

Spring Wheat-Cover Crop (Year 1 and 2)

Project duration: May 2020 – September 2021

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 soybean and 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 Years 1 and 2 of a multi-year study. Figure 1 shows a comparison of wheat yield (bu/ac) by treatment for 2020 and 2021.

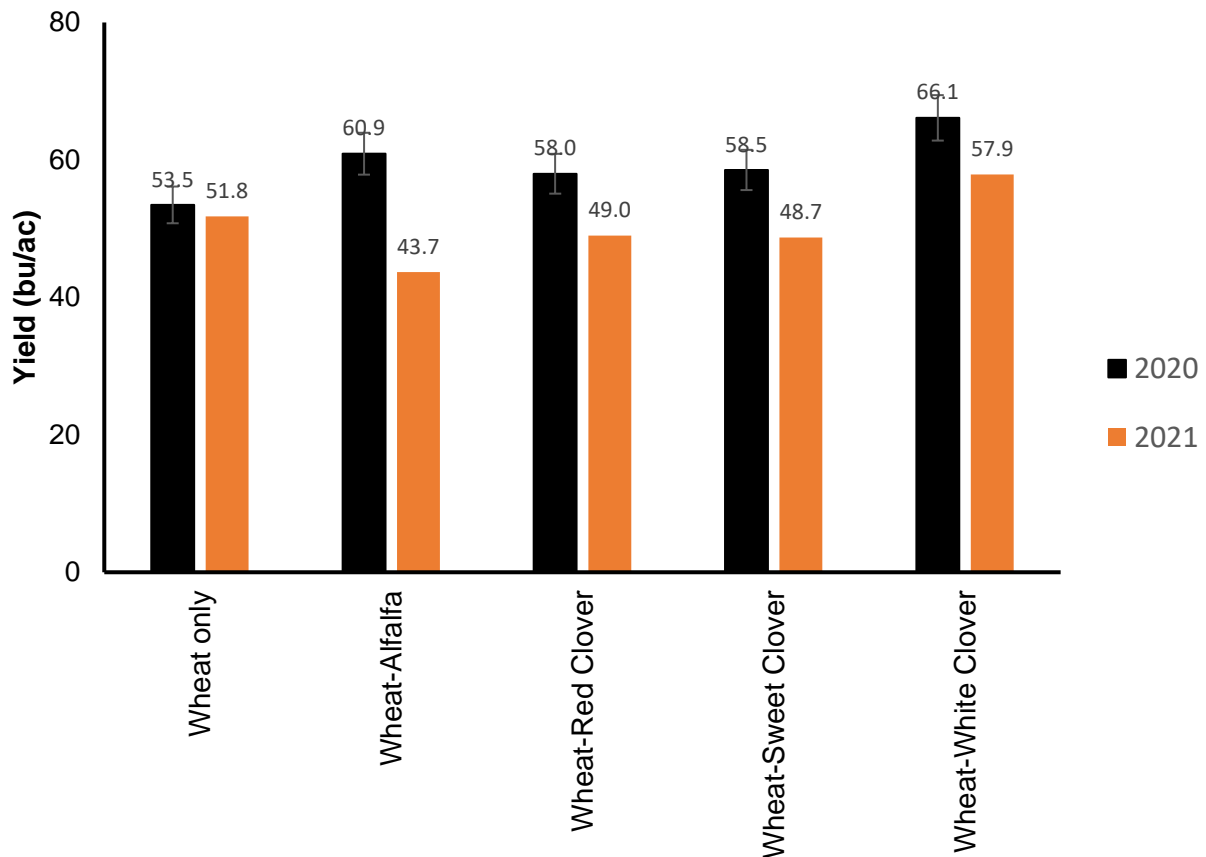


Figure 1: Wheat yield (bu/ac) by treatment.

Table 1: Comparison of yield means and statistical difference for wheat-cover crop entries for 2020 and 2021 (varieties connected by the same letter are statistically significant)

Variety	Statistical significance			Yield (bu/ac)	
	2020	2021		2020	2021
Wheat only	A	A		53.5	57.9
Wheat-Alfalfa	A	A	B	60.9	51.8
Wheat-Red Clover	A		B C	58.0	49.0
Wheat-Sweet Clover	A		B C	58.5	48.7
Wheat-White Clover	A		C	66.1	43.7
LSD				15.1	7.9
CV (%)				13.9	13.3

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

Figure 2 shows forage July 2021 yields for cover crops seeded in 2020. All results are for one year only, and should be interpreted with caution.

