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Community
Alliance with
Family
Farmers

July 28, 1997

Staff Review Panel
1997 Category III Ecosystem Restoration
Projects and Programs
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Please find enclosed our Inquiry Submittal entitled: The Biologically Intensive Grazing Systems (BIGS) Program--Applying Intensive Grazing Management to the Problem of Stream Siltation and Aquatic Habitat Degradation.

We are in the early stages of program development, and your consideration of and feedback on the program concept outlined here would be very welcome.

Please contact me directly with any comments, and I will pass them on to our program team.

Thank you for your assistance.

Sincerely,

Ernest Phinney
Executive Director

- c. David Pratt, Livestock and Farm Advisor, Napa and Solano Counties,
UCCE
Roger Ingram, Livestock and Ranch Advisor, Placer County, UCCE

A Biologically Intensive Grazing Systems Program: Applying Intensive Grazing Management to the Problem of Stream Siltation and Aquatic Habitat Degradation

A CALFED Inquiry Submittal from Community Alliance with Family Farmers

Project Description and Primary Biological/Ecological Objectives

The importance of the rangeland hills surrounding the Great Central Valley, the Delta and the San Francisco Bay as a water "catchment" for the entire state cannot be overstated. Yet relatively little is understood about what constitutes a healthy range ecosystem and watershed. The dominance of perennial grasses is a critical element in that health, and the relationship between the lack of perennial grasses and conventional grazing management has been established. But the advantages of using large ruminants to restore perennial grasslands and improve the water cycle is less well understood or accepted.

Biologically Intensive Grazing Systems (BIGS) is an attempt to change livestock management practices to practices that favor the survival of perennial grasses. The theory we will test involves concentrating the largest number of animals on the smallest areas of land for the shortest practical time. This intensive grazing management involving the planned movement of animals through well-identified pastures (paddocks) we believe will stimulate perennial grass growth and restore the ability of the Bay-Delta watershed lands to hold water, to hold soil in place, to decrease the incidence and severity of floods and their negative impact on human and aquatic habitats, and to increase the economic viability of livestock operations. According to an unpublished 1994 survey, only 7% of northern California ranchers currently use any kind of controlled grazing management. However, of those who do use these techniques 69% report that range and pasture conditions have improved over the last five years. Only 31% of the conventional management ranchers reported range improvement. The potential for positive change with this new management program is very high, we believe.

The BIGS program will use methods established by CAFF through the Biologically Intensive Orchard Systems (BIOS) Program to develop a model which will ultimately move the number of ranchers from the 7% to the majority figure.

Approach, Tasks & Schedules

The CAFF methodology calls for bringing together disparate stakeholders in a cooperative and inquiring setting to address the problems of rangeland health, economic viability for livestock operators, and the siltation of aquatic habitats. For BIGS, this group would include landowners (we have identified ranches in the Napa/Solano hills for initial consideration), livestock organizations, agricultural groups, agricultural professionals, governmental agencies, and successful implementers from around the state of California. Like BIOS, BIGS would form management teams that would serve as guides, role models, promoters and defenders. Like BIOS, BIGS would initiate a three-year demonstration project establishment period. Year 1 would begin with the setting up of

monitoring protocols, identification of participating ranches, and selection of the management team. By the end of Year 3, the model would be established and published, monitoring guidelines would be established and new watershed areas would be identified for future work.

Justification for Project and Funding by CALFED

Conventional grazing management has contributed enormously to the decline of spawning grounds for many varieties of salmon and other fish while adding substantial silt loads to water carried down from rangeland hills. We believe that BIGS implemented broadly throughout the state will substantially restore areas that in times past provided bountiful habitats for fish and other species.

Budget Costs and Third Party Impacts

The three-year project we are calling BIGS would be a demonstration project set up to implement new technologies, techniques and management systems. Intensive monitoring would be required on those lands selected for innovation. We would expect costs of \$350,000 per year for each of the three years.

Applicant Qualification

Since 1993, CAFF has been successfully operating the BIOS program for almond and walnut growers. Our professional staff of more than 30, has successfully developed models and techniques that minimize conflict and move contending groups toward consensus. This expertise would be available to the BIGS program as well.

In addition, CAFF would look to David Pratt, Livestock and Farm Advisor, Napa and Solano Counties UCCE, and Roger Ingram, Livestock and Ranch Advisor, Placer County UCCE, to provide the basic technical direction of the project. An article written by Mr. Pratt on a comparison between perennial and annual grass rangelands and their ability to absorb water is attached to this Inquiry Submittal.

Monitoring and Data Evaluation

Monitoring techniques and guidelines would be set up to provide measures of success for the BIGS program. One key monitoring focus will be the reemergence of perennial grasses as the dominant grass form on the subject rangelands. A variety of biological and geological monitoring schemes and evaluation procedures will be considered before the final proposal is made to CALFED, and a final scheme will be provided as part of the formal proposal.

Local Support/Coordination with other Programs/Compatibility with CALFED Objectives

Although conventional thinking on erosion control measures generally tends toward the engineering approach, we are planning to submit a proposal that outlines a natural system and a real transformation in grazing management thinking. As we understand the CALFED objectives in this RFP process, CALFED will be implementing programs that look at the identified stressors from a wide variety of perspectives. Certainly changing the management of livestock on our watershed grazing lands fits within the perspectives outlined by CALFED.

EFFECTIVE, OR INEFFECTIVE, THAT IS THE QUESTION

In describing the weather we've had recently, most of us think about the total rainfall. More important for the grass is the *effectiveness* of the rainfall, that is, how much soaked into the soil and is available for plant growth. Effectiveness depends on the intensity of individual storms and the distribution of rainfall through the year. Most importantly (since we can do something about it) effectiveness also depends on the condition of the soil surface. The condition of the soil surface and the amount of residue left after grazing have a huge influence on the effectiveness of rainfall.

Q. *When is soil like a sponge?*

A. *When it supports perennial grasses & has adequate cover.*

At a recent Natural Resource Conservation Service (formerly Soil Conservation Service) training a portable rainfall simulator was used to demonstrate the effect of soil surface cover on water infiltration and runoff on several rangeland sites around northern California. Only one was conducted at each site. Replications would be required to establish statistical significance. However, the demonstrations showed some dramatic results.

The first test compared perennial grassland and annual grassland sites 150 feet apart on Zamora soils with slopes of 6%. The simulated rainfall rate used was 4 inches per hour. Runoff from the annual grassland site was 3.91 inches per hour. Runoff from the perennial grassland site was 0.14 inches/hour (figure 1).

Runoff from a heavily grazed site (1000-15000 lbs/acre residue) was compared to runoff from a moderately grazed site (2000-2500 lbs./acre residue) using a rainfall simulation of six inches per hour. The rate of runoff from the heavily grazed site after one hour was 4.72 inches per hour and only 1.13 inches per hour on the moderately grazed site.

Finally an area where grazing had been excluded for 21 years was compared to an adjacent area where grazing was light to moderate. There were no differences in infiltration and runoff between these two sites.

FIGURE 1. RUNOFF FROM PERENNIAL & ANNUAL GRASSLAND SITES

