

## XXI TIME OF SWATHING TRIAL

**Objective:** To compare the effects of various swathing dates and seeding rates on yield and quality of a hybrid canola.

**Background:** Traditionally, the recommended stage of swathing is at 30 to 40 % seed colour change (SCC) on the main stem to maximize yield and quality and minimize green seed and shattering. The introduction of hybrids, with associated lower seeding rates and lower plant densities, induces increased secondary branching. The secondary branching results in a wider range of seed development and maturation as compared to traditional seeding rates. Therefore, the normal time of swathing (30 to 40 % SCC) may need to be delayed to a later stage to allow for optimum development and fill of the secondary side branches.

**Methodology:** The time of swathing trial had the following treatments, in a split plot design with seeding rate as the main plot and seed colour change as the sub-plot.

- A) 30-40 % SCC (Seed Colour Change) ~ Hyola 440 @ 5.0 lb/ac
- B) 40-50 % SCC (Seed Colour Change) ~ Hyola 440 @ 5.0 lb/ac
- C) 50-60 % SCC (Seed Colour Change) ~ Hyola 440 @ 5.0 lb/ac
- D) 60-70 % SCC (Seed Colour Change) ~ Hyola 440 @ 5.0 lb/ac
- E) Straight Combine ~ Hyola 440 @ 5.0 lb/ac
- F) 30-40 % SCC (Seed Colour Change) ~ Hyola 440 @ 3.0 lb/ac
- G) 40-50 % SCC (Seed Colour Change) ~ Hyola 440 @ 3.0 lb/ac
- H) 50-60 % SCC (Seed Colour Change) ~ Hyola 440 @ 3.0 lb/ac
- I) 60-70 % SCC (Seed Colour Change) ~ Hyola 440 @ 3.0 lb/ac
- J) Straight Combine ~ Hyola 440 @ 3.0 lb/ac

## Western Canadian Summary:

CPC Location	Dauphin MB		Grenfell SK		N. Battleford SK		Vegreville AB		Beiseker AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
<b>TIME OF SWATHING TRIAL</b>												
30 to 40% SCC @ 5lb/ac (check)	21.1	(54)	35.9	66	21.2	2	28.9	78	14.3	(50)	-	-
40 to 50% SCC @ 5lb/ac	21.8	(49)	36.1	67	22.2	8	29.6	83	14.9	(46)	-	-
50 to 60% SCC @ 5lb/ac	23.0	(42)	37.1	74	24.2	28	31.5	96	16.0	(38)	-	-
60 to 70% SCC @ 5lb/ac	26.3	(13)	38.1	81	25.0	33	30.7	90	16.0	(38)	-	-
Straight Cut @ 5lb/ac	32.1	28	30.4	31	22.6	19	31.4	96	12.5	(62)	-	-
30 to 40% SCC @ 3lb/ac	21.9	(39)	36.7	81	21.5	14	28.7	87	13.1	(52)	47.6	205
40 to 50% SCC @ 3lb/ac	22.9	(26)	36.9	83	21.6	20	29.0	89	13.3	(51)	46.8	199
50 to 60% SCC @ 3lb/ac	24.6	(21)	37.8	89	23.3	31	30.7	100	13.6	(49)	48.9	213
60 to 70% SCC @ 3lb/ac	26.0	(6)	38.6	94	25.3	45	29.9	95	16.8	(27)	49.6	218
Straight Cut @ 3lb/ac	29.9	21	32.9	58	23.0	31	32.1	112	12.8	(54)	49.1	184
30 to 40% SCC @ 8lb/ac (check)	-	-	-	-	-	-	-	-	-	-	43.8	158
40 to 50% SCC @ 8lb/ac	-	-	-	-	-	-	-	-	-	-	45.8	171
50 to 60% SCC @ 8lb/ac	-	-	-	-	-	-	-	-	-	-	47.7	184
60 to 70% SCC @ 8lb/ac	-	-	-	-	-	-	-	-	-	-	50.2	201
Straight Cut @ 8lb/ac	-	-	-	-	-	-	-	-	-	-	49.2	149

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data (\$/ac)

(-) Indicates treatment not conducted.

Brackets represent a negative contribution margin.

