EFFECT OF ROLLING CREEPING RED FESCUE PRIOR TO FALL GLYPHOSATE APPLICATIONS CPCS AGRICULTURAL RESEARCH UPDATE

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OBJECTIVES

A common observation that producers have observed is the improved performance of the glyphosate application on creeping red fescue in the wheel tracks of the tractor and sprayer. There has been a great deal of producer interest in the effect of rolling the fescue immediately prior to the spraying operation. The rational for this appears to be the transition of the fescue leaf from a vertical orientation to a horizontal orientation. This may improve the amount of herbicide that is translocated into the fescue roots and improve the control.

METHODS

The 2003-2005 trial was located at the following site north of Spirit River – SW 09 79 5 W6

2003 Activities

On September 24th an application consisting of 2 l/ac Roundup Transorb was sprayed using a water volume of 7.5 gal/ac and 110' nozzles. Half of the strips received a pass using a land roller. This operation was performed 5 to 10 minutes ahead of spraying operations using a 16' Dika roller without ballast (water). By this time the fescue had regrown to a 10 - 12" height. Showers fell 2 hours after spraying operation. The temperature was cool at time of spraying, about 5 degrees celcius. The fescue was judged to still be actively growing and there were no severe frosts that had occurred yet.

2004 Activities

A burnoff herbicide operation consisting of 1.0 l/ac Roundup Transorb using a water volume of 5 gal/ac was applied on May 13th. The plot area was very clean with only a very few blades of fescue found growing.

All seeding operations occurred on May 17th. DKL 3235 RR canola was seeded at a rate of 7.5 lb/ac at a depth of 0.5-0.75". Morgan oats were seeded at a rate of 100 lb/ac at a depth of 1.0". Espace peas were seeded at a rate of 190 lb/ac at a depth of 0.75-1.0".

The soil test revealed the following information in the 0-6" layer:

- Nitrogen: 10 lb/ac, deficient
- Phosphorus: 17 lb/ac, deficient
- Potassium: 816 lb/ac, optimum
- Sulfur: 34 lb/ac, optimum

- pH: 6.7, neutral
- Organic Matter: 8.0%
- EC 0.23, good

Recommendation for a 80 bu/ac oat crop:

64 lb N, 34 lb P_20_5, 0 lb K_2O and 6 lb S /ac

Recommendation for a 40 bu/ac pea crop:

13 lb N, 49 lb P_20_5, 0 lb K_2O and 6 lb S /ac

Recommendation for a 35 bu/ac canola crop:

95 lb N, 37 lb P_20_5, 0 lb K_2O and 17 lb S /ac

The fertility program for oats consisted of 80-28-21-0 that was deep banded at the time of seeding.

The fertility program for peas consisted of "Soil Implant" Inoculant applied at 7.5 lb/ac deep banded at the time of seeding.

The fertility program for canola consisted of 80-28-21-0 that was deep banded at the time of seeding.

Field peas were sprayed on June 19th with the recommended rate of Odyssey using a water volume of 10 gal/ac. The crop was at the 3 to 6 node stage. The major weeds were volunteer fescue and dandelion.

RR canola was sprayed first June 21st with 0.33 l/ac Roundup WeatherMax using a water volume of 5 gal/ac. The canola was at the cotyledon to 5 leaf stage. The major weeds were dandelion and volunteer fescue. A second application of glyphosate was made on June 27th.

There were no incrop herbicidies applied to the oats.

ABOVE: Rolling fescue at the Mortland site in September 2003.

Above: Oat crop during the summer (2004).

Above: Pea crop during the summer (2004).

Above: Canola crop during the summer (2004).

The plots were swathed on October 7th but due to weather problems we were unable to combine and weigh the trial.

The Effect of Rolling Prior to Spraying

The benefit of rolling prior to spraying remains unanswered in 2004 as we were not successful in collecting yield data at the Mortland site. However, we did see some visual differences between the effect of rolling and crop selection/incrop herbicide application.

On November 21st the site was rated for the degree of fescue control. The results are given in Table 1 below.

TABLE 1 Effect of Rolling Prior to Fall Glyphosate Application on Fescue, Mortland Site, 2004

Treatment	Rolled Fescue % Control	Fescue Not Rolled % Control
Oat	65	52
Pea	80	73
Canola	90	88
Average	78	71

2005 Activities

On May 22nd 2005 Roundup WeatherMax (0.67 l/ac) was applied to the oat and field pea stubble and 0.67 l/ac Roundup WeatherMax and 250 ml/ac 2,4-D was applied to the RR canola stubble. These herbicides were applied using a water volume of 5 gal/ac. The air temperature was 9' Celsius and the fescue was 4 to 6" in height. The major weeds at

this time were volunteer fescue, Canada thistle and volunteer canola.

