



GREEN MANURE OPTIONS FOR ORGANIC FARMERS

Interim Research Report W2006-14

INTRODUCTION

Green manures offer many benefits when included in a crop rotation for organic production. Green manures have long been recommended as a means of increasing soil fertility, especially nitrogen availability. Green manures can increase soil organic matter and improve soil structure. They can also prevent erosion by providing a protective cover during fallow seasons. Including green manure crops in a rotation can break disease cycles and compete with weeds. Despite this, a recent survey showed that only half of the organic producers in Saskatchewan use green manures.

This project was developed to demonstrate the benefits of various green manure options on organic farms. A second goal of this project was to test the effectiveness of mowing as a method of terminating green manures. We wished to see if we could get the benefits of a green manure without tillage. The study was initiated by Kirby McCuaig and conducted on organic farms in Eastend and Tisdale, SK. The farmers provided the seed, inoculants, machinery and labor (including that of interested neighbors). OACC collected samples and provided scientific support.

METHODS

At Eastend:

- Plot size: 21 ft x 500 ft (6.4 m X 152 m)
- Seeding date: May 2, 2005
- Prework: disced to 1"
- Seeding: Massey Ferguson seed drill, 1" deep.
- Green Manure Crops: AC Greenfix chickling vetch, 4010 forage pea, green fallow, black fallow
- Chickling vetch: 90 lb ac⁻¹
- Forage pea: 75 lb ac⁻¹
- Lifetech inoculant
- Green and black fallow cultivated
- Soil samples at 0-6" and 6-12" depths

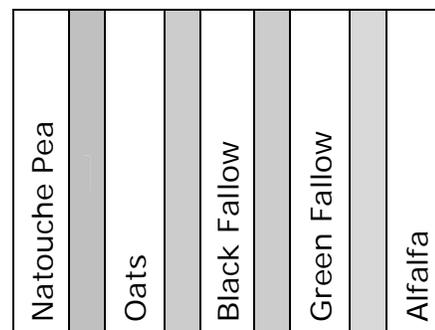
Field Layout:



At Tisdale:

- Plot size: 197 ft x 984 ft (60 m x 300 m)
- Seeding date: June 10, 2005
- Prework: disced to 2"
- Seeding: John Deere hoe drill
- Green Manure Crops: Common oat, Natouche pea, green fallow, black fallow, and alfalfa established in 2004
- Oat: 50 lb ac⁻¹
- Pea: 120 lb ac⁻¹
- No inoculant
- Green and black fallow cultivated
- Soil samples at 0-6" and 6-12" depths

Field Layout:



PRELIMINARY RESULTS

At Eastend in 2005, Forage pea provided more biomass than AC Greenfix chickling vetch, though both plots provided similar amounts of green matter once weeds were included.

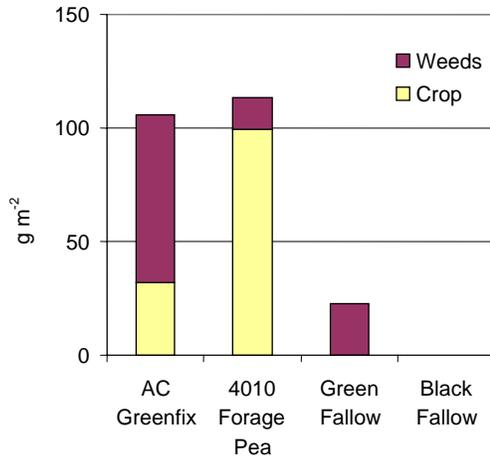


Figure 1. Biomass at early bloom, Eastend

At the Tisdale site, forage pea and oats provided similar amounts of green matter once weeds were included. Alfalfa provided more biomass than either annual crop; weeds alone provided the most biomass.

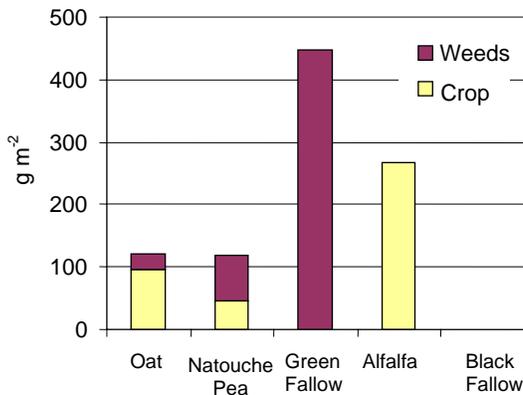


Figure 2. Biomass at early bloom, Tisdale

ACKNOWLEDGEMENTS

Kirby, Brenda and Schafer McCuaig, Nature Acres Organic Farm (Eastend, SK)
Norm Bromm, Bromm's Organic Farm (Tisdale, SK)

CREDITS

Brenda Frick, Jennifer Bromm and Roxanne Beavers (ed.)



THE BOTTOM LINE...

At two Saskatchewan organic farms, green manures of 4010 Forage Pea (Eastend site) and Alfalfa and Green Fallow (Tisdale) proved to be highly productive.

To determine the effect of different green manures on the following crop, in 2006 we will revisit these farms to assess nitrogen levels, water use, and crop yield and protein content.

NEXT STEPS

This test has been developed to provide a comparison of fallow treatments under dry land organic prairie conditions. In spring 2006 we will take a second set of soil samples and be able to compare nitrogen benefits and water use among the treatments. The plots will be seeded to wheat. Yields and protein levels in these wheat plots will allow us to compare the benefits of the different treatments to the crop that follows. The Research and Education Board and OACC would like to thank all those who have assisted with these trials and we look forward to seeing the conclusions of these field tests, and the expansion of this test across the prairies, as funding allows.



Forage Pea produced high biomass at Eastend (J. Bromm)

FUNDING

This project was initiated by Kirby McCuaig, and developed in partnership with Saskatchewan Agriculture and Food and the OCIA Research and Education Fund.

For more information:

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