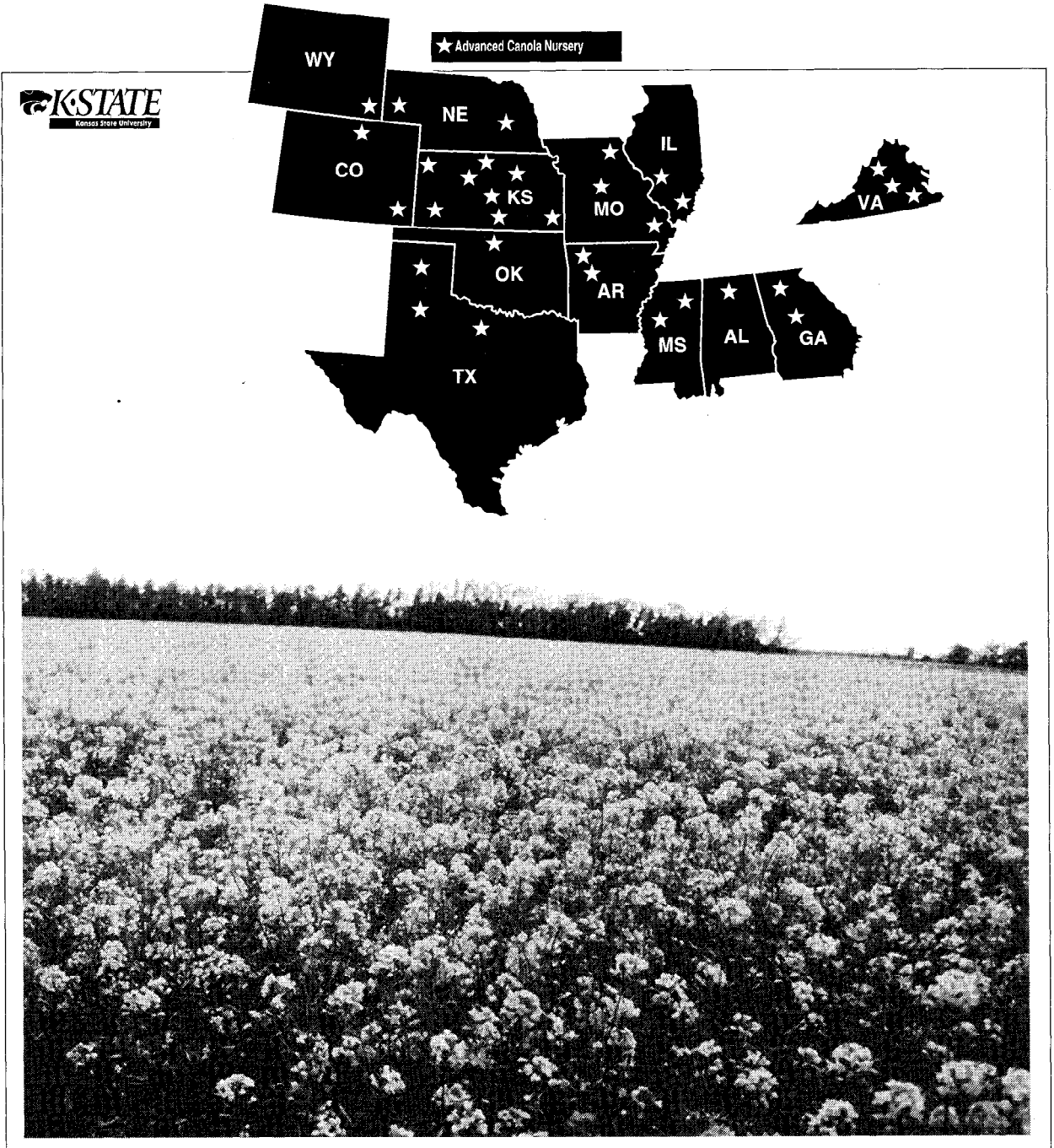


# 1997

## GREAT PLAINS CANOLA RESEARCH INCLUDING SOME MIDWESTERN AND SOUTHEASTERN STATES



### Report of Progress 803

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

## CONTENTS

Introduction .....	1
Objectives .....	1
Procedures .....	2
1996-97 Growing Conditions .....	2
Table 1. Site Descriptions for Locations of the 1996-97 Advanced Canola Nursery (ACN). .....	3
Table 2. Yields (lb/ac) for the 5 Locations of the Advanced Canola Nursery in the Southeast Region, 1996-1997. ....	5
Table 3. Yields (lb/ac) for the 6 Locations of the Advanced Canola Nursery in the Midwest Region, 1995-1997. ....	6
Table 4. Yields (lb/ac) for the 4 Locations of the Advanced Canola Nursery in the Central Great Plains, 1995-1997. ....	7
Table 5. Yields (lb/ac) for the 6 Locations of the Advanced Canola Nursery in the High Plains, 1995-1997. ....	8
Table 6. Winter Survival (%) from 5 Locations of the Advanced Canola Nursery in the Southeast Region, 1996-1997. ....	9
Table 7. Winter Survival (%) from 5 Locations of the Advanced Canola Nursery in the Midwest Region, 1996-1997 .....	10
Table 8. Winter Survival (%) from 7 Locations of the Advanced Canola Nursery in the Central Plains Region, 1995-1997. ....	11
Table 9. Winter Survival (%) from 8 Locations of the Advanced Canola Nursery in the High Plains Region, 1995-1997 .....	12
Table 10. Fail Stand Ratings from 22 Locations of the Advanced Canola Nursery, 1996-97. ....	13
Table 11. 50% Bloom Dates for 16 Locations of the Advanced Canola Nursery, 1996-97. ....	15
Table 12. Maturity Dates for 11 Locations of the Advanced Canola Nursery, 1996-97. ....	16
Table 13. Plant Height (in) for 17 Locations of the Advanced Canola Nursery, 1996-97. ....	17
Table 14. Lodging (%) for 9 Locations of the Advanced Canola Nursery, 1996-97. ....	18
Table 15. Shattering (%) for 8 Locations of the Advanced Canola Nursery, 1996-97. ....	19
Table 16. Moisture (%) for 13 Locations of the Advanced Canola Nursery, 1996-97. ....	20
Table 17. Test Weights (lb/bu) for 13 Locations of the Advanced Canola Nursery, 1996-97. ....	21
Table 18. Total Oil (%) for 18 Locations of the Advanced Canola Nursery, 1996-97.. ....	22

---

Contribution no. 98-269-S from the Kansas Agricultural Experiment Station.

