



SASKATCHEWAN CANOLA GROWERS ASSOCIATION

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"CANOLA GROWERS IN BUSINESS"

Maximum Yield Canola Production

1986 Data

(Year one of a three year program)

Sponsored by:

Potash & Phosphate Institute
of Canada

in Cooperation with

Lorne Christopherson
&
Hubert Esquirol



ABSTRACT

The primary objective of this project was to determine the maximum yield of canola on a commercial farm using field scale equipment.

A yield of 50.2 bushels per acre of Westar was obtained, and a yield of 41.8 bushels per acre of Tobin was obtained. This represented a 29% yield increase in both varieties compared to the yield obtained using the practices commonly recommended in the Weldon area. At the Meota location a yield increase of 46% was obtained with Tobin in relation to that grown with locally recommended practices.

The major factor contributing to the yield increases, was the use of fertilizer at rates considerably above that recommended by the Soil Test Labs. It should be noted however, that at present prices of canola it was not economically feasible to apply the high rates of fertilizer elements used in this study.

TITLE: Maximum Yield Canola Production.

OBJECTIVE: The primary objective of this project was to determine the maximum yield of canola on a commercial farm using field scale equipment. Secondly, we wished to determine the response of present canola varieties to high levels of fertility and other management practices.

WORK PLAN: Two locations were selected. The Lorne Christopherson farm at Weldon was our primary site. At this location we used both Tobin and Westar. At our secondary site at Hubert Esquirol's, at Meota, only the variety Tobin was used.

At each location plots with a fertilizer rate equal or greater than that recommended by the Soil Test Lab was compared to plots fertilized at a rate considerably higher than that recommended.

At each location Canocote seed was used. In the plots in which double seeding was used, the seeding rate was cut by half and the plot was seeded twice in the same direction.

The plots were monitored for disease. At neither location did the situation warrant the spraying of a fungicide for Sclerotinia. Also levels of Blackleg did not appear to greatly effect yields.

OBSERVATIONS RECORDED: Double seeding did not appear to achieve the desired benefits of narrow rowspacing. A great majority of all canola plants came from the second seeding operation.

Tissue analysis were taken at the early bloom stage and submitted to the Saskatchewan Soil Testing Laboratory for analysis. The results indicated that small deficiencies in micronutrients can be created by the use of extremely high rates of macro fertilizer elements.

The maturity of Westar was not notably effected by the high fertilizer rates. The Westar appeared to flower longer but the differences in maturity disappeared at swathing time. However, at both locations the Tobin required 4 to 6 days longer to mature with the high fertilizer treatments. Under high fertility both varieties of canola didn't appear to grow much taller but were considerably denser.

DATA ANALYSIS & INTERPRETATION: The major factor contributing to the yield increase was the use of fertilizer at rates considerably above that recommended by the Soil Test Labs. It should be noted, however that at the price of canola experienced during this crop year, it has not been economically feasible to use these higher rates. Results from protein and oil analysis had not yet been recieved at the time of writing this report.

CONCLUSION: The results lead us to believe that this project should be continued as planned for an additional two years in order to have a more reliable data base.

Lorne Christopherson

Weldon, Sask.

PERTINENT DATA- Variety: Tobin and Westar

Seeded: May 26/86 on spring burnt stubble
IHC hoe drill
Tobin 8 lbs of seed (12 lbs of coated) per acre
Westar 10 lbs of seed (14 lbs of coated) per acre

Chemicals: Vitavax Rs seed treatment (Canocote)

Herbicide: Treflan, applied May 2/86

Fertilizer: A combined application of banding, broadcast,
seed placed and foliar application.

