

**Title:** Integrating Sustainable and Organic Agriculture into NRCS Programs

**Project Director:** Jeff Schahczenski, Agriculture Policy and Funding Research Director, National Center for Appropriate Technology, Butte, MT

**Timeframe Covered by Report:** September 15, 2010-September 15, 2014

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**Deliverables Identified in Original Grant Agreement and as Modified:**

1. Summarize practice standards evaluation and review and recommend modifications to optimize appropriateness and relevance to sustainable and organic systems, including National Organic Program (NOP) compliance.
2. Draft new practice standards critical to sustainable and organic systems.
3. Update correlation chart showing how existing and proposed practice standards align with NOP guidelines and standards.
4. Provide recommendations for conservation practice considerations to make them appropriate and accessible for small farms.
5. Recommend payment schedule modifications for advanced land management systems.
6. Provide recommendations:
  - on the CSP Conservation Management Tool and on-line access
  - on additions, deletions, and modifications to the list of CSP enhancements and activities
  - for the conservation planning and on farm R&D options
  - for the CSP/organic crosswalk documents and support tools
7. Survey Organic Training Needs
8. Provide curriculum for production system training. We will develop a “core” curriculum for organic production system trainings, based in part on training materials used in on-going training projects, and in part on additional materials for which our project partners identify a need.
9. Provide five, 60-90 minute national webinars for NRCS personnel and on the general theme of the conservation benefits and considerations of organic production systems. We estimate a total of 300 NRCS and 300 organic producers attending these webinars.
10. Four training team partners (NCAT, MOSES, FOG and KRC) to this project will hold a total of five state-level joint organic producer and NRCS trainings on the conservation benefits and limitations of organic production systems as well as how specific Practice Standards and CSP Enhancement Activities can be implemented in these systems for maximal conservation benefits.
11. Provide four, 60-90 minute national webinars on topics on related to becoming a Technical Service Provider (TSP) to serve organic farmers and ranchers. We estimate a total of 300 potential TSPs attending these webinars.
12. Develop a guidance document on developing NRCS conservation plans to help organic producers meet the Organic System Plan conservation components for crop and livestock production for organic and transitional producers.
13. Attend at least one NRCS CIG Showcase or comparable NRCS event during the period of the project agreement.
14. Semi-annual performance progress reports and a final report documenting project results.

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## Executive Summary

This four-year project utilized the expertise and experience of eleven leading sustainable and organic agriculture organizations, several consulting experts, many practicing farmers and other experts to work with the Natural Resources Conservation Service (NRCS) to better integrate sustainable—including organic—production systems into NRCS programs and procedures. Our efforts have also led to greater accessibility of NRCS programs to sustainable and organic farmers as well as training and future educational resources for NRCS staff nationwide.

This collaborative effort analyzed potential improvements for NRCS technical, procedural and training policies. Project partners provided hundreds of detailed recommendations to improve implementation of the Conservation Stewardship Program (CSP) and in particular the use of the Conservation Management Tool (CMT) in assessing the conservation performance of applicants and awarding contracts. We provided careful review (and re-review) and recommendations for improvement for 41 conservation practice standards and 20 CSP enhancements including a proposal for one entirely new enhancement offering. We addressed multiple issues concerning the payment schedules for six important practice standards that are of great importance for advanced land management systems that include diversified, organic and transitioning-to-organic production systems. We also provided 14 national webinars and 4 face-to-face trainings to certified organic and transitioning-to-organic farmers, NRCS field staff and those agricultural professionals interested in becoming NRCS Technical Assistance Providers (TSPs). We offered improvements to important national NRCS guidance “crosswalk” documents that help organic and transitioning-to-organic producers determine which NRCS programs can help them meet the organic standards set out by the USDS National Organic Program (NOP) and achieve improved conservation outcomes. Finally, we worked with a national NRCS team to assist in the development of an national organic guidance document that will help NRCS field staff nationwide to better address the conservation benefits and needs of sustainable and organic producers.

We are confident that ultimately greater environmental benefits have and will continue to result from the past and future NRCS adoption of the fully scrutinized policy and technical recommendations produced by this project. One of the most significant outcomes of this project has been an improved mutual understanding between the project partners and national and state NRCS technical and administrative staffs concerning the conservation benefits of organic and sustainable systems of production. Where NRCS and project partners were unable to come to consensus on how best to move forward on certain recommended improvements to critical federal working lands conservation programs, we have improved clarity on important issues that will remain for future discussions and consideration.

We modified some of the deliverables mainly related to training efforts about a year and half into the project, due to constraints of state NRCS offices, which did not have sufficient travel support to attend planned in-person training events. We compensated by providing national Webinars as an alternative mode of training.

The project addressed every item in the original sustainable and organic agriculture subcategory of the Conservation Innovation Grant proposal request that focused primarily on conservation practice standard modification, field data for conservation planning, and conservation planning needs.

At the completion date of the project (9/15/ 2014), project partners spent \$ 744,143 of a total budgeted amount of \$1,043,907 on the project. Project partners spent \$365,312.15 of an available \$502,659 of NRCS funding and \$378,830 of non-federal resources. Project partners provided a 51% non-federal match for this project. Overall, the project spent 71 % of total budgeted funds. The major reasons for this shortage of expenditures were that several original partners had to leave the project before completion of project activities and because of an NRCS approved shift to provide training deliverables via webinars rather than face-to-face meetings. The budget for face-to face meetings would have been far more expensive. This shift in training method was also undertaken because of the travel restrictions of NRCS field staff during much of the project period and thus could not have attended these originally planned face-to-face training activities.

## **Introduction**

The National Center for Appropriate Technology (NCAT) provided over-all direction and acted as fiscal sponsor for the project. All project participants are member groups<sup>1</sup> of the National Sustainable Agriculture Coalition (NSAC). These groups along with NSAC staff and a number of external consultants, worked with NRCS over four years to provide advice and assistance on how to better integrate sustainable and organic agriculture into NRCS programs. Our work consists of important recommendations related to conservation practice standards, payment schedules and scenarios, conservation enhancements, the Conservation Stewardship Program (CSP) and Conservation Measurement Tool (CMT), and training and a national guidebook for NRCS staff.

The goal of this project was to work with NRCS to better inter integrate sustainable—including organic—production systems into NRCS programs and procedures, and to make NRCS programs more accessible to sustainable and organic farmers. Ultimately, greater environmental benefits will result when NRCS adopts the fully scrutinized policy and technical recommendations produced by this project.

The objectives of this project were to:

1. Evaluate the body of NRCS conservation practice standards and propose modifications and additions to facilitate participation in NRCS programs by sustainable and organic producers and thus help achieve NRCS conservation goals
2. Evaluate and recommend improvements for the CSP conservation measurement tool, including the farm baseline, stewardship thresholds, and conservation activities/enhancements, to maximize conservation performance and reflect sustainable and organic systems. Develop

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<sup>1</sup> National Center for Appropriate Technology, Organic Farming Research Foundation, Midwest Organic and Sustainable Education Service, Center for Rural Affairs, Land Stewardship Project, Kansas Rural Center, Wild Farm Alliance, Virginia Association of Biological Farming, Institute for Agriculture and Trade Policy, Florida Organic Growers

recommendations for implementing the CSP comprehensive conservation planning option and the on-farm research and demonstration option; and for the “organic crosswalk” to suggest how organic plans can help meet CSP conservation requirements and how CSP can support organic system plans.

3. Analyze and provide training to enhance the capacity of Technical Service Providers (TSP) to help organic producers and identify barriers and solutions for organic production systems.
4. Assess and provide training to NRCS staff and organic producers so as to better understand the conservation benefits and limitations of organic production systems, and how EQIP and CSP can assist producers.

The related tasks of this project included a series of recommendations and training assistance and assessments. Specifically they included:

- Recommendations for modifications to conservation practice standards.
- Recommendations for modifications to CSP enhancements
- Recommendations to practice standard payment schedules for advanced land management systems, including diversified, organic and transitioning-to-organic farms.
- Recommendations related to improvement in the CSP and the CMT.
- Provide training assistance and needs assessment for NRCS staff, farmers and Technical Service Providers (TSPs).
- Improve the NRCS- National Organic Program (NOP) “crosswalks” document
- Provide assistance in the development of a national guidebook for NRCS field staff

## **Background**

Sustainable and organic agricultural systems produce some of the best conservation results in the nation, as they enhance the natural resource base and provide multiple environmental services. These systems can conserve biodiversity and improve soil quality, water quality, air quality, carbon sequestration, energy efficiency, and wildlife habitat. Increased adoption of sustainable and organic systems of production are directly in line with NRCS’s mission of “helping people help the land.” Yet, too often opportunities for use of working lands programs to support greater adoption of these systems of production are missed because NRCS field staffs are uninformed about the benefits of sustainable and organic practices and producers. This project was motivated by the need to address these deficiencies.

The 2008 Farm Bill led to implementation of specific provisions for organic and sustainable farmers, including the Environmental Quality Incentive Program (EQIP) Organic Initiative and the Conservation Stewardship Program (CSP). These important steps illuminated a number of needs which this project addressed:

- to update, expand or modify certain conservation practice standards and CSP conservation activities in order to better serve this constituency
- to credit the full conservation benefits of organic and sustainable systems
- to provide guidance and well-trained technical assistance for addressing the resource conservation challenges of organic and sustainable producers
- to train NRCS staff and certify technical service providers (TSPs) so they understand the conservation benefits and basic requirements of these systems
- to educate underserved sustainable and organic producers on how NRCS programs can help them enhance natural resources
- to create NRCS conservation planning tools that support and integrate with organic system plans required for certification.

With the passage of the 2014 Farm Bill near the end of this project's life, there is renewed interest in these working lands programs and the work accomplished by the participants to this project will continue to impact future implantation of these programs.

## **Review of Methods**

There were four primary methods used in this project:

Practices Standards and CSP Enhancements Method- We reviewed the current body of NRCS conservation practice standards and enhancement job sheets to: (a) identify practice standards and enhancement job sheets most relevant to sustainable and organic farming systems, with an emphasis on land management, soil quality, water quality and vegetative practices; (b) propose modifications needed to make practice standards and enhancement job sheets more appropriate and accessible to sustainable and organic producers, and to improve overall environmental outcomes; and (c) propose additional conservation practices and enhancements to consider that are inherent in sustainable and organic systems but are not adequately covered by existing practice standards. We drafted recommendations, which included considerations for small, transitioning, and beginning farms where appropriate, as well as payment schedule modifications for organic and other advanced land management systems. Input was gathered from sustainable and organic farmers, agricultural scientists, and agricultural organization leaders with organic and sustainable expertise. We developed and submitted to NRCS several revisions, of practice standards and CSP enhancements. In addition, we developed an updated chart showing the correlation of existing and proposed NRCS practice standards with NOP standards. We conducted outreach on our recommendations and assisted NRCS with any follow-up to the recommendations.

CSP Methodology - We conducted an assessment of the baseline inventory questions and scores in the Conservation Measurement Tool (CMT), with a focus on modifying questions and strengthening the appropriate ranking and payment point values for a range of activities most relevant to sustainable and organic farming systems (including the conservation planning and on-farm research

and demonstration options.) We proposed modifications where appropriate. In addition, we analyzed and developed recommendations on stewardship thresholds, calculation and weighting of CSP payment points, and on making the CMT a user-friendly web-based tool. Finally, we analyzed and recommended improvements to the CSP organic crosswalk. At all steps in the process and where appropriate, we worked closely with individuals assigned to this part of the project from, NRCS, ARS, and AMS/NOP.

Technical Service Providers Methodology- We undertook a review of current and potential technical service providers (TSPs) to assess their capacity to serve current and transitioning organic producers. This work served as the basis of a series of training workshops and webinars for current and potential organic TSPs, including Certified Crop Advisors, organic inspectors, and conservation/wildlife groups. Instructors included organic farmers and TSPs knowledgeable in conservation services.

Training Methodology - We identified training needs through a review of past training efforts and surveys of current needs with assistance of NRCS staff. We undertook a series of face-to-face and state-based training workshops and webinars base on this review with the goal to educate NRCS personnel and their clients on the conservation, biodiversity and wildlife benefits of organic production. Finally, this team worked with a national-level NRCS team to develop a national guidance document to improve conservation planning as it relates to organic production systems.

## **Discussion of Quality Assurance**

This project was not typical of many national-level Conservation Innovation Grant projects in that the “data” collected and analyzed was not related to specific technical solutions to specific farming practices such managing fertilizer applications, rotational grazing schemes, or on-farm energy efficiency improvement. The “data” for this project was largely the current practice standards, CSP enhancements, EQIP payment schedules, and the existing CMT that we sought to improve to better serve sustainable and organic farmers. These “data” were often moving targets as NRCS was (is) constantly modifying them; and one of the most challenging aspects of this program was the need to be adjusting our recommendations and new relevant information was released. For example, over the four years of the project several of the practice standards or CSP enhancements that were reviewed for the project underwent change, sometimes in response to our recommendations and sometimes as part of the normal agency process of review.

Our efforts were necessarily an iterative process: making recommendations, reviewing NRCS responses, making further recommendations in light of NRCS responses, etc. Thus quality assurance in terms of this project is more related to the marshalling of the input of experienced farmers and ranchers, scientists (within and from without NRCS) and other agricultural professionals to assure the highest quality of scientifically validated as well as well-reasoned and practical recommendations possible. For example, we made recommendation to modify 41 conservation practice standards and

20 existing CSP enhancements in this project and these were vetted through dozens of scientists, agricultural professionals and producers.

## **Findings**

### **1. Modifications to conservation practice standards**

Between May and September of 2012, we sent NRCS recommendations on 41 conservation practice standards. Because of the extended and cyclical revision process for practice standards, NRCS first incorporated some of our proposed changes when it published revised conservation practice standards in September 2013 in the Federal Register. We reviewed and submitted recommendations on six of these standards, five of which we had reviewed in 2012, and one of which was a brand new standard regarding livestock shelter.

In April 2014, we met with the Director of NRCS Ecological Sciences Division, NRCS National Agronomist, and NRCS CIG project liaison to discuss status of our practice standard recommendations. At that meeting, NRCS presented us with responses to our recommendations on five of the six standards. In total, NRCS accepted an estimated 30 percent of our recommended changes to the six standards.

In August 2014, we provided NRCS with detailed responses to their responses to our recommendations on the five standards. We have yet to have any follow up correspondence with NRCS staff.

Also in August 2014, NRCS published revisions to five additional practice standards on which we had submitted recommendations in 2012. In this latest round of revisions, NRCS adopted an estimated 20 percent of our proposed revisions. In September, we revised and re-submitted recommendations on these five standards in response to NRCS' request for public comments.

In sum, since 2012, NRCS has adopted recommendations from 11 of the 41 standards that we reviewed. We expect that, as additional standards cycle through the review process, NRCS will revisit our recommendations.

For your convenience, our full conservation practice standard recommendations, along with justifications for each recommendation, our public comments, and any responses that we have received thus far from NRCS, may be downloaded from the NSAC website here:

<http://sustainableagriculture.net/wp-content/uploads/2014/10/CIG-project-Conservation-Practice-Standards.zip>

### **2. Conservation Stewardship Program: modifications to enhancements**

Between May and September of 2012, we sent NRCS recommendations on 20 existing CSP conservation enhancements. We also proposed three new enhancements.



In 2013, NRCS incorporated recommended changes into eight CSP enhancements and accepted our proposal to create a new cover crop enhancement for orchards and vineyards.

For FY 2014, NRCS incorporated roughly 65 percent of our recommendations on nine CSP enhancements. The FY 2014 review brought the total number of revised or created enhancements to 18.

For FY 2015, we resubmitted our recommended changes to the titles and descriptions of seven enhancements because NRCS did not have sufficient time to review those proposed revisions in time for the FY 2014 sign up. We have not yet had any correspondence with NRCS staff to determine if those proposed revisions are moving forward.

For your convenience, our full conservation enhancement recommendations, along with justifications for each recommendation, may be downloaded from the NSAC website here:

<http://sustainableagriculture.net/wp-content/uploads/2014/10/CIG-Project-Conservation-Enhancements.zip>

### **3. Modifications to practice standard payment schedules for advanced land management systems, including diversified, organic, and transitioning-to-organic farms**

Please note that this is the first time that we have submitted these findings to NRCS during this project. In addition to the text below, we have attached a detailed general analysis of payment schedules as well as specific recommendations for the Appalachian, mid Atlantic, and Northern Mountain regions (see Appendices A, B, C and D, respectively).

We conducted a review of six conservation practices that can play integral roles in organic and sustainable farming systems: CPS 328 Crop Rotation, CPS 340 Cover Crop, CPS 329 No-Till, CPS 345 Reduced Till, CPS 590 Nutrient Management, and CPS 595 Integrated Pest Management. For each practice, cost scenarios, payment schedules, and selected supporting documents (job sheets, implementation requirements, etc.) were evaluated for clarity, consistency, and practical relevance and accessibility for organic, sustainable, small-diversified, and specialty crop farming systems. We undertook in-depth reviews of the six practices for three of the regions designated by NRCS for cost scenario development: Appalachian (KY, NC, TN, VA, WV); Mid-Atlantic (DE, MD, NJ, NY, PA) and Northern Mountain (ID, MT, WY). Scenarios, payment schedules, and other documents from selected states within other regions were examined to assess whether certain trends or concerns that arose in all three regions also occurred nationwide.

In summary, our findings and recommendations are:

- Availability and accessibility of cost scenarios, payment schedules, and implementation requirements need improvement. Web site locations and formats of these documents must be consistent across all regions and states to facilitate access and understanding.
- Consistency and compliance with national criteria in scenario development and practice

implementation must be balanced with sufficient flexibility to allow regions, states, and districts to develop appropriate and creative adaptations of practices and scenarios to meet the conservation needs of their farmers.

- CPS 328, 340, 590, and 595 generally offer good options for organic, sustainable, specialty crop, and small scale diversified producers. In a few states, however, unwarranted barriers to understanding and/or implementation of one or more practices by these producers remain. Specific recommendations for addressing these barriers are presented throughout our report.
- CPS 329 is uniformly under-supported across the US due to inadequate cost accounting, thus making the practice less likely to be implemented, especially by organic and smaller scale producers.
- CPS 345 offers a practical means for organic producers to implement conservation tillage, yet is not offered in some states. We recommend that this practice be made available in all states and regions.
- The current Standard and the 13 scenarios utilized nationwide for CPS 595 offer excellent options for organic, sustainable, specialty crop, and small-scale diversified producers, as well as conventional field crop farmers, to adopt basic, mid- or high-level IPM to address resource concerns. Advanced scenarios support the producer to protect resources by reducing need for pesticides through a full Prevention-Avoidance-Monitoring-Suppression (PAMS) IPM system as well as mitigating pesticide impacts on water, air, and non-target organisms. NRCS must ensure that all regions offer both basic and advanced scenarios, and that state offices and district field staff have the capacity (or access to appropriately trained Technical Service Providers) to deliver basic and advanced CPS 595 scenarios to both organic and non-organic producers.

In undertaking this review, we are very aware of the often limited staffing and funding for technical assistance that NRCS might face in endeavoring to implement some of our recommendations. At the same time, we see great potential for NRCS working lands programs and conservation practices to support exceptional conservation performance by organic, sustainable, specialty crop, and small-diversified producers, as well as conventional field crop / livestock farmers and ranchers. Our intent in the following report is to help NRCS realize this potential through improvements in the development, presentation, and administration of conservation practices, scenarios, and payment schedules.

#### **4. Conservation Stewardship Program: Conservation Measurement Tool (CMT)**

In March 2012, we submitted initial CMT recommendations. For your convenience, that March 2012 report, along with NRCS responses, can be downloaded from the NSAC website at this link: <http://sustainableagriculture.net/wp-content/uploads/2014/10/CIG-Project-March-2012-CMT-recommendations.zip>

In addition to our March 2012 report, we submitted four memos to NRCS between June and August 2014. The four CSP memos included recommendations regarding (1) providing financial assistance for conservation planning; (2) reevaluating the CPPE point values assigned to certain conservation enhancements, and establishing a minimum cumulative CPPE point threshold to be eligible for the program; (3) creating a new soil health enhancement bundle; and (4) implementing certain provisions of the 2014 Farm Bill. NRCS responded to each of these memos in the fall of 2014. The memos and NRCS responses are attached as Appendices E, F, G, and H. In subsections a-e below we present new or revised recommendations, in addition to discussing actions that NRCS took following our initial recommendations in 2012.

### **a) Transparency for Enhancements: Environmental Benefit Scores**

Our CIG Project Recommendations to NRCS, dated July 21, 2011, called for incorporating transparency into the CMT. In response, several actions have already been implemented by NRCS, and some are still planned.

Our recommendation to make information on environmental benefit scores for enhancements available to applicants was at first rejected by NRCS, then accepted in principle in a follow-up meeting in 2012. (Note that we use the term environmental benefit here to refer specifically to enhancement scores, although NRCS often uses the term conservation benefit. The two terms are interchangeable.) NRCS staff agreed that in order to make full use of the program, an applicant needs to be able to understand how adding new enhancements and practices will impact his or her performance. Producers miss the whole point of CSP if they do not understand the value of new conservation efforts. In addition, more information on scores can encourage farmers and ranchers to choose higher value enhancements.

Subsequently, NRCS addressed the issue in part by adding a running score to the CMT as it is filled out. Here we clarify our recommendation in hopes of full implementation.

Along with supporting the active management and continual improvement of existing, ongoing conservation efforts, another statutory requirement of the CSP is to encourage farmers to add additional conservation practices to their farming systems. While a running tally is now shown as the CMT is filled out, NRCS in our view still does not provide enough information to help farmers understand the relative conservation outcomes of the enhancements available for their operation.

NRCS assigns point values to every enhancement and practice available within CSP, and those points represent the expected relative environmental benefit for each activity, ranging from 4 points to 153.5 points. Despite its utility in assessing conservation outcomes, this scoring information is generally not disclosed to applicants. Instead, the CMT reveals only the enhancements available to that applicant, by land use (crop, pasture, range or forestry). While titles, short descriptions and job sheets are available on line, the farmer lacks the scoring information that would likely positively impact selection decisions.

It is true that enhancements and practices should be chosen first and foremost because they are appropriate to the resource concerns being addressed and to the specific farm and its needs. Ideally, all applicants would have a comprehensive conservation farm plan or its equivalent already in place, and would be well equipped to know which enhancements are most appropriate to address their particular resource concerns, site, and farming operation. Elsewhere in our CIG project recommendations we make suggestions for increasing comprehensive conservation planning.

Unfortunately, only a small number of farmers have such a plan. Some farmers may already have a personal interest in moving into a particular practice, because of their own experience or research. Yet the majority of applicants would simply have to look at the long list of available enhancements and bundles available to them and make a selection based on a first impression. Local NRCS staff may be asked for advice, but their time and past experience with that farm might be limited.

What is missing is a way for the applicant to see the relative conservation performance of each enhancement or practice that is relevant to his or her priority resource concerns and farm, by comparing scores. A tech-savvy farmer might be able to find the compilation of the relative environmental benefits of all enhancements available by referencing the NSAC list posted on its website, but most producers either would not take the time or simply would not know of this resource. The local staff can enter each prospective enhancement and show the applicant how many points were added to the point tally box, but that could be time-consuming and clumsy and places a drain on NRCS' limited technical assistance. What advantages are to be gained by sharing the relative environmental benefit scores of CSP enhancements?

First, transparency will help NRCS achieve the highest levels of conservation possible. We are confident that most farmers enter CSP because they are proud of their conservation efforts and want to achieve higher levels of conservation performance. Provided there is sufficient financial support, most will go through the effort of adopting a new practice if they understand what the relative benefits to the resource and the environment would be. Not providing this information can hinder the very purpose of CSP, which is to encourage good conservation farmers to become great conservation farmers.

Second, farmers need to understand that the relative environmental benefits of the enhancements will in large part determine how they rank among eligible CSP applicants. The CSP ranking formula has been weighted 25% for existing conservation, and 75% for new enhancements and achievement of two established stewardship thresholds. Motivated farmers will want to do more when they know that doing more and earning a higher score, as long as it fits their operation and capacities to adopt, will improve their chances of being selected for a contract. Our CIG project analysis revealed that this is a particular problem for the better conservation farmers—they start out already having achieved a relatively high-level of conservation performance and may have less obvious choices of what else to do. These high performing farmers may have to stretch a little to find enhancements that take them to the next level. Transparency on the environmental benefits of enhancements would help these farmers figure out how to rank well enough to be selected for CSP or to undertake a renewal of their current contracts. Conversely, our CIG analysis also found some applicants who

inadvertently picked low scoring enhancements, or were guided by NRCS staff to relatively easy enhancements, not understanding the significance of their enhancement choices or the opportunity to improve resources. Some may have ended up shooting themselves in the foot by not ranking high enough to be selected.

Third, points for enhancements are a significant part of the payment formula for CSP contracts, and knowing the points would help farmers improve contract funding. Farmers should be able to easily weigh the financial support provided for going the extra mile in undertaking a higher level of conservation performance against the cost of undertaking such efforts. Of course farmers must also take into account what level of conservation adoption best fits their operation and the site, and what they are able to manage in making their enhancement selections, but knowing the level of support for a given level of conservation effort is a critical factor as well. The unlikely chance that a producer would choose an inappropriate enhancement merely for the points and payment is tempered by the fact that field staff are involved in the application process, and job sheets and contracts are enforceable. Transparency on points and payments is especially critical for smaller acreage producers, including beginning, minority, and other underserved farmers, for whom CSP payments may otherwise not be high enough to warrant participation. Greater transparency could assist NRCS in achieving its environmental justice objectives.

## **Recommendations**

We recommend NRCS add to its annual Conservation Stewardship Program Conservation Activity List the environmental benefit scores for each enhancement, post it on the web and include the information in educational materials available about the program. We also recommend that NRCS post a ranked list showing all enhancements and practices on all NRCS websites and educational materials. State and local field offices should inform applicants of this information and be trained to help applicants understand the value of selecting higher scoring enhancements and practices, because of the greater environmental benefits that will result from adoption, the impact of such adoption their CSP ranking, and the impact on contract payments.

### **b) Validation of Threshold Scores**

Our Recommendations dated July 21, 2011 called for revising and validating the stewardship thresholds, which are used to determine if applicants have achieved a minimum level of conservation on resource concerns, as measured by the Conservation Measurement Tool (CMT). NRCS agreed with our recommendation that the stewardship thresholds should be reviewed, validated, and potentially raised. To date we are unaware of any actions taken to implement this recommendation. Herein, we offer further recommendations and explain the importance of the need for threshold validation.

The term ‘stewardship threshold’ is defined in the law as the level of management required, as determined by the Secretary, to conserve and improve the quality and condition of a natural resource. The CMT provides a good process for predicting conservation performance. By scoring and totaling the conservation physical effects points (negative five to plus five) for each of many

individual farm practices and enhancements, the CMT provides an assessment of how those practices affect the eight resource concerns. The CMT itself has proven useful and has been partially validated as an assessment tool. A research paper published in the September-October 2014 issue of the *Journal of Soil and Water Conservation*<sup>2</sup> came to the conclusion that the CMT generally weights the conservation benefits of practices appropriately, with some suggestions for improvement. However, the resource concern thresholds themselves have not been validated.

Thresholds were set beginning in 2008 for each of the resource concerns, using what is generally acknowledged as an imperfect process. The threshold scores were developed from a study of 100 farms which aimed to set the thresholds for each of the eight resources of concern. The study was based on agricultural operations which the local NRCS staff considered to be good to excellent in meeting resource sustainability levels. Note that no overall farm stewardship threshold score has been established.

Given how much the CSP relies on meeting resource concern thresholds for administering the program, it would be advantageous to have greater scientific underpinning or validation of whether the thresholds are defensibly indicative of conserving and improving the quality and condition of a natural resource.

The importance of thresholds to the CSP cannot be overstated. In order to even apply for the CSP, new applicants since the 2014 farm bill must meet a stewardship threshold for two priority resource concerns and must meet or exceed the threshold for a third resource concern by the end of the contract. In addition, renewing contract holders must either meet the stewardship threshold for two additional priority resource concerns, or exceed the stewardship threshold for two existing priority resource concerns by the end of the new contract period. Thresholds also are used in two of the six factors of the ranking formula for enrollment and are one of the six factors for figuring payment amounts. Given the critical importance of thresholds, it is vital that stewardship thresholds be based on a better-documented standard of what constitutes good environmental performance.

One use of thresholds has gotten more attention than the others: should stewardship thresholds be set higher and used for screening applications to ensure that only the best qualified move on to the ranking step? At the outset of the original Conservation Security Program, the then-NRCS Chief indicated he wanted low thresholds, so the program would be open to all. That meant that the vast majority of applicants ended up meeting multiple thresholds, but many went on to be rejected during competitive ranking; a result that left many applicants confused and resentful.

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<sup>2</sup> Ugarte, C. M, H.Kwon, S.S. Andrews and M.M. Wander, 2014. A Meta-Analysis of Soil Organic Matter Response to Soil Management Practices: An Approach to Evaluate Conservation Indicators, *Journal of Soil and Water Conservation* 69 (5):422-430

## **Recommendations:**

Thresholds are a foundational element of CSP enrollment, ranking, contracts, and payments, and we had previously recommended that they should be revised upward, setting a higher bar for eligibility and screening initial applications. We reaffirm that recommendation.

The law requires thresholds to be a reliable measure of the level of management necessary to conserve and improve the quality and condition of a Natural Resource. Although the program has been operational for several years, the question remains: are the current thresholds valid as a means to assure that a relatively high-level of current conservation performance is attained as a condition for eligibility into the program? Without a sound, transparent method to defend the thresholds, this will remain an issue, and not knowing the true impact of thresholds in the initial eligibility screening has led us back to our basic request for a scientifically defensible validation analysis and process to determine threshold scores.

Regarding communication to applicants of their threshold status, we had previously recommended that NRCS help applicants understand the relationship of their practices and why they failed on some resource concerns. For those who fail to meet entry threshold levels, it is vital that NCS train local staff to provide immediate feedback and advise them on what is lacking and how NRCS can help them address those deficiencies.

NRCS has a variety of technical and financial assistance programs and the initial disappointment of applicants who did not meet entry levels can be turned into a positive experience if producers are given actionable information. This area provides a huge opportunity for NRCS to say, “We can help you with this. Here are opportunities to apply for EQIP or other conservation assistance, to bring your operation up to the conservation threshold on these resource concerns.” NRCS should try to capture ineligible CSP applicants and direct them to EQIP.

The new on-line Client Gateway that is currently under development offers an exciting opportunity to both engage and inform producers who have applied and completed the CSP application process. Building the CMT and threshold performance information into the software would be an excellent way to help producers understand what their threshold scores convey. Having access to this data would provide producers a continuing opportunity to review their thresholds and identify areas for improvement.

We further recommend that NRCS make data available on the numbers of CSP applications, eligible applications, applicants meeting thresholds, and applicants failing to meet entry thresholds. Since the onset of this CIG project, we have received conflicting information about the numbers of applicants, numbers of those meeting required thresholds to become eligible, and numbers enrolled versus those who have applied. We have heard there aren’t enough applicants to use up the allotted acreage, and also that there are twice as many applications as contracts signed. While we believe much of this can be ascribed to year by year variances, the lack of consistent information from an authoritative source is troubling.

Our cornerstone recommendation remains the same—that NRCS develop a science-based, defensible approach to ensure threshold numbers are a valid measure of good conservation for the eight resources of concern. The NRCS quality criteria and the many years of CMT results will provide valuable guidance to determine appropriate threshold levels and inform development of such an analysis. NRCS may want to include the development of threshold validation into the next round Conservation Innovation Grants or enter into a Cooperative Agreement with a qualified University or research lab.

### **c) The Importance of the Proper Balance between Conservation Retention and Additionality**

Our Recommendations dated July 21, 2011 and October 27, 2011 called for revising the interpretation of ranking factors and payment factors, to move toward equalizing treatment between current conservation activities and newly added conservation activities. NRCS disagreed with our recommendations. Herein, we offer further explanation of our philosophy and the importance of increasing the value of retaining current conservation efforts within the CSP.

The Conservation Stewardship Program was created in 2002 as a new kind of “whole farm green payments program.” In contrast to other programs that either paid for individual new practices on individual fields or paid to take individual fields out of production, the CSP was intended to help entire working farms retain and actively manage ongoing conservation activities while implementing additional practices to take them to even higher levels of performance.

Central to this new policy was the recognition that while other conservation programs offered financial and technical assistance to those who have resource problems, they left out the conscientious farmers who had already implemented and continued to actively manage conservation activities that prevented those resource problems in the first place. For example, farmers who kept highly erodible fields in pasture were not eligible for the Conservation Reserve Program, and the Environmental Quality Incentives Program did not compensate early adopters (or even subsequent adopters) who bore the cost of new practices on their own.

The CSP represented a different policy approach—a systems-based, outcome-oriented approach—designed to provide financial and technical assistance to help good actors maintain and enhance existing conservation activities, while simultaneously improving their performance through the adoption of new conservation enhancements that go above and beyond the performance specifications of conventional conservation practices.

We greatly value the importance of additionality within the CSP. We do not, however, believe that additionality must overshadow or outweigh the retention of existing conservation in the program, or that taxpayers somehow receive less value by supporting the active management and maintenance of critical conservation activities and their resulting environmental benefits. One wonders how much of the Defense Department budget goes toward managing and maintaining existing ships, aircraft, facilities and other equipment, or how much is spent on ensuring existing skill levels of personnel is retained. Similarly, the majority of the NRCS Conservation Operations budget is for maintaining the existing infrastructure of NRCS.



There often appears to be an assumption that the taxpayer only gets their money's worth when something "new" is done to improve the environment that would otherwise not be done without payments. We challenge that assumption. Retaining and actively managing ongoing conservation activities is also "doing something" that might otherwise not be done without payments. From the days of Hugh Hammond Bennett to today, NRCS has recognized that managing current conservation practices is a continuing responsibility that is never over and done with. If that were so, the Agency would have ceased to exist in the 1950's.

Adaptive management requires that conservation activities must be maintained, repeated every year, possibly modified to meet the challenges of changing conditions, and not given up just because, for instance, the price of corn is high or taxpayer-financed commodity payments favor its all-out production. There is a continuing private cost in materials, management, labor, and foregone income for many critical continuing conservation practices, and the CSP was intended to help shoulder that burden as well as require additional new efforts.

In our experience there is often a confusion regarding the relationship between individual decisions and actions and the public good when it comes to assessing this issue. If we have twenty people living around a lake where ten people are spending private dollars to keep it clean for their private benefit, they are collectively providing a public benefit for all twenty. The ten who aren't contributing to this public benefit are obtaining real measurable benefits at zero cost. The ten who are working to keep the lake clean are providing a positive economic externality that represents a non-market, but nonetheless real, economic benefit. The best sustainable agriculture producers in this country, who use advanced conservation stewardship practices as part of their farming systems, are providing real public economic benefits that other farmers and the public in general benefit from—whether they have participated in a financial assistance program or not.

We again reiterate our recommendation to more equally rank the active management of ongoing conservation activity with the adoption of new conservation enhancements in ranking and payments. We urge NRCS to recognize that the CSP was created intentionally to recognize the efforts of the ten who invested to keep the water clean and at least partially provide a way to compensate them for the clear and on-going public benefits they produce and which we all receive.

Given today's agricultural and environmental challenges, and the pressing need to adapt to climate change, we believe it is critical for NRCS to more equally compensate our best stewards for both existing and new conservation in their farming practices. Paying farmers to continue growing monocultures and other non-diverse cropping systems, as the Commodity and Crop Insurance Titles of the Farm Bill do, represents a much greater total cost to the taxpayer and can cause significant harm to the environment upon which we all depend.

Sustainable and organic farmers, year-in and year-out, are improving soil health, managing perennial cover, rotating crops, using cover crops and no-till, and implementing nutrient and irrigation management plans. The CSP now rewards farmers for adopting those practices, yet does too little to reward those who had the foresight to be doing those practices already.

A prime example of the importance of conservation retention is the rapid conversion of grasslands, woodlands and other non-croplands that were plowed up for row crop production in recent years as commodity prices surged. FSA's report<sup>3</sup> that nearly 400,000 acres were converted to cropland in just one year (2011- 2012) clearly demonstrates conservation backsliding. No policies were in place to encourage preservation of those acres and yet most of those acres will now be eligible to have conservation reestablished at a tremendous cost to the taxpayers. Wouldn't it have been better to have preserved the conservation on those acres in the first place? Some of those landowners very possibly would have reconsidered their actions if they had been in CSP, receiving financial rewards for actively managing perennials under a five-year contract that recognized the value of keeping the land producing valuable conservation benefits.

Additionality is not the only public good that justifies conservation investments. Retaining conservation is also a sound investment, and may be even more cost effective, considering that management costs are usually much lower than establishment costs. Existing practices that benefit the landscape as a whole but have limited economic value for the farm itself are particularly important to recognize.

The CSP helps ensure additionality by requiring that environmentally beneficial enhancements be implemented. Yet the CSP as now configured weights new enhancements disproportionately higher for both ranking and payment amount decisions, while vastly underplaying the importance of active management of excellent existing efforts. By discounting the value of retaining ongoing conservation activities while heavily weighting new enhancements yet only requiring, at a minimum, one new enhancement, NRCS is allowing some lower stewardship farmers into the program with new enhancements that are relatively low in terms of the conservation benefit scores, while excluding entirely or paying far less to the best stewards. This compound error lowers the overall conservation benefits of the program. In contrast, creating a higher bar for participation in CSP while removing artificial discounting of the value of conservation retention would likely increase program performance and benefits.

### **Recommendations:**

We believe the current NRCS policy to minimize the ranking scores and payment values for conservation retention and to maximize them for new enhancements has gone much too far.. We recommend that NRCS take immediate steps to rebalance the relative importance of additionality and conservation retention; revising upward the interpretation of both ranking and payment amount factors for existing conservation to upgrade the importance of maintaining and actively managing existing good conservation on the land.

We applaud the agency for making the third and fourth ranking factors include both ongoing and new conservation. The groups that were part of this project have made that recommendation repeatedly since 2008 and are pleased that, starting with the 2014 sign-up, it is now NRCS policy.

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<sup>3</sup> <http://www.fsa.usda.gov/FSA/webapp?area=newsroom&subject=landing&topic=foi-er-fri-dtc>

We believe, however, that the concurrent decision to reduce the weighting of conservation retention points to just 5 percent of the total ranking points was a dramatic offsetting step in the wrong direction. We encourage you to reconsider the ranking weighting factors for future sign-ups, beginning with the 2015 sign-up. Not counting the cost and CRP ranking factors (factors 5 and 6), we recommend that no single factor receive less than a 20% weight. We urge you to make the requisite changes to the weighting factors to reflect this minimum.

We also recommend that the discount of payment factors for conservation retention be thoroughly re-evaluated and adjusted upward. For cropland (8.6%), forestland (9.3%), and rangeland (6.8%), the program currently pays less than 10 percent per environmental benefit point for the active management of ongoing conservation activities than it does for the adoption of new enhancement environmental benefit points. Pasture (13.6%) and pastured cropland (21.4%) fare only somewhat better. On the basis of environmental benefit they should be equal, discounted only by an averaging of the actual differences in cost and forgone income between active management of ongoing conservation activity and adoption of new conservation activity. For some of the most significant conservation activities, there is little difference between the two, while for others the difference can be substantial. The current discount on payments per environmental benefit point for conservation retention clearly falls far short of representing either good science or good economics. We urge you to determine these payment factors based on the best available science, accounting for real differences in cost and forgone income, and to do so with full transparency and with the utmost urgency.

#### **d) CMT: Validation, Baseline Questions and Scores**

A major validation study of the CMT was completed during our project and the NRCS CSP Team agreed with our recommendation that there is need to pursue further validation of the CMT inventory scores on a larger population. We made fourteen recommendations to NRCS regarding improvements to the Cropland section of the CMT in our report dated July 21, 2011. NRCS responded to each item in a report dated December 7, 2011 and another dated April 18, 2012. Most changes were considered favorably by NRCS and have been implemented in the 2014 CMT. Herein we revisit unresolved or postponed solutions.

#### **Validation**

The Conservation Measurement Tool was released by NRCS in 2008, and has been periodically updated and improved in response to the normal process of fixing complex tools and integrating new knowledge as the CSP was implemented. NRCS contracted with a team of staff and experts to employ a meta-analysis of peer-reviewed scientific literature to evaluate and validate the CMT environmental benefits scores, or indicators, to determine if they accurately reflect what research has found. The resulting study in the September/October 2014 edition of the Journal of Soil and Water

Conservation<sup>4</sup> focused on the crop portion of the CMT. Using soil erosion and soil organic carbon as a proxy for ecosystem services, the literature was found to be useful in evaluating several inventory questions in the CMT. The major conclusions follow:

- Studies using shallow soil sampling methods (0 to 7.8 in) showed that conservation systems that use reduced or no-till, and organic cropping systems using some tillage, both can increase soil organic matter compared to conventional monocultures with intensive use of external inputs.
- Results looking at deeper depths (0 to 11.8 in) suggested that CMT scores for use of true no-till are too high compared to scores for organic and sustainable systems using other conservation practices including shallow surface tillage.
- Cover crops provide a more consistent and higher benefit to soil organic matter accumulation than does the use of manure, thus points allotted for manure used should be reduced.
- Different forms of manure have different effects on soil systems, thus the CMT should reflect lower soil organic matter resulting from liquid manure.
- Results indicate that rotations of three years or longer contribute more to soil organic matter accrual than shorter rotations, thus two year rotations should receive fewer points.
- Overall, the CMT was found to generally score practices appropriately, and the study recommended that the tool continue to be used to evaluate program applications, with adjustments made as noted above.