Trade names are used to identify products. No endorsement is intended, nor is any criticism implied of similar products not named.

## INTRODUCTION

Canola is a specific crop developed from rapeseed. Canola also has been called double zero rapeseed because of the low contents of erucic acid (less than 2 percent in the oil) and glucosinolates (less than 30 micromoles per gram in the oil-free meal). Food and oil-processing industries have a high interest in canola, because it produces a high-quality oil that is lower in saturated fat than other sources of dietary fats. The meal remaining after oil extraction is used as a protein supplement by the livestock industry.

Rapeseed production was first reported in Europe in the 1600's. During the 1950's, 60's, and 70's, rapeseed varieties were developed in Canada that were low in erucic acid and glucosinolates, and the term canola was coined to describe these varieties. In 1986, canola oil was given GRAS status, and it began appearing on grocers' shelves in the United States. Canola oil consumption in the U.S. increased from zero prior to 1986 to the equivalent of over 2 million acres of production in 1994. This represents an increase in consumption of 50% since 1992. Seventy percent of this oil is imported from Canada. Canola is one of the few new crops that possesses a substantial market before its production has been established.

Canola-quality varieties of rapeseed have been developed from two species, *Brassica napus* and *B. rapa*. Both species have spring and winter types. In general, *B. napus* is later, higher yielding, more winter hardy, and easier to harvest than *B. rapa*. Nearly all canola grown in the U.S. is *B. napus*. Winter canola yields are generally 30% greater than yields of the spring types. This difference can be even more pronounced in areas similar to the Great Plains, where high temperatures in the early summer are common. Winter canola is planted in late summer. The

plants need to reach the 6 to 8 true-leaf stage and about 8 to 10 inches in height before freeze down to increase winter survival. Plants overwinter as rosettes and bolt early the next spring. Harvest takes place about the same time as winter wheat harvest in a given area.

Canola research began in the Great Plains in the late 1980's. Industrial rapeseed had been investigated prior to this, but because of the limited demand for this product, interest was low. Canola production was attempted in the late 1980's but was not successful. The lack of success was primarily due to the lack of adapted varieties, the lack of management recommendations for the area, and the lack of a local market for the crop. In 1992, a canola breeding project was established at Kansas State University to determine the potential of developing canola varieties that are adapted to the Great Plains region. Since that time, canola-quality lines have been selected and identified that are significant improvements over previously tested varieties. Advancements in production research have led to management recommendations consistent with the conditions of the region. An increased oil consumption has led to increased demand for canola seed and a market interest by oil processors.

## 1997 REGIONAL CANOLA TESTS

### Objectives

The objectives of these tests were to evaluate germplasm over a wide range of environments. The Advanced Canola Nursery (ACN) has been coordinated from Kansas State University since the 1994-95 growing season. The ACN was established to evaluate material that had been selected and advanced and has potential to become new released canola varieties for use in the Great Plains region. Over the past few years, this nursery

has expanded the number of environments and now has locations in the Great Plains, Midwest, and Southeast regions of the United States. The wide diversity in environments has increased our knowledge and understanding of rapeseed germplasm for use in the eastern half of the United States.

## **Procedures**

The ACN was established at 31 locations in 12 states during the fall of 1996. This test included 11 released varieties, 9 experimental lines, and 4 plant introduction lines. Management guidelines were supplied to each cooperator, but past experience at that locality was used for final management decisions. Local management and site descriptions can be found in Table 1. All tests were planted in small plots (approximately 100 square feet) and replicated 3 times. This nursery was continued in 1997-98 and includes 15 experimental lines from 6 different breeding programs and 9 released cultivars. It was distributed to 33 locations in 15 states.

## **1996-1997 Growing Conditions**

Of the 31 locations planted, 21 locations were harvested. Fall establishment was successful at all locations except 2 (Normal, AL and Prairie, MS), where stands had establishment problems and were later lost over the winter. Fall growth was average, and plants at most locations went into the winter in good condition. The winter of 1996-97 was milder than normal or normal for most locations involved in these tests. Spring stands were excellent at most locations. Five tests (Belleville, Colby, and Garden City, KS; Novelty, MO; and Lincoln, NE) were not harvested because winter injury caused poor spring stands. The April freeze that damaged wheat in southern Kansas, Oklahoma, and

Texas also damaged developing branches, but most lines were able to compensate with secondary branching, so yield reduction was minimal. Tests at Hays, KS and Fayetteville, AR were not harvested because of bird damage and hail, respectively, after flowering. Temperatures in April, May, and June were cooler than normal and combined with adequate spring moisture, resulted in excellent yields at many locations. Seven locations (Griffin, GA; Orange, VA; Columbia, MO; Hutchinson and Manhattan, KS; Walsh and Ft. Collins, CO) had at least one line that yielded over 3000 lb/a. 'Jetton' was the top yielding line in both the Southeast and Midwest regions. 'Ceres' was the top yielding line in the Central Great Plains, and 'KS3580' produced the top yields in the High Plains. Weather conditions that resembled those in Europe allowed European-developed cultivars to produce excellent yields. Cultivars like Jetton, 'Falcon', and 'KayStar 11' which do not always survive over the winter, came through the winter in good condition and produced above- average yields at many locations.

## **ACKNOWLEDGMENTS**

This work was funded in part by the National Canola Research Program, United States Department of Agriculture, Cooperative States Research Program; a Special Research Grant for canola research from the United States Department of Agriculture, Cooperative States Research Program; and the Kansas Agricultural Experiment Station. Research assistant Cindy Blaker, as well as student workers Beth Garver and Rachel Jaeger helped with planting, care, harvest, and data preparation of some of these tests. We also thank Len Messenger for providing land for the test near Kingman, KS.

Table 1. Site Descriptions for Locations of the 1996-97 Advanced Canola Nursery (ACN).

