

Enhancing Grain Production of Great Plains Cropping Systems with a Legume-Pasture Phase – Progress Report

Summary

Alfalfa, black medic, pea, and wheat were seeded in 1 ha paddocks so that comparisons between a grain based crop sequence (wheat/pea) and pasture based crop sequences (wheat/alfalfa and wheat/medic) can be made. Severe drought limited the grazing of alfalfa and medic paddocks by calves. Still, the field demonstration was used to introduce 50 farmers and ranchers to the concept of pasture based crop sequences during a visit to the site in July, 2002. Data that were collected will be used to help launch an on line discussion forum accessed at the North Dakota State University (NDSU), Dickinson Research Extension Center web page in 2003.

Objectives/Performance Targets

1. Demonstrate pasture based cropping systems that can be used as alternatives to grain and seed based annual cropping systems.
2. Demonstrate the economic consequences associated with changing from a grain and seed based cropping system to pasture based cropping systems.
3. Develop a pasture based cropping systems working group comprised of farmers and ranchers, researchers, and others in the north central region.

Accomplishments/Milestones

1. Alfalfa, black medic, pea, and wheat were seeded in 1 ha paddocks in 2002 so that comparisons between a grain based crop sequence (wheat/pea) and pasture based crop sequences (wheat/alfalfa and wheat/medic) can be made in 2003. Severe drought after seeding resulted in poor establishment of alfalfa and particularly black medic plots, and developing legume plants were unable to suppress weeds. Forage production was 2922 kg/ha in alfalfa paddocks and 3281 kg/ha in black medic paddocks, but legume vegetation comprised less than 20% of forage. Calves grazed alfalfa paddocks for 14 d and medic paddocks for 21 d. Grain yield averaged 1613 kg/ha for wheat and 840 kg/ha for pea across paddocks. Fifty farmers and ranchers were introduced to the concept of pasture based crop sequences during an observational visit to the site in July. Preliminary results of this project will be presented at the winter meeting of the Northern Plains Sustainable Agriculture Society in January, 2003. Over 150 farmers and ranchers are scheduled to visit the site in 2003, during which time pre and post visit surveys will be used to document knowledge and interest in pasture based cropping systems.

2. Labor and management, equipment, and fuel requirements for maintaining the paddocks were kept. These data will be used along with data collected in 2003 to develop spreadsheets detailing the economic returns for each of the crop sequences.

3. A portion of the information specialist's time at the NDSU Dickinson Research Extension Center (DREC) was reassigned to this project. Work is underway to include a discussion forum relating to pasture based cropping systems at the DREC home page, and to provide specific information outlining the project and results of the field demonstration. The information specialist is responsible for maintaining all aspects of the project that can or will be accessed on the web.

Coordinator

Patrick Carr
North Dakota State University

SARE Grant

\$42,676

Matching Non-Federal Funds

\$18,304

Project Number

LNC01-182

Type

Research and Education Project

Region

North Central

Report Year

2002

Impacts and Contributions/Outcomes

This project will be the first to demonstrate the advantages of incorporating grazed pastures with reseeding or reestablishing legume species into grain and seed based cropping systems in the Great Plains. Adoption of these systems will result in reduction or possibly elimination of synthetic fertilizer and pesticide applications and their associated costs when growing wheat. This project will demonstrate that incorporation of pasture into grain and seed based cropping systems should be considered by those who are considering a transition from conventional to organic farming methods.