The Decision to Cover Crop - Prairie Farms

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Introduction

- A cover crop is a plant seeded in a plot for other purposes other than cash such as to cover exposed soil areas. It must include "a grass, a legume, and a broadleaf in the cropping rotation." [3]
- Cover cropping systems have been implemented as a technique is farms across America and Eastern Canada [1]
- The adoption of cover crops in Canadian prairies is often questioned by the climate.
- This research aims to conclude whether cover crops should be adopted within Canadian farms by analyzing their effects on examined plots of wheat.

Cover crop mix used:
- Facelia
- Alfalfa
- Clover mix: Red Clover, White Dutch Clover, Subterranean Clover, Persian Clover

Figure 1: Plot with Facelia and clover mix

Methods

- For each individual plot, a count was performed that obtained the following data: total cover crops, total cash crop by counting two rows a meter long and the number of weeds per one square meter.

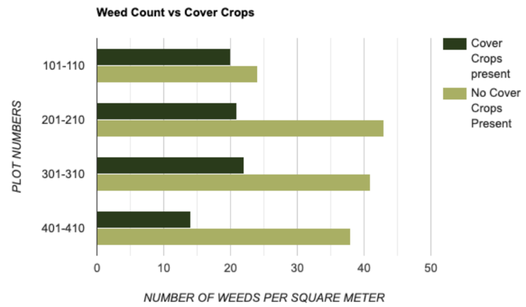
- According to the BBCH staging manual [2] , the wheat is at the Flowering/Anthesis growing stage (#6. 65).

- A water infiltration test was performed using a metal cylinder, plastic wrap and a specific measured amount of water to time how long the soil takes to fully absorb the water.

Figure 2: Image of the performed water infiltration test.

Figure 3: Map of the field work site

Results



(s)

Figure 4: The diagram represents and compares the total of weeds in plots with a cover crop mix and the total weeds in plots without cover crops per row.

Water Infiltration Results

Plot Number	Cover Crop?	Absorption Time
102	No	11.44
104	Yes	12.52
208	Yes	17.01
209	No	13.33
210	Yes	5.30
303	No	18.74
304	Yes	7.70
305	Yes	17.07
306	No	38.25
307	No	11.31
309 309	No No	12.96 10.34
310	Yes	8.16
404	Yes	9.14
405	No	23.99
406	Yes	13.39
407	No	17.24
409	Yes	6.64
410	Yes	3.84

Table 1: This diagram shows the results from a water infiltration test where it was recorded how many seconds the soil took to absorb a specific amount of water

Cover Crops?	Total Average Absorption Time
Yes	10.08 seconds
No	17.51 seconds

Table 2: The average time for water infiltration of the total number of plots with cover crops vs. without.

Type of Plot	Total Cash Crop
Cover Crop (19 plots)	4242
Control (21 plots)	4390

Table 3: Results from a cash crop count.

Average cash crops per plot:

223 - (Cover crops)

209 - (Control)

Table 4: Average cash crops per plot with and without cover crops.

Conclusions

- Plots with the cover crop mix showed faster absorption rates by 7.43 seconds faster than control plots. This means the crops allows for more water to be stored and continuously made available for the wheat.
- Cover crops also demonstrated weed suppressive abilities. Plots with no cover crops had approximately 1.9 times many weeds as those with cover crops.
- Cover crops showed an increase in production rates; with averaging 223 cash crops per plot with cover crops and averaging 209 cash crops in plots without cover crops.
- Overall, cover crops have shown beneficial effects in the following areas: water infiltration, weed suppression and production rates.
- Cover cropping techniques should be implemented across prairie farms.

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