

Adapting Cover Cropping Techniques to Northern Climate Conventional Cropping Systems



Background

Northeast Minnesota has a very large cow/calf industry, which has been experiencing depressed profit margins in recent years. This is due in part to the cost of feeding stored feeds through the area’s long period of winter dormancy. Cover crops offer a potential solution to this problem as a way to increase forage production and extend the grazing season. Creating this opportunity to decrease costs of winter feeding can strengthen profit margins as well as the sustainability of the cattle industry throughout the region. Additionally, cover crops have been shown to improve soil structure and vitality (see University of Minnesota fact sheet).

Project Design

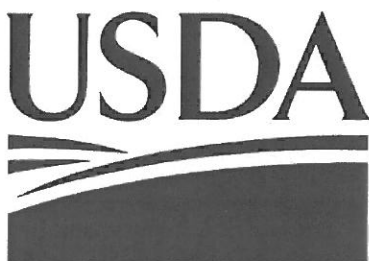
This project will take place for two years (2014-2015), at three different farms: Abe Mach’s of Sturgeon Lake, Troy Salzer’s of Barnum, and Scott Peterson’s of Floodwood. Sites were strategically selected along a north/south gradient in three different counties. Each of the farms are dedicating ten acres to the study. The following table shows a timeline of activities.

May	Late August	November
Plant small grain (oats, barley, wheat, or peas)	Harvest small grain as hay or grain, plant cool season cover crop mix	Graze cover crop (consisting of winter rye, forage turnips, and peas.)

The small grain crop utilized at this site (Abe Mach’s) in 2014 was oats and peas. The cover crop mixture planted afterward will include: winter rye, forage turnips, and peas. Research has shown that when many different species are included in a cover crop mix there is not only a greater chance of successful establishment of the seeding but also, a healthier microbe population is cultivated, which promotes greater nutrient cycling. The following year, the winter rye, a biennial, will be established in the spring for grazing prior to perennial pastures being ready.

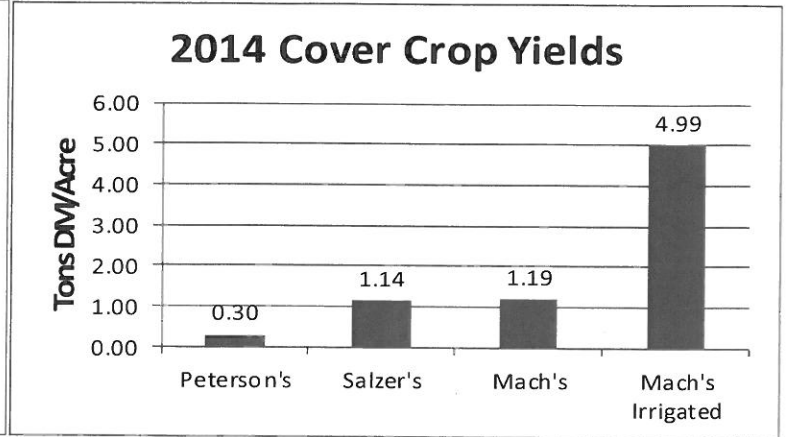
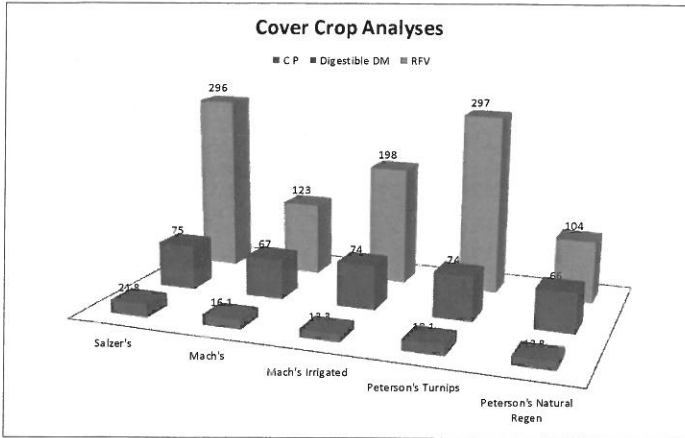
Benefits for Northeast Minnesota Agriculture

Cover crops are regarded in many regions of the United States as a sustainable solution to the negative effects of row cropping on soil health and productivity as well as water quality. This demonstration project will utilize a crop rotation that will maximize the likelihood for successful establishment of cover crops in NE Minnesota. It is our hope that this cropping strategy offers greater crop productivity and diversity, increased grazing opportunity, and improved soil health and productivity for livestock producers in NE Minnesota.



Small Grain for Forage Cost Analysis for 2014

(2014 SARE) Total costs per acre = \$184.28/acre to prepare, plant, and harvest oats and peas.
Calculated profit of \$52.72



Cover crop samples were scissor clipped in early November 2014. Samples were used for yield measurement and feed analysis.

Outcome for 2015

Winter Rye established in fall of 2014 was allowed to grow and harvested as forage in August 2015.

Spreading fertilizer: (\$1.67/acre)

1 hour x \$15/hr. = \$15 labor

3.3 gal. Fuel x \$2.05/gal = \$6.77 fuel

Disking: (\$ 5.04/ acre)

3 hours x \$15/hr. = \$45 labor

10 gal. Fuel x \$2.05/gal = \$20.50 fuel

Dragging: (\$3.09/ acre)

2 hours x \$15/hr. = \$30 labor

5 gal. Fuel x \$2.05/gal = \$10.25 fuel

100 pounds Potash: \$25.71/acre

30 pounds AMS: \$6.91/acre

4 pounds Purple Top Turnip seed: \$11.57/acre

Fall Planting costs:

(2015 SARE) Total costs per acre = \$53.99/acre to prepare, plant and harvest winter rye and purple top turnips.

Rye Turnips 1 1/2 weeks after seeding—4# of Purple Top Turnips, 100# Potash and 30 # AMS. The field was lightly disked and then dragged.

Planted on August 22, 2015