There were six treatments that were used in the 2005 trial:

2005 Crop	2004 Crop	Rolled
RR Canola	Oat	Yes
RR Canola	Oat	No
Wheat	Pea	Yes
Wheat	Pea	No
Wheat	RR Canola	Yes
Wheat	RR Canola	No

All seeding operations occurred on May 30th. LBD 588 RR canola was seeded at a rate of 5.3 lb/ac at a depth of 0.5“. Intrepid HRS wheat were seeded at a rate of 140 lb/ac at a depth of 0.5”.

The fertility program for both RR canola and HRS wheat consisted of 60-20-10-10 that was deep banded at the time of seeding.

The incrop weed control program consisted of:

ABOVE: RR canola seeded into the oat stubble. The canola on the LHS was NOT rolled prior to spraying on 2003 and the canola on the RHS WAS rolled prior to spraying in 2003.

ABOVE: Wheat seedings in 2005 seeded into the canola stubble from 2004.

ABOVE: Wheat seeded into the RR canola stubble on the RHS. Wheat seeded into the pea stubble on the LHS. The volunteer fescue is clearly more prevalent in the pea stubble compared to the canola stubble.

The wheat was sprayed with the recommended rate of Curtail M using a water volume of 5 gal/ac. The crop was at the 1 to 4 leaf stage. The major weeds were volunteer fescue (mainly in the pea stubble) and volunteer canola.

RR canola was sprayed on June 6th with 0.33 l/ac Roundup WeatherMax using a water volume of 5 gal/ac. The canola was at the cotyledon to 2 leaf stage. The major weeds were volunteer fescue and oats. A second application similar to the first was made on June 19th. The canola was at the cotyledon to 4 leaf stage. The major weeds were volunteer fescue and oats. A third application similar to the first was made on June 28th. The canola was at the 2 to 6 leaf stage. The major weeds were volunteer fescue and oats.

The plots were swathed on September 17th and combined on October 27th. Samples were retained

to determine the % moisture, % dockage, % green, % protein and bushel weight. The results are given in Table 2 below.

Table 2 Effect of Rolling and Crop Selection on Non-Tillage Removal of Fescue, Mortland Site, 2005

Crop	Rolled	Yield bu/ac*	% Moisture*	% Dockage*	% Green*
Canola/Oat	Yes	14.1a	11.4a	12.0a	5.3a
Canola/Oat	No	9.6 b	12.1a	14.0a	6.0a
	CV	8.6%	19.8%	26.7%	24.5%

*means followed by the same letter within each column are not significantly different at P=0.05

Crop	Rolled	Yield bu/ac*	% Moisture*	% Dockage*	% Protein*	Bu Weight*
Wheat/Pea	Yes	16.7a	24.3a	3.2a	13.2a	44.2a
Wheat/Pea	No	15.0a	24.1a	6.8 b	13.3a	43.6a
	CV	16.1%	6.0%	17.0%	1.1%	6.8%

*means followed by the same letter within each column are not significantly different at P=0.05

Crop	Rolled	Yield bu/ac*	% Moisture*	% Dockage*	% Protein*	Bu Weight*
Wheat/ Canola	Yes	29.2a	24.3a	3.0a	13.2a	42.9a
Wheat/ Canola	No	28.6a	23.9a	2.3 b	13.3a	42.4a
	CV	7.3%	1.1%	4.1%	3.1%	4.7%

*means followed by the same letter within each column are not significantly different at P=0.05

On November 2nd the site was rated for the degree of fescue control. The results are given in Table 3 below.

TABLE 3 Effect of Rolling Prior to Fall Glyphosate Application on Fescue, Mortland Site, 2005

Treatment	Rolled Fescue % Control	Fescue Not Rolled % Control
RR Canola on Oat Stubble	80	78
Wheat on Field Pea Stubble	30	30
Wheat on RR Canola Stubble	82	75
Average	64	61

CONCLUSIONS

At the Mortland site we learned that crop selection and the ability to have incrop herbicide options for fescue control are critical components of being able to successfully remove fescue from rotation and to establish acceptable annual crop production. RR canola in the year after the fescue was sprayed or in the second year after the fescue was sprayed provided the best incrop weed control options for dealing with volunteer fescue. While field pea did appear to be promising after the first year there was significant fescue regrowth in the following wheat crop with no incrop herbicide options for controlling the fescue. Seeding wheat into RR canola resulted in a promising wheat crop with little fescue regrowth but again incrop herbicide options for controlling fescue regrowth are not available.

We conclude from this trial that the incrop herbicide options are essential for successful removal of fescue from rotation without tillage and thus producers must look towards using RR canola in the first or second year after the fescue has been sprayed out.

Tables 1, 2 and 3 supports observations made during the summer that the rolling prior to fall spraying may be of value particularly if not seeding RR canola the following year.

In 2006 CPCS will continue this study with a fescue removal program located at the Brett Young Agronomy Research Farm 1 mile east of Rycroft.

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