Outreach on Grazing Lands to Enhance Economic Analysis (Costs/ Benefits) for Conservation Changes

Grantee: The National Grazing Lands Coalition

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Executive Summary

This project addressed some of NRCS's priority resource concerns as data were collected related to animals, plants, soil erosion, soil quality and water quality. Data were also collected in additional areas including program participation, use of conservation management practices, costs and returns of programs and practices, productive capacity, socio-economic factors and producers' opinions about conservation issues.

The primary goal of this project was to determine whether agricultural producers are motivated by economics when considering implementing conservation programs and management practices on their farms/ranches. Data were requested from producers in six regions to identify economic linkages, namely costs and benefits, for conservation programs and practices that were either planned, in progress or completed by agricultural producers across the U.S. to address this goal.



Producers did not provide enough cost and benefit data to develop investment analyses. They readily provided descriptions of costs but were not able to delineate actual total costs for projects. Nor were they able to clearly or completely describe the economic benefits accrued to projects let alone provide a total value of these benefits. Producers were asked to consult their records for further cost and benefit details during phase two. Even then, little additional useful information was provided.

This situation then became a challenge for project investigators. As a result, they developed an extremely useful process that producers view as a valuable management tool for the future. The Ag Sustainability Process (ASP) with the Sustainability Assessment Matrix (SAM) as its foundation includes performance evaluation (productivity and financial performance) of conservation programs and practices. Producers will have the appropriate economic data to complete investment analyses that will result in better management decisions about conservation programs and practices that might benefit their operations.

Beneficiaries of this project have always been farmers and ranchers across the U.S. Producers now have access to a wealth of information characterizing what their fellow producers are doing in terms of developing sustainable farms and ranches in their region and other regions of the U.S. They now have a process available that will improve their management decision making to evaluate conservation alternatives more carefully.

Results

Background

There are many factors contributing to the yield and productivity of grazing lands during the growing season. The most important factors are arguably soil moisture availability and soil nutrient status. Several management factors contribute to overall soil health and consequently the growth and productivity of grazing lands. Livestock concentration, soil compaction and erosion, living plant cover, dead plant residue on the surface, forage mass, and height and soil organic matter are some easily accessible indicators of grazing land management. Rangeland and pasture health indicators have been informative but, tying them to economics can lead to changes in management decisions which allows for improved soil health.

Utilizing grazing animals as a management tool ultimately should protect the soil from direct raindrop impact, slow surface runoff, and reduce soil erosion. This allows for more water to infiltrate, which ultimately improves soil moisture and enhances soil nutrient status.

Conservation Economics is the use of economics to understand the costs and benefits of sustaining natural ecosystems. Its purpose is to accomplish more widespread and lasting conservation by lowering its costs, revealing its benefits and fitting it within genuine economic development. Several organizations and journals exist with economics as one of their focus areas. These include the Natural Capital Project, the Conservation Economics Institute, and the New Republic. However, these organizations are more interested in economic processes and strategies that can contribute to environmental protection and conservation as well as integrated approaches to economic development and biodiversity conservation rather than agricultural conservation applications.

Conservationtools.com, a website of the Pennsylvania Land Trust Association, published a series of articles that addressed the economic benefits of conservation to outdoor recreation and tourism, working lands, urban greenspace, open space in general, wilderness areas, waterways and wetlands, costs of community services, and ecosystem services. Articles in the working lands section dealt with farm level decisions about land preservation programs and very little on conservation programs and management practices

aimed at conservation.

Data collected for this CIG project demonstrated quite clearly how producers currently deal with conservation issues on their farms/ranches. Descriptions of completed, current and planned conservation programs and practices were very detailed regarding project objectives and reasons for implementation. Producers were quite thorough in describing the physical elements of the projects as well. However, in most cases, responses to requests for costs and benefits data were incomplete. This seems to imply that producers focus on the physical benefits of conservation programs and practices in addition to the possible cost sharing that might be available from off-farm sources. Based on these implications a new Agricultural Sustainability Process was developed that will integrate conservation into a system that will ensure appropriate implementation and monitoring of net benefits and payout of programs and practices.

This project was designed to merge economic and conservation management decision making so that producer farms and ranches would become more sustainable using proven economic analysis tools. However, one prerequisite of using these tools is availability of accurate cost and benefit data for each respective farm or ranch operation. Just over 90 producers were surveyed in six regions of the U.S. to determine how available accurate cost and benefit information were on these operations.