Location and Cooperator	Test	Irrigation and Rainfall	Dates of Planting and Harvest	Soil Type and Previous Crop	Fertilizers Applied, lbs/a * N, P O , K O	Seeding Rate and Row Spacing	Average Winter Survival
Normal, AL	ALN	none	-----	silt loam	F: 0 0 0	5 lb/a	5%
Sabry Elias	ALN	-----	no harvest	fallow	S: 0 0 0	12 in	
	ALN						
Fayetteville, AR	ARF	none	10/02	Captina silt loam	F: 30 60 30	7 lb/a	50%
Robert Bacon	ARF	39.2 in	no harvest	fallow	S: 120 0 0	7 in	
	ARF						
Kibler, AR	ARK	1.3 in	10/02	Roxanna silt loam	F: 30 60 30	7 lb/a	100%
Robert Bacon	ARK	34.4 in	06/23	fallow	S: 120 0 0	7 in	
	ARK						
Ft. Collins, CO	COF	yes	09/04	Nunn clay loam	F: 70 40 0	5 lb/a	79%
Duane Johnson	COF	8.9 in	7/8-25	onions	S: 0 0 0	12 in	
	COF						
Walsh, CO	COW	none	09/11	Wiley silt loam	F: 6 19 0	5 lb/a	88%
Duane Johnson	COW	-----	07/02	fallow/wheat	S: 0 0 0	12 in	
	COW						
Calhoun, GA	GAC	none	09/26	Waynesboro loam	F: 50 60 90	5 lb/a	88%
Paul Raymer	GAC	48.8 in	06/24	corn	S: 130 0 0	7 in	
	GAC						
Griffin, GA	GAG	none	10/11	Cecil sandy clay loam	F: 35 70 105	5 lb/a	93%
Paul Raymer	GAG	45.8 in	06/12	soybeans	S: 150 0 0	7 in	
	GAG						
Belleville, IL	ILB	none	09/19	Rushville-Iva silt loam	F: 30 0 0	5 lb/a	68%
Michael Schmidt	ILB	32.2 in	07/10	wheat	S: 120 0 0	8 in	
	ILB						
Carbondale, IL	ILC	none	09/20	Stoy silt loam	F: 30 0 0	5 lb/a	87%
Michael Schmidt	ILC	44.9 in	07/19	wheat	S: 120 0 0	8 in	
	ILC						
Belleville, KS	KSB	none	08/29	Crete silt loam	F: 80 18 46	5 lb/a	3%
Barney Gordon	KSB	21.1 in	no harvest	winter killed canola	S: 0 0 0	10 in	
	KSB						
Colby, KS	KSC	1.6 in	08/26	Keith silt loam	F: 40 40 0	5 lb/a	23%
Herbert Sunderman	KSC	9.1 in	no harvest	Wheat	S: 0 0 0	12 in	
	KSC						
Garden City, KS	KSG	none	08/19	Keith silt loam	F: 60 0 0	10 lb/a	25%
Merle Witt	KSG	14.9 in	no harvest	fallow/wheat	S: 0 0 0	6 in	
	KSG						
Hays, KS	KSHE	none	08/29	Crete silty clay loam	F: 0 0 0	5 lb/a	57%
William Stegmeier	KSHE	25.5 in	no harvest	fallow/sunflowers	S: 80 0 0	12 in	
	KSHE						
Hutchinson, KS	KSHR	none	09/10	Ost silt loam	F: 65 40 0	5 lb/a	100%
William Heer	KSHR	24.4 in	06/28	wheat	S: 80 0 0	10 in	
	KSHR						
Kingman, KS	KSK	none	09/11	Pond Creek silt loam	F: 0 0 0	5 lb/a	100%
Greg McCormack	KSK	-----	07/03	triticale	S: 86 0 0	10 in	
	KSK						
Manhattan, KS	KSM	none	09/04	Ivan silt loam	F: 55 24 0	5 lb/a	87%
Charlie Rife	KSM	22.2 in	07/02	Oats	S: 80 0 0	10 in	
	KSM						

(continued)

Table 1. Site Descriptions for Locations of the 1996-97 Advanced Canola Nursery (ACN) (continued).

Location and Cooperator	Test	Irrigation and Rainfall	Dates of Planting and Harvest	Soil Type and Previous Crop	Fertilizers Applied, lbs/a * N, P O , K O	Seeding Rate and Row Spacing	Average Winter Survival
Parsons, KS James Long	KSP KSP	none 34.2 in	09/13 6/18&23	Parson silt loam wheat	F: 40 46 120 S: 78 0 0	5 lb/a 7 in	99%
Columbia, MO Harry Minor	MOC MOC	none 37.7 in	09/09 07/01	Mexico silt loam soybean	F: 50 0 0 S: 60 0 0	5 lb/a 7.5 in	100%
Novelty, MO Harry Minor	MON MON	none 39.0 in	09/06 no harvest	Putnam silt loam wheat	F: 32 32 32 S: 50 0 0	5 lb/a 7.5 in	5%
Portageville, MO Harry Minor	MOP MOP	none 53.7 in	09/20 06/23	Brosely fine sandy loam cotton	F: 50 50 50 S: 50 0 0	5 lb/a 7.5 in	36%
Holly Springs, MS R. Saunders & R. Ivy	MSH MSH	none 60.0 in	10/10 06/20	Grenada silt loam fallow	F: 30 0 0 S: 120 0 0	5 lb/a 8 in	85%
Prairie, MS Roscoe Ivy	MSP MSP	none 52.6 in	09/26 no harvest	Houston clay fallow	F: 30 0 0 S: 0 0 0	5 lb/a 8 in	0%
Lincoln, NE Lenis Nelson	NEL NEL	none 14.1 in	09/05 no harvest	Sharpsburg silt clay loam fallow	F: 0 0 0 S: 0 0 0	5 lb/a 9 in	9%
Sidney, NE David Baltensperger	NES NES	10.0 in 17.5 in	08/26 9/19&26	Tripp Fine Sandy Loam oats	F: 49 24 0 S: 0 0 0	5 lb/a 12 in	42%
Bushland, TX Brent Beans	TXB TXB	3 in -----	09/23 07/16	Pullman clay loam fallow	F: 100 0 0 S: 0 0 0	5 lb/a 8 in	98%
Lubbock, TX Richard Auld	TXL TXL	9.7 in 11.8 in	09/12 6/17&18	Amarillo fine sandy loam fallow	F: 0 0 0 S: 50 17 33	8 lb/a 5 in	54%
Munday, TX David Bordovsky	TXM TXM	3/25 23.7 in	10/01 6/12&16	Miles fine sandy loam wheat	F: 25 31 0 S: 50 0 0	5 lb/a 10 in	68%
Orange, VA David Stamer	VAO VAO	none 40.8 in	09/09 07/08	Starr silty clay loam forage small grain	F: 30 80 80 S: 60 0 0	6 lb/a 12 in	81%
Petersburg, VA Harbans Bhardwaj	VAP VAP	none 43.8 in	09/26 06/09	Abell sandy loam fallow	F: 0 0 0 S: 100 100 100	6 lb/a -----	100%
Suffolk, VA Harbans Bhardwaj	VAS VAS	none 40.6 in	09/27 06/30	Rains fine sandy loam corn	F: 0 0 0 S: 100 100 100	6 lb/a -----	100%
Archer, WY James Krall	WYA WYA	none 6.6 in	08/23 07/25	Albinas loam fallow, wheat	F: 0 0 0 S: 0 0 0	12.3 lb/a 14 in	56%
----- WYA							

\* F = fall application and S = spring application.

