

2007 Farmer/Rancher Grant Application

Please type or print legibly in dark ink. There are five pages to the application (not including the budget). Do not exceed the page limit. If your proposed project requires assistance from a financial institution, please enclose a letter from them indicating their commitment. (This letter is only necessary if you must take out a loan in order to carry out your project.)

Project Title: (The title lets reviewers know what your project is about at a glance – be descriptive but not too wordy.) “Evaluating TEFF Grass (Eragrostis teff) as a Value-Added Annual Crop for Hay and Forage to Mitigate Drought Impacts in Northwestern Nebraska”.

One or Two Sentence Description of Project (This will be posted on the SARE website if your project is selected for funding.):

A producer implemented evaluation of using annual crops of Eragrostis teff to provide hay, grazing forage, and ground cover in an effort to stabilize herd depopulation and productivity losses generated by six consecutive years of drought in the northern Panhandle region of Nebraska. Producer will plant dryland plot to evaluate production, suitability and value of this species.

Project Leader: Keith Oetken

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Is the applicant a Farmer/Rancher? YES XX No _____

Is this an Individual XX or Group _____ Project?

Grant Funds Requested: \$ 6,000

(This must not exceed \$6,000 for an individual grant or \$18,000 for a group grant.)

Have you previously received a SARE Farmer/Rancher Grant? Yes _____ No XX

If yes, was the project successfully completed? Yes _____ No _____

If project was not completed, explain why not. _____

PAGE 1

1) Describe the problem your project will address, and provide a detailed description of the innovative plan you are proposing to test possible solutions to the problem.

Since 2001, the northern Panhandle of Nebraska has experienced drought. Since, 2003 the intensity of the drought has been from severe to extreme with less than 6" of precipitation occurring in an effective manner that benefits crops and rangeland condition.

Issues related to the persisting drought include:

- Carrying capacity of rangelands has been reduced from 40-70%.
- Herds have been depopulated from 30-50%.
- Native plant communities have been fragmented by as much as 60% allowing the invasion of weedy annual species such as Downy Brome grass.
- Watershed and riparian stability has become fragile generating more erosion.
- Wildlife habitat has been impacted.
- Financial solvency of livestock production families (74% of the population base) has been placed at risk.
- Ag-related businesses and communities have begun documenting significant stress.

The plan of this livestock producer group is to:

- Plant Eragrostis teff grass in a location where I can evaluate its production as hay, grazing, and ground cover. This would include 35 acres on a site where native and introduced species have failed due to drought stress.
- Monitor and document emergence, production, yield, and growth dynamics on the site.
- Once information is reviewed with Technical Advisors from UNL Extension, conduct a field day for other producers and agency representatives.

2) Describe how you will add to or build on previous work done on this problem.

In the last four years regional producers including those involved in this project have evaluated using a number of more traditional crops to mitigate drought generated forage and hay shortages. This included planting several varieties of winter wheat, sorghum, millet, and a wide variety of familiar grass species. Drought severity was so intense in 2005 and 2006 that many millet and grass plantings did not emerge and winter wheat provided sub-standard yields.

By reviewing and conducting producer-driven field trials of *Eragrostis teff* which has been thoroughly researched in Montana and Idaho in locales where the climate and soils are similar to northwestern Nebraska, it may be possible to ground-truth the value of this drought tolerant grass for the western semi-arid segments of the North Central Region and the Western Region of the United States, potentially benefitting all rangeland producers. Scott Cotton (Extension Unit Leader) and Teshome Regassa (UNL Agronomist raised in Ethiopia where TEFF originated) have agreed to assist us with scientific monitoring and analysis of each stage of the project including summarizing results and outreach.

3) How will you share information from your project with other farmers/ranchers? Be innovative in your outreach. (Each project must include outreach – the more the better.)

I intend to start outreach by consolidating my results and documentation and conducting a field tour of the test sites for ranchers in a 13 county (within Nebraska, South Dakota, and Wyoming). This would allow ranchers to see results, look at the product and ask another producer and technical experts focused questions.

Scott Cotton (UNL Extension) has agreed to assist me in photo and video documentation so I can format a web-based presentation and then he can present it to the entire state via the POLYCOM system at UNL and possibly generate an interactive web-based session on a system called “BREEZE” that could be open to anyone in the region with web access and could be “archived” on the UNL server for continued access to others.

If the project is successful UNL Advisors may try to utilize results for a UNL Neb Guide on “Using Teff To Temporarily Mitigate Drought Impacts on Western Rangelands”.

