ACKNOWLEDGEMENTS

The Canola Council of Canada is the co-ordinating body of the Canola Production Centre Program across Canada and is a major contributor to the program.

Each year, sponsors (both locally and nationally), help support the Canola Production Centre Program across Canada. With their generous contribution, the program has become an effective tool in technology transfer to all interested parties.

In 2001, the Canola Production Centre program was supported by the following Contract Research participants:

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Dow AgroSciences Canada Inc.

SILVER
Agricore
Aventis CropScience Canada Co.
BASF Canada Inc.
Brett Young Seeds Ltd.
IMC Cargill Ltd.
Saskatchewan Wheat Pool

BRONZE
Aventis Seed Treatment
CanAmera Foods
Gustafson
James Richardson International Inc.
Kamterter II L.L.C.
Proven Seed / United Grain Growers
Syngenta Crop Protection Canada Inc.
Taurus Technology Inc.

The program is supported on a national basis by the following cash sponsors:

Advanta Seeds
Agrium, Inc.
Syngenta Crop Protection Canada Inc.

This project is supported by the following provincial organizations:

Alberta Agriculture Food and Rural Development
(Farming for the Future On-Farm Demo Program)
Alberta Canola Producers Commission
British Columbia Peace River Grain Industry Development Council
(Peace River Agriculture Development Fund)
Manitoba Canola Growers Association
Ontario Canola Growers Association
Saskatchewan Canola Development Commission
Saskatchewan Canola Growers Association

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Aventis CropScience Canada Co.
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Esso / Imperial Oil
Monsanto Canada Seeds Inc.
Simplot Canada Ltd.

BRONZE

AAFC - PFRA Agroclimate Unit
Advanta Seeds
Agricore
Aventis Seed Treatment
Cargill AgHorizons Ltd.
Enviro-Test Labs
Grow Tec
Gustafson
Hetland Seeds
Inter-Ag
Monsanto Canada Inc.
Pioneer Grain / JRI
Proven Seed
Saskatchewan Wheat Pool
United Grain Growers

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I SITE DESCRIPTION

The Program is supported locally by the following individuals and organizations that have donated products and/or services to the Canola Production Centres:

MANITOBA REGION - Derwyn Hammond, Agronomist

Location:	**Selkirk, MB - 80 acres**

Land:

Angele and Mark Deprez (Co-operators)

Silver Level Sponsor

- TD Agricultural Services (Selkirk)

Bronze Level Sponsor

- McMillan Agencies Ltd. (Selkirk)

Seed and Seed Treatment:

Aventis CropScience Canada Co.
Aventis Seed Treatment
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer:

Esso/Imperial Oil Ltd. (Terraco - Stonewall, MB) - Granular fertilizer (80 acres)

Pesticides:

Aventis CropScience Canada Co. - Compas, Liberty, Select
BASF Canada Inc. - Ronilan EG
Dow AgroSciences Canada Inc. - Eclipse, Edge Granular, Lontrel, Vantage Plus
DuPont Canada Inc. - Muster
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:

Enviro-Test Labs - soil test analysis
Leo's Sales and Service Ltd. (Winnipeg) - IHC 1460 combine

Tours:

Grower tour - July 17
Concorde Colony, Phosyn PLC - lunch sponsors
MB Agriculture and Food - tour advertising & promotion
Many thanks to Michael Sykes (Ag Rep for Selkirk) for his assistance in organizing the event, and to Angele Deprez for allowing us to utilize her yard for lunch.

Crop Production Committee Tour - July 25
Many thanks to Advanta Seeds, Brett Young Seeds and Monsanto Canada Inc. for sponsoring food and refreshments for the Canola Council of Canada Crop Production Committee tour this year.

Location:	**Dauphin, MB - 75 acres**

Land:

Gary Sydor (Co-operator)

Silver Level Sponsors

- Dauphin Plains Credit Union (Dauphin)
- Super 8 Motel (Dauphin)
- Triple "S" Seeds Ltd. (Grandview)

Bronze Level Sponsors

- Bonnie Banks Seed Farm (Dauphin)
- Dauphin Co-op Agro (Dauphin & Ste. Rose)
- Fisher Seeds Ltd. (Dauphin)
- Gagnon Seed Service Ltd. (Ste. Rose)

Seed and Seed Treatment:

Advanta Seeds
BASF Canada Inc.
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer:

Simplot Canada Ltd. - Fertilizer (75 acres)

Pesticides:

Aventis CropScience Canada Co. - Liberty, Select, Rovral Flo
Dow AgroSciences Canada Inc. - Lontrel, Vantage Plus
DuPont Canada Inc. - Muster Gold II
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:

Agricore (Dauphin) - fungicide application
Cargill AgHorizons (Dauphin) - burnoff application
Enviro-Test Labs - soil test analysis
Gary Sydor - fall fertilizer application and fall tillage (75 acres)
Sydor Farm Equipment Ltd. (Dauphin) - JD 7700 combine, JD 9610 for straight cut treatments.

Tours:

Aventis Seed Treatment, Gustafson, Phosyn PLC - lunch sponsors
Sydor Farm Equipment - tent for lunch

Comments:

As the agronomist responsible for the CPC Program in Manitoba, I would also like to take this opportunity to thank my technicians **Andrew MacKenzie** and **Warren Robak** for their dedicated assistance throughout the season.

EASTERN SASKATCHEWAN - David Vanthuyne, Agronomist

Location:	**Grenfell, SK - 86 acres**

Land:
Hoffman Farms (Co-operator)
Mainline Rural Economic Development Association

Seed and Seed Treatment:
Advanta Seeds
Aventis CropScience Canada Co.
BASF Canada Inc.
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer:
Agricore - Liquid and granular (25 acres)

Pesticides:
Aventis CropScience Canada Co. - Liberty, Select, Compas
BASF Canada Inc. - Ronilan EG, Poast Ultra
Dow AgroSciences Canada Inc. - Vantage Plus, Lontrel
DuPont Canada Inc. - Muster
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:
Agricore (Calvin Worth and staff) - herbicide storage and liquid coulter applicator
Agriculture Canada - diamondback moth traps
Bill, Doug and Mike Kent - seed and equipment storage, shop use and tools
Bruce Wonchulanko - swather maintenance
Enviro-Test Labs - soil test analysis
Hoffman Farms - MF 1135 and Case 2590 tractors and grain truck
Garth Drenin - swath roller
Lloyd Wolfe - swath roller
Peter Wall - shop use and equipment storage
Vanthuyne Farms - ATV use for seeding and spraying

Tours:
Aventis CropScience Canada Co. - four-wheel drive truck to pull tour wagon
Bruce and Lorne Loveridge - bales for tour wagon
Gustafson - BBQ sponsorship
Syngenta Crop Protection Canada Inc. - BBQ sponsorship
Town of Grenfell - picnic table for tour
Tour help - Grenfell and District Canola Production Centre Committee (Sharon May, Co-ordinator)

Location:	**Naicam, SK - 50 acres**

Land: Naicam Marketing Club (Co-operators)

Seed and Seed Treatment:
Advanta Seeds
Aventis CropScience Canada Co.
Aventis Seed Treatment
BASF Canada Inc.
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer: Esso / Imperial Oil Ltd. - anhydrous ammonia and granular (50 acres)

Pesticides:
Aventis CropScience Canada Co. - Liberty, Select
BASF Canada Inc. - Poast Ultra
Dow AgroSciences Canada Inc. - Vantage Plus, Lontrel
DuPont Canada Inc. - Muster Gold II
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:
Cropper Motors - tractor for banding and harrowing
Dauk Farms - tractor, grain truck, shop use and tools
Enviro-Test Labs - soil test analysis
Esso / Imperial Oil Ltd. - anhydrous ammonia and granular spreader applicators
Hetland Seeds - seed storage and blending
Jim Anholdt - tractor trailer unit for hauling grain
Robert McPherson - combine storage
Naicam Co-op Agro Centre - custom spraying, heavy harrows and chemical storage
Warren Loyns and Stan Rude - swather and swath roller

Tours:
Aventis Seed Treatment - BBQ sponsorship
City of Melfort - bleachers for tour
Proven Seed - BBQ sponsorship
Naicam Marketing Club - tour help

Comments: I would like to take this opportunity to extend a very special thank you to **Barry Hurd** and **Chad Wonchulanko** for their dedicated technical assistance throughout the season.

BATTLE RIVER REGION - David Blais, Agronomist

Location:	**North Battleford, SK - 80 acres**

Land: Nachtegaele Farms

Seed and Seed Treatment:
Advanta Seeds
Aventis CropScience Canada Co.
Aventis Seed Treatment
BASF Canada Inc.
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer:
Esso / Imperial Oil - (Northwest Agro) - urea (80 acres)
Pioneer Grain / JRI - field blend (80 acres)

Pesticides:
Aventis CropScience Canada Co. - Decis, Liberty, Select
Dow AgroSciences Canada Inc. - Lontrel
Dupont Canada Inc. - Muster Gold II
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:
Enviro-Test Labs - soil test analysis
Multi Crop Services Ltd. - photocopies and bag sewer
Nachtegaele Farms - fall fertilizer application, spring tillage and harrow-packing, combine, grain truck and hauling, grain auger and storage.

Location:	**Vegreville, AB - 80 acres**

Land: Rick Dobush

Seed and Seed Treatment:
Advanta Seeds
Aventis Seed Treatment
Gustafson
Hetland Seeds
Monsanto Canada Seeds Inc.
Proven Seed
Saskatchewan Wheat Pool

Fertilizer: United Grain Growers - field blend (40 acres)

Pesticides:
Aventis CropScience Canada Co. - Fusion, Liberty, Select
Dow AgroSciences Canada Inc. - Vantage Plus
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour: Enviro-Test Labs - soil test analysis
Rick Dobush - spring application of anhydrous ammonia, grain truck
Kent MacDonald, Alberta Agriculture - technical support

Tours: Vegreville Agricultural Society - bleachers for tour

Comments: A special **THANK YOU** to **Blair Michaud** and **Ryan Blais** for their valued technical assistance throughout the summer. Also, **THANK YOU** to **Leo Blais** for continued use of shop tools and winter storage of equipment.

CHINOOK REGION - Doug Moisey, Agronomist

Location: Beiseker, AB - 70 acres

Land: JHB Farms

Seed and Seed Treatment: Advanta Seeds
Aventis CropScience Canada Co.
Aventis Seed Treatment
Gustafson
Hetland Seeds
Proven Seed
Saskatchewan Wheat Pool

Pesticides: Aventis CropScience Canada Co. - Liberty, Select, Compas
BASF Canada Inc. - Poast Ultra, Odyssey
Dow AgroSciences Canada Inc. - Vantage Plus, Lorsban, Lontrel
DuPont Canada Inc. - Muster
Monsanto Canada Inc - Roundup Transorb

Equipment and Labour: Cargill AgHorizons - fertilizer truck
Enviro-Test Labs - soil test analysis

Location: Lethbridge, AB (Irrigation) - 60 acres

Land: Tom & Joe Shigehiro

Seed and Seed Treatment: Advanta Seeds
Aventis CropScience Canada Co.
Gustafson
Hetland Seeds
Pioneer Grain / JRI
Proven Seed
Saskatchewan Wheat Pool

Fertilizer:	Cargill AgHorizons Ltd. (60 acres granular) Southern Agri Services Ltd. (60 acres granular)
Pesticides:	Aventis CropScience Canada Co. - Liberty, Select, Decis BASF Canada Inc. - Poast Ultra Dow AgroSciences Canada Inc. - Vantage Plus, Lontrel DuPont Canada Inc. - Muster Monsanto Canada Inc. - Roundup Transorb
Equipment and Labour:	Enviro-Test Labs - soil test analysis

Location:	**Lethbridge, AB (Dryland) - 50 acres**

Land:	Rod & Ike Lanier
Seed and Seed Treatment:	Advanta Seeds Aventis CropScience Canada Co. Gustafson Hetland Seeds Pioneer Grain / JRI Proven Seed Saskatchewan Wheat Pool
Fertilizer:	Pioneer Grain / JRI (50 acres granular)
Pesticides:	Aventis CropScience Canada Co. - Liberty, Select BASF Canada Inc. - Poast Ultra Dow AgroSciences Canada Inc. - Lontrel DuPont Canada Inc. - Muster Monsanto Canada Inc. - Roundup Transorb
Equipment and Labour:	Enviro-Test Labs - soil test analysis
Comments:	Thank you to the Alberta Agriculture Research Institute - Farming For The Future program for their continued funding of the Canola Production Centre Program. A special thank you to our summer technicians **Matt Stanford** and **Dennis Edwards** for all their hard work and dedication. Also, thank you to **Lloyd Dosdall** of the University of Alberta and **Rob Dunn** of Alberta Agriculture Food and Rural Development for their help and knowledge this past summer.

PEACE RIVER REGION - Christine Mardell, Agronomist

Location:	**Rycroft, AB - 80 acres**

Land: George Dika

Seed and Seed Treatment:
Advanta Seeds
Aventis CropScience Canada Co.
Gustafson
Hetland Seeds
Monsanto Canada Seeds Ltd.
Proven Seed
Saskatchewan Wheat Pool

Pesticides:
Aventis CropScience Canada Co. - Liberty, Select, Decis
BASF Canada Inc. - Odyssey
Dow AgroSciences Canada Inc. - Eclipse, Vantage Plus
DuPont Canada Inc. - Muster Gold II
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:
George Dika - harrowing, broadcast application of fertilizer and combining fill area.
Nick Sekulic - application of Eclipse
Rudy Dika - hauling canola to elevator
Dika Farms - equipment storage and use of shop tools

Tours:
Agricore
Aventis CropScience Canada Co.
BASF Canada Inc.
Brett-Young Seeds Ltd.
Dow AgroSciences Canada Inc.
DuPont Canada Inc.
United Grain Growers

Location:	**Rolla, BC - 80 acres**

Land: Gene Vipond (Borek Farms)

Seed and Seed Treatment:
Advanta Seeds
Aventis CropScience Canada Co.
Aventis Seed Treatment
Gustafson
Hetland Seeds
Proven Seed
Saskatchewan Wheat Pool

Pesticides:
Aventis CropScience Canada Co. - Liberty, Decis
DuPont Canada Inc. - Muster Gold II
Monsanto Canada Inc. - Roundup Transorb

Equipment and Labour:

Gene Vipond - technical assistance
Borek Farms - swather, grain truck, and fall application of anhydrous ammonia
Borek Farms Staff - for swathing the fill area

Tours:

Aventis CropScience Canada Co.
BC Grain Producers Association
Capital Motors (1985) Ltd.
Dow AgroSciences Canada Inc.
DuPont Canada Inc.
Kenver Equipment Ltd.
Subway

Comment:

I would like to take this opportunity to thank all those that helped me with my first season as an Agronomist with the Canola Council of Canada. Thank you to **Michael Coy** and **Shelagh Coy** for their technical help over the summer. Also a special thank you to **Blair Michaud** for helping with harvest.

Canola Production Centre Thank You

The Canola Production Centre program continues to be a success only through the co-operation and collaboration of the entire Crop Production team across the Prairies, including; JoAnne Buth, Jim Bessel, John Mayko, David Blais, Derwyn Hammond, Barry Hurd, Christine Mardell, Doug Moisey, Warren Robak and Dave Vanthuyne. The crop production team would like to thank the Head Office Staff in Winnipeg, and in particular Nicole Guay, for their valuable assistance and support. Once again, thanks to all of the Canola Production Centre supporters, both national and local!!

Thank-You All !!

II INTRODUCTION

The Canola Council of Canada initiated Canola Production Centres to address the ongoing need for canola production technology transfer as identified during the Grow with Canola program. The Canola Production Centres are a joint effort between producer groups, industry representatives and provincial governments and their extension personnel. The continuing co-operation of these groups, co-ordinated by the Canola Council of Canada, ensures the ongoing success of the Canola Production Centres.

The goal of the Canola Production Centre program is to improve the quality and yield of the Canadian canola crop, thereby improving profitability for both producers and processors. The Canola Production Centres provide a focal point for the transfer of canola production technology, thus enhancing interaction among the various industry participants. The specific goals of the program are to increase the yield of oil and protein, and to increase the margin per unit of production.

The program consists of four components:

1. Canola Production Centres operate on a field scale, addressing a wide range of agronomic topics of regional and national interest. Typical plot sizes are 20-40 ft wide by 300-400 ft long. All trials are replicated and randomized.
2. Satellite locations operate on a field scale, addressing one or two topics of interest to the local community.
3. Communications through distribution of the results from the Canola Production Centres in annual regional reports and multi-year summaries; and extension activities.
4. Agronomic research conducted by either public or private research organizations in conjunction with the activities of the Canola Council at Canola Production Centres.

A series of summer tours were held throughout the growing season at the main Canola Production Centres that allowed the opportunity to view the various projects. All sites were signed and copies of site plans were available at the entrances to allow for self-guided tours at any time other than scheduled tour dates.

Quantitative information obtained from the Canola Production Centres included many agronomic factors such as early season plant counts, crop yields and lodging ratings on varieties.

Note: The material contained in this report is a collection of agronomic information from a specific location and only from one site year. Therefore, it should be observed and understood accordingly.

III DEFINITIONS

Brassica napus varieties: Argentine varieties

Brassica rapa varieties: Polish varieties

Break-even/cost per bushel: The price needed per bushel to cover the variable costs at the stated yield per acre of production.

Coefficient of variation (CV): The standard deviation expressed as a percentage of the mean.

Contribution margin: The amount of total revenue less variable costs that directly relate to the business operation available to contribute to fixed costs and return on investment, labour and management.

Contribution margin per bushel: The extra revenue per unit of production, which is available to service fixed costs. This illustrates to the producer the importance of a well-planned marketing strategy.

Contribution margin per acre: The amount of revenue remaining per acre after variable costs have been serviced, allowing the producer to manage other financial commitments, such as fixed costs.

Damaged seed: The percentage of seeds that were damaged, including green and brown seed, determined by a crush strip test.

Days to maturity: Actual calendar days from the date of seeding to approximately 30 % seed colour change on the main stem.

Fixed costs: Costs that remain relatively unchanged regardless of the volume of production (eg. land taxes, mortgage interest and machinery depreciation).

Growing degree days (GDD): Heat accumulated above canola's base temperature. The heat accumulated each day is determined by adding the maximum and minimum temperatures and dividing the total by two to obtain a daily average. The base temperature for canola of 5°C is subtracted from the average to arrive at the number of growing degree days. The total growing degree-days required for Argentine canola on average is 1040 growing degree days. Polish canola on average requires 850 growing degree days.[1]

Least significant difference (LSD): The difference required for one treatment to be statistically different from another at the 90 % confidence level, expressed in identical units. For example, if Variety A yielded 30 bu/ac and Variety B yielded 34 bu/ac and the LSD for that trial was 2.25, then Variety A is statistically different from Variety B because 34-30=4, which is greater than 2.25. If the difference were less than 2.25, then the varieties would not be statistically different from each other.

1 Source: Canola Growers Manual

Lodging ratio: Crop canopy height divided by actual plant length. A measure of the lodging resistance of a particular variety.

Opportunity costs: The opportunity cost of a resource is the return the resource can earn when put to its best alternative.

Variable costs: Costs that vary directly with the volume of production or activity (eg. seed, fertilizer, fuel and repairs).

Definitions provided by the ROYAL BANK in consultations with the Canola Council with reference from the Farm Accounting Standardization Manual©.

IV ECONOMIC ANALYSIS

A Canola Pricing System

Grade	Green Seed (%)	Total Damaged & Green Seed Allowed (%)	$/bu
# 1	0 - 2.0	3.0	7.00
# 2	2.1 - 6.0	10.0	6.73
# 3A	6.1 - 10.0	15.0	6.43
# 3B	10.1 - 20.0	20.0	5.87
Sample	Over 20.0	Over 20.0	4.87

Note 1: ***The damaged and green, includes all frost, brown and green seed. This was determined by using a 500 seed crush strip test done on each sample from every treatment within a particular trial.***

Note 2: ***High erucic acid varieties (eg. MilleniUM 03) were assigned a premium of $1.15/bu.***

Note 3: ***Specialty oil varieties were assigned a premium as follows:***

- ***IMC 105, IMC 207, IMC 302 = $0.69/bu***
- ***IMC 106RR, IMC 206RR = $0.59/bu***
- ***Nex 705, Nex 710, Nex 715, Nex 720 = $0.45/bu***

B. Cost Calculations & Assumptions

The following costs were used in calculating economic returns for the various trials and treatments. Fertilizer and crop protection product prices were obtained from various dealers throughout the region. Prices reflect the western Canadian average for spring 2001. Equipment costs were obtained from agrologists with the Royal Bank and are actual equipment variable costs from producers across Western Canada. There has been no value allocated for capital and fixed costs.

CANOLA ARGENTINE VARIETY SEED COSTS					
B. napus	**$/lb**	**Distributor**	***B. napus***	**$/lb**	**Distributor**
45A51	2.89	Proven Seed	InVigor 2663	4.50	Aventis CropScience
45A55	3.39	Proven Seed	InVigor 2733	5.25	Aventis CropScience
45A77	N/A	Proven Seed	Kelsey	3.49	Agricore
46A76	3.29	Proven Seed	LBD 449RR	3.12	Brett-Young Seeds Ltd.
A98-13NR	3.49	Agricore	LBD 561RR	3.12	Brett-Young Seeds Ltd.
AC Excel	1.15	Hetland Seeds	LBD 799RR - S	3.75	Brett-Young Seeds Ltd.
Admire RR	3.95	SK Wheat Pool	MilleniUM 03	2.20	CanAmera Foods / SK Wheat Pool
Conquest RR	2.99	SK Wheat Pool / Agricore	Nex 500	2.25	Dow AgroSciences
DKL34-55	3.40	Monsanto Canada Seeds Inc.	Nex 705	3.63	Dow AgroSciences
Hyola 440	N/A	Advanta Seeds	Nex 710	3.63	Dow AgroSciences
IMC 105	2.19	Cargill	Nex 715	3.98	Dow AgroSciences
IMC 106 RR	2.49	Cargill	Nex 720	3.98	Dow AgroSciences
IMC 206 RR	2.49	Cargill	Prairie 499 RR	4.99	Prairie Seeds
IMC 207	2.19	Cargill	Q2	2.49	SK Wheat Pool / Agricore
IMC 302	2.19	Cargill	Renegade	2.49	SK Wheat Pool
InVigor 2153	3.75	Aventis CropScience	SP Armada	1.99	SK Wheat Pool
InVigor 2573	4.50	Aventis CropScience			

Note: ca - case, N/A - not available at time of publication
Seed cost may vary from location to location.
The above seed prices reflect prices available in July, 2001. Actual seed prices will depend upon the time of year the seed is purchased and discounts or incentives that may be available. Please check with your local retailer to get current prices for specific seed varieties.

OTHER PRODUCT COSTS		
Product/Process	**$/Unit**	**Distributor**
Corn Cob Grit	35.00/22kg	North Star Seeds
Precise CS	0.50/lb	Taurus Technology Inc.
Roundup Technology Fee	15.00/ac	Monsanto Canada Inc.
Seed Priming	N/A	Kamterter II L. L. C.

PRODUCT INFORMATION			
Product	**Common Name**	**Manufacturer/ Distributor**	**$/Unit Cost**
Absolute	imazamox+imazethapyr+clopyralid	BASF Canada Inc.	29.95/ac
Assure II	quizalofop ethyl	DuPont Canada Inc.	660.00/ca
Compas	bromoxynil	Aventis CropScience	330.00/jug
Counter 5G	terbufos	BASF Canada Inc.	73.20/20kg
Decis 5EC	deltamethriin	Aventis CropScience	168.00/2.0L
Eclipse	glyphosate+clopyralid	Dow AgroSciences Canada Inc.	159.00/6.2L
Edge	ethalfluralin	Dow AgroSciences Canada Inc.	51.00/25kg
Foundation	iprodione+thiram+lindane	Aventis Seed Treatment	0.55/lb
Foundation Lite	iprodione+thiram	Aventis Seed Treatment	0.45/lb
Foundation Premium	iprodione+thiram+acetomiprid (low rate)	Aventis Seed Treatment	N/A
Foundation Premium Plus	iprodione+thiram+acetomiprid (high rate)	Aventis Seed Treatment	N/A
Fusion	fenoxaprop-p-ethyl + fluazifop-p-butyl	Aventis CropScience	239.00/ca
Gaucho Canola System	imidacloprid + carbathiin + thiram + metalaxyl	Gustafson	1.08/lb
Gaucho Platinum	imidacloprid + carbathiin + thiram + metalaxyl	Gustafson	2.17/lb
Helix	fludioxonil+metalaxyl+ difenoconazole+thiamethoxam	Syngenta	1.22/lb
Helix XTra	fludioxonil+metalaxyl+ difenoconazole+thiamethoxam	Syngenta	2.25/lb
Liberty (1st application)	glufosinate ammonium	Aventis CropScience	18.50/ac
Liberty (2nd application)	glufosinate ammonium	Aventis CropScience	11.45/ac
Lontrel 360	clopyralid	Dow AgroSciences Canada Inc.	620.00/4.51L
Muster	ethametsulfuron methyl	DuPont Canada Inc.	638.00/ca
Muster Gold II (40 rate)	ethametsulfuron methyl + quizalofop-p-ethyl	DuPont Canada Inc.	806.00/ca
Odyssey	imazamox + imazethapyr	BASF Canada Inc.	1,026.80/ca
Poast Ultra	sethoxydim	BASF Canada Inc.	583.66/ca
Ronilan EG	vinclozolin	BASF Canada Inc.	751.31/ca
Rovral Flo	iprodione	Aventis CropScience	209.00/8.4L
Roundup Original	glyphosate	Monsanto Canada Inc.	8.99/L
Roundup Transorb	glyphosate	Monsanto Canada Inc.	9.79/L
Select	clethodim	Aventis CropScience	630.00/ca
Titan FL	clothianidin + vitavax + thiram + metalaxyl	Gustafson	N/A
Vantage Plus	glyphosate	Dow AgroSciences Canada Inc.	97.90/10L

Note: ca - case, N/A - not available at time of publication
Product cost may vary from location to location.
The above product prices reflect prices available in July, 2001. Actual product prices will depend upon the time of year the product is purchased and discounts or incentives that may be available. Please check with your local retailer to get current prices.

Numerous references to pesticide applications will be found in this report. We advise everyone to consult with provincial recommendations and product labels for complete instructions.

CANOLA FERTILIZER COSTS			
Fertilizer	**Analysis**	**$/tonne**	**$/lb**
Anhydrous Ammonia	82-0-0	732	0.40
Ammonium Nitrate	34-0-0	395	0.53
Ammonium Sulphate	21-0-0-24	258	0.12 (S)
Liquid Nitrogen	28-0-0	271	0.44
Liquid Phosphate	10-34-0	347	0.33 ($P_2 0_5$)
Liquid Sulphur	15-0-0-20	211	0.15 (S)
Phosphate	11-52-0	391	0.25 ($P_2 0_5$)
Potash	0-0-60	186	0.14
Urea	46-0-0	425	0.42

Crop and Hail Insurance:

Prices will vary from site to site.

Machinery Cost:

- Conventional tillage: $17.00/acre
- Direct seeding: subtract $6.00/acre
- Straight combining: subtract $2.00/acre

Additional Machinery Costs: (Spraying Application)

- Aerial $4.00/acre
- Ground $3.00/acre

Note: Machinery costs reflect the average operating cost (such as fuel, lubrication and repairs) across western Canada (source Royal Bank of Canada).

Marketing Cost: ($0.25/bu)

This cost was assigned to the variable cost using the Options Marketing System.

Interest/Opportunity Cost:

This cost calculation demonstrates the cost of money borrowed (at the prime rate 6.5% + 1.5%) and charged on crop inputs and machinery operating costs. In 2001, 8% per annum over six months was used.

C. Economic Results Report (example)

Site: ***Rycroft, AB***

Systems Comparison Trial: ***AC Excel***

CALCULATION OF VALUE OF PRODUCTION				
Yield (bu/ac)	**X**	**Price ($/bu)**	**=**	**Value of Production**
33.1		7.00		231.70

CALCULATION OF VARIABLE COSTS ($/ac)	
Seed	9.20
Fertilizer	30.84
Herbicides/Fungicides	35.90
Insecticides	5.04
Machinery	27.00
Insurance	0
Marketing	8.28
Interest/opportunity	4.32
Total Variable Costs	120.57

CALCULATION OF CONTRIBUTION MARGIN				
Value of Production ($/ac)	**-**	**Variable Costs ($/ac)**	**=**	**Contribution Margin ($/ac)**
231.70		120.57		111.13

Contribution Margin ($/ac)	/	Yield (bu/ac)	=	Contribution Margin ($/bu)
111.13		33.1		3.36

This example was developed and prepared with assistance from Royal Bank agrologists.

D. Contribution Margin Worksheet

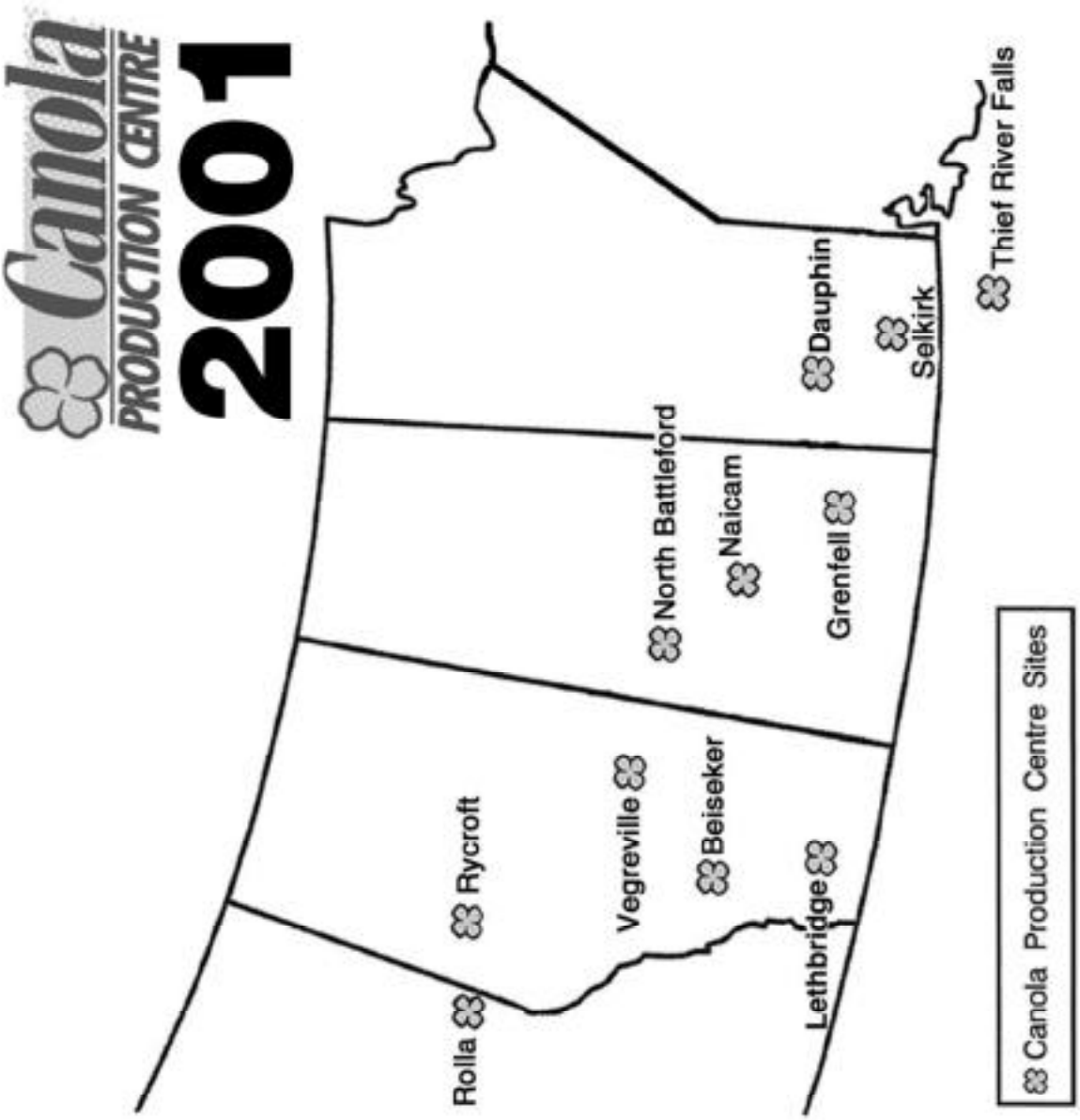
CALCULATION OF VALUE OF PRODUCTION				
Yield (bu/ac)	**X**	**Price ($/bu)**	**=**	**Value of Production**

CALCULATION OF VARIABLE COSTS ($/ac)	
Seed Fertilizer Herbicides/Fungicides Insecticides Machinery Insurance Marketing Interest/opportunity	
Total Variable Costs	

CALCULATION OF CONTRIBUTION MARGIN				
Value of Production ($/ac)	**-**	**Variable Costs ($/ac)**	**=**	**Contribution Margin ($/ac)**

Contribution Margin ($/ac)	**/**	**Yield (bu/ac)**	**=**	**Contribution Margin ($/bu)**

V SITE LOCATION MAP



VI SITE INFORMATION

THIS IS GENERAL SITE INFORMATION THAT MAY CHANGE FOR SPECIFIC TRIALS.

Location: Selkirk, MB

Co-operator: Angele and Mark Deprez

Previous crop: Wheat

Soil Test Results: (Enviro-Test Labs)

Organic matter content: ***5.6*** % (0-6")

Macronutrient Levels: (0-6", 6-24")		***Micronutrient Levels: (0-6")***	
Nitrogen -	33, 53 lb/ac	Boron -	3 lb/ac
Phosphorus-	>54 lb/ac	Copper -	10.3 lb/ac
Potassium -	>540 lb/ac	Iron -	432 lb/ac
Sulphur -	9, 19 lb/ac	Zinc -	49 lb/ac
		Chlorine -	19 lb/ac
		Manganese -	313 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
46	25	N/A	55-65	20-25	0 or 15	25-30
38	50	N/A	50-60	15-20	0 or 15	20-25
26	75	N/A	25-35	5-10	0	15-20

Target yield: 46 bu/ac

Fertilizer applied: N - 71 lb/ac P - 29 lb/ac K - 0 lb/ac S - 32 lb/ac

Soil climatic zone: Moist Black Central North

Soil texture: Clay Loam (Clay from 6-24")

Soil pH: 8.1

Salinity: 0.2 mS/cm (non-saline)

Tillage operations: N, K and S fertilizer was broadcast in granular form, followed by cultivation and harrowing for incorporation and seedbed preparation.

Seeding method: All trials were seeded with a Morris MH-3100 hoe press drill with 7_" spacings. The phosphate fertilizer was seed-placed. Seed was single treated.

Date:	May 21-31
Depth:	_ to _"
Rate:	Open-pollinated ***B. napus*** varieties - 6.1 lb/ac Hybrid ***B. napus*** varieties - 5.0 lb/ac
Soil Temp:	Varied among seeding dates - approximately 10°C

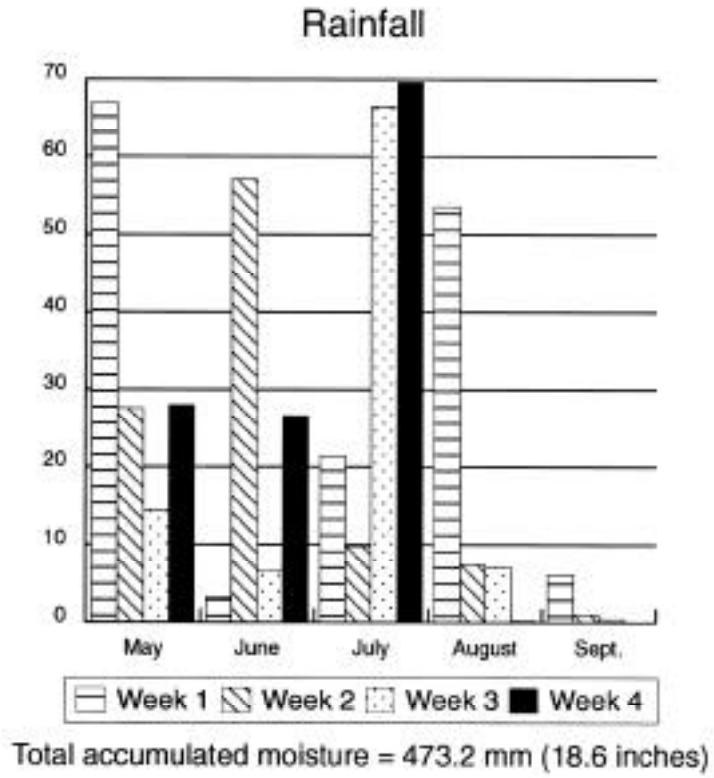
Herbicides applied: All chemical weed control was applied in-crop as per trial protocols.

Fungicides applied: Ronilan EG (0.3 kg/ac)

Swathing: Started: August 14 Finished: August 22

Combining: Started: September 13 Finished: September 15

Comments: Seeding was delayed by 109 mm (4.3") of rain during the first three weeks of May. Seeding commenced on May 21, but additional rain showers caused further delays. The remaining treatments were seeded from May 27 to 31. Emergence was excellent, as the moist conditions allowed for shallow seeding and quick germination. Conditions were generally warm and wet up to the first week in August, providing ideal conditions for sclerotinia development. The fungicide provided very good control, but the untreated plots in two of the trials showed infection levels as high as 55 % at swathing. Wild oats provided the greatest weed pressure. Insect pests observed throughout the season included flea beetles, diamondback moth and lygus bugs. Damage from flea beetles was limited to a few shot holes at the seedling stage, and the crop quickly outgrew it. Diamondback moth counts rose to 240 on July 5, well above 90 per week, which indicates a potential threat. Larvae numbers did approach the economic threshold over the following 10 days, but 61 mm (2.4") of rain on July 16 appeared to drown most of the larvae. Larvae counts never recovered to threshold levels. Lygus bug numbers appeared to be on the rise at swathing, but the crop was too advanced to warrant insecticide application. Hot and dry conditions prevailed throughout the latter part of August and first part of September. Daily maximum temperatures hovered around 30°C the week of August 20 when most of the swathing took place. The high temperatures and very little rainfall caused rapid dry-down of the swaths and did not allow for proper curing to take place. Many of the treatments were downgraded to a #2 as a result of green seed.