Table 3. Yields (lb/ac) for the 6 Locations of the Advanced Canola Nursery in the Midwest Region, 1995-1997.

Line	Orange, VA	Petersburg, VA	Suffolk, VA	Carbondale, IL		Columbia, MO		Parsons, KS		Midwest Means	USA Means
	1997	1997	1997	1997	2yr	1997	2yr	1997	2yr		
					1/		1/		1/		
Jetton	2911 *	2901 *	1871 *	2825 *	-----	2342 *	-----	1730 *	-----	2430 *	2066 *
KS3580	3372 *	1633	632	1970	2024 *	2507 *	1790 *	694	871	1801	1800
Casino	2173	1581	1225	1668	-----	3170 *	-----	817	-----	1772	1596
KS3505	1910	1264	2215 *	1575	1975 *	2129	1536	1352 *	1200 *	1741	1566
MO-513-9	2491	2106	1563	1046	1499	2257	1845 *	916	848	1730	1600
KS3203	1724	2354 *	1408	1253	-----	2474 *	-----	892	-----	1684	1623
Falcon	2050	1084	1017	1990	-----	2256	-----	1387 *	-----	1630	1723
Ceres	2537	1447	860	1793	2067 *	1933	1762 *	1166	973	1622	1818
ST9/94	1566	1720	1052	1300	-----	2742 *	-----	1035	-----	1569	1491
W4689E	2383	1712	783	1519	-----	2486 *	-----	480	-----	1560	1410
MO-503-1	2118	1442	1567	1343	1457	1820	1553	687	881	1496	1545
Selkirk	2039	1387	1171	1145	-----	2007	-----	757	-----	1418	1315
KS1701	2065	1222	1208	1205	1576	2076	1623 *	310	746	1348	1385
KayStar 11	2004	1254	1367	1069	1595	1767	1685 *	564	618	1338	1441
Bridger	1735	1841	1023	991	1070	1797	1423	614	710	1333	1058
Ericka	2413	1236	937	1011	-----	2020	-----	373	-----	1332	1233
KS3579	2189	942	1043	1071	1332	2208	1883 *	484	659	1323	1298
Winfield	1956	1179	593	886	1101	2223	1578 *	1041	829	1313	1339
Leo	1885	1762	1312	408	-----	1451	-----	343	-----	1193	1109
Bor	991	1619	978	740	-----	1570	-----	433	-----	1055	1058
PI535849	1387	1329	1208	717	-----	1332	-----	347	-----	1053	983
Polo	945	1799	1330	704	-----	672	-----	212	-----	944	1012
Aspen	1547	936	688	632	-----	1367	-----	314	-----	914	909
Debut	835	440	821	405	-----	491	-----	138	-----	522	367
Mean	1968	1508	1161	1219	1490	1962	1529	712	776	1422	1364
LSD (.05)	710	680	480	457	213	859	320	524	213	220	148
CV (%)	22.0	27.5	25.2	22.8	20.9	26.7	27.4	43.6	36.3	27.7	29.9

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1995 and 1997.

Table 4. Yields (lb/ac) for the 4 Locations of the Advanced Canola Nursery in the Central Great Plains, 1995-1997.

Line	Munday, TX		Kingman, KS	Hutchinson, KS		1997	Manhattan, KS			Central Plains	Means
	1997	2yr	1997	1997	2yr		2yr	3yr	Means		
		1/			2/		1/	3/			
Ceres	2179 *	1276 *	2351 *	3624 *	2662 *	3719 *	2406 *	1826 *	2968 *	1818	
Jetton	1937 *	1221 *	2815 *	2983	-----	3555 *	2097	-----	2822 *	2066	
Falcon	2085 *	1188 *	2081 *	3834 *	-----	2074	1258	-----	2518	1723	
KS3580	1544	889	1770 *	3169	2425 *	3081	2100	1636	2391	1800	
KS3505	1437	871	1763 *	2181	1693	3909 *	2616 *	1899 *	2323	1566	
KS3203	1369	-----	1030	2306	-----	3386 *	-----	-----	2023	1623	
KayStar 11	1553	1047	1153	2824	1963	2552	1672	1266	2021	1441	
Casino	1095	677	1325	2748	-----	2794	1863	-----	1991	1596	
MO-503-1	1179	877	1276	2487	2020	2634	2112	1618	1894	1545	
KS1701	1547	899	912	2020	1682	2958	2116	1649	1859	1385	
MO-513-9	1321	821	933	2217	1942	2786	2043	1553	1814	1600	
ST9/94	1619	-----	1146	3016	-----	1434	-----	-----	1804	1491	
Selkirk	1083	-----	878	2312	-----	2310	-----	-----	1646	1315	
KS3579	1637	969	718	1492	1623	2633	1581	1291	1620	1298	
Winfield	1691	957	788	2465	2192	1342	1025	887	1572	1339	
Ericka	1513	-----	458	1864	-----	2403	-----	-----	1559	1233	
W4689E	1212	-----	1033	1278	-----	2129	-----	-----	1413	1410	
Bor	602	-----	1640	714	-----	987	-----	-----	986	1058	
Leo	1114	-----	329	1302	-----	931	-----	-----	919	1109	
Bridger	1241	804	245	666	1091	1129	755	555	820	1058	
Polo	1046	-----	299	638	-----	1215	-----	-----	800	1012	
Aspen	1171	661	78	666	-----	1163	770	-----	770	909	
PI535849	977	-----	67	271	-----	844	-----	-----	540	983	
Debut	109	-----	97	131	-----	539	-----	-----	219	367	
Mean	1344	832	1049	1967	1741	2175	1528	1183	1634	1364	
LSD (.05)	449	177	1125	498	259	774	284	66	375	148	
CV (%)	20.4	38.9	65.3	15.0	19.5	20.8	26.1	29.4	28.4	29.9	

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1996 and 1997.

2/ Includes data from 1995 and 1997.

3/ Includes data from 1995, 1996, and 1997.



