

Achieving Rangeland Sustainability Through Total Resource Management

Final Report for ES99-045

Project Type: Professional Development Program

Funds awarded in 1999: \$157,061.00

Projected End Date: 12/31/2004

Matching Non-Federal Funds: \$46,545.00

Region: Southern

State: Texas

Principal Investigator:

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Co-Investigators:

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Project Information

Abstract:

Ranch and rangeland sustainability is dependent upon informed decision-making and managing all resources to achieve healthy functioning ecosystems and financial survival of the landowner. Ranching success depends upon the ability of the manager to utilize all resources to meet, analyze, and manage risk. Total Resource Management (TRM) emphasizes the organization and use of all resources to achieve goals and objectives where decisions are based on a strategic management process that encompasses ecological, economic and socially viable options and practices. The project has developed training and resource materials and conducted training programs for agency personnel in (TRM). Workshop participants indicated an increase in knowledge and appreciation for integrated programming and have begun using the concept in their educational programs. TRM is now a primary component in Rangeland Ecology and Management planning.

Project Objectives:

Involve producers and appropriate resource managers in planning, implementing and evaluating various phases of the project.

Develop training materials and program support resources including:

- a) A training manual, 12 fact sheets, 3 software packages, and a website as program support materials;
- b) An interactive Electronic Technology Transfer System to support the TRM program.

Develop and conduct 4 three-session workshops to train 80 County Extension Agents (CEA's) and NRCS Conservationists along with other Agency personnel over a two-year period.

Enlarge the thinking and change the paradigms of participants from single reductionist components to "total" and/or ecosystem interactions in relation to ranch management decisions. Participants learn, from both financial and biological perspectives as well as from the rancher's perspective skills including problem-solving, risk management decision-making, analytical and planning skills.

Participants will understand and apply this planning process to set goals and define actions to be taken in specific ranch situations.

Introduction:

Why are some ranch firms doing well while others are barely surviving from one crisis to the next? Successful managers understand that they manage entire ecosystems of interrelated factors and resources and that success depends on determining the right things to do. Total Resource Management (TRM) is an approach that can help a manager determine the right things to do to improve management and achieve realistic goals.

The TRM approach balances the use of resources for the best and highest benefits at an acceptable level of risk. TRM recognizes that managers must:

- 1) understand the relationships among all resources (people, finances, land, vegetation, climate, animals, time, etc.) activities and external influences;
- 2) think about the effect each decision may have;
- 3) carry out all activities correctly; and
- 4) make changes as needed to achieve the best outcome and reduce risk.

This is an impossible task if a manager has not developed a logical, practical approach to analyzing information, evaluating plans and directing daily operations. TRM is a way of doing just that.

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Education & Outreach Initiatives

Objective:

Description:

Methods

Methodologies were used to most effectively and efficiently meet the project goals and objectives. These were:

- 1) To involve producers. A steering committee of agency personnel and producers were assembled to develop the program, establish policy, and provide guidance. In addition, an Advisory Committee of ranchers from across the state of Texas provided advice and guidance throughout the project.
- 2) Develop training materials and publications. The steering committee and instructors developed teaching materials, curricula, resources, etc. and assembled this into a training manual. In addition, the Rangeland Ecology and Management (RLEM) Extension Program Unit published associated bulletins with a TRM perspective. Project funds were leveraged with other funding sources to do this.
- 3) Develop an Electronic Technology Transfer Systems and website. This was accomplished by RLEM Extension personnel with the assistance of student workers.
- 4) Develop and conduct training sessions. These training workshops were held in various locations with excellent participation of agency personnel. The workshops were approved by the Administration of all the agencies involved.

Outreach and Publications

A. Publications

The following publications were developed, were distributed; and are available for use:

1. 3 - Ring Binder Training Manual
- 2 Rangeland Resource Management for Texans series
Total Resource Management, TCE, E-196
Strategic Planning for Success, TCE, E-141
Why Are Goals Important, for Natural Resource Management?, TCE, E-147
3. Rangeland Risk Management for Texans Series
Rangeland Health and Sustainability, TCE, E-115
Forage Quality and Quantity, TCE, E-118
Common Grazing Management Mistakes, TCE, E-112
Seeding Rangeland, TCE, E-117
Drought, TCE, E-111
Toxic Plants, TCE, E-110
Types of Risks, TCE, E-113
Making Better Decisions, TCE, L-5368
Will you Succeed As A Range Manager? TCE, L-5373
Managing Climatic and Financial Risk with Grazing, TCE, E-140

Using Forage Harvest Efficiency To Determine Stocking Rate, TCE, E-128
Managing Residual Forage For Rangeland Health, TCE, E-127
Patch Grazing and Sustainable Rangeland Production, TCE, L-5428

4. Rangeland Monitoring Series

Texas Rangeland Monitoring, Level Two, TCE, L-5454
Texas RL Monitoring, Level Three, TCE, L-5455

5. Other Publications

TRM: A Protocol for Successful Professional Development Programs, J. of Extension (in press).