Location:	**Dauphin, MB**

Co-operator: Gary Sydor

Previous crop: Wheat

Soil Test Results: (Enviro-Test Labs)
(Spring soil test following application of 110-30-0-15 previous fall)

Organic matter content: 3.2 %

Macronutrient Levels: (0-12")

Nitrogen -	107 lb/ac
Phosphorus -	>102 lb/ac
Potassium -	>1020 lb/ac
Sulphur -	12 lb/ac

Micronutrient Levels: (0-12")

Boron -	6.4 lb/ac
Copper -	13.3 lb/ac
Iron -	836 lb/ac
Zinc -	25.8 lb/ac
Chlorine -	33 lb/ac
Manganese -	153 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
42	25	N/A	0	5-10	0 or 15	25-30
35	50	N/A	0	5-10	0 or 15	20-25
24	75	N/A	0	5-10	0	15-20

Target yield: 40 bu/ac

Fertilizer applied: Fall: N - 110 lb/ac P - 30 lb/ac K - 0 lb/ac S - 15 lb/ac
Spring: N - 17 lb/ac P - 0 lb/ac K - 0 lb/ac S - 20 lb/ac

Soil climatic zone: Moist Black Northwest

Soil texture: Clay

Soil pH: 7.4

Salinity: 0.2 mS/cm (non-saline)

Tillage operations: Fertilizer was banded in fall of 2000, with the exception of 20 lb/ac of seed-placed sulphate. The site was then heavy harrowed, and as a result no spring tillage was required prior to seeding in 2001.

Seeding method: All trials were seeded with a John Deere 9450 hoe press drill with 7" spacings.

Date: May 29
Depth: 1.25 cm (_")
Rate: Open-pollinated ***B. napus*** varieties - 6.5 lb/ac
Hybrid ***B. napus*** varieties - 5.1 lb/ac
Soil Temp: N/A

Herbicides applied: A pre-emergent burn-off of Vantage Plus (0.5 L/ac) was applied to the entire site two days after seeding. All in-crop chemical weed control was applied as per trial protocols.

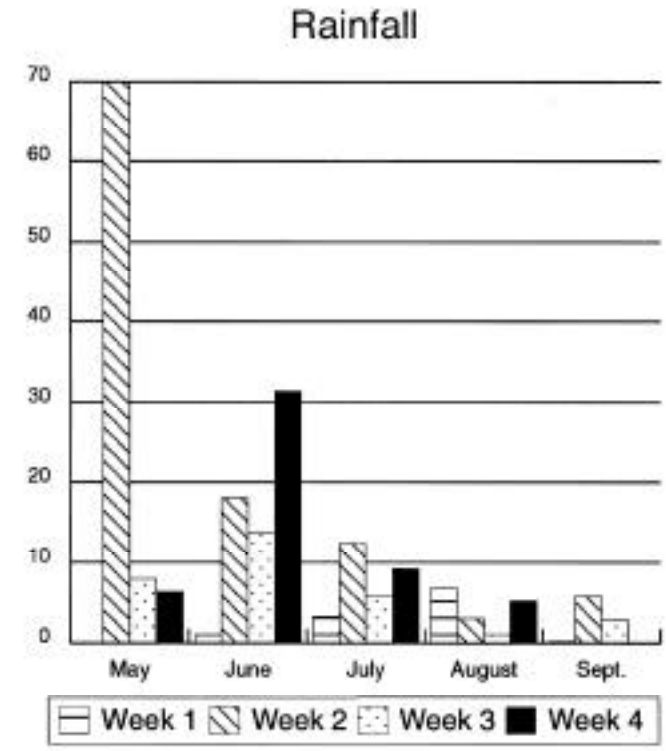
Fungicides applied: Rovral Flo (0.85 L/ac)

Swathing: Started: August 21 Finished: August 27

Combining: Started: September 17 Finished: September 19

Comments: Seeding was delayed until May 29 due to extremely wet soil conditions. Emergence was generally good, however in spots, emergence was poor due to clumping of soil in lower lying areas. Flea beetle pressure was moderate and damage was particularly evident in certain treatments in the seed treatment trial. High populations of flea beetles were also evident at swathing, raising concerns for high flea beetle pressure next spring. Growing

conditions throughout the summer were hot and humid which advanced the crop quickly. At early flowering, conditions were favorable for the development of sclerotinia and a fungicide was applied at approximately 40 to 50 % bloom. Both lygus bugs and diamondback larvae were present in the field but were not near threshold levels. High temperatures and low amounts of rainfall through August hastened maturity. These conditions at swathing caused rapid drydown, which caused downgrading of some treatments due to green seed.



Total accumulated moisture = 203.9 mm (8.0 inches)

Location:	**Grenfell, SK**

Co-operator: Hoffman Farms

Previous crop: Barley

Soil Test Results: (Enviro-Test Labs)

Organic matter content: 7.4 % (0-6")

Macronutrient Levels: (0-12")

Nitrogen -	66 lb/ac
Phosphorus -	25 lb/ac
Potassium -	1080+ lb/ac
Sulphur -	63 lb/ac

Micronutrient Levels: (0-12")

Boron -	6.4 lb/ac
Copper -	5.5 lb/ac
Iron -	82 lb/ac
Zinc -	4.6 lb/ac
Manganese -	21 lb/ac
Chlorine -	21 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
45	25	9.8	95-100	30-35	10-15	10-15
40	25-50	8.6	75-85	25-30	0-15	10-15
34	50	6.8	60-70	25-30	0-15	10-15

Target yield: 40 bu/ac

Fertilizer applied (actual): N - 86 lb/ac P - 25 lb/ac K - 10 lb/ac S - 26 lb/ac

Soil association/zone: Oxbow/Black

Soil texture: Clay loam

Soil pH: 8.0 at a depth of 0-12"

Salinity: Non-saline (conductivity 0.7 mS/cm)

Tillage operations: Liquid nitrogen and sulphur were applied with a coulter applicator to a depth of 3".

Seeding method: Seeded with a JD 9450 hoe press drill with 7" spacings.

Date: May 16 -17

Depth: _ to _"

Rate: 6.2 lb/ac open pollinated varieties
5.0 lb/ac for hybrid and synthetic varieties

Soil Temp: 11^0C - 13^0C at a depth of 1_"

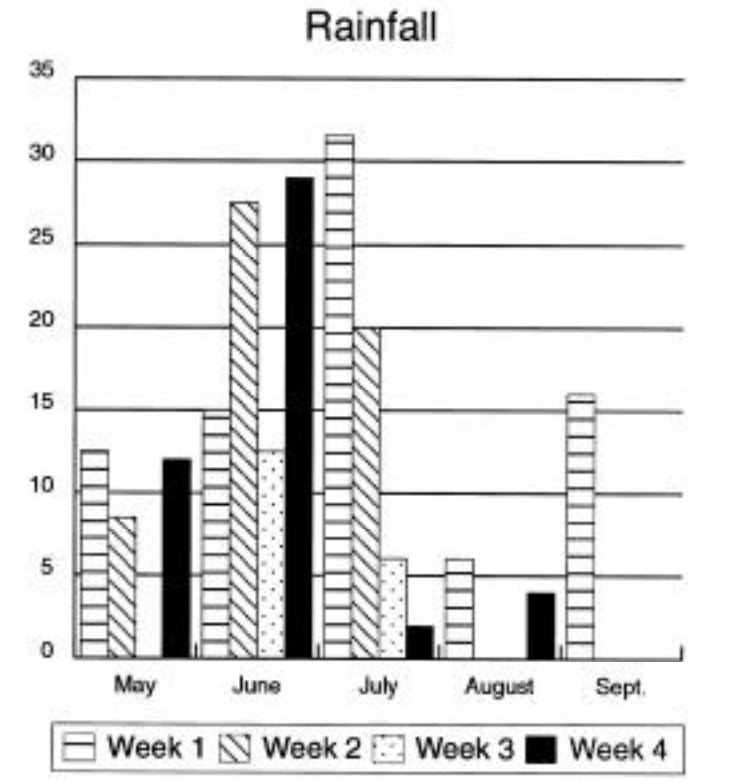
Pesticides applied: Vantage Plus (1.0 L/ac) was applied over the entire site on May 13. Ronilan EG (0.35 kg/ac or 35 ac/case) was applied on July 9 at the 20 to 25 % bloom stage.

Swathing: Started: August 13 Finished: August 23

Combining: Started: September 14 Finished: September 18

Comments: Excellent moisture and warm soil temperatures resulted in rapid emergence. Rainfall was frequent over most of the growing season. Growing conditions were ideal for prolific plant growth throughout the summer. Weed pressure was moderate to heavy. Volunteer barley, stinkweed and buckwheat were predominant

weeds. Canada thistle was also present. Flea beetle damage was moderate during early plant development (2 to 6-leaf stage) due to the adoption of Integrated Pest Management strategies. This strategy involved dual blending seed for the perimeter of the field with Counter at a 1:1 ratio, with the exception of the borders around the seed treatment trial. No foliar insecticide was applied due to rapid plant growth during this period. Assessments using the sclerotinia stem rot checklist (***Canola Growers Manual***, p. 1054) and sclerotinia petal test kit results (41 % infection) resulted in the application of a fungicide on July 12. Other disease pressure was low. Lack of rainfall during late July and early August resulted in rapid seed colour change.



Total accumulated moisture = 203.0 mm (8.1 inches)

Location:	**Naicam, SK**

Co-operators: Naicam Marketing Club

Previous crop: Wheat

Soil Test Results: (Enviro-Test Labs)

Organic matter content: 6.4 % (0-6")

Macronutrient Levels: (0-12")		***Micronutrient Levels: (0-12")***	
Nitrogen -	35 lb/ac	Boron -	4.2 lb/ac
Phosphorus -	24 lb/ac	Copper -	2.6 lb/ac
Potassium -	464 lb/ac	Iron -	79 lb/ac
Sulphur -	27 lb/ac	Zinc -	4.1 lb/ac
		Manganese -	21 lb/ac
		Chlorine -	18 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
45	<25	11.7	95-105	30-35	5-15	20-25
40	25	10.2	85-95	30-35	5-15	20-25
29	50	7.0	50-60	25-30	5-15	15-20

Target yield: 40 bu/ac

Fertilizer applied (actual):

Weed Control Trial (BASF)	N - 113 lb/ac	P - 25 lb/ac	K - 10 lb/ac	S - 30 lb/ac
All other trials	N - 91 lb/ac	P - 25 lb/ac	K - 10 lb/ac	S - 30 lb/ac

Soil association/zone: Oxbow/Black

Soil pH: 8.3 at a depth of 0-12"

Soil texture: Loam

Salinity: Non-saline (conductivity 0.1 mS/cm)

Tillage operations: Ammonium sulphate was broadcast specific to treatment protocols. Anhydrous ammonia was then applied with _" knife openers into standing stubble followed by heavy harrowing.

Seeding method: Seeded with a JD 9450 hoe press drill with 7" spacings

Date:	May 4-5
Depth:	_ to _"
Rate:	6.2 lb/ac open pollinated varieties 5.0 lb/ac for hybrid and synthetic varieties
Soil Temp:	6^0C - 9^0C at a depth of 1 _"

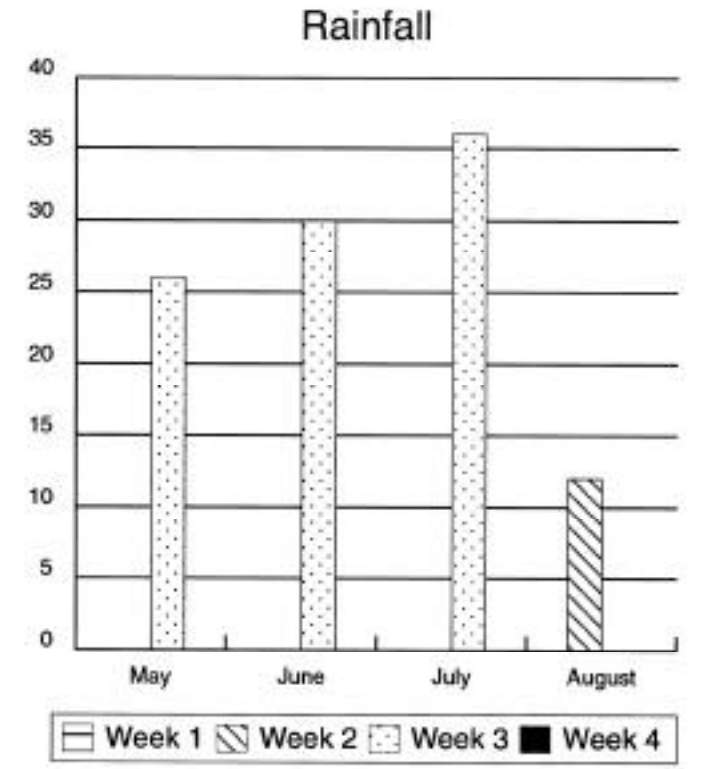
Herbicides applied: Vantage Plus was applied (1.0 L/ac) May 11

Swathing: Started: August 13 Finished: August 20

Combining: Started: September 4 Finished: September 5

Comments:

Cool, dry and windy conditions resulted in poor seedbed moisture. This combined with heavy trash resulted in slow and uneven emergence (May 22). Rain in the third week of May alleviated seedbed moisture problems. Frost during this period damaged or killed newly emerging plants causing stand reduction of approximately 50 %. Areas hardest hit by frost had heavy trash conditions. An Integrated Pest Management strategy was adopted for flea beetle control. This strategy involved dual blending seed for the perimeter of the field with Counter at a 1:1 ratio, with the exception of the borders around the seed treatment trial. Flea beetle pressure was sporadic over a three week period following emergence, and damage occasionally reached moderate levels. Weed pressure was moderate to heavy. Volunteer wheat, stinkweed and Canada thistle were the predominant weeds. These factors combined with overall lack of rain reduced yield expectations. Assessments using the sclerotinia stem rot checklist (***Canola Growers Manual***, p. 1054) and sclerotinia petal test kit results (35 % infection) indicated no need to apply a fungicide. Diamondback moth counts rose to 90 per week during the first week of July, which indicated a potential threat. Larvae numbers did approach the economic threshold over the following 10 days, but 1.4" of rain fell in mid-July and appeared to drown most of the larvae. Larvae counts never recovered to threshold levels. Disease pressure was low. Lack of overall moisture resulted in rapid and even maturity at harvest.



Total accumulated moisture = 104.0 mm (4.2 inches)

Location:	**North Battleford, SK**

Co-operator: Nachtegaele Farms

Previous crop: Hulless Barley

Soil Test Results: (Enviro-Test Labs)
(Spring soil test following fall application of 60 lb/ac of N)

Organic matter content: 3.3 %

Macronutrient Levels: (0-12")

Nitrogen -	38 lb/ac
Phosphorus -	24 lb/ac
Potassium -	>1020 lb/ac
Sulphur -	38 lb/ac

Micronutrient Levels: (0-12")

Copper -	5.5 lb/ac
Iron -	183 lb/ac
Zinc -	3.1 lb/ac
Manganese -	44 lb/ac
Chloride -	41 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
40	<25	11.4	95-105	30-35	0 or 15	15-20
32	25	9.0	60-70	30-35	0 or 15	15-20
25	50	6.8	50-60	30-35	0 or 15	15-20

Target yield: 40 bu/ac

Fertilizer applied: Fall: N - 60 lb/ac
Spring: N - 25 lb/ac P - 30 lb/ac K - 0 lb/ac S - 20 lb/ac

Soil zone: Black

Soil texture: Clay

Salinity: Non-saline

Tillage operations: Fall banding, spring cultivation and harrow packing

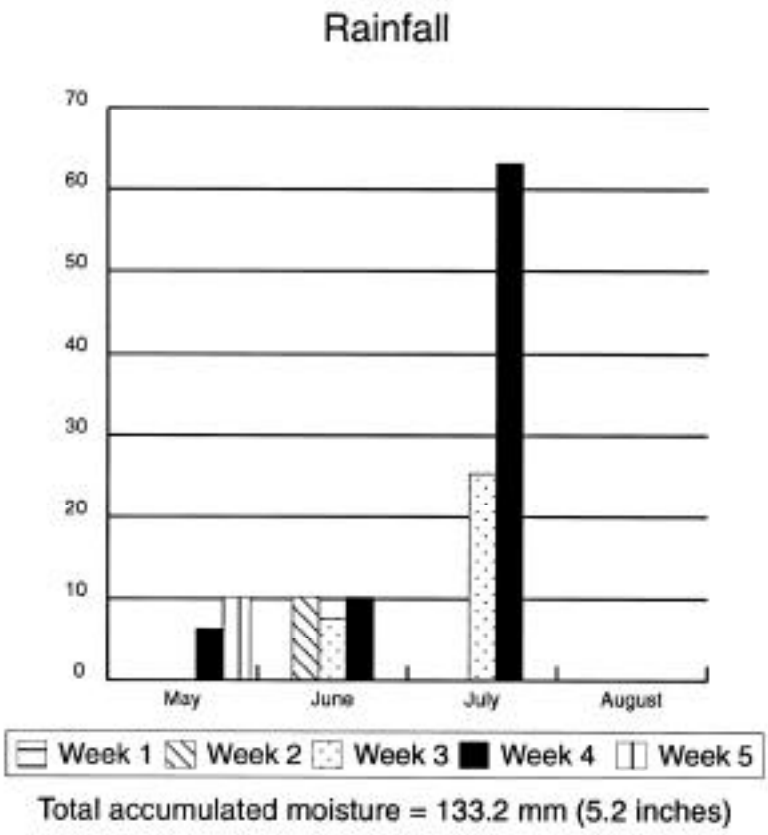
Seeding method: Seeded with John Deere 9450 hoe press drill with 7" spacings.
Date: May 3, 7, 10 and 11
Depth: 1”
Rate: 6 lb/ac open pollinated, 5 lb/ac hybrid
Soil Temp: 11^0C

Pesticides applied: Decis 5EC, Liberty, Lontrel, Muster Gold II, Roundup Transorb, Select

Swathing: Started: August 7 Finished: August 24

Combining: Started: September 4 Finished: September 5

Comments: Soil moisture was limited during the time of seeding causing slow emergence and a reduced but uniform plant stand. Soil moisture improved while canola was in the rosette stage and a good crop was beginning to develop. However, the condition of the crop quickly deteriorated due to heat and low rainfall that was experienced in late June and early July. High diamondback moth numbers were observed in late June and early July and diamondback moth larvae numbers soon reached threshold levels. The site was sprayed with Decis 5EC (50 mL/ac) on July 23. Extensive damage from cabbage root maggots was also observed.



Location:	**Vegreville, AB**

Co-operator: Rick Dobush

Previous crop: Barley

Soil Test Results: (Enviro-Test Labs)

Organic matter content: 5.0 %

Macronutrient Levels: (0-12")

Nitrogen -	66 lb/ac
Phosphorus -	52 lb/ac
Potassium -	536 lb/ac
Sulphur -	58 lb/ac

Micronutrient Levels: (0-12")

Copper -	2.4 lb/ac
Iron -	339 lb/ac
Zinc -	7.3 lb/ac
Manganese -	44 lb/ac
Boron -	5.8 lb/ac
Chloride -	49 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
40	<25	11.4	60-70	20-25	5-15	10-15
34	25	9.5	35-45	20-25	5-15	10-15
27	50	7.5	25-35	15-20	5-15	10-15

Target yield: 40 bu/ac

Fertilizer applied: N - 70 lb/ac P - 20 lb/ac K - 10 lb/ac S - 15 lb/ac

Soil climatic zone: Black North East

Soil texture: Loam

Salinity: Non-saline

Tillage operations: Spring anhydrous ammonia application with a coulter

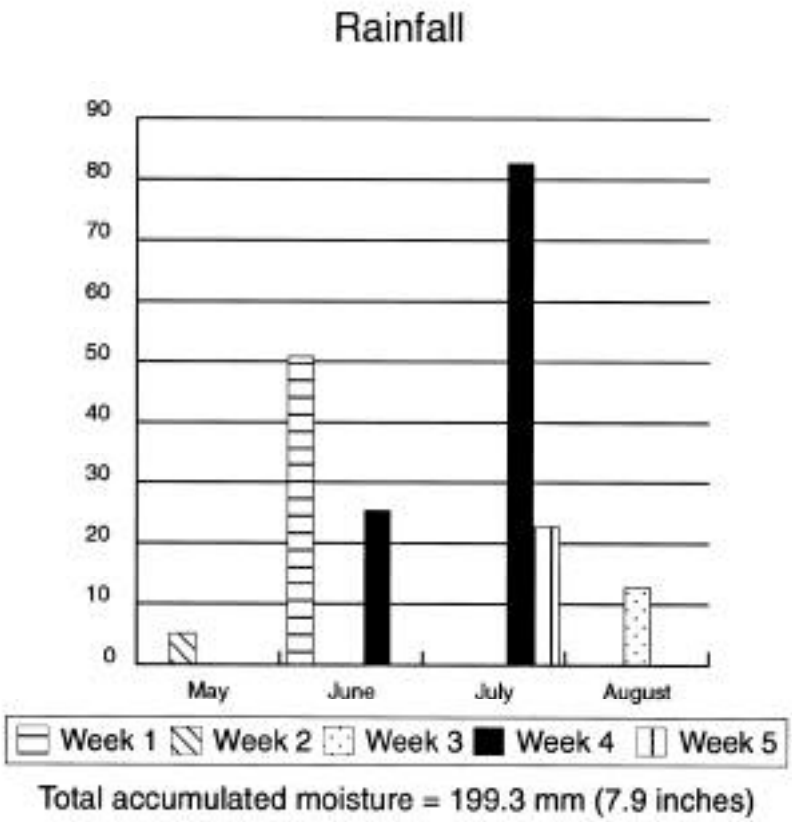
Seeding method: Seeded with JD 9450 hoe press drill with 7" spacings
Date: May 8, 9 and 12
Depth: 1"
Rate: 6 lb/ac open pollinated; 5 lb/ac hybrid
Soil Temp: 11°C

Pesticides applied: Decis 5EC, Fusion, Liberty, Roundup Transorb, Select, Vantage Plus

Swathing: Started: August 20 Finished: September 3

Combining: Started: September 24 Finished: September 26

Comments: Soil moisture was limited prior to seeding. Light rain showers just before and immediately after seeding improved soil moisture slightly. Although germination was reduced and slow, a uniform plant stand developed. Rain at the end of May and early June improved soil moisture and the crop began to grow quickly. Weed numbers were low, except for heavy pressure from volunteer barley. Initial weed control was good. Subsequent rainfall germinated additional barley from broken heads that were on the soil surface. The whole site was sprayed again and control was good. Diamondback moth numbers were high throughout the early part of the growing season. Diamondback larvae reached threshold levels and the whole site was sprayed with Decis 5EC (60 mL/ac) on August 1. Extensive feeding damage from cabbage root maggots was also observed.



Location:	**Beiseker, AB**

Co-operator: JHB Farms

Previous crop: Barley

Soil Test Results: (Enviro-Test Labs)
(Spring soil test following fall application of 60 lb/ac of N)

Organic matter content: 4.4 % (0-6")

Macronutrient Levels: (0-12")

Nitrogen -	141 lb/ac
Phosphorus -	41 lb/ac
Potassium -	600 lb/ac
Sulphur -	73 lb/ac

Micronutrient Levels: (0-12")

Boron -	2.2 lb/ac
Copper -	1.3 lb/ac
Iron -	163 lb/ac
Zinc -	5.3 lb/ac
Manganese -	28 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
40	<25	15	0	20-25	0-15	0-10
22	25	8.2	0	20-25	0-15	0-10
16	50	6.1	0	0-15	0-15	0-5

Target yield: 40 bu/ac

Fertilizer applied: N - 73 lb/ac P - 20 lb/ac K - 10 lb/ac S - 10 lb/ac

Soil zone: Thin black

Soil texture: Sandy loam

Salinity: 0.2 (mS/cm)

Tillage operations: A fall application of 60 lb/ac anhydrous with knife openers was followed by harrow packing in the spring. A blend of 13-20-10-10 was seed-placed at a rate of 98 lb/ac.

Seeding method: Seeded with JD 9450 hoe press drill with 7" spacings.
Date: May 14,15
Depth: 1"
Rate: 5 lb/ac
Soil Temp: 12°C

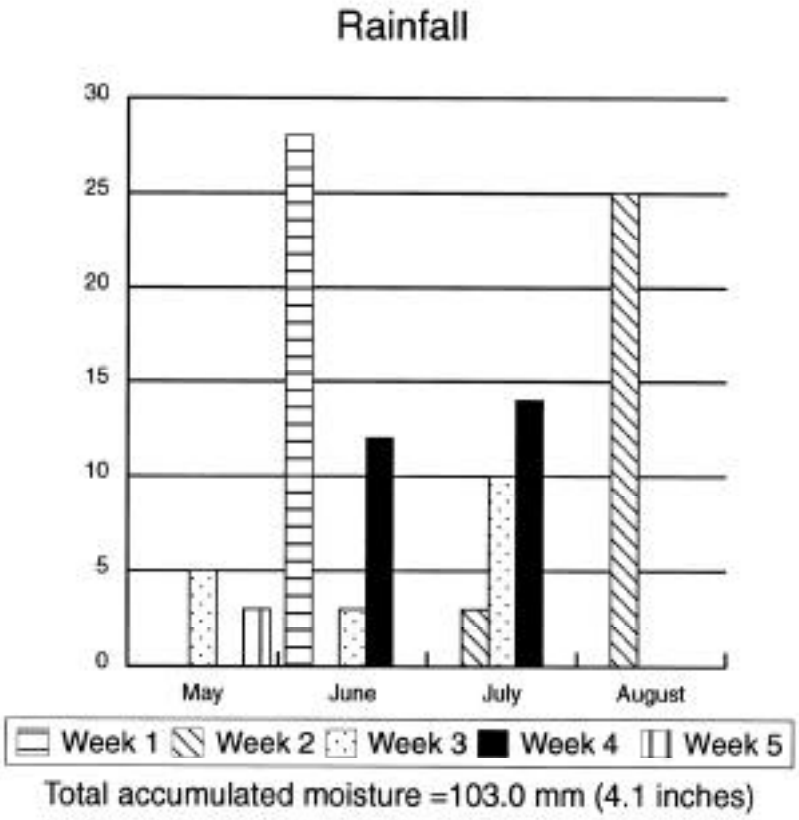
Herbicides applied: Pre-seed burnoff was applied on May 10 using Vantage Plus (0.75 L/ac). Roundup Transorb (0.5 L/ac) was sprayed in fill area of the Production Centre. Conventional varieties were sprayed with Poast Ultra (0.192 L/ac), Muster (12 g/ac) and Lontrel (0.2 L/ac). Liberty Link varieties were sprayed with Liberty (1.35 L/ac) and Select (0.025 L/ac). Clearfield varieties were sprayed with Odyssey (17 g/ac). Navigator varieties were sprayed with Compas (0.287 L/ac) and Select (0.027 L/ac). Roundup Ready varieties were sprayed with Roundup Transorb (0.5 L/ac).

Swathing: Started: August 21 Finished: August 27

Combining: Started: September 10 Finished: September 11

Comments: Vantage Plus was sprayed to control weeds prior to seeding. Soil moisture conditions at seeding were poor. After seeding was completed, the site received 5 mm of rain, which promoted even germination. Post-emergent weather conditions (dry and windy) stressed plants and restricted growth. Plant development remained slow until a June rain. Hot, windy weather in late June and throughout July restricted and stressed plants. Rain that was received during this period was insufficient to have an effect on the plants. Most varieties at the site were short and spindly.

Lygus bug populations at the end of flowering warranted spraying with Lorsban at the recommended rate. Lack of moisture and high temperatures brought on rapid maturity.



Location:	**Lethbridge, AB (Irrigation)**

Co-operators: Tom & Joe Shigehiro

Previous crop: Barley

Soil Test Results: (Enviro-Test Labs)

Organic matter content: 2 % (0-6")

Macronutrient Levels: (0-12")	
Nitrogen -	36 lb/ac
Phosphorus -	31 lb/ac
Potassium -	510 lb/ac
Sulphur -	53 lb/ac

Micronutrient Levels: (0-12")	
Copper -	3.5 lb/ac
Iron -	33 lb/ac
Zinc -	1.6 lb/ac
Manganese -	7 lb/ac
Boron -	1.3 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
55	50	20.1	105-115	20-25	0-15	0-10
43	50	16.1	65-75	20-25	0-15	0-10
38	50	14.1	50-60	20-25	0-15	0-10

Target yield: 55 bu/ac

Fertilizer applied: N - 119 lb/ac P - 25 lb/ac K - 10 lb/ac S - 10 lb/ac

Soil association/zone: 60 % Lacustrine, 40 % Ready-made till/Dark Brown

Soil texture: Clay/Clay loam

Salinity: Non-saline

Tillage operations: Fall cultivation and harrowing was followed by a spring broadcast application of 46-0-0 (115 lb/ac actual N) and harrow packing. A blend of 6-25-10-10 was seed-placed at a rate of 104 lb/ac.

Seeding method: Seeded with JD 9450 hoe press drill with 9" spacings

Date: May 3, 9,10
Depth: 1"
Rate: 4 lb/ac
Soil Temp: 6°C

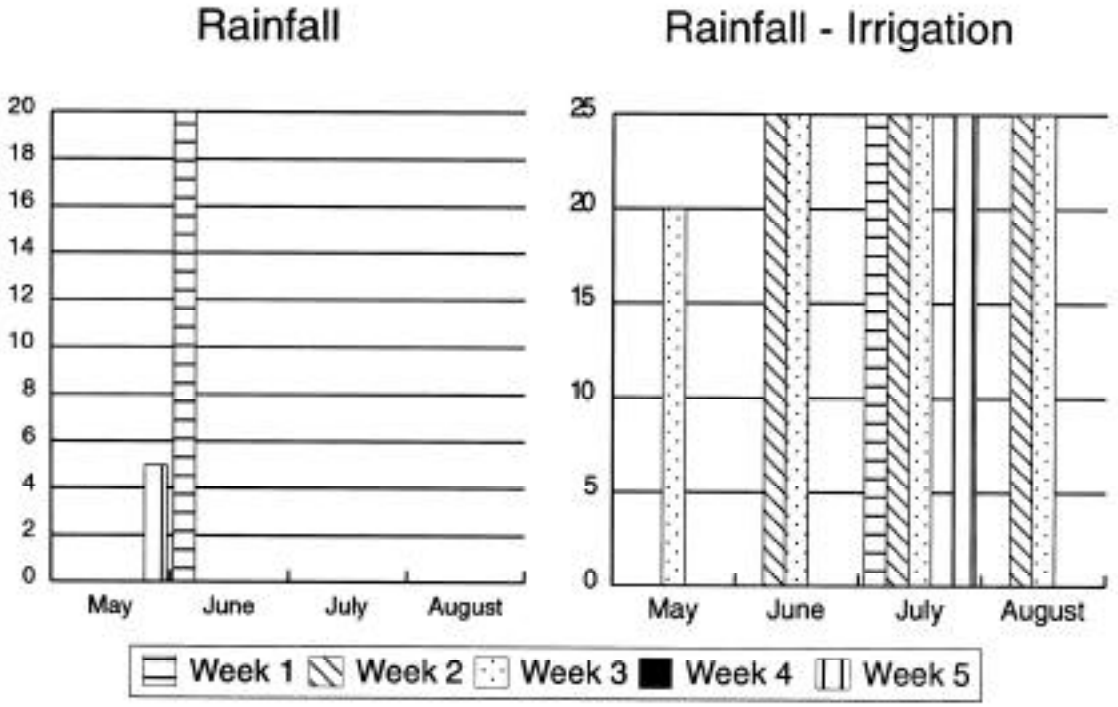
Herbicides applied: A pre-seed burnoff was applied on May 2 using Vantage Plus (0.75 L/ac). Conventional varieties were sprayed with Poast Ultra (0.192 L/ac), Muster (12 g/ac) and Lontrel (0.2 L/ac). Liberty Link varieties and fill area were sprayed with Liberty (1.35 L/ac) and Select (0.025 L/ac). Roundup Ready varieties were sprayed with Roundup Transorb (0.5 L/ac).

Swathing: Started: August 7 Finished: August 20

Combining: Started: September 17 Finished: September 18

Comments: Soil moisture prior to seeding was poor. Dry, windy conditions further dried the soil, delaying emergence of all trials except the early treatments of the canopy manipulation trial. These treatments took advantage of early soil moisture and emerged within ten days of seeding. Twelve days after seeding, irrigation water was available and _" of water was applied. Emergence was rapid and even. Water restrictions (8" of irrigation water allowed) necessitated a management decision to utilize the available irrigation water at the critical flowering and pod filling stages. Restricting water during early crop development shortened the crop substantially. InVigor varieties, normally quite tall, were only 36" in height. During flowering, high winds

and temperatures stressed the crop, and some flower blasting was observed. Diamondback moth larvae were above threshold levels and were sprayed at the recommended rate. Cabbage seed pod weevil and lygus bug populations were variable, with the highest populations in the canopy manipulation trial. Flea beetles were present and caused minor damage in areas. However, canola plants were able to outgrow the damage. Lack of moisture and high temperatures brought on rapid maturity. After swathing, 1" of irrigation water was applied to assist in curing the crop.



Total accumulated moisture = 245.0 mm
(Rainfall - 25.0 mm, 1.0 inch) + (Irrigation - 220.0 mm, 8.8 inches)

Location:	**Lethbridge, AB (Dryland)**

Co-operator: Rod & Ike Lanier

Previous crop: Barley

Soil Test Results: (Enviro-Test Labs)

Organic matter content: 2.5 % (0-6")

Macronutrient Levels: (0-12")

Nitrogen -	39 lb/ac
Phosphorus -	49 lb/ac
Potassium -	510 lb/ac
Sulphur -	46 lb/ac

Micronutrient Levels: (0-12")

Copper -	4.2 lb/ac
Iron -	169 lb/ac
Zinc -	2.4 lb/ac
Manganese -	79 lb/ac
Boron -	1.5 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
30	<25	11.3	40-50	20-25	0-15	0-10
22	25	8.2	5-15	20-25	0-15	0-10
16	50	6.1	0	15-20	0-15	0-10

Target yield: 30 bu/ac

Fertilizer applied: N - 50 lb/ac P - 20 lb/ac K - 10 lb/ac S - 10 lb/ac

Soil association/zone: 85 % Lethbridge lacustrine, 15 % Ready-made till/Brown

Soil texture: Loam/Clay loam

Salinity: Non-saline

Tillage operations: 42 lb/ac of actual N (34-0-0) was broadcast prior to seeding. A blend of 6-25-10-10 was seed-placed at a rate of 85 lb/ac. The site was direct seeded. The site was direct seeded.

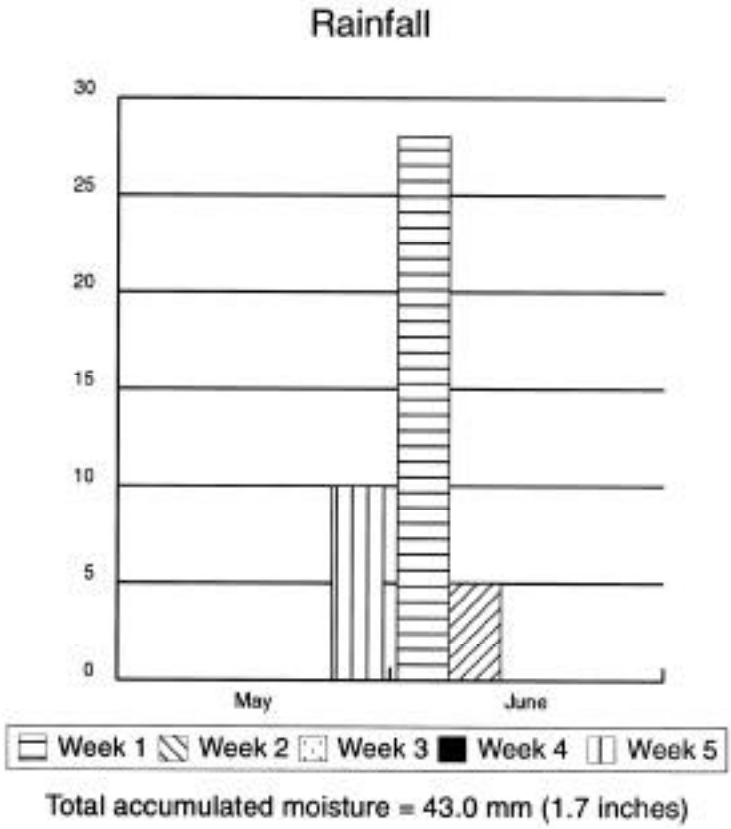
Seeding method: Seeded with JD 9450 hoe press drill with 9" spacings.

Date:	May 3, May 4
Depth:	1"
Rate:	4.5 lb/ac
Soil Temp:	5°C

Herbicides applied: Pre-seed burnoff occurred on April 28 using Roundup Transorb (0.5 L/ac). Conventional varieties were sprayed with Poast Ultra (192 mL/ac), Muster (12 g/ac) and Lontrel (200 mL/ac). Liberty Link varieties were sprayed with Liberty (1.35 L/ac) and Select (25 mL/ac). Clearfield varieties were sprayed with Odyssey (17 g/ac). Roundup Ready varieties and fill area were sprayed with Roundup Transorb (0.5 L/ac).

Comments: Soil moisture prior to seeding was poor. Most emergence did not occur until after a rain on May 28 and 29. Emergence was rapid and even. Another rain on June 2 helped in crop development. Soil moisture levels at this time were fair and the crop grew rapidly. Windy conditions combined with higher temperatures in the middle of June stressed the crop. This stunted the crop and plant development slowed to a point where there was no visible growth observed. Plants remained short as they started to flower.

Crop height on average was 12". Very few pods formed at flowering due to a lack of moisture and high temperatures. Any pods that were formed only had 3-5 seeds in them. Lack of moisture throughout the growing season severely stressed the crop. At swathing time, yield for the majority of the crop was estimated to be 1 bu/ac. The site was not harvested.



