Report No. 08-01

Crop Management Research Report

Penn State University
Department of Crop and Soil Sciences
116 ASI Bldg. University Park, PA 16802

Evaluation of Winter Canola Varieties in Pennsylvania

Conducted by: Greg Roth, Mary Carol Frier, and Mark Antle

Location: Russell Larson Agricultural Experiment Station, Rock Springs, PA; Southeast Agricultural Research Station, Landisville, PA; Richard Snyder Farm, Montoursville, PA

Collaborators: Pennsylvania Department of Agriculture, Mr. Richard Snyder, Dr. David Johnson, Mr. Scott Harkcom.

Research Objective: To evaluate the performance of various winter canola varieties grown under Pennsylvania growing conditions.

Background: Historically, relatively few acres of canola have been grown in the state of Pennsylvania. In recent years, mainly due to its potential as a bio-diesel feedstock, there has been an increased interest in growing canola in the state. Since there is little information available regarding the performance of canola grown under Pennsylvania conditions, it was important for us to obtain this information in order to assist producers in making decisions about growing canola, including variety selection and other management decisions relating to this oil seed crop.

Study Description: This study was conducted in 2007-2008 at the Russell Larson Ag Experiment farm located in Rock Springs, Pennsylvania; the Southeast Agricultural Research Station in Landisville, Pennsylvania; and the Richard Snyder Farm in Montoursville Pennsylvania.

Materials and Methods: Twelve canola varieties were grown and tested for grain yield. The experimental design at each site was a randomized complete block with four replications. Each plot was planted as 7 rows, 18 feet in length at a seeding rate of 5 pounds per acre. The interior five rows were spaced 7 inches apart and the outside rows were spaced 14 inches from the interior rows. The interior 5 rows were harvested and used in the yield calculation. The exterior rows were acted as "border rows" and were harvested separately, but not used in the yield calculation. Grain yield and where provided, lodging and height, were analyzed with SAS. Mean separations were conducted using Fisher's LSD at the p=0.05 level.

At the canola trial at the Rock Springs location, the fields were cropped to oats during the spring of 2007. After oat harvest the fields received 200# per acre of 15-15-15 and were moldboard plowed, disked, and cultimulched prior to planting canola on September 17. At the Montoursville site, the field was cropped to pumpkins during the spring and was moldboard plowed and disked prior to planting canola on September 18 The Landisville site was chisel plowed, disked and cultimulched prior to planting on September 19. 1.5 pints of Trifluralin 4EC herbicide was broadcast and incorporated prior to planting at all sites. All sites received an application of 525# per acre of 20-0-0-4S in the spring. At maturity in early July, harvesting was accomplished with a Wintersteiger Nurserymaster plot combine.

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Results

This is the third year our group has worked with winter canola and this year we achieved some of the best yields. These good yields to several factors: timely planting in mid September, good stands and a relatively mild winter.

Yields averaged over 60 bushels per acre (3000 pounds) at the Landisville and Montoursville sites. At Rock Springs, the crop lodged as a result of an early May snow storm and this likely reduced yields to a 40 bushel per acre average down from what also might have been a 50-60 bushel per acre crop. We also grew a demonstration field of 5 acres on our Farm Operations property and there we averaged about 50 bushels per acre.

In the variety trial, one of the most consistent varieties was Virginia, developed by Virginia State University and marketed by CropPlan Genetics in our area. We evaluated the Dwarf Essex Rapeseed variety, which is commonly grown as a cover crop and found it to produce lower yields than some of the canola varieties in the test. We evaluated the Dwarf Essex with and without a Prosper Insecticide/Fungicide seed treatment and found no effect of the seed treatment in these trials. It is likely that a more consistent effect of the Prosper treatment in spring canola, where the flea beetle is a more consistent and severe pest.

We also included a winter Dow Nexera Canola line, which is a representative of some of their value added canola lines that contain omega-9 fatty acids. These have mostly been developed as spring lines, but winter lines are now being becoming available.

Of the lines evaluated, the HyClass 107 W and the DKW lines were Roundup Ready. The rest were conventional varieties, including some of the more promising lines from Kansas State that we have grown in the past.

If yields of canola could consistently reach the 70+ bu/acre range, it would improve the potential profitability picture for canola compared to some other crops. Canola is an excellent feedstock for biofuel and straight vegetable oil fuel applications and we are finding an increasing level of interest in growing canola as an on farm feedstock.

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Table 1. Winter canola performance at three locations in Pennsylvania in 2008.

Entry	Source	Landisville Yield	Lycoming Yield	Lycoming Height	Lycoming Ldg	Centre Yield	Centre Height	Centre Ldg	Mean Yield
		bu/ac	bu/ac	in.	1-5	bu/ac	in.	1-5	bu/ac
Virginia	Croplan Gen	71.0	81.7	65.5	2.8	58.6	62.0	3.3	70.4
KS9135	Kansas State	67.8	67.0	64.8	2.8	41.8		4.8	58.9
HyClass 107 W	Croplan Gen	67.2	71.4	69.0	3.3	35.4	65.0	3.8	58.0
KS3254	Kansas State	65.6	70.3		5.0	36.9		5.0	57.6
Nexera Canola	Dow Agroscience	61.8	69.2	67.5	2.3	38.8		5.0	56.6
Wichita	Kansas State	60.1	63.9	67.3	2.5	44.6		5.0	56.2
Abilene	Kansas State	63.3	61.0	60.5	3.5	44.1		4.8	56.1
DKW 13-69	Monsanto	60.0	66.5	66.0	2.3	39.7		4.8	55.4
DKW 13-86	Monsanto	56.6	68.8	69.0	3.3	32.9		4.8	52.8
KS3074	Kansas State	60.9	58.3	67.0	3.8	35.1		4.8	51.4
Dwarf Essex	Rohrer	49.5	58.2	66.3	2.0	36.1		4.5	47.9
Dwarf Essesx w/Prosper	Rohrer	51.0	59.5	66.3	3.5	29.5		5.0	46.6
	mean	61.2	66.3	66.4	3.1	39.5	N/A	4.6	55.7
	lsd(.05)	11.9	10.0	3.0	1.4	13.0		0.7	
	CV(%)	13.5	10.5	3.1	32.9	22.9		10.5	

Note: one bushel=50 pounds, yields corrected to 8% moisture

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