Phase One included collecting producer responses to a wide range of survey questions including operator profiles; interest in program participation; production/conservation practices/programs producers implemented; soil health and quality; water quality and quantity; plant resources; animal resources; productive capacity; socio-economic, legal and institutional activities; producer concerns about conservation related issues and producer preferences about obtaining information. Just over 90 producers successfully completed surveys during in-person workshops. In addition, a few producers submitted information through an online system.

Phase Two was an effort to follow-up with reporting producers to obtain more specific cost and benefit data for the programs they initially reported on and any new programs initiated since the initial workshop. This gave producers a chance to utilize their records that they were not asked to bring to Phase One workshops. Phase Three was dedicated to analysis and reporting of data and included a final in-person half day workshop at the six regional sites visited in Phase One.

A review of information collected throughout this project and the nonreporting of cost/benefit data led to the development of a Sustainability Assessment Matrix (SAM) farm/ranch evaluation system which serves as the foundation for a new Agricultural Sustainability Process (ASP). This project falls short of expectations of identifying both accurate costs and returns associated with most of the specific projects reported by producers as they could not readily identify dollar amounts for the short and long-term benefits received from implementing conservation practices or programs. This led to the development of the ASP that includes specific management functions including completing a SAM, planning, implementing plans, and measuring net benefits in terms of productivity and financial performance.

Review of methods

This project is innovative because it: 1) targets producer-led grazing groups that include underserved conservation audiences; 2) engages the targeted audience in independent, on-going conservation management decisions that will improve their soil's health and thus the land's sustainability for economic and environmental objectives; 3) develops a large scale economic & spatial analysis of grazing management practices; and 4) develops economic information in key areas associated with grazing lands.

Producers will be able to study all data reported on surveys to determine what has worked and what has not worked for their fellow producers across the U.S. There is insufficient data to reach any conclusions about best management practices. However, results of this study will serve as the foundation for determining best management practices if the ASP is implemented in a subsequent project.

Producers were asked to attend a one-day workshop the first year of the project to complete a survey addressing a wide variety of topics related to conservation and management programs and practices mentioned previously. They were asked to provide additional details about their initial responses in year two once they had a chance to consult their records. Year three offered producers a one-day session to share results of the survey and to share in an educational program of the local GLC choosing.

The producer survey was developed by the ag economist and sociologist with assistance from faculty at the Noble Research Institute and staff at NatGLC. Suggestions were incorporated into the master survey and notebooks were created so producers could retain all forms for their records once they left workshops. All forms were scanned for entry into databases.

Discussion of quality assurance

Producers participating in regional workshops were invited by NRCS representatives, by local grazing land coalitions and by other organizations with an interest in natural resource conservation of farm and ranch land. Therefore, there was no sample design. However, there was considerable diversity in those attending based on profile data reported by respondents. There was considerable variation in size of operation, how much producers depended on their operations for family income, number of enterprises on farms and ranches, and participation in formal conservation programs.

All data remained confidential and was only in the custody of the ag economist throughout the project. All reports included only aggregated data, so no individual farm or ranch information was released.

Thus far data have not been significantly reduced, but rather just summarized in several different ways that will enlighten producers about what their peers are doing or not doing towards conservation in their operations.

Findings

Links to all graphical representations of producer responses are presented in appendices along with producer's text responses to all survey questions. Files are submitted digitally as they are quite lengthy since they include all producer written responses (with some minor editing to delete blanks and make sense out of some responses) to each of the survey questions included in project notebooks. All results can also be viewed at: https://greg9553.wixsite.com/nationalcig.

Some preliminary data are presented here along with a brief explanation on how to interpret the accompanying charts and graphs. The text responses of producers to each question requires no explanation in that this is exactly what producers responded to all questions. These lists provide producers actual evidence of the types of programs and practices that their fellow producers are implementing in their region and in other parts of the U.S.

A summary of profile information showed that the nearly 90 respondents represented 90,322 acres. Respondents indicated on average they manage just over two thirds of all those acres with an emphasis on conservation. Operations were as small as 5 acres and as large as 12,000 acres.

Many of the respondents did not depend on their farming operation for their family income. Slightly less than 40% of those responding derived more than half of their family income from farming/ranching. Only 14% depended entirely on farming/ranching for their family's income.