## DAUPHIN

### Methodology:

Rains and extremely wet soil conditions during early May delayed seeding until May 29. The variety used was Hyola 440. Muster Gold II was applied when the crop was at the 4-leaf stage to control wild oats, volunteer wheat, wild mustard and hemp-nettle. An application of Select was then made at the 6-leaf stage to control wild oats and volunteer cereal escapes. Conditions were favorable for sclerotinia development and Rovral Flo (0.85 L/ac) was applied at 40 to 50 % bloom. Swathing treatments were swathed with an 18 ft Versatile 400 swather equipped with a pickup reel and lifters. These plots were combined with a John Deere 7700. The straight cut plots were harvested with a John Deere 9610 equipped with a 24 ft John Deere 924 header with a bat reel, due to equipment availability.

### Observations:

Emergence was quick for all treatments, with plant counts averaging 75 plants/m<sup>2</sup> at the 3 lb/ac seeding rate, and 84 plants/m<sup>2</sup> at the 5 lb/ac seeding rate. This difference in stand density was smaller than expected. Flea beetles were present but no significant damage occurred. No symptoms were noticeable at the time of swathing. Three weeks prior to swathing, pods along the main stem started to turn a bright yellow. These pods eventually dried up and fell off. Pods that remained on the side branches were short and fat. Seeds within these pods were very few, but very big. These symptoms surely contributed to

yield loss. Dry conditions at swathing and combining allowed for quick dry down but caused some problems with green seed.

**Results:**

<b>TIME OF SWATHING TRIAL Dauphin, MB</b>							
<b>Treatment</b>	<b>Yield (%)</b>	<b>Yield (bu/ac)</b>	<b>Contribution Margin (\$/ac)</b>	<b>Oil (%)</b>	<b>1000 kwt</b>	<b>Grade</b>	<b>Green (%)</b>
<b>5.0 lb/ac - Seeding Rate</b>							
30-40% SCC (check)	100	21.1	(53.99)	40.0	4.1	2	4.4
40-50% SCC	103	21.8	(49.45)	40.4	4.4	2	2.4
50-60% SCC	109	23.0	(41.68)	40.3	4.6	2	2.5
60-70% SCC	125	26.3	(13.19)	41.1	4.6	1	1.5
Straight Cut	152	32.1	28.04	42.3	5.0	1	0.4
<b>3.0 lb/ac - Seeding Rate</b>							
30-40% SCC	104	21.9	(38.78)	39.2	4.4	2	2.8
40-50% SCC	109	22.9	(26.11)	40.8	4.3	1	2.0
50-60% SCC	117	24.6	(21.28)	40.6	4.2	2	2.3
60-70% SCC	123	26.0	(5.19)	41.4	4.7	1	1.4
Straight Cut	142	29.9	21.14	42.3	5.0	1	0.5
LSD		1.86		0.92	0.57		
CV%		5.7		2.1	10.4		

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001.

Brackets in the contribution margin reflect a negative value.

**Discussion:**

Yield and oil content increased with delayed swathing, but were unaffected by seeding rate. Delaying swathing also reduced green seed and improved grade for both seeding rates. Kernel weight tended to increase with delayed swathing for each seeding rate, and straight cutting provided a significant increase. Contribution margins reflected yield, seed cost, machinery cost and grade.

**GRENFELL**

**Methodology:**

Seeding took place on May 17. The conventional hybrid variety Hyola 440 was seeded at 3.0 and 5.0 lb/ac. Counter 5G was used as a seed bulking agent to better regulate seeding rates. Both seeding rates were calculated on a 10.0 lb/ac total product basis. A fertilizer blend of 10-25-10-5 (actual) was seed-placed for all treatments. Vantage Plus was applied at 1.0 L/ac as a burnoff. A tank mix of Muster (8 g/ac or 40 ac/pouch), Poast Ultra (0.13 L/ac or 60 ac/case) and Lontrel (0.17 L/ac or 26 ac/jug) was applied at the 2 to 3-leaf stage. Ronilan EG (0.35 Kg/ac or 35 ac/case) was applied to control sclerotinia stem rot at to 20 to 25 %

bloom stage. Treatments were swathed with a 20 ft Versatile 4400 swather equipped with a pick-up reel and harvested with a New Holland TR 85 combine. Straight combining treatments were harvested with a 20 ft New Holland flex header.

**Observations:** Excellent moisture and warm soil temperatures resulted in rapid emergence. Canada thistle, wild buckwheat and volunteer barley were the predominant weeds. Weed pressure was moderate in most areas. In-crop weed control was good. Flea beetles caused minor damage during early plant development. Lodging was apparent in low-lying areas. Hot, dry weather during maturation caused rapid seed colour change. Days to swathing ranged from 90 (30 to 40 % SCC) to 96 days (60 to 70 % SCC) within the 5 lb/ac seeding rate treatments. Days to swathing ranged from 91 (30 to 40 % SCC) to 97 days (60 to 70 % SCC) within the 3 lb/ac seeding rate treatments. Crop loss was evident in the straight combined treatments.