Table 5. Yields (lb/ac) for the 6 Locations of the Advanced Canola Nursery in the High Plains, 1995-1997.

Line	Lubbock, TX	Bushland, TX	Walsh, CO	Ft Collins, CO	Sidney, NE		Archer, WY	High Plains	USA
	1997	1997	1997	1997	1997	2yr	1997	Means	Means
						1/			
KS3580	511 *	1342	2015	2507 *	1064 *	2127	730 *	1362 *	1800
PI535849	261	845	3106 *	3086 *	108	-----	551 *	1326 *	983
MO-513-9	157	1149	2443	2453 *	658	1357	843 *	1284 *	1600
KS3203	403 *	1339	1483	2581 *	937 *	-----	689 *	1239 *	1623
Polo	259	920	2938 *	2818 *	175	-----	214	1221 *	1012
Bor	98	668	3538 *	2367	244	-----	273	1198 *	1058
Ceres	274	1590 *	2159	2220	719 *	1635	77	1173 *	1818
Falcon	403 *	1553 *	1851	2226	420	-----	378	1138	1723
MO-503-1	0	973	2451	1845	609	1877	791 *	1112	1545
Jetton	643 *	1803 *	1199	2306	11	-----	500	1077	2066 *
KS1701	291	1069	1639	2172	687	1273	583 *	1074	1385
Winfield	612 *	1030	1715	2191	327	941	358	1039	1339
ST9/94	340	1084	1807	2079	452	-----	446	1035	1491
KS3505	261	1075	1853	1564	505	1249	598 *	976	1566
KayStar 11	484 *	1213	1763	1813	343	1963	165	963	1441
Casino	485 *	1047	1567	1852	269	-----	546 *	961	1596
Selkirk	342	1083	1691	1919	174	-----	459	945	1315
Leo	0	1042	1599	1743	435	-----	598 *	903	1109
KS3579	506 *	1283	1243	1305	482	1389	597 *	903	1298
W4689E	551 *	1310	1591	1465	120	-----	221	876	1410
Bridger	421 *	1130	1331	1567	0	1169	506	826	1058
Ericka	95	971	1163	1817	492	-----	334	812	1233
Aspen	814 *	787	1187	1490	8	-----	215	750	909
Debut	0	81	899	1417	22	-----	55	412	367
Mean	342	1100	1843	2033	386	1345	447	1025	1364
LSD (.05)	433	384	696	695	347	NS	313	192	148
CV (%)	61.2	21.3	23.0	20.8	54.8	-----	42.7	28.6	29.9

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1995 and 1997.

Table 6. Winter Survival (%) from 5 Locations of the Advanced Canola Nursery in the Southeast Region, 1996-1997.

Line	Calhoun, GA	Griffin, GA	Holly Springs, MS	Kibler, AR		Portageville, MO	Southeast	USA
	1997	1997	1997	1997	2yr	1997	Means	Means
					1/			
Casino	100 *	100 *	90 *	100	92	68 *	92 *	80 *
KS3203	95 *	95 *	92 *	100	---	62 *	89 *	81 *
Ceres	100 *	100 *	90 *	100	98 *	48 *	88 *	69
ST9/94	100 *	100 *	83 *	100	---	53 *	87 *	72
MO-503-1	100 *	93 *	90 *	100	96 *	50 *	87 *	77
Falcon	86 *	100 *	90 *	100	95 *	57 *	87 *	68
KayStar 11	98 *	100 *	87 *	100	93 *	45 *	86 *	68
Jetton	88 *	100 *	90 *	100	98 *	45 *	85 *	67
Bridger	100 *	93 *	90 *	100	78	40 *	85 *	74
KS3580	100 *	100 *	92 *	100	99 *	31	84 *	81 *
W4689E	98 *	95 *	80 *	100	---	48 *	84 *	64
Ericka	100 *	100 *	90 *	100	---	30	84 *	72
MO-513-9	85 *	100 *	90 *	100	98 *	35	82	76
Selkirk	100 *	95 *	90 *	100	---	22	81	73
KS3505	85 *	88 *	88 *	100	98 *	43 *	81	76
KS3579	88 *	100 *	88 *	100	98 *	27	81	79 *
Winfield	85 *	100 *	85 *	100	97 *	32	80	72
Leo	78 *	96 *	75	100	---	39 *	78	72
Polo	100 *	75	83 *	100	---	11	74	62
KS1701	80 *	100 *	75	100	98 *	14	74	75
Aspen	78 *	100 *	70	100	68	17	73	67
PI535849	68	70	75	100	---	12	65	65
Bor	73	70	58	100	---	14	63	60
Debut	38	58	90 *	100	---	12	60	65
Mean	88	93	85	100	94	36	80	71
LSD (.05)	23	20	14	NS	6	31	10	4
CV (%)	19	14	10	---	10	53	17	16

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1996 and 1997.

Table 7. Winter Survival (%) from 5 Locations of the Advanced Canola Nursery in the Midwest Region, 1996-1997.

Line	Orange, VA		Belleville, IL		Carbondale, IL		Columbia, MO		Parsons, KS		Midwest Means	USA Means	
	1997	1997	2yr	1997	2yr	3yr	1997	2yr	1997	2yr			3yr
			1/		2/	3/		2/		2/	3/		
Casino	90 *	92 *	---	90	46 *	---	100	58 *	98	52	---	94 *	80
ST9/94	91 *	87 *	---	92	---	---	100	---	95	---	---	93 *	72
Bridger	88 *	80 *	73 *	90	46 *	61	100	51	100	53	59	92 *	74
KS3579	82 *	80 *	82 *	90	47 *	61	100	57 *	100	73 *	79 *	90 *	79
Ericka	87 *	70 *	---	93	---	---	100	---	100	---	---	90 *	72
Debut	93 *	68 *	---	88	---	---	100	---	100	---	---	90 *	65
KS3203	83 *	83 *	---	82	---	---	100	---	100	---	---	90 *	81
Selkirk	78 *	83 *	---	87	---	---	100	---	100	---	---	90 *	73
Winfield	83 *	73 *	77 *	92	46 *	61	100	53	100	56	65	90 *	72
MO-513-9	87 *	80 *	79 *	80	41	59	100	53	100	53	65	89 *	76
Ceres	87 *	70 *	78 *	87	44 *	58	100	56 *	100	50	61	89 *	69
Jetton	88 *	67 *	---	92	46 *	---	100	52	95	53	---	88 *	67
KayStar 11	83 *	70 *	74 *	85	44	60	100	50	100	50	49	88 *	68
MO-503-1	82 *	70 *	74 *	85	44 *	61	100	53	100	54	64	87 *	77
W4689E	85 *	58	---	88	---	---	100	---	100	---	---	86	64
KS3580	92 *	53	64	88	45 *	61	100	56 *	95	68 *	76 *	86	81
KS3505	80 *	63	73 *	83	42	58	100	53	100	55	67	85	76
KS1701	82 *	57	70 *	85	44 *	57	100	53	100	53	64	85	75
Falcon	83 *	50	---	88	44 *	---	100	53	100	51	---	84	68
Bor	72	67 *	---	83	---	---	100	---	97	---	---	84	60
PI535849	58	67 *	---	87	---	---	100	---	100	---	---	82	65
Leo	70	60	---	80	---	---	100	---	100	---	---	82	72
Aspen	68	40	---	92	46 *	---	100	53	100	52	---	80	67
Polo	43	47	---	78	---	---	100	---	98	---	---	73	62
Mean	81	68	73	87	44	60	100	53	99	55	63	87	71
LSD (.05)	20	25	13	NS	3	NS	NS	4	NS	5	7	7	4
CV (%)	15	23	17	9	5	5	---	38	3	33	26	11	16

