

Conservation LEARNING CENTRE

2013 ADOPT Project Report

Optimum Timing of Weed Control in Field Pea and Lentil



Prepared by;

Larry White, A/Manager
Conservation Learning Centre
December 2013

1. **Project Title:** Optimum timing of weed control in field pea and lentil
2. **Project Number:** 20120405
3. **Producer Group Sponsoring the Project:** Conservation Learning Centre Inc
4. **Project Location:** Conservation Learning Centre, Prince Albert, Sask.
Located on the SW 20-46-26 W2
5. **Project Start and End Dates:** May 1, 2013 to January 15, 2014
6. **Project Contact Person and Contact Details:** Larry White, A/Manager,
Conservation Learning Centre, Box 3003, Prince Albert, Sask S6V 6G1
306 764-7320 or 306 960-1834, nlwhite@sasktel.net
7. **Project Objectives:** The project objectives are;
 - a) To provide information on weed control options in field pea and lentil
 - b) To compare the effect of herbicide application timing on pea and lentil yields
8. **Project Rationale:** Weed control in field pea and lentil is important since these crops are poor competitors with weeds. The short stature of the crop and length of time it takes to get canopy closure makes early weed control important to reduce competition. There are several herbicide options in crop to reduce competition. Producers like to delay herbicide application until a high percentage of weeds in a position to germinate do in fact do so. This can increase weed pressure and reduce crop yields.

This project will demonstrate the effects of early and late weed control on field pea and lentil. This project will help producers decide on optimum timing of herbicide application on these crops.
9. **Methodology:** The project was set up as a factorial randomized complete block design. The effects being looked at were herbicide choice and herbicide application timing. Clearfield field peas and lentils were planted.

Treatments for lentils were;

 - 1) Check—no herbicide
 - 2) Odyssey, early weed control
 - 3) Odyssey, late weed control
 - 4) Solo, early weed control
 - 5) Solo, late weed control

- 6) Sencor, early weed control
- 7) Sencor, late weed control

Treatments for peas were;

- 1) Check, no herbicide
- 2) Odyssey, early weed control
- 3) Odyssey, late weed control
- 4) Viper, early weed control
- 5) Viper, late weed control
- 6) Sencor, early weed control
- 7) Sencor, late weed control

Early weed control was applied at the 3 above ground node stage

Late weed control was applied at the 6 above ground node stage

The project was seeded on wheat stubble.

The pre-seed burn off was 1.5 L Advantage Plus on May 17th.

The soil temperature was 58 C.

The cultivars used were Centennial field peas and CDC Maxim Lentils. The seed treatment Cell Teck was used.

The treatments were cross seeded with tame oat and yellow mustard as a way to ensure there was adequate weed pressure

The peas and lentils were seeded on May 21, 2013. Emergence on both crops was May 31, 2013. Plot sizes were 3.5 x 9 m. The seeding rate was 100 seeds per m² on the peas and 130 seeds per m² on the lentils.

The actual fertilizer applied was 45# N and 43# P with the seed.

The early weed treatments were applied June 17, 2013. The temperature was 24 C that day. Some of the peas were going into the 4th node on this day.

The herbicide rates used on lentils were;

Odyssey 17.3 g/ac, merge 0.5%

Solo 11.7 g/ac, merge 0.5%

Sencor 111 g/ac

The herbicide rates used on the peas were;

Odyssey 17.3 g/ac, merge 0.5%

Viper A-11.7 g/ac, B-0.36 l/ac, UAN-0.81 l/ac

Sencor 111 g/ac

The late spraying of the peas and lentils was done on June 29, 2013 using the same herbicide rates as above for the early application.

There was no disease observed in either of the crops. No fungicide was applied.

10. Results: Observations on June 27, 2013 for the early spraying were as follows;

The pea plots sprayed with Viper had fair weed control

The pea treatments sprayed with Solo showed very slow growth

The pea and lentil plots sprayed with Odyssey were very stunted

Observations on August 20, 2013 revealed the following;

Early Sencor on peas

Peas were ripening, about 80% of pods were turning color

Good control of early weeds

Poor control of later weeds such as oats, sow thistle and pigweed.

Early Odyssey on peas

Peas were ripening, about 85% pods were turning color

Poor control of oats. Sow thistle gone to seed.

Pigweed gone to seed. Hemp nettle and barnyard grass prevalent.

Early Viper on peas

Peas just starting to turn color.

Poor weed control of sow thistle, barnyard grass, oats and cleavers.

Late Viper on peas

Peas still green.

Good control of grassy weeds, poor control of sow thistle.

Late Odyssey on peas

Very good control of all weeds, only the odd sow thistle.

The crop was still very green, about 2 weeks behind in ripening.

Late Sencor on peas

Peas turning color, about 70% pods were turning color.

Very good control of all weeds, some wheat plants in crop.

Check, no herbicide

Peas turning color, very small pods.

Oats were 6' high and gone to seed, lots of sow thistle, buckwheat, cleavers, Sheppard's purse, pigweed and smart weed.

Early Sencor on lentils

Poorest weed control of any lentil treatments

Early Solo on lentils

Weeds starting to show up, mainly barnyard grass and a few sow thistle.

Early Odyssey on lentils

Good weed control on most weeds, the odd sow thistle and oats showing up.

Late Sencor on lentils

Oats still green, lots of cleavers and barnyard grass.

Late Solo on lentils

Good control of all weeds, odd oat showing up.

Late Odyssey on lentils

Oats very prevalent and still green, lots of pigweed.

Check, no herbicide
 Lentils choked out
 Oats 6' tall and very prevalent
 Barnyard grass and sow thistle bad.