While this study was a helpful start at validation, additional work is necessary to determine how accurately the CMT predicts environmental performance overall, so that the best science is used to adjust questions and scoring of environmental benefits. The CMT is the foundation of the entire CSP program. Thus, fine-tuning and validating the CMT and the stewardship threshold scores based thereon will prioritize the most resource-conserving production systems for contract awards, and thus yield greater conservation benefits for the nation.

### **CMT Inventory Questions and Scores**

Our original recommendations were developed from the perspective of sustainable and organic agriculture. We asked if the CMT could more accurately portray farming practices in the questions asked, and if the CMT could more accurately convey expected environmental benefits of each practice across all of the micro-resource concerns, as reflected in the -5 to +5 point system.

Our update of our original 2012 recommendations<sup>5</sup> are as follows:

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<sup>4</sup> Ugarte, C. M, H.Kwon, S.S. Andrews and W. Wander, 2014. A Meta-Analysis of Soil Organic Matter Responses to Soil Management Practices: An Approach to Evaluate Conservation Indicators, *Journal of Soil and Water Conservation* 69 (5):422-430

<sup>5</sup> Original recommendations are at : <http://sustainableagriculture.net/wp-content/uploads/2014/10/CIG-Project-March-2012-CMT-recommendations.zip>

1. We are pleased to see that energy questions on the General Inventory questions for 2014 now include further explanations and supporting material for deciding what constitutes the minimum for “yes” answers. We look forward to the NRCS plan to insert a revised suite of inventory questions on energy and air quality into the respective land uses, after the current draft is vetted.
2. We are pleased that the CSP Team plans to revisit the residue groups for Question 2. While we understand that the crop groupings for question 2 are based on the above- and below-ground residue generated from the crops, and not their management or tillage, we still maintain that there are some big problems with the current CMT crop groupings. Specialty and minor crops are grouped together in a way that puts them at a disadvantage compared to commodity crops. Some major crops with low residues like soybeans, mung beans, lentils, potatoes and buckwheat are all in the “c”, or neutral, category, while equivalent or better residue-producing minor crops like brassicas, snap and lima beans, tomatoes, peppers and eggplant are in the “b”, or negative, category. The biomass (tons per acre) of brassica residues after harvest has been well documented in particular—see Building Soils for Better Crops: Sustainable Soil Management, 3rd edition by Fred Magdoff and Harold Van Es, published by USDA’s Sustainable Agriculture Research and Education, 2010. 294 pp. The information in Chapter 9 gives estimated root residues (in pounds/acre) and above ground residues (in tons/acre) for a number of crops.
3. We are pleased to see that Question 3 on cover crops now has three sub-questions, which differentiate the number of years a cover crop is used in the rotation, the percent of time cover is maintained, and crop maturity at time of termination, all of which determine the extent of benefits from residues. On the latter question, those farmers incorporating above ground cover crop residue early, for the purpose of feeding soil health, may be receiving an unintended penalty, and the actual effect on soil organic matter should be explored further. We are also pleased to see that the exclusion of grazed cover crops, which was added in 2012, has now been removed. Limited grazing of cover crops can add soil health benefits with the manure application, and adds an incentive to adopt the practice for integrated crop and livestock systems. Please confirm our understanding. We are pleased that the CSP Team is also considering a question to address cover crop biomass levels.
4. We appreciate the explanation that Question 5 focuses on temporary flooding for wildlife benefits.
5. On Question 6 we now understand that hay and perennials are highly scored, although use of non-wildlife-friendly species can make a small reduction on the score.
6. On Question 10, it asks, “Do you consistently use controlled traffic methods (either GPS or manual methods) to minimize soil compaction?” We recommended that raised beds be specified as an example. NRCS responded, “Raised beds are a means to define traffic patterns but the process to make the beds ultimately affects soil compaction by destroying the natural soil aggregates.” We were referring to permanent raised beds, in which the positions of alleys and growing zones are kept the same for many years, with all tractor wheel traffic confined to alleys, minimizing compaction of bed tops until the field is planted to sod in a long term rotation. We concede that an applicant could

choose that option now and answer yes, but we hope field staff understands that raised beds qualify for their traffic controlling attribute.

Thank you for clarifying that on Question 11 regarding tillage, non-inversion tillage is included in option b, “soil fracturing and lifting.” Again, we hope field staff are trained to understand this.

Our query on Question 12 regarding how to select the average condition of crop residues for wildlife was answered by NRCS in a way that makes sense for a farm averaging two stubble heights on equal acreages within a rotation. But for mixed acreages including all five residue options on one farm and with multiple rotations, which is not unusual for organic farms, the answer is not easy to select. We hope staff would be able to create a quick algorithm for apportioning acres and winter residue condition.

We are pleased to see that our suggestions for greater specification and quantification of IPM choices for Question 15.1 related to pest management have been implemented. We have some concerns about the wording of the IPM selections, and we recommend changes to reflect the superiority of not using pesticides at all, and spraying some crops only if needed while not spraying other crops in the rotation at all. We propose this language:

(a) Pesticides are applied to some or all crops in the rotation without prior implementation of pest prevention and avoidance tactics, and without pest monitoring to determine whether and when a pesticide application is needed (e.g. “calendar spraying”).

(b) Some pest prevention, avoidance, and/or monitoring is used for all crops in the rotation, with pesticide applications as needed; or a full, site-specific PAMS (pest prevention, avoidance, monitoring, and suppression) program of Integrated Pest Management is applied to at least one-third of the crops in the rotation.

(c) A full, site-specific PAMS program is applied to all crops in the rotation; pesticides are used for pest suppression only when monitoring indicates that pest action thresholds have been reached. Answer “c” if some of your crops are never treated with pesticides and pest are managed on all other crops with a full PAMS program.

We are pleased to see that questions under 16 nutrient management, have been greatly improved for the 2014 CMT.

We appreciate the additional treatment of organic nutrient sources, and better recognition of the potential environmental benefits.

We suggest that the breakdown between N, P, and K could be simplified by eliminating K since it is not a water quality concern. N and P are clearly the leading cause of water pollution and should be closely scrutinized in the CMT.

In regard to both organic and inorganic nutrients, we understand that exceeding some or all of crop’s needs has negative consequences. We question why “meeting nutrient needs” for some crops

is scored negatively for environmental benefits, while meeting all of the crops' needs is scored at zero. Under-applying nutrients is rarely an environmental problem, so why penalize that answer? We believe this needs to be corrected.

Asking if soil tests are taken at intervals following local land grant university guidance is an improvement. For all of these nutrient questions, we assume that NRCS requires some means of verification before signing a CSP contract with the applicant. Please confirm.

Finally, we question the logic of applying a 30 point penalty for failure to test each and every organic nutrient source, wiping out all positive points, while at the same time awarding 14 positive points for soil testing following university guidance (not negative points for not doing it) and not asking any equivalent question about testing or recording use of inorganic nutrient sources. This is a serious problem and must be corrected. Please advise.

Regarding Question 18, NRCS agreed that there was potential to improve the irrigation management questions, and we are pleased to see that changes have been made. A question was added on implementation of an irrigation water management plan, and questions were worded to ask about records that can be used to verify the answers.

NRCS agreed that inventory questions regarding capturing biomass harvest considerations are needed, but we do not see any progress on this item. We were told a suite of inventory questions has been developed, but still needs extensive vetting and testing. We ask that this be prioritized quickly, because corn stover harvest for ethanol is already underway in Iowa and Kansas in preparation for the opening of three commercial biofuels facilities within the year. Crop residue harvest is likely to increase dramatically across the Corn Belt in the next few years as the conversion technology is proven. Initial plans are now for partial stover harvest, but total stover removal may take hold as demand rises. It is particularly important that crops which include residue removal be counted in Question 2 on residue quality as category a) low-residue or idle bare fields, and not as category b) corn. Partial harvest, depending on the rate of removal, could be scored in the neutral category c). We wonder if residue removal on wheat and other crops should be scored positively under any conditions. We note that the choices of grazed corn dry fodder, and corn/sorghum silage already distinguish residue removal, so a precedent has been set to also explicitly score biomass removal for energy.

Thank you for implementing the request that the CMT identify applicants as certified organic, for research and tracking purposes

NRCS did not respond directly to our input that having two micro-resource concerns for Soil Organic Matter (SOM) depletion and oxidation, while having none for soil life, was a problem. The CSP team said that they plan to align all macro and micro resource concerns with the resource concerns in the Conservation Delivery Streamlining Initiative. Since the integrated web-based system may take some time to roll out, NRCS should make this change to the CMT for the next signup.

We recommended that the two micro-resource concerns be reframed and combined as “organic matter depletion (including oxidation.)” A new micro-resource concern should be created on the missing factor of "soil life depletion/inhibition". Since we made this recommendation the NRCS Soil Health Initiative has blossomed and really caught the imagination of more farmers than ever, and it is the soil biota concept that has moved from the organic and sustainable segments of agriculture out into the mainstream. It is incumbent on NRCS to ensure that its premier conservation program reflects the nation’s growing knowledge and appreciation of both carbon sequestration for climate mitigation (organic matter), and soil life and health.

Specifically, we are concerned that well managed tillage on sustainable and organic farms can get a double penalty for depleting SOM through both oxidation and other mechanisms (-4 points for each,) even if its purpose is to incorporate a nourishing, high-diversity cover crop that ultimately builds soil organic matter. On the other hand, a combination of no-till and herbicide use to kill a cover crop would receive 10 points for the two SOM factors, even though benefits to soil life may be quite modest due to pesticide residues. Similarly, under question 5 on soil flooding, the impact on SOM is scored positively on both SOM factors, yet anaerobic conditions harm soil life and that is not accounted for. Combining the two SOM factors into one and revising the scores to total a maximum of five points, and adding a soil life factor would improve the CMT.

One new concern has arisen during our analysis. In Question 7 regarding field-edge habitat, we found that checking "no habitat" could give a better score (zero) than answering that you have some habitat that is of poor quality, small, or less accessible to wildlife, which could result in as many as 24 negative points. We understand that this approach was taken with water features, with the theory that you either have a water body on your land or you don't. But setting aside a little land for habitat is clearly a choice, and it is available to any farmer and should receive some recognition. It is an illogical conclusion that less than ideal habitat is worse than none at all. Possibly, providing poor habitat should get very few points, but unless it actually harms wildlife it should not be penalized with negative points. We do not want to see mixed farms with plenty of mediocre field border habitat getting fewer points than fencerow-to-fencerow, low-diversity or monocrop farms that provide none at all.

#### **e) Inflated Enhancement Scores for Expiring Conservation Reserve Program (CRP) Lands**

As part of the new option for CRP landowners to seamlessly transition to CSP, NRCS created four new enhancements specifically for expiring CRP lands (in addition to the full list of applicable enhancements.) The environmental benefits scores calculated for the CRP enhancements seem wildly out of proportion to equivalent enhancements for non-CRP lands. NSAC recommended in its August 8, 2014 input on Farm Bill Program Implementation that any bonus for CRP should consist of a modest five percent bonus on top of normally calculated environmental benefit points. We think there may be a misunderstanding, because NRCS responded by discussing how they controlled the ranking factor formula for CRP, but did not respond to our point about CRP enhancement scoring. Herein, we summarize for the record, based on our knowledge of sustainable and organic



agriculture, areas where adjustments are needed in the CRP enhancement environmental benefit points.

The large number of expiring CRP contracts is recognized as a great opportunity to bring farmers into the CSP in the final year of their CRP contract. As those farmers are planning and implementing new farming systems for land that has been out of production for ten or more years, it is obviously an appropriate time to provide technical and financial assistance to encourage excellent conservation as they begin working the land again.

Four new enhancements were created to meet the needs of CRP acres transitioning to grazing, cropping, or enhanced wildlife habitat. Apparently, the normal procedure for assigning Environmental Benefit scores by resource micro-concern for farming practices and conservation activities (which is the foundation of the Conservation Measurement Tool), was set aside. Heretofore, whether scoring baseline conditions, enhancement activities, or additional conservation practices, the CMT has always used a negative-five to plus-five scoring range to indicate detrimental, neutral or positive impacts on each and every micro-resource concern. For the first time, for these four expiring CRP enhancements, NRCS awarded point values from 5.25 to as high as 17.85 for individual micro-resource concerns, instead of a maximum of 5. Another oddity is that points are conveyed in decimal fractions for CRP enhancements, but whole numbers are used for scoring nearly all the other enhancements. We also note that two non-CRP enhancements, PLT20 and PLT21 are also scored higher than plus-five in several instances. Please provide us with the scientific justification for such scoring abnormalities.

The results are perplexing when we compare the CRP enhancement scores to similar enhancements. For example, SQL10 (Crop Management System Expired CRP) scores 153.3 points, while the highest non-CRP enhancement ever offered, PLT20 (High Residue Cover Crop or Mixtures for Weed Suppression & Soil Health) only scores 84, and Intensive No-till (SOE05) scores 62. Note that the required activities and criteria for these three enhancements—continuous no-till with STIR<10 and high biomass cover cropping after all lower-residue production crops—are very similar. SQL10 does set a higher bar for erosion than the other two (< 0.5T versus T) and both SQL10 and PLT20 set higher bars for high biomass intensive cover cropping than SOE05. However, both SQL10 and to a lesser degree PLT 20 assign some individual micro-concern point scores well above the traditional maximum of plus-5. When we assign a score of plus-5 to all micro-concerns that currently have an inflated score, we arrive at total point counts of 91.8, 66, and 62 points for SQL10, PLT20, and SOE05, respectively. Oddly, whereas SOE05 receives 3 points for reducing soil organic matter oxidation and 5 points for conserving moisture (micro-concern = insufficient water quality), and SQL10 received 3.15 and 5.25 points respectively, PLT20 was assigned a zero for both. We are struggling to understand this differential. It seems much more logical to give all three Enhancements 3 points for SOM oxidation and 5 points for water conservation, which would increase the PLT20 score to 74.

In any case, the expiring CRP enhancement (SQL10), very similar to PLT20 though with a higher bar for erosion control, provides an 83% bonus for CRP land compared to a similar practice on

non-CRP land. This seems excessive. That this high score is for land coming out of perennial cover and being plowed up for annual row crops makes this particularly surprising and difficult to explain. If we normalize all high micro-concern point assignments to plus-5, bringing SQL10 to 91.8, and add a 5% bonus for retiring CRP land, that comes to 96.4 points, which seems ample for this Enhancement.

A second example is ANM 37 (Prescriptive Grazing Management System for Grazing Lands including Expired CRP Grass/legume Acres), which has an environmental benefit score of 88.2, while PLT16 (Intensive Rotational Grazing) has a score of 45. This scoring provides a 96 percent bonus for the expired CRP practice. While we understand and appreciate that AMN37 has additional requirements relative to PLT16, a 5% bonus on a score of 45 would put the CRP score at around 48 points and seems reasonable.

In one of our previous questions regarding scoring we received this response from NRCS:

“The effect scores (i.e., environmental benefit points) are impartially assigned and exceed technical adequacy for the program and its purpose. The process to assign scores to an activity, at the national scale of the activity’s criteria, is greatly rooted in science. Any remainder, as with all modeling tools, is based on subjective judgment. It is in this narrow judgment zone where difference will always be found. In other words, two experts assigning effect scores will yield different results.”

We would appreciate knowing how much of the above mentioned scores are “rooted in science” and how much is “based on subjective judgment.”

An additional concern about inflated enhancement effects scores is that payments for those four practices are also inflated, compared to other enhancements.

We understand that NRCS was trying to tweak program details of the CSP to capture the opportunity to entice expiring CRP farms to enroll and maximize conservation. We have actively supported this goal and continue to do so. We especially emphasize aggressive and early outreach from both NRCS and FSA, alerting expiring CRP owners to the option to transition to CSP.

We suggest that a five percent point bonus on CRP enhancements seems more appropriate for the CRP enhancement scores. If they choose enhancements with full knowledge of their point values (including a small 5% bonus for CRP enhancements,) they will very likely rank high enough to be enrolled. As it stands now, however, we are concerned that expiring CRP applications, because of inflated enhancement scores, will be more likely to rank high enough to be selected for contracts, and will receive higher payments than non-CRP farmers who may in fact be providing better conservation outcomes. This would be unfair.

### **Recommendations:**

Using values for environmental effects points for CRP enhancements that are so far outside the customary -5 to +5 range undermines the scientific integrity of the CMT upon which CSP has been based. It calls into question the underlying science of all enhancement scores, since the CRP

numbers appear to have been drawn from thin air. We strongly recommend NRCS retain the integrity of CMT and enhancement effects scoring by sticking to the negative-five to plus-five system. This provides transparency, consistency and an understandable ordinal metric for scientists who determine scores. It is also necessary for future validation studies to evaluate the accuracy of assessment tools.

NRCS should recalculate the environmental effect scores for enhancements for recently converted CRP, using the normal negative five to plus five scale, and then add a transparent point bonus in the range of 5%, to achieve the aim of attracting farms with expiring CRP lands into the CSP.

In the future, scoring methods for the CMT as well as enhancements should aim for a consistent, transparent and science-based methodology to measure relative impacts on micro-resource concerns.

## **Section 5 – Crosswalks**

NRCS maintains two different documents to help organic and transitioning-to-organic producers determine which NRCS conservation activities can help them meet the organic standards set out by USDA’s National Organic Program. The first document focuses on conservation practice standards, and is not program-specific; nonetheless, we henceforth refer to it as the EQIP-NOP crosswalk. The second document focuses on the Conservation Stewardship Program, comparing CSP enhancements with NOP standards; we call this document the CSP-NOP crosswalk.

In early March of 2013, we submitted detailed recommendations on the EQIP-NOP crosswalk. By the end of March, NRCS staff had made some revisions to the crosswalk based on our recommendations as well as internal recommendations from other NRCS specialists. At that point, we provided follow-up feedback on the revisions that NRCS had made to the crosswalk. We have not seen a revised version of the EQIP-NOP crosswalk since March 2013, and it appears that the crosswalk is not currently posted to the NRCS website.

We submitted detailed recommendations on the CSP-NOP crosswalk in August 2014. We were told by NRCS at that time, “the CSP Team will review the proposed changes when we prepare the outreach documents for the FY15 sign-up, after the activity list has been finalized.” We expect that an updated version of the CSP-NOP crosswalk will soon be posted to the CSP webpage shortly.

For your convenience, our recommendations on the two crosswalks, along with justifications for those recommendations, have been uploaded to the NSAC website and are available at this link: <http://sustainableagriculture.net/wp-content/uploads/2014/10/CIG-Project-Crosswalk-recommendations.zip>

## **Section 6 – Training**

Throughout the four years of this project, the CIG project partners provided training to certified organic, transitioning organic, NRCS field staff and those professionals interested in becoming NRCS Technical Service Providers (TSPs) serving organic and sustainable producers.

For ease of review we have provided a link to a YouTube playlist of the training webinars that we conducted during the duration of the project: [Integrating Organic and Sustainable System Trainings \(http://www.youtube.com/playlist?list=PLDu0ElBiEy9zxvk5o-Oy\\_5hLDjpY-P1vs\)](http://www.youtube.com/playlist?list=PLDu0ElBiEy9zxvk5o-Oy_5hLDjpY-P1vs).

More than 1,440 people, including farmers, agricultural professionals and NRCS field staff attended the live trainings. As of October 7, 2014, more than 8,440 additional viewings have been documented.

These webinars are accessible on NCAT's ATTRA National Sustainable Agriculture Information Service Website, many of the project partner websites, and via a link on the NRCS national website. In addition to this web-based training and technical assistance, project partners have conducted five state-level face-to-face trainings for farmers and NRCS staff on the conservation benefits and challenges of organic production systems. Roughly 150 farmers and 78 NRCS staff attended those face-to-face trainings.

In addition to these educational efforts, project partners organized symposia for the 2012 and 2013 Soil and Water Conservation Society (SWCS) meetings. Jeff Schahczenski of NCAT attended the 2014 SWCS meeting and represented the project in a panel organized by Dr. Michelle Wander of the University of Illinois. The special symposium was titled "Informing Conservation through Social Sciences."

Finally, project partners worked with NRCS staff to coordinate trainings and review of training materials as well as publication of a national NRCS organic training strategy. Some of these joint efforts have been presented on the national NRCS website at [NRCS Organic Farming \(http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic/\)](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic/).

The original deliverables 7- 10 on our project agreement related to the work of the Training and technical service provider (TSP) teams within the project. Those deliverables were modified from the original agreement and approved by NRCS into the following:

**a) Survey Organic Training Needs**

A survey of NRCS organic training needs was undertaken in 2011. We worked with Sarah Brown, National NRCS organic specialist to develop and review an additional survey in 2012, which was completed. Sarah's work has greatly enhanced and informed our efforts. Sarah has published a document for NRCS called "Organic Training Strategy;" all partners have reviewed the strategy and concur with her recommendations. .

**b) Provide curriculum for production system training. We will develop a "core" curriculum for organic production system trainings, based in part on training materials used in on-going training projects, and in part on additional materials for which our project partners identify a need.**

Upon completion of our training activities, we worked with Sarah Brown, National NRCS organic specialist with her efforts of improving organic training. That draft core curriculum for organic

production system training is embodied in our completed a webinar series on the broad topic of the conservation benefits of organic production, which is available to NRCS staff and the national conservation community on the national NRCS website at [CIG Project Training Playlist \(http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic\)](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic).

In addition, the USDA National Organic Program has recently released its own core curriculum for organic production systems training, which they call the organic literacy initiative (available at [Organic Literacy Initiative, http://www.ams.usda.gov/AMSV1.0/organicinfo](http://www.ams.usda.gov/AMSV1.0/organicinfo)). NCAT and other project partners assisted in offering materials for this effort.

- c) Provide five, 60-90 minute national webinars for NRCS personnel and on the general theme of the conservation benefits and considerations of organic production systems. We estimate a total of 300 NRCS and 300 organic producers attending these webinars (60 NRCS and 60 organic farmers per webinar).**

We provided six national webinars. There have been 7,958 total viewings of these webinars as of October 7, 2014. There were 956 that attended the original live broadcasts including an estimated 487 NRCS staff members. We exceeded our training goal, and moreover, these webinars will continue to be available for NRCS staff and others beyond the project's completion. These are as follows:

- “Organic Pest Management I” (Rex Dufour, NCAT) had 270 attendees (139 NRCS--phone lines with estimate of 200 NRCS employees listening) on live broadcast with 1,681 viewings since posting for a total of 1,951 viewings.
- “Organic Pest Management II” (Rex Dufour, NCAT) had 118 attendees (45 NRCS) on live broadcast with 729 viewings since posting for at total of 847 viewings.
- “Tropical and Semi Tropical Organic Agriculture” (Jose Perez, Marty Mesh, FOG) had 96 attendees (17 NRCS) on live broadcast with 936 viewings since posting for a total of 1,032 viewings.
- “Organic Crop Rotations, Conservation Benefits” (Harriet Behar, MOSES and Mark Schonbeck, VABF) had 197 attendees (21 NRCS-- turned out NRCS was running a webinar itself on the same day and time) with 2,833 viewings since posting for a total of 3,030 viewings.
- “Links between Biodiversity Requirements of Organic Systems and NRCS Practice Standards” (Project Partner, Jo Ann Baumgartner, WFA; Jim Riddle, Organic Outreach Coordinator for the University of Minnesota Southwest Research and Outreach Center and Tom Broz of Live Earth Farm operates a diverse organic farm with more than 100 acres under cultivation.) had 149 attendees (49 NRCS) on live broadcast with 603 viewings since posting for a total of 752 viewings.
- “Promoting High Quality Conservation on Organic Farms” (Project Partners Jo Ann Baumgartner, WFA and Harriet Behar, MOSES had 126 attendees (16 NRCS) on live broadcasts with 221viewings since posting for a total of 347 viewings.

Some of these webinars were featured in Capital Press, a western regional agriculture newspaper, and were featured along with TSP webinars (described below) on the National Organic Programs weekly E-News at [CIG project in NOP Insider](http://archive.constantcontact.com/fs054/1103777415326/archive/1111221040305.html) (<http://archive.constantcontact.com/fs054/1103777415326/archive/1111221040305.html>).

- d) Four training team partners (NCAT, MOSES, FOG and KRC) to this project will hold a total of five state-level joint organic producer and NRCS trainings on the conservation benefits and limitations of organic production systems as well as how specific Practice Standards and CSP Enhancement Activities can be implemented in these systems for maximal conservation benefits.**

Three trainings were completed and one was cancelled at that last minute due to a travel interruption.

- NCAT held a training session for organic farmers and NRCS personnel as part of this project. Roughly 18 NRCS personnel and 80 farmers attended this training. The event was held in November 2011 in Billings, Montana as part of the Montana Organic Association annual conference.
- Project partner, Harriet Behar of MOSES worked with Sarah Brown, NRCS national organic specialist, on a NRCS personnel training in Northeast Iowa (20 NRCS field staff in attendance). They also did a second training in western Illinois for an additional 20 NRCS personnel. Both were full day trainings and both focused on organic production systems.
- Project partner, Mary Fund of the Kansas Rural Center (KRC) organized and held a November 13, 2012 Organic Forum Training Workshop in Salina, KS, with 70 attending. The audience was primarily made up of organic farmers, transitional farmers, and conventional farmers interested in learning more. NRCS provided information and a presentation on their programs and how they can work for organic farmers and transitional farmers. Other speakers addressed other aspects of organic systems and marketing. Following the forum, KRC developed a simple two-page questionnaire on farmer use of the EQIP Organic Initiative and CSP to (1) use at follow-up regional meetings over the winter and spring held by a statewide organic association, and (2) mail out to state organic farmers to collect information on farmer use and experiences with these programs.
- KRC worked with Kansas State University, the Kansas Center for Sustainable Agriculture and Alternative Crops (KCSAAC), state NRCS staff, and members of the Kansas Organic Producers (KOP) to develop the agenda for the training. Dr. Michel Cavigelli, lead scientist for USDA ARS Farming Systems Project, was our keynote speaker, providing an overview of organic research nationwide. Co-sponsors KOP and KCSAAC also provided financial match.
- KRC also participated in one regional organic meeting of the Kansas Organic Producers on February 28, 2013. We surveyed producers on their use and knowledge of the NRCS conservation programs in an effort to begin collecting information on why relatively low numbers of organic and transitional farmers have used the programs. Only one or two producers out of eight had inquired with their local offices and they had been told they were not eligible. We will be compiling more detailed information on our survey responses in the future. Enrollment in the EQIP Organic Initiative and organic farmer involvement in the CSP remain

low in Kansas. Several things contribute to this: lack of interest in transitioning to organic while conventional crop prices remain high; lack of farmer trust in NRCS; lack of farmer knowledge of what NRCS can do for them; NRCS skepticism and lack of knowledge about organic farming; and limited outreach to producers.

- Project Partner, Jose Perez of the Florida Organic Growers (FOG) developed a formal proposal for two training workshops for Florida NRCS. The participation of project partner Wild Farm Alliance Program Director Jo Ann Baumgartner was included in this proposal, so as to include training on the co-management of biodiversity and food safety. In the proposal FOG identified potential organic farms that could be used for part of the training. Throughout mid-2012 and early 2013 there were multiple changes in the leadership and management of Florida NRCS. FOG believes that due to these changes, our proposal for trainings was put aside. During this time our requests for information on the status of the proposal were not answered. When new staff came on board, FOG reinitiated the conversation from the beginning. The current staff indicated initially that there was a lot of interest for these events to take place. Finally, FOG was informed that due to NRCS' requirement that all field staff receive online training for organic agriculture, and due to serious budget cuts, the trainings would not be possible. FOG has since initiated conversations with Georgia NRCS offices, and is studying the possibility of contacting another state office.

FOG also offered to do trainings at NRCS offices. Only one area, Area 3, did agree to a presentation as part of their area-wide meeting. An hour-long presentation was scheduled at the Palmetto Area Office on July 15, 2014. Unfortunately, this training was not completed due to air traffic delays as the FOG staff member was traveling back from a different event. FOG intends to keep talking with NRCS staff, and there is an open offer to present at any upcoming area meetings in the state.

- e) **Provide four, 60-90 minute national webinars on topics on related to becoming a Technical Service Provider (TSP) to serve organic farmers and ranchers. We estimate a total of 300 potential TSPs attending these webinars.**

We provided four national webinars. There have been 2,858 total viewings of these webinars as of October 7, 2014. There were 484 people that attended the original live broadcasts. Again, we exceeded our training goal and these webinars will continue to be available for NRCS staff and others beyond the projects ending. As a final recommendation, we would encourage NRCS to link to these webinars on its national website. The webinar produced are as follows:

- “Becoming a Technical Service Provider for NRCS: An Introduction” (Harriet Behar, MOSES) had 185 attendees with 676 viewings since posting for a total of 861 viewings.
- “Doing NRCS Conservation Activity Planning for Organic Farmers and Ranchers: Writing a CAP 138” (Katy Green of Maine Organic Farmers and Gardeners Association) had 111 attendees with 496 viewings since posting for a total of 607 viewings.
- “Virtual Tour of Organic Farm Conservation Activity Planning – Examples from Wisconsin” (Harriet Behar, MOSES) had 91 attendees with 770 viewings since posting for a total of 861 viewings.
- “How NRCS Technical Service Providers (TSP), NRCS Personnel, and Conservation Planners

Can Support Biodiversity Conservation in Organic Systems” (Jo Ann Baumgartner, WFA and Harriet Behar, MOSES and Sam Earnshaw, Hedgerows Unlimited) had 97 attendees with 432 viewings since posting for a total of 529 viewings.

A few comments from attendees:

“Thank you, Jo Ann, and I'd like to reiterate that today's webinar was well done and informative, so thanks you all. I've seen the previous webinars in this TSP series and have already taken many of the steps including registering w/ TechReg at level 2 and taking the TSP orientation. I am working on gaining access to RUSLE2 and WEPS and basic conservation training. Still need to write a practice conservation plan.”

“Hi Jeff and Harriet, I think the webinar went very well. I don't know if you 'debrief' sessions like this, but I would appreciate any feedback you have for me. Great job and thanks again for welcoming NRCS participation.”

“It was all those one hour video training seminar's from NCAT, ATTRA, USDA, NOP, and various other instructional videos that led me to TSP and NRCS.”

Finally the National Organic Program highlighted our TSP work in its [Organic Integrity Quarterly Publication](http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5100909) (<http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5100909>).

- f) Provide a stand-alone national conference on the topic of the conservation benefits and limitations of organic production systems, OR a “sub” or connected regional training events which include NRCS, TSP and organic producer components; attend at least one NRCS CIG Showcase or comparable NRCS event during the period of the project agreement.**

Sarah Brown, NRCS national Organic Specialist and David Lamm national NRCS Organic, Small Farm & Specialty Crop Specialist, created several documents which project partners have reviewed and prepared and have been made available on the [national NRCS website](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic) (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic>).

Project partners organized symposia for the 2012 and 2013 International Soil and Water Conservation Society (SWCS) meetings. Jeff Schahczenski, NCAT attended the 2014 International Soil and Water Conservation Society meeting and represented the project in a panel organized by Dr. Michelle Wander of the University of Illinois. The special symposium was titled “Informing Conservation through Social Sciences.

## **Section 7 – National Guidebook for NRCS Field Staff**

In 2012, we met with NRCS Ecological Sciences staff to discuss our recommendations related to conservation practice standards. At that meeting, NRCS staff suggested that roughly 35 percent of our recommendations were better suited for a guidebook for NRCS staff. Out of that conversation



came an effort to incorporate some of our practice standard recommendations into a new guidebook to help NRCS field staff better meet the needs of producers operating highly diversified, organic, and transitioning-to-organic farms.

NRCS dedicated 18 staff from across the country to the effort. The NRCS and project partners divided into five subgroups to work on five sections of the guidebook. We had several all-team calls and each subgroup also had calls between September 2013 and September 2014. In July, each subgroup finalized their respective section outlines; in August, the subgroups completed first drafts of each section; in September, those drafts were revised.

We have thus far developed 70 pages, which we have uploaded to the NSAC website for your convenience. You can download the September 2014 *draft* of the guidebook here: <http://sustainableagriculture.net/wp-content/uploads/2014/10/NRCS-Guidebook-Sept-2014-DRAFT.doc>.

The NRCS team hopes to finalize the guidebook by mid- November, and some project partners will continue to consult on a pro-bono basis.

## Conclusions and Recommendations

This project has provided many recommendations and we have included them in the “Findings” section and appendices to this report for ease of reading. Overall this project was motivated by the premise that sustainable and organic production systems are uniquely beneficial for the promotion of high-levels of conservation and the provision of environmental service benefits. As project participant, Dr. Mark Shonebeck, wrote in the National Guidance Document created as part of this project:

“From its beginnings, organic farmers have considered the farm within its wider ecological context. Experienced practitioners understand, care for, and utilize the uncultivated natural areas on their land as essential components of the farming system. For example, healthy riparian zones protect water quality and aquatic habitat; and forest edges and field borders provide habitat for beneficial insects, insectivorous songbirds, raptors, reptiles, and other pest predators, as well as windbreaks, shade, and browse for livestock. Thus, organic and sustainable farmers value biodiversity and seek to provide and protect habitat for wildlife and native plants as well as pollinators and other organisms that directly support production.”

Given that premise, which we readily admit is an *ideal*, rather than the actual reality of all sustainable and organic production systems, our ultimate task was to review and propose solutions to bring down any barriers that would inhibit the attainment of that ideal. While we know that NRCS as a public agency cannot “pick” specific systems of production to support, we do contend that NRCS can now better assist sustainable and organic producers in more fully utilizing NRCS conservation programs, and can provide better technical assistance to sustainable and organic producers because of the outcomes of this project..

This was a complex project because the NRCS is a very complex federal agency, with a culture and language that the project partners have not always fully understood, but have come to often appreciate despite our own “cultural” biases. We are very thankful for the assistance by many NRCS

staff in helping us in this project. It is very rare that a public agency will open its doors so widely to outside and critical review. We hope we have helped in advancing our common goal for a more sustainable agriculture

## Appendix A

### Appendix A—Additional general analyses of Practice Costs, Scenarios and Payment Schedules.

#### Introduction

For each conservation practice, NRCS develops a set of *cost scenarios*, which represent estimated costs associated with the implementation of that practice within the context of different farming systems, resource concerns, and conservation purposes. The agency also establishes cost scenarios for the development of conservation activity plans (CAP). At the beginning of each fiscal year and prior to opening signup for the Environmental Quality Incentives Program (EQIP), the state NRCS office issues a *payment schedule*, which lists actual payments for each practice or CAP, based on a percentage of the total estimated cost under each scenario. Commonly, payments for each scenario are 75% of the estimated costs (or “allowable costs”), and 90% for Historically Underserved (HU) producers. However, states can set other percentages at their discretion. All payment figures cited in this analysis refer to the regular payment rate, not the HU rate.

In the past, individual state NRCS offices worked independently to establish cost scenarios and payment schedules for each state. This led to increasing inconsistency in cost estimations among states, and sometimes lack of transparency in the cost estimation process. In some cases, adjoining states offered substantially different scenarios and payments for a given practice, which resulted in unequal access to conservation assistance among states. In an effort to address these inconsistencies, NRCS moved to a more centralized process for cost estimations, beginning in 2012. The agency established a national list of *cost components* (farm inputs such as seeds, herbicides, etc, construction materials, labor at several levels of skill or specialty, field operations, any income foregone in implementing the practice, etc), and divided the United States into 12 regions in order to develop cost scenarios and payment schedules on a regional basis.

One goal of our review was to determine whether there has been improved consistency and transparency about costs of practice adoption and payment schedules within regions. In our view payment rates need to be set at levels that encourage producers to adopt conservation practices while optimizing the use of federal funds. However, producers can only evaluate whether adoption of a given practice is cost effective if information on practice implementation and payment rates are readily accessible, clear, and consistent. Specifically, can farmers and field staff confidently determine:

- What practices and scenarios are being offered under general EQIP, the EQIP Organic Initiative, and other special initiatives?
- Which scenario would be most appropriate for a given location (soils, climate, topography, resource condition, etc.), farming system (field crops, specialty crops, small diversified, organic, conventional, etc.), and conservation purpose?
- What are the actual implementation requirements (criteria) and restrictions for a given practice and for specific purpose(s) or scenarios within the practice?

- What would the payment be, and on what cost components is it based (labor, materials, fuel, income foregone, etc)?

We acknowledge the importance of striking a balance between consistency and flexibility; specifically:

- Are EQIP practice scenarios and payments in a particular state reasonably consistent with what is offered in other states across the region?
- Do practice implementation criteria and scenarios offered allow sufficient flexibility for program participants and NRCS field staff to adapt the practice to the farm's production system, soils, climate, and resource conditions, and to the producer's conservation goals?

The second goal of our review was to assess how well practice scenarios and payments serve organic and sustainable producers. In contrast with the larger scale, conventional field crop and/or livestock farms historically served by NRCS conservation programs, many sustainable and organic producers manage smaller scale and/or highly diversified farms that may include grains and livestock as well as vegetables, fruits, and other specialty crops. Thus, we evaluated the following:

- Does the list of scenarios for a given practice include at least one that is relevant, accessible, and applicable to organic and sustainable systems?
- Do the payment schedules for this scenario(s) adequately reflect the costs of implementation for a USDA certified organic producer, or other producers who generally follow organic procedures?
- Does the practice offer one or more scenarios for small, diversified farms, and for specialty crop farms, and do payment schedules adequately reflect implementation costs for these systems?
- Do scenarios for a given practice in a given region relate appropriately to the particular soils, climates, topography, and conservation challenges of that region, particularly for organic and sustainable producers?
- Do differences in scenarios and payment schedules among regions relate logically to differences between regions in soils, topography, climate, predominant farming systems, and costs of conservation practice components?
- Do differences among regions have the potential to put organic, sustainable, or small-scale specialty crop producers in some regions at an unfair disadvantage?
- Do differences among states within a region accurately reflect differences in resource considerations, or do they appear arbitrary?

We also sought to identify possible barriers to implementation of a given practice or scenario on organic and/or sustainable farms, such as:

- Implementation criteria that require the use of materials or methods that the National Organic Program (NOP) prohibits for certified organic production, or that other sustainable producers might choose to avoid.

- Scenario descriptions that include such materials or methods, and that might be *interpreted* as implementation requirements by farmers and ranchers, NRCS field staff, Technical Service Providers (TSPs), or other consultants working with producers.
- Inadequate payment rates that do not take into account the costs of materials and methods used by organic or sustainable producers, or the complex management challenges of smaller scale, diversified farms.

We reviewed cost scenarios and payment schedules for the following six practice standards within three of the 12 new regions:

- Conservation Crop Rotation (CPS 328)
- Cover Crop (CPS 340)
- Residue and Tillage Management – No-Till/Strip/Till/Direct Seed (CPS 329)
- Residue and Tillage Management – Reduced Tillage (CPS 345)
- Nutrient Management (CPS 590)
- Integrated Pest Management (595)

These practices were chosen because of their importance to organic and sustainable production systems. A limited review of state Practice Standards, implementation requirements, job sheets, and guidance documents was also undertaken to gain some insight into the following questions:

- What are the actual implementation requirements *versus* non-binding guidance or hypothetical examples used to develop cost estimates?
- Are implementation criteria strong enough to ensure robust conservation outcomes, yet flexible enough to allow and invite participation by the full range of producer constituencies (specialty crop, field crop, organic, conventional, etc) in the region?
- Do additional criteria and guidance offered by the state appropriately address local climatic, topographical, soil, water, and other resource conditions; and the needs of the state's producers?

This review focuses on information provided for FY 2014 on public websites. We focused mainly on three of the 12 regions: the Northern Mountain Region (ID, MT, WY); Mid-Atlantic Region (NY, PA, NJ, DE, MD) and the Appalachian Region (WV, KY, TN, VA, NC). Selected cost scenarios and other documents from individual states within other regions were also examined to evaluate whether certain trends or issues identified in the Appalachian, mid-Atlantic, and Northern Mountain regions also arise in other regions or nationwide.

### **Availability and Clarity of Information Regarding EQIP Practice Scenarios, Payment Schedules, and Implementation Requirements**

For each state, we sought on-line information on conservation practice cost scenarios and payment schedules through the electronic Field Office Technical Guide (eFOTG) and the EQIP page on the

state NRCS web site. We met with varying success in finding this information for different regions and states, and encountered three categories of document:

- *Payment Schedules* – spreadsheet (in Excel, Word, or PDF) that lists practice and scenario name (sometimes with *brief* description), unit on which payment is based [acre, linear foot, each (whole farm), etc.], and actual payment to the farmer.
- *Cost scenarios* – PDF documents for each Practice listing one or (usually) more scenarios offered in the state, including a narrative scenario description (how the practice is “typically” implemented), “before situation” (resource problems to be addressed), and “after situation” (resource benefits, changes in practices); followed by a tabular presentation of how implementation cost per unit (acre, linear foot, each, etc.) was calculated, with a detailed cost breakdown showing each component (labor, materials, field operations, tests and analyses, income foregone, etc).
- *Other documents* – a few states posted documents variously called “Cost List” (MT), “Practice Payment Rate and Guideline Sheet for Eligible Conservation Practices” (WY), or other title, with formats that combined that of payment schedule and scenario, without clear indication whether the dollar figures cited represent the total cost estimate or the actual payment offered.