4) SARE defines sustainable agriculture as good for the environment, profitable, and good for your family and community. How will you evaluate the environmental, economic, and social impacts of your project and how will those impacts contribute to the growth of sustainable agriculture?*

What I would like to measure and document is:

- What level of planned herd reductions could be forestalled by generating this forage?
- What level of ground cover was established and maintained compared to adjacent drought impacted areas?
- What forage and production value was generated (including economic values) compared to “normal season” crops and “drought season” production levels?
- Did wildlife frequent the crop and residue areas during and after crop growth?
- Was erosion reduced compared to adjacent areas?
- Does this crop generate a level of social acceptance in this producer-based community?
- On irrigated plots, was water conserved producing this crop compared to those grown in the past?
- Did growing this crop allow limited water resources to be used more effectively on other crops, thereby stabilizing farm income.

PAGE 4

*Environmental, economic, and social impacts can be evaluated in a variety of ways, depending on your personal goals and farming/ranching operation. Impacts could be evaluated, for example, by anticipated effect on water resources, soil erosion, wildlife, cash flow, community, and quality of life. Call the NCR-SARE office if you have any questions about these indicators, which are an important part of this application.

5) Describe your farm or ranch operation if you are submitting an individual proposal. If you are submitting a group proposal, describe your operation and provide names, addresses and a brief description of the other farmer/rancher members of the group.

I am a range cow-calf producer who depends on range forage production and dryland crop production (alfalfa and winter wheat with a few other crops) for operation stability.

Normally I harvest some dryland hay usually a grass or grass /alfalfa mix in limited quantities. I purchase some import feed supplements and feeds but minimize purchasing feedstuffs as much as possible. During the recent drought years it has become more and more difficult to produce a sustainable level of forage, hay and crops.

With limited amounts of product diversity, producers like myself and our communities are extremely susceptible to drought impacts, especially in situations of multi-year drought. This type of alternative crop trial research could potentially offer a crop diversity that would assist in mitigating the drought impacts that affect sustainability of operations, communities, and environment within this and similar regions.

6) List the names, addresses, and phone numbers of any cooperators. Include how they will participate or what they will contribute.

(Keith Oetken) I will provide labor, machinery investment, fuel, machinery maintenance, landscape, supervision and access to plant, test, monitor, harvest, analyze and generate documentation during the planting, harvesting and testing of this test crop on a 35 acre site.

After the growth, harvesting and analysis of the crop is completed I will work with UNL Extension and NRCS staff to conduct a field tour of the site and provide first hand input to other producers.

x Keith Oetken

Signature of Applicant (**must** be a Farmer/Rancher)

FNC07-676, Evaluating TEFF Grass (*Eragrostis teff*) as a Value-Added Annual Crop for Hay and Forage to Mitigate Drought Impacts in Northwestern Nebraska

Reviewers felt the information from this project would be valuable for NW Nebraska and states with a similar climate. The author mentioned the states that would benefit from the project and that was useful to reviewers. The technical team assisting with the grant has great expertise and that will be helpful in monitoring and analyzing results. The support letter confirmed that a technical team member has agreed to help with the project. This strengthens a proposal because reviewers know the rancher has buy-in from the people he says will help him.

Reviewers liked the innovative outreach ideas which take into consideration the difficulty of reaching producers in low density areas. The grant participants will use field tours as well as a web-based presentation and possibly an interactive web session. The crop being tested is fairly new so the research is innovative and has potential for improving the bottom line of ranchers in the region. The project addresses a serious problem of ranchers in the region (drought) and clearly identifies a potential solution. The explanation of how teff will be used was important to reviewers who were not familiar with the grain.

The proposal was concise which was good but it could have used a few more details. The author identified the aspects of the project that he wants to monitor but did not explain the specific evaluation methods that will be used. The proposal could be strengthened by explaining exactly how the project will be carried out (for example, when are cattle going to graze?) and how the author will monitor and measure the results of the project. The author showed that he plans to take into account a range of indicators such as wildlife habitat and local acceptance. Reviewers liked this but would also like to know how he will measure these indicators.

Reviewers would like to see the social aspect of the project addressed in the evaluation section as well as the economic and environmental aspects. The social aspect was mentioned in the problem but was not addressed in the evaluation section. More specifics in the budget would be helpful too. The author lists fertilizer and herbicide use but does not identify the specific products. Reviewers also wanted more details on the ranch such as the number of acres, description of terrain and vegetative cover.