Location: Rycroft, AB

Co-operator: George Dika

Previous crop: Summerfallow

Soil Test Results: (*Enviro-Test Labs*)

Organic matter content: N/A

Macronutrient Levels: (0-12")

Nitrogen -	49 lb/ac
Phosphorus -	26 lb/ac
Potassium -	>1020 lb/ac
Sulphur -	80 lb/ac

Micronutrient Levels: (0-12")

Copper -	12.6 lb/ac
Iron -	782 lb/ac
Zinc -	14 lb/ac
Manganese -	17 lb/ac
Chlorine -	45 lb/ac
Boron -	2.1 lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (Inches)	Nitrogen	Phosphate	Potash	Sulphur
28	25	9.5	0-0	30-35	0 or 15	10-15
22	50	7.5	0-0	25-30	0 or 15	10-15
19	75	4.8	0-0	15-20	0-0	5-10
45	<25	14.8	60-70	30-35	0 or 15	10-15

Target yield: 45 bu/ac

Fertilizer applied: N - 60 lb/ac P - 20 lb/ac K - 20 lb/ac S - 15 lb/ac

Soil climatic zone: Black North East

Soil texture: Clay

Salinity: Non-saline (0.4 mS/cm)

Soil pH: 6.3

Tillage operations: Since the site had been summerfallow the previous year, seedbed preparation only involved a spring broadcast and incorporation of fertilizer with harrows.

Seeding method: Seeded with a JD 9450 hoe press drill with 7" spacings.
Date: May 22-23
Depth: _" to 1"
Rate: 8 lb/ac
Soil Temp: 11°C

Pesticides applied: The entire site, with the exception of the time of burnoff and weed control trials, was sprayed with Select at a rate of 0.053 L/ac on June 20. On July 4, the fill area was sprayed with Eclipse (1 L/ac rate) to control a second flush of weeds. The trials were also sprayed using the appropriate herbicide at the recommended rate for each treatment. On August 1, the entire site was sprayed with Decis 5EC (0.060 L/ac) to control diamondback moths.

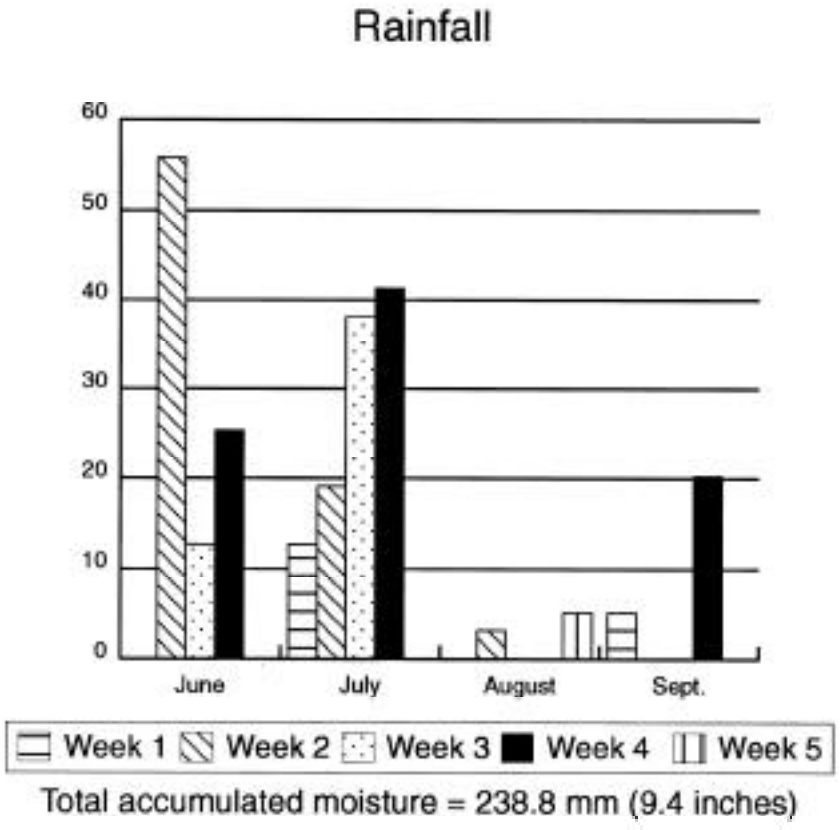
Swathing: Started: August 31 Finished: September 8

Combining: Started: September 29 Finished: October 2

Comments: Dry conditions in early May delayed seeding by seven to ten days. On May 22, soil moisture was good and seeding commenced. Further rains allowed for fast and even germination of the crop. However, a flush of wild oats soon became very competitive with the crop. When the weather permitted, the site was sprayed with the appropriate herbicides allowing the crop to regain the competitive advantage. The rains continued

throughout the growing season, causing some flooding and water stress on the plants. However, the loss in yield was less than expected.

The site managed to escape the first two flushes of diamondback moth larvae that were observed in the area. An aerial application of insecticide controlled the third flush and damage was minimal. Harvest was slightly delayed by rains but was completed within a few days.



Location:	**Rolla, BC**

Co-operator: Gene Vipond

Previous crop: Wheat, CWRS

Soil Test Results: (*Enviro-Test Labs*)

Organic matter content: 6.2 %

Macronutrient Levels: (0-6")

Nitrogen -	26 lb/ac
Phosphorus -	25 lb/ac
Potassium -	204 lb/ac
Sulphur -	16 lb/ac

Micronutrient Levels: (0-6")

Boron -	N/A lb/ac
Copper -	N/A lb/ac
Zinc -	N/A lb/ac
Manganese -	N/A lb/ac
Chlorine -	N/A lb/ac
Iron -	N/A lb/ac

Recommended Fertilizer Applications - (lb/ac of actual nutrient):

Target Yield (bu/ac)	Probability of Precip. (%)	Precip. Required (inches)	Nitrogen	Phosphate	Potash	Sulphur
33	25	8.7	55	25	15	23
26	50	6.5	45	20	15	18
17	75	3.8	22	10	15	13
40	<25	11	86	25	15	23

Target yield: 40 bu/ac

Fertilizer applied: Fall: N - 90 lb/ac P - 0 lb/ac K - 0 lb/ac S - 0 lb/ac
Spring: N - 8 lb/ac P - 25 lb/ac K - 10 lb/ac S - 20 lb/ac

Soil zone: Dark gray

Soil texture: Clay loam

Salinity: Non-saline (0.4 mS/cm)

Tillage operations: In the previous cropping year, the site had been hailed out, forcing the wheat crop to be silaged. A fall application of anhydrous ammonia was applied. There were no tillage operations in the spring prior to seeding.

Seeding method: Seeded with a JD 9450 hoe press drill with 7" spacings.

Date: May 9 - 10 (all trials) and May 24 for late seeding treatment in the canopy manipulation trial.

Depth: _" to 1"

Rate: 8 lb/ac

Soil Temp: 9°C

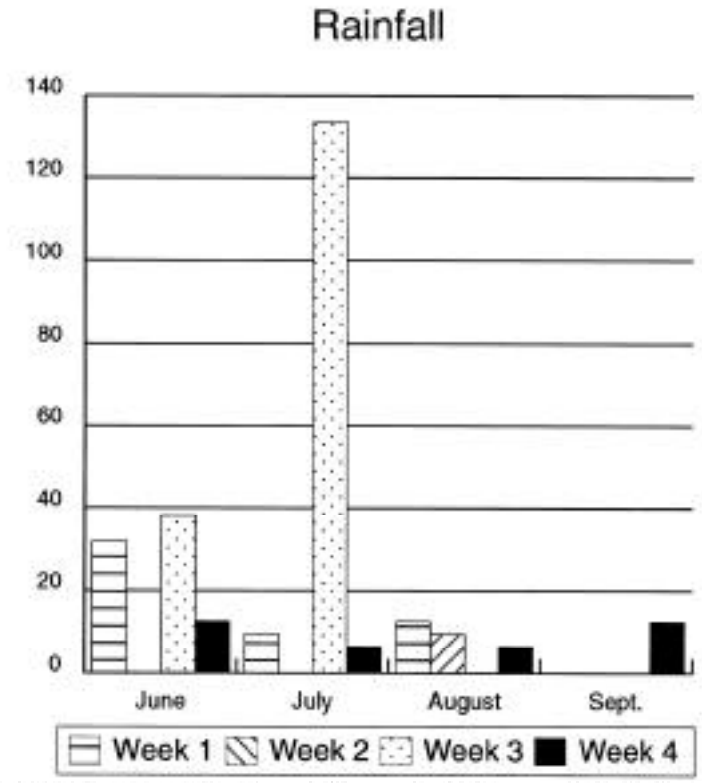
Pesticides applied: The location was not sprayed with any herbicides. This was a result of poor environmental conditions during the proper crop stage for spraying. Also, based on economic factors, the weed pressure was not high enough to make it economically viable to spray. On August 2, the site was sprayed with Decis 5EC (60 mL/ac) to control diamondback moth larvae.

Swathing: Started: September 1 Finished: September 7

Combining: Started: October 4 Finished: October 7

Comments:

Favourable conditions allowed seeding to begin in early May. Although soil temperatures were on the cool side, soil moisture levels were optimum. Due to excellent weed management practices in previous years, weed pressure remained below threshold levels. Therefore, no herbicides were applied. Timely rainfall occurred over the entire growing season. The gentle slope of the topography allowed for adequate moisture drainage when excess occurred. Harvest was slow due to the heavy crop but was rewarding through the yields that resulted.



Total accumulated moisture = 273.1 mm (10.8 inches)

VII SEED PRIMING TRIAL

Objective: To evaluate a novel seed priming system to enhance emergence, maturity and yield of canola.

Background: A method of priming seed has been developed and commercialized by a company named Kamterter II L.L.C. for a number of vegetable crops, including some crucifer vegetables. This priming system has been shown to improve germination and reduce time to germination of these small seeded vegetable crops. Potential benefits for canola may include faster germination rates, which should reduce the incidence of seedling diseases such as rhizoctonia, fusarium and pythium, better crop weed competition, shorter days to maturity and higher yields.

Methodology: This trial was conducted as a subset of the systems trial using Q2 (open pollinated) and InVigor 2663 (hybrid). One objective was to determine whether the response to priming was different between hybrid and open pollinated varieties. The four treatments were primed vs. unprimed Q2 and InVigor 2663. Seed lots were identical for both primed and umprimed lots of each variety. Each treatment was replicated four times. Ratings taken included those used for the systems trials and weekly crop development ratings throughout the growing season. The primed seed was treated with Foundation after priming.

Western Canadian Summary:

CPC Location	Selkirk MB		Naicam SK		Beiseker AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SEED PRIMING TRIAL								
InVigor 2663 - Primed	39.8	N/A	30.8	N/A	21.8	N/A	50.9	N/A
InVigor 2663 - Unprimed	38.2	120	29.7	83	17.0	(18)	51.0	209
Q2 - Primed	35.3	N/A	25.1	N/A	8.8	N/A	47.8	N/A
Q2 - Unprimed	33.6	85	23.9	55	8.3	(89)	50.0	202

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
N/A - not available at time of publication.
Brackets in the CMD reflect a negative value.

SELKIRK

Methodology: The trial was seeded on May 27. All treatments received the same level of crop inputs, with the exception of herbicide applications. The Q2 treatments received a pre-plant incorporated application of Edge granular (9 kg/ac) which required an additional tillage pass. There were some wild oat escapes which required a follow up application of Select (0.065 L/ac). The InVigor 2663 treatments received an application of Liberty (1.35 L/ac) at the 2-leaf stage of the canola.

Observations: Conditions at this site were ideal for emergence, with the unprimed treatments emerging in about one week. Emergence counts at 5, 10 and 21 days after seeding (DAS) indicated that the primed treatments emerged quicker initially. However, by 10 DAS this advantage in plant density had disappeared. Based on the growth stage observations throughout the season, it appeared that the one to two day earlier emergence provided a maturity advantage for the Q2 until late flowering. The advantage in the InVigor 2663 disappeared more quickly, by the late rosette stage.

Results:

SEED PRIMING TRIAL Selkirk, MB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
InVigor 2663 - Primed	104	39.8	N/A	44.3	1097	84	2
InVigor 2663 - Unprimed	100	38.2	120.19	44.5	1097	84	2
Q2 - Primed	105	35.3	N/A	43.1	1084	83	1
Q2 - Unprimed	100	33.6	84.82	43.1	1084	83	2
LSD CV%		2.33 5.3		1.66 1.6			

Note: N/A - not available at time of publication.

Discussion: Statistical analysis revealed no advantages in net yield or oil content due to priming of either of the varieties. Final maturity was also unaffected by priming. The priming did provide a grade advantage for Q2 due to reduced levels of green seed. The downgrading of the other treatments due to green seed was probably a function of hot weather during and following swathing, as well as very little rainfall prior to combining.

NAICAM

Methodology: This trial was seeded on May 4. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Muster Gold II (40 ac/case) was applied for the conventional treatments. A Liberty (1.35 L/ac) and Select (0.025 L/ac) tankmix was applied to the Liberty Link treatments. All herbicides were applied at the 2 to 3-leaf stage.

Observations: Dry growing conditions (see ***Site Information - Comments***) resulted in uneven emergence. Emergence took place on May 22. Emergence was more uniform for the primed treatments compared to the unprimed. Emergence counts indicated an advantage of 20 plants/m^2 for primed compared to unprimed treatments. Length of flowering, pod filling and ripening were very similar. Harvestability ratings were equal.

Results:

SEED PRIMING TRIAL Naicam, SK						
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	105	30.8	N/A	42.1	1055	101
InVigor 2663 - Unprimed	100	29.7	75.65	43.2	1055	101
Q2 - Primed	105	25.1	N/A	43.2	1055	100
Q2 - Unprimed	100	23.9	47.01	42.4	1046	101
LSD CV%		1.52 4.0		1.35 2.2		

Note: N/A - not available at time of publication.

Discussion: All treatments graded number one. Contribution margins reflect differences in yield, herbicide and seed costs. There were no statistical differences in terms of yield or oil content among treatments.

BEISEKER

Methodology: Q2 and InVigor 2663 (primed and unprimed) were seeded on May 15 within the systems trial at a rate of 5 lb/ac. Each of the varieties were sprayed with the appropriate herbicides (see ***Site Description, Beiseker***).

Observations: A rain the day after seeding resulted in rapid emergence. The primed treatments were the first to emerge. Emergence counts conducted 21 days after seeding were higher for the primed treatments. Primed InVigor 2663 averaged 99 plants/m^2, while the unprimed averaged 77 plants/m^2. The Q2 primed averaged 122 plants/m^2, while the unprimed averaged 105 plants/m^2. Weekly growth staging during the growing season indicated that the primed treatments were continually further advanced than the unprimed. At swathing time, seed colour change on the main stem was more uniform throughout the plots in both of the primed treatments. The unprimed treatments had more variability in maturity.

Results:

SEED PRIMING TRIAL Beiseker, AB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Ground Cover (%) June 27**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	128	21.8	N/A	37.5	100	1154	94
InVigor 2663 - Unprimed	100	17.0	(17.88)	37.5	100	1185	96
Q2 - Primed	106	8.8	N/A	37.5	97	1185	96
Q2 - Unprimed	100	8.3	(88.28)	36.9	93	1276	102
LSD CV%		1.91 10.0		0.86 1.6			

Note: N/A - not available at time of publication.
Brackets in the contribution margin reflect a negative value.

Discussion: The primed InVigor 2663 had the highest yield. There were no differences in yield comparing the Q2 primed and unprimed. Oil content was unaffected by priming.

ROLLA

Methodology: This trial was seeded on May 10 at a seeding rate of 8 lb/ac. A fertilizer blend of 8-25-10-20 (actual) was seed-placed for all treatments. On August 2, an aerial application of Decis 5EC was applied at a rate of 60 mL/ac to control diamondback moth larvae. Swathing began on September 1 and finished on September 7. This trial was harvested on October 6.

Observations: Due to the optimal growing conditions that were present during seeding, no differences were observed between the primed and unprimed treatments. However, differences occurred between the two varieties. Both InVigor 2663 treatments had higher emergence counts (132 plants/m^2) compared to the Q2 treatments (112 plants/m^2).

Results:

SEED PRIMING TRIAL Rolla, BC						
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	100	50.9	N/A	43.8	945	112
InVigor 2663 - Unprimed	100	51.0	208.86	43.8	945	111
Q2 - Primed	96	47.8	N/A	45.0	969	117
Q2 - Unprimed	100	50.0	202.10	44.4	969	117
LSD CV%		3.02 5.2		0.72 1.3		

Note: N/A - not available at time of publication.

Discussion: Priming had no significant impact on yield, oil content or maturity within a variety.

VIII VARIETY TRIAL - *B. NAPUS*

Objective: To evaluate agronomic differences between newly registered and recommended varieties in a given area as submitted by the seed trade.

Background: The increase in numbers of new varieties available over the past several years has made the task of choosing a variety for a specific farm challenging. Yield, crop quality and disease resistance are important variety traits to consider in the selection process. However, other agronomic factors such as lodging resistance and harvestability are also important factors. Varieties in the trial are selected and submitted by the seed trade and compared against the check (AC Excel) and the industry standard Q2.

Methodology: The variety trial was a randomized block with four replicates. Identical agronomic practices were used for the entire trial. This included the same tillage, fertilizer, weed control and post-emergent fungicide treatments. Seed treatments included any treatment that was standard for the variety. The entire trial was seeded on the same day. Swathing commenced when seed colour change was 30 to 40 % on the main stem. Harvest was completed under suitable conditions.

Western Canadian Summary:

CPC Location	Selkirk MB		Dauphin MB		Grenfell SK		Naicam SK		N. Battleford SK		Vegreville AB		Lethbridge (Irr) AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
B. NAPUS VARIETY TRIAL																
Nex 500	32.1	54	32.4	47	33.6	61	24.3	51	19.1	4	34.3	126	22.4	(11)	48.5	211
Nex 705	29.4	41	33.3	50	35.6	82	23.7	49	14.6	(28)	32.5	120	20.1	(24)	50.1	233
Nex 715	25.7	13	29.8	23	34.1	68	24.2	50	16.4	(18)	35	135	21.6	(16)	42.6	164
Nex 720	28.6	33	31.3	33	-	-	-	-	-	-	-	-	-	-	-	-
SP Armada	31.3	59	36.0	73	35.9	78	27.0	71	16.6	(11)	35.9	138	24.8	3	52.1	237
IMC 105	-	-	28.3	39	30.7	63	25.2	75	21.9	39	27.5	99	23.6	9	-	-
IMC 207	-	-	-	-	-	-	-	-	-	-	27.7	101	21.9	(4)	-	-
IMC 302	-	-	-	-	29.8	56	-	-	-	-	-	-	-	-	-	-
MilleniUM 03	27.8	66	30.6	70	34.1	104	26.0	93	23.1	58	30.5	135	-	-	-	-
Q2	31.0	45	34.4	59	31.1	42	24.3	50	21	15	35.4	132	24.3	(2)	52.5	236
AC Excel	29.3	43	30.2	39	30.3	46	23.6	54	23.8	43	29.7	101	21.6	(15)	46.4	206

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.
Brackets in the CMD reflect a negative value.

SELKIRK

Methodology: Wet conditions delayed seeding of this trial until May 27, but allowed for shallow seeding (about _"). Edge granular was applied and incorporated

through cultivation and harrowing about one week prior to seeding. Wet conditions following the incorporation reduced the control of the weeds that were present. As a result of this, together with a few escapes, a follow-up application of Select (0.065 L/ac) and Muster (8 g/ac) was required. Two of the four reps also received a half rate of Lontrel (0.085 L/ac) for wild buckwheat suppression. Ronilan EG (0.3 kg/ac) was applied at around 30 % bloom based on high potential for sclerotinia as a result of frequent rainfall.

Observations: Emergence was excellent for all varieties and plant growth was hastened throughout the summer by warm, humid conditions. Some shot holes were observed initially from flea beetles, but the crop quickly outgrew any damage. Counts of diamondback moth larvae approached economic threshold near the middle of July, but heavy rain on July 16 appeared to reduce populations, and they never recovered. Conditions were ideal for sclerotinia during flowering and early podding, but the fungicide was effective in limiting any disease development. Hot, dry weather during and following swathing resulted in rapid dry down of the swaths.

Results:

***B. NAPUS* VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Selkirk, MB**							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Nex 500	110	32.1	53.95	43.1	1114	85	2
SP Armada	107	31.3	58.87	41.9	1051	80	1
Q2	106	31.0	45.31	41.8	1114	85	2
Nex 705*	100	29.4	40.94	44.6	1133	86	2
AC Excel	100	29.3	42.79	43.5	1133	86	2
Nex 720*	98	28.6	33.17	41.4	1133	86	2
MilleniUM 03*	95	27.8	65.89	43.5	1063	81	1
Nex 715*	88	25.7	13.07	41.1	1133	86	2
LSD CV%		2.43 6.8		1.30 2.5			

Note: *Specialty oil varieties.

Discussion: Nex 500 was the only variety to produce significantly higher yield than the check (AC Excel), while Nex 715 was the only one that yielded significantly lower. Nex 705 provided the highest oil content, and was the only one that was significantly higher from AC Excel. Contribution margins reflected yield, seed cost, grade and premiums for specialty oils. MilleniUM 03 and SP Armada were the earliest to mature, and also the only varieties that graded #1. The downgrading of the other varieties was likely a result of the rapid dry down of the swaths, combined with little rainfall prior to harvest.

DAUPHIN

Methodology: Rains and extremely wet soil conditions during early May delayed seeding until May 29. Herbicide applications included Muster Gold II (40 ac/case) and Select (0.09 L/ac). Rovral Flo (0.85 L/ac) was applied at 40 % bloom.

Observations: Emergence was quick although not uniform due to clumping of soil. Flea beetles were present but no significant damage occurred. Wild oats and volunteer wheat were the main weeds, while hemp-nettle and wild mustard were present. Control of wild mustard and hemp-nettle by the Muster Gold II was excellent. However, there were a considerable number of wild oat and volunteer wheat escapes. The number of escapes was high enough to justify the application of Select 10 days later, which worked very well. Conditions were favorable for sclerotinia development, but the fungicide was effective. Very low levels of infection were visible at time of swathing. Dry conditions at swathing and combining allowed for quick drydown but caused some problems with green seed.

Results:

***B. NAPUS* VARIETY TRIAL**
YIELD, ECONOMIC & QUALITY RESULTS
Dauphin, MB

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity	Grade
SP Armada	119	36.0	72.94	42.8	1053	85	1
Q2	114	34.4	58.76	42.1	1087	87	1
Nex 705*	110	33.3	49.62	45.2	1115	89	2
Nex 500	107	32.4	46.88	43.4	1070	86	1
Nex 720*	104	31.3	33.37	43.1	1128	90	2
MilleniUM 03*	101	30.6	70.26	43.4	1040	84	1
AC Excel	100	30.2	39.47	43.1	1070	86	1
Nex 715*	99	29.8	22.97	42.0	1102	88	2
IMC 105*	94	28.3	39.14	42.4	1070	86	1
LSD		1.70		1.92			
CV%		4.4		3.7			

Note: *Specialty oil varieties.

Discussion: A number of varieties yielded significantly better than AC Excel, including SP Armada, Q2, Nex 705 and Nex 500, with only IMC 105 yielding significantly lower. Nex 705 produced significantly higher oil content than the check. Contribution margins reflected yield, seed cost, grade and premiums for specialty oils. Maturity ranged from 84 to 90 days, with MilleniUM 03 being the earliest and Nex 720 the latest. The later maturing Nex 705, Nex 715 and Nex 720 suffered downgrading to a #2,

due to the timing of the hot dry weather at swathing. These varieties did not get the moisture to allow them to cure properly.

GRENFELL

Methodology: Seeding took place on May 17. All varieties were seeded at 6.2 lb/ac. A fertilizer blend of 10-25-10-5 (actual) was seed-placed for all treatments. Excellent moisture and warm soil temperatures resulted in rapid emergence. Weed pressure was moderate to heavy in most areas. 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. A fungicide was applied to control sclerotinia stem rot at 20 to 25 % bloom stage.

Observations: Growing conditions (see ***Site Information - Comments***) were very good throughout the season. Weed control was excellent. Flea beetles caused damage during early plant development. Shot hole damage reached 25 % in some areas. Plants outgrew the damage quickly. IMC 105 and MilleniUM 03 were first to reach 100 % ground cover. Height and standability (lodging) differences were noted among the varieties (see ***Harvestability Trial - Discussion***).

Results:

***B. NAPUS V*ARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Grenfell, SK**							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
SP Armada	118	35.9	78.11	41.6	1043	91	1
Nex 705*	117	35.6	81.52	45.2	1070	94	1
MilleniUM 03*	113	34.1	103.82	43.4	1015	89	1
Nex 715*	113	34.1	68.47	42.4	1057	92	1
Nex 500	111	33.6	30.91	42.9	1070	93	1
Q2	103	31.1	42.48	41.7	1031	90	1
IMC 105*	101	30.7	62.90	40.7	1031	90	1
AC Excel	100	30.3	45.72	41.9	1043	91	1
IMC 302*	98	29.8	56.20	40.9	1057	92	1
LSD CV%		2.59 5.5		0.84 1.4			

Note: *Specialty oil varieties.

Discussion: Yield differences of 2.59 bu/ac or more are significant. Among the ***B. napus*** varieties five varieties yielded significantly greater than the check variety (AC Excel). Only four ***B. napus*** varieties yielded significantly higher than the industry check (Q2). MilleniUM 03 provided the greatest

economic return ($103.82/ac), primarily due to a higher premium paid for its specialty oil profile. All treatments graded #1. Contribution margins reflect differences in yield, seed costs and specific oil premiums.

Days to maturity (30 % seed colour change) ranged from 89 to 94 days. Five varieties varied significantly from AC Excel in terms of oil content. Nex 705 had the highest oil content at 45.2 %.

NAICAM

Methodology: This trial was seeded May 5. All varieties were seeded at 6.2 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. A conventional herbicide, Muster Gold II (40 ac/case), was applied at the 1 to 3-leaf stage.

Observations: Variable growing conditions outlined in ***Comments*** of the Naicam ***Site Information*** section affected the yield potential of the varieties. Weed pressure was variable across all treatments. Control of target weeds was adequate. Moderate crop canopy and dry weather reduced the risk of sclerotinia (***Grow with Canola Manual***, p. 1054). All varieties matured evenly within a given treatment due to the lack of moisture.

Light infestations of blackleg were observed. Flea beetles caused moderate damage during early plant development. Although shot hole damage reached 25 % in a number of treatments, plants recovered. Other insect damage was light.

Results:

B. NAPUS VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Naicam, SK							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
SP Armada	114	27.0	71.16	43.3	1020	99	1
MilleniUM 03*	110	26.0	92.96	45.9	1020	99	1
IMC 105*	107	25.2	75.11	43.3	1020	99	1
Nex 500	103	24.3	51.26	43.9	1055	101	1
Q2	103	24.3	49.71	43.6	1046	100	1
Nex 715*	103	24.2	50.32	43.3	1055	101	1
Nex 705*	100	23.7	48.98	44.9	1063	102	1
AC Excel	100	23.6	53.63	43.4	1046	100	1
LSD CV%		1.26 3.5		0.84 1.3			

Note: *Specialty oil varieties.

Discussion: Yield differences of 1.26 bu/ac or more are significant. Three varieties (Armada, MilleniUM 03 and IMC 105) yielded significantly higher than the check (AC Excel), while two varieties yielded significantly higher than the industry check (Q2). MilleniUM 03 had the highest contribution margin, primarily due to the premium paid for high erucic acid varieties. Contribution margins reflect differences in yield, seed cost and specific oil premiums.

Days to maturity varied by three days (99 to 102). Oil contents also varied significantly, with MilleniUM 03 and Nex 705 providing significantly more oil than AC Excel.

NORTH BATTLEFORD

Methodology: This trial was seeded on May 10. All varieties were sprayed with Muster Gold II (40 ac/case) on June 6. Lontrel (0.23 L/ac or 19.3 ac/jug) was spot sprayed on June 16. A value of $15.81/ac was used for additional herbicide in calculating contribution margins for the varieties.

Observations: See ***Site Information - Comments*** for growing conditions at the site. There were no noticeable differences in stand establishment and growth early in the season. The hot, dry conditions experienced throughout the growing season affected the yield potential of all varieties. The later maturing varieties appeared to be affected the most. These varieties were the lowest yielding, latest to mature and took the longest to clear green seed.

Results:

B. NAPUS VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS North Battleford, SK							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
AC Excel	100	23.8	42.69	42.8	1063	99	1
MilleniUM 03*	97	23.1	57.98	44.3	1036	97	1
IMC 105*	92	21.9	38.49	41.9	1048	98	1
Q2	88	21.0	15.43	42.2	1063	99	1
Nex 500	80	19.1	4.10	41.8	1063	99	1
SP Armada	70	16.6	(11.15)	40.9	1077	100	1
Nex 715*	69	16.4	(17.54)	43.5	1133	104	1
Nex 705*	61	14.6	(28.31)	43.8	1133	104	1
LSD CV%		1.39 5.8		0.97 1.9			

Note: *Specialty oil varieties.
Brackets in the contribution margin reflect a negative value.

Discussion: AC Excel was significantly higher yielding than all other varieties except for MilleniUM 03. Maturity ranged from 97 days for MilleniUM 03 to 104 days for Nex 705 and Nex 715. MilleniUM 03 had significantly higher oil content than all varieties except for Nex 705 and Nex 715. Differences in contribution margins reflect differences in yield, seed costs and speciality oil premiums paid for some varieties.

VEGREVILLE

Methodology: This trial was seeded on May 9. All varieties were sprayed with Select (40 ac/case) on June 6. They were sprayed again on June 20 with Fusion (20 ac/case) to control a second flush of volunteer barley.

Observations: See ***Site Information - Comments*** for growing conditions at the site. Stand establishment was similar for all varieties. Varieties varied only slightly as they developed throughout the growing season.

Results:

B. NAPUS VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Vegreville, AB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
SP Armada	121	35.9	138.03	44.7	1145	110	1
Q2	119	35.4	131.54	45.1	1157	111	1
Nex 715*	118	35.0	135.29	47.1	1217	117	1
Nex 500	115	34.3	125.61	45.1	1145	110	1
Nex 705*	109	32.5	119.48	47.3	1186	114	1
MilleniUM 03*	103	30.5	135.35	45.5	1115	107	1
AC Excel	100	29.7	101.43	43.9	1115	107	1
IMC 207*	93	27.7	100.55	44.8	1124	108	1
IMC 105*	93	27.5	99.06	41.5	1002	106	1
LSD CV%		1.73 4.5		1.02 1.9			

Note: *Specialty oil varieties.

Discussion: SP Armada was significantly higher yielding than all other varieties except for Q2, Nex 715 and Nex 500. Nex 715 and Nex 705 had significantly higher oil content than all other varieties. Maturity ranged from 106 days for IMC 105 to 117 days for Nex 715. Differences in contribution margins reflect differences in yield, seed costs and speciality oil premiums paid for some varieties.

BEISEKER

Methodology: Refer to ***Site Description***.

Observations: A rain after seeding resulted in rapid emergence. Lack of subsurface moisture combined with hot, windy weather in June resulted in stressed plants. Plants were stunted and spindly and never reached 100 % ground cover. The average height of the varieties was 26". The lack of moisture combined with heat and windy conditions caused blossom blast. Towards the end of flowering a 14 mm rain brought on some second growth (new flowers) which resulted in variability in maturity at swathing.

Results: Due to the high coefficient of variation for this trial, which was caused by environmental conditions, no accurate conclusions could be made. Therefore, the results have not been reported.

LETHBRIDGE (IRRIGATION)

Methodology: This trial was seeded on May 9 at a rate of 4 lb/ac.

Observations: As a result of seeding into dry soil, emergence did not occur until after an application of irrigation water. Emergence was even across all treatments. Restricted water access (see ***Site Description***) affected plant development. Varieties were shorter than expected. Hot, windy conditions during flower caused some blossom blast. Cabbage seed pod weevil and lygus bugs were below threshold levels. Diamondback moth larvae were above threshold levels and were sprayed to control them. Maturity was rapid.

Results:

***B. NAPUS* VARIETY TRIAL**
YIELD, ECONOMIC & QUALITY RESULTS
Lethbridge, AB (Irrigation)

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Ground Cover % (June 14)	Growing Degree Days	Days To Maturity	Grade
SP Armada	114	24.8	3.12	40.5	86	1059	96	2
Q2	113	24.3	(2.33)	41.4	85	1059	96	2
IMC 105*	109	23.6	8.59	41.0	94	1059	96	2
Nex 500	104	22.4	(10.58)	41.3	92	1073	97	2
IMC 207*	100	21.9	(3.93)	41.5	100	1046	95	2
AC Excel	100	21.6	(14.98)	41.3	93	1073	97	2
Nex 715*	100	21.6	(15.58)	39.0	89	1073	97	2
Nex 705*	98	20.1	(23.38)	40.9	98	1059	96	2
LSD		2.85		0.69				
CV%		10.4		1.4				

Note: *Specialty oil varieties.
Brackets in the contribution margin reflect a negative value.

Discussion: SP Armada had the highest yield among the varieties. IMC 105 had the highest contribution margin. Q2 had the highest oil content. All varieties graded #2 as a result of extremely hot and dry conditions after swathing. Water rationing did not allow sufficient irrigation water to assist in curing the swath.

RYCROFT

Methodology: Seeding was delayed until favourable moisture conditions existed. The trial was seeded on May 22, when soil moisture levels increased. A seeding rate of 8 lb/ac was used for all treatments. The site received a spring broadcast application of fertilizer (60-20-20-15 actual) which was incorporated into the soil using harrows. A dense stand of wild oats

resulted in the decision to spray the entire site with Select (53 mL/ac). To control the weeds that still remained, Muster Gold II (Muster @ 8 g/ac and Assure II @ 200 mL/ac) was used.

Observations: Emergence was even and fairly rapid as a result of a rainfall that came shortly after seeding. However, the continuation of the rain for three weeks caused some flooding in the trial. The excess moisture also caused the plants to show some signs of moisture stress. These signs included spindly plants that had poor ground cover percentages. Weed pressures were also very high from the time of crop emergence. Wild oat was the major weed present. Due to unfavourable spraying conditions, the wild oats reached the 6-leaf stage before they were sprayed. When the weather permitted the trial was sprayed and weed control was adequate. Rainfall continued throughout the remainder of the growing season. An infestation of diamondback moth larvae was sprayed on August 1 with Decis 5EC (60 mL/ac). Swathing stretched over a three-day span and harvest was completed in one day on October 2.

Results: Due to the high coefficient of variation for this trial, no accurate conclusions could be made. Therefore, the results have not been reported.

ROLLA

Methodology: The trial was seeded on May 10 into excellent soil moisture levels using a seeding rate of 8 lb/ac. Due to low weed pressures and unfavourable environmental conditions at the proper crop stage for spraying, no herbicides were applied to this trial. Swathing was performed on two different dates, September 1 and September 7. The trial was harvested on October 6.

Observations: Optimum growing conditions resulted in quick emergence and exceptional stand establishment. Weed pressures were extremely low and the trial was not sprayed with any herbicides. A high population of diamondback moth larvae appeared in late July and on August 2 Decis 5EC (60 mL/ac) was applied by aerial application. Due to the high amount of moisture that was received throughout the growing season, the crop seemed to take a long time to mature.

Results:

B. NAPUS VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Rolla, BC							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Q2	113	52.5	235.71	43.5	969	117	1
SP Armada	112	52.1	237.17	42.0	945	113	1
Nex 705*	108	50.1	232.57	46.0	969	117	1
Nex 500	105	48.5	210.71	44.0	965	116	1
AC Excel	100	46.4	205.68	42.0	952	114	1
Nex 715*	92	42.6	164.16	41.3	965	114	2
LSD CV%		3.44 5.7		1.34 2.5			

Note: *Specialty oil varieties.

Discussion:

Yield differences of 3.44 bu/ac or more are significant. Q2, SP Armada and Nex 705 all yielded significantly higher than the check (AC Excel). Oil content was significantly higher in Q2, Nex 500 and Nex 705 as compared to the check.

Contribution margins are a reflection of yield, grade, seed costs and specialty oil premiums paid for some varieties. Even with a $0.45/bu premium for Nex 715, the contribution margin still remained the lowest at $164.16/ac. This was a result of having the lowest yield and being graded #2.

IX HARVESTABILITY TRIAL

Objective: To compare the harvestability of varieties entered in the variety trials.

Background: A number of varieties have very similar yield and quality traits. In choosing a variety, a grower needs to consider additional traits like lodging and harvestability. Harvestability is the measurement of swathing and combining ease. Currently, there is no meaningful scientific measurement for harvestability. Therefore, a standardized criteria for a subjective measurement was used.

Methodology: Harvestability was evaluated as swathing and combining were completed on the ***B. napus*** variety and system comparison trials. Swathing and combining were each evaluated on a scale of one to five with AC Excel (the check) being three. The following criteria were considered; lodging, height, straw stiffness, straw strength, stand uniformity, swath fluffiness (pod dispersion), tendency to clump, flowability, feeding and speed of operation.

The following ratings are subjective. The machine operator, crop conditions, weather and time of day can affect the harvestability of a variety.

Ratings:
1 = much better than check
2 = better than check
3 = check
4 = worse than check
5 = much worse than check

Western Canadian Summary:

Harvestability is a very subjective evaluation and there are often differences in the ease of operation experienced by the operation of the equipment. Factors in swathing include the uniformity of stand, plant height, straw stiffness and lodging. When combining, a uniform stand usually translates into an even swath that feeds smoothly. Any difficulties when swathing are usually magnified at combining time. Stressful environmental conditions minimized the differences in harvestability among the varieties at several locations.

SELKIRK

Methodology: All plots were swathed with an 18 ft Versatile 400 swather equipped with a UII pick-up reel. Three reps were combined with a John Deere 6600 Turbo, while the fourth rep was combined with an IHC 1460 combine.

Observation: Heavy rains during late flowering contributed to moderate to severe lodging in the plots. The combination of this lodging and greater

amounts of plant material for some of the varieties led to poorer swathability ratings. With regard to combining ease, the varieties with less plant material and less clumping of the swath were rated the highest.