We visited the eFOTG web site for 28 states (all of Northern Mountain, Appalachian, and mid-Atlantic regions, plus selected states from other regions). For 10 states, we found full Cost Scenario documents for 2014 in the Cost Data folder within Section I of eFOTG, and other documents with similar information for two (MT, WY). However, only three states (NM, NJ, NY) posted *both* the 2014 Payment Schedule and the Cost Scenarios together at this location, and five others (ID, KY, MI, MN, and NE) posted *only* the Payment Schedule on eFOTG. For 14 other states, we located 2014 Payment Schedules by navigating through the EQIP section of the state NRCS web sites sometimes with some difficulty (e.g., MT, where the navigation path was convoluted, and PA where the file was labeled “FAP” rather than “EQIP”). In a few cases, notably TN, the payment schedule itself included scenario or implementation details. Some states had only out-of-date documents readily available, and we could not find either cost scenario or payment data for 2014 for MD or TX. The MD EQIP web page included a Payment Schedule heading with the message “check back soon,” which suggests that the 2014 schedule had been removed because the signup deadline had passed at the time we visited the web site.

Some states posted separate payment schedules for general EQIP, and special initiatives such as the Organic Initiative, (OI), High Tunnel (HT), National Water Quality Initiative (NWQI), Mississippi River Basin Initiative (MRBI) and others. Occasionally, (e.g., NC), schedules for special initiatives were posted at a different location from the general EQIP schedule, and were difficult to locate. The eFOTG site for NY included payment schedules for a dozen initiatives (organic, high tunnel, on-farm energy, soil health, NWQI, tribal HU producers, grazing, livestock waste, and several others) but no payment schedule for general EQIP or cropland. These variations can make it difficult for producers and even NRCS field staff to locate or correctly understand vital information related to EQIP conservation practice offerings.

Cost scenarios were most commonly provided in a consistent format, with separate documents for each practice posted in the Cost Data folder of eFOTG (LA, NC, NJ, NM, NY, OK, PA, and VA). Two states (DE and CA) posted one large (600+ page) document with scenarios for all practices, which was a bit more awkward for looking up cost data for a given practice(s).

Many states (KY, TN, WV in the Appalachian region, all states in the Lakes and Southeast regions, MA in New England, and IA in Corn Belt) offered only the payment schedule without the detail provided in cost scenarios. The advantage of the payment schedule spreadsheet is that it provides a ready reference to unambiguous data on what the farmer actually receives for implementing a given practice and scenario. However, there is no transparency regarding how that payment was derived, and no guidance regarding what is entailed in implementing the practice in a manner that qualifies for payment.

On the other hand, cost scenario information can cause confusion in several ways. *First*, the reader might interpret the unit cost figure as the actual payment to the EQIP participant, especially where cost scenario files are misleadingly labeled “payment schedules” (e.g., NJ), where a current payment schedule is not provided (e.g., LA, OK, CA), or is provided at a different location (NRCS web site vs eFOTG; e.g., DE, NC, PA, VA).

*Second*, the reader cannot readily discern what aspects of the scenario description represent firm *implementation requirements*, and what aspects only represent “typical practices” on which NRCS has based cost estimates. For example, organic scenarios of CPS 430 Cover Crop require the use of certified organic seed, whose purchase costs are higher than for non-organic seed. Organic producers who use untreated non-organic seed (allowed by NOP if organic seed is not commercially available in the needed quantities) are directed to other Cover Crop scenarios, most of which include herbicide for cover crop termination in both the narrative description and in the cost components list (e.g., NC, VA, NJ, DE, OK). In some states (e.g., KY, NJ), job sheets or other documents explicitly allow mechanical cover crop termination; however, it is generally difficult at best to distinguish requirement from guidance or example in scenarios.

In other states, scenario descriptions are presented as firm criteria and limitations; for example, the MT 2014 Cost Lists document states that the one CPS 340 scenario MT offers requires a 5-species cover crop mix of which no more than 10% can be cool season grasses, limits the practice to 450 acres or 150 acres depending on planting date, and prohibits enrollment of the same acres in CPS 340 and CPS 328 Conservation Crop Rotation. These rigid criteria are likely to deter farmer enrollment in these practices.

Occasionally cost scenarios offer conflicting information. For example, in the Appalachian region, the narrative description for the N scavenging cover crop scenario for CPS 340 includes “grass plus forbs such as radish,” yet “1 grass + 1 legume” is listed for seed in the cost components table. This can be confusing, especially considering that legumes are not well suited to N scavenging. In addition, the Appalachian region CPS 340 scenario for soil health refers to a “small grain-legume

mix ... typically rye and clover” while the cost components include seed for a “five species mix cool season annual grasses and legumes”.

In an effort to gain a better understanding of implementation requirements *versus* examples and guidance, we reviewed additional information on the six practices under review (CPS 328, 329, 340, 345, 590, and 595) posted in eFOTG section IV. The content, format, quantity, and quality of this information varied widely among regions and states. Documents variously entitled “job sheets,” “specifications,” “implementation requirements,” “EQIP / WHIP Guidance Document” (KY),” etc. ranged from simply giving a record keeping form for the planner and farmer to document the practice as planned and implemented, to succinct or more extensive criteria and guidance. State Practice Standards sometimes included valuable state- or region-specific criteria and guidance, especially for CPS 340 Cover Crop and CPS Nutrient Management; other states provided similar information in separate documents, and still others not at all. See additional comments under specific practices (below) and in region reports (Appendices).

In summary, while a few states provided clear information regarding the criteria within which farmer must implement a given practice scenario, and the degree of latitude that farmers and planners have to adapt the practice to site specific conditions, information was most often ambiguous, sketchy, difficult to find, or entirely lacking. The resulting confusion can seriously hamper efforts by farmers and NRCS field staff to identify the best practices and scenarios to apply in a given situation. This is particularly true for organic, sustainable, small-diversified, and specialty crop producers, whose farming systems are significantly different from those with which many NRCS field staff are most familiar.

*Third*, in a few cases, the state provided 2014 cost scenario data for practices or scenarios that were apparently not included on the 2014 payment schedule. For instance, when we inquired about four missing scenarios in NC, we learned that three of them were offered through the Organic Initiative and not regular EQIP; in this case the OI payment schedule was found with some difficulty at a different location from the general EQIP schedule. The fourth scenario (nutrient management with manure) was not offered because it appeared redundant with state regulations imposed on all producers.

One especially helpful feature of cost scenario documents from the Mid-Atlantic region is a listing of “Associated Practices” under each Practice; for example, CPS 328 Conservation Crop Rotation lists “Residue and Tillage Management - No-Till/Strip Till/Direct Seed (329), Contour Farming (330), Cover Crop (340), Residue and Tillage Management - Seasonal (344), Residue and Tillage management - Mulch-Till (345), Residue and Tillage Management - Ridge Till (346), Mulching (484), Forage Harvest Management (511), Stripcropping (585), Nutrient Management (590), Integrated Pest Management (595)” as associated practices. This kind of information supports conservation planners and organic, sustainable, and conventional producers to implement integrated, multi-practice conservation programs that can maximize conservation benefits as well as enhancing productivity and efficiency of the farming system.



In order to facilitate access to vital practice and cost information in all states and regions, we offer the following recommendations:

**Recommendation 1:** The national NRCS office should require each state NRCS office to:

- Post the current fiscal year's Conservation Practice Cost Scenarios and Payment Schedule(s) in the Cost Data folder in Section I of the state's eFOTG website. Ensure that files and folders are labeled "FY 20XX EQIP Payment Schedules" and "FY 20XX Conservation Practice Cost Scenarios" as appropriate.
- If different practice offerings and payment schedules are developed for General EQIP and for one or more special initiatives (Organic, High Tunnel, Mississippi River Basin, On-farm Energy, etc), either list offerings and payments for all initiatives on one Payment Schedule (with separate columns for each initiative), or post separate payment schedules documents for each initiative in the same folder with the general EQIP schedule.
- Post prominent, easy-to-find links to the current Cost Scenarios and Payment Schedules on the EQIP home page of the state's NRCS web site
- Ensure that this information is posted as soon as it becomes available, and at latest by the opening date for the current year's EQIP signup period.
- Keep the latest Cost Scenarios and Payment Schedules posted on these sites until the next year's documents become available, even if the current signup period has closed.
- Whenever a new year's cost scenario and payment schedule documents are posted on eFOTG, move the previous year's documents (and any older versions) to another folder clearly marked "archives" or remove them from the website.

*Rationale:* These simple requirements will ensure equal and easy access to current and complete financial information for producers and NRCS field staff across all states and regions. Such transparency will facilitate farmer and TSP understanding of and participation in the EQIP and other working lands conservation programs, thereby enhancing conservation outcomes. Keeping the latest cost scenarios and payment schedules posted after the current year's signup has closed allows farmers (and their local NRCS or TSP professional) who are considering enrolling in EQIP or other working lands programs in the future to get a better idea of what the programs entail and offer.

**Recommendation 2:** Ensure that each Practice Cost Scenario document includes prominently displayed language that clarifies the following:

- That the total cost shown on a cost scenario is usually *not* the actual payment the farmer will receive, and that the latter is given in the current year's Payment Schedules, also posted within the Cost Data folder of eFOTG section 1.
- The cost share percentage(s) that the state uses to calculate actual payments from total costs (provides additional transparency to the process).
- Whether materials, field operations, procedures, special trainings, and other elements included in a Scenario description are *required* for the participant to receive payment, or simply represent guidance, examples, or recommendations.

- Whether cost components (materials, field operations, general, skilled, or specialist labor, and other elements) listed in the cost breakdown represent materials and activities *required* for payment under that scenario (e.g., certified organic seed for an organic scenario of CPS 340 Cover Crop), or are simply used to represent *typical* or *most common* implementation methods for the purposes of cost estimation (e.g., herbicide termination of a sod or cover crop within a rotation, when mechanical or winter-kill termination would also be satisfactory).

**Recommendation 3:** Require state NRCS offices to clarify implementation requirements or criteria for each practice and scenario – *what tasks, planning and implementation activities, materials, and methods the producer must do or use in order to be eligible for payment* under that practice and scenario. This information might be provided in one of the following ways:

- A document for each Practice, perhaps called “Implementation Requirements” or “State Implementation Criteria” that clearly and succinctly lists all required activities, materials, and methods for each scenario of that practice offered by the state. These documents should have a fairly consistent format, be readily recognized as the “go-to” source regarding requirements, and be posted in the Conservation Practices folder within Section IV of eFOTG alongside job sheets, record keeping forms and other technical information and guidance related to the Practice; *or*
- A narrative paragraph or bulleted list under the heading “Implementation requirements” in the Cost Scenario document, perhaps following the “Scenario description” or the “After condition” paragraph, and before the cost analysis.

In addition, NRCS national, regional, and state offices should avoid applying criteria or implementation requirements that create barriers to participation by organic, sustainable, and/or diversified systems (e.g., the use of an herbicide to terminate a cover crop or sod crop).

*Rationale:* While many of the details of how a particular conservation practice is installed or implemented on a particular farm are rightfully left up to the farmer and planner to determine and document on appropriate worksheets, some criteria or specifications nonetheless apply state-, region- or nation-wide. These should be made readily available and transparent on each state’s eFOTG. Some examples include: for CPS 590 Nutrient Management, conducting soil and manure analyses and adhering to the state’s land grant university recommendations for nutrient applications; for CPS 595 Integrated Pest Management, the use of the WIN-PST risk assessment tool for pesticides applied; for organic scenarios under CPS 340 the use of certified organic seed; and for nitrogen fixation scenarios under CPS 340 Cover Crop, the use of regionally and seasonally adapted legume species. While these examples may seem obvious and/or already covered by national or state Practice Standards, it has often been hard to determine from the standard, cost scenario, and other documentation provided, what is actually *required* versus what is recommended, suggested, or offered as options or examples.

In addition, the diversity of documents currently posted in the Conservation Practices folder in section IV of state eFOTG web sites can be confusing. Although Practice Standards are generally consistent in content and format, other documents such as “Job Sheets” and “Implementation Requirements” vary among states from simple record keeping forms for the farmer to plan and document implementation, to succinct outlines or detailed explanations of practice criteria and requirements, and/or guidance and supporting technical information. Thus, there exists a critical need to present the actual implementation requirements of each conservation practice and scenario in a consistent format, under a consistent document title, and in a consistent location on state eFOTG websites.

*One significant barrier to participation by organic, sustainable, specialty crop, and small-scale diversified producers in EQIP and other NRCS programs has been their perception that all materials and methods given in cost scenarios are implementation requirements. Since many of these materials and methods were developed for conventional agronomic crop and/or livestock production, their inclusion in cost scenario descriptions can leave the impression that the practice or scenario is simply not suited to the organic, sustainable, or diversified farmer. Yet, not all the elements in a given scenario may be essential or required. For example, basic nutrient management scenarios under CPS 590 might include soil testing, manure analysis, nutrient budgeting, and the use of a urease inhibitor, a synthetic material not allowed by NOP. While the testing and budgeting seem like essential components of “basic” nutrient management, is this also true of the urease inhibitor, which might not be needed if low-urea N sources (such as cover crops or finished compost) are used? Or do Cover Crop (CPS 340) and Crop Rotation (CPS 328) scenarios that list herbicide and herbicide application as cost components require that the cover crop or sod crop be killed by herbicide and not other methods? Clear lists of what is and is not actually required will help clarify for the organic or sustainable producer what practice scenarios meet their needs.*

**Recommendation 4.** The national NRCS office should encourage all regions to list “associated practices” on Cost Scenario documents for each practice as the Mid-Atlantic region has already done. Since different regions would be expected to implement and integrate practices differently according to their priority resource concerns, predominant farming and ranching systems, soil, climate, topography, etc, regions should be encouraged to develop their own lists of associated practices and not simply adopt those used by the Mid-Atlantic region.

### **Consistency and flexibility – striking a balance**

Considerable variability was observed from state to state and region to region in the quantity, quality, and content of technical information on EQIP and Conservation Practices, including both implementation requirements and guidance. We also found some differences in payments for similar scenarios, both in the amount paid per acre or per farm, and in the cost components from which cost estimates and payment rates were derived.

Often, state and regional differences in requirements and guidance reflect differences in soils, climates, predominant farming systems, priority resource concerns, etc., and represent appropriate

adaptation at the regional or state level. For example, for CPS Cover Crops, both requirements (such as minimum and maximum seeding rates, and latest planting dates) and guidance (recommended cover crop species or mixes for different purpose or scenarios) vary considerably among states and regions according to climate and other factors. We have been pleased with the quality and thoroughness of locale-specific information on cover crops provided on many state eFOTG sites (e.g., DE, KY, MD, NJ, PA). The balanced combination of basic requirements (to ensure that the cover crop serves the intended conservation purposes) and a wealth of non-binding guidance and information offered in these states can empower producers and planners to use their ingenuity to maximize soil quality and other conservation outcomes from the cover cropping practice. By the same token, we are also concerned about the dearth of such information provided by other states (e.g., ID, VA). WV provides a wealth of information on pollinator habitat for CPS 340, CPS 328 Conservation Crop Rotation, and CPS 595 Integrated Pest Management, but otherwise offers little in the way of technical information or guidance.

We also understand that some variations in per-acre cost estimates relate to state price indexing or to scales of operation (for example, basic nutrient management planning on a 1,000 acre ranch in the Great Plains would probably not require ten times as many hours skilled labor as the same level of nutrient management planning for a 100-acre farm in the Northeast); thus lower per-acre rates are reasonable for more extensive production systems.

However, in some cases differences among states appear arbitrary and possibly in conflict with national directives or criteria. A few of these inconsistencies create unwarranted barriers to practice implementation by organic, sustainable, or diversified producers. For example, Kentucky requires farmers to complete a Conservation Activity Plan for Nutrient Management (CAP 104) or Comprehensive Nutrient Management (CAP102) *under a separate EQIP contract prior to enrolling in CPS 590*. Similarly, KY requires producers to have a completed CAP114 Integrated Pest Management Plan in hand before they can enroll in either basic or advanced scenarios for CPS 595. *To make matters worse, CPS 595 is offered through the Organic Initiative but not general EQIP, while CAP 114 is available through general EQIP but not the OI*. This places organic farmers in an unworkable position: they cannot receive support to implement advanced levels of IPM under CPS 595, unless they happen to have completed a CAP 114 before these restrictions were imposed. Meanwhile, nonorganic farmers are effectively shut out of support for implementing any level of IPM under CPS 595, even after they complete the CAP 114.

No other state that we reviewed requires completion of a CAP prior to enrollment in CPS 590 Nutrient Management or CPS 595 Integrated Pest Management, and cost scenario posted by other states in the region (NC, VA) clearly include skilled and/or specialist labor for both planning and implementation. Based on this information, we conclude that the intent of CPS 590 and CPS 595 is to support the farmer to *develop and execute* a nutrient or pest management plan, respectively.

In MT, only one scenario is offered for CPS 340 Cover Crop, in which the scenario description states the use of a “cocktail mix” consisting of a minimum of five species with no one species comprising more than one-third of the mix as an *implementation requirement*. This sets an excessively

high bar that will likely deter enrollment by farmers with no or limited experience in cover cropping. In addition, CPS 328 Conservation Crop Rotation offers two scenarios, one of which consists of adding a cover crop (legume or 5-species cocktail mix) to the rotation, and thus appears redundant with CPS 328. Furthermore, MT does not allow enrollment of the same acreage in CPS 340 and in either scenario of CPS 328, even though the “standard” rotation (increase length and diversity of the rotation) would nicely complement the cover crop. The paucity of options (scenarios) and disallowing simultaneous implementation of these two practices make these two practices far less useful for organic, sustainable, and diversified producers than they are in neighboring states (ID and WY), where six scenarios of CPS 328 and two of CPS 340 are offered. In addition, WY requires organic or transitioning-organic acreages enrolled in CPS 590 Nutrient Management to receive in addition both CPS 328 and CPS 340 because these two practices play such vital roles in organic nutrient management.

Other inconsistencies that could hinder effective implementation of conservation practices by organic, sustainable, small-diversified, and/or conventional farmers are discussed under individual practices (below) and in the three regional analyses (Appendices A, B, and C).

**Recommendation 5:** The National NRCS office should direct and support state offices to become more consistent, both internally and with national criteria and policy, in scenario offerings and payment schedules, as well as implementation requirements. At the same time, requirements for consistency in administering EQIP conservation practices must not become so rigid as to limit or deter regional and state level adaptation of practices and scenarios to meet locale-specific conservation needs and to respond to local/regional climate, soil, topographical, and resource factors, as well as the needs of different farming constituencies.

**Recommendation 6:** While state NRCS offices should provide scenario, payment, and implementation requirement information in easily accessible and consistent forms (Recommendations 1-4 above), the national NRCS office should also encourage and support states to develop and provide state- and locale-specific technical information and guidance regarding practice implementation, as many have already done for cover crop species selection and seeding rates, methods, and timing.

*Rationale:* The amount of information and guidance offered in regard to such core conservation practices like the six discussed in this analysis varies greatly among regions and states. Guidance ranges from scarce to highly informative, detailed, and creatively presented; in most cases the more thorough guidance can enhance the capacity of NRCS field staff, conservation planners, and participating farmers to optimize conservation outcomes of practice implementation. In the case of CPS 328 Conservation Crop Rotation, many states offer little or no technical guidance in addition to the federal standard. Since crop rotations must be adapted both to the region’s climate, soils, and topography as well as to the farming systems within which they are implemented, region- and state-level guidance or recommendations (not rigid requirements) could enhance efficacy of CPS 328 implementation by organic and conventional producers alike. See Recommendation #9 below.

**Recommendation 7:** Ensure that states do not create unwarranted barriers to participation by either organic, sustainable, and/or conventional producers. Examples of barriers that should be removed immediately include the extremely high bar that Montana has set for its only scenario for CPS 340 Cover Crop (see Northern Mountain region analysis, Appendix C for more), and the restrictions that Kentucky has imposed on availability of CAP 114 IPM planning and CPS 595 IPM, which effectively prevent both conventional and organic producers from planning and implementing resource-conserving integrated pest management in a timely manner (discussed above and also under CPS 595, pp. 24-28 below).

### **Accessibility and Relevance to Organic and Sustainable Producers, Small Diversified Farms, and Specialty Crops**

With few exceptions, regions and states offered one or more scenarios for each of CPS 328 Conservation Crop Rotation, CPS 340 Cover Crop, CPS 590 Nutrient Management, and CPS 595 Integrated Pest Management that were specifically designated for, or well suited to, organic production systems. Most regions offered one or more Crop Rotation scenarios for specialty crops, which assumed smaller acreages and more complex systems, resulting in higher per-acre payments. Small, diversified farm scenarios for CPS 590 and CPS 595 estimated cost for developing and implementing a nutrient management or pest management plan (respectively) for the whole farm, rather than on a per acre basis. Organic cost scenarios for CPS 340 take into account the higher costs of organic cover crop seed.

In addition to payment rates, three additional factors can affect how well these practices and scenarios serve organic, sustainable, specialty crop, and small diversified producers:

- Do scenarios, job sheets, or other supporting documentation provide relevant technical information or guidance for these producers?
- Do implementation requirements or criteria create unwarranted barriers for these producers?
- Do states and district office have the capacity to help these producers select and apply the best practices and scenarios for their farming systems?

Most regions offered only one scenario each for CPS 329 Residue and Tillage Management - No-till, Strip-till, and Direct Seed; and CPS 345 Residue and Tillage Management – Reduced Tillage, although some states offered both conventional and organic no-till, usually at the same per-acre payment rate. Of the two practices, CPS 345 is more accessible to organic farmers and other producers who do not use herbicides. In 2014, a few states (e.g., KY, NC, SC, IA), offered CPS 345 through the Organic Initiative but not general EQIP, and a few others (IN, WV, PA) did not offer it at all. Low per-acre payment rates probably constitute the main barrier to implementation on organic, diversified, and specialty crop producers, particularly for the more challenging No-till practice.

The issues summarized above are explored in greater depth in the following discussions of each of the six Practices we reviewed, and in the three Appendices that provide detailed analyses for the Appalachian, Mid-Atlantic, and Northern Mountain regions.

### **CPS 328 – Conservation Crop Rotation**

Crop rotation is a required practice for USDA certified organic producers; thus CPS 328 is highly relevant to organic systems, and most scenarios are compatible with NOP. All scenarios require a change in the crop rotation toward greater resource conservation: lengthening and diversifying the rotation, adding high residue crops, adding a perennial sod phase to a rotation, or converting from an irrigated to a dryland system in regions where the water resource is limited and/or at risk.

Cost scenarios are based primarily on the cost of manager/supervisor labor (roughly \$40 per hour) to learn skills (some scenarios mention attending training events), and to design and implement the new crop rotation. Rotations that entail introducing a perennial sod into an annual crop rotation, or converting irrigated land to dryland (offered in Southern and Northern Plains, Southern and Northern Mountains, and Delta regions) include income foregone in the cost estimate, resulting in much higher per-acre payments.

Scenario descriptions and payments varied widely among regions and states. The Appalachian region (KY, NC, TN, VA, WV) offered a wide range of choices that could serve organic and sustainable producers well: “improve rotation diversity” (simply add a new crop to the rotation), “continuous live roots” (tight crop rotation that eliminates uncropped fallow periods), rotations to two years perennial sod for field crops, specialty crops, and organic specialty crops (substantially improves soil quality and helps disrupt weed and pest life cycles), and an organic transition scenario in which conventional field crop land is rotated to three years perennial sod to facilitate meeting NOP criteria regarding prohibited substances. Each state offered 4, 5, or all 6 scenarios, and payments seemed appropriate, ranging from about \$10 per acre for the new crop to \$200 – 1,000 per acre for the perennial sod rotations, all of which included income foregone.

Two possible hurdles to implementation by organic producers include mention of herbicide termination of the perennial sod phase in field and specialty crop rotations, and a high bar for soil quality in VA (SCI>0.25), which can be very difficult to achieve in such a warm, rainy climate. Otherwise, the scenario descriptions and supplementary information (such as the excellent guidance on pollinator habitat offered by WV) support effective implementation by organic and specialty crop producers.

The mid-Atlantic region (DE, MD, NJ, NY, PA) offered “standard”, “standard organic”, “specialty crop”, and “specialty crop organic” scenarios, all of which require adding high residue and/or nitrogen fixing crops; none entail perennial sod or income foregone. Per-acre payments are based on 40-55 hours of management labor on 100 (standard) down to 35 (organic specialty crop) acres, yielding reasonably high per-acre payments for the more complex systems (\$49-71 per acre for organic specialty crop). In PA, the job sheet offers valuable guidance on designing rotations to

manage regionally prevalent diseases and pests, as well as nutrients and erosion. Other states offered very little guidance in designing the rotation.

In the Northern Mountain region, ID and WY offered five to six scenarios including organic field crop and organic specialty crop (the latter paid at ~\$130/ac), but Montana offered only a “standard” and a “flexible crop” scenarios, the latter appearing redundant with their only scenario for CPS 340 Cover Crop.

A brief review of selected states from other regions revealed a generally good choice of scenarios for organic and specialty crop as well as conventional field cropping systems. A few states offered scenarios designed to assist with the transition to organic. Exceptions include WI, FL, and MT, each of which offers just two scenarios, thus serving a more limited range of producers.

Several regions apparently based cost estimates on a minimal amount of management labor (e.g., 10 hours) to implement a “standard” rotation on large acreages (e.g., 200), resulting in very low per-acre payment rates (\$1 – 2), which might deter implementation on all but the largest farms (e.g., NM, OK, WI). Other states base cost estimates for implementing a “standard” rotation (adding a new, high residue, or legume crop to the rotation) on 40 hours labor for 100 acres (e.g., LA, NJ), resulting in payment rates more likely to encourage field crop farmers to enroll in the practice.

Oklahoma includes a specialty crop rotation scenario that entails adding “higher residue specialty crops” to the rotation. We are encouraged to see a CPS 328 scenario that recognizes that some specialty crops can add sufficient residue to improve soil quality, and hope that some accounting of these higher residue crops can be included in future versions of the Conservation Measurement Tool (CMT) used in the Conservation Stewardship Program.

**Recommendation 8:** Ensure that all regions allocate sufficient management and labor hours for the producer to learn, implement, and integrate the new crop rotation into their cropping systems, thus providing adequate support for adoption of this important practice.

**Recommendation 9:** Encourage regions and states to provide more technical information and guidance, either in scenario descriptions, or in job sheets and guidance documents posted in Section IV of eFOTG, on designing crop rotations suitable to their particular soils, climates, resource concerns, and farming systems.

*Rationale:* PA is one of the few states to provide state-specific guidance to help farmers and planners select crops and design rotations. The Appalachian region provides helpful descriptions of crop rotation scenarios that can help producers plan and implement a rotation to meet their conservation needs. Most other regions and states provide such general and brief descriptions as to leave the reader uncertain as to how to begin the planning process.

### **CPS 340 – Cover Crop**

Most regions offered 2 to 6 cover crop scenarios including at least one specifically organic, which requires the use of certified organic seed, and offers a higher payment rate based on the higher cost



of organic seed. Cost components for the cover crop practice include seed, seeding operation (either no-till or including a light tillage pass to prepare the seedbed), and termination of the cover crop. Payments generally range from \$40 to \$100 per acre depending on the complexity of the cover crop species composition and expected cost of the seed. Payment rates are scale neutral, and appear sufficient to provide substantive support for adopting this practice. Higher rates for the organic scenarios facilitate participation by NOP-certified organic producers using organic seed.

Generally, descriptions of non-organic scenarios state that that “the cover crop is terminated using an approved herbicide,” and the cost analysis includes herbicide (glyphosate) and herbicide application as cost components. Scenarios in the mid-Atlantic, Appalachian, and some other regions include no-till drilling of the cover crop as well. These scenarios can lead the reader to the incorrect conclusion that CPS 340 Cover Crop can only be implemented within the context of a no-till production system that requires the use of herbicide to terminate the cover crop, even though many conventional as well as organic farmers use mechanical termination methods including but not limited to tillage.

The current set of scenario descriptions for CPS 340 in the Appalachian region and many other regions can create an especially awkward situation for organic producers who cannot find commercially available certified organic seed of the desired cover crop in the quantities needed.

Under these circumstances, NOP allows the use of untreated non-organic seed, but no scenario of CPS 340 may be available if the scenario description is interpreted as an implementation requirement. Non-certified, sustainable farmers who choose not to use herbicides would similarly find themselves without an option to adopt CPS 340. Furthermore, the organic scenario cites “mowing, roll-crimping, undercutting, etc” for mechanical termination, which suggests that some form of no-till termination is either required or strongly preferred for all cover crop scenarios.

In KY, cover crop job sheets recommend but do not require no-till planting and termination of cover crops. In TN, however, the Requirements Sheet for CPS 340 clearly mandates no-till:

*“Cover crops and the following crop will be planted no-till. Aerial seeding is a no-till method (moist conditions best). Tilled cropland can convert to No-till crops.”*

Some other regions clarify that herbicide use is not required even though it is shown as a cost component, including the mid-Atlantic (“*The cover crop will be terminated using an approved herbicide and/or by mechanical operations*”); in NJ, the job sheet explicitly allows tillage termination for green manure), Pacific (“*Termination may be by methods such as chemical or mechanical*”), and Corn Belt (IA). In the Delta region, LA offers separate chemical and mechanical kill non-organic options. In the Northern Mountains, WY allows termination by crimping/rolling, mowing, disking, or grazing to stubble height no shorter than 6 inches.

Organic producers might be deterred from enrolling in CPS 340 in regions or states whose scenario descriptions include no-till planting and only chemical or other no-till termination methods and/or no-till seeding, since no-till without herbicides can be especially challenging.

Scenarios vary considerably among states and regions, and often include one or more of: a basic scenario (one species, grass or legume, variously called “soil protection”, “general,” etc), nitrogen fixation (legume or legume + grass), nitrogen scavenging (grass and/or crucifer), soil health or multispecies (high diversity, often 5+ species from 3+ plant families), and organic versions of one or more of these. Some regions or states offer additional scenarios designed to address other specific needs, such as:

- Aerial seeding into standing production crops (Mid-Atlantic)
- Cover crop seeding into pasture to provide forage and/or prevent erosion if the pasture is overgrazed or seasonally dormant (OK)
- Orchard and vineyard (in alleys, covering 60% of field area – NC, TN, WVC, LA)

Most states provide additional criteria, guidelines, and other technical information related to CPS 340, either as part of the state’s Standard, or in separate documents (job sheets, guidance documents, etc). These include factors to consider when choosing cover crops for different purposes; and seeding rates, dates, depths, and methods for different hardiness zones within the state. In addition, most states have also posted the December 2013 RMA-FSA-NRCS cover crop termination guidelines, either appended to the Standard or separately. Many states (e.g., KY, TN, WV, and all Mid-Atlantic states) provide excellent locale-specific guidance (non-binding) as well as criteria (requirements) that set a high enough bar to ensure good conservation outcome without excessively restricting grower or planner ingenuity in adapting the cover crop practice to a particular farm. A few states (e.g., NC) provide little or no such guidance, and thereby perhaps missing an opportunity to achieve optimum cover crop outcomes for their climates, soils, and farming systems.

As mentioned above, one state (MT) strictly requires a 5+-species cocktail with no one species comprising more than 1/3 of the mix, and disallows enrollment of the same acres in CPS 340 and CPS 328. These criteria create unwarranted deterrents to implementation of CPS 340, especially for producers who are new to cover cropping.

**Recommendation 10:** Ensure that all regions offer at least one organic cover crop scenario (covering the cost of certified organic seed); and at least one and preferably more than one non-organic scenarios (i.e., that do not require organic seed) that do not include no-till planting and management, or chemical termination as implementation requirements. Clarify what elements of a scenario are or are not requirements for enrollment in the practice.

**Recommendation 11:** Ensure that all regions offer at least one “basic” cover cropping scenario that allows payment for planting a single species cover crop, in order to provide an accessible entry point for producers new to the practice. Additional scenarios that combine legume with grass, or multiple species and plant families, can be offered as the next step for producers who already plant single species covers.

**Recommendation 12:** Consider listing all specifically no-till cost components under CPS 329 No Till, rather than CPS 340 Cover Crop. See Residue and Tillage management (next section) for more on this recommendation.

**Recommendation 13:** Encourage and support regions and states to continue developing and refining cover crop scenarios optimally suited to their conservation needs, and to provide additional technical support information to help producers and planners optimize cover crop selection, planting, and management.

### **Residue and Tillage Management: CPS 329 No-till, Strip-till, and Direct Seed, and CPS 345 Reduced Till**

Minimizing soil disturbance and maintaining a healthy, diverse soil life (or soil food web) play vital roles in conservation and health of agricultural soils. Over the past 20 years, as agricultural professionals have embraced the importance of soil life and soil organic matter; and organic and specialty crop farmers have come to understand more fully the soil health risks of frequent tillage, producers and conservation professionals have worked together to develop systems that reduce tillage, increase organic inputs, and build the soil food web while maintaining satisfactory production. Thus, Residue and Tillage Management practices, especially CPS 329 No Till, Strip Till, and Direct Seed; and CPS 345 Reduced Till remain integral practices for organic, sustainable, specialty crop, and diversified, as well as conventional field crop farming systems.

While some organic producers use mechanical no-till cover crop termination and production crop planting methods, CPS329 remains a very challenging practice for USDA certified organic farmers and other farmers who do not use synthetic herbicides. A greater number of organic and sustainable producers are reducing tillage and can more easily meet the criteria of CPS 345, which can provide many of the same benefits, especially when done in conjunction with high biomass cover crops and tight (no-fallow) crop rotations that include sod or high-residue grain crops. Residue and tillage management can play an especially important role in improving soil conservation and soil health in specialty cropping systems, in which annual residue returns may be lower than for field crops, even in highly diversified, double cropped rotations. Many organic, sustainable, and small-scale diversified farmers also manage cropping systems that might be described as “diverse but low-residue.” Therefore, we analyzed CPS 329 and CPS 345 together with regard to accessibility of residue and tillage management conservation practices to these producers.

In December 2013, NRCS issued a revised CPS 329 that tightened criteria for “no till” systems to those with an annual Soil Tillage Intensity Rating (STIR)  $\leq 20$  (formerly 30), and a new CPS 345 Reduced Tillage that embraces the previous CPS 345 Mulch Till and CPS 346 Ridge Till. During FY 2014, a few states offered No-till and Reduced-till under the current standards (e.g., MD, NC, NM, TN), while most continued to offer the former (2011) CPS 345 Mulch Till (e.g., KY, NJ, OK, NY, VA, WV), some offered CPS 329 under the earlier (2010), less stringent criteria (e.g., NJ, NY, OK, PA), and a few also offered CPS 346 Ridge Till (e.g., NM). A few state Standards were more seriously out of date, e.g., 2006 (DE, WV).

Most states offered only one scenario for CPS 329 No Till, and only one (“basic mulch till”) for CPS 345, although some offered conventional and organic no-till as separate scenarios for CPS 329 (e.g., ID, MT, NE, NM, WY), a few western states offered separate scenarios for dryland and irrigated applications of CPS 345 (e.g., ID, WY), and CA offered “basic” and “high residue” scenarios for CPS 345.

Throughout the United States, the only cost component for the CPS 329 scenario(s) in 2014 consisted of a no-till drilling or planting operation, resulting in payment rates of \$9-18 per acre; MT paid just \$7 owing to an anomalously low cost share rate of 40% for this practice. This cost analysis fails to take into account that adoption of no-till entails acquisition of new skills and often new equipment, extra management labor, additional technology and materials to manage weeds and cover crops without tillage, and increased production risks during the first years of implementation. These costs can be higher for organic and other no-herbicide systems, for which no-till requires especially skilled management, as well as a roller-crimper or other tool for mechanical no-till cover crop management. The 2014 payments are far too low to provide adequate motivation and assistance for smaller scale producers to adopt the no-till technology. As a result, an opportunity to help specialty crop and small-scale diversified producers to improve soil conservation has been missed.

Given the particular challenges of no-till without herbicides, organic producers may not find implementation of CPS 329 practical at 2014 payment rates, even at a moderate production scale (e.g., 100-200 acres). A few states paid CPS 329 at higher rates under Organic Initiative than general EQIP, but payments for organic producers remained far too low (e.g., \$13/ac in FL, \$14/ac in IA)

Although our analysis focused on 2014, we explored past payment schedules for CPS 329 in two states to get an idea of what has been historically offered under CPS 329. In 2010, PA offered two scenarios for CPS 329: conventional field crops (cost components: no-till planting, herbicide, income foregone for anticipated small yield reduction, and risk of larger yield reduction, for total allowable costs of \$36/ac); and organic no-till vegetable or field crops after winter cover crop (cost components: roll-crimping cover crop, no-till planting, acquisition of technical knowledge at field day, income foregone for slight yield reduction, and risk, for total allowable costs of \$56/ac). Given the heavy emphasis that NRCS places on no-till for both soil conservation and soil health (organic matter and carbon sequestration), it surprises us that the 2014 cost estimates do not take account of the added skill, risk, and technology (no-till mechanical or chemical vegetation management) that a transition to no-till production entails.

In 2010, the following eight scenarios and payments were offered under CPS 329 in the VA EQIP payment schedule:

*Agronomic crops, one year NT, 30% residue cover - \$15/ac*

*Agronomic crops, one year NT, 60% residue - \$20/ac*

*Agronomic crops, continuous NT, 60% residue - \$30/ac*

*Specialty crops, one year NT, 30% residue - \$150/ac*

*Specialty crops, one year NT, 60% residue - \$200/ac*

*Specialty crops, continuous NT, 60% residue - \$300/ac*

*Tobacco, one year NT, 30% residue cover - \$120/ac*

*Tobacco, one year NT, 60% residue cover - \$160/ac*

This set of scenarios provided the following:

- Viable options for organic producers (one year no till, alternating with a year with some tillage has proven feasible for good organic managers, whereas perennial weeds render *continuous* no-till for organic annual crop production extremely difficult at best)
- Higher payments for specialty crops, taking into account greater risks and management challenges in higher-value crops, and thus facilitating adoption by smaller scale producers.
- Higher payments for conversion to continuous no-till, which requires higher management skill for all farming systems.

In most regions and states, cost components in 2014 scenarios for CPS 345 included one or two tillage passes (using methods such as chisel or light disk that meet criteria of CPS 345) as well as no-till drilling or planting. As a result, allowable costs for CPS 345 were two to three times as high as for CPS 329, creating a potential paradox in which farmers would receive substantially higher payments for CPS 345 Reduced Till than for the more challenging CPS 329 No-till, which NRCS also considers more effective in preventing soil erosion and improving soil quality.

In 2014, several states actually offered much more for CPS 345 than 329 in the general EQIP, including CA (basic reduced till at \$29/ac, high residue reduced till STIR $\leq$ 40 at \$58/ac versus \$17/ac for no-till), ID (reduced till dryland \$31/ac, irrigated \$48/ac vs no till \$13/ac), MA (\$35/ac for reduced till, versus \$13/ac for no-till), NM (\$27/ac for reduced till versus \$15/ac for no-till) and WY (reduced till dryland \$26/ac, irrigated \$40/ac vs no till \$11/ac).

Other states avoided or limited such discrepancies by arbitrarily setting CPS 345 payments at or below the level for CPS 329 (FL, NE, VA, ), by including *only* light tillage (not planting) as cost component (DE, NJ, NY), by offering CPS 345 only through the Organic Initiative and sometimes other special initiatives (IA, KY, NC ), by limiting CPS 345 to certain cropping systems (MT – CPS 345 for irrigated potato or sugarbeet only at \$51/ac, CPS 329 at just \$7/ac), or by not offering CPS 345 at all (PA, TN, WI, WV).

The availability of CPS 345 reduced-till options at payments of \$27-58 per acre in states such as CA, IA, ID, KY, MA, NC, NM, and WY can provide moderate-scale organic producers with significant support in adopting conservation tillage systems that are practical for organic production. However,

soil conservation would benefit by making this practice available through general EQIP as well as special initiatives (IA, KY, NC), and by increasing payments for CPS 329 No till to equal or exceed those for CPS 345 for all growers (CA, ID, MA, NM, WY).

Finally, we noted that a critical cost component for CPS 329 No Till – no till vegetation management by mechanical or chemical means – has been assigned to CPS 340 Cover Crop in virtually all regional scenarios reviewed, and also for termination of the sod phase in CPS 328 Conservation Crop Rotation scenarios offered in the Appalachian region. We feel strongly that this cost component belongs in CPS 329, where it will help elevate cost estimates and payments for this important soil conservation practice to a level that can make it feasible and attractive for farmers to participate; and not in CPS 340 or CPS 328, where an expectation of no-till termination could limit accessibility for organic and sustainable farmers, especially if herbicide use is considered an implementation requirement. Cover crop and sod termination should be retained as cost components under CPS 340 and 328 respectively, but scenarios must clarify that this can be accomplished through appropriate tillage, mechanical no-till, or herbicide.

**Recommendation 14:** Ensure that all regions develop FY2015 scenarios based on the current (Dec. 2013) national CPS 329 and CPS 345 standards, in order to realize greater clarity and consistency in delivery of the Residue and Tillage Management practices.

**Recommendation 15:** Ask all regions to develop conventional and organic scenarios for CPS 329 that take account of all typical costs of adoption, including labor for skill acquisition and increased management needs, mechanical or chemical vegetation management, and increased risk of yield reductions during the first few years in a no-till system in addition to the no-till planting itself. Cost estimates for organic no till should be somewhat higher than conventional, reflecting the greater management skill and technology (e.g. roller-crimper) required for no-till without herbicides.

*Rationale:* By providing adequate cost-based support for CPS 329 implementation in both organic and non-organic production systems, NRCS can enhance adoption by organic, specialty crop, and smaller-scale diversified producers as well as larger scale field crop farmers.

**Recommendation 16:** Ensure that no-till payment rates are at least somewhat higher than those for CPS 345 reduced tillage, and high enough to make it worthwhile for farmers at all scales to enroll in CPS 329.