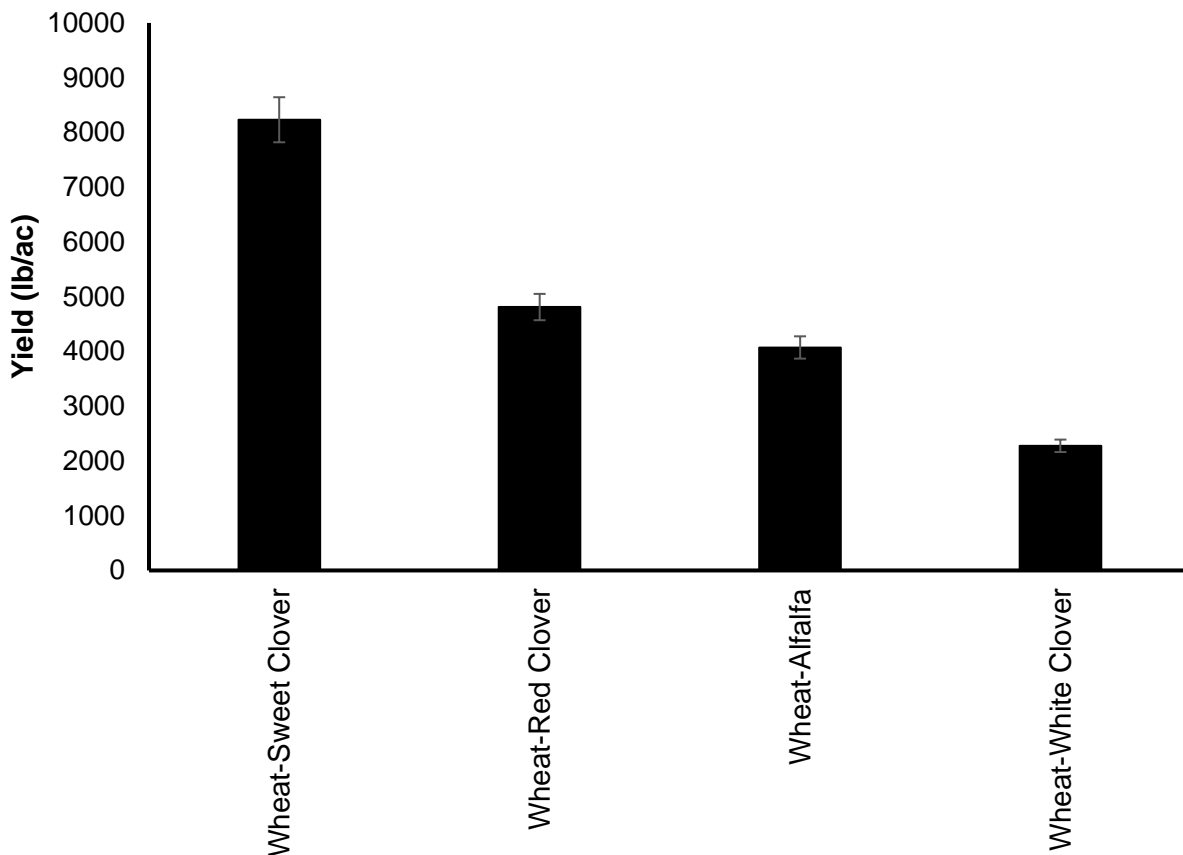


Figure 2: Average forage yield for cover crop by treatment, seeded 2020, harvested July 16, 2021 (lb/ac, 15% moisture).

Figure 3 shows the average yield for cover crops for all reps in the 2021 growing season (planted with the wheat crop). White clover yields were negligible and are not show. **Note that the results are for one year only, and should be interpreted with caution.**

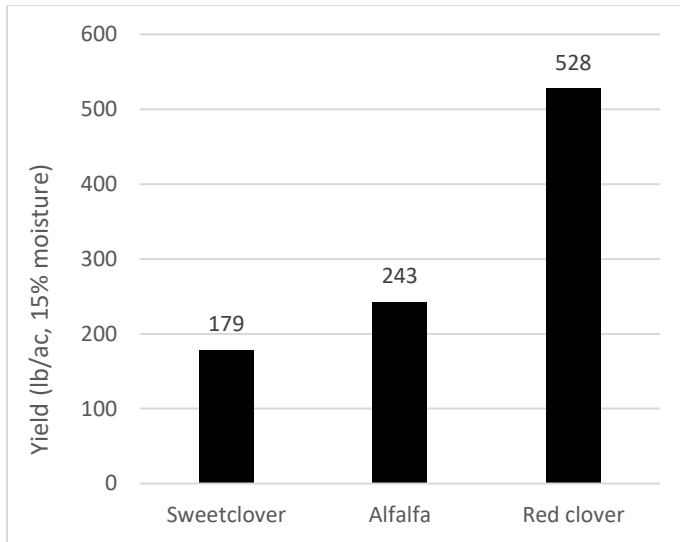


Figure 3: Figure 2: Average forage yield for cover crop by treatment, seeded 2021, harvested Sept 15, 2021 (lb/ac, 15% moisture).

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 14
 Harvest: Sep 11

Table 2: 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 21-22, Cover crops: May 20-24
Wheat variety:	AC Goodeve VB
Wheat Heading:	Jul 1-3
Stand rating:	Jul 1
Vigor Rating:	Jul 1
Yield:	Sep 28
Moisture:	Sep 28

Agronomic info

Previous year's crop:	Oat Silage
Soil Type:	Erickson Loam Clay
Landscape:	Rolling with trees to the east
Seedbed preparation:	Vertical Tilled

Table 3: Fertility Information

	Available	Added	Type
N	162 lb/ac	27 lb/ac	46-0-0
P	41 ppm	10 lb/ac	11-52-0-0
K	703 ppm		
Cover crops inoculated; no herbicide applied (hand weeded)			