Results:

HARVESTABILITY TRIAL
***B. napus* Varieties**
Selkirk, MB

Variety	Lodging Ratio	Swathability Rating	Combinability Rating
A98-13NR	0.89	1	3
AC Excel	0.64	3	3
Admire	0.87	1	3
InVigor 2573	0.71	3	3
InVigor 2663	0.82	3	3
Kelsey	0.78	2	3
LBD 561RR	0.88	1	3
LBD 799RR-S	0.90	1	3
MilleniUM 03	0.70	3	3
Nex 500	0.76	2	3
Nex 705	0.80	2	3
Nex 715	0.75	2	3
Nex 720	0.77	2	3
Prairie 499RR	0.83	1	3
Q2	0.80	2	3
Renegade BX	0.81	3	3
SP Armada	0.87	1	2

Discussion: In terms of lodging ratio, none of the varieties were worse than AC Excel, and this was also true for swathability and combinablility. The greatest differences were in the swathability, with six varieties performing better than the check (AC Excel), and six performing much better than the check. Only SP Armada performed better in terms of combinability.

DAUPHIN

Methodology: All plots were swathed with an 18 ft Versatile swather, equipped with a MacDon pickup reel and lifter guards. Combining was done with a JD 7700.

Observation: At swathing, the entire crop was lodged towards the east because of several strong westerly winds during the summer. The plots were situated so that they had to be swathed north and south. This

complicated swathing as sometimes the crop would fold under the cutting bar and then drag, resulting in some piles. The taller varieties were a little easier to swath because it was easier to get the cutter bar under the canopy. However, because of the extra height, there was more biomass to put through the swather. Differences in combinability ratings were due mainly to the amount of piles made at swathing.

Results:

HARVESTABILITY TRIAL
***B. napus* Varieties**
Dauphin, MB

Variety	Lodging Ratio	Swathability Rating	Combinability Rating
A98-13NR	0.74	4	3
AC Excel	0.43	3	3
Admire	0.64	4	3
IMC 105	0.49	4	3
IMC 106 RR	0.64	4	3
InVigor 2573	0.63	3	3
InVigor 2663	0.60	4	3
Kelsey	0.60	4	3
LBD 449RR	0.58	3	3
LBD 799RR-S	0.83	3	3
MilleniUM 03	0.46	3	2
Nex 500	0.58	3	3
Nex 705	0.61	3	3
Nex 715	0.62	4	3
Nex 720	0.58	3	3
Prairie 499RR	0.75	4	3
Q2	0.52	3	3
SP Armada	0.68	3	3

Discussion: All the varieties had a better lodging ratio than the check AC Excel. There were eight varieties that had a poorer swathability rating and none that were rated better than AC Excel. There were not many differences in the combinability ratings as MilleniUM 03 was the only variety rated better than the check and none were rated worse.

GRENFELL

Methodology: The treatments were swathed with a 20 ft Versatile 4400 equipped with a pick-up reel and harvested with a New Holland TR 85 combine.

Observation: Differences in plant characteristics such as height, straw stiffness, stem strength, branching and initial podding height affected harvestability.

Varieties that were tall, stiffer stemmed or more severely lodged were considerably more difficult to swath. Low-lying areas had more plant material. Some varieties were more severely lodged than others.

Results:

HARVESTABILITY TRIAL *B. napus* Varieties Grenfell, SK			
Variety	**Lodging Ratio**	**Swathability Rating**	**Combinability Rating**
45A51	0.90	3	3
A98-13NR	0.98	3	3
AC Excel	0.92	3	3
Admire	0.93	2	2
Conquest	0.98	4	4
DKL34-55	0.94	3	4
Hyola 440	0.90	3	3
IMC 105	0.80	3	3
IMC 106 RR	0.91	3	3
IMC 206 RR	0.94	3	3
IMC 302	0.84	3	3
InVigor 2573	0.94	4	5
InVigor 2663	0.96	4	4
LBD 561RR	0.96	2	2
LBD 799RR-S	0.95	2	2
MilleniUM 03	0.64	4	3
Nex 500	0.82	3	3
Nex 705	0.83	2	3
Nex 710	0.89	3	3
Nex 715	0.82	4	4
Prairie 499RR	0.88	3	3
Q2	0.90	3	3
Renegade BX	0.92	3	3
SP Armada	0.89	4	3

Discussion:

There were notable differences in the harvestability of a number of the ***B. napus*** varieties. The severity of the lodging ranged from 0.64 to 0.98, where 1.00 would indicate no lodging. Plant height, stem stiffness and lodging directly related to swathability ratings. MilleniUM 03 was badly lodged. This resulted in operating the swather table and reel on or near to the ground, making swathing more difficult. Taller and stiffer stemmed varieties were considerably harder to swath. They had a tendency to hang up in the throat of the swather. Shorter less lodged varieties were easier to swath. Higher combinability ratings (1 and 2) were related to

ease of thrashing and speed of operation. Poor flowability and reduced speed of operation, due to clumping, resulted in lower (4 and 5) combinability ratings.

NAICAM

Methodology: Treatments were swathed with an 18 ft Co-op swather equipped with a bat reel, and harvested with a New Holland TR 85 combine.

Observation: Differences in plant characteristics such as height, straw stiffness, initial podding height and uniformity of the stand did not vary greatly due to moderate plant canopy and environmental conditions outlined in the ***Site Information - Comments***.

Results:

HARVESTABILITY TRIAL
***B. napus* Varieties**
Naicam, SK

Variety	Lodging Ratio	Swathability Rating	Combinability Rating
46A76	0.98	3	3
A98-13NR	0.99	3	3
AC Excel	0.97	3	3
Admire	0.98	3	3
Conquest	0.99	3	3
DKL34-55	0.98	3	3
IMC 105	0.96	3	3
IMC 106 RR	0.94	3	3
InVigor 2573	0.98	3	3
InVigor 2663	0.95	3	3
LBD 449RR	0.98	3	3
LBD 561RR	0.98	3	3
LBD 799RR-S	0.99	3	3
MilleniUM 03	0.89	3	3
Nex 500	0.92	3	3
Nex 705	0.92	3	3
Nex 715	0.92	3	3
Prairie 499RR	0.98	3	3
Q2	0.97	3	3
SP Armada	0.95	3	3

Discussion: Lodging ratios varied only slightly. There were no notable differences in the harvestability of the ***B. napus*** varieties.

NORTH BATTLEFORD

Observation: Growth of varieties in this trial was limited due to environmental conditions experienced at the site (see ***Site Information - Comments***).

Results: No differences in lodging or harvestability were noticed among the varieties.

VEGREVILLE

Methodology: All varieties were swathed with a 20 ft Versatile 400 swather equipped with a pickup reel. They were all combined with a John Deere Turbo 7700 combine.

Observation: All varieties were lodged across the direction of the plots. Some varieties were lodged more than others making swathing more difficult for some treatments. None of the varieties tested grew very tall and plant height did not limit ease of swathing any varieties. Combining speed varied slightly among the varieties.

Results:

HARVESTABILITY TRIAL *B. napus* Varieties Vegreville, AB			
Variety	**Lodging Ratio**	**Swathability Rating**	**Combinability Rating**
***B. napus* Trial**			
AC Excel	0.84	3	3
IMC 105	0.78	3	3
IMC 207	0.75	4	3
MilleniUM 03	0.83	4	3
Nex 500	0.86	3	3
Nex 705	0.89	3	3
Nex 715	0.83	3	3
Q2	0.82	3	3
SP Armada	0.90	3	3
Systems Comparison Trial			
A98-13NR	0.84	3	4
Admire	0.85	3	3
IMC 106 RR	0.86	4	3
IMC 206 RR	0.76	4	2
InVigor 2573	0.83	2	3
InVigor 2663	0.83	2	3
Kelsey	0.84	3	4
LBD 449RR	0.78	4	2
LBD 561RR	0.83	2	3
LBD 799RR-S	0.85	2	3
Prairie 499RR	0.79	3	3

Discussion: Differences in harvestability among the varieties were slight. Swathability differences were due to differences in crop height and lodging. Varieties that were more difficult to swath were shorter and lodged more than the other varieties. Differences in combinability were due to slight differences in combine speed.

BEISEKER

Observation: Growth of varieties in this trial was limited due to environmental conditions experienced at the site (see ***Site Information - Comments***).

Results: No differences in lodging or harvestability were noticed among the varieties.

LETHBRIDGE (IRRIGATION)

Observation: Growth of varieties in this trial was limited due to environmental conditions experienced at the site (see ***Site Information - Comments***).

Results: No differences in lodging or harvestability were noticed among the varieties.

RYCROFT

Methodology: This trial was harvested using an 18 ft Versatile swather equipped with a pick-up reel and a 1440 IH combine.

Observation: There were no major differences observed among varieties during harvest operations. Any differences were a direct result of speed of operation.

Results:

HARVESTABILITY TRIAL
***B. napus* Varieties**
Rycroft, AB

Variety	Lodging Ratio	Swathability Rating	Combinability Rating
A98-13NR	0.76	2	3
AC Excel	0.77	3	3
IMC 105	0.78	2	4
IMC 106 RR	0.84	3	2
InVigor 2573	0.78	3	4
InVigor 2663	0.79	3	3
Kelsey	0.62	3	3
LBD 449RR	0.80	3	2
Nex 500	0.82	2	3
Nex 705	0.85	3	2
Nex 715	0.73	3	3
Prairie 499RR	0.79	2	3
Q2	0.72	3	3
SP Armada	0.85	3	3

Discussion: Lodging had no direct impact on the ease of swathing. Harvestability differences were related to the speed of operation.

ROLLA

Methodology: The trial was harvested using a 21 ft Premier swather equipped with a pick-up reel and a 1440 IH combine.

Observation: There were no major differences observed among the varieties during harvest.

Results:

HARVESTABILITY TRIAL
***B. napus* Varieties**
Rolla, BC

Variety	Lodging Ratio	Swathability Rating	Combinability Rating
A98-13NR	0.76	2	3
AC Excel	0.69	3	3
IMC 106 RR	0.77	2	3
InVigor 2573	0.84	3	3
InVigor 2663	0.87	3	3
Kelsey	0.77	2	3
Nex 500	0.74	3	3
Nex 705	0.77	3	3
Nex 715	0.76	2	3
Q2	0.75	3	4
SP Armada	0.92	2	3

Discussion: Lodging did not have an effect on the ease of swathing. Any differences seen in the harvestability were due to the speed of operation.

X PRE-SEEDING BURNOFF TIMING TRIAL

Objective: To investigate the appropriate timing for pre-seeding burnoff using glyphosate prior to seeding a specialty oil (conventional herbicide) canola variety.

Background: A pre-seeding application of glyphosate has become a relatively standard practice for growers in reduced tillage situations. The addition of a pre-seed or pre-emergent burnoff may also be an advantage when growing conventional herbicide canola varieties for controlling weeds that are competing with the crop near the time of emergence. The timing of the pre-emergent burnoff may be critical in extracting the most benefit from the application.

Methodology: This trial consisted of the following treatments:

1. Burnoff with glyphosate 5-7 days before seeding (DBS)
2. Burnoff with glyphosate _-1 day before seeding (DBS)
3. Burnoff with glyphosate 3-5 days after seeding (DAS)
4. Check - no burnoff

The herbicide used was Vantage Plus, at 0.5 to 1 L/ac depending on weeds present (thistle, quackgrass or dandelion required 1 L/ac). The variety used was Nex 710. Weeds were recorded at time of burnoff and in-crop herbicide applications (size, number).

Western Canadian Summary:

CPC Location	Selkirk MB		Grenfell SK		Vegreville AB		Rycroft AB	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
PRE-SEEDING BURNOFF TIMING TRIAL								
Burnoff 5-7 Days before seeding	38.4	105	33.0	48	35.4	133	29.0	87
Burnoff 0.5-1 Day before seeding	37.8	91	36.3	72	35.3	132	28.9	86
Burnoff 3-5 Days before seeding	36.9	85	37.8	80	35.1	131	-	-
Check - No burnoff	30.1	44	29.5	38	35.1	138	29.4	98

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.

SELKIRK

Methodology: The initial burnoff application treatment was actually applied nine days prior to the seeding date of May 27, as a result of wet conditions. The second burnoff timing was applied in the evening prior to seeding the following morning. The final burnoff treatment was made four days after seeding. The Vantage Plus was applied at a rate of 0.6 L/ac based on the weeds present. The trial was not cultivated following the broadcast fertilizer application, but was harrowed. In-crop herbicide applications

included Select (0.08 L/ac), Muster (8 g/ac) and Lontrel (0.17 L/ac) for all treatments at about the 2-leaf stage of the crop. All other management was as described in the ***Site Information***.

Observations: The burnoff applications prior to seeding appeared to be quite effective in removing the weeds present, but the application four days after seeding received a heavy rain shower about 45 minutes after spraying was completed. Efficacy was somewhat reduced in patches where the weeds had been more advanced. Wild oats provided the greatest in-crop competition, but wild mustard, stinkweed, lamb's quarters and wild buckwheat were also present. In-crop herbicide applications were effective, but it was evident that the check treatment suffered from greater weed competition. The wild oats in particular were very dense in patches of these plots, and quite advanced (tillering). While the check was somewhat stunted compared to the other treatments at swathing, there was no difference in maturity observed.

Results: (a) Weed data

PRE-SEEDING BURNOFF TIMING TRIAL
Selkirk, MB

Treatment	Spray Date	Broadleaf Weeds #/m^2 (stage)	Grassy Weeds #/m^2 (stage)
Burnoff 5-7 DBS	May 18	5-10 (1-2 leaf)	100-150 (1-2 leaf)
Burnoff _-1 DBS	May 26	15-25 (3-5 leaf)	200-300 (3-5 leaf)
Burnoff 3-5 DAS	May 31	20-30 (4-6 leaf)	200-300 (4-6 leaf)
Check - no burnoff	N/A	N/A	N/A

Note: N/A - not applicable

Results: (b) Yield and quality data

PRE-SEEDING BURNOFF TIMING TRIAL Selkirk, MB					
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Grade**	**Contribution Margin ($/ac)**
Burnoff 5-7 DBS	1.4	38.4	45.7	1	105.37
Burnoff _-1 DBS	1.3	37.8	45.8	2	90.84
Burnoff 3-5 DAS	1.3	36.9	45.8	2	84.61
Check - no burnoff	1.4	30.1	45.7	2	43.59
LSD CV%	0.22 12.8	1.78 3.8	0.58 1.0		

Discussion: All burnoff applications improved yield as compared to the check, but the timing of the application had no significant impact. Dockage and oil content were similar for all treatments. Three of the four treatments were downgraded based on the cutoff of 2 % green seed for a grade of #1, but it is important to note that the range in green seed among the treatments was relatively small (1.8 to 2.6 %). Contribution margins reflected the yield, herbicide cost and grade.

GRENFELL

Methodology: Seeding took place on May 17. The conventional specialty oil variety Nex 710 was seeded at 6.2 lb/ac. 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. A fungicide was applied to control sclerotinia stem rot at the 20 to 25 % bloom stage.

Observations: Growing conditions (see ***Site Information - Comments***) were very good. 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. Weed pressure was most severe in the check treatment at time of seeding. Periodic showers resulted in a second flush of volunteer barley in the 5 to 7 DBS treatment. In-crop weed control was good. Flea beetles caused some damage during early plant development. Shot hole damage reached 25 % in some areas. Plants outgrew damage quickly because of excellent growing conditions. Canada thistle re-growth at swathing was more prevalent in the check and 5 to 7 DBS treatments.

Results: (a) Emergence and weed data

PRE-SEEDING BURNOFF TIMING TRIAL Grenfell, SK				
Treatment	**Emergence Counts (plants/m^2)**	**Spray Date**	**Broadleaf Weeds (#/m^2)**	**Grassy Weeds (#/m^2)**
Burnoff 5-7 DBS	121	May 9	22	52
Burnoff _-1 DBS	118	May 16	29	54
Burnoff 3-5 DAS	114	May 21	25	49
Check - no burnoff	116	N/A	30	72

Note: N/A - not applicable

Results: (b) Yield and quality data

PRE-SEEDING BURNOFF TIMING TRIAL Grenfell, SK				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Burnoff 5-7 DBS	2.9	33.0	44.5	47.95
Burnoff _-1 DBS	2.8	36.6	45.4	72.25
Burnoff 3-5 DAS	2.6	37.8	45.7	80.35
Check - no burnoff	3.7	29.5	45.3	37.63
LSD CV%		3.78 7.0	1.96 2.7	

Discussion: Yield differences of 3.78 bu/ac or more are significant. Only the _ -1 day before and 3 to 5 days after seeding burnoff treatments yielded significantly higher than the check. Contribution margins reflect differences in yield and costs associated with applying glyphosate.

Increased weed pressure contributed to the higher dockage and reduced yield and contribution margin of the check treatment.

VEGREVILLE

Methodology: This trial was seeded on May 12. All burnoff treatments were sprayed with Vantage Plus (0.7 L/ac) at their respective intervals. Post emergent weed control consisted of Select (40 ac/case) on June 6 and Fusion (20 ac/case) on June 20.

Observation: Due to the dry conditions during seeding (***Site Information - Comments***), there were very few weeds present during each burnoff treatment. There were no differences among treatments throughout the growing season.

Results: (a) Weed data

PRE-SEEDING BURNOFF TIMING TRIAL Vegreville, AB			
Treatment	**Spray Date**	**Broadleaf Weeds (#/m^2)**	**Grassy Weeds (#/m^2)**
Burnoff 5-7 DBS	May 7	0	0
Burnoff _-1 DBS	May 11	0	0
Burnoff 3-5 DAS	May 15	0	1
Check - no burnoff	N/A	0	1

Note: N/A - not applicable

Results: (b) Yield and quality data

PRE-SEEDING BURNOFF TIMING TRIAL Vegreville, AB				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Burnoff 5-7 DBS	2.9	35.4	45.8	133.23
Burnoff _-1 DBS	2.9	35.3	46.5	132.10
Burnoff 3-5 DAS	2.8	35.1	46.4	131.07
Check - no burnoff	3.3	35.1	45.8	138.20
LSD CV%		2.40 1.1	0.95 1.6	

Discussion: There were no significant differences in yield or oil content among treatments. The check treatment had the highest contribution margin because there was no added cost of having a burnoff treatment. Results from this trial at this site display the importance of walking fields to determine whether or not a burnoff is needed.

RYCROFT

Methodology: This trial was seeded into good soil moisture conditions on May 23 at a rate of 8 lb/ac. Harrows were used to incorporate a fertilizer blend (60-20-20-15 actual) that was spring broadcast. Vantage Plus (0.5 L/ac rate) was used as the burnoff herbicide. Muster Gold II (Muster @ 8 g/ac and Assure II @ 0.2 L/ac) was sprayed on June 30. The whole trial was swathed on September 6 and harvested on October 2.

Observations: Due to unfavourable spraying conditions after seeding, the 3 to 5 days after seeding treatment could not be included at this site. Very few weeds were present at the time of burnoff. Most weeds emerged

approximately one to two weeks after seeding. Adequate rainfall continued throughout the rest of the growing season.

Results: (a) Weed data

PRE-SEEDING BURNOFF TIMING TRIAL Rycroft, AB			
Treatment	**Spray Date**	**Broadleaf Weeds (#/m^2)**	**Grassy Weeds (#/m^2)**
Burnoff 5-7 DBS	May 16	0	0
Burnoff _-1 DBS	May 22	24	4
Check - no burnoff	N/A	0	0

Note: N/A - not applicable

Results: (b) Yield and quality data

PRE-SEEDING BURNOFF TIMING TRIAL Rycroft, AB				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Burnoff 5-7 DBS	8.6	29.0	47.1	87.15
Burnoff _-1 DBS	9.0	28.9	46.4	86.43
Check - no burnoff	9.4	29.4	46.0	98.25
LSD CV%		2.19 5.5	1.28 2.0	

Discussion: Due to minimal weed emergence at the time of burnoff, no significant differences were noted between each treatment. Contribution margins reflect differences in yield and herbicide costs.

XI SEED TREATMENT TRIAL

Objective: To evaluate the impact of new seed treatments on seedling diseases and insect control for canola as it relates to yield, quality and contribution margins.

Background: The most widespread problem of canola production is stand establishment. Poor stand establishment may be caused by a seedling disease complex including pathogens such as ***Rhzioctonia solani***, along with ***Fusarium*** and ***Pythium*** species. Seed treatment fungicides are used extensively in canola production as a first line of defence to control seedling diseases. In addition, some new insecticide products are being evaluated to determine their effectiveness for flea beetle control.

Methodology: The seed treatment trial included the following treatments:

A) Foundation (check)
B) Foundation Lite (check)
C) Foundation Premium
D) Foundation Plus
E) Gaucho Platinum
F) Titan FL
G) Helix
H) Helix Xtra

The following flea beetle damage guide was used to estimate the percentage of (shot hole) damage to leaf area using the following scale:

0 = No leaf damage
1 = Less than 10 % leaf damage
2 = 11 to 25 % leaf damage
3 = 26 to 50 % leaf damage
4 = 51 to 75 % leaf damage
5 = 76 to 100 % leaf damage

For assistance in estimating percent damage use the Flea Beetle Damage Guide (BASF).

All seed treatments were applied to the same seed lot of the Roundup Ready variety DKL34-55. All other agronomic practices remained the same.

Western Canadian Summary:

CPC Location	Dauphin MB		Grenfell SK		Naicam SK		Lethbridge (Irr) AB	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SEED TREATMENT TRIAL								
Foundation (check)	34.4	71	33.2	78	28.8	71	30.0	53
Foundation Lite (check)	32.7	61	29.9	57	26.6	57	24.0	13
Foundation Premium	34.0	N/A	34.5	N/A	31.0	N/A	29.9	N/A
Foundation Premium Plus	32.7	N/A	36.0	N/A	30.2	N/A	28.7	N/A
Gaucho Platinum	35.0	64	35.3	82	30.4	72	30.5	58
Titan FL	33.8	N/A	35.8	N/A	30.1	N/A	30.5	N/A
Helix	33.0	57	34.4	82	30.7	80	30.0	50
Helix Xtra	34.0	57	36.8	92	31.0	75	31.7	57

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
N/A - At time of writing, no cost figures were available for these seed treatments.
Trial sites were chosen in areas where high numbers of flea beetles were expected. The Foundation Lite (fungicide only) treatments would normally have been sprayed with a foliar insecticide for flea beetle control. In these trials, a foliar insecticide was not applied.

DAUPHIN

Methodology: Rains and extremely wet soil conditions during early May delayed seeding until May 29. The in-crop herbicide application included Roundup Transorb at 0.5 L/ac. All other agronomic practices were performed as described in the ***Site Information***.

Observations: Emergence was quick due to adequate soil moisture and warm temperatures. No disease symptoms were observed at the seedling stage. There was flea beetle pressure, but significant damage was done only to the Foundation Lite treatment because no insecticide component was present. However, damage was limited to loss of leaf area, as the plant population remained the same as the other treatments. The other treatments had a few shot holes, but little damage was done to affect total leaf area. Throughout the growing season, the Foundation Lite treatment was several days behind in growth compared to the rest of the trial. At swathing, the Foundation Lite treatment was one to two days behind in maturity. The population of lygus bugs was very low (0.2-0.3 per sweep). Flea beetles were present at swathing which raises concerns for high flea beetle populations next spring.

Results:

Table 1. Average number of emerged (plants/m^2)

Treatment	7 DAE	14 DAE	21 DAE
Foundation (check)	118	145	98
Foundation Lite (check)	112	139	100
Foundation Premium	123	140	113
Foundation Premium Plus	122	140	102
Gaucho Platinum	125	134	104
Titan FL	120	143	106
Helix	135	141	100
Helix Xtra	124	156	110

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% of leaf area damaged)

Treatment	7 DAE	14 DAE	21 DAE
Foundation (check)	0	0	0
Foundation Lite (check)	26-50	1-10	0
Foundation Premium	0	0	0
Foundation Premium Plus	0	0	0
Gaucho Platinum	0	0	0
Titan FL	0	0	0
Helix	0	0	0
Helix Xtra	0	0	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Dauphin, MB			
Treatment	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**
Foundation (check)	34.4	71.30	43.1
Foundation Lite (check)	32.7	60.50	43.2
Foundation Premium	34.0	N/A	43.3
Foundation Premium Plus	32.7	N/A	42.9
Gaucho Platinum	35.0	64.40	43.8
Titan FL	33.8	N/A	43.4
Helix	33.0	57.32	43.9
Helix Xtra	34.0	57.10	43.5
LSD	1.71		0.50
CV%	4.2		1.0

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion: Seed treatment did not appear to have a large impact on plant density, and only the Foundation Lite treatment which had no insecticide, suffered significant flea beetle damage. While maturity was delayed throughout the season in this treatment, the crop recovered reasonably well with respect to yield. Only Gaucho Platinum produced a statistically significant yield advantage over the Foundation Lite. All treatments graded #1, and only Helix and Gaucho Platinum provided a significantly higher oil content than the checks.

GRENFELL

Methodology: Seeding took place on May 16. The Roundup Ready variety DKL34-55 was seeded at 6.2 lb/ac. A fertilizer blend of 10-25-10-5 (actual) was seed- placed for all treatments. Vantage Plus was applied at _ L/ac at the 2 to 3-leaf stage of the crop. A fungicide was also applied to control sclerotinia stem rot.

Observations: Excellent moisture and warm soil temperatures resulted in rapid emergence. Emergence occurred on May 27. 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 beetle infestations were sporadic. Shot hole damage was in excess of 25 % in some areas during early plant development. Plants outgrew damage because of excellent growing conditions. The Foundation Lite treatment was delayed by three to four days during early plant development due to flea beetle damage. There were no lygus bugs observed at this site.

Results: ***Table 1. Average number of emerged (plants/m^2)***

Treatment	8 DAE	15 DAE	22 DAE
Foundation (check)	133	140	138
Foundation Lite (check)	124	133	134
Foundation Premium	134	143	141
Foundation Premium Plus	133	142	142
Gaucho Platinum	133	146	145
Titan FL	141	148	146
Helix	136	145	144
Helix Xtra	137	144	144

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	8 DAE	15 DAE	22 DAE
Foundation (check)	0	1-10	1-10
Foundation Lite (check)	1-10	26-50	11-25
Foundation Premium	0	1-10	1-10
Foundation Premium Plus	0	0	0
Gaucho Platinum	0	0	0
Titan FL	0	0	0
Helix	0	0	0
Helix Xtra	0	0	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Grenfell, SK			
Treatment	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**
Foundation (check)	33.2	78.25	44.1
Foundation Lite (check)	29.9	56.90	43.6
Foundation Premium	34.5	N/A	44.1
Foundation Premium Plus	36.0	N/A	43.5
Gaucho Platinum	35.3	82.38	44.6
Titan FL	35.8	N/A	43.8
Helix	34.4	82.20	43.9
Helix Xtra	36.8	91.89	44.8
LSD CV%	2.65 5.3		0.75 1.2

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion: Flea beetle damage was moderate (up to 50 %) in the Foundation Lite treatment. Reduced leaf area at early plant development, from flea beetle damage in the Foundation Lite treatment resulted in a significantly lower yield. Oil content varied significantly among treatments. All treatments graded #1. Contribution margins reflect yield variation and seed treatment costs.

NAICAM

Methodology: Seeding took place on May 5. The Roundup Ready variety DKL34-55 was seeded at 6.2 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Vantage Plus was applied at _ L/ac at the 2 to 3-leaf stage of the crop.

Observations: Climatic conditions (see ***Site Information - Comments***) delayed emergence until May 22. Canada thistle, wild buckwheat and volunteer wheat were the predominant weeds. Weed pressure was moderate in most areas. In-crop weed control was good. Flea beetle damage increased by the first week of June. Shot hole damage in some areas was in excess of 50 %. Newly emerging leaves in the Foundation Lite treatment were unable to recover from flea beetle damage. Damage was consistent across all replicates of the Foundation Lite treatment. The Foundation Lite treatment was delayed by six to seven days during early plant development due to flea beetle damage. There were no lygus bugs observed at this site.

Results:

Table 1. Average number of emerged (plants/m^2)

Treatment	6 DAE	13 DAE	22 DAE
Foundation (check)	28	164	152
Foundation Lite (check)	30	162	164
Foundation Premium	28	177	146
Foundation Premium Plus	32	176	150
Gaucho Platinum	36	182	188
Titan FL	29	156	172
Helix	40	165	168
Helix Xtra	42	154	170

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	6 DAE	13 DAE	22 DAE
Foundation (check)	11-25	1-10	0
Foundation Lite (check)	11-25	51-75	1-10
Foundation Premium	1-10	1-10	0
Foundation Premium Plus	1-10	1-10	0
Gaucho Platinum	1-10	1-10	0
Titan FL	1-10	1-10	0
Helix	1-10	1-10	0
Helix Xtra	1-10	1-10	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Naicam, SK			
Treatment	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**
Foundation (check)	28.8	71.07	43.9
Foundation Lite (check)	26.6	57.15	44.7
Foundation Premium	31.0	N/A	44.6
Foundation Premium Plus	30.2	N/A	44.6
Gaucho Platinum	30.4	71.85	44.1
Titan FL	30.1	N/A	44.2
Helix	30.7	79.75	44.2
Helix Xtra	31.0	75.26	44.4
LSD	1.90		0.74
CV%	4.4		1.2

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion: Rain during the third week of May caused a dramatic increase in plant counts taken thirteen days after emergence. Flea beetle damage was moderate to heavy (up to 75 %) in the Foundation Lite treatment. Reduced leaf area at early plant development, from flea beetle damage in the Foundation Lite treatment, resulted in a significantly lower yield. Oil content was significantly lower for the Foundation treatment compared to Foundation Lite. All treatments graded #1. Contribution margins reflect yield variation and seed treatment costs.

LETHBRIDGE (IRRIGATION)

Methodology: This trial was seeded on May 9 at a rate of 4 lb/ac.

Observations: Emergence was even across all treatments and flea beetles were present. Flea beetle damage was the highest in the Foundation Lite treatment (See ***Table #2***). Sweep net samples were conducted to determine lygus bug and cabbage seed pod weevil numbers. Sweep net results revealed that there were minimal differences among the treatments (See ***Table #3***). The flea beetle damage on the Foundation Lite treatment delayed flowering three to five days. Foundation Lite treatment took 99 days to mature while all other treatments took 96 days.

Results:

Table 1. Average number of emerged (plants/m^2)

Treatment	6 DAE	14 DAE	24 DAE
Foundation (check)	111	95	93
Foundation Lite (check)	78	80	73
Foundation Premium	92	96	88
Foundation Premium Plus	95	101	91
Titan FL	98	103	95
Gaucho Platinum	110	99	96
Helix	134	112	98
Helix Xtra	96	99	101

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	6 DAE	14 DAE	24 DAE
Foundation (check)	1-10	11-25	1-10
Foundation Lite (check)	11-25	26-50	51-75
Foundation Premium	1-10	1-10	11-25
Foundation Premium Plus	1-10	1-10	1-10
Titan FL	0	1-10	1-10
Gaucho Platinum	1-10	11-25	11-25
Helix	0	1-10	1-10
Helix Xtra	0	1-10	1-10

DAE = Days After Emergence

Table 3. Lygus Bug/Cabbage seed pod weevil #'s (per 10 sweeps)

Treatment	Lygus Bugs		Cabbage Seed Pod Weevil	
	July 3	July 24	July 3	July 24
Foundation (check)	8	1	25	2
Foundation Lite (check)	5	1	18	2
Foundation Premium	6	1	27	1
Foundation Premium Plus	5	2	25	2
Titan FL	7	1	28	1
Gaucho Platinum	5	1	32	1
Helix	10	1	28	1
Helix Xtra	7	1	29	1

Table 4. Yield and quality data

SEED TREATMENT TRIAL Lethbridge, AB (Irrigation)				
Treatment	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Ground Cover % (June 15)**	**Oil (%)**
Foundation (check)	30.0	52.62	92	42.9
Foundation Lite (check)	24.0	12.72	52	42.3
Foundation Premium	29.9	N/A	94	42.7
Foundation Premium Plus	28.7	N/A	96	42.6
Gaucho Platinum	30.5	58.20	97	42.9
Titan FL	30.5	N/A	98	42.6
Helix	30.0	49.94	98	42.8
Helix Xtra	31.7	57.22	100	42.7
LSD CV%	2.66 7.5			0.54 1.1

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion: The Foundation Lite treatment yielded significantly lower than all other treatments. Helix Xtra yielded significantly higher than Foundation Premium Plus. This year, flea beetle populations flourished due to warm and dry weather. Populations were high enough to cause some damage to all treatments 14 days after emergence, the most severe being the Foundation Lite treatment. Even with good fertility and moisture the Foundation Lite treatment never fully recovered. Ground cover measurements completed June 15 were similar among all treatments with the exception of Foundation Lite, which had 52 % ground cover.

XII WEED CONTROL TRIAL (BASF)

Objective: To evaluate the weed control options in canola for thistle control.

Background: Control of thistles continues to be a problem for canola growers. The introduction of the various herbicide tolerant canola systems provides varying levels of thistle control depending on the product and rate used and the timing of spraying. The introduction of new herbicides like Absolute offer the potential for improved thistle control. This product was compared to other systems for their relative performance against thistles.

Methodology: The weed control trial included the following treatments:

A) Clearfield canola - Absolute one application (Odyssey @ 17 g/ac + Lontrel @ 0.17 L/ac) 18-21 DAS
B) Clearfield canola (check) - Odyssey one application (17 g/ac) 18-21 DAS (days after seeding)
C) Liberty Link canola - Liberty one application (1.35 L/ac) 18-21 DAS
D) Roundup Ready canola - Roundup Transorb one application (0.5 L/ac) 10 DAS
E) Roundup Ready canola - Roundup Transorb two applications (0.5 L/ac each) 10 DAS & 20 DAS

Western Canadian Summary:

CPC Location	Naicam SK		Rycroft AB	
	NYD	CMD	NYD	CMD
WEED CONTROL TRIAL				
Absolute (46A76)	30.5	78	31.1	89
Odyssey (46A76) - check	28.6	60	32.6	104
Liberty (InVigor 2663)	34.6	113	39.6	148
Transorb (DKL34-55) - one application	32.9	93	31.4	101
Transorb (DKL34-55) - two applications	34.2	99	32.4	99

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

NAICAM

Methodology: This trial was seeded May 4. Open pollinated varieties (46A76 and DKL34-55) were seeded at 6.2 lb/ac. The Liberty Link hybrid (InVigor 2663) was seeded at 5.0 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Treatments received the following herbicides:

InVigor 2663 - Liberty (1.35 L/ac or 10 ac/jug and 1.05 L/ac or 13.5 ac/jug) 12 days and 21 days after emergence.
DKL34-55 - Roundup Transorb (0.5 L/ac) 12 days after emergence.
- Roundup Transorb (0.5 L/ac) 12 and 21 days after emergence.

46A76 - Odyssey (17 g/ac or 40 ac/case) 12 days after emergence.
- Absolute (Odyssey @ 17 g/ac or 40 ac/case and Lontrel at 0.17 L/ac or 26 ac/jug) 12 days after emergence.

Broadleaf weeds counts (Canada thistle, sow thistle, wild buckwheat and dandelions) were taken at spraying and swathing.

Observations: Climatic conditions (see ***Site Information - Comments***) delayed emergence until May 22. Canada thistle, wild buckwheat and volunteer wheat were the predominant weeds. Weed pressure was moderate in most areas. Patches of Canada thistle were evident across the entire trial. In-crop weed control was good to excellent. Flea beetle damage became noticeable by the first week of June.

Results: (a) Weed data

WEED CONTROL TRIAL (BASF) Naicam, SK		
Treatment	**Broadleaf Weeds at spraying (#/m^2)**	**Broadleaf Weeds at swathing (#/m^2)**
Absolute (46A76)	17	8
Odyssey (46A76) - check	17	21
Liberty (InVigor 2663)	18	7
Transorb (DKL34-55) - one app.	16	8
Transorb (DKL34-55) - two app.	16	6

Note: app. - application

Results: (b) Yield and quality data

WEED CONTROL TRIAL (BASF) Naicam, SK				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Absolute (46A76)	2.3	30.5	41.3	78.48
Odyssey (46A76) - check	3.1	28.6	42.4	59.92
Liberty (InVigor 2663)	2.6	34.6	42.4	113.03
Transorb (DKL34-55) - one app.	2.6	32.9	43.1	93.43
Transorb (DKL34-55) - two app.	3.0	34.4	43.6	98.56
LSD CV%		2.47 5.2	1.01 1.6	

Note: app. - application

Discussion: Broadleaf weed (Canada thistle and sow thistle) counts were reduced in all treatments except Odyssey. A reduction in overall broadleaf weed counts can be attributed to herbicide control. Differences of 2.47 bu/ac or more are significant. Three treatments yielded significantly higher than the check (Odyssey). Oil content did vary significantly. All treatments graded #1. Contribution margins reflect differences in seed costs, yield, herbicides and associated application costs.

RYCROFT

Methodology: Seeding commenced on May 22. All treatments were seeded at 8 lb/ac. A fertilizer blend of 60-20-20-15 lb/ac (actual) had been broadcast prior to seeding and incorporated with harrows. All treatments were sprayed at 20 days after seeding except for Transorb (DKL34-55) one application and the first application of the Transorb two application treatment. These two applications were made at 10 days after seeding.

Observations: Soil moisture was adequate at the time of seeding and rainfall began shortly after, allowing for quick emergence and an even plant stand. At the time of spraying, the predominant weeds were Canada thistle and wild buckwheat. A few dandelions emerged prior to harvest. Moist conditions created a favourable environment for both the crop and the weed populations.

Results: (a) Weed data

WEED CONTROL TRIAL (BASF)
Rycroft, AB

Treatment	Broadleaf Weeds at spraying (#/m^2)	Broadleaf Weeds at swathing (#/m^2)
Absolute (46A76)	4	4
Odyssey (46A76) - check	0	4
Liberty (InVigor 2663)	4	4
Transorb (DKL34-55) - one app.	0	8
Transorb (DKL34-55) - two app.	0	8

Note: app. - application

Results: (b) Yield and quality data

WEED CONTROL TRIAL (BASF) Rycroft, AB				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Absolute (46A76)	2.0	31.1	44.4	89.13
Odyssey (46A76) - check	2.8	32.6	44.3	103.71
Liberty (InVigor 2663)	1.7	39.6	44.8	148.34
Transorb (DKL34-55) - one app.	4.3	31.5	44.6	101.37
Transorb (DKL34-55) - two app.	2.6	32.5	44.2	99.24
LSD CV%		3.98 9.9	0.81 1.5	

Note: app. - application

Discussion: The only treatment that was significantly different in yield from the Odyssey check was the Liberty treatment. Not only did it have the highest yield, but the lowest dockage and highest contribution margin. None of the treatments showed any significant difference in oil content. The one application of Roundup Transorb had the highest dockage.