*Rationale:* Maintaining payments for CPS 329  $\geq$  CPS 345 will avoid creating an incentive for farmers to select the option that NRCS considers less effective for protecting the soil resource.

**Recommendation 17:** Ensure that all regions offer CPS 345 Reduced Till, and one-year scenarios for CPS 329, as well as (optionally) continuous no-till under CPS 329.

*Rationale:* Providing reduced-till and one-year no-till options as well as the more technically challenging continuous no-till practice will make it feasible for a wider range of organic, sustainable, and conventional farmers to receive support for Residue and Tillage Management by making it

possible for producers who do not have the capacity for continuous no-till. This not only provides more accessible options for organic farmers, but also provides a step by step pathway from soil-depleting tillage to soil-conserving systems. These steps can be especially helpful for beginning farmers and transitioning-organic producers.

### **CPS 590 – Nutrient Management**

Most regions and states offered 6 to 8 scenarios in 2014 for developing and implementing a nutrient management plan and nutrient budgets under CPS 590. Implementation requirements varied among states, and state Standards for CPS 590 were extensively adapted to meet state nutrient management and environmental regulations, which varied according to water and other priority resource concerns of different states and regions.

Scenarios ranged from basic to enhanced, precision, and advanced-precision levels of management. A few states (e.g. CA), offer CPS 590 scenarios specific to livestock operations including CAFOs. Each region provided at least one basic nutrient management scenario specifically for organic systems, and one for small-scale diversified farms in which payment is based on a per-plan (per-farm) basis rather than per-acre. More advanced levels of nutrient management often included technology not well suited to organic fertility programs (e.g., precision fertilizer application, split nitrogen applications), or not allowed by NOP (e.g., nitrification inhibitors, urease inhibitors). However, organic producers might benefit from precision nutrient management based on multiple (grid) soil testing, provided that the precision scenario is adaptable to organic systems, with NOP-allowed materials and practices.

Cost scenario components include labor (general, skilled, and/or specialist), truck and ATV use, soil tests, manure and compost analysis when these nutrient sources are utilized, and sometimes the cost of a urease inhibitor. Precision scenarios included multiple soil tests for “grid analysis” and a precision fertilizer application, and sometimes mid-season soil N and/or foliar tests. Advanced or “enhanced” scenarios also included costs of technologies such as satellite imagery, and chlorophyll reader. Payments ranged widely from as low as \$1 to more than \$100 per acre, depending on region, farming system, and scenario.

Many regions and states offered an Adaptive Nutrient Management scenario, which consists of an on farm replicated trial of a specific nutrient management technique, with payments of \$700 to \$1,400 per farm. Some state in the mid-Atlantic and New England regions also offered a soil health assessment scenario, providing \$75 to 125 to support in-field evaluation of the physical, biological, and chemical health of the soil. It was not clear whether a single farm could receive multiple payments for assessments in multiple fields or sites within the farm.

In addition to scenarios and state Standards (including state- or LGU regulations, guidelines, and procedures as well as criteria from the federal standard), many states offered a lot of additional state-specific technical information in Section IV of eFOTG, including protocols for calculating realistic yield goals, and N and P runoff and leaching risks, and guidance regarding manure, compost, and other fertilizer inputs. Some states, notably DE, offer extensive and helpful guidance related to

specific nutrient management challenges in that state (e.g., manure accumulations in DE and NC). However, the wealth of technical material could be overwhelming for EQIP applicants to interpret without the assistance of a qualified nutrient management planner or consultant.

Many of the differences among states appear appropriate to regional variations in geography, environmentally sensitive waters, and other resource concern; state regulations and procedures; and prevalent farming systems. However, some large variations in cost estimates and payment rates appear to put farmers in certain regions at a tremendous disadvantage.

For example, in CA, cost components for the basic nutrient management scenario for larger farms include just two soil tests, two hours truck use, three hours general labor, and five hours skilled labor for 160 acres, which yields allowable costs of just \$4.43 per acre (actual payment probably about \$3.30). Most soil scientist would agree that two samples are inadequate for even basic nutrient management over such a large acreage. Extension offices generally recommend at least one soil sample per 20 acres for field crops on fairly uniform soil and topography, and more intensive sampling for more varied terrain or more complex production systems.

In NM, narrative description for basic and basic-organic scenarios state:

*“payment for implementation is to defray the costs of soil testing, analysis, consultant services that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, and recordkeeping.”*

Yet, cost components for a 40 acre basic scenario include just two hours general labor (no skilled or specialist labor to cover the consultant services or nutrient budgeting), two hours truck use, one soil test, and one irrigation water test, for an allowable cost of just \$2.35 per acre. The organic scenario adds one compost analysis and one manure analysis, but no additional or skilled labor, yielding \$3.99/ac allowable costs. For a small diversified farm (0.25 – 10 acres), NM budgets two hours general labor, one hour truck use, two soil tests, and one each compost, manure, and irrigation water analysis, coming to a total allowable cost of just \$182 per farm. Again, this estimate appears entirely inadequate for the small farm scenario description:

*“Payment for implementation of this scenario is to defray the costs of soil testing, manure and/or compost analysis, training attendance, and consultant services that provide nutrient management recommendations, associated nutrient budgets, and recordkeeping.”*

Other states with low labor and soil testing allotments and low payment rates for basic nutrient management include LA (two hours general and two hours specialist labor, one soil test, one hour truck use for 40 acres, for \$6.95/ac, \$8.65 for organic), OK (five soil tests, six hours each general labor and truck use for 125 acres, total costs \$2.69/ac; basic organic adds a manure analysis for total costs of \$3.21/ac); NE (\$2.45/ac, basic organic \$7.03/ac), and FL (\$0.92 without manure, and \$2.54 with manure).



In contrast, basic organic nutrient management in NJ budgets for three soil tests, two compost analyses, eight hours labor (four specialist and two each skilled and general), and two hours truck use for 40 acres, which comes to a cost estimate of \$17.68 per acre. NJ also offers a small farm scenario at \$546 per plan. In NC, basic nutrient management scenarios budget for two soil tests, 9 hours labor (skilled + general), and 3 hours truck and ATV use for \$16/ac (\$18 if manure analysis is included).

In the Appalachian region, actual payments for basic scenario are \$12-13/ac, while the basic organic scenario takes the more management-intensive organic approach into account, paying \$23-25/ac. In the mid-Atlantic, however, basic nutrient management is paid slightly higher (\$15-16) than basic organic (\$13-14) because the former scenario includes application of a urease inhibitor, which accounts for more than half the cost estimate.

A few other state level provisions have the potential to create unwarranted barriers to enrollment in CPS 590. For example:

- KY requires completion of a CAP 104 (Nutrient Management Plan) or CAP 102 (Comprehensive Nutrient Management Plan) under a separate stand-alone EQIP contract prior to enrollment in CPS 590. No other state has this requirement, and most scenario descriptions state or imply that CPS 590 itself entails a planning process.
- MT offers payment at only 50% of the cost estimate for basic, organic, and small farm scenarios, in contrast with most other states (75%); this can hinder farmer participation in the practice.
- Some states, such as NC, VA, and WV, have not posted sufficient guidance for the potential participant to understand how the often detailed and complex state nutrient management criteria can be met.
- At least two states (PA, WY) require simultaneous application of CPS 328 Conservation Crop Rotation and CPS 340 Cover Crop to acres enrolled in CPS 590 under an organic scenario. While such integration of practices can greatly enhance conservation outcomes, a firm requirement could create an unnecessary barrier for organic producers.

**Recommendation 18:** Continue to allow and support states to add to the federal standard state level criteria, specifications, protocols for nutrient management and risk assessment, considerations and guidance specific to the state's soils, climates, farming systems, and resource issues, as well as state regulation. Encourage states to post this information in plain, user friendly language and formats to facilitate understanding and easy implementation by farmers and conservation planners.

**Recommendation 19:** Clarify that CPS 590 entails both development and implementation of a nutrient management plans or crop nutrient budgets, and that the farmer does not need to complete a CAP 102 or 104 in order to enroll in CPS 590. Ask any states (e.g., KY) with such prerequisites for CPS 590 enrollment to remove them in time for the FY 2015 signup.

**Recommendation 20:** Ensure that all regions include reasonable and appropriate cost components for all Nutrient management scenarios, including adequate Specialist Labor hours to cover

consultant time to develop a plan and/or nutrient budgets, as well as adequate farmer labor hours for any “special training” required or expected.

**Recommendation 21:** Encourage regions and states to offer a more advanced organic nutrient management scenario that includes grid soil testing for precision applications of organic amendments, and does not require technologies designed for inorganic fertilizers or materials that are prohibited under NOP (such as urease inhibitor).

**Recommendation 22:** Support regions and states to continue offering a full gamut of options under CPS 590, including basic, basic + manure, more advanced, small-farm-diversified (paid per farm rather than per acre), and organic scenarios, as well as adaptive (field trials for organic or conventional systems), soil health assessments, and any special scenarios to address state or region specific conditions or concerns (e.g., livestock operations).

**Recommendation 23:** Clarify that an EQIP applicant can sign up for more than one Soil Health assessment to evaluate different fields, setting a reasonable maximum number per farm, such as 10 or 20.

*Rationale:* The soil health assessment package is fairly modestly paid (~\$100), and farms with larger acreages, multiple fields, or more complex production systems or topographies might benefit from multiple soil assessments. Organic, sustainable, and small scale diversified producers might be especially interested in conducting multiple soil health assessments, and in tailoring nutrient management and other conservation practices in different fields or rotations according to soil health assessment results.

**Recommendation 24:** We recommend that NRCS *encourage all producers* to consider implementing CPS 328 and/or CPS 340 in conjunction with CPS 590, rather than *require organic producers* to undertake such multiple practice implementation.

## **CPS 595 – Integrated Pest Management**

A comprehensive set of 13 scenarios apparently underlies CPS 595 implementation across the United States: two basic and one advanced level of IPM for each of four farming systems (field crops, vegetables and small fruit, orchard and vineyard, and small diversified farm, “*e.g. CSA, organic, etc*”), plus a “Risk Prevention” scenario. The basic IPM scenarios entail “*a basic IPM plan with LGU-approved pest monitoring techniques and pest thresholds,*” with risk prevention or mitigation measures as described in Agronomy Technical Note 5 applied to one or to more than one Resource Concern (RC). Advanced IPM scenarios require:

*“A comprehensive IPM plan with LGU-approved pest prevention, avoidance and monitoring techniques and pest thresholds (where available) is applied ... to address all identified resource concerns with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation”*

The Risk Prevention scenario description clearly outlines its relevance to organic and sustainable systems:

*“A comprehensive IPM plan based primarily on LGU-approved pest prevention and avoidance techniques is applied to prevent negative impacts on all identified resource concerns. LGU-approved pest monitoring techniques and pest thresholds may also be included, but suppression techniques cannot pose any hazards to identified resource concerns. This type of system is very difficult to achieve, but may be most commonly achieved in Organic Systems that already rely heavily on prevention and avoidance techniques.”*

In addition to providing highly relevant options for organic and sustainable producers, the Advanced and Risk Prevention scenarios most faithfully reflect the Definition of IPM, General Criteria, and Considerations given in the national Standard for CPS 595:

*“DEFINITION: A site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies.*

*“CRITERIA - General Criteria Applicable to All Purposes:*

*IPM strategies (Prevention, Avoidance, Monitoring and Suppression or “PAMS”) shall be employed to prevent or mitigate pest management risks for identified natural resource concerns.*

*“A comprehensive IPM plan utilizing PAMS strategies will be developed in accordance with this standard to document how specific pest management risks will be prevented or mitigated.*

*“CONSIDERATIONS*

*“IPM strategies that keep pest populations below economically damaging levels and minimize pest resistance should be utilized because they also help prevent unnecessary pest management risks to natural resources and humans.*

*“Enhancement Considerations*

*“A more intensive level of IPM focused primarily on prevention and avoidance strategies can further minimize pest management risks to natural resources and humans.”*

All regions except for the Southeast offered advanced scenarios of CPS 595 in 2014. A majority of states offer all three levels of IPM for each of the four farming systems, and many also offered Risk Prevention. A few states provided additional information and guidance to support IPM in organic, sustainable, and/or diversified systems. For example:

- NJ posted an organic pest management job sheet that emphasized pest prevention and avoidance methods, and record keeping forms include pest prevention and avoidance measures as well as pesticide mitigation.
- The NC Standard for CPS 595 includes helpful information under Considerations on organic integrated weed management that can help organic producers address the fourth Purpose listed for the practice, *“Prevent or mitigate cultural, mechanical and biological pest suppression risks.”*

- The WV Standard includes Additional Criteria for protection pollinators from pesticide impacts, and Considerations for beneficial insect habitat (farmscaping) as part of the IPM strategy. WV also provides a Job Sheet for IPM for Pollinators.
- NM offers organic producers a Pest Management-Prevention & Avoidance, Organic Conservation Practice Jobsheet, that requests documentation of “prevention and avoidance, and emergency suppression planned.”

Cost components for all scenarios of CPS 595 included specialist labor and skilled labor to develop and implement an IPM plan. Payments were generally consistent within and among regions, with mostly small variations related to state cost indexing factors. Payments for advanced IPM averaged about \$25/ac for field crops, \$130/ac for vegetables, \$200/ac for orchard, and \$800 per plan for small diversified farms. Basic IPM payments were roughly half as much. These rates can provide substantive support for organic, sustainable, specialty crop, and small-diversified, as well as conventional field crop producers to implement the IPM practice at levels appropriate to their farming systems.

The Risk Prevention scenario pays roughly \$100 per acre regardless of farming system, a rate based on 15 hours skilled labor and 10 hour specialist labor for 10 acres. In comparison, payments for advanced IPM for vegetable/small fruit systems are based on 10 hours skilled and 15 hours specialized for 10 acres; and for orchard, 25 hours skilled and 20 hours specialized labor for the same acreage. It seems counter-intuitive that the most challenging application of CPS 595 (Risk Prevention, mandating zero hazard to all RCs) on specialty crop farms would require less labor and receive lower payments than the Advanced scenarios, which set a somewhat lower bar of risk prevention or mitigation for all RCs.

Overall, the 13 scenarios for CPS 595 offered in 2014 represented a range of viable options for organic, transitioning-organic, small-scale diversified, and other producers to receive support through EQIP to learn, develop, and implement IPM systems ranging from mitigation of pesticide impacts on resources to full PAMS strategies that minimize or eliminate the need for pesticides. However, this opportunity was not equally available throughout the United States. For example:

- In the Southeast, FL, AL, and SC offered only basic level IPM scenarios, (paying just \$7 – 9/ac for field crops in FL); and GA did not offer CPS 595 at all.
- MT offered only a single scenario (small farm, basic, >1RC), and only for organic farmers. In contrast, the other two Northern Mountain states (ID, WY) offer all 13 scenarios. This puts MT farmers at a tremendous disadvantage relative to farmers in neighboring states with regard to this important practice.
- In PA, a practice guidance document posted on eFOTG section IV for CPS 595 focuses narrowly on pesticide mitigation rather than technical assistance to develop a full IPM program.
- In IA, the “small diversified farm” scenarios are applied to operations “under 100 acres.” At 99 acres a small farm would receive less than one-half the payment as a 101 acre field cropping operation would at the same level of IPM.

- In KY, a completed CAP 114 (IPM) developed under a separate stand-alone EQIP contract is required before a producer can enroll in CPS 595; furthermore, CAP 114 was offered in 2014 through general EQIP but not the Organic Initiative, whereas CPS 595 was offered only through OI and some other special initiatives.
- Implementation requirements on the 2014 TN payment schedule address only pesticide mitigation for all RCs under Advanced scenarios, and neither criteria nor guidance for pest prevention and avoidance is offered here or on Section IV of eFOTG. Furthermore, the Small Farm scenarios include language implying that organic systems typically incur soil erosion problems from their weed management practices.
- NE offered only two high-level IPM scenarios in 2014: advanced field crops, and risk prevention; basic IPM was offered for field crops, orchard, and small farm. Payments were commensurate with other regions under the Organic Initiative, but one-third lower under general EQIP. Thus, support was lacking for higher-level IPM in specialty crop and diversified systems, and was reduced for non-organic producers seeking to implement any level of IPM or pesticide mitigation.

Aside from the content of practice standards, scenarios, and payment schedules, a couple other observations by members of our project team have raised concerns about NRCS capacity to support organic and other producers to utilize CPS 595 effectively. First, several organic producers have told us that they were turned away from enrollment in CPS 595 by NRCS field staff because the applicants “do not use pesticides” or only use pesticides with low risk levels on the WIN-PST tool, and thus do not require mitigation to protect resources.

Second, some NRCS staff, along with members of our CIG project team, have suggested that CPS 595 is not really appropriate for organic producers seeking to learn and implement full PAMS or high level, resource conserving IPM programs on their farms, and that the practice is most appropriate for mitigation of pesticide impacts on RCs. This contrasts sharply with the widespread offering of advanced and risk prevention scenarios, as well as language in the Standard stating that pest prevention and avoidance that can reduce the need for pesticides, as well as threshold-mediated suppression and pesticide impact mitigation, play integral roles in CPS 595.

Third, we realize that providing the technical support that organic and sustainable farmers may need in developing and implementing high level, resource-conserving IPM programs requires considerable capacity that some NRCS field offices, already overstretched and understaffed, might not have. We suspect that this may be why some states have chosen to offer a much more limited range of scenarios (FL, MT), to narrow the context of advanced scenarios to pesticide mitigation for all resource concerns (TN, PA) or to require a completed CAP 114 before enrolling in CPS 595 (KY). If the emphasis of IPM becomes completing the CAP 114, the need to train and certify many more TSPs for integrated pest management planning will become that much more acute.

These conversations and observations illustrate a need to (a) actively support states to deliver the advanced, full PAMS scenarios of CPS 595 to organic, sustainable, and conservation minded

conventional farmers; and (b) build state, regional, and national capacity to provide the technical assistance that farmers need to implement advanced CPS 595 scenarios effectively.

**Recommendation 25:** Maintain, for FY 2015 and beyond, basic and advanced (full PAMS) scenarios for CPS 595 for field crop, vegetable/small fruit, orchard/vineyard, and small-diversified farming systems. Encourage regions and states to offer all of options to applicants through general EQIP, the Organic Initiative, and other special initiatives as appropriate.

**Recommendation 26:** Continue to offer a Risk Prevention scenario(s), but increase the labor allotments under cost components for specialty crop, orchard, and small-diversified producers, so that payments adequately support this high level IPM implementation in these production systems.

**Recommendation 27:** Encourage states to develop and post locale-specific technical information and guidance on resource-conserving IPM programs that include pest prevention and avoidance measures that reduce the need for pesticides as well as effective mitigation of pesticide impacts on off-site and on-site resources. Encourage other states to follow NC's lead in providing information on soil-conserving integrated organic weed management systems to address the fourth Purpose under CPS 595.

**Recommendation 28:** Ask state NRCS offices to remove barriers to resource-conserving, full-PAMS implementation of CPS 595, such as imposing a prerequisite of a completed CAP 114 for enrollment in CPS 595 (KY), language that narrowly interprets all scenarios in terms of pesticide mitigation only (PA, TN), or that creates a "doughnut-hole" of under-payment for implementation on "small" farms in the 20-100 acre range (IA).

**Recommendation 29:** Build capacity to assist organic and other farmers to develop and implement high level resource-conserving IPM plans under CPS 595, through trained NRCS field staff or TSPs.

## Appendix B

## Appendix B – Additional analyses of Practice Costs, Scenarios and Payment Schedules in the *Appalachian Region*

### Executive Summary:

- Cost scenarios, FY2014 payment schedules, state practice standards, job sheets, and other specifications and guidance for the six Practices in each of the five states in the Appalachian region: Kentucky (KY), North Carolina (NC), Tennessee (TN), Virginia (VA), and West Virginia (WV).
- Scenarios and payment schedules for FY 2014 were generally consistent across the region.
- Some ambiguities regarding cost scenarios, payment schedules, and availability of different practices under general EQIP, Organic Initiative (OI), and other initiatives could cause confusion.
- Amount, quality, and accessibility of information regarding practice criteria and implementation requirements, guidance and considerations, are highly variable among States and Practices.
- CPS 328 Crop Rotation, CPS 340 Cover Crop, CPS 590 Nutrient Management, and CPS 595 Integrated Pest Management offer scenarios and applications that could meet the needs of a wide range of farming systems: organic, specialty crop, small-diversified, and conventional field crops.
- For CPs 595, all five states offered advanced scenarios (full IPM including pest prevention, avoidance, monitoring, LGU-determined action thresholds, suppression, and pesticide mitigation as needed) for field crop, vegetable, orchard, and small diversified farming systems. KY, VA, and WV also offered the Risk Prevention scenario with greater emphasis on prevention and avoidance.
- In some cases, inconsistencies, ambiguities, or unwarranted barriers could interfere with organic producer access to these Practices, such as:
  - Do CPS 328 and 340 require herbicide termination of cover or sod crops?
  - In KY, CPS 590 and CPS 595 list CAPs as a *prerequisite* for implementation of and payment for the practice standards, creating an extra hurdle to participation. Other States require nutrient management plans (590) and IPM plans (595), with the implication that planning is part of practice implementation.
  - In KY, CPS 595 (IPM) is available for OI but not general EQIP, but the prerequisite CAP 114 (IPM Plan) is available through general EQIP but not OI, which creates a barrier to full implementation for all farmers.
  - In TN, all CPS 595 scenarios, as described on the 2014 payment schedule, focus narrowly on pesticide mitigation, with no mention of prevention and avoidance, in sharp contrast with NC and VA.
- CPS 329 No-till is very low paid, based on just one cost component (no-till planting – no payment for skill acquisition, added risk, or herbicide or mechanical no-till vegetation management). It offers little to the organic producer, particularly in KY and NC, which offer CPS 345 through OI at a higher pay rate.
- Cost components related to no-till chemical or mechanical cover crop termination appear misplaced (in CPS 340; they properly belong in CPS 329 No Till)

## Transparency and accessibility of information

States varied considerably in what information (criteria, requirements, considerations, guidance, scenarios, and component costs) could easily be found for these six Practices on the eFOTG web site and/or the state's NRCS web site (EQIP page for current fiscal year). KY, VA, and NC offered the most information, followed by TN, with WV the least.

Cost Scenario documents for each Practice were posted on Section I of eFOTG only for VA and NC. Payment schedules for these two states were harder to find (required a visit to the EQIP page of the state's NRCS web site), which could leave eFOTG users with the incorrect impression that the cost totals shown on the scenario documents are the payment rates (actual rates on the payment schedules were about 25% lower).

*Comments by state, below.*

### Consistency, Clarity, and Flexibility

States varied in how much and in what way they modified and adapted the federal standards. Most of these variations seem related to state-specific resource concerns, conservation priorities, and state regulations.

Generally, scenario names and descriptions for each practice are satisfactorily consistent across the region. Often, states did not offer *all* of the regional scenarios for a given practice, but usually they offered enough to meet a range of producer needs, including organic, sustainable, specialty crop, and small-diversified systems.

With few exceptions, payment schedules showed only slight variation among states, attributable to state level indexing.

In NC, four scenarios listed in the Cost Scenarios document were missing from the 2014 Payment Schedule. When we inquired with NRCS-NC, we learned that three of these four practices were offered only through the Organic Initiative (OI), and a separate 2014 Payment Schedule for OI was eventually located at a different place on the NRCS-NC web site.

In contrast, a single 2014 payment schedule is posted in VA, WV, and TN that included all practice scenarios, with no indication that OI offers a different menu of practices and scenarios from the general EQIP. KY has also posted a single payment schedule, but the reader must consult KY's 2014 EQIP-WHIP Guidance Document to determine which practices are available under general EQIP or under the Organic Initiative or other initiatives. *These variations in accessibility of information made it harder to determine what practices and scenarios are actually available through general EQIP and/or OI in NC and KY.*

Conservation purposes, criteria, and implementation requirements in the state Standards, job sheets, and other documents ("Requirement Sheets," "Implementation Requirements," *etc.*) vary somewhat from state to state. Many of these variations reflect differences in climate, topography, soils, farming



systems, and local priorities among resource considerations (appropriate flexibility). Some stem from the use of an out of date national Standard in one or more states, and a few others appear to reflect inconsistencies in interpretation of national criteria unrelated to local needs, farming systems, or resource concerns. In a few cases, information is confusing, contradictory, or too scant to know what is expected of the producer in implementing the practice. *Some of these issues are explored further in discussions of each Practice below.*

Additional guidance offered by some states, especially for CPS 328 and CPS 340, offers valuable information that can help farmers adapt the practice to their production system to greatest conservation benefit.

In addition to Recommendations 1, 2, and 3 on page 7 of the general report, we offer the following recommendations for the Appalachian region based on our review:

**Recommendation A1:** Ensure that each State bases its Standard, purposes, criteria, job sheets, and implementation requirements on the current national Standard.

*Rationale:* some states, notably WV, are using practice standards and criteria based on out-of-date national standards, resulting in inconsistencies among states in implementation requirements.

**Recommendation A2:** Support the Appalachian region and each of the five states therein to continue to optimize conservation outcomes by:

- Maintaining flexible yet robust practice criteria that meet national standards yet respond to local conditions.
- Adapting practices and scenarios to the range of bioregions, resource concerns, and farming systems within the state.
- Developing and offering state-specific guidance on cover crop species mixes, seeding rates and dates; best cover crops, crop rotations, and tillage practices for priority wildlife or pollinator habitat in the state; crop rotation and nutrient management tips to meet the state's priority resource concerns, etc.
- Sharing information resources among states that might have region-wide application.

*Rationale:* The Appalachian region has generally provided a good balance of strong yet flexible criteria, and most states offer excellent, detailed information to help producers select cover crops, design rotations, choose nutrient management and other practice scenarios for their farms. Different states show different strengths, for example, WV offers excellent information on pollinator habitat, while KY offers especially thorough guidance on cover crops. States vary, especially in how much guidance is offered for crop rotation design and cover crops (virtually none in VA); state NRCS offices can learn from one another and share information resources as appropriate.

### **Scenarios for organic systems and for small, diversified and/or specialty crop farms**

All five states offered “per-farm” or “per-plan” payment schedules for small, diversified farm scenarios for CPS 590 Nutrient Management and CPS 595 Integrated Pest Management. Payments for all scenarios of the other four Practices reviewed – CPS 328 Conservation Crop Rotation, CPS 329 No Till, CPS 340 Cover Crop, and CPS 345 Reduced Till – were on a per-acre basis. However, all five states offered Crop Rotation scenarios for specialty crop farms at high per-acre rates (\$849-1,030) in recognition of the complex, diversified rotations and the income foregone in rotating high-value cropland into perennial sod.

All five states offer specifically organic scenarios for CPS 328 (two), CPS 340 (one), and CPS 590 (one). KY and NC offer CPS 345 Reduced Till only under the Organic Initiative, whereas TN and WV did not offer this practice at all. In general, CPS 328, 340, 590, and 595 appears accessible and relevant to organic and sustainable systems, and CPS 329 less so.

NC offers several scenarios (328 organic specialty crop to perennial, 340 organic weed control, and 345 basic mulch till) *only* via the Organic Initiative (OI), which makes them unavailable to organic producers who choose to compete for general EQIP funding (for which the cap on contract size is much higher than for OI). This could deter participation in EQIP by larger scale organic producers whose resource conservation goals might exceed the \$20K-per-year / \$80K-per-contact cap for OI, as these three scenarios would be unavailable to them.

With more and more organic and sustainable producers adopting conservation tillage, including no-till cover crop termination, organic-compatible scenarios for both CPS 329 and CPS 345 would be valuable, especially in the hills of Appalachia where soil erosion by water is a priority resource concern.

**Recommendation A3:** Ensure that organic scenarios for CPS 328 and CPS 340 are available via both Organic Initiative and general EQIP in all states throughout the region.

**Recommendation A4:** Develop and offer an organic scenario for CPS 329 No-till.

**Recommendation A5:** Make CPS 345 Reduced Till available in all states across the region. It need not be specific to organic producers, but should be compatible with or adaptable to NOP.

*Rationale: CPS 345 is a practical approach to conservation tillage for most organic producers, while CPS 329 No Till may not be practical for organic systems except where weed pressure is light and farmer skill in these systems is excellent.*

*For more on practice applicability to organic producers see the sections on individual practices below.*

### **Payments and Cost Components:**

In general, payments for practices appear reasonable, with the notable exception of CPS 329 No Till, for which per-acre payments are very low nationwide. In VA, payment for CPs 345 Reduced Till is also very low, whereas CPS offered only through the OI in KY and NC at a higher rate. Payments per acre for CPS 328 Rotation, CPS 590 Nutrient Management, and CPS 595 Pest

Management were generally higher for more intensively managed crops (orchard, vegetables and small fruit, etc) than for agronomic crops. This reflects the greater complexity and higher crop value of the specialty cropping systems.

Cost Scenarios for NC and VA were essentially identical. Based on consistency in payment schedules and scenario names therein, it appears that all five states worked from the same set of scenarios, as mandated by the national office.

Cost components for each practice include one or more of the following: labor for planning, consulting, implementation, and monitoring; field operations [equipment, “power unit” (fuel?), and labor]; materials (seeds, herbicides); and soil, manure, compost, and plant tissue testing.

### **Comments and observations by state**

#### Kentucky:

KY eFOTG, posted a general Payment Schedule spreadsheet for 2014, but not detailed cost scenarios. Multiple up to date (2014) job sheets were available for some practices (340, 590 – each scenario) but no job sheets for others (345, 328), and a very out of date job sheet for 329.

The EQIP page of the KY-NRCS web site includes a link to an EQIP-WHIP Guidance document dated 2014 that offers succinct guidance for some Practices (e.g., 328) but virtually none for others. It also indicates which practices are available for which EQIP programs or initiatives. CPS 328, 329, 340, and 590 are offered through both general EQIP and Organic Initiative (OI), whereas CPS 345 and 595 are offered only for OI.

#### North Carolina:

Cost scenarios are posted on eFOTG, while payment schedules are on the state EQIP web site. In addition to the three practice scenarios offered only through OI, the Basic plus Manure scenario for CPS 590 Nutrient Management was missing from the general EQIP payment schedule. Inquiry with NRCS NC revealed that this scenario was not offered because it appeared redundant with state regulations (see CPS 590 below for more).

Some of the information within the CPS 340 Cover Crop scenario and payment schedule document is contradictory or ambiguous.

#### Tennessee:

The eFOTG site for TN showed payment schedules for CAPs only, and only through 2013. A 2014 payment schedule with concise yet informative scenario descriptions, was posted at: [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/tn/programs/?cid=nrcs141p2\\_016426](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/tn/programs/?cid=nrcs141p2_016426).

The eFOTG site gave Standards and Job sheets for all practices – some very up to date including Reduced Till for 345; some old (2006), and some other documents (excel spreadsheet for 595 job

sheet, “national info” for 340). Requirement Sheets with more detailed criteria are included for most CPS 340 and 590 scenarios.

#### Virginia:

We found cost scenarios for 2014, job sheets, and state standards on eFOTG, while the Payment Schedule itself was found on the EQIP page of the VA NRCS web site. VA is using an older version of CPS 345 (“mulch till” rather than “reduced till”) and VA eFOTG lists CPS 346 Ridge Till standards and job sheets, though the practice did not appear on the 2014 payment schedule.

#### West Virginia:

WV eFOTG had only out-of date payment schedules (2009 – 2013); the 2014 schedule was on WV NRCS web site at:

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wv/programs/financial/eqip/?cid=stelprdb1193944>.

Standards and Statement of Work are available for most, but Job Sheets only for a few standards & scenarios. WV places strong emphasis on pollinator habitat, including additional criteria & considerations in CPS 328, 340, and 595; job sheet for CPS340 for pollinators, and pollinator habitat info in CPS 329 job sheet.

Otherwise, West Virginia offered the most sparse information on criteria and implementation requirements, and had the most out-of-date Standards (four of the six we review pre-dated the current Federal standards).

### **Comments and observations by practice**

The section for each practice includes a summary table and additional comments about cost components and selected aspects of the practice as delivered in five states of the Appalachian region, especially for organic/sustainable systems. Recommendations are given at the end of each section.

	KY	NC	TN	VA	WV	Comments
Date of Standard	Dec. 2013	Feb. 2012	Aug 2012	Oct 2011	Apr 2011 (fed Apr 2010)	WV appears out of date; others up to date.
Content of Standard <sup>1</sup>	Fed.	Fed.	Fed.	Fed. with higher SCI, crop continuity, etc.	Fed. with WV criteria for pollinat or habitat	KY, NC, TN, VA appear based on May 2011 federal standard; WV on an earlier version.
Payment schedule <sup>2</sup>	Summary for FY 2014	Sum. & Det. for FY 2014	Summary for FY2014*	Sum. & Det. for FY 2014	Summary for FY2014*	* Found on state NRCS web site, not eFOTG
<i>Other documentation:</i> Job Sheets (detailed practice info), Statement of Work (brief), Implementation Requirement, other info	SOW with min. info; EQIP-WHIP Guidance Document (Feb. 2014; succinct info on CPS 328)	Job sheet dated Feb 2012 – general info for all scenarios	Job sheet dated 2006, summary of standard plus documentation form	Job sheet Oct 2011, ref. & brief summary of standard; documentation form.		Information on actual criteria and specs for implementation of the practice is sketchy and somewhat different between states
Number of Scenarios	4	5	5	5	6	
Organic Scenarios <sup>3</sup> & payments	OSp-P2 – \$1018 TrO2 - \$366	OSp-P2hel <sup>4</sup> – \$1,027 TrO3s - \$354	OSp-P2 – \$1021 TrO3s - \$372	OSp-P2hel – \$1000 TrO3s - \$365	OSp-P – \$1030 TrO - \$390	NC pmt. sched. omits OSp-P2; otherwise consistent across region.
Other Scenarios <sup>3</sup> & payments	R-P2 - \$257 Sp-P2 - \$847	IRD - \$11 R-P2x - \$170 CLR - \$46	IRD - \$10 R-P2 - \$258 SP-P2 - \$849	R-P2x - \$140 SP-P2helx – \$850 CLR - \$35	IRD - \$11 R-P - \$259 SP-P - \$865 CLR - \$46	4 regional scenarios, of which states picked 2-4; pmts vary for R-P; consistent for other scenarios
Scenario details	In EQIP-WHIP	Scenarios document;	Generally similar to	Scenarios document	Could not find	

	guide; 2 yr cover or perennial for all scenarios		NC, KY; SCI>0	SCI>0.25; otherwise similar to NC	scenario description on eFOTG or WV-NRCS	
Comments by State		x Sod term. terminated by herbicide		x Sod terminated by herbicide	Lack of info, or info well hidden	

<sup>1</sup> Fed = federal standard, with no or minimal state-specific modifications to the 2011 version currently posted on the NRCS web site except where otherwise indicated.

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> OSp-P2 = organic specialty crop rotated to perennial for 2+ years; TrO2 – transition to organic with 2 years cover cropping, TrO3s = transition to organic with the three-year transition period in perennial sod; SP-P2 specialty crop rotated to perennial for 2+ years; SP-P2hel = specialty crop to perennial on highly erodible land; R-P2 = row crops rotated to perennial for 2+ years; IRD = improve rotation diversity by adding one high-residue crop; CLR = continuous live roots, tight rotation of agronomic crops emphasizing high residue grains (cereal-soy-cereal-sorghum / 2 years)

“Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”. Payments are per acre, rounded to the nearest dollar.

<sup>4</sup> Offered *only* within NC EQIP Organic Initiative, for which a separate 2014 Payment Schedule document can be accessed from the NC EQIP OI web page; Scenario not listed on regular 2014 EQIP Payment Schedule.

The Appalachian region offers a wide choice of scenarios for CPS 328 Conservation Crop Rotation, all of which would be suitable for sustainable systems, two are specifically intended for organic, and two are intended for specialty crop rotations:

- *Increasing Rotation Diversity* simply adds at least one high-residue crop to an existing rotation of low to moderate residue crops.
- *Continuous Live Roots* involves a transition from a summer cash crop (e.g. soybean) / winter fallow system to a tight crop rotation in which each crop is planted promptly after harvest of the last. The example offered is a rotation of four crops (barley, soybean, wheat, sorghum) over two years.

- *Transition to Organic* involves rotating a conventional annual crop field into perennial grass-legume sod for 36 months to meet the NOP requirements for 3 years without prohibited materials. In a minor variation, KY seems to require only 24 months in grass, legume, or “other approved winter and summer cover crops.”
- *Row crop to perennial* – agronomic crop field rotated to perennial sod for at least 24 months.
- *Specialty crop to perennial* – conventionally grown vegetables / winter annual cover, rotate to perennial sod for at least 24 months.
- *Organic [specialty] crop to perennial* – as above, except organically managed.

The Appalachian region is one of the few regions that offers a range of crop rotations from simply adding a new plant family, annual legume, or high residue annual crop (called “standard rotation” in most regions, and called “increase rotation diversity” here), tighter annual rotation (continuous live roots), to integrating two years of sod into an existing annual rotation. The last, offered in several options or scenarios, represents a highly effective approach to improving the conservation benefits of the rotation.

Cost components include “Supervisor/Manager labor” to learn and implement the new rotation (\$37/hr in NC and \$38/hr in VA), and Income Foregone for all scenarios that rotate annual cropland into perennial sod for two years or more. Income foregone is based on the difference between average per-acre proceeds for hay (from the sod) and the preceding field or specialty crops.

The Row Crop to Perennial and Specialty Crop to Perennial scenarios include an herbicide to terminate the sod, and Organic (specialty) Crop to Perennial includes an “OMRI approved herbicide” to terminate the sod. However, cost components do not include herbicide, and neither Standard nor Job Sheets throughout the region require any herbicide use. Thus, it appears that all scenarios are suitable to organic and sustainable systems, and organic scenarios do not require use of an OMRI approved herbicide (of which no materials practical for terminating a sod crop at a multi-acre scale are available). However, this might not be immediately apparent to organic and sustainable farmers and/or NRCS field staff working with them, especially if they simply read the scenario description. As a result, these producers might be deterred from signing up for CPS 328 under and EQIP contract.

Criteria in state standards and implementation requirements in job sheets include “reduce soil erosion to the soil loss objective” (under the soil erosion control purpose for KY, VA, and TN; under general criteria for NC and WV); and a “SCI>0 or positive trend for the organic matter component of SCI” for the Improve Soil Quality purpose (KY, NC, TN) or general criteria (WV). WV requires crops to generate 2000 lb/ac under Improve Soil Quality, and allows grazing so long as this much biomass remains after grazing.

VA sets a higher bar for the Improve Soil Quality purpose: SCI>0.25 and erosion <T, with considerations for higher SCI (up to 0.75+). Yet, under Considerations, the VA standard recognizes that crop diversity and crop continuity (continuous live roots) may contribute to soil quality in ways not fully captured by SCI.

The SCI>0 criterion is already a high bar in the warm climates and “red clay” Ultisol soils that predominate across the Piedmont, and especially challenging in the Tidewater, where sandy soils burn up OM even faster than red clays. Because the algorithm used to calculate SCI gives more weight to tillage intensity than to biomass and cover, the VA criterion may be impossible for organic producers to achieve, even with a 2 year perennial break in an annual cropping rotation. Skilled organic producers who combine the perennial sod break with conservation tillage (CPS 345 or 329) and high biomass cover crops (CPS 340) during the annual cropping part of the rotation can improve soil quality, yet the need for some tillage to manage weeds, sod and cover crops without herbicides can result in a negative SCI in warm, rainy climates, even when actual soil organic matter levels are stable or increasing.

Criteria for other purposes such as N fixation (e.g., legume precedes N requiring crop), nutrient management (deep roots & strong N recovery), pest management (break pest lifecycles, beneficial habitat), wildlife/pollinator habitat, livestock grazing, etc. are qualitative and appropriate for the purpose. They mostly parallel the federal standard and pose no difficulties for the sustainable or organic farmer.

The West Virginia standard includes excellent detailed criteria for pollinator habitat. The pollinator crisis represents a major resource concern deserving of focused NRCS and farmer attention.

Purpose checklists in job sheets include biofuel feedstock purpose in NC and VA, but not in TN. This purpose poses a concern, as biofuel feedstock harvests can be counterproductive to soil erosion and soil quality criteria.

**Recommendation A6:** Ask all state NRCS offices in the region to clarify that herbicide termination of perennial sod is not an implementation requirement for scenarios that include a perennial sod phase.

**Recommendation A7:** Ask NRCS Virginia to examine the feasibility of achieving an SCI of 0.25+ through a conservation crop rotation, especially in the warmer parts of VA, and consider adopting a criterion of SCI>0 for soil quality for all states in the region.

**Recommendation A8:** Encourage the Appalachian region to continue to offer the wide range of options for improved crop rotation in different farming systems, including especially rotations to sod.

**Recommendation A9:** Ask the other states in the region (and elsewhere) to consider providing pollinator habitat information similar to that offered in West Virginia, adapted to local / state conditions

*Rationale:* Loss of pollinators (aka “the pollinator crisis”) has emerged as a major agricultural and resource conservation issue in the US and worldwide. Promoting implementation of scenarios of CPS 328, CPS 340 Cover Crop, and other conservation practices in ways that enhance pollinator habitat will support farmers to help address the pollinator crisis.