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1995 and 1997.

2/ Includes data from 1996 and 1997.

3/ Includes data from 1995, 1996, and 1997.

Table 8. Winter Survival (%) from 7 Locations of the Advanced Canola Nursery in the Central Plains Region, 1995-1997.

Line	Kingman, KS	Manhattan, KS			Hutchinson, KS			Belleville, KS		Hays, KS	Lincoln, NE			Munday, TX		Central Plains
	1997	1997	2yr	3yr	1997	2yr	3yr	1997	2yr	1997	1997	2yr	3yr	1997	2yr	Means
			1/	2/		1/	2/		1/							1/
KS3580	100	80	71	79	100	83 *	89 *	4	5 *	90 *	35 *	19	38 *	70	69 *	68 *
KS3505	100	100 *	86 *	89 *	100	82 *	88 *	13 *	8 *	85 *	17 *	11	31 *	58	59	68 *
KS3579	100	98 *	83 *	88 *	100	93 *	96 *	1	2 *	93 *	5	4	32 *	68	64	67 *
Casino	100	93 *	77 *	---	100	78	---	0	1	80 *	7	4	---	79 *	73 *	66 *
KS3203	100	100 *	---	---	100	---	---	2	---	68	15	---	---	73	---	65 *
KS1701	100	80	85 *	90 *	100	68	79	5	4 *	90 *	15	10	30 *	66	60	65 *
MO-513-9	100	87 *	82 *	86 *	100	69	79	8 *	5 *	63	25 *	17	32 *	61	66 *	63 *
Ceres	100	85 *	76 *	81 *	100	53	68	0	1	70	10	6	26 *	78 *	74 *	63
MO-503-1	100	95 *	93 *	93 *	100	69	79	7 *	5 *	77 *	7	7	26 *	57	62	63
Winfield	100	95 *	77 *	83 *	100	75	83	0	1	45	10	7	22 *	86 *	70 *	62
Selkirk	100	93 *	---	---	100	---	---	0	---	65	2	---	---	74 *	---	62
Polo	100	95 *	82 *	---	100	51	---	15 *	---	50	7	---	---	61	---	61
Debut	100	98 *	---	---	100	---	---	4	---	93 *	2	---	---	28	---	61
Leo	100	82 *	65	---	100	63	---	6 *	---	73	7	---	---	57	---	61
Bridger	100	78	71	77	100	54	69	0	0	68	10	6	24 *	61	62	60
Aspen	100	90 *	84 *	---	100	63	---	0	1	47	5	3	---	69	65	59
Jetton	100	90 *	58	---	100	56	---	0	0	30	2	3	---	80 *	72 *	57
Ericka	100	96 *	---	---	100	---	---	1	---	20	7	---	---	77 *	---	57
KayStar 11	100	90 *	64	71	100	51	67	0	0	33	4	3	16	69	63	57
PI535849	100	77	---	---	100	---	---	2	---	52	7	---	---	48	---	55
Bor	97	73	68	---	100	58	---	2	---	22	22 *	---	---	62	---	54
Falcon	100	50	49	---	100	53	---	0	0	37	2	1	---	85 *	76 *	53
ST9/94	100	82 *	---	---	100	---	---	0	---	10	2	---	---	77 *	---	53
W4689E	100	50	---	---	100	---	---	0	---	15	0	---	---	76 *	---	49
Mean	100	86	74	80	100	61	74	3	2	57	9	6	25	68	63	60
LSD (.05)	5	19	20	13	NS	12	8	9	7	18	19	NS	18	12	11	5
CV (%)	1	13	24	18	---	---	---	194	160	19	126	94	69	11	15	14

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1996 and 1997.

2/ Includes data from 1995, 1996, and 1997.

Table 9. Winter Survival (%) from 8 Locations of the Advanced Canola Nursery in the High Plains Region, 1995-1997.