XIII WEED CONTROL TRIAL (DOW AGROSCIENCES)

Objective: To evaluate the weed control options in canola for thistle and wild buckwheat control.

Background: Control of problem weeds such as thistles and wild buckwheat continue to be a problem for canola growers. The introduction of the various herbicide tolerant canola systems provides varying levels of weed control depending on the product and rate used and the timing of spraying. The introduction of new herbicides like Eclipse offer the potential for improved thistle and wild buckwheat control.

Methodology: The weed control trial included the following treatments:

A) Eclipse
B) Vantage Plus

The variety used was DKL34-55, which is a Roundup Ready variety.

Western Canadian Summary:

CPC Location	Selkirk MB		Naicam SK		Rycroft AB	
	NYD	CMD	NYD	CMD	NYD	CMD
WEED CONTROL TRIAL						
Eclipse	36.5	108	34.1	90	31.1	87
Vantage Plus (check)	38.8	135	33.6	98	31.2	99

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

SELKIRK

Methodology: The trial was seeded May 28, and both herbicide treatments were applied at the 2 to 3-leaf stage of the crop on June 12. All other agronomic practices were conducted as described in the ***Site Information***.

Observations: Wild buckwheat was observed throughout the area of the field where this trial was seeded, prior to incorporation of the fertilizer. Emergence of the canola was very good as a result of the warm and moist conditions. However, emergence of wild buckwheat following the tillage and seeding operations was less than expected. At the time of the herbicide applications there was a scattering of wild buckwheat throughout the trial, but the pressure was not intense. Control of the buckwheat and other weeds present was excellent.

Results: Yield and quality data

WEED CONTROL TRIAL (DOW AGROSCIENCES) Selkirk, MB				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Eclipse	0.9	36.5	45.3	107.96
Vantage Plus (check)	0.9	38.8	45.0	134.93
LSD CV%	0.38 18.1	3.44 3.8	0.74 1.0	

Discussion: The low levels of dockage in both treatments supported the observations of excellent weed control by the two products. There were no differences in yield or oil content, probably due to the lower than expected pressure from wild buckwheat. Contribution margins reflect the herbicide cost and minor differences in yield. Both treatments graded #1.

NAICAM

Methodology: The trial was seeded May 4 at a rate of 6.2 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Treatments received the following herbicides:

DKL34-55 - Vantage Plus (0.5 L/ac) 12 days after emergence.
DKL34-55 - Eclipse (Eclipse A @ 0.112L/ac and Eclipse B @ 0.5 L/ac) 12 days after emergence.

Broadleaf weed counts (Canada thistle, sow thistle, wild buckwheat and dandelions) were taken at spraying and swathing.

Observations: Climatic conditions (see ***Site Information - Comments***) delayed emergence until May 22. Canada thistle, wild buckwheat and volunteer wheat were the predominant weeds. Weed pressure was moderate in most areas. Patches of Canada thistle were evident across the entire trial. In-crop weed control was good to excellent. Flea beetle damage became noticeable by the first week of June.

Results: (a) Weed data

WEED CONTROL TRIAL (DOW AGROSCIENCES) Naicam, SK		
Treatment	**Broadleaf Weeds at spraying (#/m^2)**	**Broadleaf Weeds at swathing (#/m^2)**
Eclipse	18	7
Vantage Plus (check)	15	8

Results: (b) Yield and quality data

WEED CONTROL TRIAL (DOW AGROSCIENCES) Naicam, SK				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Eclipse	3.4	34.1	43.6	89.81
Vantage Plus (check)	3.0	33.6	43.7	98.16
LSD CV%		2.47 5.2	1.01 1.6	

Discussion: Broadleaf weed (Canada thistle, wild buckwheat and sow thistle) counts were reduced in both treatments. A reduction in overall broadleaf weed counts can be attributed to herbicide control. There were no significant differences in yield or oil content. All treatments graded #1. Contribution margins reflect differences in yield and herbicide costs.

RYCROFT

Methodology: Seeding commenced on May 22. All treatments were seeded at 8 lb/ac. A fertilizer blend of 60-20-20-15 lb/ac (actual) had been broadcast prior to seeding and incorporated with harrows.

Observations: Soil moisture was adequate at the time of seeding and rainfall began shortly after, allowing for quick emergence and an even plant stand. At the time of spraying, the predominant weeds were Canada thistle and wild buckwheat. A few dandelions emerged prior to harvest. Moist conditions created a favourable environment for both the crop and the weed populations.

Results: (a) Weed data

WEED CONTROL TRIAL (DOW AGROSCIENCES) Rycroft, AB		
Treatment	**Broadleaf Weeds at spraying (#/m^2)**	**Broadleaf Weeds at swathing (#/m^2)**
Eclipse	0	0
Vantage Plus (check)	0	16

Results: (b) Yield and quality data

WEED CONTROL TRIAL (DOW AGROSCIENCES) Rycroft, AB				
Treatment	**Dockage (%)**	**Yield (bu/ac)**	**Oil (%)**	**Contribution Margin ($/ac)**
Eclipse	2.2	31.1	45.0	87.23
Vantage Plus (check)	5.4	31.2	43.5	99.34
LSD CV%		3.98 9.9	0.81 1.5	

Discussion: There was no difference in yield between the two treatments. This may have been due to the low target weed population present at the time of spraying. The difference in contribution margin is primarily attributed to the additional cost of Eclipse. The oil content in the Eclipse treatment was significantly higher than the Vantage Plus treatment.

XIV SYSTEMS COMPARISON TRIAL

Objective: To establish agronomic criteria for choosing a combination of varieties and herbicide options of novel trait canola.

Background: The introduction of canola with novel traits for herbicide tolerance has given producers many options for herbicide and variety selection. The greatest return will occur by choosing the most appropriate combination of suitable varieties and appropriate herbicides for each field. Factors to consider beyond the performance of the variety include weed population, weed spectrum, tillage system and herbicide rotation.

Methodology: The trial was conducted as a modified split block with four replicates. Hybrids (including synthetics) were seeded at 4 to 5 lb/ac. Other varieties were seeded at 'normal' seeding rates. The canola varieties with novel traits for herbicide tolerance were compared to the conventional varieties AC Excel and Q2 and a conventional herbicide program.

Western Canadian Summary:

CPC Location	Selkirk MB		Dauphin MB		Grenfell SK		Naicam SK		N. Battleford SK		Vegreville AB		Lethbridge (Irr) AB		Rycroft AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SYSTEMS COMPARISON TRIAL																		
AC Excel	34.0	105	29.4	34	31.7	55	24.8	62	21.5	27	26.8	82	22.9	(6)	33.1	111	45.2	198
Q2	33.6	85	32.5	46	32.0	48	23.9	47	19.3	4	30.6	99	21.4	(22)	37.7	131	50.0	202
InVigor 2573	38.3	131	34.6	73	36.2	97	29.2	72	26.3	56	35.0	121	28.9	46	45.2	167	52.1	216
InVigor 2663	38.2	120	36.1	83	36.6	100	29.7	76	28.2	69	33.1	108	31.2	61	43.8	157	51.0	209
InVigor 2733	-	-	-	-	-	-	-	-	-	-	-	-	31.3	62	-	-	-	-
Renegade BX	36.9	112	-	-	33.8	99	-	-	-	-	-	-	-	-	-	-	-	-
A98-13NR	35.1	100	31.2	49	32.6	81	24.2	47	19.6	20	31.9	108	21.8	4	33.6	111	46.0	184
Admire	38.8	121	33.9	64	35.0	90	28.9	72	25.7	55	34.7	121	23.8	17	-	-	-	-
Conquest	-	-	-	-	32.6	79	26.7	63	24.1	44	-	-	-	-	-	-	-	-
IMC 106 RR	-	-	30.2	67	31.1	92	27.8	90	19.5	34	27.3	96	23	41	37.5	168	41.7	187
IMC 206 RR	-	-	-	-	30.5	87	-	-	-	-	19.6	39	22.8	31	-	-	-	-
Kelsey	38.6	133	32.1	55	-	-	-	-	-	-	29.7	90	23.1	14	37.6	128	45.4	179
LBD 449RR	-	-	29.2	38	-	-	28.0	71	23.8	47	25.8	66	-	-	35.9	130	-	-
LBD 561RR	36.7	113	-	-	33.4	85	27.5	68	24.4	51	30.0	94	-	-	-	-	-	-
LBD 799RR-S	38.1	122	31.5	55	31.7	74	28.7	76	24.8	50	24.3	52	-	-	-	-	-	-
Prairie 499RR	38.6	133	31.9	55	35.6	98	30.0	82	25.5	52	27.7	72	-	-	35.5	111	-	-

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.
Brackets in the CMD reflect a negative value.

SELKIRK

Methodology: Seeding of this trial was delayed until May 27 by wet weather. The hybrid and synthetic varieties were seeded at 5 lb/ac, while the open

pollinated varieties were seeded at 6.1 lb/ac. In-crop herbicide applications were made to each of the systems as follows: Liberty Link - Liberty (1.35 L/ac) at the 2-leaf stage; Roundup Ready - Roundup Transorb (0.5 L/ac) at the 2-leaf stage; Navigator/Compas - Select (0.08 L/ac) at the 2-leaf stage, Compas 480EC (0.23 L/ac) 8 days later; Conventional - Edge granular (9 kg/ac) incorporated prior to seeding, Select (0.065 L/ac) at 2-leaf stage.

Observation: In spite of the late seeding date, warm weather and ample moisture throughout June and July hastened crop growth and maturity. The majority of the weed competition was from wild oats, with some volunteer wheat and green foxtail. Some broadleaf weeds were also present, including wild buckwheat, wild mustard, smartweed and stinkweed. Weed control was very good in all treatments. The fungicide application provided good control in spite of conditions that were ideal for sclerotinia. Hot and dry weather prevailed in the latter part of August, resulting in rapid dry down at swathing. There was very little rainfall between swathing and combining.

Results:

SYSTEMS COMPARISON TRIAL
Selkirk, MB

System	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity
Liberty Link						
InVigor 2573	113	38.3	131.18	44.7	1097	84
InVigor 2663	112	38.2	120.19	44.5	1097	84
Roundup Ready						
Admire	114	38.8	120.96	44.0	1114	85
Prairie 499RR	114	38.6	133.05	44.3	1084	83
Kelsey	114	38.6	133.00	43.9	1076	82
LBD 799RR-S	112	38.1	121.98	44.3	1114	85
LBD 561RR	108	36.7	112.62	43.9	1084	83
A98-13NR	103	35.1	99.90	43.8	1084	83
Navigator / Compas						
Renegade BX	109	36.9	112.35	44.5	1097	84
Conventional						
AC Excel	100	34.0	105.08	43.8	1114	85
Q2	99	33.6	84.82	43.1	1084	83
LSD		1.87		0.86		
CV%		4.2		1.6		

Discussion: All varieties significantly out-yielded AC Excel, with the exception of Q2 and A98-13NR. InVigor 2573 had significantly higher oil than the check. The hot and dry weather from swathing through harvest hampered the curing process, and as a result a number of the varieties were downgraded to #2. Only AC Excel, Kelsey, Prairie 499RR and InVigor 2573 achieved a #1 grade. Contribution margins reflected yield, seed cost, herbicide cost and grade. The hot weather likely contributed to a fairly small range in maturity among the varieties, from 82 to 85 days.

DAUPHIN

Methodology: This trial was seeded on May 29 in wet soil conditions. Herbicide application occurred when the canola was at approximately the 4-leaf stage. The herbicides and rates were as follows: Conventional - Muster Gold II (40 ac/case), Select (0.09 L/ac); Liberty Link - Liberty (1.35 L/ac); Roundup Ready - Roundup Transorb (0.5 L/ac).

Observations: Emergence was quick due to adequate moisture and heat. Weeds present included wild oats, volunteer wheat, wild mustard and hemp-nettle. The conventional system had to be resprayed with the Select as a result of poor grassy weed control, and this occurred at the 5 to 6-leaf stage. Weed control in the Roundup Ready and Liberty Link systems were generally good. The trial was sprayed for sclerotinia with Rovral Flo and negligible levels of infection were observed at swathing. No other diseases were observed throughout the growing season. Lygus bugs and diamondback larvae were present but well below threshold levels. Flea beetles caused a few shot holes at the cotyledon stage, but were present in high numbers at swathing time.

Results:

SYSTEMS COMPARISON TRIAL Dauphin, MB						
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Liberty Link						
InVigor 2663	123	36.1	83.34	42.7	1053	85
InVigor 2573	118	34.6	73.21	42.6	1040	84
Roundup Ready						
Admire	115	33.9	64.20	42.5	1070	86
Kelsey	109	32.1	55.16	44.0	1025	83
Prairie 499RR	109	31.9	54.86	43.0	1053	85
LBD 799RR-S	107	31.5	54.82	43.1	1070	86
A98-13NR	106	31.2	49.09	42.8	1070	86
IMC 106*	103	30.2	66.92	42.7	1053	85
LBD 449RR	99	29.2	38.09	42.6	1040	84
Conventional						
Q2	111	32.5	45.93	42.8	1070	86
AC Excel	100	29.4	34.07	42.2	1053	85
LSD CV%		2.04 5.3		1.15 2.2		

Note: *Specialty oil

Discussion: Yields of most varieties were better than AC Excel, with the exception of A98-13NR, IMC 106 and LBD 449RR. Only Kelsey produced a significantly higher oil content than the check. Contribution margins reflected yield, seed cost, herbicide cost and premiums on specialty oils (IMC 106). All varieties graded #1. At maturity, seed colour change took place rapidly due to the warm conditions, resulting in a range of only 83 to 86 days among the varieties.

GRENFELL

Methodology: Seeding took place on May 17. Open pollinated varieties were seeded at 6.2 lb/ac. Hybrid and synthetic varieties were seeded at 5.0 lb/ac. A fertilizer blend of 10-25-10-5 (actual) was seed-placed for all treatments. Herbicides were applied at the 2 to 3-leaf stage of the crop. 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 to conventional treatments. Liberty Link treatments received Liberty (1.35 L/ac or 10 ac/jug) and Select (0.025 L/ac or 120 ac/jug) as a tank mix. Roundup Ready treatments received Roundup Transorb (0.5 L/ac). Compas (40 ac/case) was applied to the Navigator treatment. A fungicide was applied to control sclerotinia stem rot at the 20 to 25 % bloom stage.

Observations: Excellent moisture and warm soil temperatures resulted in rapid emergence. Growing conditions (see ***Site Information - Comments***) were next to ideal throughout the season. Weed pressure was moderate to heavy in most areas. Weed control was excellent. Flea beetles caused damage during early plant development. Up to 25 % shot hole damage was identified in some areas. Plants outgrew damage quickly because of excellent growing conditions. IMC 206 was the first variety to reach 100 % ground cover, 34 days after seeding. Height and standability (lodging) differences were noted among the varieties (see ***Harvestabilty Trial - Discussion***).

Results:

SYSTEMS COMPARISON TRIAL
Grenfell, SK

System	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity
Liberty Link						
InVigor 2663	115	36.6	99.70	43.4	1057	92
InVigor 2573	114	36.2	97.00	42.7	1057	92
Roundup Ready						
Prairie 499RR	112	35.6	97.68	42.6	1070	93
Admire	110	35.0	90.26	42.1	1057	92
LBD 561RR	105	33.4	84.82	42.2	1031	90
A98-13NR	103	32.6	81.38	41.7	1095	95
Conquest	103	32.6	79.42	43.1	1082	94
LBD 799RR-S	100	31.7	73.96	42.3	1057	92
IMC 106*	98	31.1	91.70	43.5	1015	89
IMC 206*	96	30.5	87.29	41.5	1031	90
Navigator / Compas						
Renegade Bx	107	33.8	99.26	42.8	1043	91
Conventional						
Q2	101	32.0	48.46	41.3	1031	90
AC Excel	100	31.7	55.17	42.8	1043	91
LSD		2.16		2.59		
CV%		4.6		5.5		

Note: *Specialty oil

Discussion: Yield differences of 2.16 bu/ac or more are significant. Four varieties (InVigor 2663, InVigor 2573, Prairie 499RR and Admire) yielded significantly higher than AC Excel and the industry check (Q2). Each system had at least one variety exceeding $90 contribution margin, with the exception of the conventional system. Economic returns of the conventional varieties were lower due to additional herbicide costs for

Canada thistle and wild buckwheat control. Contribution margins reflect differences in yield, seed cost, herbicide cost and specific oil premiums.

Days to maturity varied by six days (89 to 95). There were no significant differences in oil content.

NAICAM

Methodology: This trial was seeded May 5. Open pollinated varieties were seeded at 6.2 lb/ac. Hybrid and synthetic varieties were seeded at 5.0 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Herbicides were applied at the 1 to 3-leaf stage. In-crop application of Muster Gold II (40 ac/case) was applied for all conventional treatments. Liberty Link treatments received Liberty (1.35 L/ac or 10 ac/jug) and Select (0.025 L/ac or 120 ac/jug) as a tank mix. Roundup Ready treatments received Roundup Transorb (0.5 L/ac).

Observations: Variable growing conditions outlined in the ***Site Information - Comments*** section affected the yield potential. Weed pressure was variable across all treatments. Weed control was good for all treatments. Crop density and dry weather reduced the risk of sclerotinia (***Grow with Canola Manual***, p. 1054). All varieties matured rapidly and evenly within a given treatment due to the lack of moisture. Four varieties (LBD 449RR, IMC 106, LBD 561RR and Conquest) were the first varieties to reach 100 % ground cover, 38 days after seeding. Plant height did not vary greatly among varieties.

Light infestations of blackleg were observed. Flea beetles caused minimal damage during early plant development. Diamondback moth larvae were also present in this trial, but damage was minimal.

Results:

SYSTEMS COMPARISON TRIAL Naicam, SK						
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Liberty Link						
InVigor 2663	120	29.7	75.65	43.2	1055	101
InVigor 2573	118	29.2	72.27	42.4	1055	101
Roundup Ready						
Prairie 499RR	121	30.0	82.41	44.1	1055	101
Admire	117	28.9	71.61	43.6	1046	100
LBD 799RR-S	116	28.7	76.23	43.3	1063	102
LBD 449RR	113	28.0	70.89	43.4	1020	99
IMC 106*	112	27.8	90.00	45.1	1020	99
LBD 561RR	111	27.5	67.52	43.4	1020	99
Conquest	108	26.7	62.95	44.1	1055	101
A98-13NR	98	24.2	47.21	43.0	1077	103
Conventional						
AC Excel	100	24.8	61.73	42.9	1046	100
Q2	96	23.9	47.01	42.4	1046	100
LSD CV%		1.52 4.0		1.35 2.2		

Note: *Specialty oil

Discussion: Yield differences of 1.52 bu/ac or more are significant. Nine varieties yielded significantly higher than AC Excel and the industry check (Q2). The highest contribution margin was associated with the specialty oil variety IMC 106. Contribution margins reflect differences in yield, seed cost, herbicide costs and specialty oil premiums.

Due to high temperatures and lack of moisture at swathing, days to maturity varied by only four days (99 to 103). Oil contents varied significantly, with IMC 106 providing significantly more oil than the check (AC Excel).

NORTH BATTLEFORD

Methodology: This trial was seeded on May 10. Conventional varieties were sprayed with Muster Gold II (40 ac/case) on June 6. Lontrel (0.23 L/ac or 19.3 ac/jug) was spot sprayed on June 16 and a value of $15.81/ac was added to herbicide costs for the conventional varieties. Liberty Link varieties were sprayed with a Liberty (1.35 L/ac or 10 ac/jug) and Select (120 ac/case) tank mix on June 5. Roundup Ready varieties were sprayed with Roundup Transorb (0.5 L/ac) on June 6.

Observations: Stand establishment was similar for all varieties. Weed pressure was light to moderate throughout the trial. Weeds present were stinkweed, wild buckwheat, volunteer barley, wild oats, cleavers, Canada thistle and perennial sow thistle. Weed control was adequate for all treatments. Due to dry conditions, remaining cleavers in the trial were spindly and weak. Thistle patches in the Liberty Link system were suppressed for most of the season and were not visible above the crop canopy until swathing time. Swathing of all varieties occurred during a short period of time due to the hot, dry conditions experienced in the middle of August.

Results:

SYSTEMS COMPARISON TRIAL
North Battleford, SK

System	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity
Liberty Link						
InVigor 2663	131	28.2	68.87	43.4	1036	97
InVigor 2573	122	26.3	56.04	41.9	1036	97
Roundup Ready						
Admire	120	25.7	54.75	41.7	1019	96
Prairie 499RR	119	25.5	52.10	42.5	1036	97
LBD 799RR-S	115	24.8	49.94	42.6	1036	97
LBD 561RR	113	24.4	51.15	42.3	1036	97
Conquest	112	24.1	43.95	43.4	1019	96
LBD 449RR	111	23.8	47.10	42.8	1036	97
A98-13NR	91	19.6	20.07	40.7	1119	103
IMC 106*	91	19.5	33.51	42.8	1036	97
Conventional						
AC Excel	100	21.5	27.17	41.9	1047	98
Q2	90	19.3	3.96	40.8	1047	98
LSD		1.74		0.62		
CV%		6.2		1.24		

Note: *Specialty oil

Discussion: InVigor 2663 was significantly higher yielding than all other varieties. Admire, the highest yielding Roundup Ready variety, was significantly higher yielding than IMC 106, A98-13NR, LBD 449RR and the conventional varieties. InVigor 2663 and Conquest had significantly higher oil content than all other varieties except for IMC 106 and LBD 449RR. Maturity ranged from 96 days to 103 days. Contribution margins reflect differences in yield, seed costs, herbicide costs and specialty oil premiums (IMC 106).

VEGREVILLE

Methodology: This trial was seeded on May 8. All varieties were sprayed twice. The first herbicide application on the conventional varieties was with Select (40 ac/case) on June 6. The second application was with Fusion (20 ac/case) on June 20. Liberty Link varieties were sprayed with Liberty (1.35 L/ac or 10 ac/jug) and Select (120 ac/case) on June 6. A follow up application of Fusion (20 ac/case) was applied on June 20. Roundup Ready varieties were sprayed with Roundup Transorb (0.5 L/ac) on June 6 and again on June 20.

Observations: Stand establishment was similar for most varieties. However, plant stands within IMC 206 treatments were low compared to the other varieties. Weed pressure was moderate at spraying time. The predominant weed present was volunteer barley. Other weeds present were lamb's quarters, smartweed, ball mustard, hemp-nettle and field horsetail. Initial weed control was good for all treatments. However, a second flush of volunteer barley emerged and the trial was re-sprayed. Weed control was good with the second herbicide application. At the end of the growing season, some lamb's quarters were noticed above the crop canopy throughout the field. Some ball mustard and hemp-nettle were also noticed in low-lying areas.

Results:

SYSTEMS COMPARISON TRIAL Vegreville, AB						
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Liberty Link						
InVigor 2573	131	35.0	120.52	45.3	1133	109
InVigor 2663	124	33.1	107.69	44.5	1133	109
Roundup Ready						
Admire	129	34.7	120.73	44.2	1178	113
A98-13NR	119	31.9	108.33	45.0	1225	118
LBD 561RR	112	30.0	94.18	43.8	1157	111
Kelsey	111	29.7	89.85	46.2	1145	110
Prairie 499RR	103	27.7	72.18	42.5	1178	113
IMC 106*	102	27.3	96.00	46.1	1124	108
LBD 449RR	96	25.8	65.83	43.8	1115	107
LBD 799RR-S	91	24.3	51.78	43.2	1178	113
IMC 206*	73	19.6	39.48	42.2	1133	109
Conventional						
Q2	114	30.6	99.14	44.7	1145	110
AC Excel	100	26.8	81.85	44.2	1145	110
LSD		3.52		1.05		
CV%		10.2		2.0		

Note: *Specialty oil

Discussion: InVigor 2573, the highest yielding variety, was significantly higher yielding than all other varieties except for InVigor 2663, A98-13NR and Admire. Admire, the highest yielding Roundup Ready variety, was significantly higher yielding than all other varieties except for InVigor 2663, InVigor 2573 and A98-13NR. Kelsey had significantly higher oil content than all varieties except for InVigor 2573 and IMC 106. Maturity ranged from 108 to 118 days. Contribution margins reflect differences in yield, seed costs, herbicide costs and specialty oil premiums (IMC 106 and IMC 206).

BEISEKER

Methodology: All treatments were seeded on May 16 at a rate of 5 lb/ac. Each of the systems were sprayed with their appropriate herbicides (See ***Site Information*** for rates and tank mixes).

Observations: Emergence for all the varieties was even. Weed growth and populations were moderate. Predominant weeds were wild oats, wild buckwheat and stinkweed. Canada thistle and perennial sow thistle were also noted. Spraying for weeds occurred at the 2-leaf stage of the crop. Weed control for all systems was good. All varieties suffered from heat and moisture stress. However, hybrid and synthetic varieties coped better than the open pollinated varieties. Maturity was noted to be more uniform within the hybrid and synthetic varieties than the open pollinated varieties.

Results: Due to the high coefficient of variation for this trial, which was caused by environmental conditions, no accurate conclusions could be made. Therefore, the results have not been reported.

LETHBRIDGE (IRRIGATION)

Methodology: This trial was seeded on May 9 at a seeding rate of 4 lb/ac for all varieties. All varieties were sprayed with their appropriate system (See ***Site Information*** for rates and tank mixes).

Observation: Emergence was rapid and even for all varieties. The limited supply of irrigation water restricted plant height. High temperatures caused blossom blast.

Results:

SYSTEMS COMPARISON TRIAL Lethbridge, AB (Irrigation)						
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Liberty Link						
InVigor 2733	137	31.3	62.04	42.0	992	93
InVigor 2663	137	31.2	61.36	41.2	1073	98
InVigor 2573	126	28.9	45.84	40.5	1073	98
Roundup Ready						
Admire	104	23.8	17.34	39.1	1059	96
IMC 106*	103	23.6	41.40	36.5	1031	95
Kelsey	101	23.1	14.53	41.0	992	93
IMC 206*	100	22.8	30.57	39.9	1031	95
A98-13NR	94	21.6	4.40	39.4	1073	98
Conventional						
AC Excel	100	22.9	(6.21)	41.0	1059	96
Q2	93	21.4	(21.91)	40.6	1059	96
LSD CV%		3.38 11.2		0.99 2.0		

Note: *Specialty oil
Brackets in the contribution margin reflect a negative value.

Discussion: InVigor 2733 had the highest yield, contribution margin and oil content among the varieties. Yield differences of 3.38 bu/ac or more are significant. Contribution margins reflect differences in yield, seed costs, herbicide costs and specialty oil premiums (IMC 106 and IMC 206).

RYCROFT

Methodology: The trial was seeded on May 22 at a seeding rate of 8 lb/ac for all treatments. A dense stand of wild oats quickly emerged after seeding. Wet weather delayed herbicide applications. Based on the stage and density of the wild oat population, the whole trial was sprayed with Select (0.053 L/ac), in order to protect the yield potential of all varieties. When weather conditions improved, the Roundup Ready varieties were sprayed with Roundup Transorb (0.5 L/ac), Liberty Link varieties were sprayed with Liberty (1.35 L/ac) and the conventional varieties were sprayed with Muster Gold II (Assure II @ 0.2 L/ac and Muster @ 8 g/ac). The treatments within the trial were swathed on August 31 or September 2. The whole trial was harvested on October 2.

Observation: Soil moisture was good at the time of seeding. Rain after seeding allowed for quick emergence and an even plant stand. Excess amounts of rain caused areas of the trial to be flooded for the majority of the season. As a result of this flooding, one whole rep was eliminated and data was only taken from the three remaining replicates.

Results:

SYSTEMS COMPARISON TRIAL Rycroft, AB						
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Liberty Link						
InVigor 2573	137	45.2	166.64	45.5	1035	102
InVigor 2663	132	43.8	157.19	44.7	1035	102
Roundup Ready						
Kelsey	114	37.6	127.74	45.9	1027	101
IMC 106*	113	37.5	167.66	46.8	1035	102
LBD 449RR	108	35.9	129.50	45.2	1035	101
Prairie 499RR	107	35.5	111.24	44.0	1035	102
A98-13NR	102	33.6	110.89	44.1	1035	102
Conventional						
Q2	114	37.7	131.03	44.5	1035	102
AC Excel	100	33.1	111.13	44.3	1035	102
LSD CV%		3.63 6.7		0.76 1.2		

Note: *Specialty oil

Discussion: Yield differences of 3.63 bu/ac or greater and oil content differences of 0.76 % or greater are significant. It is important to note that due to the Select application across the entire trial, these yields are primarily a reflection of broadleaf weed control and genetics. IMC 106 had the highest contribution margin even though it did not have the highest yield. Contribution margins are a reflection of yield, seed costs, herbicide costs and specialty oil premiums (IMC 106).

ROLLA

Methodology: Each treatment was seeded at a rate of 8 lb/ac on May 10 into excellent soil moisture. Decis 5EC (60 mL/ac) was aerial applied on August 2 for diamondback moth larvae control. Due to low weed pressures and unfavourable weather during the appropriate crop stage, no herbicides were applied.

Observations: Optimum growing conditions occurred throughout the growing season. This allowed the crop to emerge quickly and evenly. Adequate moisture levels were also reached. InVigor 2663 was the first variety to reach 100 % ground cover.

Results:

SYSTEMS COMPARISON TRIAL
Rolla, BC

System	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity
Liberty Link						
InVigor 2573	115	52.1	216.29	43.6	945	112
InVigor 2663	113	51.0	208.86	43.8	945	111
Roundup Ready						
A98-13NR	102	46.0	183.52	45.3	979	119
Kelsey	100	45.4	179.47	45.4	945	113
IMC 106*	92	41.7	187.41	45.5	945	113
Conventional						
Q2	110	50.0	202.10	44.4	969	117
AC Excel	100	45.2	197.58	43.9	979	120
LSD CV%		3.02 5.2		0.72 1.3		

Note: *Specialty oil

Discussion: Yield differences of 3.02 bu/ac or more and oil content differences of 0.72 % or more are significant. Although InVigor 2573 had the lowest oil content, it had the highest yield and contribution margin. The contribution margins are a reflection of yield and seed costs.

Maturity ranged from 111 to 120 days. AC Excel (check) took the longest time to mature, while InVigor 2663 matured the earliest.

XV CANOPY MANIPULATION TRIAL

Objective: To compare the effects of various seeding dates and rates on yield, maturity and disease on ***B. napus*** canola.

Background: European research (Scott et al, 1999) indicates that canola yields can be related to canopy structure after flowering. Thinner canopies allow more light to penetrate to lower pods resulting in increased yield due to translocation of photosynthetic light from pod hulls. Also, excessive vegetative growth can deplete soil moisture in dry conditions resulting in poor pod formation and filling.

Seeding rate studies have been carried out throughout western Canada under various weed and disease pressures. The introduction of genetically enhanced canola varieties has improved weed control, which lessens the need for higher plant populations. Weather conditions often contribute to increased lodging and sclerotinia. Reducing plant stands may lessen the risk of these factors. However, lower plant densities bring higher risks due to later maturity, green seed and insects (ex. root maggots).

Recent seeding date research indicated that early spring or fall dormant seeded canola has thinner and shorter plant stands, which has been related to increased yields.

Methodology: The canopy manipulation trial consisted of a combination of two seeding dates and three seeding rates using the variety InVigor 2153.

A) Early seeding date @ 1.0 lb/ac ** (Peace ~ 2.0 lb/ac)
B) Early seeding date @ 1.0 lb/ac ** (Peace ~ 2.0 lb/ac) @ SCC whole plant (optional)
C) Early seeding date @ 3.0 lb/ac ** (Peace ~ 5.0 lb/ac)
D) Early seeding date @ 5.0 lb/ac ** (Peace ~ 8.0 lb/ac)
E) Normal seeding date @ 1.0 lb/ac ** (Peace ~ 2.0 lb/ac)
F) Normal seeding date @ 1.0 lb/ac ** (Peace ~ 2.0 lb/ac) @ SCC on whole plant (optional)
G) Normal seeding date @ 3.0 lb/ac ** (Peace ~ 5.0 lb/ac)
H) Normal seeding date @ 5.0 lb/ac ** (Peace ~ 8.0 lb/ac) (Check)

Weeds were removed at the recommended leaf stage with an application of Liberty and/or Select. No fungicides were applied in order to allow the assessment of sclerotinia infection levels within each treatment.

Swathing commenced when the main stem was at 30 to 40 % seed colour change (SCC) unless the seed in the pods of the side branches were translucent and soft. In this case, swathing was delayed until the seeds in the side branches were firm.

Western Canadian Summary:

CPC Location	Selkirk MB		Naicam SK		N. Battleford SK		Beiseker AB		Lethbridge (Irr) AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
CANOPY MANIPULATION TRIAL												
Early seeding at 1lb/ac	-	-	22.0	43	19.3	28	-	-	22.1	4	-	-
Early seeding at 3lb/ac	-	-	29.9	89	23.4	48	-	-	25.3	19	-	-
Early seeding at 5lb/ac	-	-	29.2	76	23.5	41	-	-	27.5	26	-	-
Normal seeding at 1lb/ac	25.7	88	24.3	59	19.8	32	25.3	62	21.1	(2)	-	-
Normal seeding at 3lb/ac	27.4	92	30.8	95	24.6	56	20.8	25	31.2	59	-	-
Normal seeding at 5lb/ac	25.7	73	26.9	61	24.5	48	19.3	9	30.3	42	-	-
Late seeding at 1lb/ac	31.8	121	-	-	-	-	-	-	-	-	-	-
Late seeding at 3lb/ac	32.9	129	-	-	-	-	-	-	-	-	-	-
Late seeding at 5lb/ac	32.3	117	-	-	-	-	-	-	-	-	-	-
Normal seeding at 2lb/ac	-	-	-	-	-	-	-	-	-	-	49.1	221
Normal seeding at 5lb/ac	-	-	-	-	-	-	-	-	-	-	47.2	199
Normal seeding at 8lb/ac	-	-	-	-	-	-	-	-	-	-	47.2	190
Late seeding at 2lb/ac	-	-	-	-	-	-	-	-	-	-	49.7	225
Late seeding at 5lb/ac	-	-	-	-	-	-	-	-	-	-	48.7	209
Late seeding at 8lb/ac	-	-	-	-	-	-	-	-	-	-	50.1	209

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.
Brackets in the CMD reflect a negative value.

SELKIRK

Methodology: Early seeding was not possible due to wet conditions, so a late seeding date was substituted. The seeding dates were normal (May 22) and late (May 31). All treatments received a 1.35 L/ac application of Liberty at about the 2 to 3-leaf stage.

Observations: Emergence was excellent due to warm, moist soil conditions. As a result, stand establishment in all treatments was greater than expected. Weed control was very good following the Liberty application, and no sequential applications were required. Warm and moist conditions hastened crop development, but were ideal for sclerotinia development. Disease incidence was less severe at the late seeding date due to drier conditions which prevailed in August and September. Disease incidence appeared to be unaffected by seeding rate. The percentage of plants infected was 55, 50 and 51 % for the 1, 3 and 5 lb/ac normal treatments, respectively. For the late treatments, the levels were 22, 20 and 15 % for the 1, 3 and 5 lb/ac rates.

Results: (a) Plant stand measurements

CANOPY MANIPULATION Selkirk, MB						
System	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**
Normal Seeding Date						
1 lb/ac	37	33	148	71	5	4
3 lb/ac	82	42	141	66	3	1
5 lb/ac	141	77	131	60	2	0
Late Seeding Date						
1 lb/ac	43	34	139	65	5	4
3 lb/ac	92	52	135	57	3	1
5 lb/ac	149	81	125	57	2	1
LSD CV%	23.5 20.6	17.7 28.4	11.6 4.5	8.3 10.8	0.9 15.5	1.8 51.8

Results: (b) Yield and quality data

CANOPY MANIPULATION Selkirk, MB								
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Normal Seeding Date								
1 lb/ac	100	25.7	88.28	40.7	3.8	1077	84	1
3 lb/ac	107	27.4	91.95	41.6	4.2	1052	82	1
5 lb/ac	100	25.7	72.68	41.9	4.3	1052	82	1
Late Seeding Date								
1 lb/ac	124	31.8	120.87	43.3	4.4	1078	81	2
3 lb/ac	128	32.9	129.08	43.8	4.7	1078	81	1
5 lb/ac	126	32.3	117.23	43.7	5.0	1061	80	1
LSD CV%		2.79 3.7		1.43 2.6	0.86 15.8			

Results: (c) Swath staging comparison data

CANOPY MANIPULATION Selkirk, MB								
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Swathing**	**Grade**
Swath Staging Comparison								
1lb/ac @ 30-40%	100	31.8	120.87	43.3	4.4	1078	81	2
1lb/ac firm seed in side branches	105	33.5	131.88	44.0	4.4	1097	82	1
LSD CV%		2.79 3.7		1.43 2.6	0.86 15.8			

Discussion:

Plant counts increased with increased seeding rate, but were unaffected by seeding date. Lodging ratio, plant height and the number of primary and secondary branches all decreased as seeding rate increased, for both planting dates. Planting date had no effect on these factors.

The lower sclerotinia incidence in the late seeding date translated into significantly higher yields and economic returns. Seeding rate had no clear impact on yield. It appeared that the excellent emergence in the lower seeding rates combined with good growing conditions allowed the plants in those treatments to compensate well. Oil content was unaffected by seeding rate but was reduced in the normal planting date, probably due to stress from sclerotinia. Kernel weight also tended to be lower for the normal planting date. Hotter and drier weather in the latter part of the season appeared to ripen the late seeding date treatments quicker, and minimized the impact of the lower plant densities on maturity. Contribution margins reflected differences in yield, seed cost and grade.

With respect to the swath staging comparison, a one day delay in swathing resulted in an 11 % increase in seed colour change on the main stem. Some colour change was noted on lower pods on the primary branches. The delay in swathing improved yield, though not significantly. Contribution margin reflected this small increase and an improvement in grade. There was no impact on oil content or kernel weight.

