

Intercropping: Spring Wheat-Clover (Year 1)

Project duration: May 2020 – September 2020

Objectives: To evaluate intercropping potential for Wheat and clovers

Collaborators: PCDF

Background

The Manitoba Agriculture and Resource Development (ARD) [website](#) states that producers may plant cover crops to minimize wind and water erosion. Cover crops can play an important role after low-residue crops, such as potatoes, or in spring as a new crop is establishing. Another important function is to immobilize excess nutrients, especially nitrogen, and prevent losses. Additionally, cover crops can help to trap snow, enhancing moisture conditions in spring.

Despite these benefits, the limited growing season before or after another crop can make establishing cover crops a challenge. A common practice is to establish a cover crop in-season, with a cash crop. This trial examined the effect of establishing four cover crops with wheat (Table 1).

Results

The data presented here are for Year 1 of a two-year study. Figure 1 shows wheat yield (bu/ac) by treatment. The yields do not differ significantly by treatment (Table 1), indicating that seeding a cover crop with wheat did not affect wheat yield.

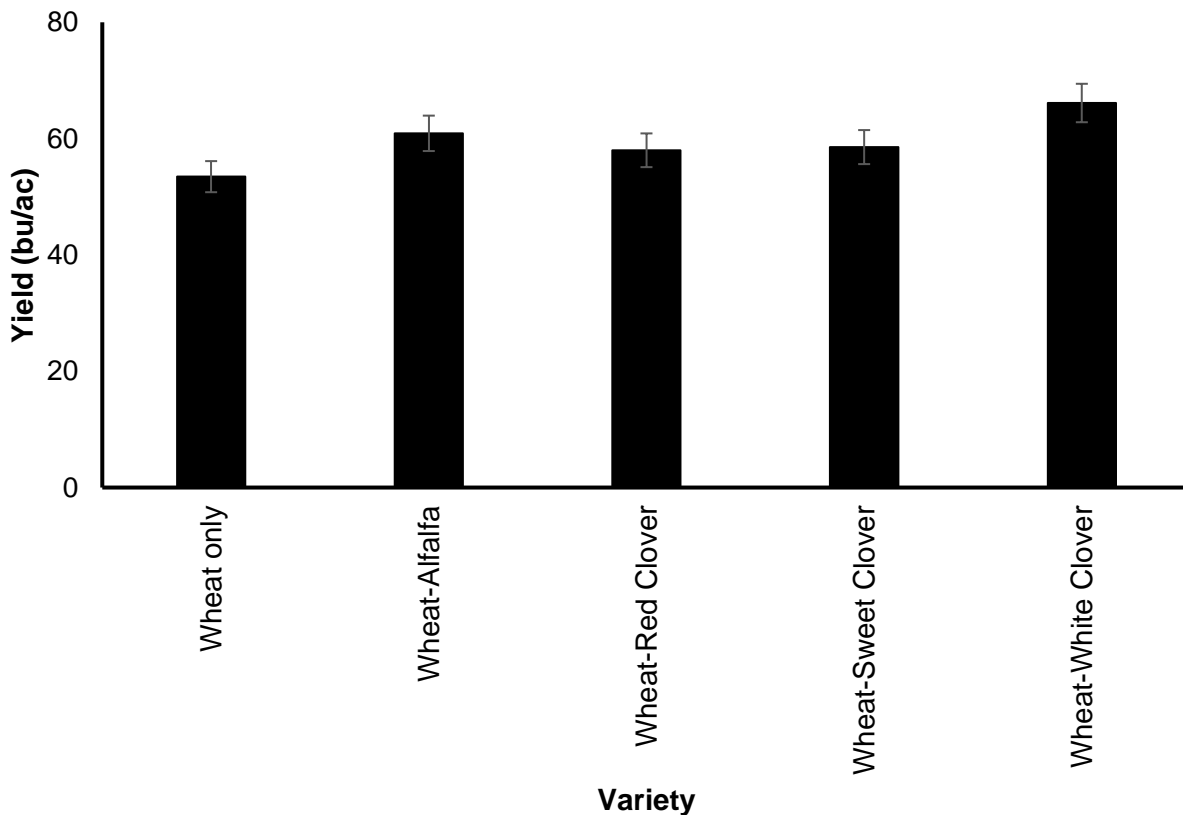


Figure 1: Wheat yield (bu/ac) by treatment.

Table 1: Summary of statistical information for wheat yield

| Treatment | Yield (bu/ac) | Statistical significance |
|--------------------|---------------|--------------------------|
| Wheat only | 53.5 | A |
| Wheat-Alfalfa | 60.9 | A |
| Wheat-Red Clover | 58.0 | A |
| Wheat-Sweet Clover | 58.5 | A |
| Wheat-White Clover | 66.1 | A |
| CV (%) | 10.7 | |
| LSD (0.05) | 28.61 | |

* Treatments not marked with the same letter are statistically different from other treatments.

Observations

Cover crop biomass was not collected, but qualitative assessments of the cover crops after harvest suggest that the treatments all established well. The oats were cut about 18-20" above the ground, and the loose straw was removed from the field so that the undamaged cover crop could continue to grow for the remainder of the season. Additionally, the longer stubble will trap more snow during the winter, providing better protection for the crop. Year 2 of the study will look at the winter survival and spring growth of the cover crop.

No herbicides were applied to the crop. Limited herbicide options are available for oat-cover crop intercrops, and the close proximity of the plots (and danger of spray drift) made it more feasible to hand-weed the plots. On a field-scale, careful field selection and pre-emergence herbicide application would be crucial to the establishment of a successful intercrop. Consult a herbicide guide or dealer to determine the best herbicide option for each intercrop.

Materials and methods

Experimental Design: Random Complete Block Design
 Entries: 5
 Seeding: May 22
 Harvest: Sep 11
 Treatments: 5

Table 2: Treatments by seeding rate (lb/ac)

| | Wheat | Red Clover | White Clover | Sweet Clover | Alfalfa |
|-------------|----------|------------|--------------|--------------|---------|
| Treatment 1 | 90 lb/ac | - | - | - | - |
| Treatment 2 | 90 lb/ac | 10lb/ac | - | - | - |
| Treatment 3 | 90 lb/ac | - | 5lb/ac | - | - |
| Treatment 4 | 90 lb/ac | - | - | 5lb/ac | - |
| Treatment 5 | 90 lb/ac | - | - | - | 18lb/ac |

Data collected Date Collected
 Emergence: Wheat: May 24-25, Cover crops: May 27-30

Wheat variety: AC Goodeve VB
 Wheat Heading: Jul 5-8
 Stand rating: Jul
 Vigor Rating: Jul
 Yield: Sep 11
 Moisture: Sep 11

Agronomic info

Previous year's crop: Barley Silage
 Soil Type: Erickson Loam Clay
 Landscape: Rolling with trees to the east
 Seedbed preparation: Heavy harrowed

Table 3: Fertility Information

| | Available | Added | Type |
|---|-----------|-----------|-----------|
| N | 61 lb/ac | 128 lb/ac | 46-0-0 |
| P | 47 ppm | 10 lb/ac | 11-52-0-0 |
| K | 393ppm | | |
| Cover crops inoculated; no herbicide applied (hand weeded) | | | |