Curbing The Silent Ranch Crisis, Common Ground, Dec. 2001.

Abstract, Presentation at Society for Range Management Annual Meeting, Kansas City, Mo., 2001

TRM: A White Paper

TRM: A White Paper, not published

Power Point Presentations

- Achieving Rangeland Sustainability Through TRM
- Managing Rangeland Risks
- TRM: Planning Today for Tomorrow's Success

B. Outreach

Natural Resource Management Training Workshops for Natural Resource Conservation Service personnel, La Copita Ranch, summers and 2003 and 2004.

Natural Resource Management Training Workshop for County Extension Agents, La Copita Ranch, summer 2004.

Natural Resource Leadership Course for County Extension Agents, La Copita Ranch, Summer, 2004.

Rangeland Ecology and Management Extension, Strategic Plan, 2005-2009.

Professional Development, C. W. Hanselka and L.D. White at Society for Range Management Annual Meeting, Salt Lake City, Utah, 2004.

Natural Resources Training Workshop, Students from Natl. University, Chipingo and TAMU-Kingsville, Spring, 2003 and 2004.

Several Faculty promoted the TRM program at the 2002, 2003, and 2004 SRM Annual Meetings.

One Faculty developed and taught a short course based on TRM precepts to 30 TPWD biologists in association with Texas Dept. of Agriculture and Holistic Resource Management of Texas in the summer of 2004.

Outcomes and impacts:

Workshop participants were administered a pre/post workshop exam to measure changes in knowledge, attitude, skills, and plans for Adoption. Increases in all four parameters were noted. For example, participants indicated an increase of 8% in ecological knowledge, 38% in economic knowledge, 35% in "human" and social interactions, 45% in strategic planning, and 20% in goal setting. Please refer to graphic shown below. Follow up interviews show that over 75% are currently using elements of TRM in their educational programming. Post project educational activities have feathered TRM concepts and feedback from participants has been similar. TRM is presently a major component of the Rangeland Ecology and Management Extension Program Units' Strategic Plan.

One prominent secondary activity has been taking place since 2002. Based upon work down with the TRM educational program and the concepts and approaches presented. Dr. William Fox has been participating in the Sustainable Rangeland Roundtable. The SRR has brought together a group of rangeland scientist to focus on the development of criteria and indicators for assessing rangeland sustainability. Dr.

Fox has been an active member of this program from 2002-2004 and has participated on the briefing team that visited with congressional staffers, agency heads and NGO directors in Washington, D. C. in May of 2003.

Project Outcomes

Project outcomes:

Total Resource Management activities focused on four primary areas of effort based upon proposed objectives, deliverables, and performance indicators.

A. Involve producers and appropriate resource managers in various phases of the project.

Under the leadership of the Texas Cooperative Extension, the Natural Resource Conservation Service, and the Texas Parks & Wildlife Department, a Steering Committee of natural resource experts was designated to guide in the development of the program. The Steering Committee membership included expertise in rangeland ecology and management, wildlife management, and agriculture economics. The Steering Committee membership included TCE Range Specialists, the Texas State Range Conservation (NRCS), County Extension Agents (TCE), Technical Guidance Biologists (TP&W), and Wildlife and Range Extension Associates (TAEX).

The Steering Committee was assisted by the participation of numerous producers and natural resource management personnel that served on the program's Advisory Committee. The Advisory Committee provided leadership and advice on materials developed by the Steering Committee. It also provided a larger perspective on the subject through the inclusion of persons involved with operations based upon the use of natural resources (landowners/land managers). Materials developed by the Steering Committee were distributed through those members of the Advisory Committee for comment and input on subject matter. The Advisory Committee included all members of the Steering Committee, the TCE District Director from Region 6 (Trans-Pecos), four ranchers, a natural resource consultant, a TAEX programs evaluation expert and the Chairman of the Texas A&M University SARE committee. Other project advisors included the Grazinglands Conservation Initiative (NGO), the Texas Section-Society for Range Management, Holistic Resource Management of Texas (NGO), the Center for Grazinglands and Ranch Management (TAMU) and several independent ranchers from across the state.

B. Develop Training Manual, publications, and other support materials. Several resource and training materials were developed by project personnel and RLEM Extension Program Unit faculty. Most can be found at .

C. Development of an Electronic Technology Transfer System. This system has been developed and is available online at [The webpage and training program is separated into five areas:](#)

Section 1 focuses on the Total Resource Management approach and the use of strategic management principles for managing natural resources. This section provides the basic outline used in the Professional Development Program and the training courses. It is expected to act as refresher materials for previous participants in the TRM workshop series as well as introductory materials that can be used by professionals in natural resource management that have not taken part in the TRM workshop program.