NAICAM

Methodology: This trial was seeded May 4 and 15. The variety InVigor 2153 was seeded at 1.0, 3.0 and 5.0 lb/ac. Corn cob grit was used as a seed bulking agent to better regulate the 1.0 lb/ac and 3.0 lb/ac seeding rates. Seeding rates were then calculated on a 5.0 lb/ac total product basis. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. All treatments were sprayed with a tank mix of Liberty (1.35 L/ac or 10 ac/jug) and Select (0.025 L/ac or 120 ac/case).

Observations: Environmental conditions delayed emergence of the early seeding date treatments (May 22). Normal seeding date treatments emerged in only 7 days. Plant densities were proportional to seeding rates. Flea beetle damage was more severe in the 1.0 lb/ac seeding rate for both seeding dates. This was due to lower plant densities than the other treatments. All treatments were sprayed at the 2 to 3-leaf stage of the crop. Weed control was good, but there were late flushes of weeds in the lower seeding rates due to reduced crop competition. The level of sclerotinia stem rot infection did not vary between seeding rates or seeding dates.

Results: (a) Plant stand measurements

CANOPY MANIPULATION Naicam, SK						
Treatment	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**
Early Seeding Date						
1 lb/ac	20	23	99	93	5	5
3 lb/ac	59	61	105	94	3	3
5 lb/ac	98	96	112	95	3	3
Normal Seeding Date						
1 lb/ac	21	23	92	95	5	5
3 lb/ac	66	64	100	96	3	3
5 lb/ac (check)	104	100	109	96	2	2

Results: (b) Yield and quality data

CANOPY MANIPULATION Naicam, SK								
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Early Seeding Date								
1 lb/ac	82	22.0	43.17	39.4	3.1	1077	103	1
3 lb/ac	111	29.9	88.70	41.3	3.7	1055	101	1
5 lb/ac	110	29.2	76.17	42.5	3.3	1055	101	1
Normal Seeding Date								
1 lb/ac	90	24.3	58.70	40.4	3.5	1092	104	1
3 lb/ac	114	30.8	94.77	41.9	3.7	1055	101	1
5 lb/ac (check)	100	26.9	60.65	42.2	3.3	1055	101	1
LSD CV%		3.05 3.4		2.13 2.1				

Discussion: Lodging ratios, maturity and branching tended to increase as seeding rates were lowered, whereas plant height decreased, regardless of seeding date. There was no significant difference in yield between the 3 and 5 lb/ac seeding rates in either seeding date. However, the 3.0 lb/ac seeding rate yielded significantly higher compared to the 1.0 lb/ac seeding rate for both seeding dates. This yield increase is reflected in contribution margins. Seeding rate also factors into the level of profitability. There were significant differences in oil content between seeding rates in the early seeding date treatments.

NORTH BATTLEFORD

Methodology: The early seeding date treatments for this trial were seeded on May 3. The normal seeding date treatments were seeded on May 10. The drill was calibrated to seed 5 lb/ac. Corn cob grit was used to bulk up the 1 and 3 lb/ac treatments to equal 5 lb/ac. The trial was sprayed with Liberty (1.35 L/ac or 10 ac/jug) and Select (120 ac/case) on June 5. Swathing of each treatment began when all seeds on the side branches of the plants were firm.

Observations: Emergence was slow for all treatments. However, a uniform plant stand developed that was proportional to the respective seeding rates. Initial weed control was good for all treatments. However, there were late germinating weeds in the 1 lb/ac seeding rates. Canola plants in the 1 lb/ac treatments appeared to withstand the heat during flowering better than the other treatments. Flowers in the 3 lb/ac and 5 lb/ac treatments turned pale orange in colour indicating signs of heat stress. Flowers in

the 1 lb/ac treatment remained yellow in colour. Plants in the 1 lb/ac seeding rate treatments became very large and lodging problems developed. Plants in the 3 lb/ac and 5 lb/ac seeding rate treatments did not lodge. Swathing was most difficult in the 1 lb/ac seeding rate treatments.

Results: (a) Plant stand measurements

CANOPY MANIPULATION North Battleford, SK						
System	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**
Early Seeding Date						
1 lb/ac	6	6	80	76	9	18
3 lb/ac	22	22	80	89	4	9
5 lb/ac	42	47	86	90	5	3
Normal Seeding Date						
1 lb/ac	6	10	92	72	9	19
3 lb/ac	28	34	96	87	5	8
5 lb/ac (check)	50	47	96	90	5	4

Results: (b) Yield and quality data

CANOPY MANIPULATION North Battleford, SK								
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Early Seeding Date								
1 lb/ac	79	19.3	28.29	42.6	4.5	1041	103	1
3 lb/ac	96	23.4	48.17	43.5	4.3	988	98	1
5 lb/ac	96	23.5	41.04	43.7	4.4	973	97	1
Normal Seeding Date								
1 lb/ac	81	19.8	31.67	41.6	4.7	1036	97	1
3 lb/ac	100	24.6	56.27	43.8	4.6	1008	95	1
5 lb/ac (check)	100	24.5	47.79	43.1	4.7	985	93	1
LSD CV%		1.66 5.9		0.56 1.0	0.53 9.3			

Discussion: Seeding at 1 lb/ac for both seeding dates produced the lowest yield. There were no significant differences in yield among the other treatments. The 3 lb/ac and 5 lb/ac seeding rate treatments produced higher oil content than seeding at 1 lb/ac. There were no significant

differences in kernel weight among the treatments. All treatments graded #1. Differences in contribution margins reflect differences in yield and seed costs.

BEISEKER

Methodology: This trial was seeded on May 14. Corn cob grit was used as a bulking agent to achieve the lower seeding rates.

Observations: Emergence across all treatments was rapid. Drought stress was less apparent as seeding rates were lowered. Weed control was good for all treatments. The more open canopy in the 1 lb/ac treatment allowed new weeds to emerge and compete against the crop. Days to maturity lengthened as seeding rates were reduced. No sclerotinia was found in this trial.

Results: (a) Plant stand measurements

CANOPY MANIPULATION Beiseker, AB					
System	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**# Primary Branches**	**# Secondary Branches**	**# Tertiary Branches**
Normal Seeding Date					
1 lb/ac	18	17	8	8	1
3 lb/ac	49	46	5	5	0
5 lb/ac (check)	79	78	4	4	0

Results: (b) Plant stand measurements

CANOPY MANIPULATION Beiseker, AB			
System	**Plant Height (cm)**	**Lodging Ratio (%)**	**Seed Colour Change on Main stem to achieve 35 % seed colour of whole plant**
Normal Seeding Date			
1 lb/ac	76	91	55
3 lb/ac	78	95	45
5 lb/ac (check)	81	95	35

Results: (c) Yield and quality data

CANOPY MANIPULATION Beiseker, AB							
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
Normal Seeding Date							
1 lb/ac	131	25.3	61.78	39.4	4.4	1270	102
3 lb/ac	108	20.8	25.17	37.5	4.1	1185	96
5 lb/ac (check)	100	19.3	8.80	38.6	4.6	1185	96
LSD CV%		2.55 8.5		1.55 2.9	1.07 17.9		

Discussion: The 1 lb/ac treatment yielded significantly higher than the 3 and 5 lb/ac treatments, and also had the highest oil content. For this year, the 1 lb/ac seeding rate treatment had the highest contribution margin.

Maturity and branching increased as seeding rate declined. To achieve an overall plant seed colour change of 35 %, swathing had to be delayed. As seeding rates increased, plants were taller and less lodged. Due to dry conditions experienced at this site, the lower seeding rates benefited from less inter-plant competition.

LETHBRIDGE (IRRIGATION)

Methodology: The trial was seeded May 3 and 10. To achieve lower seeding rates, corn cob grit was used. All treatments were sprayed with a Liberty and Select tank mix (See ***Site Information***).

Observations: Emergence within all treatments was uniform. The early seeded portion of the trial emerged rapidly taking advantage of available soil moisture. The normal seeded portion of the trial did not emerge until after irrigation water was applied. Cabbage seedpod weevils were above threshold levels, and were sprayed when the crop was at 10 % bloom (see ***Cabbage Seedpod Weevil Trial***). Plant heights were shorter than expected. Flower blast was observed in all treatments.

Results: (a) Plant measurements

CANOPY MANIPULATION Lethbridge, AB (Irrigation)					
System	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**# Primary Branches**	**# Secondary Branches**	**# Tertiary Branches**
Early Seeding Date					
1 lb/ac	17	17	7	9	1
3 lb/ac	39	39	5	5	0
5 lb/ac	104	104	4	1	0
Normal Seeding Date					
1 lb/ac	27	27	7	9	1
3 lb/ac	59	59	5	3	0
5 lb/ac (check)	147	147	4	1	0
LSD CV%			0.5 7.9	1.5 26.7	0.3 121.5

Results: (b) Plant measurements

CANOPY MANIPULATION Lethbridge, AB (Irrigation)					
System	**Plant Height (cm)**	**Lodging Ratio (%)**	**Seed Colour Change on Main stem to achieve 35% seed colour of whole plant**	**Pods/Plant**	**Pods/ft^2**
Early Seeding Date					
1 lb/ac	97	70	70	172	292
3 lb/ac	94	83	50	105	410
5 lb/ac	91	83	30	58	603
Normal Seeding Date					
1 lb/ac	99	77	60	153	413
3 lb/ac	92	84	40	81	513
5 lb/ac (check)	91	82	30	53	779
LSD CV%				18.9 15.5	

Results: (c) Yield and quality data

CANOPY MANIPULATION Lethbridge, AB (Irrigation)								
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Early Seeding Date								
1 lb/ac	73	22.1	4.48	42.3	4.4	1136	108	1
3 lb/ac	83	25.3	19.46	42.7	4.3	1065	102	1
5 lb/ac	91	27.5	25.73	42.6	4.3	1009	97	1
Normal Seeding Date								
1 lb/ac	70	21.1	(1.88)	42.3	3.8	1079	99	1
3 lb/ac	103	31.2	59.28	43.3	3.8	1023	95	1
5 lb/ac (check)	100	30.3	41.80	43.4	4.0	1009	94	1
LSD CV%		3.98 12.7		0.82 1.6	0.70 14.5			

Note: Brackets in the contribution margin reflect a negative value.

Discussion: Yields differing by 3.98 bu/ac or more were significant. The 3 lb/ac normal seeded treatment had the highest yield and contribution margin. Emergence was greater at the normal seeding date for each seeding rate. Increased seeding rates produced shorter plants and less lodging. The 1 lb/ac seeding rate had the longest days to maturity at 108 days. To achieve overall plant seed colour change of 35 %, swathing had to be delayed as seeding rates decreased. Branching and pods per plant increased as seeding rates declined. The number of pods per square foot was highest at the 5 lb/ac normal seeding date.

ROLLA

Methodology: The normal seeding date treatments were seeded on May 9 and the late seeding date treatments were seeded on May 24. Three different seeding rates were used: 2 lb/ac, 5 lb/ac and 8 lb/ac. A fertilizer blend was seed-placed. Due to the low weed pressure, the trial was not sprayed with a herbicide. However, it was sprayed with Decis 5EC (60 mL/ac) to control diamondback moth larvae.

Observations: Adequate rainfall occurred throughout the growing season. There were no apparent maturity differences among the seeding rates at each seeding date. Each treatment was swathed at 40 % seed colour change on the main stem. There were no apparent differences in swathing each treatment.

Results: (a) Plant stand measurements

CANOPY MANIPULATION Rolla, BC					
System	**Harvest Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**
Normal Seeding Date					
2 lb/ac	52	120	72	3	1
5 lb/ac	104	119	74	3	0
8 lb/ac (check)	136	119	68	3	1
Late Seeding Date					
2 lb/ac	48	122	69	4	1
5 lb/ac	100	115	80	2	1
8 lb/ac	128	116	69	3	0

Results: (b) Yield and Quality Data

CANOPY MANIPULATION Rolla, BC								
System	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
Normal Seeding Date								
2 lb/ac	104	49.1	221.31	43.6	4.4	947	112	1
5 lb/ac	100	47.2	198.97	43.7	4.8	947	112	1
8 lb/ac (check)	100	47.2	189.45	43.8	5.0	947	112	1
Late Seeding Date								
2 lb/ac	105	49.7	225.36	44.2	4.2	981	118	1
5 lb/ac	103	48.7	209.09	44.4	4.9	981	118	1
8 lb/ac	106	50.1	209.03	44.7	4.5	947	118	1
LSD CV%		1.53 2.6		0.64 1.2	0.48 8.2			

Discussion: Yield differences of 1.53 bu/ac or greater are significant. Oil content differences of 0.64 % or greater are also significant. The oil content of the late seeded 8 lb/ac treatments was significantly higher than the check. Contribution margins are a function of yield and seed costs. Every treatment had a higher contribution margin than the check.

Lodging was slightly reduced at the 5 lb/ac seeding rate at either time of seeding. Both primary and secondary branching tended to decrease as the seeding rate increased. Days to maturity were the same among the different seeding rates. Although the normal and late seeding dates were two weeks apart, maturity only differed by six days.

XVI SEED BULKING (PRECISE) TRIAL

Objective: To investigate the use of Precise granular elemental sulphur as a seed bulking agent in assisting in reducing seeding rates of canola.

Background: One of the ways of increasing a crop's ability to fight disease while reducing lodging and overall crop height is to decrease plant population.

Over the past three years the agronomy unit of Alberta Agriculture has done preliminary research that has investigated the possibility of utilizing agronomic rates (10 to 30 lb/ac) of seed-sized elemental sulphur fertilizer to reduce canola seeding rates. By blending seed-sized sulphur with canola seed, seeding can be reduced without compromising an even stand. Many farmers are using seeding rates of 5 to 7 lb/ac, which often translates to 200 or more plants per meter square. By harvest, canola stands seldom contain half of this number. Respectable yields can be obtained from stands as low as 20 plants/meter square with proper management. However, achieving low (below 5 lb/ac) seeding rates with commercial seeding equipment is often difficult.

Methodology: Precise at 20 lb/ac was applied with canola seed at 3 lb/ac as an additional treatment within the canopy manipulation trial. This treatment was compared with a normal seeding rate. Measurements taken were the same as those used in the canopy manipulation trial.

Western Canadian Summary:

CPC Location	Selkirk MB		Naicam SK		N. Battleford SK		Lethbridge (Irr) AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SEED BULKING (PRECISE) TRIAL										
Seed rate @ 3lb/ac + Precise @ 20lb/ac	25.6	69	22.5	28	25.5	52	30.1	42	-	-
Seed rate @ 3.0 lb/ac	27.4	92	30.8	93	24.6	56	31.2	59	-	-
Seed rate @ 5lb/ac (check)	25.7	73	26.9	61	24.5	48	30.3	53	47.2	199
Seed rate @ 5lb/ac + Precise @ 20lb/ac	-	-	-	-	-	-	-	-	49.0	203
Seed rate @ 8lb/ac (check)	-	-	-	-	-	-	-	-	47.2	190

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.

SELKIRK

Methodology: The plots were seeded on May 22 into excellent moisture conditions. The variety used was InVigor 2153. In-crop herbicide applications included a single application of Liberty (1.35 L/ac). No fungicide was applied to this trial. All other agronomic practices were conducted as described in the ***Site Information***.

Observations: Emergence was very good for all treatments. Wild oats provided the majority of the weed pressure, but a scattering of various broadleaf weeds were also present. Weed control from the herbicide application was very good. The Precise treatment appeared to flower slightly earlier, but the advantage disappeared by swathing. Warm and humid conditions throughout the summer led to high levels of sclerotinia in these plots.

Results: (a) Plant stand measurements

SEED BULKING (PRECISE) TRIAL Selkirk, MB						
Treatment	**Emergence Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**	**Harvest Counts (plants/m^2)**
3 lb/ac + Precise	65	145	61	3	1	47
3 lb/ac	82	141	66	3	1	42
5 lb/ac (check)	141	131	61	2	0	77

Results: (b) Yield and quality data

SEED BULKING (PRECISE) TRIAL Selkirk, MB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
3 lb/ac + Precise	100	25.6	69.40	41.0	5.1	1052	82
3 lb/ac	107	27.4	91.95	41.6	4.2	1052	82
5 lb/ac (check)	100	25.7	72.68	41.9	4.3	1052	82
LSD CV%		1.17 3.6		1.26 2.4	0.83 15.6		

Discussion: Plant counts were higher for the 5 lb/ac seeding rate treatment than either of the other two treatments, which had similar plant stands. This appeared to translate into reduced branching and shorter plant heights. Lodging was similar for all treatments.

The 3 lb/ac seeding rate treatment significantly out yielded both the 5 lb/ac rate treatment and the Precise treatment. All treatments graded #1, so contribution margins were a reflection of yield, seed cost and the cost of the Precise. Oil contents were similar for all treatments, as was the maturity.

NAICAM

Methodology: This trial was seeded May 15. The variety InVigor 2153 was seeded at 3.0 and 5.0 lb/ac. Corn cob grit was used as a seed bulking agent to

better regulate the 3.0 lb/ac seeding rate. The 3.0 lb/ac seeding rate was calculated on a 5.0 lb/ac total product basis. Precise (20 lb/ac) was blended with 3.0 lb of InVigor 2153 and seeded at 23 lb/ac of total product. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. All treatments were sprayed at the 2 to 3-leaf stage of the crop with a tank mix of Liberty (1.35 L/ac or 10 ac/jug) and Select (0.025 L/ac or 120 ac/case).

Observations: Seedbed moisture was marginal at time of seeding. Precipitation one day after seeding resulted in rapid emergence (May 22). Plant densities recorded on June 13, were not proportional to seeding rates. A reduction in plant stand occurred in the 3.0 lb/ac seeding rate + Precise treatment. Weed control was good, but there were late flushes of weeds in the 3.0 lb/ac seeding rate + Precise, due to reduced crop competition. Maturity (seed colour change) was more variable in the low seeding rate treatments.

Results: (a) Plant stand measurements

SEED BULKING (PRECISE) TRIAL
Naicam, SK

Treatment	Emergence Counts (plants/m^2)	Plant Height (cm)	Lodging Ratio (%)	# Primary Branches	# Secondary Branches	Harvest Counts (plants/m^2)
3.0 lb/ac + Precise	24	95	94	5	4	34
3.0 lb/ac	66	100	96	3	3	69
5.0 lb/ac (check)	104	109	96	2	2	98

Results: (b) Yield and quality data

SEED BULKING (PRECISE) TRIAL
Naicam, SK

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	1000 Kernel Weight (g)	Growing Degree Days	Days To Maturity
3.0 lb/ac + Precise	84	22.5	28.35	39.7	3.4	1092	104
3.0 lb/ac	115	30.8	93.10	41.9	3.7	1055	101
5.0 lb/ac (check)	100	26.9	60.65	42.2	3.5	1046	100
LSD CV%		1.51 3.3		0.97 1.4			

Discussion: The 3.0 lb/ac + Precise treatment had at least twice the number of primary and secondary branches as compared to the check (5.0 lb/ac) treatment. Emergence and harvest plant counts were also dramatically lower. Yield and oil content varied significantly among treatments. The 3.0 lb/ac seeding rate + Precise treatment yielded significantly lower than

the check. Contribution margins reflect differences in yield, seeding rate and seed bulking costs.

NORTH BATTLEFORD

Methodology: This trial was seeded on May 10 and was included as part of the canopy manipulation trial. All treatments were sprayed with a Liberty (1.35 L/ac or 10 ac/jug) and Select (120 ac/case) tank mix on June 5.

Observations: Germination was slow but a uniform plant stand developed within each treatment. There were visible differences in plant density among the respective treatments. Heat stress was visible on all treatments and there were no visible differences in heat tolerance among the treatments. Lodging was not an issue with any of the treatments.

Results: (a) Plant stand measurements

SEED BULKING (PRECISE) TRIAL North Battleford, SK						
Treatment	**Emergence Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**	**Harvest Counts (plants/m^2)**
3.0 lb/ac + Precise	30	94	90	5	6	35
3.0 lb/ac	28	96	87	5	8	34
5.0 lb/ac (check)	50	96	90	5	4	47

Results: (b) Yield and quality data

SEED BULKING (PRECISE) TRIAL North Battleford, SK							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
3.0 lb/ac + Precise	104	25.5	51.94	43.6	5.1	1008	95
3.0 lb/ac	100	24.6	56.27	43.8	4.6	1008	95
5.0 lb/ac (check)	100	24.5	47.79	43.1	4.7	985	93
LSD CV%		2.09 6.8		0.55 1.0	0.61 10.0		

Discussion: There were no significant differences in yield or kernel weight among the treatments. The 3 lb/ac seeding rate produced significantly higher oil content than the 5 lb/ac seeding rate. Differences in contribution margins reflect differences in yield and costs associated with seeding rates and the use of Precise.

LETHBRIDGE (IRRIGATION)

Methodology: InVigor 2153 was seeded May 10. One of the 3 lb/ac treatments was blended with Precise (20 lb/ac), the other was blended with corn cob grit. The 5 lb/ac treatment was seeded without bulking.

Observations: At seeding, both the Precise and corn cob grit treatments were monitored for flowability, potential bridging, and separation of seed from the bulking agents. The Precise flowed easier through the seed drill cups. No bridging or plugging were seen using the Precise. No bridging was seen with the corn cob grit. However, because the bulk density of the corn cob grit is not the same as the bulk density of canola, some separation could be seen. No differences in days to emergence were seen among the treatments. The Precise treatment flowered one to two days longer.

Results: (a) Plant stand measurements

SEED BULKING (PRECISE) TRIAL Lethbridge, AB (Irrigation)						
Treatment	**Emergence Counts (plants/m^2)**	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**	**Harvest Counts (plants/m^2)**
3.0 lb/ac + Precise	91	91	83	5	3	89
3.0 lb/ac	59	90	84	5	3	59
5.0 lb/ac (check)	147	92	82	4	1	147

Results: (b) Yield and quality data

SEED BULKING (PRECISE) TRIAL Lethbridge, AB (Irrigation)							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
3.0 lb/ac + Precise	99	30.1	41.80	43.4	4.0	1023	95
3.0 lb/ac	103	31.2	58.50	43.3	3.8	1023	95
5.0 lb/ac (check)	100	30.3	53.21	42.3	3.8	1009	94
LSD CV%		3.98 12.7		0.82 1.6	0.70 14.5		

Discussion: There were no significant differences in yield. The check had significantly lower oil content than the other treatments. The 3 lb/ac treatment gave the highest contribution margin.

As a bulking agent, Precise had good flowability and did not bridge inside the seed drill cups. The added benefit of sulphur would not be realised until late in the season or next year.

ROLLA

Methodology: The Precise treatment consisted of 5 lb/ac of seed bulked up with 20 lb/ac of Precise. No herbicides were applied. Decis 5EC (60 mL/ac) was aerial applied on August 2 to control diamondback moth larvae.

Observations: Optimal growing conditions existed at the time of seeding and continued through the rest of the season. Weed pressure was very minimal over all treatments. All treatments were swathed at 40 % seed colour change. There were no apparent differences among these treatments during swathing or combining when considering the ease of equipment operation.

Results: (a) Plant stand measurements

SEED BULKING (PRECISE) TRIAL Rolla, BC					
Treatment	**Plant Height (cm)**	**Lodging Ratio (%)**	**# Primary Branches**	**# Secondary Branches**	**Harvest Counts (plants/m^2)**
5 lb/ac + Precise	120	70	3	1	76
5 lb/ac	119	74	3	0	104
8 lb/ac (check)	119	68	3	1	136

Results: (b) Yield and quality data

SEED BULKING (PRECISE) TRIAL Rolla, BC							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
5 lb/ac + Precise	104	49.0	202.90	43.6	4.5	947	112
5 lb/ac	100	47.2	199.05	43.7	4.8	947	112
8 lb/ac (check)	100	47.2	189.45	43.8	5.0	947	112
LSD CV%		1.53 2.6		0.64 1.2	0.82 14.5		

Discussion: The Precise treatment yielded significantly higher than the check. There were no significant differences in oil content or 1000 kernel weight of the treatments. Contribution margins are a function of yield, seed costs and cost of Precise. Although the treatment with the Precise had the added cost of the seed-bulking agent, it still had a higher contribution margin. This was a result of having a higher yield and lower seeding rate. The addition of Precise had no effect on maturity.

XVII OPTIMIZING CANOLA PRODUCTION TRIAL

Objective: To measure the individual and combined effects of varying levels of fertilization and crop protection on canola yield, quality and profitability.

Background: Research in the past has generally focused on a single component of canola production, be that a product or a management decision. While this allows the researcher to isolate the benefit of that single component, it is clear that benefits determined in this way cannot simply be added together to determine the overall benefit in a cropping system. Several small plot research trials are being conducted by a team of researchers, headed by Dr. Don Flaten at the University of Manitoba. The purpose of these experiments is to focus on the combined effects of varying levels of fertilization, crop protection and genetics, in order to determine how the choice of a certain level of one (eg. genetics) affects the profitability of different levels of the others (eg. fertility, crop protection levels).

While their experiments focused on three general "packages" of inputs including fertilization, crop protection and genetic yield potential, the trial at the Canola Production Centre in Selkirk, MB focused only on the interaction between fertilization and crop protection levels. This allowed the trial to be conducted in the larger field scale format commonly used at the CPC sites.

Methodology: The optimizing canola production trial consisted of two main treatments and three sub-treatments. InVigor 2663 was the variety used.

A) Medium level of crop protection, low level of fertilization
B) Medium level of crop protection, medium level of fertilization
C) Medium level of crop protection, high level of fertilization
D) High level of crop protection, low level of fertilization
E) High level of crop protection, medium level of fertilization
F) High level of crop protection, high level of fertilization

Low level of fertilization = no fertilizer applied
Medium level of fertilization = fertilizer applied to 35 bu/ac target yield
High level of fertilzation = fertilizer applied to 50 bu/ac target yield

Medium level of crop protection = Foundation seed treatment, one application of Liberty (1.35 L/ac)
High level of crop protection = medium level of crop protection plus sequential application of Liberty (1.08 L/ac) and fungicide application (Ronilan EG @ 0.4 kg/ac)

SELKIRK

Methodology: The nitrogen and sulphur fertilizer was broadcast on the treatments receiving fertilizer, prior to cultivation and harrowing of the entire trial. The phosphate fertilizer was seed-placed. Seeding took place on May 21, at a rate of 4 lb/ac. The first application of Liberty was done at the 2-leaf stage of the canola, with the sequential application on the high level of pest control treatments applied at the 6-leaf stage. The fungicide was applied to the high level of pest control treatments at 40 to 50 % bloom.

Observations: Emergence was very good and plant counts were similar for all treatments. Wild oats were the predominant weed with a scattering of various broadleaf weeds. Weed control was good in all treatments, and although there were some 1-leaf wild oats emerging at the time of the sequential application, this second application probably would not have been necessary. The higher fertility treatments were taller and suffered greater lodging than the low fertility treatment in both pest control regimes. In the medium level of pest control this led to increasing levels of sclerotinia infection as fertility increased (15, 30 and 43 % of plants infected in the low, medium and high fertility treatments, respectively). The fungicide application to the high pest control regime limited infection levels to near zero.

Results:

OPTIMIZING CANOLA PRODUCTION TRIAL
Selkirk, MB

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Growing Degree Days	Days To Maturity
Medium Level of Pest Control						
Low Fertility	100	31.1	152.45	44.4	1044	82
Medium Fertility	100	31.2	121.47	42.9	1044	82
High Fertility	95	29.4	97.90	42.2	1053	83
High Level of Pest Control						
Low Fertility	121	37.5	161.10	44.5	1031	81
Medium Fertility	134	41.7	157.79	44.0	1044	82
High Fertility	144	44.9	167.97	42.6	1053	83
LSD CV%		4.99 4.7		1.26 2.1		

Discussion: Yields increased with increasing fertility under the high pest control regime, but there was no increase in yield under the medium level of pest control. The yield increases in this regime were probably offset by the increasing levels of sclerotinia, as a result of the lack of fungicide and denser canopies. Higher levels of pest management improved yield in the low fertility treatments, and this spread widened as fertility increased.

Contribution margins were a function of yield, fertilizer costs and pest control costs, and all treatments graded #1. Increased pest control improved economic returns in all cases. Increased fertility decreased returns with lower levels of pest control, but increased returns slightly under the high pest control regime. Pest control had little impact on oil content or maturity. Increasing fertility decreased oil content and lengthened maturity for both levels of pest control.

XVIII DIAMONDBACK MOTH EVALUATION TRIAL

Objective: To determine the level of diamondback moth information as it relates to establishing a forecasting model.

Background: Previous work completed by Agriculture and Agri-Food Canada, Environment Canada and the Canola Council of Canada has shown a need to establish a migration forecasting model for diamondback moths. Establishing the deposit points and numbers of diamondbacks present is essential in ground truthing this forecasting model. The diamondback moths recorded are used in establishing the migration forecasting model.

Methodology: Trap counts were completed as follows:

A) Date and number of moths
B) Date and other insects
C) Change lures and trap inserts weekly
D) Forward moth counts as per protocol to Agriculture & Agri-Food Canada

Observations: High numbers of diamondback moths were caught in a number of traps this growing season. As many as four generations were observed at some Canola Production Centres. Insecticides were applied to control diamondback moth larvae at seven CPC locations. Plant damage was variable across all sites. Plant damage was most severe during pod development and maturation.

Results: All information was forwarded to Agriculture and Agri-Food Canada.

Discussion: Early migration of diamondback moths into Canada in May resulted in overlapping generations. Diamondback moth traps act as an excellent tool for monitoring populations. Counts in excess of 90 moths per week indicate a potential threat and the need for increased scouting for larvae (economic threshold of 200-300 larvae/m^2 at podding). At a number of the Canola Production Centres, moth counts were well in excess of 90 per week. Results will be added to Agriculture and Agri-Food Canada's database to improve the diamondback moth migration and forecasting model.

XIX ROOT MAGGOT MONITORING TRIAL - *B. NAPUS*

Objective: To compare and rate root maggot damage on varieties entered in the variety trial.

Background: Root maggots have been identified as a major pest of ***B. rapa*** in the parkland area of Alberta. Work at the University of Alberta and the Alberta Environmental Centre has shown that root maggots can reduce canola yield by up to 50 %. Susceptibility to root maggot differs between ***B. rapa*** and ***B. napus*** types. However, there may also be different degrees of root maggot resistance within each species.

Methodology: The variety trials (***B. napus***) were used in the root maggot monitoring trial. Thirty representative plants were collected from each plot within two days of swathing. Root maggot ratings were made immediately after collection.

Ratings:
0 - no damage
1 - feeding channels <10 % root surface area
2 - feeding channels 11 - 25 %
3 - feeding channels 25 - 50 %
4 - feeding channels 51 - 75 %
5 - feeding channels 76 - 100 % or root is completely severed

Western Canadian Summary:

Root maggot infestations were generally low at most CPC locations this year. However, moderate to heavy root maggot damage was noticed at the North Battleford CPC. Ratings were conducted on varieties within the ***B. napus*** and systems comparison trials. Ratings were also conducted on the same varieties at the Vegreville CPC. Ratings from the two sites were compared to determine if there was any consistency in damage among the varieties between the sites. InVigor 2663 (2.7 for both sites) had the highest damage rating at both sites and AC Excel (1.1 for North Battleford and 1.8 for Vegreville) the lowest. Damage ratings were variable among the other varieties and differed in severity between the two sites. It was noticed that varieties with higher damage ratings had large roots while varieties with lower damage ratings had small roots. This is similar to results from other studies where root maggot damage tends to be more severe on large rooted canola plants.

XX CABBAGE SEEDPOD WEEVIL TRIAL

Objective: To evaluate the effectiveness of management tools, such as seeding date, seeding rate and insecticide application, in minimizing cabbage seedpod weevil damage.

Background: ***History:*** The cabbage seedpod weevil (***Ceutorhynchus obstrictus***) was first introduced into the lower mainland of British Columbia from Europe in the 1930's. From there, the insect spread into the Pacific Northwest region (PNW) of the United States. Up until 1995, with the exception of a few reports of spraying for the weevil in the Creston valley of British Columbia, it was believed that the insect remained isolated in the PNW region. Yield losses in the Pacific Northwest from the weevil have been as high as 35 %. In 1996, the larvae of the weevil were found feeding on seeds during an examination of pods at the Lethbridge Canola Production Centre (Canola Council Agronomist: Doug Moisey). Bob Byers and Rick Butts of Agriculture Canada later identified the larvae as ***Ceutorhynchus obstrictus***. Since 1996, pod weevil numbers have steadily increased. According to Alberta Agriculture surveys, the weevil has spread as far north as Olds, Alberta and as far east as Medicine Hat, Alberta. In 2000, seedpod weevils were identified in southwestern Saskatchewan.

Life Cycle: The cabbage seedpod weevil attacks plants within the ***Brassicaceae*** family. In the early spring over-wintering adults emerge and begin feeding on stinkweed, flixweed, volunteer canola and wild mustard. The weevils begin to move into the fields once canola reaches the bud stage. Damage is inflicted by both adults and larvae. The adult weevils first feed on the flower by piercing the centre of the bud. The resulting damage can either be an aborted flower or damage to petals on fertile flowers. Feeding continues until females reach sexual maturity.

Adults then begin to search for developing (1-2 cm long) pods and begin egg laying. Each female will lay between 60 - 70 eggs. Eggs are typically laid on one side of the pod, but can be laid on both sides of the septum. The larvae hatch within the pod and begin to feed on developing seeds. Each larva consumes approximately six seeds. They then burrow out of the pod, leaving an exit hole. Infection of the pod from fungal agents can occur depending on environmental conditions.

Larvae migrate to the ground to pupate in the soil. A week to ten days later emergence of the next generation of adults begins. Under normal conditions these new adults feed on late maturing canola and other host plants. If the crop is delayed in maturity, the new adults will begin feeding on the immature seeds within the pods. The adults extract the nutrients from the centre of the seed leaving an outer shell.

Control: Presently the only control method is to apply an insecticide at early bud or bloom stage. Seed treatments and varietal resistance are being examined.

Methodology: InVigor 2153 was seeded at three rates (1lb/ac, 3lb/ac and 5lb/ac) on two seeding dates. All treatments were doubled. This allowed for spraying if cabbage seedpod weevil populations were above threshold levels. The trial was made up of four replicates in a randomized complete block design. Each of the treatments were monitored over the growing season for weevil populations and exit holes. Emergence traps were set up within each treatment to monitor populations of new adults.

LETHBRIDGE (IRRIGATION)

Methodology: This trial was seeded May 3 and 10. The treatments were sprayed at the 2-leaf stage with a tank mix of Liberty and Select. Duplicate treatments were sprayed with the recommended rate of Matador at 10 % bloom. Three pan traps per plot were set up after crop emergence to monitor over wintering cabbage seedpod weevils entering the field. At pod set, emergence traps were set up in the unsprayed treatments of the trial to monitor numbers of emerging second generation weevils. At harvest, branches, pods and exit holes per pod were counted on 20 plants per plot.

Observations: The early seeded portion of the trial emerged rapidly. The normal seeded treatments did not emerge until an application of irrigation water. Pan trap samples revealed high numbers of over wintering adults. Sweep sampling conducted at bolting, revealed weevil levels at six per sweep, which was above threshold levels of three per sweep. The weevils were feeding on the newly emerging buds. After spraying, sweeps of the sprayed portions revealed no weevils. The unsprayed treatments contained above threshold levels (six per sweep) of the weevil. High temperatures and wind caused blossom blast across all treatments. The early seeded treatments appeared to suffer more. Pod assessment at harvest showed that the sprayed portions of the trial had very few exit holes in the pods. Conversely, the unsprayed portions contained high numbers of exit holes. It was also observed that as seeding rate increased so did the numbers of pods with exit holes.

Results: (a) Plant measurements

CABBAGE SEED POD WEEVIL Lethbridge, AB (Irrigation)					
Treatment	**Emergence Counts (plants/m^2)**	**Harvest Counts (plants/m^2)**	**# Primary Branches**	**# Secondary Branches**	**# Tertiary Branches**
Early Seeding Date					
1lb/ac sprayed	17	17	7	9	1
1lb/ac unsprayed	17	17	6	9	1
3lb/ac sprayed	39	39	5	5	0
3lb/ac unsprayed	44	44	4	4	0
5lb/ac sprayed	104	104	4	1	0
5lb/ac unsprayed	85	83	4	1	0
Normal Seeding Date					
1lb/ac sprayed	27	27	7	9	1
1lb/ac unsprayed	22	22	6	8	1
3lb/ac sprayed	59	59	5	3	0
3lb/ac unsprayed	55	53	4	3	0
5lb/ac sprayed	147	147	4	1	0
5lb/ac unsprayed	150	148	4	1	0
LSD CV%			0.5 7.9	1.5 26.7	0.2 121.5

Results: (b) Pod Distribution

CABBAGE SEED POD WEEVIL Lethbridge, AB (Irrigation)		
Treatment	**Pods/Plant**	**Pods/ft^2**
Early Seeding Date		
1lb/ac sprayed	172	292
1lb/ac unsprayed	161	274
3lb/ac sprayed	93	362
3lb/ac unsprayed	87	383
5lb/ac sprayed	58	603
5lb/ac unsprayed	58	493
Normal Seeding Date		
1lb/ac sprayed	153	413
1lb/ac unsprayed	144	316
3lb/ac sprayed	85	513
3lb/ac unsprayed	87	479
5lb/ac sprayed	53	779
5lb/ac unsprayed	54	810
LSD CV%	19.0 15.5	

Results: (c) Exit Hole data*

Seeding Date	Treatment	Seeding Rate	Mean Number of Exit Holes per Pod
Early	Sprayed	1	0.00 ± 0.00 ***a***
		3	0.01 ± 0.00 ***a***
		5	0.00 ± 0.00 ***b***
	Unsprayed	1	0.02 ± 0.01 ***a***
		3	0.04 ± 0.01 ***b***
		5	0.21 ± 0.02 ***b***
Normal	Sprayed	1	0.01 ± 0.00 ***a***
		3	0.00 ± 0.00 ***a***
		5	0.00 ± 0.00 ***a***
	Unsprayed	1	0.03 ± 0.01 ***a***
		3	0.05 ± 0.01 ***a***
		5	0.05 ± 0.01 ***a***

*Data supplied by Dr. Lloyd Dosdall.
Mean numbers of cabbage seedpod weevil exit holes per pod (± S.E.) for plants of ***B. napus*** seeded at rates of 1, 3, and 5 pounds per acre on early (+ May 2001) and normal (+ May 2001) seeding dates and either treated with foliar insecticide (Matador CS® at 10 g a.i. per ha) or untreated. Letters in the columns within each seeding date and insecticide treatment regime indicate significance of differences among the seeding rates: means having the same letter indicate no significant differences using analysis of variance and Tukey's studentized range test.