**CPS 329 Residue and Tillage Management: No-till, strip till, direct seed.** Federal standard date Dec. 2013

	KY	NC	TN	VA	WV	Comments
Date of Standard	July 2013	Jan . 2014	June 2014	Oct 2011	Apr 2011, based on fed Apr 2010	Inconsistent – 3 states using out-of-date standards
Content of Standard <sup>1</sup>	Fed. previous	Fed.	Fed.	Fed. previous	Fed. prev. w/ additional WV criteria	
Payment schedule <sup>2</sup>	Summary for FY 2014	Sum. & Det. for FY 2014	Summary for FY2014*	Sum. & Det. for FY 2014	Summary for FY2014*	* Found on state NRCS web site, not eFOTG
<i>Other documentation:</i> Job Sheets (detailed practice info), Statement of Work (brief), Implementation Requirement, other info	EQIP 2014 guidance doc. Refers to Oct. 2007 Job sheet for continuous no till, STIR <10 over the rotation	Impl. Req. document, essentially a record keeping form.	Impl. Req. document, record keeping form and instructions for est. residue cover	Job sheet (Oct 2011) summary of standard and record keeping form	Job sheet (Apr 2011) with info on pollinator & wildlife habitat + record keeping forms	
Number of Scenarios	1	1	1	1	1	
Organic Scenarios <sup>3</sup> & payments						
Other Scenarios <sup>3</sup> & payments	Cont10 - \$15	NTahx- \$14	NTsp - \$14	NTahx- \$14	NTgen - \$14	Significant variation in scenario, low pmts!
Scenario details	2007 job sheet	In scenarios document	In job sheet	In scenarios document	Job sheet (pollinators)	
Comments by State	Listed under Organic Initiative, but may	x – mandates herbicide use		x – mandates herbicide use	Past strong emphasis on pollinators and habitat; little	

	not be practical therefor!				support in 2014	
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<sup>1</sup> Fed = federal standard, with no or minimal state-specific modifications to the 2013 version currently posted on the NRCS web site except where otherwise indicated. Fed previous = based on earlier version of federal standard.

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> Cont10 = continuous no-till, with STIR <10 over the rotation; NTah = No-till planting of agronomic crops with herbicides for weed and cover crop management; NTsp = conversion to no-till, specialty crops only; NTgen = generic no-till, no details provided

“Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”. Payments are per acre, rounded to the nearest dollar.

Each state offers a single scenario for CPS 329, but both scenario and criteria appear to vary significantly. In KY, both the 2014 EQIP guidance document and a 2007 Job Sheet on No-till for Soil Quality (the only job sheet found for CPS 329), mandate payment *only* for conversion to a continuous no till system and a STIR rating <10 over the rotation. Furthermore, the \$15/ac payment is authorized only for those crops in the rotation newly converted to no-till, and caps payments at \$2,500 per farm annually for up to 3 years max. With such a high bar and small payment, many farmers, organic or conventional, would say, “why bother?”

In NC and VA, the one scenario offered in the Cost Scenarios document applies to “row crops or small grains” (i.e., agronomic crops), and includes the following statement:

*“The no-till/ strip-till system includes chemical weed control (rather than cultivation) and may also include a period of chemical fallow.”*

Chemical fallow seems like a highly unsustainable practice, especially in the hilly Appalachian region as well as the hot climates and sandy and red-clay soils of the Tidewater and Piedmont, respectively.

It is not clear from the scenario whether continuous no-till is required, or one year / one crop no till can receive payment.

The NC standard parallels the current (Dec 2013) federal standard, the one additional criterion being a 60% residue cover or 2000 lb/ac residue mass for the moisture conservation purpose.

The VA standard (Oct 2011) is based on an earlier (2011) version of the federal, and includes several additional criteria, some potentially in conflict with the current federal standard such as the STIR<30 under general criteria (currently STIR<20 in federal), and a statement under Considerations that “strip till” can disturb up to 33% of the soil surface (this much disturbance may not be allowed under the current STIR<20). Criteria for improving soil organic matter include 60% residue cover and SCI>0.25. Criteria for “reduce CO<sub>2</sub> losses from the soil” (a purpose that does not appear in the 2013 federal standard) include STIR<10.

The TN standard is very similar to NC; the job sheet includes a documentation form and helpful instructions for evaluating residue coverage in the field. The Payment Schedule notes clarify that CPS 329 in TN applies only to specialty crops (in direct contrast with VA and NC):

*“Conversion from a conventional tilled system with a Specialty crop (includes tobacco and green beans) farm to no-till or strip-till system / One time payment / Not applicable to commodity crops (those listed on the CME Group Exchange such as corn, wheat, cotton, soybeans, etc)”*

The WV standard appears based on the 2011 federal standard, with a STIR<30. Additional state criteria include: for reducing erosion, 40% residue cover with partial residue removal allowed to this level; for “reducing CO<sub>2</sub> losses,” STIR <20; for improving soil organic matter, 50% residue cover and erosion <T), and extensive additional criteria for pollinator habitat, especially ground nesting bees. The job sheet includes criteria for wildlife habitat with specifications for bobwhite quail and ringnecked pheasant as well as ground nesting bees and other pollinators. The job sheet also gives the same instructions for field estimation of residue coverage as TN. WV does not restrict application of CPS 329 either to agronomic or to specialty crops.

In addition to Recommendations 13, 14, and 15 on pages 19-20, we offer the following:

**Recommendation A10:** Ask the Appalachian region to develop scenarios for CPS 329 based on the current (December 2013) national standard, and ensure that states develop implementation criteria consistent with the current standard and the regional scenarios offered.

**CPS 340 Cover Crop** – Federal standard date May 2011

	KY	NC	TN	VA	WV	Comments
Date of Standard	Jan. 2014	Jan 2014	Jan 2014	Oct 2013	Sep 2010, (4/11 WV)	WV out of date, VA slightly out of

						date
Content of Standard <sup>1</sup>	Fed, Term, KY Guide	Fed (ref. to Term)	Fed (Term in sep. doc.)	Fed, Term	Fed, WV Guide, info on pollinators	Federal standard adapted to state in most cases, some with lots of info.
Payment schedule <sup>2</sup>	Summary for FY 2014	Sum. & Det. for FY 2014	Summary for FY2014*	Sum. & Det. for FY 2014	Summary for FY2014*	* Found on state NRCS web site, not eFOTG
Job Sheets? (detailed narrative)	Yes, Jan 2014			Yes, one for all scenarios Oct 2013	One for pollinators, Apr 2011	
Implementation Reqs? (form & brief narrative)		Record keeping form only	“Job sheet” w/ limited info, 2006			
Other documents		Specs, w/ seed dates & rates (Jan 2013)	Requirement sheet (TN, v. informative); 8/2008 flow chart of cover crop benefits			
Number of Scenarios	5	6	6	4	6	
Organic Scenarios <sup>3</sup> & payment	OW - \$107	OW <sup>4</sup> - \$106	OW - \$105	OW - \$110	OW - \$106	Omitted in NC pmt sched otherwise consistent
Other Scenarios <sup>3</sup> & payment	NF - \$75 NS - \$69 SH - \$88 SP - \$39	NF x - \$74 NS x - \$69 SH x - \$87 SP x - \$58 OrV - \$53	NF - \$49 NS - \$46 SH - \$87 SP - \$39 OrV - \$52	NF x - \$60 NS x - \$45 SH x - \$75	NF - \$74 NS - \$69 SH - \$87 SP - \$59 OrV - \$53	Consistent scenarios – individual states chose 3 – 5 out of 5. Payments vary somewhat
Number and type of cover crop species in	OW-4 (g,l) NF-1-4	OW-2 (g,l/f) NF-2	OW-2 (r,l,b) NF-2-(g,l) NS-2 (g,b)	OW-2 (g,l/f) NF (wg,l)	Information could not be located	Do scenarios for number or types of cover

scenario <sup>5</sup>	(l,r or sl) NS- <b>2</b> (r,b) SH- <b>4</b> (r,l,rd) SP-1 (wg)	(wg,l) NS- <b>2</b> (wg,rd) SH- <b>2-5</b> (wg, l/f) SP-1 (wg] OrV- <b>1-2</b> (wg,l)	SH- <b>5</b> (g,b,l) SP-1(r or r,l) <i>cotton only</i> OrV- <b>2</b> -(g,l)	NS- <b>2</b> (wg,b) SH- <b>2-5</b> (wg, l/f)	on eFOTG or on WV NRCS web site.	crops constitute firm requirements or criteria? This could be confusing for applicant or NRCS field staff.
Comments by state	Excellent menu of offerings with detailed job sheets	x No-till, term. w/ herbicide	Little info on eFOTG; more on TN NRCS web site.	x No-till, term. w/ herbicide	Strong emphasis on pollinators; otherwise little info	

<sup>1</sup> Fed = federal standard, sometimes with brief reference to state specifications; Term = NRCS Cover Crop Termination Guidelines (Dec. 2013) in relation to crop insurance, summer fallow practice, etc.; KY (or other state) Guide = cover crop guidance specific to the state (seeding rates and dates for different purposes and regions, etc).

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> NF = nitrogen fixation; NS = nitrogen scavenging; OW = weed control in organic systems; SH = soil health; SP = soil protection; OrV = orchard & vineyard cover (60% of area). “Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”. Payments are per acre, rounded to the nearest dollar.

<sup>4</sup> Offered *only* within NC EQIP Organic Initiative, for which a separate 2014 Payment Schedule document can be accessed from the NC EQIP OI web page; Scenario not listed on regular 2014 EQIP Payment Schedule.

<sup>5</sup> Number in **bold**; wg = winter cereal grain (rye, wheat, oats, triticale, barley), r = cereal rye (specifically), sg = summer grain (sorghum-sudan, millet), g = any winter or summer grain or annual grass, gp = perennial grass, b = brassica (mustard, turnip, radish, etc.), rd = radish (specifically), bw = buckwheat, f = any forb, l = legume (clover, vetch, pea, cowpea, soybean, etc), sl = summer planted legume (usually soybean, cowpea, etc), l/f = legume or forb.

Regional scenarios and state standards, job sheets, and other specs and guidance show that the regional team and individual states assign high priority to this practice, and have put a lot of thought into how it could be most effectively implemented in the diverse environments and farming systems

across the region. A few criteria appear rigid (e.g., cover crop species requirements); but, overall, options are flexible enough to meet the needs of organic, specialty crop, and conventional agronomic cropping systems. Several states offer helpful guidance on seeding rates and dates, etc for a wide range of cover crop species. Most states also post the December 2013 RMA-FSA-NRCS cover crop termination guidelines, either appended to the Standard or separately.

Cost components for most scenarios of *CPS 340 Cover Crop* include: cover crop seed, seeding operation with a no-till drill (equipment, power unit, and labor), herbicide, and herbicide application (equipment, power unit, labor). The organic cover crop scenario cost is based on “light tillage” to prepare seedbed, broadcast-and-cultipack planting, certified organic seed, and mechanical termination (roll-crimp or mow). Concerns about the impact of no-till scenarios and herbicide as cost component on organic implementation of CPS 340 are discussed in the general report, pages 14-16.

The KY Standard includes an extensive “Kentucky Cover Crop Guidance” section with recommended seeding rates and dates and other information for a wide range of single species and multi-species cover crops used in KY cover crop scenarios. Most of this information seems very helpful, though a couple statements are inaccurate. For example, buckwheat is described as “excellent” for biomass, yet it is among the lowest biomass cover crops because of its short life cycle. Also, the “organic guidance” at the end of this document states: “If weed suppression is the goal then single species summer or winter grass species should be utilized.” In fact, multispecies mixes that combine fast growing, heavy canopy broadleaf species (buckwheat, radish, cowpea) with tall, competitive grasses (sorghum-sudan, rye, millet) give the best weed suppression. In Massachusetts, rye + vetch managed no-till suppressed weeds better than either alone. (Mangan et al., 1995. *Cover Cropping Systems for Brassicas in the Northeastern United States*. J. Sustainable Agriculture 5 (3) pp. 15-36.)

KY cover crop job sheets recommend but *do not require* no-till planting and termination of cover crops. The organic weed control job sheet recommends (does not require) no-till cover crop planting, and mowing followed by incorporation (tillage) to terminate the cover. The job sheet for the Soil Health scenario requires a mix of cereal rye, two legumes, and one brassica. The job sheet for Soil Protection gives specs for single-species wheat or rye, and also states that “Appropriate cover crop species should be chosen to maximize landowner objectives.” Job sheets for other scenarios direct organic producers to use organic seed when available, and organic-approved chemicals for terminating covers (not practical with current technology).

Because of pest (Hessian fly) issues with other cereal grains, the KY EQIP-WHIP Guidance document specifies rye as the cereal grain component of all winter cover crops, except that wheat can be planted between Oct 10 and Nov 1 for Soil Protection. It also specifies maximum payments for this Practice, which are most generous (\$50K/year for 3 years) for the Mississippi River Basin Initiative and for Soil Health cover under general EQIP; \$15K/yr for 3 years for N fixing and N scavenging, and \$10K/yr for 2 years for Soil Protection. KY was the only state in the Appalachian region for which such dollar limits were found.

NC offers the same scenarios as KY, plus one for orchard/vineyard. A Cover Crop Specifications document dated January 2013 gives “minimum seeding rates” and planting date ranges for three regions (Tidewater, Piedmont, Appalachian) for a wide range of single-species grass, legume, and forb covers. Specs for 2-way mixes suggest cutting grass rates by only 1/3 and legume rates not at all, resulting in much heavier seeding rates for mixtures than recommended by KY, and indeed by the NRCS Soil Health Team stationed in Greensboro, NC. The latter has found that lower seeding rates for individual species components in their high diversity mixtures are actually important for efficacy, as higher rates result in crowded, unhealthy plants, with some species in the mix being choked out completely.

NC gives detailed Cost Scenarios that include glyphosate herbicide termination of covers for most scenarios, mechanical no-till termination for organic, and *two* herbicides (glyphosate and the more hazardous 2,4-D) for N fixing covers. The organic weed control cost scenario includes conventional tillage for cover crop planting, and mechanical no-till termination. Other than the seeding specs, no detailed criteria or implementation requirements could be found; the “implementation requirements” document for CPS 340 is simply a record keeping form for the practice. Thus, applicants and field staff may be confused regarding whether herbicide termination is required for scenarios that do not use certified organic seed.

In addition, some of the information given in the scenarios is contradictory and confusing. For example, the Soil Health scenario narrative discusses a two-way mix of a grain with a legume or forb, while the cost component for seed is for a five-species mix.

The TN job sheet for CPS 340 is mostly a record keeping form. A separate Requirements Sheet gives detailed implementation requirements and guidance; it clearly mandates no-till: “**Cover crops and the following crop will be planted no-till. Aerial seeding is a no-till method (moist conditions best). Tilled cropland can convert to No-till crops.**” (Emphasis in original.) Although herbicides are not mentioned at all in the Requirement Sheet, the requirement for no-till cover crop planting and management could make application of CPS 340 to organic and other no-herbicide production systems difficult at best.

Cotton is the only production crop for which the Soil Protection (one species grain cover crop) is offered.

Otherwise, the Requirement Sheet offers considerable flexibility in choice of covers and seeding rates. Minimum number of species and plant family(ies), and relative seeding rates (as percentage of full rates given for single-species covers) required for different scenarios are given; specific mixes are suggested; and helpful information on properties of different cover crops is offered (e.g., rye allelopathy against Palmer amaranth; tips for sowing very fine seed like turnip at low rates, etc.).

The VA Job Sheet for CPS 340 summarizes the VA Standard and provides a record keeping form. The Cost Scenarios are the same as NC. Neither the Standard nor the Job sheet require no-till or herbicide termination, and the Considerations sections of both federal and VA state Standards state:

*“Cover crops may be terminated by tillage, herbicides, harvest, frost, mowing, crimping, natural senescence, or any combination of these methods.”*

In contrast to the helpful information offered by KY, TN, and NC, no specifications or guidance regarding seeding rates, seeding dates, cover crop species was found on the VA NRCS or eFOTG websites.

The WV standard is based on an out of date national standard (9/2010), and provides a wealth of supplemental information on cover crops for pollinator habitat and bee forage. Three tables appended to the Standard offer seeding rates and dates, nutrient impacts, and other conservation benefits of cover crops for general purposes, for pollinator habitat, and for orchard/vineyard. The one job sheet for CPS 340 focuses specifically on pollinator habitat, and is also dated April 2011. No implementation requirement details were found.

In addition to Recommendations 3 (page 7), and 9-10 (page 16) in the general report, we offer the following:

**Recommendation A11:** Delete mention of 2,4-D from the cover crop for N fixation scenario.

*Rationale:* Glyphosate alone or with mechanical methods (mow or roll-crimp) should be sufficient to terminate legumes, and 2,4-D carries greater risks to human health and to neighboring broadleaf crops than glyphosate.

**Recommendation A12:** Encourage VA and WV to post state-specific guidance on species selection, seeding rates and dates, and cover crop attributes and management tips as NC, TN, and KY have done.

**Recommendation A13:** Invite producers and scientists experienced with cover cropping in the region to review state-specific requirements, guidance, and information, and recommend any changes needed to enhance accuracy.

**CPS 345 Residue and Tillage Management: Reduced till.** Federal standard date December 2013

	KY	NC	TN	VA	WV	Comments
Date of Standard	July 2013	Jan. 2014	June 2014	Oct. 2011	Aug. 2006	Inconsistent – only two states using current std.
Content of Standard <sup>1</sup>	Fed. previous	Fed.	Fed.	Fed.. previous	Fed. prev. (2005)	
Payment schedule <sup>2</sup>	Summary for FY	Sum. & Det. for	None for CPS 345	Sum. & Det. for	None for CPS 345	KY and NC offering CPS



	2014	FY 2014		FY 2014		345 in Organic Initiative but not general EQIP; TN and WV not at all.
<i>Other documentation:</i> Job Sheets (detailed practice info), Statement of Work (brief), Implementation Requirement, other info	EQIP 2014 guidance doc.	Impl. Req. document, essentially a record keeping form.	Impl. Req. document for 2014 – record keeping form	Job sheet w/ summary of criteria + record keep-ing form.	None	Very sketchy info.
Number of Scenarios	1	1	0	1	0	
Organic Scenarios <sup>3</sup> & payments	MTB - \$35 (OI)	MTB – \$33 (OI only) <sup>4</sup>				
Other Scenarios <sup>3</sup> & payments	MTB - \$35 (for NWQI, OFE only)		No scenario or payment listed in 2014	MTB - \$10	No scenario or payment listed in 2014	VA mulch till paid at low % of allowable costs (\$45)
Scenario details	Very little detail beyond Std; purpose(s) & criteria not clear	Tillage before & after crop lighter, leaves more residue	None	Tillage before & after crop lighter, leaves more residue	None	
Comments by State			Impl. Req. for 2014 but no scenario or payment - is it offered or not?			

<sup>1</sup> Fed = federal standard, with no or minimal state-specific modifications to the 2013 version currently posted on the NRCS web site except where otherwise indicated. Fed previous = based on earlier version of federal standard.

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> MTB – mulch till basic – applicable to all cropland, criteria given in state Standard, generally 30% residue cover, STIR<80.

“Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”. NWQI = National Water Quality Initiative (priority watersheds), OFE = on-farm energy conservation initiative; OI = Organic Initiative. Payments are per acre, rounded to the nearest dollar.

<sup>4</sup> Offered *only* within NC EQIP Organic Initiative, for which a separate 2014 Payment Schedule document can be accessed from the NC EQIP OI web page; Scenario not listed on regular 2014 EQIP Payment Schedule.

Criteria and other information on CPS 345 in the Appalachian region are sketchy and confusing. NC and TN Standards are based on the current Federal standard (“Reduced Till”), while KY, VA, and WV are still using an older standard (“Mulch Till”). KY and NC offer CPS 345 through Organic Initiative (OI) but not through the general EQIP program. TN has posted a 2014 Standard and Job Sheet for CPS 345 but the practice could not be found on 2014 payment schedules. In VA, the practice is offered at a low payment (less than CPS 329 No Till). WV has posted a very out-of-date Standard (2006), and CPS 345 is not on the 2014 Payment Schedule.

Although only a single scenario is offered for CPS 345 in KY, NC, and VA, the standards give different criteria for different purposes. In KY, general criteria are simply to distribute residues evenly over the soil surface; additional criteria for specific purposes include sufficient residue to meet the soil loss reduction objective, SCI>0 for soil quality, 60% residue cover for moisture conservation, 10-15 inch stubble height for trapping snow, and STIR<80 for energy conservation. In NC, general criteria include even residue distribution and STIR<80; additional criteria for specific purposes include sufficient residue to meet the soil loss reduction objective, SCI>0 for soil quality, 60% residue cover for moisture conservation, 10-15 inch stubble height for trapping snow, and 25% reduction in energy use for energy conservation. In VA, general criteria include even residue distribution and 30% residue cover; additional criteria for specific purposes include sufficient residue cover (30% or more) to meet soil loss reduction objectives, 60% residue cover and SCI>0 to maintain soil quality and SCI ≥0.25 to improve soil quality, and STIR<80 to reduce energy use. With just a single scenario and payment rate offered, these multiple criteria for different purposes can be confusing for farmers and NRCS field staff.

In addition to Recommendations 13-15 on page 19 of the general report, we offer the following:

**Recommendation A14:** If a state is not offering CPS 345 (or any other practice) during the current fiscal year, Standards, Job Sheets, or other documentation with the current year’s date should not be posted on the state’s NRCS web site or eFOTG. If the Standard remains posted during a year the

Practice is not offered, a prominent notice “Not offered in FY20\_\_” should be displayed at the top of the document.

**Recommendation A15:** Ask each state in the Appalachian region to adopt and clearly state (in job sheet or other state documentation) a single set of criteria or implementation requirements for CPS 345 if a single scenario is offered, or establish a separate scenario and payment rate for each distinct purpose and associated criteria.

**CPS 590 Nutrient Management.** Federal standard date January 2012

	KY	NC	TN	VA	WV	Comments
Date of Standard	Jan. 2013	Oct. 2013	Mar. 2014	Oct. 2012	Apr. 2013	Federal standard date Jan 2012
Content of Standard <sup>1</sup>	Fed.+ KY criteria, regs, guidance	Fed. + NC criteria, extensive regs & guidance	Fed. + TN criteria, regs., guidance	Fed. + extensive VA state gov’t regs., criteria, and guidance	Fed. (Dec. 2011?), + ref. to WV state regs and WVU soil test recs.	All states appear to have adapted the current Federal standard to State requirements and LGU procedures and recommendations
Payment schedule <sup>2</sup>	Summary for FY 2014	Sum. & Det. for FY 2014	Summary for FY2014*	Sum. & Det. for FY 2014	Summary for FY2014*	* Found on state NRCS web site, not eFOTG
<i>Other documentation:</i> Job Sheets (detailed practice info), Statement of Work (brief), Implementation Requirement, other info	EQIIP 2014 Guidance document ; job sheets (Apr. 2014) for each scenario	Job sheet dated October 2013 summarize s standard	Requirement t sheets with scenario criteria; Impl. Req. incl. record keeping & nutrient budget form	Job sheet (Apr. 2014) w/ complete checklist and documentation form for all scenarios.	2011 revised WV P-index (34pp!); N timing cri-teria (12pp);	All states have provided good, detailed info on nutrient management – they are serious about this Practice. (We value our water resource here in Appalachia!)
Number of Scenarios	8	7	6	6	8	
Organic Scenarios <sup>3</sup> & payments	BONM - \$23	BONM- \$23	BONM - \$23	BONM- \$25	BONM - \$25	Fairly consistent scenario and payment rates

Other Scenarios <sup>3</sup> & payments	BNM - \$13 BNMm - \$14 PNM - \$26 APNM - \$30 ENM x - \$35 SpNMP - \$337/plan ANMP - \$729/plan	BNM - \$12 (BNMm <sup>4</sup> ) PNM - \$26 APNM - \$31 ENM - \$35 SpNMP - \$327/plan ANMP - \$717/plan	BNM - \$12 BNMm - \$14 PNM - \$26 APNM - \$31 SpNMP - \$329/plan	BNM - \$10 BNMm - \$15 ENM - \$37 SpNMP - \$360/plan ANMP - \$760/plan	BNM - \$14 BNMm - \$15 PNM - \$26 APNM - \$31 ENM - \$36 SpNMP - \$363/plan ANMP - \$774/plan	Fairly consistent scenarios and payment rates across the region; each adapted to state's soil, climate, environ, and regulatory status.
Scenario details	Given in job sheets; ANMP active learning process; see detail document	In cost scenarios document ANMP as for KY, rep. field trials required	Given in Requirement sheets	In cost scenarios document & payment schedule	Unable to locate scenario details.	Different states have different documents / formats for details; WV may also have this info; if so, it is well hidden.
Comments by State	Thorough, wide choice of scenarios. x – includes synthetic N inhibitors.	Thorough, wide choice, sim. to KY	Similar to KY but omits ENM, ANMP	Similar to NC, omits precision NM	Lacks vital info on scenarios, similar to KY	

<sup>1</sup> Fed = federal standard, dated Jan. 2012 (current version posted on the NRCS web site) modified as indicated by state.

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> BNM = basic nutrient management system (no manure); BNMm = basic nutrient management with manure; PNM = precision nutrient management system; APNM = advanced precision nutrient management system; ENM = enhanced nutrient management; BONM = basic organic nutrient management system; SpNMP = small, diversified, specialty crop farm nutrient management plan; ANMP = adaptive nutrient management plan.

“Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”. Payments are per acre unless otherwise indicated, rounded to the nearest dollar.

<sup>4</sup> Scenario listed in Cost Scenarios document but not in payment schedule; not offered because state regulations require all farmers to manage manure nutrients to strict standards.

The region adopted the following eight scenarios for CPS 590 Nutrient Management (cost components listed in parentheses; general, skilled, and specialist labor at \$19, \$24-28, and \$94-102 respectively):

- *Basic* – nutrient budget, soil test (general and skilled labor, standard soil test, truck and ATV use)
- *Basic plus manure* – nutrient budget, N & P risk assessments to set limits on manure application rates, soil and manure analysis, pre-sidedress soil nitrate or tissue N tests to fine tune N side-dress rates (same as Basic, plus manure analysis)
- *Basic organic* – same as basic, plus manure and compost analyses, special training required (same as Basic, plus manure and compost analysis)
- *Precision* – basic plus grid testing, in which cropland is divided into zones tested and budgeted individually for greater precision (general, skilled, and specialist labor, standard soil test, soil N test, precision fertilizer application, truck and ATV use)
- *Advanced precision* – greater precision achieved through one of several plant N analysis techniques, and GPS-based variable rate nutrient applications; special training “may be needed” (same as Precision plus crop tissue testing and infrared aerial photography)
- *Enhanced* – similar to advanced precision except precision is enhanced through use of chlorophyll meter, spectral analysis, and soil survey map to establish zones (general, skilled, and specialist labor, standard soil tests, precision fertilizer application, chlorophyll reader, truck and ATV use)
- *Small diversified specialty crop farm plan* – intended for organic and conventional farms; soil testing for each “crop block” or “rotation; compost analysis; special training required (Same as Basic plus compost analysis)
- *Adaptive nutrient management*: hands on learning, usually a replicated (4x) field trial comparing two or more treatments related to organic or conventional nutrient management; interactive learning with consultant and often as part of a group of farmers engaged in the trial; special training required (general and skilled labor, standard soil tests, soil N test, plant tissue analysis, ATV use)

Enhanced, precision, and advanced precision scenarios appear designed for conventional agriculture, though NOP-prohibited materials are explicitly utilized only in Enhanced nutrient management (NM) in KY. All states offered Basic Organic NM and Diversified Specialty Crop (organic or conventional) NMP in 2014, and all except Tennessee offer Adaptive NM, which offers organic and sustainable producers a valuable opportunity to field-test refinements in their nutrient management strategies.

It is interesting to note that the precision, advanced precision, and enhanced scenarios include “specialist” (consultant) labor to provide the expertise required to implement these systems, whereas scenarios designed to address the needs of sustainable, organic and small diversified systems (basic organic, diversified, adaptive) budget for the farmer to acquire the needed expertise by attending workshops or other training events.

All five states require nutrient management plans, but the nature of this requirement varies widely. KY requires either a CAP 104 (NMP by third party TSP) or CAP 102 (Comprehensive NMP – if farm is importing and storing manure before application) *through a separate contract, with the CAP completed prior to enrollment in CPS 590. CAP 104 and CPS 590 are available through the OI but CAP 102 is not.* Thus, organic producers participating in OI who store brought-in manure cannot enroll in CPS 590 in KY. NC requires a NMP that “can be part of a broader conservation plan or CNMP that addresses multiple resource concerns, and TN requires a NMP developed on U Tennessee software. It is not clear whether the NC or TN farmer can develop her/his own plan, or whether a certified planner must do it. VA and WV require NMP developed by state-certified nutrient management planners. These differences and ambiguities could lead to some confusion and make it difficult for EQIP applicants and NRCS field staff to know what is actually required for enrollment in CPS 590.

All five states have adapted the current (Jan 2012) federal standard to meet state regulations. General criteria across the region include: the “4Rs” (right nutrient source, right placement, right amount, right timing), nutrient budgeting (several states provide nutrient budgeting forms) the use of standard soil tests, and manure and compost analyses where these materials are applied, applying nutrients at  $\leq$  land grant university (LGU) recommendations, risk assessments for loss of N and P (using state assessment tools) especially when manure is used, and managing soil erosion, usually to  $\leq$  T. Other implementation requirements vary with state regulations based on top NM challenges and resource concerns in each state.

KY requires N and P loss risk assessments for *all* farms implementing CPS 590; however the soil test P criteria beyond which no more P may be applied appear very lenient (high - 400-800 ppm).

NC mandates the use of Realistic Yield Estimates (RYE) that take soil series into account in determining nutrient application rates. The basic + manure scenario is not offered because the state already regulates manure management on *all* farms to strict criteria.

TN requires grid soil testing for *all* scenarios with a maximum unit size of 10 acres, and soil quality conservation practices to maintain  $SCI > 0$ . Realistic Yield Goals for nutrient budgeting are based on average of best 3 out of 5 years. TN recognizes criteria for low P risk under which a P risk assessment is not needed: low-medium soil test P, slope  $< 5\%$ , erosion  $< T$ . Precision NM requires grid testing with units  $\leq 3$  acres, variable rate precision application maps, and yield data.

The VA standard requires NMP based on realistic yield estimates, considering soil type, farmer experience, and/or best 3 out of past 5 years, N risk assessment (to identify “environmentally sensitive” areas) and P risk assessment based on P index and RUSLE2 if P applications in manure

exceed crop need. No P can be applied if soil is above “65% P saturation” (375-525 ppm on Mehlich 1 test – this is a very high level).

In addition to the state practice standard, WV has posted supplemental documents on a WV Phosphorus site index (assessment required if soil test P<sub>2</sub>O<sub>5</sub> exceeds 80 lb/ac), N application timing criteria for environmentally sensitive sites, and setback requirements for surface waters, wells, etc. Detailed criteria for the eight scenarios offered could not be found on the web site.

In addition to Recommendations 16-21 (pages 22-23 of the general report), we offer the following:

**Recommendation A16:** NC, VA, and WV should post detailed job sheets or requirement sheets like those provided by KY and TN.

*Rationale:* Implementation requirements for CPS 590 are often quite complicated, and depend in part on state regulations. Providing producers and NRCS field staff with clear, accurate, and easy-to-understand information on nutrient management requirements in each state can facilitate effective implementation of CPS 590.

**Recommendation A17:** Ask KY to drop the requirement of a completed CAP prior to enrollment in CPS 590. In all states, clarify that developing an NMP is part of CPS 590 implementation, and not a prerequisite for enrollment in the practice.

*Rationale:* Requiring completion of a CAP or other NMP prior to enrollment in CPS 590 slows and complicates the process of implementation, thus delaying realization of conservation benefits and potentially discouraging farmers from enrolling in CPS 590. Farmers should be allowed to develop the NMP as their first step in implementing CPS 590.

**Recommendation A18:** Ask all state NRCS offices in the region to clarify their nutrient management planning requirements for CPS 590, including who may do the planning.

*Rationale:* VA and WV require a state certified planner, but in TN and NC, it is not clear whether the farmer or a consultant can develop the plan, or whether a state certified planner is required.

**CPS 595 Integrated Pest Management.** Federal standard date January 2010

	KY	NC	TN	VA	WV	Comments
Date of	Apr 2011,	July 2011	Oct 2011	Oct 2011	May 2011	All are up to

Standard	brief ref. to UK recs.					date, though federal standard itself is pretty old
Content of Standard <sup>1</sup>	Fed.	Fed. plus considerations for organic weed mgmt.	Fed.	Fed.	Fed., add'l criteria to protect pollinators	
Payment schedule <sup>2</sup>	Summary for FY 2014	Sum. & Det. for FY 2014	Summary for FY2014*	Sum. & Det. for FY 2014	Summary for FY2014*	* Found on state NRCS web site, not eFOTG
<i>Other documentation:</i> Job Sheets (detailed practice info), Statement of Work (brief), Implementation Requirement, other info	2014 EQIP guidance document lists scenarios but no other info			Job sheets - general (2011), and apple/peach orchard (2008)		
Number of Scenarios	13	12	12	13	13	
Organic Scenarios <sup>3</sup> & payments						Advanced and RP scenarios relevant
Other Scenarios <sup>3</sup> & payments	BF - \$11 BF+ - \$15 AF - \$22 BV - \$60 BV+ - \$77 AV - \$117 BOr - \$77 BOr+ - \$117 AOr - \$178 SF - \$365/plan SF+ -	BF - \$12 BF+ - \$15 AF - \$23 BV - \$64 BV+ = \$81 AV - \$124 BOr - \$81 BOr+ - \$124 AOr - \$186 SF - \$389/plan SF+ -	BF - \$12 BF+ - \$17 AF - \$25 BV - \$69 BV+ = \$88 AV - \$133 BOr - \$88 BOr+ - \$133 AOr - \$199 SF - \$503/plan SF+ -	BF - \$13 BF+ - \$17 AF - \$25 BV - \$70 BV+ - \$90 AV - \$140 BOr - \$90 BOr+ - \$140 AOr - \$205 SF - \$425/plan SF+ -	BF - \$11 BF+ - \$15 AF - \$23 BV - \$64 BV+ - \$82 AV - \$125 BOr - \$82 BOr+ - \$125 AOr - \$192 SF - \$388/pla	Scenarios and payments fairly consistent. All payments for all states are based on the cost of "skilled labor" and "specialized



	\$468/plan ASF - \$703/plan RP - \$94	\$496/plan ASF - \$744/plan	\$639/plan ASF - \$959/plan	\$595/plan ASF - \$815/plan RP - \$110	n SF+ - \$500/pla n ASF - \$751/pla n RP - \$94	labor” (consultants, ~\$100/hr); differences between states reflect differences in hourly rate estimates. No restrictions on whether labor is paid to reduce pesticide use and/or mitigate pesticide impacts.
Scenario details	None could be found	Scenarios document	In payment schedule	Scenarios document	None could be found	
Comments by State	2014 EQIP guidance: only avail thru MRBI, OI, NWQI <sup>4</sup>					

<sup>1</sup> Fed = federal standard, with no or minimal state-specific modifications to the January 2010 version currently posted on the NRCS web site except where otherwise indicated. Fed previous = based on earlier version of federal standard.

<sup>2</sup> Summary = payment schedule table for all Practices offered in the state. Sum. & Det. = payment schedule plus separate scenarios document for each practice, showing “allowable costs” by component and total (usually ~20-40% higher than actual payment).

<sup>3</sup> BF = basic IPM field crops, 1 resource consideration (RC); BF+ = basic IPM field & forage crops >1RC; AF = advanced IPM field crops, all RCs; BV = basic IPM vegetable and small fruit crops, 1RC; BV+ = basic IPM vegetables and small fruit >1RC; AV = advanced IPM vegetables and small fruit, all RCs; BOr = basic IPM orchard, 1RC; BOr+ = basic IPM orchard, >1RC; AOr = advanced IPM orchard, all RCs; SF = small farm IPM, 1RC; SF+ = small farm IPM >1RC; ASD = advanced small farm IPM, all RCs; RP = risk prevention IPM, all RCs.

“Organic” scenarios are explicitly listed for organic systems; “Other” scenarios are suitable for organic unless marked “x” with explanation under “Comments by State”.

Payments are per acre, rounded to the nearest dollar, except as otherwise specified.

<sup>4</sup> MRBI = Mississippi River Basin Initiative; OI = Organic Initiative; NWQI = National Water Quality Initiative

All Appalachian region scenarios under CPS 595 Integrated Pest Management entail IPM plans drawn up with the help of a consultant, and utilizing Land Grant University monitoring protocols and action thresholds. Cost components include skilled labor and specialist labor, with more hours allotted for the more advanced scenarios and more complex farming systems. All five states offer all three levels of IPM (basic addressing one resource concern, basic addressing more than one resource concern, and advanced addressing all resource concerns with a full IPM plan including pest prevention, avoidance, monitoring, and suppression) for four farming systems (field crops, vegetables and small fruit, orchard and vineyard, and small farm). NC, VA, and WV also offer Risk Prevention.

This suite of IPM scenarios, which is also offered in all other regions except the Southeast, has the potential to provide organic, sustainable, and small-diversified producers with support to develop and implement high level, resource-conserving IPM programs through the advanced and risk prevention scenarios (see pages 23-27 of the general report). However, the extent to which this potential can be realized in practice may vary among states. In our review of the Appalachian regions, we identified potentially serious constraints on implementation in KY, VA, and TN, as well as excellent guidance for soil-conserving organic weed management in NC, and pollinator conservation in WV.

**Kentucky** offered all 13 scenarios in 2014, but the KY EQIP-WHIP Guidance Document for 2014 imposes the following additional hurdle to enrollment in CPS 595:

*“For a producer to be eligible to implement Conservation Practice Standard 595, they must have an Integrated Pest Management Plan (114) written at time of application.”*

*“All CAP application must be supported in a single stand-alone contract if funded.”*

The guidance document also indicates that CPS 595 is available through the Organic Initiative (OI), Mississippi River Basin Initiative (MRBI), and National Water Quality Initiative (NWQI), but not general EQIP, even though it is listed on the general participant payment schedule. Conversely, CAP 114 is available through general EQIP and MRBI but not OI or NWQI.

If taken at face value, these constraints effectively prevent prompt implementation of CPS 595 by all producers, since participants in general EQIP can receive support under CAP 114 but not under CPS595, while those in the OI can enroll in CPS 595, but *only* if they happened to have completed a

CAP 114 prior to or in spite of the current Guidance. Even if field staff assume that the omissions (of general EQIP from CPS 595 and organic from CAP 114) were unintended and deliver both activities to both general and OI applicants, the producer will need to take out a separate contract for CAP 114 one year and then wait until the next year or signup to enroll in CPS 595.

This appears to conflict with the General Criteria of current federal and state CPS 595 standards, which state that the participant *will develop* the plan as part of practice implementation, not as a prerequisite for enrollment:

*“A comprehensive IPM plan utilizing PAM’s strategies will be developed in accordance with this standard to document how specific pest management risks will be prevented or mitigated.”*

Furthermore, the Cost Scenarios posted by two other states (NC and VA), and presumably developed at the regional level include the following labor component that explicitly includes planning yet excludes TSP services entailed in the CAP:

*“Specialist Labor – Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.”*

Thus the requirement for CAP 114 as a prerequisite to CPS 595 should be dropped.

The **North Carolina** standard includes especially helpful Considerations for organic weed management. Recommendations include an integrated strategy based on knowledge of weed life cycles, preventive measures, crop rotation, and cover crops to allow the grower to limit reliance on cultivation to a level that allows a positive trend in soil organic matter. In addition:

*“Producers are also encouraged to contact NCSU Cooperative Extension organic cropping specialists to get weed management information specific to North Carolina.”*

This is a good example of creative, holistic interpretation and implementation of CPS 595. Since this information is provided under Considerations, it does not entail any additional burdens on farmer or field staffer; it simply offers support for farmers who want to address the fourth Purpose in the Standard with regard to non-herbicide weed management systems:

*“Prevent or mitigate cultural, mechanical and biological pest suppression risks to soil, water, air, plants, animals and humans.”*

**Tennessee** did not post job sheets, requirement sheets, or cost scenarios for 2014, but the Payment Schedule includes paragraphs summarizing implementation requirements for each scenario. These notes say nothing about IPM planning, or pest prevention and avoidance. For the three levels of IPM, producers are simply required to document needs for “additional IPM mitigation techniques” to address one, two, or all of the following:

*“(1) Off-site Water Quality Impacts, (2) Off-site Drift Impacts, or (3) On-Site Impact on Pollinators through Direct Contact ... documented utilizing the 595 IPM Planning Workbook and Win-PST for assessing water quality mitigation needs.”*

For the Small Farm IPM scenarios, a fourth resource concern is added:

*“(4) (TYPICAL ORGANIC) pest suppression methods are causing a resource concern ... (Example for organic cropland: Weed suppression-related tillage on organic cropland is causing an erosion resource concern and an IPM plan is needed for implementation of changing pest control strategies (i.e. crop rotation changes or tillage frequency changes to reduce erosion to "T" or less)) ... Erosion-related resource concern must be documented through use of RUSLE 2.”*

In lieu of an IPM plan, TN simply states for all scenarios:

*“ADDITIONAL IPM techniques to be implemented for mitigation must be identified on the 595 IPM Planning Workbook Job Sheet.”*

Organic producers in TN would be less motivated to implement CPS 595 because of the lack of support for preventive IPM, and the implication that they cause soil erosion through their weed management practices. In addition, TN does not offer the risk prevention scenario intended primarily for organic producers.

The **Virginia** standard is essentially the same as the current federal standard, with the single added criterion under Additional Criteria for biological, physical, and cultural pest control risks that soil erosion (from mechanical weed control) be reduced to  $\leq T$ . VA offered all 13 scenarios in 2014, including Risk Prevention. However, supporting documentation was sparse: two out-of-date job sheets for general implementation of CPs 595 (2010) and for apple and peach orchard IPM (2008).