**Results: (a) Plant stand measurements**

<b>TIME OF SWATHING TRIAL Grenfell, SK</b>					
<b>Treatment</b>	<b>Emergence Counts (plants/m<sup>2</sup>)</b>	<b>Plant Height (cm)</b>	<b>Lodging Ratio (%)</b>	<b># Primary Branches</b>	<b># Secondary Branches</b>
<b>5.0 lb/ac - Seeding Rate</b>					
30-40% SCC (check)	98	121	94	4	1
40-50% SCC	89	123	95	3	1
50-60% SCC	95	122	93	3	2
60-70% SCC	96	124	94	3	1
Straight Cut	91	122	76	4	1
<b>3.0 lb/ac - Seeding Rate</b>					
30-40% SCC	61	119	95	6	2
40-50% SCC	60	121	93	6	1
50-60% SCC	59	123	95	5	2
60-70% SCC	60	125	94	5	2
Straight Cut	57	120	79	6	1

**Results: (b) Yield and quality data**

<b>TIME OF SWATHING TRIAL Grenfell, SK</b>					
<b>Treatment</b>	<b>Yield (%)</b>	<b>Yield (bu/ac)</b>	<b>Contribution Margin (\$/ac)</b>	<b>Oil (%)</b>	<b>1000 kwt</b>
<b>5.0 lb/ac - Seeding Rate</b>					
30-40% SCC (check)	100	35.9	65.88	43.0	3.7
40-50% SCC	101	36.1	67.23	43.4	4.1
50-60% SCC	103	37.1	73.98	43.9	4.3
60-70% SCC	106	38.1	80.73	43.9	5.3
Straight Cut	85	30.4	30.83	44.2	5.2
<b>3.0 lb/ac - Seeding Rate</b>					
30-40% SCC	102	36.7	81.30	43.3	4.0
40-50% SCC	103	36.9	82.65	43.8	4.5
50-60% SCC	105	37.8	88.73	44.1	4.7
60-70% SCC	108	38.6	94.13	44.2	5.5
Straight Cut	92	32.9	57.73	44.2	5.0
LSD		3.41		1.02	1.26
CV%		5.6		1.3	12.8

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001.

**Discussion:**

The lower seeding rate treatments, regardless of stage of swathing, had increased branching by at least 50 %. Swathing past the 30 to 40 % seed colour change recommendation had no significant impact on yield for either seeding rate. However, the 3.0 lb/ac seeding rate out yielded the 5.0 lb/ac seeding rate for all treatments. Straight combining resulted in a significantly lower yield in both seeding rates. Straight cut losses were attributed to shattering by the header in lodged areas and wind damage. Oil content also increased as swathing was delayed. Oil content varied significantly between the 5.0 lb/ac straight cut treatment and the check. Thousand kernel weights increased with delayed harvesting. Contribution margins reflect differences in yield, machinery costs and seed costs.

**NORTH BATTLEFORD**

**Methodology:**

This trial was seeded on May 7. The drill was calibrated to seed 5 lb/ac. Seed for the 3 lb/ac treatments was bulked up to 5 lb/ac with corn cob grit. All treatments were sprayed with Muster Gold II (40 ac/case) on June 6 and spot sprayed with Lontrel (0.23 L/ac or 19.3 ac/jug) on June 16. A value of \$15.81/ac for the Lontrel was added to herbicide costs while calculating contribution margins for all treatments.

**Observations:** Stand establishment was uniform for both seeding rates. The 3 lb/ac seeding rate had lower plant densities than the 5 lb/ac and had more primary and secondary branching. Weather conditions at swathing were hot and dry. Days to swathing ranged from 98 (30 to 40 % SCC) to 104 days (60 to 70 % SCC) within the 5 lb/ac seeding rate treatments. Days to swathing ranged from 99 (30 to 40 % SCC) to 104 days (60 to 70 % SCC) within the 3 lb/ac seeding rate treatments. Some second growth was observed throughout all treatments. Green seed problems occurred in some of the earlier swathing treatments.

