

Final Results

FW99-069

No-till Wheat Interseeded with Medic vs. Conventional Wheat

Location:
Stanford, Montana

Funding Period:
Jan. 1999 to Dec. 2000

Grant Award:
\$4,578

Project Coordinator:
Jess Alger, Alger Ranch
Box 27
Stanford, MT 59479
(406) 566-2483

Technical Advisor:
Jim Sims
Private Consultant
21 Border Lane
Bozeman, MT 59178
(406) 586-3653

Cooperators:
Russell Salisbury
Organic Farmer
Box 65
Floweree, MT 59178
(406) 734-5374
tuss@3rivers.net

Sean Turecko
Conventional Farmer
HC 76 Box 22
Coffee Creek, MT 59424

For a list of more
cooperators, please scroll to
the bottom of the report

OBJECTIVES

The research sought to determine whether an organic system of farming without chemicals, using black medic in rotation with small grains, would work as well as a conventional system with inputs of fertilizers and sprays.

ABSTRACT

Black medic is a legume that puts down nitrogen and provides fall grazing for cattle and wildlife. It also provides ground cover and competes with weeds. The SARE-funded research team tested the premise that black medic could provide these benefits in a wheat rotation on the Jess Alger Ranch, a dryland grain and cow-calf operation 8 miles north of Stanford, Mont. Average annual precipitation – 12 to 15 inches – dropped below normal during the two years of the project and was roughly half of normal in 2000.

In April 1999, the team planted dark northern spring wheat into an untilled 42-acre field of black medic (Field 42) and into a conventionally farmed 49-acre field (Field 49) that had been plowed twice and fertilized on the second pass with a liquid blend of 20-5-0 at 22 gallons per acre – 44 pounds of nitrogen and 11 pounds of phosphorus. Field 49 was sprayed June 10 with Achieve for Persian darnel and June 16 with 2,4-D Amine plus Banvel.

In 2000, both fields were plowed and planted May 8 and 9 to Baroness barley. No chemicals were applied to Field 42. Liquid aqua fertilizer was applied to field 49 at 28.6 gallons, or 49 pounds of nitrogen, per acre.

SPECIFIC RESULTS

Yields differed little between the two fields over the course of the study. In 1999, during which a lack of moisture inhibited yields generally, Field 42 yielded 13 bushels an acre and Field 49 yielded 14 bushels. In 2000, an even drier year, the barley yield was 20 bushels an acre on Field 42 and 23 bushels on Field 49. Still, looking at fixed and variable costs, Field 42 lost less money during both years of the trial than did Field 49, owing largely to the conventionally farmed field's higher costs for fertilizer and pesticides.

In 1999, expenses for Field 42 totaled \$76.75 an acre compared with \$117.59 for Field 49. In 2000, the comparison was \$80 for Field 42 and \$113.09 for Field 49. Even though Field 42 produced a little less, the reduced expenses resulted in better returns – minus \$2.65 per acre on Field 42 in 1999 compared with minus \$40.26 per acre on Field 49, and minus \$8.81 per acre on Field 42 in 2000 compared with minus \$35.64 on Field 49.

“We feel this grant was very successful because it allowed us to see the differences in cost between organic and conventional farming,” says Alger. “Our record keeping over the last two years has shown us that the costs of production for both fields are more than we had guessed.”

Planting black medic had little effect on organic matter, although the long-term value has yet to be determined. Soil samples taken in April 1999 show organic matter at 3.6% on Field 42 and 3.9% on Field 49. Samples taken in November that year showed a slight increase on Field 42 to 3.7% and a slight decrease on Field 49 to 3.6%. But a year later, in November 2000, organic matter had declined to 3.2% on Field 42, while it returned to 3.9% on Field 49. However, Field 42 in November 2000 had more residue on top of the soil, and once the straw and residue are broken down, test results are likely to show an increase.

Rick Caqueli

As for weeds, Alger says the weed level on Field 42 in 2000 probably would have been unacceptable to a conventional farmer. If not for the SARE grant, he says he probably would have spent money to control weeds, but the results show he would have lost \$37.95 an acre had he followed such conventional thinking.

“This trial showed very little difference between spraying for wild oats and letting them grow,” says Alger. “The population of weed seeds is much higher in Field 42, and this may affect future yields. We feel it is imperative to green manure the organic field to sprout the weed seeds, and then to kill them with tillage or grazing.”

Alger adds that the value of grazing the black medic was not added as income, mainly because the legume was grazed more by the deer than by the livestock.

James Sims, technical advisor and professor emeritus at Montana State University, notes that increased yields from fertilizer and herbicides are not sufficient to pay for their cost.

“It is my opinion that the project was successfully completed and has yielded invaluable results for Jess and his neighbors,” says Sims.

POTENTIAL BENEFITS

The project shows that farmers in this part of Montana and other dryland areas that produce small grains can reduce input costs by planting nitrogen-fixing legumes and avoiding chemicals, yet still see yields that are virtually as high as under conventional practices

FARMER ADOPTION AND DIRECT IMPACT

There are no reports to date that other farmers have followed the strategies highlighted in this project, but the project coordinator, Jess Alger, is continuing his work to test legumes in rotation with small grains.

FUTURE RECOMMENDATIONS OR NEW HYPOTHESES

In 2001, Alger planned to test the feasibility of planting lentils on both fields as green manure crops. He is also curious about the comparative results during a wet year.

DISSEMINATION OF FINDINGS

AERO and Montana State University were harnessed to provide announcements of field days as well as send news releases on the project to regional agriculture media and publish the finding in their appropriate newsletters and columns.

PRODUCER INVOLVEMENT

Several local producers were involved both as observers and providers of input.

Cooperators:

| | |
|----------------------------------|--|
| James Moore | Marcy Mahr, Plant Ecologist |
| Judith Basin MSU Extension Agent | Sustainable Agriculture Program Manager |
| Box 196 | Alternative Energy Resource Organization |
| Stanford, MT 59479 | Helena, MT 59601 |
| (406) 566-2277 | (406) 443-7272 |
| | AERO@desktop.org |

| | |
|-------------------------------|--------------------------------|
| NRCS District Conservationist | Hugo and Judy Turecko |
| Box 386 | Traditional Farmer and Rancher |
| Stanford, MT 59479 | HC 76, Box 29 |
| (406) 566-2311 | Coffee Creek, MT 59424 |
| | (406) 567-2480 |