Line	Bushland, TX		Lubbock, TX		Ft. Collins, CO		Walsh, CO	Colby, KS			Garden City, KS			Sidney, NE			Archer, WY		High Plains
	1997	1997	2yr	3yr	1997	2yr	1997	1997	2yr	3yr	1997	2yr	3yr	1997	2yr	3yr	1997	2yr	Means
			1/	2/		3/			1/	2/		1/	2/		1/	2/		1/	
KS3580	99 *	64	72 *	81 *	90 *	56	100 *	45 *	69 *	79 *	72 *	39 *	56 *	87 *	72 *	81 *	82 *	44 *	80 *
KS3203	99 *	70 *	---	---	90 *	---	93 *	40 *	---	---	63 *	---	---	80 *	---	---	82 *	---	77 *
KS3579	99 *	71 *	79 *	86 *	87 *	81 *	97 *	42 *	65 *	77 *	73 *	53 *	63 *	40	51	67	78 *	48 *	73 *
KS1701	99 *	71 *	80 *	87 *	87 *	57	97 *	45 *	66 *	77 *	38	45 *	51 *	67 *	45	63	67 *	46 *	71
MO-513-9	98 *	39	58	72	87 *	55	97 *	38 *	64 *	76 *	43 *	---	---	67 *	60 *	73 *	85 *	53 *	69
KS3505	99 *	49	68 *	79 *	93 *	72 *	97 *	20	53	69	26	28	51 *	73 *	70 *	80 *	88 *	54 *	68
MO-503-1	99 *	33	62	75 *	83 *	55	93 *	25	52	68	42	---	---	85 *	72 *	81 *	85 *	53 *	68
Casino	98 *	83 *	89 *	---	93 *	---	100 *	32	58 *	---	7	6	---	33	45	---	85 *	48 *	66
Leo	98 *	2	---	---	93 *	---	83 *	50 *	---	---	29	---	---	68 *	---	---	83 *	---	63
Bridger	99 *	72 *	80 *	86 *	83 *	48	83 *	50 *	63 *	73 *	14	13	39	1	19	46	75 *	38	60
Selkirk	99 *	41	---	---	80 *	---	83 *	32	---	---	53 *	---	---	7	---	---	78 *	---	59
Ericka	99 *	63	---	---	87 *	---	100 *	13	---	---	37	---	---	33	---	---	40	---	59
ST9/94	99 *	67 *	---	---	87 *	---	87 *	1	---	---	5	---	---	37	---	---	68 *	---	56
Winfield	99 *	63	68 *	79 *	67	52	87 *	9	42	61	4	3	33	63 *	43	62	48	29	55
Aspen	99 *	63	55	---	77 *	---	93 *	8	30	---	20	12	---	7	12	---	70 *	35	55
PI535849	99 *	44	---	---	87 *	---	83 *	25	---	---	21	---	---	37	---	---	40	---	54
Falcon	97 *	89 *	87 *	---	47	---	97 *	3	27	---	9	5	---	40	38	---	20	13	50
Debut	97 *	57	---	---	80 *	---	87 *	27	---	---	10	---	---	12	---	---	27	---	49
KayStar 11	94	67 *	54	69	60	43	97 *	6	22	48	2	1	27	20	27	51	18	11	46
Jetton	98 *	37	65	---	83 *	---	63	7	39	---	0	1	---	10	28	---	55	28	44
Bor	98 *	18	---	---	73	---	83 *	10	---	---	6	---	---	35	---	---	28	---	44
Ceres	99 *	29	35	57	67	49	57	4	33	55	17	9	38	70 *	49	66	4	5	43
W4689E	99 *	60	---	---	53	---	83 *	1	---	---	0	---	---	8	---	---	27	---	41
Polo	97	36	---	---	57	---	67	12	---	---	5	---	---	37	---	---	15	---	41
Mean	98	54	61	74	79	52	88	23	48	65	25	22	43	42	42	61	56	33	58
LSD (.05)	2	23	22	14	19	14	23	18	13	9	31	18	17	27	20	13	25	12	7
CV (%)	1	25	---	---	15	---	16	49	---	---	75	---	---	38	---	---	28	---	23

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

1/ Includes data from 1996 and 1997.

2/ Includes data from 1995, 1996, and 1997.

3/ Includes data from 1995 and 1997.

Table 10. Fall stand ratings from 22 Locations of the Advanced Canola Nursery, 1996-97.

Line	Normal AL	Kibler AR	Ft. Collins CO	Walsh CO	Belleville IL	Carbondale IL	Belleville KS	Colby KS	Garden City KS	Hays KS	Kingman KS	Means
Debut	7.7 *	7.3	7.7 *	8.2 *	6.7 *	9.0 *	10.0 *	8.3 *	10.0	10.0 *	9.7 *	8.4 *
ST9/94	7.3 *	9.7 *	5.3	7.7 *	5.8 *	9.2 *	9.7 *	9.0 *	10.0	10.0 *	9.3 *	7.8
W4689E	6.3	8.7 *	5.3	7.0 *	6.0 *	8.7 *	9.3 *	8.7 *	10.0	10.0 *	9.0 *	7.5
Casino	6.3	10.0 *	4.0	6.5 *	7.3 *	8.3 *	10.0 *	7.7	10.0	8.3	9.3 *	7.5
Ericka	4.7	9.7 *	5.0	7.2 *	6.0 *	8.7 *	10.0 *	8.7 *	9.7	10.0 *	8.7 *	7.5
Jetton	6.3	9.2 *	5.0	4.8	5.0	8.7 *	10.0 *	9.0 *	10.0	8.7	9.3 *	7.1
Winfield	6.7 *	9.7 *	5.7	3.2	5.3	7.3	9.7 *	7.0	9.0	9.0 *	8.7 *	7.0
Falcon	6.7 *	9.5 *	4.0	7.3 *	3.5	8.0 *	10.0 *	7.7	10.0	9.0 *	8.7 *	7.0
KS3203	8.3 *	9.3 *	4.0	5.5	4.3	8.0 *	9.0 *	8.0 *	10.0	8.3	8.3	6.9
KayStar 11	6.0	9.8 *	4.7	6.3 *	6.7 *	6.7	9.3 *	8.0 *	10.0	7.7	8.3	6.9
Selkirk	5.3	9.7 *	5.7	4.2	4.5	8.3 *	9.0 *	7.0	9.7	8.0	8.3	6.6
KS3579	4.3	8.0	3.7	5.2	4.3	7.5	8.7	7.3	10.0	7.7	8.0	6.6
KS3580	4.7	8.8 *	4.0	4.2	2.7	7.5	8.7	7.7	10.0	8.0	7.3	6.5
Ceres	5.0	10.0 *	4.0	3.8	2.3	7.3	9.0 *	7.3	10.0	7.3	8.3	6.2
Bridger	4.3	9.2 *	4.0	2.5	5.8 *	8.5 *	8.0	7.0	10.0	6.0	7.3	6.1
Aspen	4.0	8.8 *	3.3	3.2	2.0	7.8 *	8.7	7.7	10.0	6.7	8.0	5.9
MO-513-9	4.0	8.8 *	3.3	3.3	4.2	5.3	7.0	6.7	10.0	9.0 *	7.0	5.8
Bor	4.0	9.5 *	4.0	3.3	4.8	7.7	7.7	7.0	9.7	7.3	6.0	5.8
KS3505	7.0 *	9.0 *	3.3	2.2	4.0	7.8 *	7.0	7.7	10.0	8.3	7.0	5.7
KS1701	4.7	8.8 *	4.3	4.0	2.8	6.8	6.7	7.3	10.0	7.0	5.3	5.5
MO-503-1	4.3	10.0 *	3.3	3.3	3.3	7.2	7.7	6.3	9.3	7.3	6.0	5.5
Leo	5.3	7.0	3.0	2.8	1.5	6.0	6.7	5.7	9.7	7.3	7.3	5.3
PI535849	4.7	8.5 *	3.3	2.7	2.0	5.0	7.3	7.0	9.3	6.7	5.7	4.9
Polo	5.0	7.3	2.3	1.7	1.3	5.0	6.0	4.7	9.0	6.3	5.7	4.5
Mean	5.5	9.0	4.3	4.6	4.3	7.5	8.5	7.4	9.8	8.1	7.8	6.5
LSD (.05)	1.9	1.8	1.6	2.1	1.8	1.5	1.1	1.1	NS	1.0	1.1	0.3
CV (%)	20.7	12.2	22.5	27.4	26.0	12.0	7.9	8.8	4.9	7.8	8.5	-----

(continued)

Table 10. Fall stand ratings from 22 Locations of the Advanced Canola Nursery, 1996-97 (continued).