Observations from August 23, 2013 were;
 No disease was visually evident in the peas or lentils.

Observations from August 26, 2013 on the peas were;
 Early Sencor was 80% ripe, late Sencor was about 80% ripe.
 Early Odyssey was 60% ripe, late Odyssey was about 50% ripe.
 Early Viper was about 50% ripe, late Odyssey was about 50% ripe.
 Check, no herbicide was about 25% ripe.

Observations from August 26, 2013 on the lentils were;
 Early Solo was about 60% ripe, late Solo was about 50% ripe.
 Early Sencor was about 50% ripe, late Sencor was about 40% ripe.
 Early Odyssey was about 30% ripe, late Odyssey was about 20% ripe.
 Check, no herbicide was 0% ripe and very weedy.

August 27, 2013

The entire plot was treated with 1.5 L of WeatherMax. The temperature was 24C

September 12, 2013

Peas harvested. Peas to dry to moisture check.

Treatment	Product	Timing	Rep Yields	Ave Yield	Comments
8	Check	No herbicide	39.45 46.30 45.73 39.64	42.78	Weeds—mainly oats, sow thistle, pigweed barnyard grass
9	Odyssey	Early	39.17 45.35 41.44 42.21	42.04	
10	Odyssey	Late	27.29 30.33 34.61 27.86	30.02	Weeds—mainly oats and sow thistle
11	Viper	Early	38.31 49.15 44.68 46.97	44.78	

12	Viper	Late	19.58 31.47 28.52 32.23	27.95	Weeds—oats and sow thistle
13	Sencor	Early	39.17 42.78 46.68 41.93	42.64	
14	Sencor	Late	34.42 40.22 37.27 42.40	38.58	

September 16, 2013
Lentils harvested

Treatment	Product	Timing	Rep Yields	Ave Yield	Comments
1	Check	No herbicide	14.34 17.92	16.13	Weeds--many 2 reps flooded out
2	Odyssey	Early	20.59 20.97 24.79 28.22	23.64	
3	Odyssey	Late	12.58 16.70 19.82	16.37	Weeds—oats 1 rep flooded out
4	Solo	Early	9.15 14.11 10.30 14.87	12.11	
5	Solo	Late	9.53 24.79 26.69 19.83	20.21	Weeds--oats
6	Sencor	Early	6.10 12.20 6.86 7.63	8.20	
7	Sencor	Late	4.29 6.86 20.21	10.45	Weeds—oats 1 rep flooded out

Note: It is to be noted that there is a wide variation between replicates in the same treatment. The only variable immediately evident visually was the weed content of the treatments. The main weed was oats which were cross seeded on the plots to assure adequate weed pressure for the project.

In general pea and lentil yields were lower than expected. None of the herbicide options resulted in significant seed yield increases compared to the no herbicide control. Visually it appeared some herbicide options caused crop injury. Peas and lentils sprayed with Odyssey were very stunted, which may have resulted in lower yields when sprayed late in peas. Despite crop injury, Odyssey provided good weed control when applied late in peas and early in lentils. Oats were poorly controlled with Odyssey when applied early to peas and late to lentils.

Sencor, applied both early and late provided good control of early emerging weeds in peas, however this resulted in significantly lower seed yields when applied late compared to the no herbicide weed control. Conversely, when Sencor was applied to lentil, weed control was very poor, especially when applied early. In addition, lentil yields were also lowest with both Sencor applications compared to other treatments, with early applications being lowest.

Solo, applied to lentils provided good weed control when applied late, with barnyard grass and sow thistle emerging later with the early application. The effective weed control in the late application of Solo also resulted in higher lentil yields than the early application. Solo also showed some crop injury, with crop growth being slowed. Viper applied to field peas provided good weed control when applied early, as compared to the later application which resulted in poorer pea yields.

11. Conclusions and Recommendations:

Sencor in lentil may not provide effective weed control, when applied either early or late, compromising seed yields. Sencor applied late in field pea may also have poor weed control, reducing yield potential.

Although Odyssey can stunt growth in lentil, it provided good weed control and seed yields when applied either early or late. Conversely Odyssey applied late caused crop injury to field pea and compromised seed yields.

Solo applied late to lentil provided good weed control, while applying Solo late in field pea resulted in poor weed control and reduced yields. Viper applied early in field peas provided good weed control, while applying Viper late resulted in poor weed control, reducing yields.

12. Acknowledgements:

The CLC would like to acknowledge the ADOPT funding provided to the project by the Ministry of Agriculture.

The CLC would like to recognize the leadership provided to this project by the Western Applied Research Corporation at Scott, Sask.

13. Appendices: Nil

14. Abstract/Summary: This project was implemented to demonstrate the current recommended timing options in field pea and lentil crops in Saskatchewan. Good weed control in pulse crops is necessary if pulses are to be a profitable crop for producers to grow. Since pulse crops are generally poor competitors early in the growing season, good early season weed control is necessary in order to achieve optimum yields.

In general the pea and lentil seed yields were lower than would have been expected. None of the herbicide options resulted in significant yield increases when compared to the no herbicide controls.

Sencor in lentils may not provide effective weed control, when applied early or late. Sencor applied late on field peas may also result in poor weed control and reduced yields.

Odyssey did stunt lentil growth but it provided good weed control and seed yields when applied either early or late. Odyssey applied late on peas caused crop injury and reduced seed yields.

Solo applied early on lentils provided good weed control. Applying Solo late on lentils resulted in poor weed control and reduced yields. Viper applied early on field peas provided good weed control. Viper applied early in field peas provided good weed control, while Viper applied late resulted in poor weed control and reduced yields.

15. Financial Statement:

Financial statement attached