Section 2 of the TRM website focuses on the use of risk management principles for assistance in decision-making and natural resource management. This section centers on a series of Texas Cooperative Extension publications that illustrate areas of risk in natural resource management and provide approaches to facing the risks and making decisions that reduce the risks inherently associated with the management of natural resources. The publication series is also incorporated into the TRM workshop and in this sense, provides refresher materials for past participants and introductory materials for those who have not participated in the workshop series.

Section 3 of the TRM website is a software package for monitoring precipitation. This program (free to the public) provides a simple approach to monitoring precipitation for individuals based upon their record keeping. It can also be used for long-term precipitation records from multiple sources. The rainfall analysis program allows the user to enter monthly precipitation records for a location. The user can set what output is desired from the program. Basic statistical analysis can be run to provide the average rainfall and median rainfall based upon the entered records. Graphics can be generated illustrating the variability between years of the data and each years relation to the average and the median rainfall and also to 70% of normal rainfall (drought level). The program also provides risk analysis and probabilities of rainfall on a monthly basis that can be used in management decisions for the local area. There are several other options of output for various questions that might be of interest. We encourage users to evaluate the rainfall analysis program and provide us with comments.

Section 4 of the TRM website is another software package for livestock analysis. The livestock analysis software package was developed to allow users to evaluate "What if..." situations within their current livestock management plan. Information is provided by the user filling in general sections on livestock numbers, forage availability, livestock classes and expenses for each livestock class. Once the information is entered, the user can calculate the data and is provided with a basic gross margin analysis based upon their information. The utility of the program is enhanced by allowing the user to adjust numbers based upon future plans for their livestock operation that result in an analysis that can be used to make decisions. If the results of these future plans are not suitable for the user, they can re-adjust and see what alternative plans might provide. The analysis program is another tool that can be used by the livestock operator to assist in risk analysis and decision-making.

Section 5 of the TRM website focuses on the Water for Texans program of the Texas Cooperative Extension. The section provides a multitude of information for the user based upon demonstrations currently being conducted in Texas. The demonstrations focus on small scale, paired watersheds located across the state that sample runoff and sediment loading in various rangeland systems. The demonstration programs also have a rainfall measurement that records rainfall events and intensity of rainfall. All of the results of the demonstration project across the state will be available in database form and can be queried by the user for specific information of interest at a location near them. The section also contains Texas Cooperative Extension publications related to water issues and has the publications available online in PDF format. The section also has annual reports for the various watersheds and will contain several Microsoft PowerPoint presentations regarding water issues for the state.

All publications are linked to appropriate sections of the website. In its full form, the Total Resource Management Program brings together the multitude of issues involved in the successful management of rangeland systems in Texas. The use of materials on the website should provide a beneficial addition to the material

available for natural resource managers.

D. Training Workshops

1. Six workshops were completed, training approximately 100 professionals from multiple agencies and individuals.

a. The number of workshops originally proposed was four; thus, through financial management, leveraging, and enhancement grants, the TRM team was able to extend the benefits of the S-SARE sponsored program and conduct two extra workshops.

b. Participants represented the following agencies/landowners

1. Texas & Oklahoma Cooperative Extension
2. Texas & Louisiana Natural Resource Conservation Service
3. Texas General Land Office
4. Texas Parks & Wildlife Department
5. U.S. Fish & Wildlife Service
6. S-SARE Board Member
7. Individual landowners from Texas

c. Participants of the TRM workshops that are certified by the Society for Range Management were able to receive 16 CEU's for participation in the workshop program. The result being training of those professionals that are Certified Professionals in Rangeland Management.

Recommendations:

Potential Contributions

There is an increasing awareness on the part of producers that sustainability can only be obtained through thorough planning and implementation. They must consider all the resources available to them and learn to make timely decisions based upon goals and objectives. The TRM project has contributed to this awareness. Now, with the Strategic planning process developed plus the supporting materials, natural resource professionals can continue to build on this foundation. As stated elsewhere, TRM is a primary component of the RLEM Extension Program Unit's Strategic Plan and will be emphasized in all future programming. Likewise, it has the potential to be used outside of Texas by natural resource agencies in surrounding states. One of the principal investigators has been approached to provide a TRM workshop in Mexico this coming winter.

Future Recommendations

We recommend that, as appropriate TRM workshops continue to be held periodically to train new agency professionals and to refresh information for older ones. More importantly however is the incorporation of TRM into ongoing educational programming. In Texas this will continue to be done as we work training programs for agency personnel and faculty as well as developing programs for extending the information to producers.



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