Soil Test: Nor West labs 0 - 6"
N 16, P 13, K 380, S 16, Fe 104, Cu 2.0, Zn 4.9,
B .8, Mn 24.4

Harvested: Oct. 14/86

	TOBIN				WESTAR			
	Single Seeded Low Fertility Check	Single Seeded High Fertility	Double Seeded High Fertility	Double Seeded High Fertility	Single Seeded High Fertility	Single Seeded High Fertility	Single Seeded Low Fertility Check	
Fertilizer	N 71 P 50	N 177 P 89 K 100 S 25 B 2	N 177 P 89 K 100 S 25 B 2	N 177 P 89 K 100 S 25 B 2	N 177 P 89 K 100 S 25 B 2	N 177 P 89 K 100 S 25 B 2	N 71 P 50	
Plants / M ² -Emergance -Harvest	107 104	114 112	124 114	79 75	73 74	76 73		
Weeds/M ² (predominantly flax)	10	33	21	25	21	12		
Dockage	4%	3.5	3.5	3.5	3.5	6%		
Net Yield	32.3	29.7 *	41.8	50.2	47.6	38.9		
Canadian Grain Commission Grade	#1 CAN	#1 CAN	#1 CAN	#2 CAN	#2 CAN	#2 CAN	#2 CAN	
ppm Chlorophyll	5	5	5	24	27	21		
% Green Seed	2	2	2	3	4.6	2.2		
% of Check Yield	100%	92%	129%	129%	122%	100%		

* This treatment blew badly following swathing and harvest loss is estimated to be at least 25 percent.



PLANT TISSUE ANALYSIS

SK Canola Growers Assoc.

22-Oct-86

LAB NO.:		P6-3824		SUFFICIENCY RANGE
CLIENT SAMPLE NO.:		WESTAR HIGH		FOR CANOLA
				AT FLOWERING
				(For Comparison)
	NUTRIENT	CONCENTRATION	RATING	
Nitrogen	N	3.53%	SUFFICIENT	2.50 - 4.00%
Phosphorus	P	0.48%	HIGH	0.25 - 0.40%
Potassium	K	3.10%	HIGH	1.50 - 2.50%
Sulphur	S	0.55%	HIGH	0.25 - 0.40%
Calcium	Ca	1.57%	SUFFICIENT	0.50 - 4.00%
Magnesium	Mg	0.50%	SUFFICIENT	0.20 - 1.50%
Copper	Cu	4 ppm	SUFFICIENT	2.7 - 20 ppm
Iron	Fe	74 ppm	SUFFICIENT	40 - 550 ppm
Zinc	Zn	28 ppm	SUFFICIENT	15 - 70 ppm
Manganese	Mn	47 ppm	SUFFICIENT	20 - 100 ppm
Boron	B	8.3 ppm	LOW	30 - 80 ppm

COMMENTS: Lorne Christopherson
Westar - High Fertility



PLANT TISSUE ANALYSIS

SK Canola Growers Assoc.

22-Oct-86

LAB NO.:	P6-3825	SUFFICIENCY RANGE		
CLIENT SAMPLE NO.:	WESTAR SOIL TEST	FOR CANOLA		
NUTRIENT	CONCENTRATION	RATING	AT FLOWERING	
			(For Comparison)	
Nitrogen	N	2.75%	SUFFICIENT	2.50 - 4.00%
Phosphorus	P	0.51%	HIGH	0.25 - 0.40%
Potassium	K	3.20%	HIGH	1.50 - 2.50%
Sulphur	S	0.71%	HIGH	0.25 - 0.40%
Calcium	Ca	1.08%	SUFFICIENT	0.50 - 4.00%
Magnesium	Mg	0.41%	SUFFICIENT	0.20 - 1.50%
Copper	Cu	4 ppm	SUFFICIENT	2.7 - 20 ppm
Iron	Fe	52 ppm	SUFFICIENT	40 - 550 ppm
Zinc	Zn	70 ppm	SUFFICIENT	15 - 70 ppm
Manganese	Mn	28 ppm	SUFFICIENT	20 - 100 ppm
Boron	B	10.5 ppm	LOW	30 - 80 ppm

COMMENTS: Lorne Christopherson
Westar - Low Fertility



PLANT TISSUE ANALYSIS
SK Canola Growers Assoc.
22-Oct-86

LAB NO.: P6-3826 SUFFICIENCY RANGE
CLIENT SAMPLE NO.: TOBIN HIGH FOR CANOLA
AT FLOWERING
(For Comparison)

