1) What is the objective of this project? Describe the problem your project will address.

Our objective is to increase the profitability of our beef and grain farm through the use of a winter cover crop. The problem we are studying is the interaction between fertilizing the winter cover crop for maximum grazing, and how much of those nutrients are available to the following grain crops through the manure and crop residue. We will study the optimum level of fertilizer to be applied to a cereal rye cover crop to maximize grazing potential and maximize profits from the subsequent corn crop. We will also develop a 'wet weather' spring to provide water directly to the grazing cell units. These springs are common in the area and will provide water in fields during the late fall, winter, and spring when these grain fields will be grazed. Conservation of soil and water will also be evaluated, as they contribute to the future profitability of our farm. Soil erosion control, suitability for no-tilling the subsequent crop, and water runoff will be monitored, all as a part of our objective to protect our resources while increasing our profitability.

2) Describe in detail how you would use this grant to address the problem.

Money from this grant will be used for additional fencing and the water supply needed to graze each test plot independently. A scale will be purchased to measure cattle weight gain, and a weigh wagon will be rented to measure the following grain crop yields. Soil and tissue tests will be done to determine fertility levels. Water samples will be analyzed for nutrient leaching. Manure will be tested to determine nutrient content.

Our specific plan is to no-till a rye cover crop the fall of 2000. 120 lbs./acre will be seeded, following Ohio State University's recommendations for seeding rye for grazing. Phosphorous and potassium will be applied when planting the rye based on soil test recommendations for the corn crop to be planted in spring of 2001. Nitrogen will be applied at 50lbs/acre to the rye in the fall. When the rye breaks dormancy in 2001, nitrogen will be applied in strips, replicated four times throughout the field, with the nitrogen levels increasing by increments of 25lbs/acre. Total maximum nitrogen to be applied will be based on the previous soil test recommendations for corn, with the minimum having 50lbs/acre. The rye will be fenced to divide each test strip, then it will be cross-fenced to provide checks that are not grazed but used to estimate the amount of forage produced. The same group of animals will be rotationally grazed throughout the field with total grazing units recorded for each plot. All plots will be grazed to a uniform height while maintaining a good cover for the soil. Each end of the field will be excluded from yield tests but grazed as a unit containing a representative sample from all test strips to determine if the cattle have a taste preference. Critical tests to be performed on the following corn crop are: Preplant soil nitrate test, presidedress soil nitrate test (PSNT), concentration of N in the ear leaf at silking, visual valuations of N deficiency, and end-of-season stalk nitrate test.

3) How will you know if you have achieved what you wanted to do with this grant? How do you propose to evaluate the economic, environmental and social impacts of your project?

By following our plan we will gather the necessary data to determine the economical level of nutrients that can be applied to a winter cover crop and how much fertility can be credited to the following corn crop through crop residue, manure residue, and residual applied fertilizer. In addition, we will have the data needed to determine the environmental and social impact. We think the environmental and social impacts are tied to the long-term profitability and sustainability of the family operated farms in the North Central Region. Long-term profitability and sustainability depends on increasing humus matter in the soil, decreasing water run-off, minimizing nutrient leaching, minimizing disagreeable odors, and creating a pleasing environment for ourselves, our neighbors and our customers. Some of these things will be directly measured through the use of soil testing, water testing, and measuring soil loss. We see the social impact as two-fold, one would directly help the family operation by showing how to create more profit from fewer acres, the second is to build a good relationship with the non-farmer. The social impact can be measured from the response we get to our field days and presentations and responses from neighbors and beef buyers.

4) Why is the problem you are addressing in your project important to your farm and to other producers in your area and the North Central Region?

Combination grain and livestock farms are common in the North Central Region. No-tilling is also common in this region. However, in our area of Southwestern Ohio/Eastern Indiana, very few farmers utilize their resources to their potential. Few beef cattle are grazed on crop residue; fewer still graze a winter cover crop. We want to demonstrate that combining cattle and no-till can be profitable, preserve and improve the environment, and provide a quality way of life for a family. Producing extra forage from February to May can provide feed for grass finished beef, reduce costs associated with feedlots, cut stored feed costs for brood cattle, contribute to increased profits from grain crops, and overall farm profitability. Demonstrating how to develop cost effective water sources for fields would expand many farmers' options. Instead of keeping cows close to a central water location, which requires the farmer to harvest feed from the fields, move it to the cows, then move manure back to the fields, water can be supplied in the field. This lets the cow become the harvester and manure spreader, cutting machinery expense and building expenses.

5) How will you share information from your project with other producers? (Each project must include an outreach component.)

We will have a field day in the spring to demonstrate the effectiveness of using cereal rye as winter forage to be grazed while leaving the ground in suitable condition to be no-tilled to a grain crop. We will contact the extension office, local cattlemen associations, 4-H, and FFA groups and offer to do tours or programs for them.

A fall field day will follow to demonstrate the grain crop yields.

The 70 acres to be in this project are highly visible from the road. A sign will be placed marking it as a test plot. Our switch to Management Intensive Grazing in 1999 has already generated local interest in our management of our farm, we hope to build upon that base.

A web site would be built with pictures posting various stages of this project, with test results.

6) 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 a brief description of the operations of the other producer members of the group.

My husband and I have a grain and beef cow/calf operation. Our children are young adults on their own. Our son has expressed an interest in coming back to the farm when his tour in the Air Force is completed. We rent our farm from my husbands' father.

We were raising grain and hay exclusively until 10 years ago when we added cattle as projects for our children. We expanded our cattle herd as we learned to integrate them with the grain farming. Currently we have 46 head of brood cattle, with plans to expand to 100 in the next few years. Our goal is to manage a combination grain and beef farm as efficiently and profitably as possible. Last year we started Management Intensive Grazing for our breeding stock and had great success. We graze cornstalks, cereal rye, and feed some stored hay from October through April. We are putting in 20 acres of switchgrass this year to add to our summer forage supply as well as benefit wildlife, particularly quail and pheasant. Our total cost to feed our breeding stock is less than .50/day. We have been fattening our own steers on a dry lot, immediately following fall weaning, utilizing our own foodstuffs. Now, we want to try backgrounding our calves on cornstalks and fescue through the winter then finishing them on the rye and early cool season grasses for a grass-fed market in June. We direct market some of our steers and sell bulls for seedstock.

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

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