Results: (d) Pan Trap / Emergence Trap data*

Seeding Date	Seeding Rate	Weevil Adults	Weevil Larvae
Early	1	21.64 ± 1.74 ***a***	0.12 ± 0.06 ***b***
	3	22.30 ± 2.17 ***a***	1.03 ± 0.37 ***ab***
	5	28.49 ± 2.41 ***a***	1.72 ± 0.47 ***a***
Normal	1	17.00 ± 1.47 ***a***	0.08 ± 0.05 ***a***
	3	24.57 ± 1.67 ***a***	0.22 ± 0.07 ***a***
	5	27.25 ± 2.24 ***a***	0.23 ± 0.09 ***a***

*Data supplied by Dr. Lloyd Dosdall.
Mean numbers of cabbage seedpod weevil adults and larvae (± S.E.) collected per pan trap sampler set among plants of ***B. napus*** seeded at rates of 1, 3, and 5 pounds per acre on early (+ May 2001) and normal (+ May 2001) seeding dates. Letters in the columns within each seeding date indicate significance of differences among the seeding rates: means having the same letter indicate no significant differences using analysis of variance and Tukey's studentized range test.

Results: (e) Yield and quality data

CABBAGE SEED POD WEEVIL Lethbridge, AB (Irrigation)							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**
Early Seeding Date							
1lb/ac sprayed	73	22.1	4.48	42.3	4.4	1136	108
1lb/ac unsprayed	76	23.2	22.65	42.2	4.2	1136	108
3lb/ac sprayed	83	25.3	19.46	42.7	4.3	1065	102
3lb/ac unsprayed	83	25.1	28.11	42.9	4.2	1065	102
5lb/ac sprayed	91	27.5	25.73	42.6	4.3	1009	97
5lb/ac unsprayed	85	25.7	23.92	42.6	4.1	1009	97
Normal Seeding Date							
1lb/ac sprayed	70	21.1	(1.88)	42.3	3.8	1079	99
1lb/ac unsprayed	68	20.7	5.77	41.4	4.1	1079	99
3lb/ac sprayed	103	31.2	58.50	43.3	3.8	1023	95
3lb/ac unsprayed	97	29.6	58.48	43.2	3.6	1023	95
5lb/ac sprayed (check)	100	30.3	53.21	43.4	4.0	1009	94
5lb/ac unsprayed	97	29.5	49.52	42.2	4.4	1009	94
LSD CV%		3.99 12.7		0.82 1.6	0.70 14.5		

Note: Bracket represents a negative contribution margin.

Discussion: Yields differences of 3.99 bu/ac or more are significant. As plant densities increased, the benefits of an insecticide application also increased. Comparing the early 3 lb/ac treatments (sprayed vs. unsprayed), pod exit hole numbers were significantly different. The number of pods per plant were similar, as well as the plants per square foot.

Pan trap and emergence trap data collected show significant differences in weevil populations as seeding rate increased. The highest populations found were in the 5 lb/ac early seeded treatment. A potential reason for higher weevil numbers with increased plant populations relates to pod density. The higher pod densities supply a larger target area for the weevils to feed and lay eggs on. There were more pods per square foot as seeding rate increased (see ***Table b***). The 5 lb/ac normal seeding date had 810 pods/ft^2 as compared to 513 pods/ft^2 in the 3 lb/ac normal treatment.

This is the first year for this study and it will be continued to monitor and assess the merits of seeding rates and dates as a cultural control for the weevil.

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
TIME OF SWATHING TRIAL												
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 @ 8b/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^2 at the 3 lb/ac seeding rate, and 84 plants/m^2 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:

TIME OF SWATHING TRIAL Dauphin, MB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 kwt**	**Grade**	**Green (%)**
5.0 lb/ac - Seeding Rate							
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
3.0 lb/ac - Seeding Rate							
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

TIME OF SWATHING TRIAL
Grenfell, SK

Treatment	Emergence Counts (plants/m^2)	Plant Height (cm)	Lodging Ratio (%)	# Primary Branches	# Secondary Branches
5.0 lb/ac - Seeding Rate					
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
3.0 lb/ac - Seeding Rate					
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

TIME OF SWATHING TRIAL Grenfell, SK					
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 kwt**
5.0 lb/ac - Seeding Rate					
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
3.0 lb/ac - Seeding Rate					
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 CV%		3.41 5.6		1.02 1.3	1.26 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:

TIME OF SWATHING TRIAL
North Battleford, SK

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	1000 kwt	Grade	Green (%)
5 lb/ac - Seeding Rate							
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
3 lb/ac - Seeding Rate							
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 CV%		1.47 5.3		0.92 1.7	0.92 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
5 lb/ac - Seeding Rate						
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
3 lb/ac - Seeding Rate						
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^2, where as the 5 lb/ac treatments averaged 140 plants/m^2. 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:

TIME OF SWATHING TRIAL
Beiseker, AB

Treatment	Yield (%)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	1000 kwt
5lb/ac - Seeding Rate					
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
3lb/ac - Seeding Rate					
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 (%)
8 lb/ac - Seeding Rate							
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
3lb/ac - Seeding Rate							
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.

XXII HARVEST MANAGEMENT (PUSHING) TRIAL

Objective: To evaluate the potential of the "Yield Shield" canola pusher for improving the success of straight combining of ***B. napus*** canola.

Background: Past research at Canola Production Centres has indicated that shattering losses from straight combining ***B. napus*** canola generally outweigh any yield benefits as compared to swathing. However, results have varied from losses as large as 50 % to small increases in yield, depending on the variety used and environmental conditions. The trials where straight combining has been most successful indicate that lodged crops make the best candidate for straight combining. Ag Shield, a manufacturing company in Benito, Manitoba, has designed a header that can be used to simulate lodging by pushing the crop over. These trials will assess whether this new technology actually improves the success of straight combining.

Methodology: Treatments will include some or all of the following:

A) Swathed - at appropriate seed colour change (check)
B) Straight combined without pushing
C) Pushed early (about 10 days prior to swathing) then straight cut
D) Pushed late (about 10 % seed colour change) then straight cut

Western Canadian Summary:

CPC Location	Selkirk MB		Grenfell SK	
	NYD	CMD	NYD	CMD
HARVEST MANAGEMENT (PUSHING) TRIAL				
Swathed (check)	30.1	35	33.0	84
Pushed - Early	30.4	37	-	-
Pushed - Late	33.4	57	30.4	66
Straight Cut	34.6	67	31.4	75

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
(-) Indicates treatment not conducted.

DAUPHIN

Methodology: Seeding took place on May 29. The Roundup Ready variety DKL34-55 was seeded at 6.5 lb/ac. Roundup Transorb was applied at 0.5 L/ac at the 4-leaf stage of the crop. The fungicide Rovral Flo (0.85 L/ac) was applied at about 40 % bloom. One treatment was swathed with an 18 ft Versatile 400 swather equipped with a pick-up reel and lifter guards. The pushed treatments were pushed with a 30 ft “Yield Shield” header, then harvested with a 24 ft John Deere straight combine header with a bat reel. Straight cut treatments were harvested with the same header. A John Deere 7700 combine harvested the swathed plots. A John Deere

9610 was used for the straight cut and pushed treatments, due to equipment availability and compatibility with the header.

Observations: Emergence was quick due to adequate moisture and heat. Weeds present included wild oats, volunteer wheat, wild mustard and hemp-nettle. Herbicide application occurred when the canola was at approximately the 4-leaf stage, with good weed control. No significant disease or insect pressure was noted. The crop was rather short, and as a result the pushed treatments had to be pushed very low to keep them from springing back up. Conditions from swathing through harvest were quite warm and dry. Little or no shelling was apparent in the pushed and straight cut treatments.

Results: (a) Plant stand measurements

HARVEST MANAGEMENT (PUSHING) TRIAL Dauphin, MB			
Treatment	**Plant Height (cm)**	**Canopy Height (cm)**	**Lodging Ratio (%)**
Swathed (check)	114	N/A	N/A
Pushed - Early	114	52	45
Pushed - Late	114	44	38
Straight Cut	114	80	70

Results: (b) Yield and quality data

HARVEST MANAGEMENT (PUSHING) TRIAL Dauphin, MB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Days To Harvest**	**Grade**	**Green (%)**
Swathed (check)	100	30.1	34.50	43.2	112	1	0.5
Pushed - Early	101	30.4	36.52	43.5	113	1	0
Pushed - Late	111	33.4	56.77	43.9	113	1	0
Straight Cut	115	34.6	66.95	44.4	113	1	0
LSD CV%		2.68 6.4		0.79 1.4			

Discussion: Among those treatments that were straight combined, the lodging ratios were highest in the treatment that was not pushed. The treatment pushed at 10 % seed colour change was lodged the most since it had less time to rebound after pushing. As a result, combine speed was slowed in the pushed treatments, as compared to straight combining or swathing.

Straight cutting resulted in significantly higher yield than swathing. This was probably due to conditions that were not conducive to shattering. The hot, dry conditions following swathing could also have contributed to greater seed shrinkage in the swathed treatments. Pushing early produced similar yields to swathing, while pushing later was similar to straight cutting. This indicates that perhaps the bending of the stems did in some way inhibit pod filling. Only the straight cut treatment produced significantly higher oil content than swathing. Contribution margins reflected yield and a $2.00 per acre discount on machinery cost (fuel, lube and repairs) for straight cutting. It was assumed that these costs would be similar for swathing and pushing.

GRENFELL

Methodology: Seeding took place on May 17. The Roundup Ready variety 45A51 was seeded at 6.0 lb/ac. A fertilizer blend of 10-25-10-5 (actual) was seed-placed for all treatments. Vantage Plus was applied at 0.5 L/ac at the 2 to 3-leaf stage of the crop. A fungicide was applied to control sclerotinia stem rot at 20 to 25 % bloom. One treatment was swathed with a 20 ft Versitile 4400 swather equipped with a pick-up reel. Another treatment was pushed with a "Yield Shield" 30 ft pusher then harvested with a 20 ft New Holland flex straight combine header. Straight cut treatments were harvested with the same header. A New Holland TR85 combine harvested all treatments.

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 all treatments. In-crop weed control was good. Lodging was apparent in low-lying areas. Hot, dry weather during maturation caused rapid seed colour change. Crop loss was evident in the straight combined treatments. Harvestability varied greatly among treatments.

Results: (a) Plant stand measurements

HARVEST MANAGEMENT (PUSHING) TRIAL Grenfell, SK				
Treatment	**Emergence Counts (plants/m^2)**	**Plant Height (cm)**	**Canopy Height (cm)**	**Lodging Ratio (%)**
Swathed (check)	112	132	121	92
Pushed - Late	115	135	40	30
Straight Cut	109	134	109	81

Results: (b) Yield and quality data

HARVEST MANAGEMENT (PUSHING) TRIAL Grenfell, SK				
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**
Swathed (check)	100	33.0	83.59	43.9
Pushed - Late	92	30.4	66.04	44.8
Straight Cut	95	31.4	74.87	44.9
LSD		0.79		1.84
CV%		1.4		2.4

Discussion:

Lodging ratios were highest in the pushed treatment due to the effect of pushing canola. Straight combined treatments were also lodged. Speed of operation was reduced dramatically from an average of 3.5 miles/hr in swathed treatments to 1.5 miles/hr in pushed treatments. Straight combined treatments were harvested at 2.5 miles/hr.

Yield differences of 0.79 bu/ac or greater were significant. Harvest management had a significant impact on yield. Pushing yield losses were mostly attributed to mechanical damage (shelling) during combining. However, the combination of mechanical damage in the lodged areas and wind damage contributed to yield losses in straight cut treatments. Oil content did not vary significantly. Contribution margins reflected yield and a $2.00 per acre discount on machinery cost (fuel, lube and repairs) for straight cutting. It was assumed that these costs would be similar for swathing and pushing.

XXIII SUMMARY

The Canola Production Centre program is a continuing success in spite of many environmental challenges. These include spring frost, hail, flooding, drought and insect damage. In 2001, the program looked not only at new agronomic issues and management techniques brought forward to us by producers and industry, but ongoing trials. Examples of new trials include; seed bulking, harvest management, time of burnoff and optimizing canola production. Examples of ongoing trials include; variety evaluation, canopy manipulation, cabbage seedpod weevil and systems comparison trials. These trials were carried out in a non-biased, in depth, quality driven fashion that the Canola Council of Canada strives for. The information outlined in this report should be used as a part of a complete information gathering process to assist producers in making decisions on their farms.

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I ACKNOWLEDGEMENTS

APPENDIX - Minnesota Canola Production Centre Results

The Minnesota Canola Production Centre is a public-private international partnership between the Minnesota Canola Council, the University of Minnesota and the Canola Council of Canada.

Many thanks to all of our local and regional sponsors for their donations of cash, products and services. Their continued support has made the Minnesota Canola Production Centre a reality.

Thank you all!

II SITE DESCRIPTION

The Program was supported locally by the following organizations that have donated products and/or services to the Canola Production Centre:

MINNESOTA - Dave LeGare, Agronomist

Location: Thief River Falls - 95 acres

Land:

Ken and Connie Mehrkens (co-operators)

Gold Level Sponsors ($400 or more)

- Northern State Bank

Silver Level Sponsors ($200-$399)

- Anderson Power and Equipment

Bronze Level Sponsors (Less than $200)

- Cenex Farmer's Union
- Farmer's Co-op Grain and Seed Association
- First National Bank
- Northern Motors
- Westside Motors
- Thune Insurance

Seed and Seed Treatment:

Aventis CropScience USA - InVigor 2663 (2 bags)
Croplan Genetics - HyClass 601
DeKalb - DKL3455 (2 bags)
Gustafson - Gaucho seed treatments
Interstate Seed - Hyola 401, Hylite 201, Q2
Pioneer - 44A89 (2 bags)
Syngenta - Helix seed treatments

Fertilizer:

Agriliance (72 acres)
Northwest Grain (23 acres)

Pesticides:

Agriliance - Class Trust (70 acres)
Aventis CropScience USA - Liberty (38 acres)
BASF - Ronilan (90 acres), Poast (40 acres), Raptor (8 acres)
Dow AgroSciences - Stinger (51 acres)
DuPont Agricultural Products - Assure II (73 acres), Muster (60 acres)
FMC Corporation - Capture (92 acres)
Monsanto - Roundup Ultra Max (98 acres)

Equipment and Labour:

Anderson Power & Equipment - John Deere 6600 combine
Dave Severson - cement mixer
Evergreen Implement - John Deere 9600 combine
Ken and Connie Mehrkens - John Deere 4450 tractor, John Deere 9600 combine, equipment storage, grain truck, shop use
Nelson Equipment - labor for swather repairs

Northwest Grain - fertilizer application, soil testing, pre-plant herbicide application, soil analysis, seed storage
Pioneer Hi-Bred - weigh wagon
Ron's Aerial Spraying - sponsored spraying (22 acres)

Photocopying & Faxing:

Pennington County Extension Office
Polk County Extension Office

Tours:

Agri-Tel Grain
Aventis CropScience USA
Leonard Geske and Tom Koop
Northern State Bank
Pennington County Extension Office
Smiley 4-H Club
UAP Northern Plains (Howard Hoven Family)

Comments:

A special thanks to **Susan Boeddeker, Kristin Johnson, Karen Andol** and **Nycole Erickson** for their dedication and assistance throughout the season. Thanks to **Terry Sonju** for his assistance. Thanks also to the wonderful staff of the Minnesota Canola Council for assisting with our field day. I would also like to thank **Derwyn Hammond** and the rest of the **Crop Production team** of the **Canola Council of Canada** for their assistance and guidance.

III INTRODUCTION

The Canola Council of Canada initiated Canola Production Centres to address the ongoing need for canola production technology transfer as identified during the Grow with Canola program (1985-1990). The Canola Production Centres are a joint effort between producer groups, industry representatives, and government and extension personnel. The continuing co-operation of these groups ensures the ongoing success of the Canola Production Centres. Field scale agronomic trials utilizing commercial farm equipment are conducted at the sites, and the information generated is utilized for extension activities throughout the year.

Following tours of the Canola Production Centre near Carman, MB in 1996 and 1997, the Minnesota Canola Council sought funding for a joint project between the Minnesota Canola Council, University of Minnesota and Canola Council of Canada. The purpose of the project was to establish a Canola Production Centre site in Minnesota, and the role of the Canola Council of Canada was to provide expertise and supervisory support. This would help ensure that activities at this site would be consistent with activities at the Canadian CPC's. This allows the information from all sites to be easily shared. Funding for the project was approved in April 1998, and the Minnesota Canola Production Centre program was born.

During the first two years of the project, the Minnesota Canola Production Centre was located near Roseau, MN. In 2000, the site was moved to Thief River Falls, MN. In 2001, the field day tour was held on July 11 and included a barbeque lunch and tour of the site. All trials were signed and copies of site plans were available at the entrances to allow for self-guided tours at any time other than scheduled tour dates.

Information obtained from the Canola Production Centre includes many agronomic factors such as yield and quality data, early season plant counts, lodging indices and harvestability ratings on varieties.

It should be noted that the material contained in this report is a collection of agronomic information from a specific location and only from one site year. Therefore, it should be observed and understood accordingly.

IV DEFINITIONS

Please refer to the Definitions (Page 16) section of the report for the Canadian CPC's for clarification of any terms you are not familiar with.

V ECONOMIC ANALYSIS

A. Canola Pricing System (Based on average prices at harvest, in U.S. dollars)

Green Seed (%)	$/100 lb* At Elevator	Plus $/100 lb LDP**	Final $/100 lb	Final $/bu
0 - 2.0	8.47	0.41	8.88	4.44
2.1 - 2.5	8.24	0.41	8.65	4.33
2.5 - 3.0	8.19	0.41	8.60	4.30
3.1 - 3.5	8.15	0.41	8.56	4.28
3.5 - 4.0	8.10	0.41	8.51	4.26
4.1 - 4.5	8.06	0.41	8.47	4.24
4.5 - 5.0	8.01	0.41	8.42	4.21
5.1 - 5.5	7.97	0.41	8.38	4.19
5.5 - 6.0	7.92	0.41	8.33	4.17
6.1 - 7.0	7.56	0.41	7.97	3.99
7.1 - 8.0	7.33	0.41	7.74	3.87

Note 1: The green seed was determined by using one 500 seed crush strip test done on each sample from every treatment within a particular trial.

**** Green seed discounts obtained from Harvest States Cooperatives, Velva, ND.***

Note 2: ** LDP = Loan Deficiency Program

B. Cost Calculations & Assumptions

The following costs were used in calculating economic returns for the various trials and treatments, and are expressed in **U.S. dollars**. Fertilizer and crop protection product prices were obtained from various dealers throughout the region. Prices reflect a northwestern Minnesota average for summer 2001.

Equipment costs were obtained from the University of Minnesota Extension Service and are estimated equipment variable costs for Minnesota. There has been no value allocated for capital and fixed costs.

CANOLA ARGENTINE VARIETY SEED COSTS					
B. napus	**$/lb**	**Distributor**	***B. napus***	**$/lb**	**Distributor**
44A89	3.45	Pioneer Hi-Bred	InVigor 2573	5.40	Aventis CropScience
46A76	4.15	Pioneer Hi-Bred	InVigor 2663	5.65	Aventis CropScience
Canterra 1492	5.03	Proseed	LG3311	3.96	Agri-Tel Grain
DKL23-38	3.75	DeKalb	LG3366	3.96	Agri-Tel Grain
DKL3345	4.35	DeKalb	LG3525	4.35	Limagrain
DS Roughrider	3.86	Proseed	LiBred 499RR	5.40	Brett Young Seeds
Gladiator	4.55	Interstate Seed	LS 296RR	4.88	Legend Seed
HyClass 601	4.75	Croplan Genetics	Q2	2.97	Interstate Seed
Hylite 201	3.85	Interstate Seed	RideR	4.45	DeKalb
Hyola 357	5.51	Interstate Seed	SW BadgeRR	4.85	Seeds 2000
Hyola 401	4.81	Interstate Seed			

Note: Seed cost may vary. Prices reflect the Minnesota suggested retail for Spring 2001 with Helix Xtra seed treatment.

PRODUCT INFORMATION			
Product	**Active Ingredient**	**Manufacturer/ Distributor**	**$/Unit Cost**
Assure II	quizalofop-p-ethyl	DuPont Agriculture Products	131.10/gal
Ammonium Sulfate	ammonium sulfate	Agriliance	0.26/lb
Canola Package	fludioxonil + mefenoxam + difenoconazole	Syngenta	0.20/lb seed
Capture	bifenthrin	FMC Corporation	404.90/gal
Class COC	crop oil concentrate - 17 %	Agriliance	5.10/gal
Class Trust	trifluralin	Agriliance	19.00/gal
Folicur	tebuconazole	Bayer	307.25/gal
Gaucho + Clothianidin**	carboxin + thiram + metalaxyl + imidacloprid + clothianidin**	Gustafson	1.56/lb seed**
Gaucho CS	carboxin + thiram + metalaxyl + imidacloprid	Gustafson	0.84/lb seed
Helix Lite	fludioxonil + mefenoxam + difenoconazole + thiamethoxam	Syngenta	0.79/lb seed
Helix XTra	fludioxonil + mefenoxam + difenoconazole + thiamethoxam	Syngenta	1.45/lb seed
Muster	ethametsulfuron	DuPont Agriculture Products	28.95/oz
Liberty	glufosinate ammonium	Aventis CropScience USA	87.60/gal
Poast	sethoxydim	BASF	65.90/gal
Raptor	imazamox	BASF	487.80/gal
Ronilan	vinclozolin	BASF	21.30/lb
Roundup Ultra Max *	glyphosate	Monsanto	51.30/gal
Rovral Flo	iprodione	Aventis CropScience USA	146.23/gal
Stinger	clopyralid	Dow AgroSciences	477.67/gal
Topsin	thiophanate-methyl	Elf Atochem	16.30/lb
Vitaflo 280 + Allegiance	carboxin + thiram + metalaxyl	Gustafson	0.08/lb seed

* Note: $15/ac TUA includes first 13 oz/ac of Roundup Ultra Max.

** Note: Clothianidin is a non-registered product and price is the company's estimate of market value.

Numerous references to pesticide applications will be found in this report. We advise everyone to consult with recommendations and product labels for complete instructions.

CANOLA FERTILIZER COSTS			
Fertilizer	**Analysis**	**$/Ton**	**$/lb of Nutrient**
Ammonium Sulfate	21-0-0-24	165.00	0.28 (of N)
Ammonium Sulfate	21-0-0-24	165.00	0.10 (of S)
Phosphate	18-46-0	230.00	0.14 (of P_20_5)
Urea	46-0-0	257.00	0.28

Machinery Cost:

- Conventional tillage: $ 11.73/acre
- Extra spray pass: add $ 0.32/acre
- Straight combining: subtract $ 0.71/acre

Additional Machinery Costs: (Custom Application)

- Aerial $ 4.20/acre
- Ground (fungicide) $ 4.25/acre
- Fertilizer application $ 3.75/acre

Note: Machinery costs were obtained from the University of Minnesota Extension Service and are estimated operating costs (such as fuel, lubrication and repairs) for Minnesota.

Minnesota State Check-off:

$ 0.05 per 100 pounds of canola.

Interest/Opportunity Cost:

This cost calculation demonstrates the cost of money borrowed and charged on crop inputs and machinery-operating costs. In 2001, 7.5% per annum over six months was used.

C. Economic Results Report (example)

Site: ***Thief River Falls, MN***

B. napus Variety Trial: ***Hyola 401***

CALCULATION OF VALUE OF PRODUCTION				
Yield (bu/ac)	**X**	**Price ($/bu)**	**=**	**Value of Production**
40.8		4.44		181.15

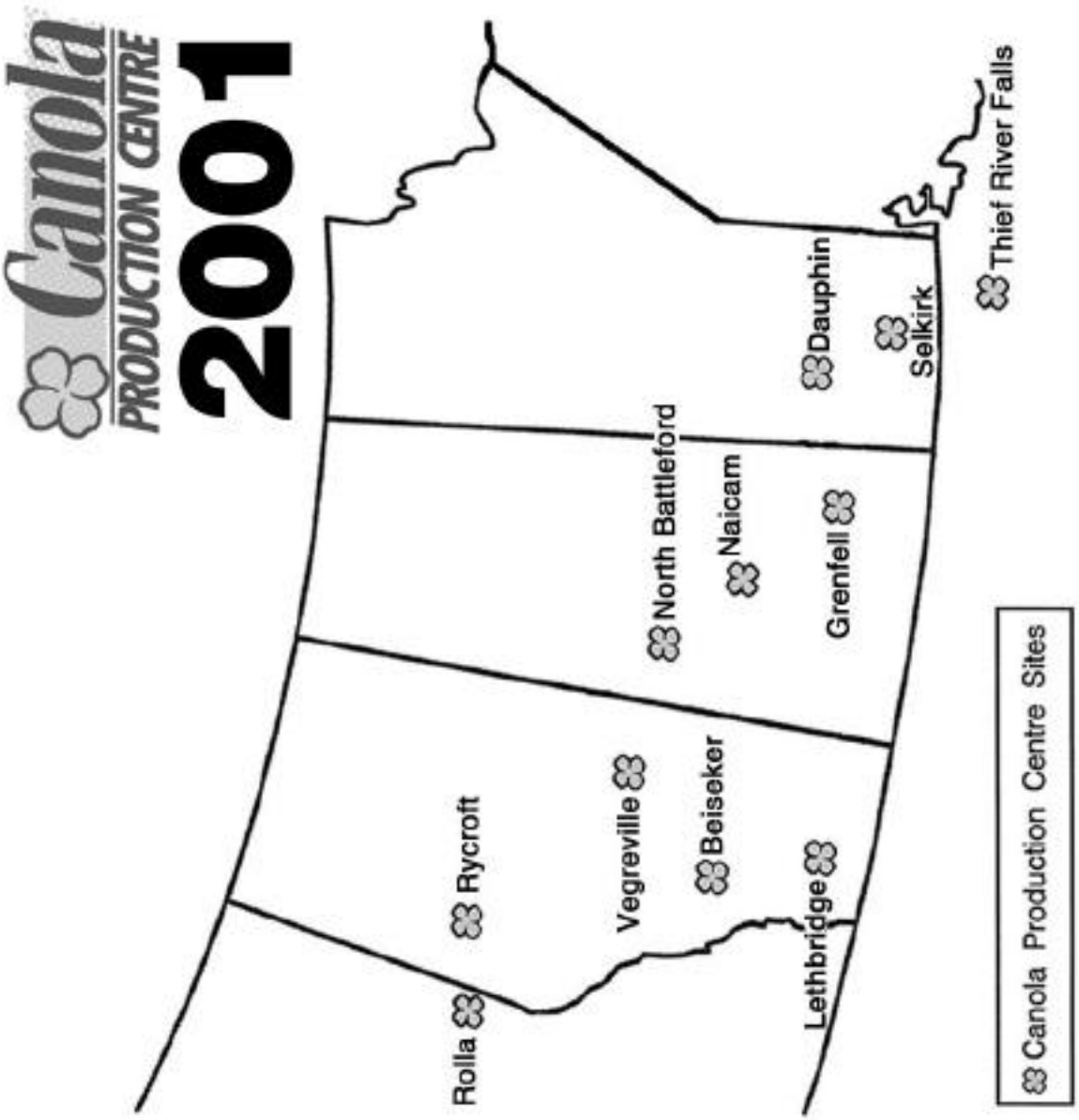
CALCULATION OF VARIABLE COSTS ($/ac)	
Seed	24.05
Fertilizer	37.11
Herbicides	37.80
Fungicides	20.17
Insecticides	8.60
Machinery	11.73
Insurance	0.00
Check-off	1.02
Interest/opportunity	5.23
Total Variable Costs	145.71

CALCULATION OF CONTRIBUTION MARGIN				
Value of Production ($/ac)	**-**	**Variable Costs ($/ac)**	**=**	**Contribution Margin ($/ac)**
181.15		145.71		35.44

Contribution Margin ($/ac)	/	Yield (bu/ac)	=	Contribution Margin ($/bu)
35.44		40.8		0.87

This example was developed and prepared with assistance from Royal Bank of Canada agrologists.

VI SITE LOCATION MAP



VII SITE INFORMATION

THIS IS GENERAL SITE INFORMATION THAT MAY CHANGE FOR SPECIFIC TRIALS.

Location: Thief River Falls, MN

Co-operator: Ken and Connie Mehrkens

		West Field	East Field
Previous crop:		Wheat	Wheat
Soil test results: (AGVISE Laboratories)			
Organic matter content:		2.7 %	3.3 %
Macronutrient Levels: (0-6", 6-24")			
Nitrogen -	0-6 inches	11 lb/ac	26 lb/ac
	0-24 inches	47 lb/ac	62 lb/ac
Phosphorus -	0-6 inches	20 lb/ac	20 lb/ac
Potassium -	0-6 inches	292 lb/ac	384 lb/ac
Sulphur -	0-6 inches	18 lb/ac	16 lb/ac
	0-24 inches	40 lb/ac	38 lb/ac
Micronutrient Levels: (0-6")			
Calcium -		4000 ppm	4300 ppm
Magnesium -		870 ppm	1150 ppm
Boron -		0.6 ppm	0.6 ppm
Zinc -		0.7 ppm	0.6 ppm
Manganese -		1.1 ppm	1.3 ppm
Copper -		0.4 ppm	0.5 ppm
Iron -		19.6 ppm	14.5 ppm
Target yield:		2200 lb/ac	2200 lb/ac
Fertilizer applied:			
Nitrogen -		103 lb/ac	105 lb/ac
Phosphorous -		35 lb/ac	35 lb/ac
Potassium -		30 lb/ac	30 lb/ac
Sulfur -		15 lb/ac	20 lb/ac
Soil association/zone:		Clearwater clay Clearwater loam Espelie fine sandy loam	Clearwater clay Clearwater loam
Soil texture:		Black clay Black loam Black fine sandy loam	Black clay Black loam
Soil pH:		8.0	8.1
Salinity:	(slightly saline)	0.4 mmho	0.3 mmho

Tillage operations: The seed treatment and pushing trials had fertilizer applied and incorporated once with a chisel plow in fall of 2000. The remainder of the west field had fertilizer and trifluralin (Trust @ 2 pt/ac) applied in spring. It was then cultivated twice to incorporate the trifluralin, the second time with coil packing. The east field had 80 units (N lb/ac) of anhydrous applied in the spring followed by a single cultivation with coil packing after the remainder of the fertilizer was applied.

Seeding method: Seeded with a John Deere 9350 double disk press drill
Date: May 14 to May 17 and June 5, 2001
Depth: _ to 1" deep
Rate: 5.0 lb/ac - with the following exceptions:
4.0 lb/ac - InVigor 2573 and InVigor 2663
4.5 lb/ac - 46A76, DS Roughrider, SW BadgeRR
5.5 lb/ac - 44A89 in the Fungicide trial

Herbicides applied:
A) Conventional varieties in system trial - Assure II (7 oz/ac), non-ionic surfactant (32 oz/100 gal), Stinger (5 oz/ac), Muster (0.40 oz/ac)
B) Liberty Link varieties in systems trial and Canopy trial - Liberty (34 oz/ac), ammonium sulfate (3.0 lb/ac)
C) Roundup Ready varieties - Roundup Ultra Max (13 oz/ac), ammonium sulfate (1 lb/ac)
D) Clearfield variety - Raptor (4 oz/ac), non-ionic surfactant (3.5 oz/ac), ammonium sulfate (2.5 lb/ac)
E) Seed priming, conventional variety trial, sclerotinia and fungicide trial - Assure II (7 oz/ac), non-ionic surfactant (32 oz/100 gal), Stinger (5 oz/ac), Muster (0.35 oz/ac)

Insecticides applied: Capture (1.4 oz/ac) was applied on July 11 to control an outbreak of diamondback moth larvae. The seed treatment trial was not sprayed.

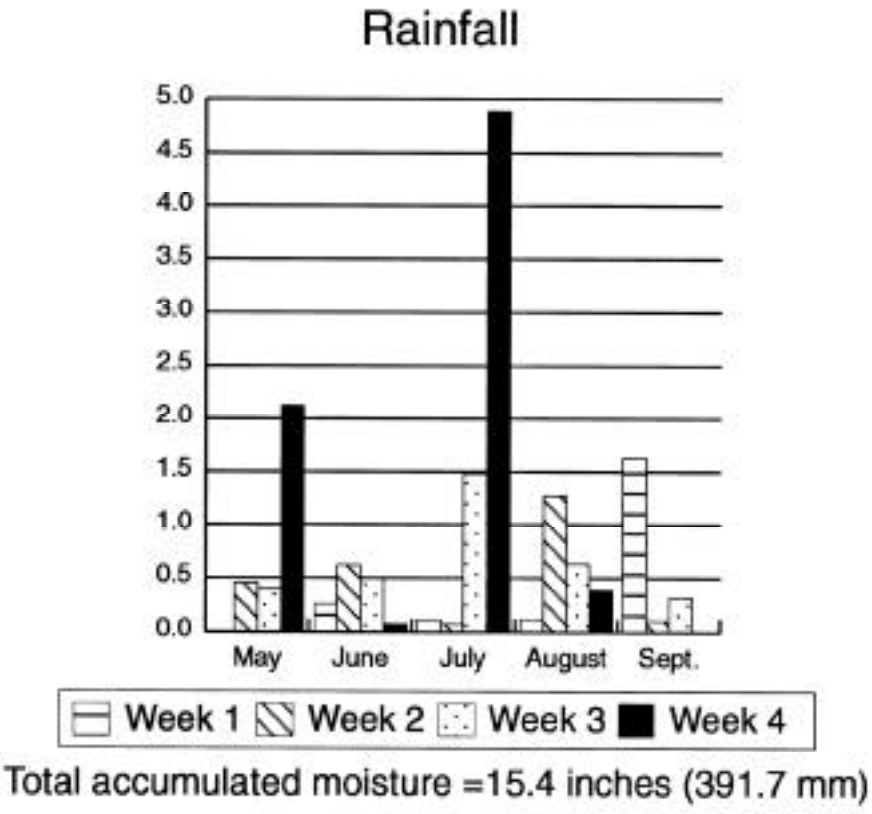
Fungicides applied: Ronilan (12 oz/ac) on July 4 at 20 to 40% bloom

Swathing: Started: August 6 Finished: August 29

Combining: Started: August 24 Finished: September 18

Comments: All trials were located on the west field with the exception of the system comparison trial, which was located on the east field. Frequent light showers during seeding provided excellent moisture conditions for quick emergence. A hot, dry period during late June and early July caused a short bloom period, which may have reduced yields slightly. The hot, dry period also provided a good environment for the increasing diamondback moth population. Weekly trap counts were over 400 in late June and early July. Visual evidence of crop damage from larvae (up to five per plant) in parts of the field required an application of Capture. The seed treatment trial was not sprayed to continue

evaluation of late season insect control from seed treatments. Hot conditions during swathing caused the crop to change seed colour very rapidly. However, improved moisture conditions from the end of flowering to harvest allowed proper curing of swaths. Most of the plots were swathed in a four day period. A thunderstorm on August 17 dropped pea size hail causing 5 to 15 % losses across the site. Most of the damage was done to the system comparison trial and to the first replicate of the other trials. The canopy manipulation trial was on the far end of the field and had minimal hail damage.



Total accumulated moisture =15.4 inches (391.7 mm)

VIII SEED PRIMING TRIAL

Objective: To evaluate a novel seed priming system to enhance emergence, maturity and yield of canola.

Background: A method of priming seed has been developed and commercialized by a company named Kamterter II L.L.C. for a number of vegetable crops including some crucifer vegetables. This priming system has shown to improve germination and reduce time to germination of these small seeded vegetable crops. Potential benefits for canola may include faster germination rates, which should reduce the incidence of seedling diseases such as ***rhizoctonia, fusarium*** and ***pythium***, better crop weed competition, shorter days to maturity and higher yields.

Methodology: The four treatments in this trial included primed vs. unprimed Q2 and InVigor 2663. This trial was designed and analyzed as a split-plot with the varieties as the main plot. Seed lots of each variety were identical for both primed and unprimed treatments. Each treatment was replicated four times. Crop development ratings were taken weekly throughout the growing season. Spring stand counts from multiple dates were taken at the exact same locations in the plots for each date.

Observation: This trial was seeded on May 15 into good moisture. The only sign of emergence at four days after planting (DAP) was in the primed Q2 (0.2 plants per square foot). At 9 DAP, the primed InVigor 2663 tended to have a few more emerged plants than the unprimed. There were no stand differences between the primed and unprimed Q2 at 9 or 22 DAP, or in the InVigor 2663 treatments at 22 DAP. For both varieties, the primed treatment reached canopy closure about one day before the unprimed. The primed Q2 bloomed about a day ahead of the unprimed Q2. No bloom differences were visible between the InVigor 2663 treatments.

Results:

SEED PRIMING TRIAL Thief River Falls, MN							
System	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Unprimed	100	1914	38.3	19.23	40.6	1169	85
InVigor 2663 - Primed	105	2006	40.1	N/A	41.0	1169	85
Q2 - Unprimed	100	1886	37.7	23.81	40.6	1169	85
Q2 - Primed	99	1863	37.3	N/A	40.8	1149	84
LSD (0.10) for priming within variety		60.6	1.21		0.56		
CV%		2.3	2.3		1.0		

Discussion: The primed InVigor 2663 showed a significant yield advantage over the unprimed. No yield difference was noted with Q2. The cost of priming was not available, therefore contribution margins were not calculated for primed treatments. There were no differences in oil content or maturity between the primed and unprimed treatments for either variety.

IX CONVENTIONAL VARIETY TRIAL - *B. NAPUS*

Objective: To evaluate agronomic differences between newly registered and recommended varieties in a given area as submitted by the seed trade.