**Results:**

<b>TIME OF SWATHING TRIAL</b>							
<b>North Battleford, SK</b>							
<b>Treatment</b>	<b>Yield (%)</b>	<b>Yield (bu/ac)</b>	<b>Contribution Margin (\$/ac)</b>	<b>Oil (%)</b>	<b>1000 kwt</b>	<b>Grade</b>	<b>Green (%)</b>
<b>5 lb/ac - Seeding Rate</b>							
30-40% SCC (check)	100	21.2	1.53	43.1	5.2	2	3.7
40-50% SCC	105	22.2	8.01	43.6	5.4	2	2.5
50-60% SCC	114	24.2	27.56	44.0	5.6	1	1.4
60-70% SCC	118	25.0	32.91	44.7	5.7	1	0.8
Straight Cut	94	22.6	18.71	44.7	6.0	1	0.6
<b>3 lb/ac - Seeding Rate</b>							
30-40% SCC	101	21.5	13.50	43.1	5.1	2	2.9
40-50% SCC	102	21.6	19.98	44.2	4.9	1	1.9
50-60% SCC	110	23.3	31.46	44.1	5.6	1	1.0
60-70% SCC	119	25.3	44.96	44.0	5.4	1	0.4
Straight Cut	108	23.0	31.43	44.4	5.4	1	0.3
LSD		1.47		0.92	0.92		
CV%		5.3		1.7	14.1		

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001.

**Discussion:** Swathing at 60 to 70 % seed colour change (SCC) within the 3 lb/ac seeding rate yielded the highest. Straight cutting produced the highest oil content for both seeding rates. Delayed swathing and straight cutting tended to increase kernel weight for both seeding dates. Differences in contribution margins reflect differences in yield, grade, seed costs and machinery costs associated with each treatment.

## VEGREVILLE

**Methodology:** This trial was seeded on May 8. The drill was calibrated to seed 5 lb/ac. Seed for the 3 lb/ac treatments was bulked up to 5 lb/ac with corn cob grit. All treatments were sprayed with Select (40 ac/case) on June 6 and again with Fusion (20 ac/case) on June 20.

**Observations:** Stand establishment was uniform for both seeding rates. The 3 lb/ac seeding rate had lower plant densities than the 5 lb/ac and had more primary and secondary branching. Lodging was moderate for all treatments. Days to swathing ranged from 104 (30 to 40 % SCC) to 115 days (60 to 70 % SCC) within the 5 lb/ac seeding rate treatments. Days to swathing ranged from 107 (30 to 40 % SCC) to 117 days (60 to 70 % SCC) within the 3 lb/ac seeding rate treatments.

### Results:

TIME OF SWATHING TRIAL Vegreville, AB						
Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin (\$/ac)	Oil (%)	1000 kwt	Grade
<b>5 lb/ac - Seeding Rate</b>						
30-40% SCC (check)	100	28.9	78.10	44.5	4.8	1
40-50% SCC	102	29.6	82.83	45.0	4.8	1
50-60% SCC	110	31.5	95.65	45.1	5.0	1
60-70% SCC	106	30.7	90.25	45.1	4.9	1
Straight Cut	109	31.4	96.98	45.3	4.9	1
<b>3 lb/ac - Seeding Rate</b>						
30-40% SCC	99	28.7	86.79	43.6	4.9	1
40-50% SCC	100	29.0	88.82	43.9	4.7	1
50-60% SCC	106	30.7	100.29	43.8	5.0	1
60-70% SCC	103	29.9	94.89	43.5	4.7	1
Straight Cut	111	32.1	111.74	45.2	5.0	1
LSD		2.47		0.61	0.48	
CV%		6.8		1.1	8.2	

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001.

**Discussion:** Straight cutting the 3 lb/ac seeding rate yielded the highest. This treatment was significantly higher yielding than 30 to 40 % and 40 to 50 % seed colour change (SCC) treatments within both seeding rates. The 50 to 60 % SCC treatment at 5 lb/ac produced the highest yield among swathed treatments. It was significantly higher yielding than both 30 to 40 % SCC treatments and the 3 lb/ac 40 to 50 % SCC treatment. Straight cutting produced the highest oil content for both seeding rates. There were no significant differences in 1000 kernel weights among

treatments. Differences in contribution margins reflect differences in yield, seed costs and machinery costs associated with each treatment.

## **BEISEKER**

**Methodology:** Hyola 440 was seeded May 16 at two rates, 3 lb/ac and 5 lb/ac. Branch assessments were conducted at swathing.

