

ADOPT

Agricultural Demonstration of Practices and Technologies

Final Report – November 13, 2012

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Effect of Weed Management on the Production of Winter Wheat in the Prince Albert Region

Contact Person: Curtis Braaten, Conservation Learning Centre
Phone: 960-1834
Email: curtis@conservationlearningcentre.com

Objectives:

To demonstrate the effect of weed management on the establishment and success of winter wheat grown on canola stubble in the Prince Albert region.

Rationale:

Interest has increased in winter wheat production for a number of reasons including:

- being a good fit with conservation farming systems;
- increased efficiency of water utilization compared to spring seeded crops;
- avoidance of wheat midge damage due to early heading;
- good weed competitor (reduced herbicide costs);
- reduced risk of fusarium head blight due to early development and maturity;
- avoid seeding problems on late, wet springs;
- lower energy requirements;
- less disturbance to wildlife, especially waterfowl and upland game birds;
- higher yield potential and reduced pesticide costs can mean greater economic returns per acre.

However, many new winter wheat producers still struggle with some of the agronomics associated with this crop. Due to the different growth habit of winter wheat compared to its spring counterparts, alternative weed control options need to be considered. Since fall tillage is not an option, fields infested with perennial grass weeds, such as quackgrass, should be avoided. Control of winter annual weeds, such as stinkweed, shepherd's purse, flixweed and narrow-leaved hawk's beard, is particularly important in winter wheat. Best control of winter annual weeds with herbicides is achieved in the



fall after the weeds have germinated and right before freeze-up. They may also be treated the following spring, but must be sprayed before the weeds bolt, which occurs in late April or early May (Manitoba Agriculture)

Materials and Methods: This project demonstrated the effects of weed management on the establishment and success of winter wheat in the Prince Albert Region. The 9 treatments selected were:

- a) Check (no weed control)
- b) Preseed glyphosate
- c) Preseed Express Pro (8 g/ac) and Glyphosate (0.5)L/ac g.e.)
- d) Preseed glyphosate + fall in crop, Bromoxynil & MCPA ester
- e) Preseed glyphosate + early spring Infinity herbicide
- f) Preseed glyphosate + late spring Infinity herbicide
- g) Preseed Glyphostae + early spring Achieve herbicide
- h) Preseed glyphostae + late spring Achieve herbicide
- i) Preseed glyphosate + early spring Refine SG herbicide

Prior to seeding, either glyphosate alone or glyphosate plus Express Pro were applied to all treatments as prescribed, except for the untreated check. The winter wheat (cv. Buteo) crop was seeded August 26, 2011 at a rate of 146 lb/ac. It was sown on canola stubble which is considered one of the best stubble types as it traps snow effectively and provides a good broadleaf-grass crop rotation. The winter wheat was seeded with a plot seeder with plots approximately 40 feet in length and 7 feet wide (which is one pass with the plot seeder). The 9 treatments were replicated 3 times for a total of 27 plots. The fall bromoxynil plus MCPA ester was applied Sep[t 13, 2011.

Results:

Soil moisture conditions at seeding were marginal for crop establishment, and emergence was somewhat spotty. Variable emergence allowed weeds to invade the crop. The main weed species were barnyard grass, with some sow thistle present as well.

After application of fall bromoxynil plus MCPA, some crop yellowing was noted that persisted through the middle of October. The sprayer used to apply the herbicides was designed to apply very low water volumes and was quite difficult to calibrate. It is probable that either higher than planned rates of herbicide were applied, or that water volumes were so low as to cause crop damage.

While no visual symptoms of herbicide damage from the spring applied herbicide treatments were noted, is quite possible that the same problems arose with calibration and low water volumes since the same sprayer was used.

Grain yield was highest for the untreated check treatments which was unexpected. The only explanation that we can provide for this result is that there may have been much more damage from all herbicide treatments that were



noted in observations during the growing season. It would also appear that if this were the case, damage was greater from early spring Infinity than from other herbicides.

In light of uncertainty about possible herbicide damage, these results should be viewed very cautiously. It should also be noted that turnover of staff associated with the site resulted in loss of some data. This data was collected to assist in understanding treatment responses.

Overall, yield of winter wheat exceeding 70 bu/ac in the absence of herbicides for weed control suggests that this crop can be highly competitive with other crops grown in the region.

Table 1. Winter wheat yield (bu/ac) with varying weed control treatments at the Conservation Learning Centre in 2012.

Treatment	Rep 1	Rep 2	Rep 3	Average
Check, no weed control	78.0	72.1	70.8	73.6
Pre-seed glyphosate (Glyphosate)	61.2	41.8	54.9	52.6
Glyphosate + Express Pro tank mix pre-seed	51.9	58.2	53.8	54.6
Glyphosate pre-seed + fall in-crop Bromoxynil + MCPA ester	51.6	55.9	57.5	55.0
Glyphosate pre-seed + early spring Infinity in-crop	36.5	48.8	51.2	45.5
Glyphosate pre-seed + late spring Infinity in-crop	53.7	70.3	52.5	58.8
Glyphosate pre-seed + early spring Achieve in-crop	56.7	60.2	62.0	59.6
Glyphosate pre-seed + late spring Achieve in-crop	54.9	55.8	49.5	53.4
Glyphosate pre-seed + early spring Refine SG in-crop	56.8	56.2	56.5	56.5
LSD (P=0.05)				10.7

Supporting Information

Acknowledgements:

We would like to express our gratitude to the Ministry of Agriculture for the funding support and in-kind support with this project. To recognize the ADOPT program and the Ministry we had signage at the sites.

Field Days:

- Conservation Learning Centre – Annual Field Day – July 17th - 45 people
- Conservation Learning Centre – Combine Clinic – Aug 9th – 55 producers

Abstract

Producers are constantly looking for alternative cropping options and winter wheat is slowly gaining attention. This season saw a producer close to the CLC drill 3 quarters of winter wheat in. August 26, 2011 saw us seed 146lb/ac of Buteo winter wheat into canola stubble with adequate soil conditions. The crop was fertilized to achieve a 50 bu crop as per soil test. Emergence was quite variable between treatments, but overall was acceptable. All treatments went into winter with great crown development. Variable emergence gave weeds the opportunity to establish where the crop was weak to gain a



foot hold. Barnyard grass was the dominate competitor, with sow thistle causing some concern as well. Sept 13 saw us spray a rate of MCPA @ 0.5l/ac combined with Pardner at 0.5l/ac. On the 19th of Sept the crop saw evidence of some injury with minor yellowing of the crop. We feel this injury could be caused from the herbicide as we used a low water volume sprayer technology out of Australia. Thus, the high yield of the Check treatment over all others. The middle of October still was showing some yellowing of the crop with marginal weed control. Spring saw some winterkill with a narrow strip of dead crowns making its way through several of the treatments. Quality of this wheat was impacted from our humid growing conditions this season with it being downgraded to #2. Yield on the other hand was a pleasant surprise making winter wheat a profitable cropping option in the Prince Albert region.