The **West Virginia** standard, based on the current federal standard, spells out a number of pesticide mitigation techniques to protect pollinators under Additional Criteria for On-Site Pesticide Risks to Pollinators and Beneficials. Considerations provide additional information on farmscaping / beneficial insect habitat for pest management. WV also provides a Job Sheet on Integrated Pest Management for Pollinators with extensive information on mitigation techniques to protect on-farm pollinators, as well as pest prevention and avoidance, including pollinator habitat plantings doing double duty as habitat for pest natural enemies.

WV offers all 13 scenarios of CPS 595, but we could not locate additional information on criteria or implementation requirements.

Finally, we realize that it will take considerable capacity, either on the part of NRCS field staff, and/or third party Technical Service Providers (TSPs) or consultants, to provide farmers with the technical support they might need to develop IPM plans, especially high level IPM plans under the

advanced and risk prevention scenarios. This points to a need to build technical assistance capacity to realize the potential conservation benefits of organic producers implementing CPS 595,

In addition to Recommendations 22-26 (pp 26-27 in the general report), we offer the following:

**Recommendation A19:** Clarify in KY and throughout the region that IPM plan development is *an integral part of CPS 595 itself*, and that growers are not required to complete a CAP 114 under a separate contract prior to implementing CPS 595. In the event that state regulations **do** require the CAP 114 as a prerequisite to CPS 595 in one or more states, clearly spell out these regulatory requirements at the top of the Standard, and ensure that both CAP 114 and CPS 595 are available under general EQIP, the Organic Initiative, and all other Initiatives for which CPS 595 / IPM is relevant.

**Recommendation A20:** Encourage all states in the region (and in other regions across the US) to provide information or guidance (as NC already does under Considerations in the state CPS 595 standard) to help organic farmers and other farmers who do not use herbicides to develop and implement integrated weed management strategies that reduce the need for cultivation and thereby address soil erosion and soil quality concerns. It would be especially helpful if states, such as TN, that cite erosion risks from mechanical weed control as a resource concern, provide this kind of information and guidance.

**Recommendation A21:** Because the pollinator crisis has emerged as a major resource conservation issue throughout the region (and in fact the world), all states should be encouraged to provide an informative Job Sheet or guidance document on implementation of CPS 595 to protect pollinators and pollinator habitat, as exemplified by the WV Job Sheet.

**Recommendation A22:** Encourage all states throughout the region (and the nation) to include a comprehensive PAMS approach to IPM in advanced scenarios for all farming system, as currently spelled out in the VA and NC cost scenarios documents. Encourage all states also to offer the 13<sup>th</sup> scenario, Risk Prevention. In particular, TN should update its “notes” for CPS 595 on the Payment Schedule to include pest prevention and avoidance under each Advanced scenario. TN and NC should offer the Risk Prevention scenario to support organic and other producers to implement high level, resource-conserving IPM.

**Recommendation A23:** All state NRCS offices in the region should take whatever steps they can to ensure that they have the staff capacity to deliver CPS 595 and to certify that participants are implementing CPS 595 to the state’s standard and specifications. We understand the severe staffing and budgetary constraints under which many state and district NRCS offices try to carry out their work, and we want to thank NRCS for offering good options under CPS 595 and several other key Practices for organic, diversified, specialty crop, and field cropping systems in the Appalachian region and many other regions. It is high time for Congress to provide NRCS adequate operating

funding to fully carry out its broad mission of resource conservation, one that is absolutely vital to the future of the nation's agricultural and food system.

## Appendix C

### Appendix C – Additional analyses of Practice Costs, Scenarios and Payment Schedules in the *Mid-Atlantic Region*

#### General Comments:

In our analysis for the Mid-Atlantic region, we reviewed cost scenarios and payment schedules, and conducted a more limited review of state practice standards, implementation requirements, and guidance than was done for the Appalachian region. Payments for all scenarios of the six Practices in four of the Mid-Atlantic states are given in Table 1 (page 3).

All scenario descriptions for each practice in the Mid-Atlantic region include a list of “associated practices.” For the six practices we examined, the following associated practices were cited:

- For CPS 328 Conservation Crop Rotation: Residue and Tillage Management - No-Till/Strip Till/Direct Seed (329), Contour Farming (330), Cover Crop (340), Residue and Tillage Management - Seasonal (344), Residue and Tillage management - Mulch-Till (345), Residue and Tillage Management - Ridge Till (346), Mulching (484), Forage Harvest Management (511), Stripcropping (585), Nutrient Management (590), Integrated Pest Management (595).
- For CPS 340 Cover Crop: Conservation Cover (327), Conservation Crop Rotation (328), Residue and Tillage Management, No-Till/Strip Till/Direct Seed (329), Critical Area Planting (342), Residue Management, Seasonal (344), Residue and Tillage Management, Mulch Till (345), Residue and Tillage Management, Ridge Till (346), Nutrient Management (590), Integrated Pest Management (595)
- For CPS 329 No-till: Conservation Crop Rotation (328), Cover Crop (340), Residue Management Seasonal (344), and Nutrient Management (590).
- For CPS 345 Reduced Till: Conservation Crop Rotation (328), Cover Crop (340), Residue Management, No Till/Strip Till/Direct Seed (329), Residue Management, Seasonal (344), Residue Management, Ridge Till (346).
- For CPS 590 Nutrient Management: Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed (329), Cover Crop (340), Filter Strip (393), Irrigation Water Management (449), Drainage Water Management (554), and Integrated Pest Management (595).
- For CPS 595 Integrated Pest Management: Agrichemical Handling Facility (309), Brush Management (314), Herbaceous Cover (315), Conservation Crop Rotation (328), Residue and Tillage Management - No-Till/Strip Till/Directs Seed (329), Cover Crop (340), Residue and Tillage Management – Mulch Till (345), Residue and Tillage Management - Ridge Till (346), Field Border (386), Riparian Herbaceous Cover (390), Riparian Forest Buffer (391), Filter Strip (393), Irrigation Water Management (449), Mulching (484), Forage Harvest Management (511), and Nutrient Management (590)

The list of Associated Practices can be a valuable tool to help producers and planners select suites of practices for more effective, integrated approaches to conservation.

We could not find a payment schedule nor cost scenarios for Maryland. Otherwise, practice scenarios and payment rates were generally consistent across the region (Table 1), with a few exceptions which will be discussed under each State. Practice standards, implementation criteria, guidance, and other technical information were generally easily located in Section IV of eFOTG.

### **CPS 328 Conservation Crop rotation**

The Mid-Atlantic region offered a simple set of four crop rotation practice scenarios in 2014: standard, standard organic, specialty crop, and organic specialty crop. Scenario descriptions call for a crop rotation plan to “reduce soil erosion, maintain or improve soil organic matter, balance nutrients, and manage plant pests,” which are “typically” achieved by adding high residue and/or nitrogen-fixing crop to the rotation. Few additional specifications are given regarding the rotation, and none of the scenarios require a perennial sod phase, and all assume that no income is foregone (i.e., the value of cash cropping is not reduced). Cost estimates and payments are based on a single cost component: management labor to learn, plan, and implement the new rotation. The producer “typically attends training to acquire the technical knowledge and skills” to plan and implement the rotation.

The simplicity of this set of scenario descriptions allows considerable flexibility and site-specific adaptation of the practice. On the other hand, the greater conservation benefits of introducing a sod phase into the rotation, or of implementing a tight (“continuous live roots”) rotation – scenarios offered in the Appalachian region, for example – may be missed under the four scenarios offered by the Mid-Atlantic region.

### **CPS 340 Cover Crop**

The Mid-Atlantic region offered six scenarios under Cover Crop:

- Small grain or legume – single species, planted within 30 days after cash crop harvest.
- Early plant mix – two-species (e.g., grass + legume) planted within 10 days after harvest
- Aerial seeding - two-species aerial planted before cash crop harvest
- Basic organic – single species, certified organic seed, with 30 days after harvest
- Organic mix – two species, certified organic seed, within 30 days after harvest
- Multispecies mix – five species, within 30 days after harvest

Cost components include seed, seeding operation (no-till or aerial), and herbicide or (for organic scenarios) no-till mechanical termination of the cover crop.

All five states provide substantial additional guidance on selection of cover crop species and mixes, seeding rates, dates, and methods. Examples and details are given in the discussions under each state below.

**Table 1.** Practices, scenarios offered, and Payment Schedule rate for 6 Conservation Practices in the mid-Atlantic region states. Figures in parentheses indicate scenarios listed but not offered on 2014 payment schedule. Payments rounded to nearest dollar. Payment rates (\$/unit)



CPS	Scenario	Unit	DE	MD	NJ	NY	PA
328	Standard Rotation	ac	12	- <sup>1</sup>	14 <sup>2</sup>	14	13
	Standard Organic	ac	19		20 <sup>2</sup>	21	19
	Specialty crop rotation	ac	31		34 <sup>2</sup>	34	31
	Organic specialty crop rotation	ac	49		71 <sup>2</sup>	54	49
329	No-till / strip till (one scenario)	ac	17		14	16	16
340	Small grain or legume	ac	54		58	61	50
	Early plant mix (grain + legume)	ac	72		69	71	-
	Aerial seeding	ac	74		72	73	70
	Basic organic (one species)	ac	78		72	76	75
	Organic mix (grass + legume)	ac	104		98	102	100
	Multispecies mix	ac	70		66	68	70
345	Mulch till, basic (one scenario)	ac	14		15	13	-
590	Basic	ac	15		15	16	15
	Basic organic	ac	13		13	14	13
	Small farm diversified	farm	387		410	430	400
	Basic with manure	ac	21		22	23	22
	Advanced with manure	ac	38		36	39	38
	Advanced no manure	ac	32		30	32	32
	Soil health assessment	each	75		76	82	77
	Adaptive strip trials	farm	1,366		1410	1463	1400
595	Basic field crops, 1RC	ac	12		13	(13) <sup>3</sup>	12
	Basic field crops, >1RC	ac	16		17	(18) <sup>3</sup>	17
	Advanced field crops, all RCs	ac	23		25	27	25
	Basic vegetable & small fruit, 1 RC	ac	65		71	(75) <sup>3</sup>	68
	Basic vegetable & small fruit, >1 RC	ac	83		91	(97) <sup>3</sup>	88
	Adv vegetable & small fruit, all RCs	ac	128		141	149	134
	Basic orchard, 1RC	ac	83		91	(97) <sup>3</sup>	88
	Basic orchard, >1RC	ac	128		141	(149) <sup>3</sup>	134
	Advanced orchard, all RCs	ac	198		222	233	210
	Small farm, 1RC (\$/farm)	farm	393		429	455 <sup>4</sup>	420
	Small farm, >1RC (\$/farm)	farm	510		562	594 <sup>4</sup>	540
	Small farm, all RCs (\$/farm)	farm	766		843	891	800
	Risk Prevention	ac	105		118	123	110

<sup>1</sup> Could not find payment schedule for Maryland on eFOTG or NRCS MD web site.

<sup>2</sup> Listed only on Organic Initiative, CPS 328 missing from general EQIP payment schedule.

<sup>3</sup> Listed in Cost Scenarios but not in Payment Schedules, suggesting these scenarios may not be offered in 2014.

<sup>4</sup> Available only through the High Tunnel initiative

### **Residue and Tillage Management: CPS 329 No-Till, Strip Till, Direct Seed; CPS 345 Reduced Till**

All states offer a single scenario for CPS 329 No-Till, with a low per-acre payment based on a single cost component, the no-till planting itself. DE, MD, NJ, and NY offer a single scenario of CPS 345 Reduced Tillage (basic mulch till), with payments again based on a single cost component (in this case, one tillage operation that meets criteria for mulch tillage), resulting in per-acre payments similar to those for CPS 329. This contrasts with several other regions, in which CPS cost estimates are based on two cost components (mulch tillage plus no-till planting), leading in some cases to a paradoxically higher per-acre payment for CPS 345 than for CPS 329.

Only MD had state practice standards for CPS 329 and CPS 345 based on the current (December 2013) federal standards (which for CPS 329 specify a Soil Tillage Intensity Rating or STIR criterion  $\leq 20$ ). NJ, NY, and PA use the previous standards (STIR  $\leq 30$  for no-till), and the DE standards are quite out of date (2006).

In some cases, individual states offered additional criteria or guidance for these practices, as discussed below.

### **CPS 590 Nutrient Management**

Mid-Atlantic states offered a range of nutrient management scenarios, including basic and advanced levels for systems with and without manure use, a basic organic scenario, and a small diversified farm scenario.

Cost components include general, skilled, and/or specialist labor (all scenarios include some consultant time as a cost component; standard soil tests; compost and manure analyses when these materials are used; and soil N, plant tissue analysis, and precision fertilizer application for the advanced scenarios. Basic, basic + manure, advanced, and advanced + manure all include urease inhibitor application as a cost component, which suggests that they are intended primarily for conventional systems. The small diversified farm scenario (for market farms, CSA's etc in the 0.25 – 10 acre range) includes both manure and compost analysis as cost components, but not urease inhibitor; thus, it is appropriate for both organic and non-organic systems.

Because the urease inhibitor adds significant cost (about \$11 per acre) to these scenarios, the basic scenario is paid at slightly higher per-acre rates than basic organic, even though the latter includes an additional test (compost) and greater amounts of skilled and specialist labor.

In addition all states offered adaptive nutrient management (field trials to evaluate nutrient use efficiency improvements in organic or non-organic systems), and a soil health assessment, also available for organic and non-organic systems, and described as follows:

*“This scenario describes the implementation of an advanced soil health assessment used on agronomic and specialty cropland in conjunction with an existing nutrient management plan to improve the biological, physical, and chemical qualities of the soil. Includes labor for comprehensive soil sampling, including penetrometer readings, and labor to study soil health concepts, interpret soil health test results, and to develop new management strategies to improve soil health.”*

However, only a limited amount of specialist labor (0.75) hours is allotted for a soil health assessment resulting in a relatively small payment (\$75-82 per assessment). It is not clear from the scenario whether an individual farm can receive support to conduct multiple soil health assessments to optimize soil management by field or in a grid pattern similar to precision nutrient management.

Cost components include three standard soil tests over a 40 acre area for basic, basic organic, and advanced scenarios. This may be adequate for basic nutrient management, but not for the advanced scenarios, for which the precision fertilizer application would require dividing cropland into a grid to better assess variations in soil nutrient levels, and thereby fine-tune application rates.

### **CPS 595 Integrated Pest Management**

The Mid-Atlantic region offered the full set of 13 scenarios that were included in payment schedules across the nation, including advanced (full IPM plan) scenarios for each of four farming systems (field crops, vegetables and small fruit, orchard and vineyard, and small diversified farm) as well as the risk prevention scenario that NRCS considers best suited for organic farms.

States vary widely in the extent to which they seem to promote implementation of full IPM (pest prevention, avoidance, monitoring, and suppression), from PA emphasizing only the pesticide mitigation aspect of IPM for basic and advanced scenarios, to NY offering only the advanced scenarios (discussed individually by state below).

### **New Jersey:**

On eFOTG (Section 1), we found both the payment schedule Excel spreadsheet for 2014, and 2014 cost scenarios for each practice, which were confusingly labeled “payment schedules.”

CPS 328 Conservation Crop Rotation was offered only through the Organic Initiative and not general EQIP in 2014. The job sheet provides guidance on crop substitution (in case of weather problems, etc with planned rotation), and a form for planning rotations up to 8 years, but offers little guidance on developing a rotation sequence for different farming systems or resource concerns.

The one scenario for CPS 329 No Till is offered for row crops or small grains. The job sheet includes specifications by purpose and detailed form for site specific design and specifications. In the one scenario for CPS 345 (mulch till basic), tillage practices are modified to reduce soil erosion

to ≤T and maintain residue coverage at 30-75%. The scenario description states that “Producer time is spent learning to manage and implement the mulch till system.” Yet, the allowable costs only include a non-inversion tillage pass (chisel or disk) that meets the criteria, and no allotment for added management labor. A job sheet for residue and tillage management practices includes tables and procedures for designing the tillage system and estimating residue retained under different practices.

The NJ standard for CPS 340 Cover Crop (Aug. 2013, based on the current 2011 federal standard) provides a wealth of state-specific information and guidance on cover crop species and mixtures, including seeding rates & season, life cycle, advantages and disadvantages, and recommended uses.

The job sheet includes a form for developing site specific specifications during the conservation planning process, and explicitly allows for green manure incorporation (tillage) to terminate cover crops. Note however, that if farmers and NRCS field staff consult the cost scenarios (which cite only no-till cover crop termination such as herbicide or roller-crimper) but not this job sheet, organic and sustainable producers who are not yet prepared to undertake no-till management without herbicides might be discouraged from enrolling in CPS 340.

The NJ Standard for CPS 590 (Dec 2012) based on the current (Jan 2012) federal standard, with lots of NJ-specific criteria, including state N and P risk assessment procedures, including a special P assessment for plastic mulch production systems. A separate nutrient management planning job sheet and checklist and several other documents provide technical information for nutrient management planning.

The NJ Standard for CPS 595 (September 2010) is based on current (Jan 2010) federal standard, with reference to Rutgers criteria. A general job sheet provides Workbook Instructions for an Excel spreadsheet, on which monitoring, thresholds, pest suppression treatments, and pesticide mitigation measures are documented.

A separate job sheet for organic integrated pest management, dated Sept 2012, emphasizes pest prevention and avoidance techniques as well as emergency suppression and mitigation measures as needed. Documentation includes planned prevention and avoidance measures to avoid or minimize the need for chemical suppression, as well as any suppression and mitigation measures taken. This job sheet lists a somewhat different suite of “associated practices”: that includes practices to support beneficial habitat, such as CPS 327 Conservation Cover and CPS 422 Hedgerow Planting, as well as the list shown above under General Comments. 449 Irrigation Water Management, 590 Nutrient Management, 340 Cover Crop, 328 Conservation Crop Rotation, 327 Conservation Cover, 422 Hedgerow Planting, 484 Mulching, 315 Herbaceous weed control, Residue & Tillage Management practices, and practices to support beneficial insect habitat.”

## Delaware:

Cost scenarios for all practices are posted together on eFOTG in one large (600pp) document, which is misleadingly labeled “practice payment schedules 2014.” We found the actual EQIP payment schedule via the Delaware NRCS web site.

The DE standard for CPS 328, dated July 2013, is little modified from the current (2011) federal standard. A specifications document for DE provides a little extra material, but no specifics regarding the structure or design of a crop rotation. It was noted that, of the “associated practices” listed for CPS 328, DE does not offer CPS 330 Contour Farming, probably because the state’s nearly-level topography renders this practice mostly unnecessary.

The DE standards for CPS 329 and 345 are quite out of date (2006). Criteria for CPS 329 allow disturbance of up to 1/3 of field width under “strip till,” yet establish a higher bar for SCI (+0.2) with higher levels (to +0.6) recommended. Criteria include STIR<30 (<20 for conserving moisture or reducing soil CO<sub>2</sub> losses); erosion ≤T for the erosion control purpose (which the national NRCS is not using). For CPS 345 Mulch Till, criteria include erosion ≤T for the erosion control purpose, SCI>0 for soil quality, and either 60% residue cover or 2,000 lb/ac residue mass for conserving moisture.

For CPS 340, the DE standard (based on the current federal standard) offers considerable state-specific information, criteria, and guidance, including extensive cover crop information tables.

The DE standard for CPS 590 Nutrient Management (March 2013) is based on the current federal standard (Jan 2012), with extensive criteria specific to Delaware, such as: irrigation criteria and considerations to avoid excess leaching and runoff; potassium balance in relation to forage quality; criteria for applications of liquid manure (which seems to be an awkwardly abundant resource in DE given the amount of attention to this material); and many references to University of Delaware procedures and nutrient recommendations (Phosphorus Site Index, N Leaching Index). General Criteria and Additional Criteria offer lots of sound information for specific purposes.

The DE standard spells out nutrient planning and budgeting more clearly than the federal standard and many other state standards:

*“A crop nutrient budget shall be developed that accounts for all for nitrogen, phosphorus, and potassium that enters the soil surface and leaves through crop uptake. The budget shall include all potential sources of N, P and K including, but not limited to animal manure and organic by-products, green manure, wastewater, commercial fertilizer, crop residues, legume credits, and irrigation water, as appropriate.”*

Unlike federal and many state standards, the DE standard states, under Additional Criteria for use of manure:

*“Manure or organic by products should not be applied on legumes since leguminous plants are capable of fixing sufficient nitrogen to meet crop needs”*

The DE criteria would improve both nutrient use efficiency and water quality, though it could be challenging for livestock farmers who need to deal with a surplus of manure. In contrast, the current federal standard states:

*“Manure or organic by-products may be applied on legumes at rates equal to the estimated removal of nitrogen in harvested plant biomass, not to exceed land grant university recommendations.”*

The link to a Specifications document for CPS 590 implementation appears broken or the document has been removed.

The DE standard for CPS 595 is formatted differently from the federal standard, with considerations given before criteria, making the following statement more prominent:

*“IPM strategies that keep pest populations below economically damaging levels and minimize pest resistance should be utilized because they also help prevent unnecessary pest management risk to natural resources and humans.”*

Otherwise, the DE standard is not much different from federal; it includes some references to U. Delaware Extension and DE Dept Ag specs. The link to a “specifications” document appears broken, or the document has been withdrawn.

### **Pennsylvania:**

On the PA eFOTG, we found cost scenarios for FY 2014 and for FY 2010 (given in a different format as Excel spreadsheets). The latter provided a cost component analysis for CPS 329 that, in our opinion, is far more complete and accurate than the one-component analysis utilized nationwide for 2014. The actual payment schedule for FY2014 was found on the EQIP page of the PA NRCS web site – with some difficulty, since the link was confusingly labeled “FAP” and not “EQIP.”

The PA Standard for CPS 328 (Oct 2011) differs little from the current federal standard. The PA job sheet (July 2011) provides a little more “cropland guidance” for developing a crop rotation than other states offer. This includes region-specific information and examples on rotation to manage certain diseases (grass family *Fusarium*), pests (corn root worm), and weeds (dogbane and tree-of-heaven in no-till corn). It also provides nutrient management hints (how to manage legume N efficiently, and using alfalfa to mop up excess P and K), summarizes PA regulations related to crop rotation, erosion, and sedimentation; and provides a record keeping form for the rotation.

The PA standard for CPS 329 No Till is based on the earlier federal standard (STIR  $\leq 30$ ), and one scenario based on the no till planting cost component was offered on the 2014 payment schedule. PA apparently did not offer CPS 345 at all this year, as it was not listed on the 2014 payment schedule, though out-of-date standard (2011) and job sheet (2005) were posted on eFOTG for this practice. It would be less confusing to the reader if practices not offered in the current fiscal year were either clearly labeled “not offered this year,” or not posted at all in the cost scenarios or elsewhere in eFOTG.

It is interesting to note that the PA job sheet for CPS 329 discusses the higher skill level required for this practice, as well as encouraging continuous no-till in *combination with crop rotation and cover crops*. The reader is also referred to additional practical “how-to” information sheets on no-till.

It is also interesting to note the 2010 cost analysis for two scenarios of CPS 329 offered that year for no-till:

Conventional no-till corn/wheat rotation on 130 acres, with per-acre components including herbicide (\$15), equipment – no-till drill/planter (\$2.46), income foregone (small yield reduction - \$9.00), and risk (of larger yield loss - \$9.60), for a total allowable \$36.06/acre.

Organic no till with a rye + vetch cover followed by agronomic or vegetable production crop on 25 ac: equipment/installation roller-crimper (\$15) and no-till planter (\$17); acquisition of technical knowledge (1 field day - \$5.20/ac), income foregone (slight yield reduction, \$9.00), and risk (\$9.60), for total allowable costs of \$55.80/acre.

These seem much more reasonable for conventional and organic no-till practices than the current single component cost basis.

The PA Standard for CPS 340 is based on the current (2011) federal standard, with links to additional state-specific documents, and a table recommended cover crops, seeding rates, dates for three climate zones (shown on a zone map), and depths. The PA job sheet includes a form to document purpose(s) and cover crop species, rates, dates, etc.

The PA Standard for CPS 590, dated Jan 2013, is based on current (2012) federal standard, with considerable PA specific information, criteria, state regulatory requirements (Act 38), specifications, and guidance.

PA criteria and considerations seem well designed to promote sound, site-specific nutrient management. A NMP with 1 to 3 years crop nutrient budgeting is required. Soil tests must be done on management units of not more than 20 acres, except if single uniform field is larger; manure/compost analyses are done annually, soil tests every 3 years. Soil erosion must be managed  $\leq T$ .

Winter application of manure is discouraged, but allowed within specified constraints. Extensive additional criteria are provided for corn production / winter cover crop rotations under “prevent non-point-source water pollution.” P application is limited to  $\leq$  crop P removal when P index is “high” and no P can be applied if P index is “very high.”

Considerations include on-farm feed sourcing to reduce nutrient import, adverse impact of high P on mycorrhizal activity resulting in greater crop stress, encourage cover crops, rotations, reduced till.

The PA eFOTG offers both current and past (2010) information, which can be confusing. The 2010 scenarios cover both basic pesticide mitigation and advanced “ecologically based IPM” with a range of options (mating disruption, beneficial insect, low impact spray materials and methods).

*However, the 2010 information is seriously out of date in that neonicotinoids are considered “low risk” pesticides (now known to be very dangerous to honeybees and other pollinators) while pyrethroids are not. Such dated information should not remain posted on a public web site, but should be archived and clearly labeled as out of date.*

The 2014 PA practice guidance document for CPS 595 focuses narrowly on pesticide mitigation:

*“IPM 595 is specifically designed to document the application of management activities that address site-specific natural resource concerns. IPM595 is not designed to manage pests. Technical assistance for managing pests on cropland is not an identified role for conservation planners...”*

*“The adoption of a comprehensive IPM system is always preferred, but 595 is not designed to prescribe what constitutes a comprehensive IPM system.”*

Although the document then refers the reader to LGU extension for guidance on comprehensive IPM, the above statements provide little support or guidance to field staff in offering the advanced and risk prevention scenarios of CPS 595, or in working with organic producers. These statements stand in marked contrast with the 2010 guidance cited in the previous paragraph, and also with the cost scenarios given for advanced and risk prevention scenarios for the Mid-Atlantic (NJ, DE), Appalachian (NC, VA), and other regions; and with the General Criteria of the current federal CPS 595 standard itself (see general report, pages 23-27).

## **Maryland**

We were unable to find either cost scenarios or payment schedule for 2014, either on eFOTG or on the MD NRCS web site (the latter said “check back soon” for payment schedule). We did find a 2010 “Maryland Practice Catalog” that provides the following vital information (albeit for 2010) in a succinct (27 page) document:

- All CAPs and CPS offered
- Practice code and scenario name, lifespan (years), unit (acre, etc), and total unit cost.
- Actual payment rates for regular and HU producers for general EQIP, WHIP, the Organic Initiative, and the AMA, allowing the reader to see at a glance what practices and scenarios are available under each initiative.
- A one-paragraph description of each practice scenario and key implementation criteria.

While the current formats (Excel payment schedule, narrative cost scenarios documents in pdf) are satisfactory, the above format is notable for providing all the basic information in one fairly compact file. The NRCS might consider adopting this format for a quick look-up reference to be posted on each state’s eFOTG. It would need to be accompanied by full cost scenarios (in current format, but with clear indication of what elements in the scenario, if any, are actually implementation requirements) as well as other documentation clearly spelling out implementation requirements and providing any other guidance, examples, considerations, and other non-binding recommendations that can help producers, planners, and NRCS field staff obtain optimum conservation outcomes.



In contrast with Section I, Section IV of MD eFOTG provides up to date state standards and, for some practices, excellent additional technical information. The 2014 job sheet and “Practice Requirements” sheet for CPS 328 consist of forms for the participant to document practice implementation, with little guidance for developing the rotation.

MD provides up to date state standards for CPS 329 and 345 (based on current federal standard), with some added MD criteria (erosion  $\leq T$ ), and considerations for building organic matter (cover crops, high residue crops, manure, organic mulch).

The MD standard for CPS 340 is based on the current (2011) federal standard, and provide lots of additional information. Under “conditions where practice applies,” MD adds emphasis on erosion control, nutrient scavenging, and preparing ground for perennial planting. *General criteria* are extensively revised to include MD criteria for plant selection, for nutrient management and pest management if producer is implementing these practices as well, for nutrient scavenging (e.g., do not add nutrients) and crop insurance considerations (referring to the new NRC/RMA cover crop termination guidelines).

*Additional criteria* for various purposes also include some MD specific material (legume N credits, kill legumes late for maximum N fixation). Considerations section is extensively modified and adapted to MD, discussing best cover crops for different seasons and uses, and a note that a grass-legume biculture gives more biomass, early ground cover, and residue than either alone. Standard includes Hardiness zone map of MD and complete table of cover crop species and mixtures – planting rates, depth, date by zone, main uses/benefits, kill dates.

The job sheet and practice requirements (both dated 2013) provides implementation documentation forms and refers the reader to the added material in the MD standard. Practice

The MD standard for CPS 590 Nutrient Management is based on the current federal standard but adds MD criteria, regulations, guidance, and some notable additional considerations such as:

- *“Ammonia-N volatilization losses from fertilizers and animal manures can become significant if available nutrients are not incorporated into the soil in a timely manner after application. Volatilized ammonia represents the loss of a valuable plant nutrient and can also potentially have a negative impact on water and soil quality upon re-position.*
- *“Modifying animal manure composition, by chemical amendments or by modification of the animal’s diet, to enhance the producer’s ability to manage manure more effectively.*
- *“Alternative uses to land application of manure or organic by-products, including the re-distribution of these materials to nutrient deficit areas and the production of value-added products, such as pelletized fertilizers and compost.*
- *“The environmental effects of pathogens ... in nutrient sources.*
- *“The use of planned grazing systems to reduce the need for storing, hauling and spreading manure.”*

The MD standard for CPS 595 is based on current (January 2010) federal standard, but it elevates a listing of PAMS given as “considerations” in the federal standard to “general criteria” in the MD

standard, right after the general criteria requirement for a full PAMS plan. MD gives an additional criterion for protecting water: when pesticide label says “do not apply to water,” a setback of 5ft from ditches, etc. is required.

The MD Pest Management Plan checklist includes all four steps of PAMS as well as pesticide assessment and mitigation requirements. Another document provides a pest scouting and treatment threshold form.

## **New York**

The NY eFOTG provided separate payment schedules for each of a dozen different initiatives and topics, including organic, high tunnel, NWQI, tribal, grazing, animal waste – but no general EQIP or “cropland” payment schedules. Soil health, NWQI, and tribal initiatives have the same set of scenarios, including all four regional scenarios for CPS 328, all six for CPS 340, all eight for CPS 590, but only the four Advanced and Risk Prevention for 595. The Organic Initiative has two organic scenarios each for 328 and 340, seven scenarios for 590, and the five advanced 595 scenarios. Livestock waste has two (field crop) 328 scenarios, and all 329, 340, 345, and 590 scenarios, none for 595 IPM. The high tunnel initiative includes all four for 328, all but aerial seeded cover crop, no residue/tillage management practices (understandable for such a small enclosed space), two nutrient management scenarios (small farm, soil health), and all 3 levels of small farm 595 pest management.

Cost scenarios for NY show both allowable unit costs and actual payment rates (about 2/3 or 3/4 of unit costs). CPS 595 lists all 13 scenarios even though only five of them are used for most of the payment schedules, and a different set of three for High Tunnel.

Technical information for CPS 328 includes the NY standard (very similar to current federal standard); implementation requirement documentation form, and NY Guidance for crop rotation including process for developing the rotation and associated resources, including RUSLE2, seeding and pesticide guides, and a list of “commonly associated processes and practices.”

For residue and tillage management, the NY CPS 329 is based on the former federal standard (STIR <30) with a NY criterion of STIR <20 in addition to stubble heights for conserving soil moisture and trapping snow. The Practice Guidance document covering CPS 329, 345, and 346 is out of date (2008); it lists “commonly associated practices” including (surprisingly) CPS 324 deep tillage 324 as well as cover crop, rotation, contour farming, terrace, nutrient management and pest management. It is interesting to note that an external reviewer for some of our CIG project’s earlier work on practice standards, an organic grain farmer in NY, observed that no-till applied with no or insufficient winter cover crops can lead to subsurface hardpan on certain silt-loam soils in NY, necessitating deep tillage to maintain crop yields.

For CPS 340, NY recently posted a specifications document, dated August 2014 (for winter 2014-15 cover crops?) with lots of information and guidance on selection, planting (rates, optimum and latest dates, depth), and management / termination of cover crops for a wide range of cover crop species

and mixes (2 to 10 spp) for primary purposes of erosion control, N fixation, N scavenging, and soil health. This excellent document is clearly written for the Northeast (e.g., inversion tillage suggested as one means of termination – also grazing, haying, freeze kill, roll-crimp, or herbicide); it offers a wide range of options, combining flexibility with sufficient criteria and guidance to promote successful cover cropping.

The NY standard for CPS 590, based on the current (2012) federal standard, adds NY-specific criteria such as (page 3):

*“[N]utrient application rate must be based on crop/cropping sequence; current soil test results; soil type; N contributions from any manure applications in the past two years, soil organic matter, and prior crops; crop yield potential; other current year nutrient applications; the NY P Index; the NY NLI; and any other applicable field specific risk factors.”*

Extensive, NY-specific manure handling specifications, and Considerations are also included. NY also provides an Implementation Requirements form is dated April 2014, and a CNMP Process document that is way out of date (2005).

The NY standard for CPs 595 is based on the current federal standard, but the NY Practice Guidance document is way out of date (2005). The latter requires an IPM plan, and the CPs 595 folder of NY eFOTG provides a link to the NYState IPM web site, and guidance on application of WIN-PST for estimating pesticide environmental risks.

No indication was given as to why NY does not offer basic (1 or >1 RC) scenarios for outdoor production, and only offers these options for high tunnel production. Certainly, full IPM as mandated in advanced scenarios is the most desirable, but availability of basic scenarios will provide a step by step process for beginning farmers and others not familiar with higher level IPM to begin a transition toward more resource-conserving pest management.

In addition to the Recommendations (1 through 26) given in the general report, we offer the following for the Mid-Atlantic region:

**Recommendation M1:** For CPS 328, Mid-Atlantic states should be encouraged to provide more guidance and technical information on developing a crop rotation. Tips given by PA for disease, pest, weed, and nutrient management through rotation are examples of the kind of information that could be helpful.

**Recommendation M2:** In developing scenarios for FY 2015 and beyond, the Mid-Atlantic region should consider providing one or more scenario that support rotating intensively cropped land into perennial sod for one or more years, with income foregone included in the cost estimate and payment.

**Recommendation M3:** Ensure that CPS 328 is offered through general EQIP throughout the region.

*Rationale:* In NJ, CPS 328 was apparently offered through OI but not general EQIP. The practice should be made available to all EQIP participants to maximize conservation benefits.

**Recommendation M4:** Support states within the Mid-Atlantic region (and across regions) to learn from one another through examples of especially useful technical information or guidance documents, that might be adapted and offered by other states. Examples from the Mid-Atlantic region include:

- The NJ Job Sheet for CPS 345 tabulates estimated residue retention for different mulch tillage practices.
- NJ provides an organic job sheet for CPS 595 with strong emphasis on, and technical information support for pest prevention and avoidance strategies.
- The DE Nutrient Management (CPS 590) standard provides an excellent and succinct outline of the nutrient budgeting process, including a clearer statement of nutrient sources and factors to take into account than is given in the federal and most state standards.
- The MD standard for CPS 340 Cover Crop greatly expands on the current federal standard, providing in one place most of the information that producers and NRCS staff might need in order to select cover crop species and methods of planting and management for optimum conservation outcomes. While most states provide excellent technical information for CPS 340, MD and a few other states have made the information optimally accessible by providing it all in one document in a well organized form.
- The MD standard for CPS 590 provides in the Considerations section especially valuable information to help producers and planners address nutrient related resource problems that pertain especially to the state and its prevalent production systems.
- In 2010, MD posted a single, concise document that provided key information on what practices and scenarios are available under general EQIP and each special initiative, payment rates, and a summary of the scenario and implementation requirements. NRCS might consider this as a model format for the payment schedule in future years.

**Recommendation M5:** Utilize the 2010 cost analysis for non-organic and organic scenarios for CPS 329 No Till as the basis for developing more appropriate cost scenarios nationwide that take into account all costs of no-till implementation including additional skill needed, and risks during the transition to no-till. *See also Recommendation 14 in the general report.*

**Recommendation M6:** For CPS 595, ensure that all states in the region emphasize all four aspects of IPM – pest prevention, avoidance, monitoring, and suppression – as well as pesticide mitigation. At the same time, ensure that all states offer both basic and advanced scenarios under CPS 595. Specifically:

- PA should broaden its perspective on CPS 595 to include full IPM for the advanced scenarios, in order to realize the full conservation benefits available through this practice.
- NY should offer basic as well as advanced scenarios of CPS 595 for all outdoor cropping systems as well as high tunnels.

**Recommendation M7:** Ensure that states remove outdated information from web pages and files that are intended to give current information regarding practices, scenarios, implementation requirements, and payment schedules. *In particular, ensure that PA removes outdated information suggesting that neonicotinoids are low-risk pesticides that do not need a WIN-PST evaluation.* In the interest of protecting pollinators, NRCS should discourage altogether the use of this class of pesticides, at least by assigning them the highest risk level requiring maximal mitigation practices.

Recommendation M8: Ensure that each state keeps the current (or most recent after the current year's signup closes) payment schedules for general EQIP and each special initiative, and practice cost scenarios posted until the new year's documents are available. Specifically:

- Ask MD to post a current payment schedule and cost scenarios.
- Ask NY to post a payment schedule for general EQIP as well as special initiatives.

## Appendix D

### Appendix D – Additional analyses of Practice Costs, Scenarios and Payment Schedules in the *Northern Mountain Region*

#### I. Overview: Finding Information, and Inconsistencies among States in Region

An initial issue with undertaking this review is that information about the payment schedules is not easily available on the respective state NRCS websites or on the Field Office Technical Guide (eFOTG). Information is inconsistent among the three states in this region, and sometimes out of date. For instance on the Montana eFOTG, the current regional “Cost List Fiscal Year 2014” giving scenario descriptions and a dollar figure per acre (or other basis) is readily available (see [http://efotg.sc.egov.usda.gov/references/public/MT/2014\\_Cost\\_List.pdf](http://efotg.sc.egov.usda.gov/references/public/MT/2014_Cost_List.pdf)). However, the scenarios do not include the cost components (materials, labor, etc) upon which cost estimates are based, and it is not clear whether the sums shown are the *total cost estimate* for the scenario, or the *payment that the farmer receives through NRCS MT* for implementing the practice. In addition, this document was not available on either the Wyoming or Idaho eFOTG sites.

On the Wyoming site the most recent data available as of August 2014 was a payment schedule for FY 2013. The “FY 2014 Wyoming Practice Payment Rate and Guideline Sheet for Eligible Conservation Practices” was subsequently posted on the NRCS-WY EQIP page upon our project team’s request. Although the format is similar to the Montana Cost List, the scenarios and payments are not consistent with the Montana cost list (see Table 1 below), which raises questions as to whether either state’s information was regionally determined.

On the Idaho eFOTG there is a current (2014) Excel file (“ID-EQIP-GENERAL-2014”), but the information, is in the form of a spreadsheet listing practice code and name, a very brief description of scenario (under the heading “component,” which is misleading since a scenario usually includes several cost components), unit (acre, etc), and unit cost. Again, it is not clear if the dollar figure represents the total estimated scenario cost, or the sum that a participating farmer receives for implementation. Again, scenarios and cost data are inconsistent with the information provided in the Montana document.

Thus, it is not easy for a farmer or rancher in the Northern Mountain Region to obtain current information on conservation practice scenarios, payment rates, and how those payment rates are derived. It is unclear why this information is not more readily available.

We also found some perplexing inconsistencies among the three states, some of which are illustrated in Table 1. In general, scenarios offered in MT are fewer in number and offer less flexibility than those offered in WY or ID. For example, under CPS 595, WY and ID offer three levels of Integrated Pest Management (IPM) for each of four farming systems, plus a Risk Prevention scenario that emphasizes pest prevention and avoidance, with pesticide applications as a last resort; MT offers only a single scenario (small diversified farm basic IPM for more than 1 resource

concern), and *only* for “small scale organic operations.” Other producers have access to Integrated Pest Management Conservation Activity Plan (CAP 114, which all three states offer in small, moderate, and larger farm scenarios), but not to CPS 595. Similarly, for CPS 328, WY and ID offer irrigation-to-dryland conversion, organic, and specialty crop rotation scenarios in addition to the “standard” rotation, while MT offers only “standard” and “flexible” rotations, the latter of which appears confounded with CPS 340 Cover Crop (more below).

Table 1. Scenarios and cost / payment listings for six Conservation Practices in the three States of the Northern Mountain region.