**Observations:** Emergence was uniform within all treatments. Plant counts completed 21 days after emergence showed the 3 lb/ac treatments averaged 117 plants/m<sup>2</sup>, where as the 5 lb/ac treatments averaged 140 plants/m<sup>2</sup>. Lodging ratios completed at harvest were at 98 % across all treatments. Branch assessments showed four primary and five secondary branches in the 3 lb/ac treatments, while the 5 lb/ac treatments averaged four primary and four secondary branches. Dry conditions combined with high temperatures resulted in rapid maturity. Some shelling was observed in the straight cut treatment prior to harvest.

### **Results:**

<b>TIME OF SWATHING TRIAL</b>					
<b>Beiseker, AB</b>					
<b>Treatment</b>	<b>Yield (%)</b>	<b>Yield (bu/ac)</b>	<b>Contribution Margin (\$/ac)</b>	<b>Oil (%)</b>	<b>1000 kwt</b>
<b>5lb/ac - Seeding Rate</b>					
30-40% SCC (check)	100	14.3	(50.43)	39.0	5.3
40-50% SCC	104	14.9	(46.38)	39.1	5.0
50-60% SCC	112	16.0	(38.95)	39.2	5.5
60-70% SCC	112	16.0	(38.95)	39.1	5.2
Straight Cut	88	12.5	(62.58)	39.5	5.6
<b>3lb/ac - Seeding Rate</b>					
30-40% SCC	91	13.1	(52.29)	38.8	4.9
40-50% SCC	93	13.3	(50.94)	39.0	5.0
50-60% SCC	95	13.6	(48.91)	38.8	5.4
60-70% SCC	117	16.8	(27.31)	39.2	5.8
Straight Cut	90	12.8	(54.31)	38.9	5.2
LSD		2.17		0.52	0.77
CV%		12.6		1.1	12.1

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001. Brackets in the contribution margin reflect a negative value.

**Discussion:** All treatments graded #1. The highest yield was the 60 to 70 % seed colour change treatment seeded at 3 lb/ac. Thousand kernel weights varied, but the trend was for higher weights as harvesting was delayed. Oil content varied among the treatments.

## ROLLA

**Methodology:** The trial consisted of two seeding rates: 3 lb/ac and 8 lb/ac. A fertilizer blend of 8-25-10-20 (actual) was applied with the seed. No herbicide was used, due to the low weed population. Decis 5EC (60 mL/ac) was applied to control diamondback moth larvae.

**Observations:** At time of seeding, optimum conditions existed. Favourable conditions continued through the remainder of the season. Since there was a high variability in maturity, many of the treatments were swathed on the same day.

### Results:

TIME OF SWATHING TRIAL Rolla, BC							
Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin (\$/ac)	Oil (%)	1000 kwt	Grade	Green (%)
<b>8 lb/ac - Seeding Rate</b>							
30-40% SCC (check)	100	43.8	157.60	43.3	4.6	1	0.75
40-50% SCC	105	45.8	171.10	44.5	5.1	1	1.1
50-60% SCC	109	47.7	183.93	44.1	4.8	1	1.3
60-70% SCC	115	50.2	200.80	44.0	4.8	1	0.6
Straight Cut	96	42.2	148.88	44.5	4.9	1	0.6
<b>3lb/ac - Seeding Rate</b>							
30-40% SCC	109	47.6	208.31	44.2	4.6	1	0.6
40-50% SCC	107	46.8	202.91	43.6	5.3	1	0.9
50-60% SCC	112	48.9	217.09	45.2	4.9	1	1.0
60-70% SCC	113	49.6	221.81	44.0	4.7	1	0.6
Straight Cut	101	49.1	188.12	44.2	4.6	1	0.9
LSD		3.08		1.12	0.48		0.56
CV%		5.5		2.1	8.2		56.3

Note: Contribution margins included the 2002 price for Hyola 440 (\$4.82/lb treated with Helix) because this variety was not commercially available in 2001.

**Discussion:** Any yield difference of 3.08 bu/ac or more was significant. All treatments at the 3 lb/ac rate except the 40 to 50 % SCC were significantly higher than the check. Two treatments at the 8 lb/ac seeding rate, 50 to 60 % SCC and 60 to 70 % SCC, were also significantly higher yielding than the check. Within both seeding rates, harvesting the crop at 60 to 70 % SCC showed the greatest benefit by achieving a higher yield.

For both seeding rates, the 40 to 50 % SCC treatments had significantly higher 1000 kernel weights than the check.