All respondents agreed or strongly agreed that soil health/quality and water quality/quantity are important to the success of their operations. Producers were then asked to list the practices they currently use to assess and manage soil health/quality and water quality/quantity which solicited a wide variety of responses.

The diversity of text responses makes analysis difficult and there is no way to determine best practices due to incomplete financial costs and benefits data. However, the frequency with which producers mentioned selected practices provides some indication of the most popular methods utilized to assess and manage soil health. Many of the charts illustrate the percentage of responses that included key words that provide some indication of programs and practices in which producers were involved.

For example, the number of practices employed to assess and manage soil health and quality ranged from zero to eleven. However, over half of the producers utilize 2-4 practices in their operations.

Nearly two-thirds of respondents take soil samples and submit them for testing. Over 40% of respondents use grazing strategies to improve soil health including rotational grazing, intensive grazing, high density grazing, and deferred grazing. They also utilized various fertilization strategies, planting of cover crops and limited weed control practices.

The number of practices employed to assess and manage water quantity and quality ranged from zero to six. However, over sixty percent of the producers utilized only one or two

practices in their operations.

Nearly sixteen percent of respondents tested their water for a variety of quality factors. Over twenty percent managed water quality and quantity by constructing, cleaning out, or limiting access to ponds. Other methods of managing water quality included instituting a variety of grazing strategies, planting cover crops, channeling water through vegetative areas, and monitoring rainfall events.

Conclusions and recommendations

Considerably more data are needed before any conclusions can be reached or case studies developed, especially cost and benefit relationships about specific practices and programs in which producers are involved. Clearly large numbers of producers with operations of all sizes and types are concerned about conservation and sustainability. What is not entirely clear at this point, is to what extent economic relationships are motivating producers to implement practices or participate in government programs.

This project fell short of expectations in terms of collecting accurate costs and returns associated with most of the specific projects reported by producers. This situation prompted the development of a Sustainability Assessment Matrix (SAM) farm/ranch evaluation system which serves as the foundation for a new Agricultural Sustainability Process (ASP).

Producers were better able to delineate program/practice costs than benefits, but for the most part not in a format that was conducive to developing reliable cost/benefit analyses. Producers were even more challenged when it came to list the short and long-term value received from implementing conservation practices or programs. Future implementation of the ASP which includes specific management steps including completing a SAM, planning, implementing plans, and measuring net benefits in terms of productivity and financial performance should result in costs and benefits that will allow for a more complete analysis of programs and practices. Illustrating the net benefits of implementing conservation programs and practices should motivate producers to adopt those practices that will benefit them from both a conservation and economic perspective.

Appendices (with Links)

Links to PowerPoint slides with charts and example responses based on frequency charts:

Profiles
Inventory of Production/Conservation Practices/Programs
Soil Health and Quality
Water Quality and Quantity
Plant Resources
Animal Resources
Productive Capacity
Inventory of Socio-Economic, Legal and Institutional Activities

Links to documents with charts and text responses:

Profiles
Interest in Program Participation
Inventory of Production/Conservation Practices/Programs
Reports of Production/Conservation Practices/Programs with program goals and why they were implemented
Reports of Production/Conservation Practices/Programs with costs and benefits
Soil Health and Quality
Listing of soil results sorted by: number of practices; location and size of operation; goal priority; length of ownership.
Water Quality and Quantity
Listing of water results sorted by: number of practices; location and size of operation; goal priority; length of ownership.
Plant Resources
Animal Resources
Productive Capacity
Inventory of Socio-Economic, Legal and Institutional Activities

- Why did you get into farming?
- How did you obtain your farm/ranch?
- What do you hope to accomplish?
- What do you like most about farming/ranching?
- What do you like least about farming/ranching?
- What barriers or constraints have kept your farm/ranch from operating efficiently and what have you done to overcome these constraints?
- Succession planning
- Financial management
- Alternative enterprises/agritourism
- Continuing education
- Government regulations
- Community involvement

Challenges to State's Natural Resources
Concern for Issues Affecting Your Operation
Initial (year one) Workshop Evaluations
Final (year three) Workshop Evaluations

Links to other presentations and resources:

Original complete notebook with survey forms
CIG Final Year Three Workshop presentation
Presentation on SAM and ASP
Printed Sustainability Assessment Matrix
Printed Nominal Work Group Planning Process
Action Planning Template