CPS	Scenario	Unit	ID <sup>1</sup>	MT <sup>2</sup>	WY <sup>3</sup>	Comment
328	Standard rotation	ac	7.82	8.42	8.19	
	Flexible rotation	ac	- <sup>4</sup>	26.90	31.82	MT - legume/5-spp cover
	Irrigated to dryland	ac	291.81	-	424.86	Incl. income foregone
	Irrig-dry endgun removal	ac	-	-	533.30	Incl. income foregone
	Organic rotation	ac	10.43	-	10.92	WY – org. transition
	Specialty crops	ac	26.07	-	-	
	Organic specialty crops	ac	130.35	-	136.44	
340	Mechanical kill	ac	-	-	56.93	
	Mech. or chemical kill	ac	70.59	-	-	Max \$15K/yr, 3 yr
	5+ spp cocktail	ac		47.72 <sup>2</sup>		
	Organic cover crop	ac	69.49	-	56.68	ID max \$15K/yr, 3 yr
329	No-till	ac	13.17	7.40 <sup>2</sup>	10.95	
	Organic no-till	ac	13.17	7.40 <sup>2</sup>	10.95	
345	Mulch till, dryland	ac	31.34	-	26.05	
	Mulch till, irrigated	ac	48.69	-	40.47	
	Irrig. sugarbeet /potato only	ac	-	51.37	-	Max 200 ac.
590	Basic nutrient management	ac	8.57	5.67 <sup>2,5</sup>	7.19	
	Basic + manure	ac	8.19	5.67 <sup>2,5</sup>	6.88	
	Basic organic	ac	9.27	5.67 <sup>2,5</sup>	7.75	
	Small farm diversified	each	431.17	284.70 <sup>2</sup>	357.43	
	Enhanced	ac	32.44	-	25.90	
	Precision	ac	22.27	-	18.46	
	Advanced precision	each	30.72	31.36 <sup>6</sup>	25.51	
	Adaptive	each	1303.67	1299.87 <sup>7</sup>	1096.14	Replicated field trial
595	Field crops, basic IPM,	ac	11.28	-	9.40	

	1RC					
	Field crops, basic, >1RC	ac	15.21	-	12.69	
	Field crops, adv., all RCs	ac	22.55	-	18.81	
	Veg/sm. fruit, basic, 1 RC	ac	62.89	-	52.52	
	Veg/sm. fruit, basic, >1 RC	ac	80.67	-	67.42	
	Veg/sm. fruit, adv., all RCs	ac	123.07	-	102.91	
	Orchard, basic, 1RC	ac	80.67	-	67.42	
	Orchard, basic, >1RC	ac	123.07	-	102.91	
	Orchard, advanced, all RCs	ac	188.13	-	157.91	
	Small farm, basic, 1 RC	each	382.76	-	319.36	
	Small farm, basic, >1RC	each	492.27	325.83 <sup>2</sup>	411.62	MT: organic systems only
	Small farm, adv., all RCs	each	738.41	-	617.44	
	Risk Prevention	ac	99.21	-	83.39	Prevention & avoidance

<sup>1</sup> From Excel spreadsheet for 2014 Idaho general EQIP

<sup>2</sup> Actual cost share only 50% (40% for CPS 329); other practices cost-shared at the usual 75%.

<sup>3</sup> From FY 2014 Wyoming Practice Payment Rate and Guideline Sheet for Eligible Conservation Practices

<sup>4</sup> “-“ means scenario not offered in that state

<sup>5</sup> Basic, basic with manure, and basic organic offered as one scenario.

<sup>6</sup> First year, then \$15.00/ac for second and third years.

<sup>7</sup> Approval by State Resource Con. required.

The three states stipulate different limits on acreage and/or payment per contract. ID limits CPS 329 and CPS 340 (all scenarios) to \$15K/year for 3 years (\$45K/contract); CPS 345, 590, and 595 to \$10K/year for 3 years (30K/contract); and CPS 328 not at all. MT limits payments to 3 years and caps practices by acreage: CPS 328 and 340 at 450 acres, CPS 329 at 640 acres, CPS 345 at 200 acres, CPS 590 at 500 acres (all practices limited to 3 years payments, except one year for basic level nutrient management). The WY payment rates document does not state dollar, acre, or time limits.

The WY payment rate document and MT cost list provide some implementation criteria or guidelines, while ID posts implementation worksheets or jobsheets with some of this information. However, it is not always easy to determine whether the information offered is firm implementation criteria (required) or is intended as guidance or examples only.



While some differences among states in scenario selection, implementation requirements, and guidance may stem from differences in climates, soils, topography, resource concerns, and predominant farming systems, and are therefore appropriate, other differences appear arbitrary and difficult to understand. Some of the differences shown in the table suggest that Montana may have established scenarios independently at the state level rather than working with the rest of the region.

**Recommendation N1:** Within regions the eFOTG should have current and consistent information about practice scenarios, costs, payment schedules, and payment limitations for practices and scenarios. Distinctions between implementation requirements on the one hand, and non-binding guidance and scenario descriptions on the other, should also be made clear and unambiguous.

**Recommendation N2:** Practice costs and payment schedule information should be more prominent on state and national NRCS websites, ideally under the program area of the website and not only in eFOTG.

**Recommendation N3:** NRCS should provide information on how costs of implementation of a practice were estimated for each cost scenario offered, including all cost components (materials, labor, equipment, field operations, etc). These should be readily available through eFOTG and on the state and national websites.

## II. Cover Cropping (340)

Under the new payment schedule system state-based specialists in the region worked together with information provided by the national NRCS office to create regional specific payment schedules to implement conservation practices like cover cropping. According to one representative of NRCS:

“A payment schedule is a collection of payment rates for financial assistance provided to producers for performing conservation practices. A payment rate is determined by multiplying scenario unit cost with program payment percentage. The scenario unit cost is the function of component prices (estimated unit component cost, including foregone income) and component quantity by scenario, both start from components. A component represents a unique product or service that is necessary for implementing conservation practices.” (Wu, M., 2012)

The concept of scenario is important because practices can be implemented differently because of differences in the natural resource concern(s) being addressed, the geographic area and the specific context of the application. For example, in the semi-arid northern great plains, the implementation of cover cropping practices are likely distinct from those in semi-tropical Florida. Also, and importantly for our interest in organic production systems, whether a producer is following organic practices or not changes how cover cropping practices can be implemented.

In Montana, there is only one scenario offered as follows:

“Cover Crop, cocktail cover crop mix planted immediately after harvest or in the fallow year of the rotation, terminated based on biomass production, cover crop and weed stage of growth and soil moisture.”

The estimated scenario unit cost of this practice in this region is \$95.43 per acre. The payment is capped at 450 acres per contract over three years. So in aggregate to apply this practice to the maximum acreage over three year is estimated to cost \$128, 831. Remember this is the total estimate cost of implementing this scenario, and not the payment the farmer would receive under contract. In the notes to this scenario, there are several additional requirements to implementing this scenario.

First, cover cropping on the same acres during a fallow year is encouraged. The implication here is that in this region soil moisture is a significant constraint to undertaking cover cropping practices and presumption is that many farmers undertake the practice of what is known as “summer fallow”, where a field (or strip of land) is left devoid of plant life for an entire cropping year so that soil moisture can be replenished. Whether summer fallow practice should be encouraged as a method of improving long-term soil health is a highly contested issue in the scientific literature, though it remains a fairly common practice by farmers in this region (O’Dea, J.K. P.R. Miller and C.A. Jones, 2013. Greening summer fallow with legume green manures: On-farm assessment in north- central Montana, *Journal of Soil and Water Conservation*, 68 (4): 270-282).

Second, the cover crop cocktail can be planted after harvest of the cash crop or in early spring, again taking note of adequate soil moisture or access to irrigation. However, as is also noted in the scenario description, the choice of when to plant and terminate a cover crop can impact eligibility for subsidized crop insurance. In two states in this region (WY and MT), wheat, barley and oats can be insured under a summer fallow or continuous crop practice policies. In some counties in Wyoming these crops can only be insured under a summer fallow practice and this can limit when and how a cover crop can be terminated, often making it complicated for farmers to undertake this conservation practice without higher costs of crop insurance or risking crop insurance coverage.

Third, the NRCS is ONLY supporting cover crop cocktails of at least five distinct species. This is a very strange limitation as cover cropping in general is not yet a common practice in this region. The use of single species cover crops has been more common, has been the topic of much more research in the region, and has demonstrated significant conservation benefits in these studies (O’Dea et al., 2013, cited above). Although recent research has revealed additional benefits from the diverse cover crop cocktails, preparing, inoculating (legumes), mixing, and drilling cover crop seed of 5 or more species is logistically much more complicated than traditional single species or two species (grass + legume) cover crops, especially on a larger scale (>100 acres). Most farmers new to the practice of cover cropping would be intimidated by the level of skill, planning, management, and labor required to successfully establish a 5+ species cover crop cocktail, and would be deterred from attempting to implement CPS 340 under this scenario.

Fourth, the cover crop cocktail must have a minimum of two crop types (warm season legumes, warm season grasses and cool season broadleaf species) that are different from the predominant crop in the current rotation (likely wheat, barley or oats in this region). This can further complicate the process of selecting a cover crop mix and obtaining the seed.

Fifth, haying or harvesting of the cover crop is not allowed.

Sixth, grazing is allowed but with a limitation that grazing cannot exceed 50 percent of the current year's growth and a minimum of 6-inch stubble is maintained. This option is in direct contradiction to the crop insurance requirements of summer fallow practice discussed above, where any grazing of the cover crop is not allowed to insure the following cash crop under summer fallow practice. Thus, a farmer implementing this practice in the region would have to insure wheat, oats or barely under a continuous crop practice policy if they wanted to graze the cover crop at all. In those few counties in Wyoming where wheat, oats and barley can ONLY be insured under summer fallow practice, grazing is not an option if one wishes to insure the crop.

Seven, if the cover crop is planted after August 10<sup>th</sup> then NRCS limits support to a 150 acres per year rather than the 450 acres as noted above. This is a strange restriction since the date seems arbitrary for those who wish to provide a winter cover crop and clearly suggests that the NRCS seems to want to provide greater incentive for early spring cover cropping practices.

Eight, cover cropping is supported in seasonal high tunnels for up to one acre.

Finally, CPS 340 cannot be contracted on the same acres as CPS 328. This arbitrary restriction deters implementation of an integrated conservation system and limits the potential resource benefits of both practices. For example, a producer should be able to receive assistance under both practices in order to move from a soil-depleting wheat-summer fallow rotation to a three-or four-year rotation that adds, for example, a warm season production crop like sunflower or safflower, and a legume or multispecies cover crop.

Based on the above we would offer five recommendations to improve Montana's offerings under CPS 340 Cover Crop:

**Recommendation N4-** Provide a scenario for certified organic producers that would reflect cost differences related to the use of certified organic cover crop seed, and to different methods of planting and termination. Consider adding a third scenario for smaller-scale diversified organic and non-organic producers (say < 60 acres), again where cover crop seed costs may be different.

**Recommendation N5-** Provide a scenario for single-species cover cropping or with the number of species used left up to the farmer's judgment. Retain the current high-diversity cover crop cocktail scenario, making it available to producers who already use a lower-diversity or single-species cover crop on the acres to be enrolled, as well as those who are not currently cover cropping at all. A higher payment for the high-diversity cocktail is probably justified by actual costs of the increased complexity of planting procedures and possibly the seeds themselves. However, ensure that payment

schedule for a single-species or two-species cover crop is sufficient to facilitate farmer adoption of this vital conservation practice.

At least in Montana, the use of cover cropping practices is likely very small (less than 2% according to the recently released 2012 U.S. Agricultural census) and since there is more widespread use of single-species cover cropping backed by extensive research, why limit the practice to multi-species cover cropping?

**Recommendation N6-** Eliminate the August 10 deadline and acreage limitation for the planting of fall-seed cover crops on acreages beyond 150 acres.

The deadline of a specific date seems arbitrary and seeding dates for fall cover crops should be left to the best judgment of the farmer especially given variable weather and soil moisture conditions. Also, why have less of incentive for fall planted cover crops than for spring seeded cover crops? Both would likely provide equal conservation benefits, and the fall plantings could be more effective in preventing soil erosion during winter.

**Recommendation N7-** NRCS could try for greater consistency with RMA crop insurance policies related to cover cropping especially regarding criteria for grazing of cover crops. Note that grazing of cover crops may have great conservation and economic benefit to the farmer and thus further encourage implementation of the cover cropping practice.

**Recommendation N8** – NRCS Montana should drop the restriction on enrolling the same acres in CPS 340 Cover Crop and CPS 328, and at least allow enrollment in both Standard Rotation and either single-species or multi-species Cover Crops as an integrated approach to improving conservation on land currently under resource-depleting systems such as wheat-fallow.

Idaho offered two cover crop scenarios in FY 2014: cover crop mechanical or chemical kill at \$70.09 per acre, and organic cover crop at \$69.49 per acre, with a cap of \$15,000 per year for three years. This cap effectively limits the practice to a little over 200 acres per contract. It is not clear why this restriction holds in ID, a higher limit (450 ac) in Montana, and no stated limit in Wyoming. The specification worksheet gives examples of highly diverse mixes (6-8 species) and recommends (but does not explicitly require) a diverse cover crop mix. The slightly lower payment for organic crop does not account for the higher cost of certified organic seeds.

Wyoming offered two cover crop scenarios: cover crop mechanical kill (terminated by frost, roll-crimping, mowing, disking, or grazing) at \$56.93 per acre, and organic cover crop which requires the use of organic seed and “typically legumes, brassicas, deep-rooted crops, and other species (e.g. a cocktail mix of radish, turnip, peas, clovers, and small grains),” at \$56.68 per acre. The slightly lower payment for the organic scenario does not account for the higher price of organic seed, nor for the potential additional costs of a highly diverse cocktail.

We offer the following two recommendations for CPS 340 across the region:

**Recommendation N9-** All three Northern Mountain states should offer at least four scenarios: basic (one or two species cover crop), basic organic, advanced (cocktail of 5 or more species), and advanced organic. Payment rates should be based on the same cost components: cost of seed (with higher cost of certified organic seed reflected in higher per acre payments for organic scenarios), cost of seeding operation (which will be higher for the high diversity cocktail to reflect the added logistical complexity of planting multispecies cover crops), and cost of termination. All three states should clearly state implementation criteria (requirements), clearly distinguish requirements from guidance and examples, and maintain flexibility in choice of cover crop termination method (frost, grazing, mowing, roll-crimping, disking, herbicide, etc.).

**Recommendation N10** – All three states should adopt the same per-contract limit in acreage or total dollars per year, and the limit should be high enough to accommodate the expected demand for adoption of this practice.

### **III. Conservation Crop Rotation (328)**

There are two scenarios available in Montana under this practice: 1) flexible crop rotation and 2) standard rotation. The flexible rotation is essentially the use of a legume cover crop or a cover crop cocktail mix planted and terminated with attention to soil moisture and is planted during a fallow year. The estimated cost of implementing this scenario is \$35.87 per acre.

The standard rotation scenario has two choices: 1) a three-crop sequence of different crop types (cool season grass or broadleaf or warm season broadleaf none of which occupy more than half the sequence); or 2) a four crop sequence containing three different crop types, again none of which occupy more than half of the sequence. The estimated cost of implementing this change is \$11.22 per acre.

Scenario 1 has many detailed limitations and payment is capped at 320 acres. Also, payment is made only in the years of the establishment of the legume or cover crop mix in the rotation. If a cover crop mix is used in this scenario it is required that the cocktail mix be of minimum of five species with no one species making up more than one third of the mix. In addition not more than 10 percent of the mix can be cool season grasses. Grazing of the cover crop is allowed but with limitations of grazing no more than 50% of the current year's growth and 6 inch stubble height is maintained. These criteria are so similar to the one scenario offered for CPS 340 that it appears that the two practices have been confounded with one another

Scenario 2 has additional limitations and payment is capped at 450 acres over three years. The object of this scenario is to increase complexity of the rotation from a current 1 or 2 crop rotation to at least a 3 to 4 crop rotation. Interesting, if the producer has already implemented a 3 or 4 crop rotation, the producer is not eligible if he wishes to expand the rotation beyond 3 or 4 crops.

Since Scenario 1 of this practice is very similar to the cover crop (340) above, NRCS MT does not allow the farmer to undertake both practices on the same acres for the same years.

Finally, several valuable scenarios offered by WY and ID are not offered by MT, including organic, specialty crop, and irrigation-to-dryland conversion.

There are two issues that cause concern for this practice. First, scenario 1 is almost identical to the cover crop practice, yet the payment is almost three times less and only pertains to the year of establishment. This would seem to provide a disincentive to adopting this practice. Why would the cost of a 5-species cocktail under CPS 340 be \$95.43, whereas when planted as part of a Conservation Crop Rotation under CPS 328, only \$35.87? It would be far more logical to allow the farmer who does CPS 328 Scenario 1 to do either a legume at \$35.87 (even more appropriate would be \$50 or so – seeding the legume at its sole-species rate is likely to cost much more than one-third the cost of a cocktail), or the 5-species cocktail at \$95.43 for the cover crop year.

**Recommendation N11-** Either eliminate scenario 1 under this practice or up the annual one-time payment to \$95.43 per acre for the 5-species cocktail, and at least \$50 per acre for a legume cover. Because Scenario 1 reads very similar to a cover crop practice, we prefer the option of eliminating this scenario under CPS 328, and expanding CPS 340 scenarios (above) to include both single-species and multispecies cover crops.

Scenario 2 is a definite incentive to increase rotation complexity with expected conservation benefits of erosion reduction, soil quality improvement and the breaking of pest cycles. However, why not encourage even greater rotational complexity? For instance, in a recent survey of organic grain farms in Montana there were several farmers who had distinct eight year rotations (OAEC, 2014).

**Recommendation N12-** Do not limit those accessing support for this practice to a 4 crop rotation. Instead, offer CPS 328 to any farmer who upgrades a crop rotation by adding new crop species, plant family, or crop type (warm/cool, grass/broadleaf), and make the payment commensurate with the complexity of the final crop rotation, rather than the very low, fixed rate of \$11.22 per acre.

#### **IV. Residue and Tillage Management, No-Till/Strip/Till/Direct Seed (329), and Reduced Till (345)**

There is only one scenario that supports the conversion from conventional tillage to strip or no-till, under either organic or non-organic systems of production. The estimated cost of implementing this practice in MT is \$18.51 per acre. Interestingly, the scenario claims that the cost of weed control in organic systems is captured in this payment. The payment is limited to 640 acres and ends three years after the practice is implemented. Further limitations include: no-full width tillage is allowed during the years of payment, the soil loss tolerance must be less than T, a maximum STIR (Soil Tillage Intensity Rating) of 20 and the Soil Conservation Index (SCI) must remain >0 for during the period of implementation.

While there is a claim that the same payment can capture either chemical control or mechanical control of weeds in non-organic or organic systems respectively, this does not seem possible.

In addition, MT offers CPS 345 Mulch till at a much higher estimated cost (\$68.41) for a specific situation only: irrigated potato or sugarbeet, with a 200 acre limit.

Both ID and WY offer organic and conventional scenarios for CPS 329 no-till, and irrigated and dryland scenarios for CPS 345. Ironically, payments for CPS 345 are 2.5 to 3.5 times as high as for CPS 329, even though the latter requires greater management skill and additional technology (either herbicide or roller-crimper or other non-tillage physical means to kill existing vegetation before planting a production crop), and also provides potentially greater soil conservation benefits. In all regions examined, cost components for CPS 329 no-till are limited to the no-till seeding operation itself (neglecting other costs such as increased risk, greater management skill, and no-till vegetation management) while for CPS 345 both mulch tillage and planting operation are included, allowing potentially higher per-acre payments for CPS 345. ID and WY are among the few states in which this paradox is reflected in the payment schedule itself; many other states either did not offer CPS 345 or arbitrarily set its payment at  $\leq$  the CPS 329 payment.

**Recommendation N13-** Provide greater clarity as to how adopting no-till/strip-till/ and directly seeding have exactly the same costs for implementation for organic systems (mechanical cover crop termination) and for conventional systems (herbicide spray for cover crop termination).

The limitations of STIR and SCI as predictive tools for soil quality were discussed earlier in this project as part of our recommendations to improvement of this practice standard and are copied here:

Given current uncertainties in measuring and predicting soil organic matter (SOM) changes in response to management variables, the difficulty in attaining a positive soil conditioning index (SCI) for cropland in warmer climates, and ongoing work by NRCS and other researchers to develop improved soil quality prediction tools, we recommend dropping the specific requirement for a positive SCI under *Additional Criteria for Improving Soil Quality and Organic Matter Content*. At such a time that more reliable SOM measurements, and an improved SCI or other updated soil quality prediction tool(s) become available, re-introduction of a requirement to show a positive SOM factor under the soil quality purpose may be warranted.

In lieu of the SCI-based criterion, we propose at this time using NRCS's current STIR value criterion for soil quality, plus a requirement for sufficient high-residue and cover crops to foster soil life and high soil quality. We suggest a 75% ground coverage criterion for 10 months of the calendar year as a rough approximation. This will naturally require a higher biomass input (in the form of cover crops + production crop residues) in warmer climates where organic matter

breaks down more quickly, and at the same time the longer growing season facilitates higher annual biomass production.

Though our recommendations were focused on issues for warmer and higher moisture areas, which is clearly not the case in this region, there is concern that these limitations may exclude organic producers in the region from making efforts at greater conservation tillage efforts. Often, any reduction in SOM and soil quality that may result from more tillage in organic systems is more than made up by greater use of cover crops and crop rotations (see Cavigelli, M.A., et al., 2013). The bottom line is that there should be an encouragement for improvement in soil quality by limiting, changing timing and type of tillage, but not necessarily eliminating all tillage.

**Recommendation N14-** Further explore whether the requirements of a STIR of 20 and positive SCI, create an unintentional bias against supporting organic systems of production in this region to adopt or improve conservation tillage.

**Recommendation N15:** Include cost components for CPS 329 that fairly reflect all costs of no-till, especially organic no-till, including skill acquisition and management labor, risk, and no-till weed and cover crop management as well as no-till planting.

## **V. Integrated Pest Management (595)**

This practice is discussed in two sections. First, there the payment schedule for the development of an Integrated Pest Management (IPM) Conservation Activity Plan (CAP). Under this section the practice has 3 scenarios in this region and that simply offer different levels of costs/payments for the development of an IPM CAP) by broken out by acreage size and (“small/specialty”, <50 acres; medium, 51-250 acres, and >250 acres. The costs of these CAPs increase by size with a small specialty IPM CAP being \$1, 471, a medium IPM Cap being \$1,884 and a large IPM CAP at \$2,943.75.

In a separate section Montana offers a single scenario for an IPM Small or Diversified systems (CSA, organic) farms. This scenario has a limitation that the applicant has to address more than one resource of concern and requires development of an IPM plan using Land Grant University pest monitoring techniques. The cost of this development is set at \$651.66 per plan and system. Apparently payments can be made over three years, but it is not clear if this is for both the development of the plan and its implementation over three years. This IPM effort is limited to small scale organic operations only and must be consistent with the Organic Systems Plan of the organic farmer applicant.

In terms of the CAP section, besides the minor issue that specialty farms are not necessarily small in acreage, we have seen in the development of CAP on organic farms that NRCS field staff or even certified Technical Service Providers do not often have training to work with the unique pest management approaches for organic production systems. Furthermore, it may require more time and expertise to develop an organic integrated pest management plan.



Both WY and ID offer the full gamut of 13 scenarios under CPS 595 that are available in most regions and offered in many states: basic (pesticide impact mitigation, one RC), basic+ (more than one RC), and advanced (full IPM pest prevention, avoidance, monitoring, suppression, pesticide mitigation as needed to address all RCs) for each of four farming systems (agronomic, vegetable/small fruit, orchard, small diversified farm), plus a Risk Prevention scenario that emphasizes prevention and avoidance and is designed primarily (but not exclusively) for organic systems.

**Recommendation N16:** Montana should be encouraged to offer a wider range of scenarios under CPS 595 to serve organic, sustainable, and conventional producers wishing to implement different levels of IPM and mitigation of pesticide impacts on resources.

**Recommendation N17-** Undertake an investigation of the potential different costs in developing an IPM plan for organic production systems compared to non-organic production systems.

For the other section with the unique small-scale organic IPM planning and possible implementation support, it is curious that the cost is possibly more not less than the cost of a small/specialty crop farm. Furthermore, the IPM CAP payment schedule could be equally open to an organic or non-organic farmer, so why wouldn't a small organic farmer access IPM planning with the higher payment for the development of a CAP? Finally, there are very large organic grain farms in this region and it is again not clear that the development of an IPM CAP for these systems ought to cost the same as non-organic IPM CAP.

## **VI. Nutrient Management (590)**

The nutrient management practice in this region offers eight scenarios, four of which are implemented in MT and all eight in ID and WY (Table 1). In Montana, the “basic” nutrient management (BNM) scenarios can apply to conventional or organic systems, with or without manure. It entails development and implementation of a nutrient management budget. The Small Farm/Diversified (SFD) scenario seems similar to BNM system but is intended for organic or non-organic farms with high diversification and with less than 10 acres of production. Payment is on a per-farm basis rather than per-acre. Many farms in the 10-150 acre range in the Northern Mountain region are also highly diversified, yet would receive much lower payments under BNM than a  $\leq 10$  acre farm at a similar level of diversification would receive under SFD.

The Advanced Precision (AP) scenario is much more technical with the possible use of high definition aerial photography, zone soil sampling and variable rate fertilizer application. AP appears much more specific to conventional production systems.

Finally, the Adaptive Nutrient Management (ANM) System entails establishment of a small plot research experiment with 4 replicated plots to developed with a TSP or “qualified agency” to evaluate, identify and implement various nutrient efficiency improvement methods (organic or

conventional). This scenario has to have approval of the State Resource Conservationist to be implemented.

There are many limitations for this practice. For all scenarios there are very specific soil sampling methods and analysis. For all scenarios nutrients need to be applied based on estimated yields and soil analysis as determined by the respective Land Grant University. The BNM and advanced systems have to take at least 20 sub-samples per 80 acre field apparently per year.

For AP, when the farmer is using variable rate application of fertilizer for the first time the cropping system must remain the same. Cropping systems include summer fallow (alternate year cash cropping on the same land) and re-crop systems (continuous cropping of the same land with no break). Without keeping the practice the same it is very hard to calibrate variable application rates because yields can be so impacted by soil moisture level differences between these practices. Finally, this scenario has a 3 year 500 acre limit meaning the maximum cost of implementing this scenario is \$35,905 (500 acres x \$41.81/acre + (2 years X \$15 per acre X 500 acres).

The BNM system is limited to only one time cost/payment capped at 500 acres or a maximum of \$5,665 (500 acres x \$11.33 per acre). The SFD system is limited to three years or maximum of \$1,708. The ANM scenario payment is \$1733.16/year on a per-farm (per-trial) basis; whether the practice can be implemented multiple years is not clear.

While it is difficult to assess the estimates of the different cost between these scenarios, it clear that the highly technical approach (AP) is clearly the most incentivized and it is probably doubtful that large organic grain systems could utilize this scenario since they do not apply synthetic fertilizers, even if they do need to monitor nutrient levels across large acreages. Because of the qualitatively different nature of nutrient sources used by organic producers versus conventional NPK fertilizers, none of the four scenarios offered really addresses the needs of the organic producer, with the possible exception of Adaptive Nutrient Management, if the organic producer can find a TSP or “qualified agency” with the expertise and willingness to work with organic systems. With the BNM system the cost per acre of implementation of the system is assumed to be the same across organic and non-organic systems which does not seem correct since the methods of nutrient sourcing and nutrient management are so fundamentally different.

ID and WY offer a wider range of nutrient management scenarios, including basic, basic with manure, basic organic, small farm diversified, enhanced, precision, advanced precision, and adaptive (field trial). One surprising observation is that payments for basic without manure are slightly *higher* than for basic with manure, with basic organic just a little higher than basic. Nutrient management that includes manure and/or other organic nutrient sources (such as compost), requires additional analyses of manure and other organic amendments, and would therefore be expected to entail higher total costs. Organic producers would mostly be interested in the basic organic, small farm diversified, and adaptive nutrient management (field trials), since the higher tech methods of enhanced, precision, and advanced are most applicable to systems using synthetic fertilizers.

It is interesting to note that WY requires organic producers to implement CPS 328 Conservation Crop Rotation and CPS 340 Cover Crop in conjunction with CPS 590 Nutrient Management on any organic or transitioning-to-organic acreage. This integrated approach to nutrient management and resource conservation can enhance conservation outcomes, and stands in contrast with Montana's stipulation that producers *cannot* enroll the same acreage in both CPS 328 and CPS 340. However a *requirement* that organic producers implement cover crop and rotation in order to enroll in the nutrient management practice can also be seen as an added burden on organic producers; while some may be happy to adopt an integrated conservation approach utilizing all three practices, others may prefer to undertake nutrient management by itself first, and reserve the option of adding the other practices later.

**Recommendation N18-** Undertake an investigation of the potential different costs in developing the Basic Nutrient Management system scenario for organic production systems compared to non-organic production systems, and for the use of manure versus synthetic nutrient sources alone.

**Recommendation N19** – Expand the acreage eligibility limit for the SFD scenario (flat rate of \$569.39 per farm) to 150 acres, so that diversified farms up to this limit would receive payments under SFD that are commensurate with what farms that only slightly exceed this limit can receive under BNM. The current set of scenarios create an unfair and illogical situation for highly diversified producers that marginally exceed the 10 acre limit for SFD: their payments under BNM would be one time, approximately \$125-150, or up to 14 fold lower than another producer at the same level of diversity but working just under 10 acres.

**Recommendation N20** – In the interest of encouraging integrated approaches to conservation, WY and other states should *encourage* enrollment of the same acres in CPS 328 Conservation Crop Rotation and/or CPS 340 Cover Crop for *all* farmers implementing CPS 590, but should not selectively *require* organic producers to enroll their CPS 590 acreage in CPS 328 and CPS 340 as well. We understand that the NOP Standards mandate crop rotation and legume cover crops as major elements of organic nutrient management; however organic producers, especially those already implementing a good crop rotation and cover cropping, should be allowed to enroll in CPS 590 without also having to enroll in CPS 340 and 328 (which would require adoption of a higher level of cover cropping, such as 5-spp cocktail, and of crop rotation, respectively).

### **Additional Comments on Montana Scenarios**

#### **Regarding grazing of the cover crop:**

Grazing the cover crop within the NRCS criteria of not more than 50 percent of aboveground biomass and stubble of at least 6 inches (Montana criteria) offers a win-win-win compromise amongst objectives. First, the cover crop is much better for soil life and soil quality (and hence moisture infiltration and retention) than bare fallow. Second, grazing it back to  $\geq 50$  percent biomass/ $\geq 6$  inch stubble height might reduce moisture consumption by the cover while retaining much of its soil-conservation value. Note that much of the soil conserving value of any vegetative cover comes from its living root biomass, which holds the soil, brings biology deeper into the

profile, and converts to long-lived soil sequestered carbon at twice the percent as that realized from aboveground biomass either incorporated or left on the soil surface. In addition, the root sloughing and subsequent regrowth stimulated by grazing – especially if it is a brief pulse of mob grazing followed by suitable recovery period – feeds soil life a feast.

The third “win”, of course, is that the cover crop offers supplemental forage for livestock in a region where available forage could be a real constraint. The economic, nutrient-management, and resource conservation benefits (including water quality) of crop-livestock integration must also be considered; it should make this practice more attractive to farmer and NRCS professional alike. As noted above, it is our understanding that grazing the cover crop within NRCS-MT proposed criteria would not sacrifice much of its conservation benefit.

We thank NRCS–MT for making this grazing option available, thereby promoting adoption of the vital cover cropping practice in this fragile, semiarid environment. We urge and support NRCS to negotiate with the Risk Management Agency to allow environmentally responsible grazing of cover crops and crop-livestock integration without imposing penalties in crop insurance coverage or premiums. It is important to avoid erecting arbitrary, non-science-based barriers to farmer adoption of important conservation practices like CPS 340 Cover crop.

**Regarding Recommendation 4 and high-diversity cover crop cocktails mandated in the single CPS 340 scenario in MT and suggested for cover crops in WY and ID:**

Scientific evidence is beginning to accrue that validates the soil health benefits of high-diversity cover crops for several different bioregions and production systems. Dr. Ray Archuleta of the Greensboro, NC regional office of NRCS gave a 145-slide powerpoint presentation at the December 2013 Virginia Farm to Table conference, available as a pdf file at <http://virginiafarmtotable.org/wordpress/wp-content/uploads/2012/12/Cover-Crops-Soil-Health.pdf>, in which the following data were presented:

In Ohio, field corn yields after three out of four, 6-to 8-species cover crop mixes averaged 174 bushels per acre at zero additional fertilizer N on the corn, with a trend toward *negative* response to adding 70 or 140 lb N/ac (148 to 171 bu/ac for fertilized corn). Meanwhile, corn after radish + field pea yielded 142-145 bu/ac with a neutral (flat) response to N. The cover crops themselves put on tremendous biomass of 5.5 to 8 tons/ac – the latter seen with the following (lb/ac seeding rates in parentheses): pearl millet (4), sorghum-sudangrass (4), soybean (10), cowpea (15), tillage radish (2), turnip (1), sunflower (1), and clover (crimson?) (5). Note that seeding rates for each cover crop are so low that the actual cost of buying seed might be not much more per acre for this than for a one- or two-species cover. However, more complex seed preparation and planting procedures will add skilled labor costs.

Dr. Archuleta emphasizes that low seeding rates for each component give better results, because higher rates e.g. if each species were sown at 1/3 or 1/2 of the recommended sole-species rates, leads to overcrowding with lower ultimate biomass and some species in the cocktail being suppressed completely.

The efficacy of multispecies cover crop cocktails, and appropriate seeding rates, may be different for the cold, dry northern Mountain region. However, in addition to documenting positive results in the southeast and mid-Atlantic regions, Dr. Archuleta and his colleagues have evaluated the moisture-consumption / moisture-availability impacts of the high diversity cover crop mix versus unplanted fallow (maintained by herbicide or cultivation) in North Dakota, where moisture deficits are more common. Moisture availability after the high-diversity, high-biomass cover crop was not less than after the bare fallow – and soil quality was a lot better, so that rain falling on the subsequent production crop was better utilized. However, additional research should be conducted on multispecies, high-biomass cover crops in the Northern Mountain region before attempting to “push” this approach on farmers by offering *only* 5+-species cover crop scenarios through EQIP. Instead, it is important to offer scenarios that require only a single species cover crop (a vital first step up from soil-depleting bare fallow), and offer sufficient payment to motivate enrollment in CPS 340 in the region.

**Regarding support for rotations longer than 4 years and more diverse than 3 crop types under CPS 328:**

It would be good to expand the application of the “standard” crop rotation beyond the 3 to 4 crop limit, as some innovative farmers in the Northern Mountain region currently implement 6- to 8-year rotations with as many crops, including 3 or more plant families and both cool and warm season crops. Resource benefits from soil and water quality to pest management (reduced need for pesticides) may continue to accrue as rotation length and diversity increase beyond the 3 or 4 crop /year level. Whereas a payment in the neighborhood of \$8 (ID, WY) to \$11 (MT) per acre might be sufficient for the addition of one or two crops to an existing rotation on a moderate to large farm, a higher rate might be appropriate for producers willing to take a larger “jump” (e.g., from wheat-fallow to a 6 year rotation including 4 production and 2 cover crops from 4 plant families or crop types), since such changes require more skill acquisition and management labor to implement, and there is a possibility of income foregone or increased risks.

## Appendix E

### Appendix E – Previously submitted memo on providing financial assistance for comprehensive conservation planning in CSP; NRCS response to memo

#### Memo to NRCS

To: Jason Weller, Chief, Natural Resources Conservation Service  
From: Ferd Hoefner, Policy Director, National Sustainable Agriculture Coalition  
RE: Creating a Comprehensive Conservation Planning Payment within the Conservation Stewardship Program  
Date: July 9, 2014

We respectfully request NRCS create a Comprehensive Conservation Planning contract payment within the Conservation Stewardship Program for use in the next sign-up period.

As you know, the 2014 Farm Bill retained the existing definition of “conservation activity” as including “planning needed to address a priority resource concern.” Moreover, the Managers’ Statement included important language that clarifies that planning “has an inclusive plain language meaning to encompass, for example, conservation planning. The Managers recognize that in developing a conservation plan, a producer incurs significant costs in time, labor, management, and foregone income.” This important clarification authorizes NRCS to provide financial and technical assistance for producers who want to undertake comprehensive conservation planning as part of their overall CSP contract.

NRCS is currently using 17 Conservation Activity Plans (CAPs) in the Environmental Quality Incentives Program. These CAPs allow producers to get quality plans done through technical service providers; plans which meet NRCS standards. NRCS has been critically short of technical funds for years, and the advantage of CAPs is that financial assistance can be used to pay for technical assistance. The producer benefits because he or she can get a professional plan done quickly; NRCS benefits because some of the workload is taken off the field staff.

We envision a similar offering being available in the CSP. Because the CSP is focused on higher level stewardship and requires both additionality and continual improvement (renewal option), providing producers with a comprehensive conservation planning enhancement would both identify and accelerate the implementation of on-farm conservation activities.

We understand from your staff that this activity would not become a CSP enhancement within the CMT, but rather would take the form of a separate, additional contract payment for any producer choosing this option. That makes good sense to us.

We recommend setting a sliding scale payment rate for the contract payment, with a minimum payment of \$1,000 and a maximum of \$3,000. We envision the comprehensive plan covering at a

minimum all of the priority resource concerns for a given region, though it would also be sensible for the plan to also cover any additional site-specific resource concerns or resource objectives of the producer. The number of resource concerns addressed in the comprehensive plan would be one factor determining the payment rate, but so too would be the complexity of the farming operation, including the number of crop and livestock species and the number of farming enterprises. In other words, we would base the rate on the complexity of the plan, not the number of acres in the operation.

We would be happy to work with your staff to develop additional specific criteria.

Thank you for your consideration.

### **Response from NRCS**

Response: As recognized by NSAC, implementing a payment for this purpose is expected to be in a form independent of CSP's traditional enhancements. Thus, to execute the proposed plan, the CSP Team must work with agency economists to set the appropriate compensation amounts. Since this process is on-going, the CSP Team will take your recommendation under advisement as we proceed.

## Appendix F

**Appendix F – Previously submitted memo on reevaluating Conservation Practice Physical Effects (CPPE) point values for certain conservation enhancements, and establishing a minimum cumulative CPPE point threshold to be eligible for the program; NRCS response to memo**

### **Memo to NRCS**

To: Jason Weller, Chief, Natural Resources Conservation Service

From: Ferd Hoefner, Policy Director, National Sustainable Agriculture Coalition

RE: Creating a Minimum Enhancement Point Value, Enhancements with Point Values to be Re-evaluated, Suggested Enhancements to Delete

Date: July 17, 2014

We respectfully request NRCS create a new minimum new conservation enhancement (or enhancement plus conservation practice) point value in order to qualify for a Conservation Stewardship Program (CSP) contract for the purpose of ensuring a reasonable degree of additionality in all CSP contracts.

We also believe there are some conservation enhancements that warrant being re-evaluated with regard to the conservation and environmental benefits they provide and the corresponding point values assigned. There are some enhancements that appear to be overvalued, while some are significantly undervalued.

There is one enhancement we believe should be amended to be more inclusive of specialty crop growers. In addition, we believe there is one enhancement that should be removed as we believe there are limited, if any, conservation or environmental outcomes achieved.

### **Minimum New Enhancement Point Value Proposal**



Our experience with and analysis of CSP reveals there are producers who meet the additionality requirement by selecting one relatively low-bar practice. This is potentially damaging to the program's reputation, as well as its ability to support advanced levels of resource stewardship. We believe these lower value enhancements should still be eligible for selection, as they provide important options for particular operations. However, establishing a minimum threshold can help ensure that each contract yields substantial additional conservation benefits. We suggest consideration of a threshold in the 20 to 25 point range, and suggest including any selected conservation practices in addition to selected enhancements.

As you know, the goal of CSP is to promote and maintain advanced conservation. Allowing producers to use one relatively low-bar conservation activity as their additional mandatory enhancement does not promote the best in conservation. The goal should be to drive the program in a direction that rewards farmers who take a thorough, whole-farm approach to conservation planning, decision making, and implementation. Moving to a minimum enhancement point value system to earn a program contract will help producers think of their farm in a systems-based context and consider what fits within their system rather than just what is easy.

### **Enhancements to Re-evaluate**

There are a number of enhancements with scores that, in our view, do not accurately reflect the conservation and environmental outcomes they provide. Therefore, we provide the following list of enhancements that we believe should be re-evaluated and given either higher points because they provide greater conservation and environmental outcomes than their current points would suggest, or lower points because they provide fewer conservation and environmental benefits. We will be happy to meet and discuss the following enhancements, or to provide further details in writing.

- Enhancements with scores that currently seem too high:

- AIR04 - Spray-drift-reducing technology
- AIR07 - Targeted spray application

These enhancements read like a single component of Integrated Pest Management (CPS 595) or High Level IPM (WQL13); however they do not alone seem sufficient to meet the New Activities requirement for CSP enrollment.

- ANM35 - Enhance wildlife habitat expired grass legume covered CRP acres
- ANM36 - Enhance wildlife habitat expired tree covered CRP acres

- ANM37 - Prescriptive grazing management system for grazing lands
- SQL10 - Crop management system where cropland acres were recently converted from CRP vegetation

We agree that CSP enhancement activities for expiring CRP acres merit priority consideration. However, the current scores for ANM35 (87.4), ANM36 (94.93), and ANM37 (88.2) seem inflated compared to other wildlife-related enhancements such as Extend Riparian Forest Buffers (ANM05 – 48 pts), Prairie Restoration for Grazing and Wildlife (ANM21 – 37 pts), and Riparian Buffer for Terrestrial and Aquatic Wildlife Habitat (ANM33 – 28 pts). Similarly, the score for SQL10 (153.3) is very high compared to that for a very similar enhancement, High residue cover crops (PLT20 – 84 pts).

We recommend a re-evaluation of the conservation and environmental benefits of ANM35, ANM36, ANM37, and SQL10. We also recommend a bonus of 5 percent, or at most 10 percent, for implementation on expiring CRP acres. In other words, if for instance an enhancement yields 50 points and is implemented on expiring CRP acres, it would be worth 52.5 points or at most 55 points.

