

ADOPT

Agricultural Demonstration of Practices and Technologies

Final Report – November 13, 2012

ADOPT Project #20110253

Effect of Seeding Date and Seeding Depth on the Production of Winter Wheat in the Prince Albert Region

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Objectives:

To demonstrate the influence of seeding depth and seeding date on the establishment and success of winter wheat grown on canola stubble in the Prince Albert region.

Rationale:

Winter wheat can have a number of benefits in a crop production system such as: 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.

Seeding date is an important factor in winter wheat establishment as plants that enter the winter with well established crowns are more durable. To enter winter with an established crown, optimal seeding dates should be earlier as one moves north and east on the prairies. The range of dates is typically August 20th to September 15th. Seeding too early can result in excessive growth in the fall and plants that are less resistant to winter injury (this is rarely a problem as removal of the previous crop usually does not occur early enough). Late dates of seeding are a greater threat to the crop, usually resulting in poor establishment and lower winter-survival potential. Plants that enter the winter with well-developed crowns are normally most desirable.

Seeding depth is an important agronomic factor in terms of the establishment and subsequent success of a winter wheat crop. Fall seeding generally means seeding into dry soil, therefore growers are recommended to seed as shallow as possible (no deeper than one inch). Winter wheat seeds need only a small amount of moisture to initiate germination therefore shallow seeding when the soil is dry allows the seed to require less precipitation to begin germination. As seeding depth increases more precipitation is



needed to initiate germination and emergence time is delayed. There is an exception to this if the top inch of soil is dry but moisture is available at 1.5-2.0 inches.

Materials and Methods:

This project helped to demonstrate the effects of seeding date and seeding depth on the establishment and success of winter wheat in the Prince Albert Region. There was four seeding dates evaluated: August 26st, September 2, September 9th and September 15st. On each of the seeding dates, four seeding depths were examined: 0.5, 1.0, 1.5 and 2.0 inches. Buteo winter wheat at 146/lbs/ac was drilled into canola stubble which is considered one of the best stubble types, as it traps snow effectively and provides a good broadleaf-grass crop rotation. 80 lbs of N along with 27 lbs of phosphorous was applied. The winter wheat was seeded with a plot seeder with plots approximately 40 feet in length and 7 feet wide (one pass with the plot seeder). There was a total of 16 plots for this demonstration project.

Results:

Seeding Date	0.5"	1.0"	1.5"	2.0"
Aug 26	50,8 bu/ac	37 bu/ac	45,4 bu/ac	65.34 bu/ac
Sept 2	75.2 bu/ac	72.6 bu/ac	75.4 bu/ac	75.8 bu/ac
Sept 9	68.3 bu/ac	59.11 bu/ac	64 bu/ac	57.7 bu/ac
Sept 15	N/A	N/A	N/A	N/A

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
- Report on the project to be posted on our website
www.conservationlearningcentre.com

Abstract

. Aug 26, Sept 2, Sept 9 and Sept 15th saw Buteo winter wheat seeded at 146 lbs/ac at these 4 different depths 0.5", 1.0", 1.5", 2.0". Soil conditions were relatively dry with the 1" seeded on Aug 26 emerging on the 31st. All plots had emerged from the Aug 26th seeding date by the time we seeded on Sept 2nd. Temperatures had continued to warm with Sept 9th's seeding day being around 30C. Soil conditions continued to dry with rain being scheduled, we seeded our last date on Sept 15th. Evening temperatures had



started to drop – 4C. Soil conditions by this time were very dry with all plots being slow to emerge.

Most treatments wintered quite well except for the Sept 15th seeding date. All depths seeded on Sept 15 were into very dry ground causing poor emergence. Weed competition overtook the latest seeded plots causing no yield data. May 16, 2012, saw the recommended rate of Stellar applied. Regardless of date, the deepest seeded plots headed out first. Aug 26th seeding date saw the plots all headed out by June 15th. 3 days later the Sept 2nd seeding date had all headed out By June 29th, all dates had headed out. Disease pressure was minimal but new flushes of weeds with every rain were costly. All dates and depths ripened within 7 days causing us to harvest Aug 21st. Most consistent yields between depths and the highest yielding was the Sept 2nd seeding date with the 2.0” depth reaching 76 bu/ac.

With the avoidance of wheat midge damage due to early heading; good weed competition (reduced herbicide costs); reduced risk of fusarium head blight due to early development and maturity lists of benefits of producing winter wheat, along with many other benefits, can mean greater economic returns per acre.