NUTRIENT		CONCENTRATION	RATING	
Nitrogen	N	2.87%	SUFFICIENT	2.50 - 4.00%
Phosphorus	P	0.45%	HIGH	0.25 - 0.40%
Potassium	K	2.15%	SUFFICIENT	1.50 - 2.50%
Sulphur	S	0.43%	SUFFICIENT	0.25 - 0.40%
Calcium	Ca	1.49%	SUFFICIENT	0.50 - 4.00%
Magnesium	Mg	0.35%	SUFFICIENT	0.20 - 1.50%
Copper	Cu	3 ppm	SUFFICIENT	2.7 - 20 ppm
Iron	Fe	69 ppm	SUFFICIENT	40 - 550 ppm
Zinc	Zn	30 ppm	SUFFICIENT	15 - 70 ppm
Manganese	Mn	38 ppm	SUFFICIENT	20 - 100 ppm
Boron	B	7.5 ppm	LOW	30 - 80 ppm

COMMENTS: Lorne Christopherson
Tobin - High Fertility



PLANT TISSUE ANALYSIS

SK Canola Growers Assoc.
22-Oct-86

LAB NO.:	P6-3827		SUFFICIENCY RANGE	
CLIENT SAMPLE NO.:	TOBIN SOIL TEST		FOR CANOLA	
NUTRIENT		CONCENTRATION	RATING	AT FLOWERING

				(For Comparison)
Nitrogen	N	2.34%	MARGINAL	2.50 - 4.00%
Phosphorus	P	0.41%	HIGH	0.25 - 0.40%
Potassium	K	2.10%	SUFFICIENT	1.50 - 2.50%
Sulphur	S	0.57%	HIGH	0.25 - 0.40%
Calcium	Ca	1.33%	SUFFICIENT	0.50 - 4.00%
Magnesium	Mg	0.44%	SUFFICIENT	0.20 - 1.50%
Copper	Cu	3 ppm	SUFFICIENT	2.7 - 20 ppm
Iron	Fe	68 ppm	SUFFICIENT	40 - 550 ppm
Zinc	Zn	21 ppm	SUFFICIENT	15 - 70 ppm
Manganese	Mn	25 ppm	SUFFICIENT	20 - 100 ppm
Boron	B	7.3 ppm	LOW	30 - 80 ppm

COMMENTS: Lorne Christopherson

Tobin - Low Fertility

Hubert Esquirol
Meota, Sask.

PERTINENT DATA- Variety: Tobin

Seeded: May 26/86 on summerfallow

Double disc press drill (Haybuster)
7 lbs/acre at a depth of 1½"

Chemicals: Vitavax Rs seed treatment (Canocote)

Herbicide - Trifluralax, applied August 8/85

Fertilizer: Deep banded Anhydrous Ammonia, spring applied

Phosphate, potash, sulphur and boron
broadcasted and seed-placed

Rates - as per plots

Soil Test: Reported on fallows N 24, P 26, K 460, S 90, B 1.6
Sask. Lab 24 inch sample

Harvested: September 11/86

COMPARATIVE DATA

	Plot A No Fertilizer	Plot B Single Seeded High Fertility	Plot C Double Seeded High Fertility	Plot D Double Seeded Low Fertility	Plot E Single Seeded Low Fertility Check
Fertilizer	NIL	N 200 P 100 K 100 S 50 B 1½	N 200 P 100 K 100 S 50 B 1½	N 50 P 25	N 50 P 25
Emergence Plants/M ²	177	108	202	248	142
Post Harvest Plants/M ²	110	111	178	169	99
Weed Count Per M ²	22	13	8	6	13
Bushels/acre	21.5	39.7	36.1	27.7	27.6
Dockage	3.5%	2.5%	2.5%	2.5%	4%
Net Bushels/acre	20.8	38.7	35.2	27.0	26.5
Canadian Grain Commission Grade	#1 CAN	#2 CAN	#2 CAN	#2 CAN	#2 CAN
ppm Chlorophyll11	2	16	14	16	21
% Green Seed	1.2%	3.6%	3.5%	3.4%	4.8%
% of Check Yield	79%	146%	133%	102%	100%