- ENR01 - Fuel use reduction for field operations - a 20 percent reduction seems like a low bar.
- PLT20 - High residue cover crops or mixtures high residue cover crops – the criteria for PLT20 (84 pts) are similar to those for SOE05 (62 pts) with a somewhat higher requirement for cover cropping; the point score seems a bit inflated.
- Enhancements with scores that currently seem too low:
  - AIR03 - Alternatives to burning prunings from orchards, vineyards, etc. – the environmental benefits of this practice seem considerably higher than the 8 points suggest, especially if prunings are returned to the soil as mulch or compost.
  - ANM03 - Incorporate native grasses and/or legumes into 15 percent or more of herbage DM productivity – the multiple benefits cited on the job sheet (soil fertility, biodiversity, wildlife habitat, food for pollinators, forage quality, quantity, and duration) seem to merit a higher score than 17.
  - ANM09 - Grazing management to improve wildlife habitat – the low point score (18) contrasts sharply with other grazing/wildlife practices, such as ANM37.
  - ANM29 - On farm forage based grazing system – the multiple benefits cited on the job sheet include better manure distribution and thus better nutrient cycling, soil quality (structure and organic matter), and energy conservation, and thus seem to merit a much higher score than 16.
  - PLT05 - Multistory cropping sustainable management non-timber forest – this enhancement amounts to permaculture or agroforestry, systems that require a lot of careful stewardship and offer major resource benefits.
  - PLT17 - Creating forest openings to improve hardwood stands – this enhancement offers substantial resource benefits (restores degraded forest), and requires considerable effort.

- SQL08 - Intercropping to improve soil quality and increase biodiversity – the benefits cited in job sheet (soil quality, water quality, wildlife) may merit a higher score.
- WQL18 - Nonchemical pest management for livestock – this is a fairly high-level stewardship activity with benefits to water quality, human health, and livestock health.
- WQL19 - Transition to organic grazing system
- WQL20 - Transition to organic cropping system

Making a transition to organic cropping (WQL20) or grazing (WQL19) system entails a high level commitment to land stewardship with multiple benefits cited in the job sheet – soil quality, water quality, wildlife, and livestock health. The current scores grossly undervalue these enhancements; we encourage NRCS to consider doubling them at least.

- CCR99 - Resource Conserving Crop Rotation – as a “flagship enhancement activity” and one of the most integrated and effective systems for addressing resource concerns, the Resource Conserving Crop Rotation merits a higher score that it currently receives.

### **Enhancement to consider adjusting**

SQL01 (Controlled traffic system) should be amended to specifically recognize permanent raised bed systems (often used by vegetable producers) as a valid application of the enhancement. This will promote a strong conservation activity and help make the program more applicable to specialty crop growers.

### **Enhancement to consider removing**

PLT19 (Herbicide resistant weed management) is one enhancement NRCS should consider removing from the list of enhancement selections. This enhancement assumes the use of herbicides and simply adjusts the type of herbicide used and likely introduces a new synthetic chemical and eventually new resistance into the production system.

Again, we would be happy to work with your staff on the above recommendations, and provide further details as needed. Thank you for your consideration of these proposals.

## *Response from NRCS*

### **Minimum New Enhancement Point Value Proposal**

Response: NRCS agrees the selection of a single enhancement with minimal performance benefits (i.e., low-bar activities) to meet the additionality requirement should be minimized. Accordingly, NRCS plans to implement, for FY2015-1 and forward, a more rigorous stewardship eligibility requirement for the “meets one additional priority resource concern” test.

### **Enhancements to Re-evaluate**

Response: The effect scores (i.e., environmental benefit points) are impartially assigned and exceed technical adequacy for the program and its purpose. The process to assign scores to an activity, at the national scale of the activity’s criteria, is greatly rooted in science. Any remainder, as with all modeling tools, is based on subjective judgment. It is in this narrow judgment zone where differences will always be found. In other words, two experts assigning effect scores will yield different results.

### **Enhancement to consider adjusting - SQL01 (Controlled traffic system)**

Response: This activity is neutral with respect to bed system and crop produced; therefore, the activity does not preclude specialty crop growers.

### **Enhancement to consider removing - PLT19 (Herbicide resistant weed management)**

Response: This activity contains and requires the implementation of all of the latest Land Grant University principles to control herbicide resistant weeds while improving soil health. While herbicides may be a component of a system, the emphasis is on principles such as crop rotation, adjusting chemistry modes of action, scouting, hand weeding, and seed bank management. Additionally, this activity was designed to be used in conjunction with PLT20- High Residue Cover Crop or Mixtures of High Residue Cover Crops for Weed Suppression and Soil Health, which

employs extensive quantities of residue cover. Long-term implementation of this activity and its complement will shift the pre-implementation production system to a more diverse production system post implementation.

## Appendix G

### Appendix G – Previously submitted memo on creating a new soil health enhancement bundle; NRCS response to memo

#### Memo to NRCS

To: Jason Weller, Chief, Natural Resources Conservation Service  
From: Ferd Hoefner, Policy Director, National Sustainable Agriculture Coalition  
RE: Establishing a Soil Health Bundle within the Conservation Stewardship Program  
Date: July 2, 2014

We respectfully request NRCS establish a Soil Health Bundle within the Conservation Stewardship Program for use in the next sign-up period.

NRCS has established itself at the lead Federal agency in promoting soil health. Through its information campaign, conservation innovation grants, and numerous program offerings, NRCS is helping increase the adoption of soil health across the country. NSAC applauds NRCS efforts in this regard and is excited at the potential of soil health to improve our water, air, and wildlife resources; reduce costly and sometimes harmful inputs; and help farmers and ranchers adapt to and become more resilient to climate change. We also know that as soil health practices become commonplace, the Nation's long-term agricultural productivity will be sustained – a critical factor as feeding a burgeoning world population will increase pressures on our working lands.

In just a few short years, NRCS has made remarkable progress in advancing soil health, and we believe establishing a Soil Health Bundle in the Conservation Stewardship Program represents the next logical step in the evolution of your effort. This recommendation has been developed as a part of the multi-partner Conservation Innovation Grant project on integrating sustainable and organic agriculture into NRCS programs (Agreement #69-3A75-10-176) that includes NSAC and NSAC member organizations.

For the next signup period, we propose that NRCS create two soil health bundles:

1. Soil Health Cropland; and
2. Soil Health Grasslands

We request that each bundle have three core enhancements which a producer would be required to implement, and then a list of nine or ten optional enhancements (“flex” enhancements) from which a producer would choose at least two. Using this flexible approach ensures that basic soil health enhancements will be implemented while allowing the producer to customize enhancements to his or her operation, soil type and condition, climate, and region.

In our bundle suggestions, we have used the four principles of soil health developed by NRCS:

- Keep the soil covered as much as possible;
- Disturb the soil as little as possible;
- Keep plants growing throughout the year to feed the soil; and
- Diversify as much as possible using crop rotations and cover crops.

## Proposed Bundles

### **I. Soil Health Cropland Bundle – Core enhancements:**

1. CCR99 – Resource Conserving Crop Rotation
2. SQL04 – Use of cover crop mixes
3. SQL05 – Use of deep-rooted crops to break up soil compaction

### **Soil Health Cropland Bundle – Optional Enhancements (pick 2)**

1. ENR10 – Using nitrogen provided by legumes, animal manure and compost to supply 90 to 100 percent of the nitrogen needs
2. ENR12 – Use of legume cover crops as a nitrogen source
3. PLT20 – High residue cover crop or mixtures for weed suppression and soil health
4. SOE05 – Intensive no-till (organic or non-organic systems)
5. SQL08 – Intercropping to improve soil quality and increase biodiversity
6. SQL10 – Crop management system where crop land acres were recently converted from CRP grass/legume cover or similar perennial vegetation
7. SQL11 – Cover crop in orchards, vineyards, or other woody perennial
8. SQL12 – Intensive cover cropping for annual crops
9. WQL17 – Use of non-chemical methods to kill cover crops
10. WQL27 – Drainage water management for nutrient, pathogen, or pesticide reduction

### **II. Soil Health Grassland Bundle – Core Enhancements**

1. PLT16 – Management-intensive rotational grazing
2. ANM03 - Incorporate native grasses and/or legumes to 15% or more of herbage dry matter productivity (diversity)
3. ANM29 – On-farm forage based grazing system

### **Soil Health Grassland Bundle – Optional Enhancements (pick 2)**

1. ANM 21 – Prairie restoration for grazing and wildlife habitat
2. ANM25 – Stockpiling of forage to extend the grazing season
3. ANM37 – Prescriptive grazing management system for grazing lands
4. ENR10 – Using nitrogen provided by legumes, animal manure and compost to supply 90 to 100% of the nitrogen needs
5. PLT02 – Monitoring key grazing areas to improve grazing management
6. WQL03 – Rotation of supplement and feeding areas
7. WQL22 – On-farm composting of farm organic waste
8. WQL26 – Reduce the concentration of nutrients imported on farm
9. SQL09 – Conversion of cropped land to grass-based agriculture

## Considerations

- Given the importance of soil health to productivity and the environment, and given the advanced nature of the required core enhancements we are proposing, we suggest that you provide as much of a bundle bonus as possible with respect to ranking and payment points. Also, note that for payment purposes the Soil Health Cropland Bundle would be a combined total of the supplemental payment for CCR99 and the additional payment points from the other activities.
- As with other bundles, all activities in the bundle – both the core enhancements and the flex enhancements – must be implemented at some point in during the contract period. We would suggest that all core enhancements must be in place by the second year. Payments of course would be calibrated for the year of implementation for new adoptions. If an applicant is already implementing some of the activities, they need only add the implementation of the remaining activities to be eligible for the bundle.
- For the cropland bundle, applicants should be allowed to choose how many acres of their total operation they want to implement the bundle on, though of course their ranking and payment points will reflect those specified acres and not the balance of the operation. For the grassland bundle, because some of the core practices require implementation on all acres, producer choice would be limited to only those enhancements that allow implementation on a portion of the operation.
- The grassland bundle works well for pasture. For range, there may need to be some further modifications to what we are proposing, as not all enhancements are designated for rangeland. In particular, a substitute would be needed for ANM03 in the core enhancement list, since AMN03 is not designated for rangeland. It may be possible to substitute ANM21 (prairie restoration) or ENR10 (using plant and animal based nitrogen). We would suggest that Science and Technology team look into these or other similar substitutions that would allow the proposed bundle to be offered on rangeland.
- We would hope that the proposed soil health bundles, if adopted, would also be heavily publicized and cross-referenced in all of the agency's Soil Health Initiative materials and outreach efforts.

Like NRCS, we at NSAC, along with all of the partners in the CIG project, believe that improving the nation's soil health is one of the most important conservation efforts ever undertaken in this Nation; the long-term positive impacts are incalculable. We also know that time is short before the next signup period for the Conservation Stewardship Program starts, but request that NRCS make every effort to add the suggested soil health bundles – they will go a long way toward making these vital enhancements a commonplace occurrence.



If you have any questions or need further information, please be in touch.

**Response from NRCS**

Response: As we have discussed previously, the CSP Team has been utilizing a soil health/CSP enhancement matrix where enhancements that address the four soil health principles are packaged into suites that address differing systems. In administering this approach, the CSP Team recognizes that a more direct approach could provide a greater benefit. Accordingly, the CSP Team recognizes merit in the offered methodology concurrent with noting some significant issues:

1. The inclusion of CCR99 as a core enhancement for the Soil Health Cropland Bundle creates a potential issue by blending a supplemental payment activity with annual payment activities.
2. There are internal compatibility conflicts between core and optional enhancement activity choices.

To alleviate potential payment issues and compatibility issues, an alternate methodology is proposed. The alternate proposal is to aggregate core enhancement criteria or similar into a single enhancement. This individual enhancement can then require the selection of two additional, compatible enhancements. Additionally, the proposed method will allow for an internal check to ensure technical adequacy is met. The CSP Team will consult with S&T on the development of a single enhancement that encompasses the proposed or similar core enhancement criteria.

## Appendix H

### Appendix H – Previously submitted memo on implementing certain provisions of the 2014 Farm Bill; NRCS response to memo

#### Memo to NRCS

#### Recommendations for 2014 Farm Bill Program Implementation

The Conservation Stewardship Program (CSP) is the nation's largest conservation program by acreage, with over 59.5 million acres enrolled. It serves a unique and critical role by incentivizing farmers, ranchers, and foresters to manage their land on an ongoing basis in a manner that yields high-level conservation benefits. Since 2009, 46,200 producers have been offered contracts, and the highly competitive program continues to grow in popularity. CSP has become a mainstay of federal farm conservation policy, and represents a realization by lawmakers, conservationists, and farmers that our nation's working lands require special attention to achieve increased land stewardship and ensure long-term agricultural productivity.

The National Sustainable Agriculture Coalition (NSAC) engaged extensively in the initial authorization of CSP and has followed its development closely ever since. A significant number of our member organizations work with farmers and NRCS field staff to promote the program at the state and county level. Leading up to the multi-year process that became the 2014 Farm Bill, and based on feedback from our member organizations and their farmer networks regarding program delivery, NSAC supported a number of statutory changes to CSP to enhance program administration and overall conservation benefits.

The 2014 Farm Bill reflects many, though not all, of the statutory changes NSAC supported, and we look forward to the opportunity to provide comments on those changes during the upcoming CSP rulemaking. In advance of the rulemaking, while the operational aspects for CSP continue for this fiscal year and programmatic changes are undertaken, we provide comments below for consideration that fall within two main categories:

- I. Incorporating Statutory Changes from the Agricultural Act of 2014; and
- II. Optimizing Outreach and Ongoing Opportunities for Program Improvement.

## I. Statutory Changes from the Agricultural Act of 2014

### A. No-Year Money and Acreage Rollover

The 2014 Farm Bill includes an important and much-needed provision relating to conservation program funds. The Section 2601(a) provision on Annual Funding states, “the Secretary shall use the funds, facilities and authorities of the Commodity Credit Corporation to carry out the following programs under this title” which includes CSP. Section 2601(b) is a “no-year” money provision, which stipulates that “amounts made available in [Section 2601(a)] for fiscal years 2014 through 2018 shall be used by the Secretary to carry out the programs specified in [Section 2601(a)] *and shall remain available until expended.*”

This no-year provision makes it clear that funds used to carry out the programs listed in Section 2601(a) carry over from year-to-year if not expended for the duration of the 2014 Farm Bill. CSP falls among the conservation programs with funding parameters based not on an enumerated dollar limit, but on total acres enrolled in the program. The amount of funding allotted to the program is measured by the amount necessary to enroll the specified acres.

The 2014 Farm Bill directs the Secretary to enroll 10,000,000 additional acres in CSP for each fiscal year 2014 through 2018 “to the maximum extent practicable.” In doing so, the farm bill provides the authority and funding for a cumulative 50,000,000 additional acres to be enrolled in CSP over the life of the farm bill. The funds associated with any remaining un-enrolled acres, or acres that become un-enrolled for any reason, are therefore appropriately carried over into the next fiscal year.

Implementing this provision properly is critical, particularly when considering that in 2013, only 9.5 million acres were enrolled in CSP despite having the funding and authority to enroll 12.8 million acres annually under the 2008 Farm Bill. Although the low enrollment can be attributed to multiple causes, including the effects of sequestration and the late enrollment resulting from the appropriations process, nearly 2.5 million acres – and associated resources – were lost. The cut to the annual acreage cap from 12.8 to 10 million makes this all the more important.

- **Recommendation:** Given the applicability of the no-year money provision to CSP, USDA should clarify in the interim final rule that any acres – and associated funds – that may be unutilized in a given year will be available for enrollment in subsequent years. Any CSP

acres that remain un-enrolled or become un-enrolled in a given fiscal year, and their associated funds, should carry over for enrollment in subsequent years.

## B. Ranking Criteria

The 2014 Farm Bill makes several changes to the ranking criteria.<sup>6</sup> Primarily, it focuses on priority resource concerns, shifting from macro to micro-targeting of resources by eliminating reference to “resource concerns” and instead making distinctions based on “applicable” priority resource concerns and “other” priority resource concerns.<sup>7</sup> It also includes land coming out of Conservation Reserve Program contracts among the ranking criteria.<sup>8</sup>

As we have communicated since CSP’s inception, we maintain that the ranking criteria should not favor newly adopted conservation activities over active management of existing conservation activities. CSP is intended to maximize conservation outcomes by selecting those applicants with the highest overall conservation and environmental benefit. Applications with the highest benefit scores should rank highest, without a preference or weighting for when the initial activity occurs. The sole concern should be that all conservation is actively managed and maintained, with a commitment to continual improvement.

***Overarching Recommendation on Ranking:*** Every aspect of CSP program design and delivery, including payment formulations and ranking, should keep the focus on outcomes, and thus should focus on adaptive management and continual improvement, not on the timing of initial adoption.

### 1. Micro-resource Targeting

Regarding the shift from resource concerns to priority resource concerns, we are concerned that this new focus on micro-resources could result in a subversion of the intent that CSP provide a *comprehensive* approach to addressing natural resource concerns.<sup>9</sup> The 2014 Farm Bill provides that the purpose of CSP is to “encourage producers to address priority resource concerns *and improve and conserve the quality and condition of natural resources in a comprehensive manner.*”<sup>10</sup> This new language indicates that the transition to more fully integrating micro-resource concerns into the program

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<sup>6</sup> Section 2101 (to be codified at 16 U.S.C. 3838f(b)).

<sup>7</sup> *Id.* (to be codified at 16 U.S.C. 3838d(5)).

<sup>8</sup> *Id.* (to be codified at 16 U.S.C. 3838f(b)(1)(F)).

<sup>9</sup> 16 U.S.C. 3838e(a).

<sup>10</sup> Section 2101 (to be codified at 16 U.S.C. 3838e(a)) (emphasis added).

should be achieved in a manner consistent with the long-term objective of the program, which remains to address all relevant resource concerns.

***Recommendation:*** When selecting priority micro-resource concerns, we recommend that each State or region be required to pick micro-resource concerns from among no less than three macro-resource concerns. In that way, the new rule and program guidelines can shift to micro-resource targeting while still maintaining a comprehensive conservation approach.

***Recommendation:*** NSAC endorses the Managers' Statement on the importance of engaging stakeholders in the process of selecting an appropriate breadth of priority resource concerns for the area, and urges NRCS to continue to encourage robust participation in State Technical Committees and local work groups from a diverse array of agriculture stakeholders in the selection of priority resource concerns.

***Recommendation:*** During the transition year or years prior to adopting micro-resource concern targeting, we recommend that States or regions that have previously targeted three or four macro resource concerns add one or two macro resource concerns to bring them up to the new statutory total of at least five resource concerns.

## **2. Conservation Reserve Program**

As part of the new option for CRP landowners to seamlessly transition to CSP, the Managers' Statement directs NRCS to do outreach to CRP landowners to facilitate the transition of expiring CRP acres into CSP.<sup>11</sup> NSAC endorses this statement, and encourages NRCS to collaborate with the Farm Service Agency to jump-start the outreach process to CRP landowners as soon as possible in order to bring CRP acres back into production in a way that protects the conservation value of those acres. We urge the agencies to work together to ensure that all landowners with retiring CRP acres are alerted at least a year ahead of time, by letter, to the option to transition to CSP.

However, we are concerned by the addition of CRP to the ranking criteria. NSAC supports doing everything possible to get CRP land that is now back in production into CSP, but we do not support making it so great a ranking factor that CRP-to-CSP proposals – that may otherwise have much

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<sup>11</sup> Managers' Statement at 983.

lower conservation and environmental benefit relative to other proposals – nonetheless get into the program, and bump others out, solely because the landowner once held a CRP contract.

The 2014 Farm Bill CRP-to-CSP transition provision, which allows CRP holders to enroll in CSP in the final year of their CRP contract, makes it easier for CRP landowners to obtain CSP contracts.<sup>12</sup> Moreover, CSP already provides a boost for activities done on expiring CRP acres through enhancement scoring. For example SQL10 (Crop management system where cropland acres were recently converted from CRP vegetation) and PLT20 (High residue cover crops mixtures/high residue cover crops) are very similar management systems, but the scoring differential reflects a preference for doing those activities on CRP acres. For FY14, SQL10 is in fact the highest scoring conservation activity, with an environmental benefit score of 153.3, while PLT20 has a score of 84. Similarly, ANM37 (Prescriptive grazing management system for grazing lands including expired CRP grass/legume acres) has an environmental benefit score of 88.2, while PLT16 (Intensive rotational grazing) has a score of 45. We believe this preferential treatment is sufficient to ensure CRP acres get into the program without impeding the ability of other high-scoring producers to enroll as well.

***Recommendation:*** Ranking points awarded to land formerly in CRP should be no more than a five percent bonus and should not be an equally weighted factor with the original ranking criteria.

***Recommendation:*** When evaluating applications from expiring CRP landowners, NRCS should prioritize those CSP contracts that will maintain CRP acres in forage-based production practices and systems, or resource-conserving crop rotations. Even when done under a CSP contract, the conversion of grassland to cropland results in significant loss of environmental benefit, and NRCS should work with CRP landowners to maximize the amount of value retained from CRP enrollment.

### **3. Other Priority Resource Concerns**

The 2014 Farm Bill now distinguishes “applicable” priority resource concerns from “other” priority resource concerns, eliminating the prior distinction between the stand-alone resource concern and priority resource concerns. We understand that the agency continues to interpret “applicable” to mean the priority resource concerns that have been designated as the priority resource concerns for

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<sup>12</sup> Section 2006(c) (to be codified at 16 U.S.C. 3835(g)(1)).

a particular watershed or region. “Other” priority resource concerns, therefore, refer to those priority resource concerns other than those that have been designated as a priority resource concern for that particular watershed or region. We support this logical interpretation of the new statutory language.

**Recommendation:** NSAC supports the interpretation of “other” priority resource concerns to signify priority resource concerns other than those designated as the priority resource concerns for a particular watershed or region.

#### 4. Ranking Factor (C)

Ranking factor (C) evaluates applicants based on “the number of applicable priority resource concerns proposed to be treated to meet or exceed the stewardship threshold by the end of the contract.”<sup>13</sup> The Managers provided clarifying report language regarding their expectation “that, in using this factor to rank applications, NRCS will verify not only the number of priority resources concerns proposed to be treated at the initial application ranking stage, but also *the extent to which* the conservation activity proposed for the priority resource concern will meet or exceed the stewardship threshold for that priority resource concern at the expiration of the contract.”<sup>14</sup> It is clear that this ranking criterion requires more than just a proposed number of priority resource concerns – it also requires meaningful and verifiable levels of treatment.

**Recommendation:** We understand that the agency intends to adjust this ranking criterion so that it parallels the meaningful and verifiable nature of the other ranking factors. We support this interpretation, and we encourage NRCS to adopt this change immediately, in time for the FY14 sign-up.

#### C. Renewals

The 2014 Farm Bill modifies the contract renewal requirement to allow re-enrollment for an additional five-year period if the producer:<sup>15</sup>

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<sup>13</sup> Section 2101 (to be codified at 16 U.S.C. 3838f(b)(1)(C)).

<sup>14</sup> Managers’ Statement at 984.

<sup>15</sup> Section 2101 (to be codified at 16 U.S.C. 3838f(e)).

- (1) demonstrates compliance with the terms of the initial contract;
- (2) agrees to adopt and continue to integrate conservation activities across the entire agricultural operation, as determined by the Secretary; and
- (3) agrees, by the end of the contract period
  - (A) to meet the stewardship threshold of at least 2 additional priority resource concerns on the agricultural operation; or
  - (B) to exceed the stewardship threshold of at least 2 existing priority resource concerns that are specified by the Secretary in the initial contract.

Part 2 is a bit vague, but we believe should be interpreted to mean that all renewals include a requirement to improve one or more existing enhancements or adopt one or more new enhancements to demonstrate a commitment to continual improvement and to use the program to adopt strong conservation across the entire agricultural operation.

A producer that entered into a CSP contract under the 2008 Farm Bill must have been meeting the stewardship threshold for one resource concern at the time of the contract offer, and must meet or exceed the stewardship threshold for at least one additional resource concern by the end of the contract period. Under the new requirements of the 2014 Farm Bill, a producer must be meeting or exceeding the stewardship thresholds for two priority resource concerns to enter into an initial contract, and meet or exceed the stewardship threshold for at least one additional priority resource concern by the end.

In implementing Part 3, the agency needs to make clear to participants that those who have already met or exceeded the stewardship thresholds for four out of five or five out of five priority resource concerns at the time they enrolled in the program for the first time have already satisfied this requirement for renewal eligibility.

Within Part 3, Part 3(A) is clear in its requirement that producers demonstrate sufficient additional activity to meet or exceed the stewardship threshold on at least five priority resource concerns – three from the first contract, and now two more.

Part (3)(B) is less clear, because it relates to two *existing* priority resource concerns. Presumably, the intent was that, for producers who met but did not exceed the stewardship threshold for at least two priority resource concerns during the initial contract, they would now have the option of adding sufficient conservation activities to allow them to exceed the stewardship thresholds. It is not clear from the statute, however, how that is to be measured or what degree of advanced treatment is required for those priority resource concerns that have already been addressed.



**Recommendation:** To qualify for a contract renewal, producers must demonstrate additionality and continual improvement through a meaningful commitment to maintaining past conservation efforts and achieving measurable levels of new advanced conservation. We recommend that NRCS require the adoption or improvement of at least one or two enhancements as part of the renewal process.

**Recommendation:** We also recommend that producers be notified prior to renewal about their status with respect to priority resource concerns. This notification should include whether or not they need to add zero, one, or two additional priority resource concerns to their renewal contract, based on their status with respect to priority resource concerns at the time of the initial contract. The notification should also provide some indication – should the producer choose the renewal option of exceeding the stewardship threshold on priority resource concerns that have already been addressed – of how the agency will determine fulfillment of this option.

**Recommendation:** Finally, to enhance overall conservation benefits through advanced conservation, NRCS should strongly encourage producers during the renewal process to consider adopting enhancements that fall among the top scoring enhancements that are appropriate at the regional and farm-level, especially if the producer did not choose at least one of these top scoring enhancements during their initial contract period.

#### **D. Comprehensive Conservation Planning**

The 2014 Farm Bill retained the existing definition of “conservation activity” as including “planning needed to address a priority resource concern.”<sup>16</sup> Moreover, the Managers’ Statement included important language that clarifies that planning “has an inclusive plain language meaning to encompass, for example, conservation planning. The Managers recognize that in developing a conservation plan, a producer incurs significant costs in time, labor, management, and foregone income.”<sup>17</sup> This important clarification authorizes NRCS to provide financial and technical assistance for producers who want to undertake comprehensive conservation planning as part of their overall CSP contract.

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<sup>16</sup> 16 U.S.C. 2828d(1)(B)(ii).

<sup>17</sup> Managers’ Statement at 983.

**Recommendation:** We support NRCS’s decision to move ahead with providing financial and technical assistance for comprehensive conservation planning as a contract line item in time for the FY15 sign-up. We look forward to the opportunity to provide feedback on the agency’s announcement of its availability in the interim final rule. Separately, we will also be making recommendations about setting the financial assistance payment rate as part of the Conservation Innovation Grant project we participate in on sustainable and organic agriculture integration.

### E. Supplemental Payment Option – Resource-Conserving Crop Rotations

Resource-Conserving Crop Rotations (RCCRs) are recognized as one of the most integrated and effective systems for addressing resources concerns. It is critical that the supplemental payment option for RCCRs be available both as a newly adopted practice, and as a modification or improvement of an existing RCCR already in practice. The Farm Bill language modifies the availability of supplemental payments for RCCRs for producers who adopt *or improve* RCCRs.<sup>18</sup>

**Recommendation:** NRCS should quickly implement the 2014 Farm Bill language that adds that the supplemental payments for RCCRs are available for producers who adopt *or improve* RCCRs. NRCS should implement this provision to provide payments for both new and modified and improved RCCRs starting with the current FY14 sign up.

Moreover, providing an appropriate payment rate will be imperative to the successful adoption and maintenance of this practice. Under existing authority, “the supplemental payment is set at a rate *needed to encourage a producer to adopt a resource conserving crop rotation* and will be based, to the maximum extent practicable, *on costs incurred and income foregone by the participant and expected environmental benefits*, determined by estimated conservation performance improvement using the CMT.”<sup>19</sup>

The most recent NASS summary of land values shows a marked trend upward in cropland value nationwide. From 2012 – 2013, cropland value increased by 13 percent per acre (\$460) up to \$4,000 per acre.<sup>20</sup> Since 2009, average cropland value increased by nearly \$1,400.<sup>21</sup> Similarly, average rent

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<sup>18</sup> Section 2101 (to be codified at 16 USC 3838g(e)).

<sup>19</sup> 7 CFR 1470.24(b)(3).

<sup>20</sup> USDA National Agricultural Statistics Service, Land Values 2013 Summary, August 2013 at 11 available at <http://usda.mannlib.cornell.edu/usda/current/AgriLandVa/AgriLandVa-08-02-2013.pdf>

<sup>21</sup> *Id.*

paid per acre has increased nationwide. In 2013, the average national rental rate was \$136 per acre, up 8.8 percent (\$11 per acre) since 2012.<sup>22</sup> In the last decade, the average national rent has nearly doubled, up from \$73 per acre in 2003.<sup>23</sup> Given the increasing trends in land value and rental rates, it is unclear how NRCS justified lowering the rate from \$18 to \$12 per acre during the 2008 Farm Bill cycle, rather than increasing the rate to reflect current trends.

***Recommendation:*** We urge NRCS to re-examine the payment rate offered for RCCRs and adjust it to reflect modern agricultural realities so it remains an attractive option for producers to consider. The current \$12 per acre rate is inadequate given that increasing land values, rental values, and costs of inputs continue to place upward price pressures on farm owners and operators. To accurately reflect the economic realities faced by producers and the conservation and environmental benefits RCCRs provide, we recommend that the supplemental payment be increased to at least \$20 per acre.

## **F. Minimum Contract Payment**

Data from the 2012 Census of Agriculture estimate that nearly 65 percent of U.S. farms range in size from 1 to 179 acres, and fully one-third of U.S. farms range between 1 and 49 acres. Even though the acreage per farm may be relatively small, the cumulative impact of CSP improvements on thousands of these small acreage farms would be highly significant.

However, CSP payments provided on a per acre basis on small acreage farms may not provide sufficient incentive to expend the time needed to analyze the farming operation, enroll in the program, create a CSP plan, and absorb the initial cost of increasing conservation activities on the farm. This dynamic has led to, and could perpetuate, a situation in which thousands of farms – and tens of thousands of acres in aggregate – do not find CSP accessible or worthwhile. Though small in acreage, these farms are often under intensive production and have unique resource demands, and could benefit the overall goals of the program.

To address this situation, NSAC recommends that NRCS establish a minimum annual contract payment that applies to all eligible applicants. Initially, we recommend that the minimum contract

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<sup>22</sup> USDA National Agricultural Statistics Service, 2013 Land Values and Cash Rents – Cropland and Pasture, No. 2013-3, October 2013 available at

[http://www.nass.usda.gov/Publications/Highlights/2013\\_LandValues\\_CashRents/index.asp#rent\\_paid](http://www.nass.usda.gov/Publications/Highlights/2013_LandValues_CashRents/index.asp#rent_paid)

<sup>23</sup> *Id.*

payment be set at \$1,500, with a process for evaluating whether or not the rate should be adjusted in subsequent years.

NSAC made this comment during the CSP rulemaking following the 2008 Farm Bill. In response, NRCS established a minimum annual contract payment of \$1,000 for beginning, socially disadvantaged, and low resource farmers.<sup>24</sup> This was an important step, and has surely benefited many farmers within this targeted group. However, NSAC recommends that NRCS both increase the minimum annual contract payment to at least \$1,500 *and provide the minimum contract amount to all successful applicants.*

The 2014 Farm Bill provides several factors that the Secretary may consider in determining CSP payment amounts, such as income forgone, expected conservation benefits, costs incurred by the producer, and other such factors as the Secretary determines are appropriate.<sup>25</sup> With the Secretary's recent efforts to support small and mid-sized farmers as well as local and regional food systems – and faced with the same considerations described in Section (E) above regarding upward pressures coming from increasing land value, rental costs, and input costs – it is both reasonable and appropriate for NRCS to implement a provision that would result in better access to NRCS conservation programs for smaller acreage operations that have the potential to substantially improve resource concerns through intensive advanced conservation on a small area.

***Recommendation:*** Increase the minimum contract payment amount to \$1,500 and apply it to all successful applicants. This will encourage participation in the program for smaller acreage producers and obtain the environmental benefits of enrolling larger numbers of smaller acreage operations.

## II. Optimizing Outreach and Ongoing Opportunities for Program Improvement

### A. Transparency

As with any farm program, it is vital that producers understand program aims and incentives in order to optimize program usage. Greater transparency can allow for producers to make more informed decisions and lessen administrative workloads.

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<sup>24</sup> 7 CFR 1470.24(d).

<sup>25</sup> Section 2101 (to be codified at 16 U.S.C. 3838g(d)(2)(G)).

We are encouraged by NRCS' letter in support of NSAC member organization the National Center for Appropriate Technology's grant proposal regarding developing an online version of the Conservation Measurement Tool (CMT). Providing producers with the ability to test out various conservation scenarios will not only improve applicants understanding of the program, but should also facilitate the ease with which NRCS field staff take producers through the CMT process. If producers are able to run scenarios, and are provided with information that clearly explains the various environmental benefits associated with various conservation activities, then producers can fully consider how to incorporate the most advanced conservation practices that are appropriate within the context of their farming operation.

***Recommendations:*** We urge NRCS to augment the Conservation Measurement Tool so it provides a real-time accounting to applicants of their ranking score and conservation performance score as they conduct farm assessments, evaluate alternative scenarios for their conservation activities, and finalize contract applications. This can be accomplished most effectively by posting a farmer-accessible, online CMT for potential applicants to try out different scenarios and combinations of conservation activities.

***Recommendation:*** We also recommend NRCS improve the reports generated by the CMT to provide a clear explanation of which natural resources of concern have been well addressed and which ones are lacking. Additionally, it should be made clear to the applicant how much of his/her final ranking was dependent on current conservation effort and how much from the selection of undertaking new enhancement or practices.

***Recommendation:*** Finally, NRCS should work with producers to convey an understanding of the practices and enhancements that produce the greatest environmental benefits and relative scores. Rather than simply posting an Excel chart that displays the CPPE scores for each activity, NRCS should also sum these scores across micro-resource concerns to generate a total environmental benefit index for each activity. NRCS field staff can then communicate these scores and appropriately apply them to producers in the context of their particular farm-level needs and requirements as part of the CMT process and the CSP contract development process.

## **B. Special Initiatives**

CSP is unique in that it evaluates numerous resources concerns for any given acreage while maintaining a whole farm approach. Because CSP spans a range of resources concerns, NRCS should seek, when practical, to link the program with special conservation initiatives championed by USDA, much like USDA does already with the Environmental Quality Incentives Program (EQIP). The recent pollinator special initiative through EQIP is one example where NRCS could also explain that funding is available through CSP to improve pollinator habitat on farms. Similarly, the Soil Health Initiative continues to provide an ongoing opportunity to promote CSP.

In recent discussions, we learned of the soil health matrix of enhancements that NRCS sent out to state offices as part of the Soil Health Initiative. As an important follow up, we recommend that NRCS continues to engage field offices on the soil health matrix to determine whether and how states have promoted this matrix of enhancements, the success of adoption rates among producers, and what additional steps can be taken to further promote enhancements in combinations that have significant soil health benefits.

We also continue to recommend that NRCS consider a soil health bundle, which would recognize the cumulative effects that adoption of multiple enhancements have on soil health and would be nationally promoted. We appreciate that producers may be discouraged from adopting bundles because of the timeline for implementation of the enhancements; however adoption by the second or third year of the contract in many cases will not be prohibitive.

***Recommendations:*** Link CSP explicitly to special conservation initiatives such as the Soil Health Initiative and other special initiatives like the recent announcement for funding related to [establishing pollinator habitat](#) and protecting [grasslands and wetlands in the prairie pothole region](#). Even where the announcement is tied directly to funding through EQIP, there is great value in mentioning the availability of funding for farmers pursuing the same goals through CSP. For many of these initiatives, moreover, the long-term, continual improvement nature of CSP makes it the more appropriate programmatic vehicle. In either case, making these connections builds awareness of the extent of CSP, and highlights its importance as a comprehensive conservation program.

### **C. Outreach and Promotion**

Producer participation and overall CSP enrollment levels depend heavily on the outreach of NRCS state and county personnel and the promotional efforts of conservation and farm stakeholders. Collaborative efforts have been proven effective and should continue to be encouraged.

- ***Recommendation:*** Continuing developing strong partnerships and collaborations with stakeholder groups. Engage State Technical Committees and local working groups at the earliest possible stages.
- ***Recommendation:*** We continue to support NRCS efforts to tell the CSP story through farmer profiles and linkages with ongoing conservation efforts such as the Soil Health Initiative. We are encouraged by recent conversations with NRCS about the anticipated improvements to CEAP models that will allow improved outcomes reporting, and hope that this change will enable NRCS to provide regular reports on CSP benefits that are promoted widely to producers, the media, and other interested stakeholders.

We appreciate your consideration of these recommendations, and we look forward to continued engagement with you to successfully implement the 2014 Farm Bill statutory changes and enhance CSP program enrollment and delivery.

### **Response from NRCS**

#### **No-Year Money and Acreage Rollover**

Response: The interpretation of unused acres having the capacity to roll forward annually conflicts with SEC. 1238G(c)(1) which states: “to the maximum extent practicable--- enroll in the program an additional 10,000,000 acres for each fiscal year”. This statutory stipulation acts to preclude carryover of acres. Regarding the funds, the new no-year provision in the 2014 Act will allow for year to year carryover. However, CSP is a “such sums as necessary” program meaning any carryover will be deducted from the next fiscal years’ total budgetary need at request and prior to apportionment.

#### **Ranking Criteria**

Response: Four of the five ranking factors are directed toward outcome measurement at the end of the contract from the adoption of additionalilty. This strongly demonstrates a focus beyond initially adopted activities, regardless of internal weighting. Furthermore, agency leadership has applied discretion toward additionalilty.

#### **Picking micro-resource concerns from among no less than three macro-resource concerns**

Response: NRCS has discussed a similar, yet broader approach. This proposal is pending approval once the shift to using micro-resource concerns is made.

### **State Technical Committees and local work groups**

Response: NRCS agrees with encouraging diverse and robust participation in State Technical Committees. The program's rule and policy will support this objective.

### **Transition year or years prior to adopting micro-resource concern targeting**

Response: NRCS required this action, although at the macro-resource concern level, beginning with the FY 2014-1 sign-up.

### **CRP factor ranking points and weighting**

Response: NRCS agrees. In fact, NRCS has employed a system to avoid double counting of ranking factors A and B when ranking factor F is prompted.

### **Prioritizing CSP contracts that will maintain CRP acres in forage-based production practices and systems, or resource-conserving crop rotations**

Response: The voluntary actions of the participant dictate their place in the ranking. With all other variables constant, selecting the conservation activities listed above will yield a higher ranking score than otherwise.

### **Other Priority Resource Concerns**

Response: NRCS thanks you for the support.

### **Ranking Factor (C)**

Response: NRCS thanks you for the support. Note: The new interpretation is being implemented in the FY2014-1 sign-up.

### **Renewal requirements**

Response: The adoption of at least one new enhancement per land use is the minimum requirement to receive any payment.

### **Notifying producers of status**

Response: Renewal offers will be evaluated as new, non-competitive applications. Participant's requesting to renew will be informed if their stewardship threshold meets or exceeds results as they proceed through the evaluation process. NRCS will work with applicants who do not pass the "exceeds 2 existing applicable priority resource concern" test to facilitate passing the "meets 2 additional applicable priority resource concerns" test, if the applicant so desires.

### **Encouraging adoption of high-scoring enhancements**

Response: As with a general sign-up, participants have the entire activity list available, less previously adopted enhancements.



### **Comprehensive Conservation Planning**

Response: NRCS thanks you for your support and we look forward to the feedback.

### **Payments for improvements of Resource Conserving Crop Rotations**

Response: This provision is scheduled to be available beginning with the FY2015-1 sign-up.

### **Payment rate for Resource Conserving Crop Rotations**

Response: NRCS will reconsider the rate per acre for adopting an RCCR as it investigates a new rate for improving an RCCR.

### **Minimum Contract Payment**

Response: NRCS is receptive to increasing the minimum payment amount. Additionally, NRCS is investigating options and 2014 Act support in order to expand the provision to all successful applicants other than historically underserved applicants.

### **Transparency**

Response: The current code structure of CMT precludes “real-time accounting”; however, the current structure is being utilized to perform accounting as close to “real-time” as possible. Each time the user saves the inputs, the tool updates the output values. This structure does allow for alternative scenario evaluation.

Response: The CSP Summary Report displays individual ranking factor values before aggregation. Training will be provided to field office staffs to enable a greater conveyance of the meaning.

Response: Summing CPPE vales across micro-resource concerns as proposed does not include application specific variables; thus, creating misleading and inaccurate information. Furthermore, decisions predicted on afore mentioned information could negatively impact a comprehensive conservation plan.

### **Link CSP to Special Initiatives**

Response: The CSP Team is actively working with the Landscape Conservation Initiative (LCI) team to integrate multiple initiatives into the program’s sign-up offerings.

### **Outreach and Promotion**

Response: NRCS agrees with encouraging diverse and robust participation in State Technical Committees. The program’s rule and policy will support this objective.

Response: NRCS thanks you for your support.



