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Evaluation of winter wheat varieties in northern Peace area

Background: Winter wheat offers producers several advantages. It provides soil cover during the fall and winter, reducing the potential for wind and water erosion; spring moisture is not lost from seeding disturbance; seeding and harvest dates are off-set to different times of the year; and it often out-competes spring emerging weeds. Winter wheat lines have been found to vary in winter hardiness, e.g. SM-8323 is considered resistant to snow mold.

The production of winter wheat is concentrated in the southern areas of Alberta. Its area in northern areas of Alberta is limited due to poor winter survival and susceptibility to snow molds.

Objective: To determine which winter wheat varieties perform well under the northern Peace region growing conditions.

Materials and Methods

2004/05 Trial: Fourteen lines of winter wheat were seeded in small plots (1.22 m by 5 m), using a randomized complete block design with 3 replicates. Seeding was done on August 16, 2004. In spring of 2005, nitrogen and phosphorous fertilizers were broadcast at 50 lbs/ac and 25 lbs/ac, respectively. In late April of 2005, winter survival measurements (percentage of plants surviving) were taken. Weeds were controlled with Buctril M herbicide at the recommended rate.

2005/06 Trial: A randomized block design with 4 replicates was used to compare 4 varieties of winter wheat. Direct seeding (depth 3/4") into canola stubble was done on August 17, 2005 with a Conserva Pak air seeder. The varieties were AC Bellatrix, CDC Falcon, CDC Osprey and Norstar. A mixture of 27-12-9-4 granular fertilizer was added at a rate of 90 lbs/acre. Plots measured 12' width by 40' length. Plant emergence counts were done on May 15, 2006. The trial was sprayed with Buctril M at recommended rates on June 19, 2008, with a 12' Hardi tractor mounted sprayer.

Results and Discussion

2004/05 Trial: Winter kill was extreme for most of the varieties and yields in 2005 were severely affected (Table 1). Since the coefficient of variation is very high for these data, we cannot draw statistical conclusions about the results.

Table 1: Winter survival and yield of 2005 winter wheat variety trial.

Variety	Survival %	Yield bu/ac
CDC Harrier	3	13.3
SM-8323	2	16.5
CDC Kestrel	10	18.2
AC Tempest	4	21.1
McClintock	27	12.0
Norstar	15	22.3
AC Bellatrix	14	20.2
CDC Osprey	23	15.8
CDC Clair	32	21.2
CDC Falcon	16	20.4
CDC Raptor	18	21.0
AC Readymade	10	30.7
Radiant	12	34.0
CDC Buteo	13	21.1
LSD at 0.05)	*18.2*	*22.3*
P Value	*0.069*	*0.799*
CV	*76.52*	*63*

2005/06 Trial: The establishment of the winter wheat varieties in fall of 2005 was consistent with what has been observed in the past research trials near Fort Vermilion. Emergence (% plot) was averaged over the four plots per variety: CDC Falcon: 66%, CDC Osprey: 62%, Norstar: 56% and AC Bellatrix: 52%. Due to heavy weed pressure and lack of adequate plot growth, this trial was removed with the Hege Combine on August 17, 2006. Yield and forage production data was not measured. The main issue in this trial was the heavy spring weed pressure. Although this trial was seeded into canola stubble (Roundup Ready) and a pre-seed burn off was done, it may have been useful to spray for winter annual weeds later in the fall.

Conclusions: The trials did not provide good data to draw definite conclusions. However, critical rules to follow for growing winter wheat may be summarised as follows: seed early, seed shallow, seed into standing stubble, manage weeds properly. Adequate snow cover during the winter is a key for good winter survival rates. Timing of herbicide application in spring for weed control is also an important factor.

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