PLANT TISSUE ANALYSIS
SASKATCHEWAN CANOLA GROWERS ASSOCIATION
17-Oct-86

LAB NO.:	P6-2889		SUFFICIENCY RANGE	
CLIENT SAMPLE NO.:	Regular Management		FOR CANOLA	
			AT FLOWERING	
			(For Comparison)	
	NUTRIENT	CONCENTRATION	RATING	
Nitrogen	N	2.93%	Sufficient	2.50 - 4.00%
Phosphorus	P	0.52%	High	0.25 - 0.40%
Potassium	K	3.55%	High	1.50 - 2.50%
Sulphur	S	0.75%	High	0.25 - 0.40%
Calcium	Ca	0.90%	Sufficient	0.50 - 4.00%
Magnesium	Mg	0.21%	Sufficient	0.20 - 1.50%
Copper	Cu	3.5 ppm	Sufficient	2.7 - 20 ppm
Iron	Fe	210 ppm	Sufficient	40 - 550 ppm
Zinc	Zn	29 ppm	High	15 - 70 ppm
Manganese	Mn	34 ppm	Sufficient	20 - 100 ppm
Boron	B	11.3 ppm	Low	20-30 ppm

COMMENTS: Hubert Esquirol
TOBIN -Low Fertility

SASKATCHEWAN SOIL TESTING LABORATORY

University of Saskatchewan, General Purpose Building, Saskatoon, Sask. S7N 0W0 343-3173



PLANT TISSUE ANALYSIS
SASKATCHEWAN CANOLA GROWERS ASSOCIATION
17-Oct-86

LAB NO.:		P6-2890		SUFFICIENCY RANGE
CLIENT SAMPLE NO.:		Check (July 14)		FOR CANOLA
				AT FLOWERING
				(For Comparison)
	NUTRIENT	CONCENTRATION	RATING	
Nitrogen	N	1.88%	Low	2.50 - 4.00%
Phosphorus	P	0.42%	High	0.25 - 0.40%
Potassium	K	2.54%	High	1.50 - 2.50%
Sulphur	S	0.53%	High	0.25 - 0.40%
Calcium	Ca	0.90%	Sufficient	0.50 - 4.00%
Magnesium	Mg	0.18%	Marginal	0.20 - 1.50%
Copper	Cu	2.9 ppm	Sufficient	2.7 - 20 ppm
Iron	Fe	135 ppm	Sufficient	40 - 550 ppm
Zinc	Zn	18.8 ppm	Sufficient	15 - 70 ppm
Manganese	Mn	14.3 ppm	Low	20 - 100 ppm
Boron	B	8.1 ppm	Low	20-30 ppm

COMMENTS:

Hubert Esquirol

TOBIN-Check
-No Fertilizer

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PLANT TISSUE ANALYSIS
SASKATCHEWAN CANOLA GROWERS ASSOCIATION
17-Oct-86

LAB NO.:	P6-2888		SUFFICIENCY RANGE	
CLIENT SAMPLE NO.:	Attentive Management		FOR CANOLA	
			AT FLOWERING	
			(For Comparison)	
NUTRIENT		CONCENTRATION	RATING	
Nitrogen	N	3.76%	Sufficient	2.50 - 4.00%
Phosphorus	P	0.55%	High	0.25 - 0.40%
Potassium	K	5.14%	High	1.50 - 2.50%
Sulphur	S	0.67%	High	0.25 - 0.40%
Calcium	Ca	0.32%	Low	0.50 - 4.00%
Magnesium	Mg	0.08%	Low	0.20 - 1.50%
Copper	Cu	1.0 ppm	Low	2.7 - 20 ppm
Iron	Fe	89 ppm	Sufficient	40 - 550 ppm
Zinc	Zn	9.3 ppm	Low	15 - 70 ppm
Manganese	Mn	15 ppm	Marginal	20 - 100 ppm
Boron	B	15.9 ppm	Low	20-30 ppm

COMMENTS:

Hubert Esquirol

TOBIN - High Fertility

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