Background: The large numbers of canola varieties available can make the task of choosing a variety for a specific farm challenging. Yield, crop quality and disease resistance are important variety traits to consider in the selection process. However, other agronomic factors such as lodging resistance and harvestability are also important factors. Varieties in the trial are selected and submitted by the seed trade and compared against the check (Hyola 401) and the industry standard Q2.

Methodology: The variety trial was conducted with four replicates in a randomized complete block design. Identical agronomic practices were used for the entire trial. This included the same tillage, fertilizer, weed control and post-emergent fungicide treatments. Seed treatments included any treatment that was standard for the variety. The entire trial was seeded on the same day. Canopy closure was determined by the number of days after planting (DAP) required for the variety to reach 95 % ground cover. Swathing commenced when seed colour change was 30 to 40 %, and harvest was completed under suitable conditions.

Observation: The trial was seeded on May 16 into good moisture. Conditions were ideal for crop establishment, but turned hot and dry leading up to bloom (see ***Site Information***). Losses from a hailstorm on August 17 ranged from about 10 to 15 % in the first replicate to 0 to 5 % in the fourth replicate.

Results:

B. NAPUS VARIETY TRIAL YIELD, ECONOMIC & QUALITY RESULTS Thief River Falls, MN								
Treatment	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Canopy Closure (DAP)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Hyola 401	100	2055	41.1	29.20	28	41.5	1167	85
Q2	87	1786	35.7	14.95	30	41.2	1167	85
LG3311	87	1786	35.7	9.79	29	42.2	1135	83
HyClass 601	87	1786	35.7	5.74	28	40.8	1167	85
Canterra 1492	85	1743	34.9	0.48	29	40.8	1155	84
LG3366	85	1742	34.8	5.93	29	41.7	1167	85
LSD (0.10) CV%		107.9 4.8	2.16 4.8		1.5 4.2	0.41 0.8		0.8 0.8

Note: Hyola 401 was used as a check in this trial.

Discussion: The check (Hyola 401) was significantly higher yielding than any of the other varieties. Hyola 401 also had the highest contribution margin compared to all the other varieties. Contribution margins reflect differences in seed cost and yield. LG3311 had the highest oil content while HyClass 601 and Canterra 1492 had the lowest oil content. LG3311 was the earliest maturing. Q2 was the last variety to reach canopy closure.

X HARVESTABILITY TRIAL

Objective: To compare the harvestability of varieties entered in the variety and system comparison trials.

Background: A number of varieties have very similar yield and quality traits. In choosing a variety a grower needs to consider additional traits like lodging and harvestability. Harvestability is the measurement of swathing and combining ease. Currently, there is no meaningful scientific measurement for harvestability. Therefore, a standardized criterion for a subjective measurement was used.

Methodology: A **Lodging score** is a visual score in which 1=erect and 9=flat. Varieties that are standing well and have a 'high yield tip' are given a score of two to three. Varieties that have severe uneven lodging with patches standing upright and patches laying flat are given a seven or eight, depending on the severity. **Lodging ratios** are obtained by dividing the average height of the canopy by the average height of randomly selected plants. **Harvestability** was evaluated as swathing and combining were completed on the ***B. napus*** variety and system comparison trials. Swathing and combining were each evaluated on a scale of one to five, compared to the check (Hyola 401) which was rated a two to match the rating at the Canola Production Centres in Canada where AC Excel is the standard with a rating of three. The following criteria were considered; lodging, height, straw stiffness, straw strength, stand uniformity, swath fluffiness (pod dispersion), tendency to clump, flowability, feeding and speed of operation.

The following ratings are subjective. The machine operator, crop conditions, weather and time of day can affect the harvestability of a variety.

Ratings:
1 = much better than average
2 = better than average (check)
3 = average
4 = worse than average
5 = much worse than average

Observation: The variety and system comparison trials are reported in separate tables for statistical analysis. Lodging was variable among the varieties. Swathing was more difficult in plots that were lodged unevenly. Combining ease was related closely to flow of the swath into the combine, the amount of clumping in the swath and the ease of picking up the swath. The plots were swathed with an 18 ft Versatile swather equipped with a pick-up reel. They were harvested with a John Deere 9600 combine in the system comparison trial and with a John Deere 8820 combine in the ***B. napus*** variety trial.

Results:

HARVESTABILITY TRIAL Systems Comparison Trial Thief River Falls, MN				
Variety	**Lodging Ratio**	**Lodging Score**	**Swathing Rating**	**Combining Rating**
46A76	0.55	4.5	3.0	2.6
DKL23-38	0.55	4.8	2.3	2.6
DKL3455	0.70	4.0	3.0	2.9
DS Roughrider	0.57	4.8	2.5	2.6
Gladiator	0.65	4.5	1.9	2.8
Hyola 357	0.61	4.0	2.0	2.6
Hyola 401	0.70	4.0	2.0	2.0
InVigor 2573	0.53	4.5	3.1	3.5
InVigor 2663	0.51	4.0	3.0	3.1
LG3525	0.63	4.3	2.8	3.1
LS 296RR	0.57	5.5	2.8	2.3
LiBred 499RR	0.64	4.3	2.4	2.4
Q2	0.59	4.3	2.9	2.6
RideR	0.56	4.8	3.0	2.9
SW BadgeRR	0.59	4.5	2.5	2.5
LSD (0.10) C.V.	0.091 12.8	0.58 11.1	0.55 17.9	0.46 14.4

HARVESTABILITY TRIAL *B. napus,* Variety Trial Thief River Falls, MN				
Variety	**Lodging Ratio**	**Lodging Score**	**Swathing Rating**	**Combining Rating**
Canterra 1492	0.62	4.5	3.3	2.8
HyClass 601	0.68	3.8	3.1	3.0
Hyola 401	0.74	3.8	2.0	2.0
LG3311	0.63	4.3	3.0	2.8
LG3366	0.60	5.0	3.4	2.8
Q2	0.55	4.3	3.5	3.0
LSD (0.10) C.V.	0.083 10.5	0.65 12.4	0.7 20.5	0.5 13.9

Discussion:

LS296RR had more lodging than most of the other varieties in the systems comparison trial. Gladiator, Hyola 357 and Hyola 401 swathed easier than most of the varieties. Hyola 401 and LS296RR flowed the best into the combine. In the ***B. napus*** trial, LG3366 had the most lodging. Hyola 401 was the easiest to swath and combine.

XI SEED TREATMENT TRIAL

Objective: To evaluate the impact of new seed treatments on seedling diseases and insect control for canola as it relates to yield, quality and contribution margins.

Background: The most widespread problem of canola production is stand establishment. Poor stand establishment may be caused by a seedling disease complex including pathogens such as ***Rhizoctonia solani***, along with ***Fusarium*** and ***Pythium*** species. Seed treatment fungicides are used extensively in canola production as a first line of defense to control seedling diseases. In addition, some new insecticide products are being evaluated to determine their effectiveness for control of flea beetles and late season insects such as lygus bug and cabbage seed pod weevil.

Methodology: The seed treatment trial included the following treatments on the same seed lot of the variety DKL3455:

A) Gaucho + Clothianidin
B) Gaucho CS
C) Vitaflo 280 + Allegiance (Gaucho fungicide package)
D) Helix Xtra
E) Helix Lite
F) Canola Package (Helix fungicide package)

All other agronomic practices remained the same. Flea beetle ratings and stand counts were taken at the exact same locations in the plots on three dates (10, 16 and 23 days after planting). This trial was placed up against the side of a conservation reserve program (CRP) field to improve the probability of late season insect infestations. Due to the placement, plots were shortened to 150 ft long by 60 ft wide. This provided less soil uniformity among the treatments. This trial was also conducted with five replicates instead of the standard four.

The following flea beetle damage guide was used to estimate the percentage of (shot hole) damage to leaf area using the following scale:

0 = No leaf damage
1 = Approximately 10 % leaf damage
2 = Approximately 20 % leaf damage
3 = Approximately 30 % leaf damage
(4, 5, 6, etc.)
9 = Approximately 90 to 100 % leaf damage

Observation: The trial was seeded into good moisture on May 14. Heavy rains shortly after seeding caused standing water in much of the trial that caused noticeably delayed emergence and delayed maturity throughout the season. Flowering was very uneven with the hardest hit areas of the trial about four days behind in bloom initiation. Lygus counts were taken

weekly in each plot during bloom. Average counts ranged from 4 to 8 lygus per 10 sweeps with little consistency among treatments. An exception was on July 5 when the Gaucho + Clothianidin treatment had significantly lower lygus bug counts than the Vitaflo 280 + Allegiance treatment. On July 10 and July 18, there were no significant differences in lygus bug counts among treatments.

Results:

SEED TREATMENT TRIAL
Thief River Falls, MN

Treatment	Yield (lb/ac)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)	Seed Cost ($/ac) *	Flea Beetle Rating **	Plant Stand (Pl/ft^2) ***
Gaucho + Clothianidin	1447	28.9	17.43	42.9	22.30	0	14
Gaucho CS	1559	31.2	31.08	42.6	18.70	0	17
Vitaflo 280 + Allegiance	1592	31.8	37.99	42.4	14.90	1	15
Helix Xtra	1612	32.2	32.62	42.2	21.75	0	18
Helix Lite	1560	31.2	31.49	42.7	18.45	0	17
Canola Package	1481	29.6	27.48	42.8	15.50	1	15
LSD	124.0	2.50		0.70		0.4	2.1
CV%	7.37	7.37		1.5		100.3	11.8

Note: Clothianidin is a non-registered product and price is the company's estimate of market value.
Note: *These prices are based on consultation with industry representatives and include the cost of seed and treatment.
** Average flea beetle ratings at 16 days after planting.
*** Stand counts at 16 days after planting.

Discussion: Helix Xtra yielded significantly higher than the Canola Package (fungicide only). The Vitaflo 280 + Allegiance treatment yielded significantly higher than the Gaucho + Clothianidin. Oil was not affected by seed treatment. Flea beetle ratings were low. However, the insecticide treatments had significantly lower flea beetle damage than the fungicide only seed treatments. Helix Xtra treatments significantly improved plant stands at 16 days after planting, compared to the canola package. However, these differences were not evident by 23 days after planting.

XII ROUNDUP RATE / TIMING TRIAL

Objective: To demonstrate the effect of split applications or higher rates of the new formulation of Roundup called Roundup Ultra Max for control of Canada thistle.

***Background*:** Roundup is a non-selective herbicide that is used to control weeds in Roundup Ready canola. Previous research has indicated that the standard rate of Roundup Ultra (16 oz/ac) frequently does not provide effective control of Canada thistle. Split applications or higher rates of Roundup Ultra Max may provide more effective control of the Canada thistle.

***Methodology*:** Roundup Ultra Max was used in this trial. The standard rate for Roundup Ultra Max (13 oz/ac) is equivalent to the 16 oz/ac rate of Roundup Ultra. The Roundup Rate/Timing Trial was conducted using the variety RideR and was integrated into the Systems Comparison Trial. The trial consisted of the following treatments:

A) Roundup standard rate - Roundup Ultra Max (13 oz/ac) + ammonium sulfate (1 lb/ac) applied at the 3 leaf stage
B) Roundup high rate - Roundup Ultra Max (20 oz/ac) + ammonium sulfate (1 lb/ac) applied at the 3-leaf stage
C) Roundup split application - Roundup Ultra Max (13 oz/ac) + ammonium sulfate (1 lb/ac) applied at the 2 and 6-leaf stages

Observation: The site for this trial had a history of Canada thistle problems. However, an application of Curtail in 2000 resulted in good control and few Canada thistles in 2001. Where there were some Canada thistles in the plots, all three treatments gave similar control. The different rates and timings of Roundup Ultra Max had no effect on canopy closure, lodging, or maturity. The split application was noticeably easier to swath than the standard rate of 13 oz/ac.

Results:

ROUNDUP RATE / TIMING TRIAL Thief River Falls, MN					
Treatment	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Swathability Rating (1-5)**
Roundup - high	1685	33.7	17.71	41.3	2.3
Roundup - standard	1632	32.6	15.55	41.3	3.0
Roundup - split	1580	31.6	5.34	41.5	2.0
LSD CV%	78.6 3.5	1.57 3.5		0.76 1.3	0.4 11.9

Discussion: Yield from the high rate of Roundup was significantly higher than the split application. There was no difference in yield between the standard and high rates of Roundup. The contribution margin of the split application was lower than the other two treatments due to the added chemical cost and lower yields.

XIII LIBERTY TANK MIX / TIMING TRIAL

Objective: To demonstrate strategies to improve the efficacy of the contact herbicide Liberty on grassy weeds.

Background: Liberty is a non-selective contact herbicide that is used to control weeds in Liberty Link canola. Previous research has indicated Liberty to be less effective on controlling grasses than other non-selective herbicides. Reducing the rate of Liberty while adding a half rate of a grass herbicide should improve grass control while maintaining control of broadleaf weeds.

Methodology: The Liberty tank mix trial was conducted using the variety InVigor 2573 and was integrated into the Systems Comparison Trial. The trial consisted of the following treatments in a randomized block design:

A) Liberty tank mix - (28 oz/ac) + Poast (6 oz/ac) + ammonium sulfate (3 lb/ac) applied at the 3-leaf stage.
B) Liberty - full rate (34 oz/ac) + ammonium sulfate (3 lb/ac) applied at the 3-leaf stage.
C) Liberty - low rate (20 oz/ac) + ammonium sulfate (3 lb/ac) applied at the 2-leaf stage

The original plan for treatment C was for a split application of 20 oz/ac at the 2 and 6-leaf stages. However, weather conditions were not conducive for the application at the 6-leaf stage, so Liberty was applied at only the 2-leaf stage.

Observation: There were few weeds in this trial. All of the small annual grasses were controlled by all three treatments. Based on visual ratings, quackgrass in the low rate treatment showed approximately 40 % control at seven days after application. Quackgrass was not present in the other two treatments. The tank mix and full rate of Liberty provided approximately 80 % control of Canada thistle compared to 50 % with the low rate of Liberty. Minor crop injury in the form of yellowing, was noted on the tank mix and full rate treatments.

Results:

LIBERTY TANK MIX TRIAL Thief River Falls, MN				
Treatment	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**
Liberty + Poast	1792	35.8	22.28	41.2
Liberty - full rate	1859	37.2	26.89	41.0
Liberty - low rate	1772	35.4	29.08	40.9
LSD (0.10) CV%	149.8 6.0	2.99 6.0		1.04 1.9

Discussion: There were no yield or oil differences among the treatments. Contribution margins reflect the differences in yield and chemical costs. The low rate of Liberty gave the highest contribution margin primarily due to approximately $9.00/ac less for chemical. With the light weed pressure that was present this year, the low rate of Liberty performed adequately.

XIV RAPTOR TANK MIX TRIAL

Objective: To demonstrate the effectiveness of Stinger with Raptor for Canada thistle control.

***Background*:** Raptor is a non-selective herbicide that is used to control weeds in Clearfield canola. Previous research has indicated that Raptor is less effective at controlling Canada thistle than other non-selective herbicides. Adding Stinger herbicide to the Raptor should provide additional control of Canada thistle.

***Methodology*:** The Raptor tank mix trial was conducted using the variety 46A76. It was integrated into the Systems Comparison Trial and consisted of the following treatments in a randomized block design:

A) Raptor (4 oz/ac) + ammonium sulfate (2.5 lb/ac) + non-ionic surfactant (3.5 oz/ac) applied at the 3-leaf stage.
B) Raptor (4 oz/ac) + Stinger (4 oz/ac) + ammonium sulfate (2.5 lb/ac) + non-ionic surfactant (3.5 oz/ac) applied at the 3-leaf stage.

Observation: The site for this trial had a history of Canada thistle problems. However, an application of Curtail in 2000 resulted in good control and few Canada thistles in 2001. Where there were some Canada thistles in the plots, Raptor + Stinger gave good control compared to only slight yellowing of the Canada thistle in the Raptor treatments. There were no other agronomic differences between the two treatments.

Results:

RAPTOR TANK MIX TRIAL
Thief River Falls, MN

Treatment	Yield (lb/ac)	Yield (bu/ac)	Contribution Margin ($/ac)	Oil (%)
Raptor	1679	33.6	31.47	41.5
Raptor + Stinger	1673	33.5	15.38	41.3
LSD	73.7	1.47		1.00
CV%	2.6	2.6		1.65

Discussion: There were no differences in yield or oil content between the treatments. The contribution margin was higher for the Raptor treatment due to the extra cost of the Stinger in the tank mix treatment.

XV SYSTEMS COMPARISON TRIAL

Objective: To establish agronomic criteria for choosing among varieties and herbicide options of novel trait canola varieties.

Background: The introduction of canola with novel traits for herbicide tolerance has given producers many options for herbicide and variety selection. The greatest return will occur by choosing the most appropriate combination of suitable varieties and appropriate herbicides for each field. Factors to consider beyond the performance of the variety include weed population, weed spectrum, tillage system and herbicide rotation.

Methodology: The trial was conducted as a randomized complete block with four replicates. Seeding rates varied according to what the industry recommended (see ***Site Information***). The canola varieties with novel traits for herbicide tolerance were compared to the conventional varieties Hyola 401 and Q2 and a conventional herbicide program. All of the herbicide tolerant varieties were sprayed with their respective recommended herbicides at the recommended rates. Canopy closure was determined by the number of days after planting (DAP) required for the variety to reach 95 % ground cover.

Observations: The trial was seeded on May 16 into good moisture. Weed populations were relatively low and patchy with primary weeds including Canada thistle, dandelions, lamb's quarters, foxtails and some patches of quackgrass. Enough weeds of each kind were present in the conventional treatments that a complete weed control mixture (Stinger, Assure II and Muster) was required. All applications were done in the early morning to avoid drift into neighboring plots that were not tolerant to the same herbicide. The Roundup Ready varieties were sprayed the day before the other varieties. The crop was at the 3-leaf stage at the time of herbicide application. Rider and Hyola 357 reached canopy closure at 29 days after planting (DAP). Q2 was the slowest at 37 DAP. All other varieties reached canopy closure at 30 to 32 DAP. Hail damage from the August 17 storm was most severe on the systems comparison trial with damage estimates between 10 and 15 % across all the plots. Yields were not adjusted for hail damage.

Results:

SYSTEMS COMPARISON TRIAL Thief River Falls, MN							
System	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
Conventional							
Hyola 401	100	2003	40.1	32.17	41.1	1193	87
Q2	90	1805	36.1	24.22	41.1	1193	87
Clearfield (Raptor Tolerant)							
46A76	84	1679	33.6	31.47	41.5	1193	87
Liberty Link							
InVigor 2573	93	1859	37.2	35.98	41.0	1167	85
InVigor 2663	89	1786	35.7	28.50	41.6	1155	84
Roundup Ready							
Hyola 357	97	1942	38.8	46.33	40.9	1179	86
LiBred 499RR	89	1783	35.7	33.12	41.0	1167	85
DKL34-55	86	1726	34.5	33.53	41.6	1155	84
DKL35-25	86	1718	34.4	32.79	41.9	1167	85
DKL23-38	84	1686	33.7	33.04	41.8	1135	83
Gladiator	84	1675	33.5	27.94	41.5	1135	83
LS296RR	83	1669	33.4	25.69	40.6	1135	83
SW BadgeRR	83	1655	33.1	27.13	40.7	1167	85
DS Roughrider	82	1636	32.7	30.13	42.9	1193	87
RideR	81	1632	32.6	24.64	41.3	1135	83
LSD CV%		156.2 7.5	3.12 7.5		0.80 1.6		1.4 1.4

Discussion: Yields for Hyola 401 and Hyola 357 were significantly higher than most of the other varieties tested. Hyola 357 had the best contribution margin. Contribution margins reflect differences in seed costs, yield and herbicide costs. DS Roughrider had significantly higher oil than the other varieties. The hot conditions during swathing appeared to minimize differences in maturity among varieties.

XVI CANOPY MANIPULATION TRIAL

Objective: To compare the effects of various seeding dates and rates on yield, maturity and disease on ***B. napus*** canola***.***

Background: European research (Scott et al, 1999) indicates that canola yields can be related to canopy structure after flowering. Thinner canopies allow more light to penetrate lower pods resulting in increased yield due to translocation of photosynthetic light from pod hulls. Also, excessive vegetative growth can deplete soil moisture in dry conditions resulting in poor pod formation and filling.

Seeding rate studies have been carried out throughout western Canada under various weed and disease pressures. The introduction of herbicide tolerant canola varieties has improved weed control, which lessens the need for higher plant populations. Weather conditions often contribute to increased lodging and sclerotinia. Reducing plant stands may lessen the risk of these factors. However lower plant densities bring higher risks due to later maturity, green seed and insects (ex. root maggots).

Recent seeding date research indicated that early spring or fall dormant seeded canola results in fewer and shorter plants. This often leads to lower disease pressure due to a more open canopy, which may result in increased yields.

Methodology: This trial consisted of two main plot treatments and three sub-plot treatments. InVigor 2663 was the variety used.

A) Normal planting date @ 1.0 lb/ac
B) Normal planting date @ 1.0 lb/ac @ 30% SCC whole plant
C) Normal planting date @ 3.0 lb/ac
D) Normal planting date @ 5.0 lb/ac
E) Late planting date @ 1.0 lb/ac
F) Late planting date @ 3.0 lb/ac
G) Late planting date @ 5.0 lb/ac

The 1 lb/ac and 3 lb/ac seeding rates were bulked up by using corn cob grit ($18.00/50 lb bag). Weeds were controlled at the 3-leaf stage with Liberty (34 oz/ac).

Swathing commenced when the main stem was at 30 to 40 % seed colour change (SCC). The second normal planting date @ 1.0 lb/ac treatment was swathed when the SCC was 30 % over the whole plant. Treatments A and B were analyzed as a randomized complete block, separately from the rest of the trial. All treatments other than B were analyzed as a split-plot with planting date as the main plot.

Observation: This trial had two planting dates, May 14 and June 5. Good soil moisture was present on each date. No secondary weed flushes were evident in

the delayed canopy closure of the 1 lb/ac seeding rate. There was more lodging in the late planting date than the normal planting date. However, there was little difference in lodging among the seeding rates within a planting date. This trial was not sprayed with a fungicide. Petal tests indicated 9 % and 7 % infection for the normal and late planting date, respectively. Sclerotinia levels were expected to be low for the normal planting date due to the hot, dry weather up to the end of flowering. Sclerotinia was expected to be high for the late planting date due to high moisture levels during flowering of those treatments. As it turned out, disease levels were opposite from expected.

Results: (a) Swath Staging Comparison

CANOPY MANIPULATION Thief River Falls, MN								
System	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Swathing**	**Green Seed (%)**
Swath Staging Comparison								
1lb/ac @ 30-40% SCC main stem	1530	30.6	14.54	40.1	3.7	1143	84	0.1
1lb/ac @ 30-40% SCC whole plant	1599	32.0	20.65	40.1	4.0	1196	87	0.1
LSD CV%	112.3 4.3	2.25 4.3		0.65 1.0	1.69 26.6		0.7 0.5	0.38 230.9

Results: (b) Plant stand measurements

CANOPY MANIPULATION Thief River Falls, MN							
System	**Emergence Counts Plants/ft^2**	**Harvest Counts Plants/ft^2**	**Plant Height (inches)**	**Canopy Closure (DAP)**	**Infected Plants (%)**	**# Primary Branches**	**# Secondary Branches**
Normal Planting Date							
1 lb/ac	2.0	2.2	50.1	43	39	10.5	10.2
3 lb/ac	4.9	5.1	50.6	31	23	6.9	1.4
5 lb/ac	8.8	7.8	48.6	29	29	6.0	1.0
Late Planting Date							
1 lb/ac	1.8	1.8	56.7	37	5	12.1	15.9
3 lb/ac	5.1	4.4	55.4	24	4	6.5	4.1
5 lb/ac	9.1	8.2	53.0	21	3	5.2	1.4
LSD1	0.90	1.04	2.12	0.5	14.4	1.13	2.61
LSD2	0.80	1.10	2.50	0.6	6.3	0.80	1.93
CV%	12.1	17.7	3.8	1.6	28.9	8.1	27.0

Note: LSD1 - LSD (0.10) between any two treatments.
LSD2 - LSD (0.10) between any two seeding rates within a planting date.

Results: (c) Yield and Quality Data

CANOPY MANIPULATION Thief River Falls, MN								
System	**Yield (lb/ac)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**1000 Kernel Weight (g)**	**Growing Degree Days**	**Days To Maturity**	**Green Seed (%)**
Normal Planting Date								
1 lb/ac	1530	30.6	13.10	40.1	3.65	1164	85	0.1
3 lb/ac	1675	33.5	14.92	40.1	3.95	1143	84	0.1
5 lb/ac	1661	33.2	2.62	40.4	4.00	1143	84	0.2
Late Planting Date								
1 lb/ac	1744	34.9	18.85	41.5	4.05	1248	83	5.8
3 lb/ac	1987	39.7	30.15	41.8	4.30	1248	83	5.6
5 lb/ac	2035	40.7	24.36	41.9	3.95	1248	83	5.2
LSD1	130.2	2.61		1.25	0.69		2.3	1.84
LSD2	121.9	2.44		0.44	0.69		0.5	1.63
CV%	5.5	5.5		0.8	13.7		0.42	46.0

Note: LSD1 - LSD (0.10) between any two treatments.
LSD2 - LSD (0.10) between any two seeding rates within a planting date.

Discussion: The main stems of the 1 lb/ac delayed swathed plots were at 70 % SCC when the whole plant reached 30 to 40 % SCC. Delaying swathing three days in the 1 lb/ac seeding rate did not increase yield or seed weight significantly. Oil content was the same for both swathing dates. The later swathing date was swathed with a heavy dew so very little shattering occurred. The contribution margin was slightly higher for the delayed swathing due to the added yield.

The 5 lb/ac seeding rate had the shortest plants. Canopy closure in the 1 lb/ac seeding rate was nearly two weeks after the 3 and 5 lb/ac seeding rates. Sclerotinia levels were the highest at the 1 lb/ac seeding rate for both planting dates. For both planting dates, the number of primary and secondary branches increased significantly as seeding rate decreased from 3 lb/ac to 1 lb/ac. The tremendous increase in branches from the 3 lb/ac to 1 lb/ac seeding rates did not compensate enough to provide similar yields. The 1 lb/ac seeding rate was significantly lower yielding than the 3 and 5 lb/ac seeding rates for both planting dates. Contribution margins were highest for the 3 lb/ac seeding rate for both planting dates due to the high yield and lower seed cost compared to the 5 lb/ac rate. Contribution margins reflect differences in yield, grade and seed costs.

XVII PUSHING TRIAL

Objective: To evaluate the potential of the "Yield Shield" canola pusher for improving the success of straight combining of ***B. napus*** canola.

Background: Past research at Canola Production Centres has indicated that shattering losses from straight combining ***B. napus*** canola generally outweigh any benefits as compared to swathing. However, results have varied from losses as large as 50 % to significant increases in yield. The trials where straight combining has been most successful indicate that lodged crops make the best candidates for straight combining. Ag Shield, a manufacturing company in Benito, Manitoba, has designed a header that can be used to simulate lodging by pushing the crop over. This trial will help assess whether this new technology actually reduces the risks associated with straight combining.

Methodology: Treatments included the following:

A) Swath at 30 to 40 % seed colour change
B) Straight combine without pushing
C) Pushed high (8"), with the lodging (about 20 % seed colour change) then straight combine
D) Pushed low (3"), against the lodging (about 20 % seed colour change) then straight combine

Observation: This trial was seeded on May 15 into good moisture. The original plan for this trial was to push early (15 days prior to swathing) and late (5 days prior to swathing). However, with pusher scheduling problems and hot weather hastening seed colour change, modifications to the treatments were required. High winds and heavy rains in late July had left the canopy leaning heavily in one direction. So a high push with the lodging and a low push against the lodging were substituted for the early and late pushing date. A John Deere 4450 was used to operate the pusher. Even though the pushing process required driving backwards, it was a rather simple procedure for the few plots that were pushed. Pushing was done on August 4, swathing was done on August 7 and all plots were combined on August 29. Hail and high winds after pushing caused a significant amount of shattering in the pushed and straight cut plots.

At harvest, the pushed treatments were much harder to combine due to their closeness to the ground. The possibility of picking up rocks was a concern. The low pushed treatment was cut at about a 2" height, the high pushed treatment was cut at about a 4" height and the straight combine treatment was cut at about a 10" height. Some yield was lost in the pushed treatments where the tractor had driven over the edges of the pushed area, making it impossible to get to with the combine. A 20 ft John Deere flex-head with a pick-up reel was used for the pushed and straight combine treatments.

Results:

PUSHING TRIAL Thief River Falls, MN						
Treatment	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Oil (%)**	**Seed size (gms/1000)**	**Contribution Margin ($/ac)**
Swath	100	1559	31.2	43.4	3.4	19.02
Straight Combine	81	1255	25.1	42.7	4.3	(7.15)
Push Low	75	1173	23.5	42.9	3.6	(15.08)
Push High	70	1094	21.9	42.9	3.8	(22.07)
LSD CV%		105.9 6.4	2.12 6.4	0.81 1.5	0.99 20.2	

Note: Brackets in Contribution Margin reflect a negative value.

Discussion: Swathing yielded significantly higher than the other treatments. Losses from the straight combining and pushing treatments were from the hail and wind damage that occurred prior to combining. Canola in the swath was more protected from damage than the standing canola. Even though the crop was leaning heavily prior to swathing, as it dried down it became more erect and tended to shell out in the straight combining treatment. The pushed plots also straightened up during the maturation process. This may have been a result of pushing them too late. Oil content and seed size were not significantly different among treatments. The swathed treatment had the highest contribution margin. Contribution margins reflect the differences in yield and fuel, lube and repair costs of each of the treatments. The expense of custom pushing was not taken into account here, or the economic losses would have been greater.

XVIII FUNGICIDE TRIAL

Objective: To evaluate the effectiveness of different fungicides at controlling sclerotinia in canola and how they influence yield, quality and economic return.

Background: Sclerotinia stem rot is caused by the fungus ***Sclerotinia sclerotiorum*** that occurs in most canola growing areas. The disease is usually most severe in wetter areas of the growing region. Severity of stem rot varies from year to year, and even from field to field within a region. With the right combination of thick crop density and wet weather conditions before and during flowering, heavy infections can develop almost anywhere. In some cases half the potential yield of a crop may be lost to sclerotinia. Quadris and Ronilan EG are currently labeled for sclerotinia control on canola in the United States.

Methodology: The trial was seeded with the variety 44A89. A higher seeding rate of 5.5 lb/ac was used to facilitate a microclimate in the canopy to enhance sclerotinia development. Spraying was done using a ground sprayer equipped with twinjet nozzles at 75 psi and 20 gal/ac spray solution. Fungicides were applied at rates and timings suggested by the label or industry representative. Treatments included:

A) Check - no fungicide applied
B) Folicur - 4.0 oz/ac + 0.25 % nonionic surfactant applied at 25 % bloom
C) Ronilan EG - 12 oz/ac applied at 25 % bloom
D) Rovral Flo - 14.4 oz/ac + 1% crop oil concentrate applied at 25 % bloom
E) Rovral Flo - 14.4 oz/ac + 1% crop oil concentrate applied at 50 % bloom
F) Topsin - 16 oz/ac applied at 35 % bloom

Infection readings were taken by recording incidence and average disease level of 100 unswathed plants at three random locations within each plot along the edge of the swathed area. Disease levels were assessed on a scale of 1 to 5 (1 = small branch infected, 5 = the whole plant is dead with substantial yield loss).

Observation: This trial was seeded on May 17 into good moisture. Weather conditions leading up to bloom and during the first half of the bloom period were dry and hot. Petal tests conducted at 25 % bloom on July 3 showed only 9 % infection. Wet conditions during pod fill provided an ideal environment for sclerotinia to develop. The weather was calm and warm on each of the dates the fungicides were applied.

Results:

FUNGICIDE EVALUATION TRIAL Thief River Falls, MN							
Treatment	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Oil (%)**	**Plants Infected (%)**	**Infect. Rating (1-5)**	**Contribution Margin ($/ac)**
Check (No Fung.)	100	1468	29.4	40.2	26	4.7	3.69
Folicur	106	1563	31.3	40.4	23	4.8	(3.28)
Ronilan	112	1643	32.9	40.5	8	3.4	(1.79)
Rovral Flo at 25 %	109	1601	32.0	40.8	7	3.9	(7.08)
Rovral Flo at 50 %	116	1703	34.1	40.7	6	3.9	1.96
Topsin	115	1685	33.7	40.5	2	1.7	1.56
LSD (0.10)		80.9	1.62	0.46	11.8	1.29	
CV%		4.1	4.1	0.9	79.9	27.9	

Note: Brackets in Contribution Margin reflect a negative value.

Discussion:

The check yielded significantly lower than any other treatment. The later timing of Rovral Flo provided significantly higher yield than the early timing. This is likely due to the wet weather experienced at the end of flowering and into pod fill, compared to the hot, dry conditions during early flowering. Folicur had significantly higher yield than the check even though the percent of infected plants was similar to the check. The Ronilan, Rovral Flo and Topsin treatments all had significantly fewer infected plants than the check or Folicur. The Topsin treatment not only had the lowest number of infected plants, but the plants that were infected had significantly less severe infections. Both spray timings of Rovral Flo had significantly higher oil contents than the check. Even though the check yielded the lowest, it still had the highest contribution margin. Contribution margins reflect the differences in yield, fungicide costs and application costs for each of the treatments.

XIX SCLEROTINIA TRIAL

Objective: To evaluate the effectiveness of an apetalous variety at avoiding sclerotinia compared to two other petalled varieties that are equal and later in maturity.

Background: Sclerotinia stem rot is caused by the fungus ***Sclerotinia sclerotiorum*** that occurs in most canola growing areas. The disease is usually most severe in wetter areas of the growing region. Severity of stem rot varies from year to year, and even from field to field within a region. With the right combination of thick crop density and wet weather conditions before and during flowering, heavy infections can develop almost anywhere. In some cases half the potential yield of a crop may be lost to sclerotinia. Differences in disease level can be observed among varieties due to timing of flowering or structure of the plant. Since the spores of sclerotinia infect dead flower petals prior to infecting the healthy plant stem, eliminating the petals from the plant should reduce the potential of infection. Hylite 201, an apetalous variety, uses this technique to reduce infection levels of sclerotinia. In 2000, Hylite 201 provided a higher contribution margin without fungicide than with fungicide. The trial this year is a repeat of last year's to confirm those findings.

Methodology: Spraying was done using twinjet nozzles at 75 psi. Ronilan EG was applied at 12 oz/ac in 20 gal/ac of spray solution at the 20 to 30 % bloom stage of each variety. The trial was set up as a randomized complete block in a 3 x 2 factorial design. Treatments included:

A) Hylite 201 (early maturing apetalous) - no fungicide
B) Hylite 201 (early maturing apetalous) - fungicide
C) 44A89 (early maturing petalled) - no fungicide
D) 44A89 (early maturing petalled) - fungicide
E) HyClass 601 (late maturing petalled) - no fungicide
F) HyClass 601 (late maturing petalled) - fungicide

Infection readings were taken by recording incidence and average disease level of 100 unswathed plants at three random locations within each plot along the edge of the swathed area. Disease levels were assessed on a scale of 1 to 5 (1 = small branch infected, 5 = the whole plant is dead with substantial yield loss).

Observation: This trial was seeded on May 17 into good moisture. Weather conditions leading up to bloom and during the first half of the bloom period were dry and hot. Petal tests conducted at 25 % bloom on July 3 showed only 9 % infection. Not much sclerotinia was expected in the trial because of the hot, dry weather leading up to and during bloom. However, wet conditions during pod fill provided an ideal environment for the sclerotinia to develop. The weather was calm and warm on each of the dates the fungicides were applied. HyClass 601 was sprayed three days after the 44A89 and Hylite 201. The average sclerotinia rating scores were

between 3.6 and 4.1 for all the treatments that had 6 % or more infected plants.

Results:

SCLEROTINIA STEM ROT CONTROL TRIAL Thief River Falls, MN						
Treatment	**Yield (%)**	**Yield (lb/ac)**	**Yield (bu/ac)**	**Oil (%)**	**Plants Infected (%)**	**Contribution Margin ($/ac)**
Hylite 201 - no fungicide	100	1379	27.6	39.7	6	(5.35)
Hylite 201 - fungicide	102	1410	28.2	39.7	1	(22.66)
44A89 - no fungicide	100	1382	27.6	40.1	19	(2.11)
44A89 - fungicide	105	1457	29.1	40.3	10	(16.44)
HyClass 601 - no fung.	100	1504	30.1	40.2	16	1.91
HyClass 601 - fungicide	109	1634	32.7	40.2	0	(7.57)
LSD CV%		42.7 2.4	0.85 2.4	0.36 0.7	5.3 48.4	

Discussion: Hylite 201 had similar yields with and without fungicide. Both 44A89 and HyClass 601 had significant yield boosts from fungicide applications. There were no differences in oil content between fungicide treatments within a variety. The fungicide application provided significantly less infected plants for both 44A89 and HyClass 601. Despite the increased yield of each of the varieties from the application of fungicide, the contribution margins were all higher for the treatments with no fungicide. Contribution margins reflect the differences in yield, seed costs and fungicide costs. Sclerotinia pressure was low enough this year that the fungicide treatments were not economically beneficial.

XX SUMMARY

The fourth year of the Minnesota Canola Production Centre (CPC) program has been another success. The trials at the Thief River Falls site were chosen to demonstrate basic canola production principles as well as look at new technologies and techniques. While many of the trends in the trials reflected past results from the Canadian CPC program, other trial results differed. Future work will help reveal if these unexpected trends are regionally specific, or if they were just a feature of this year's growing conditions. All of the results will provide good focal points for discussions at extension meetings throughout the winter. This joint project has provided a unique opportunity to share information between Canadian and American growers. Planning for next year's program has already begun with the site for 2002 being 1.5 miles south and 1 mile west of Thief River Falls, Minnesota on County Road 7. A fall dormant seeding trial has already been established with treatments using the "Extender" seed coating. If you have any questions or comments about the Minnesota CPC program please feel free to contact any of the people listed in the following Field Staff Information section.

XXI FIELD STAFF INFORMATION

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