

## Cover Crop Opportunities in Manitoba

Farming systems in Manitoba present several opportunities for integrating cover crops. Examples include growing cover crops in the late summer following winter wheat harvest, growing cover crops in the fall if the season allows for an early harvest of spring seeded crops (such as spring wheat and canola), intercropping or relay cropping cover crops with cash crops (ex. seeding red clover at time of spring wheat seeding), as well as the practice of green manuring, where a full summer growing season is dedicated to a cover crop for soil and nutrient building. In addition, there is the opportunity to integrate livestock with cover crop grazing.

There are also several challenges associated with growing cover crops in Manitoba. One major challenge is the short growing season, which may restrict windows in which cover crops can be planted and also restricts the amount of biomass a cover crop can accumulate. On the Western side of the province, limited precipitation can make cover crop establishment difficult. As well, due to extended cold winters, finding cold hardy winter annual cover crops and cover crop varieties is necessary. Furthermore, since the use of cover crops has thus far been limited in the province, seed availability can also be a challenge.

### Recent and ongoing cover crop trials in Manitoba

**Investigator: Dr. Yvonne Lawley, Department of Plant Science, University of Manitoba**

#### **Intercropping cover crops in spring wheat, corn, and soybean**

*Purpose:* determine the optimal time and method of seeding a cover crop mix into cash crops.

*Cover crops:* mix of red clover, Indian Head black lentil, purple top turnip, and groundhog radish

*Main crops:* spring wheat, corn, and soybean

#### **Cover crops for wet soils**

*Purpose:* establish and quantify growth of cover crops on soils that were too wet for spring planting.

*Cover crops:* mix of sorghum-sudan grass and groundhog radish

#### **Using mulches to improve cover crop establishment on saline soils**

*Purpose:* quantify the impact of straw mulch on cover crop stand establishment at different levels of salinity.

*Cover crops:* camelina, groundhog radish, and sorghum-sudan grass



Mix of camelina, sorghum-sudan grass, and groundhog radish grown in mulch on saline soil.

**Investigator: Dr. Martin Entz, Department of Plant Science, University of Manitoba**

#### **Cover crops for organic pulse crop production**

*Purpose:* weed suppression in organic pulse crops.

*Cover crops:* fall rye, winter wheat, fall-seeded oat, fall-seeded barley, fall-seeded oilseed radish

*Main crops (grown after cover crop):* soybean, navy bean

### **Late-season legume cover crops with winter cereals**

*Purpose:* late-season soil cover and N fixation after winter cereal harvest.

*Cover crop species:* relay-cropped alfalfa, relay-cropped red clover; double-cropped field pea

*Main crop (grown before cover crop):* fall rye, winter wheat

### **Termination options for summer cover crops / green manures**

*Purpose:* evaluate implements for terminating full season summer cover crops or green manures to reduce tillage and maintain soil cover.

*Cover crop species:* pea/barley mixture; hairy vetch; various mixtures

### **Decomposition dynamics of cover crop mulch**

*Purpose:* evaluate the rate and dynamics of mulch decomposition in full season summer cover crops terminated with the blade roller.

*Cover crop species:* hairy vetch and various mixtures

### **Integrating livestock into cover crop systems**

*Purpose:* gain a harvestable product (livestock products) from the production of season-long legume cover crops while maintaining the N benefit to following crops.

*Species:* pea/oat mixture; hairy vetch; Italian ryegrass in mixture with various legumes; fall rye



Sheep grazing on a cover crop mix.

**Investigator: Scott Chalmers, Westman Agricultural Diversification Organization Inc. (WADO), Manitoba Agriculture, Food and Rural Initiatives (MAFRI)**

### **Relay and intercropping with grain and cover crops**

*Purpose:* Evaluating combinations of grain/silage crops and cover crops to optimize production within a short growing season.

*Cover crop species and main crop combinations:* 1) red clover, berseem clover, black medic, and hairy vetch in barley and spring triticale for grain and silage production, 2) hairy vetch with corn for grain and grazing production systems, 3) hairy vetch with winter wheat for seed production

### **Cover crop termination**

*Purpose:* Evaluating the roller-crimper as a tool to terminate cover crops within low input no-till cropping systems.

*Cover crops:* combinations of barley, hairy vetch, sunola, oilseed radish, and forage pea

### **Hairy vetch seed production**

*Purpose:* Selection for winter hardiness in locally adapted hairy vetch populations. Also evaluating herbicide options for hairy vetch