Line	Manhattan KS	Parsons KS	Hutchinson KS	Columbia MO	Holly Springs MS	Prairie MS	Lincoln NE	Sidney NE	Bushland TX	Munday TX	Archer WY	Means
Debut	9.3 *	7.7	9.3 *	7.6 *	9.5 *	10.0	4.0 *	8.7 *	7.0	8.8 *	9.3 *	8.4 *
ST9/94	8.7 *	7.0	8.7 *	8.6 *	7.5	4.0	4.7 *	8.0 *	6.5	8.2 *	7.5 *	7.8
W4689E	9.7 *	4.3	8.7 *	7.8 *	7.2	8.0	2.7	7.3 *	6.0	8.2 *	6.8	7.5
Casino	9.3 *	5.7	8.7 *	9.8 *	7.3	8.0	4.0 *	3.8	5.3	8.1 *	6.7	7.5
Ericka	9.7 *	6.0	8.7 *	8.2 *	7.8	5.0	4.0 *	6.5	6.8	8.3 *	4.9	7.5
Jetton	9.0 *	5.0	8.3 *	5.9	7.7	6.0	3.3 *	4.7	5.2	8.5 *	6.5	7.1
Winfield	9.3 *	5.7	8.7 *	8.3 *	7.8	6.0	2.7	3.5	5.7	8.0 *	8.0 *	7.0
Falcon	9.3 *	6.0	7.3	5.8	7.5	3.0	4.3 *	5.3	5.5	8.4 *	6.7	7.0
KS3203	9.0 *	5.0	7.3	8.5 *	6.5	4.0	4.0 *	6.0	5.2	7.8 *	5.8	6.9
KayStar 11	9.7 *	5.3	8.7 *	7.2 *	7.2	5.0	3.3 *	5.8	2.8	6.8	5.5	6.9
Selkirk	9.0 *	4.0	6.7	8.0 *	7.5	7.0	3.0	5.0	3.8	7.0	4.5	6.6
KS3579	9.3 *	6.0	7.0	6.8 *	6.3	7.0	3.3 *	4.2	6.2	7.4	6.7	6.6
KS3580	8.3 *	5.0	6.7	6.4	6.2	6.0	3.3 *	7.0	4.8	7.4	8.2 *	6.5
Ceres	8.3 *	5.7	7.0	5.3	6.7	6.0	3.0	3.2	4.8	6.9	6.0	6.2
Bridger	8.3 *	4.7	6.3	7.1 *	6.5	5.0	4.3 *	2.2	4.0	7.8 *	6.0	6.1
Aspen	8.3 *	5.0	6.7	5.0	5.8	5.0	2.7	3.3	5.2	6.4	6.8	5.9
MO-513-9	5.0	5.0	6.0	6.3	5.5	5.0	3.0	6.0	3.7	6.6	7.9 *	5.8
Bor	6.0	5.0	7.0	5.1	6.0	4.0	2.7	4.3	2.3	6.3	7.2	5.8
KS3505	5.7	5.7	4.7	6.3	5.0	3.0	2.3	2.7	3.8	5.5	7.0	5.7
KS1701	5.0	5.0	4.0	6.8 *	5.8	3.0	3.0	5.2	3.3	6.4	6.2	5.5
MO-503-1	6.3	4.7	5.7	5.3	5.3	3.0	3.0	3.0	3.8	5.6	6.8	5.5
Leo	7.3	3.7	4.3	5.3	5.7	6.0	2.7	2.7	2.3	5.8	7.5 *	5.3
PI535849	6.0	2.0	5.0	4.8	4.0	3.0	2.7	3.0	4.0	4.3	5.9	4.9
Polo	6.3	5.3	4.3	2.3	4.7	5.0	2.3	2.3	3.3	4.8	4.6	4.5
Mean	8.1	5.2	7.0	6.6	6.7	5.3	3.3	4.7	4.6	7.1	6.6	6.5
LSD (.05)	1.5	NS	1.1	3.3	0.9	NS	1.4	1.7	NS	1.1	1.9	0.3
CV (%)	11.5	34.6	9.3	30.1	8.1	----	26.4	21.4	39.7	9.2	17.4	----

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

Fall Stand Ratings, 10 = complete stand, 0 = no established plants.

Table 11. 50% Bloom Dates for 16 Locations of the Advanced Canola Nursery, 1996-97.

Line	Kibler AR	Ft. Collins CO	Walsh CO	Calhoun GA	Griffin GA	Carbondale IL	Hays KS	Manhattan KS	Parsons KS	Hutch. KS	Columbia MO	Holly Sp. MS	Sidney NE	Bushland TX	Munday TX	Orange VA	Means 35521.0
KS3579	03/19	05/10 e	04/30	03/23	03/21 e	03/30 e	04/17 e	04/18 e	04/06 e	04/07 e	04/20	03/25 e	05/19 e	04/04 e	03/24 e	04/06 e	10.1 e
Debut	03/06 e	05/12	04/13 e	03/27	03/24	03/29 e	04/16 e	04/20 e	04/04 e	04/17	04/17 e	03/26 e	05/19 e	04/07 e	04/02	04/06 e	10.6 e
Bridger	03/12	05/18	05/09 l	03/21 e	03/20 e	03/31	05/05	04/22	04/05 e	04/11	04/18 e	03/25 e	05/28 l	04/06 e	03/25 e	04/06 e	12.1
Aspen	03/12	05/12	05/05	03/21 e	03/19 e	03/31	05/04	04/21	04/07	04/15	04/21	03/30	05/28 l	04/06 e	03/23 e	04/07 e	12.2
Winfield	03/12	05/14	05/06	03/25	03/25	03/31 e	05/02	04/19 e	04/08	04/17	04/21	04/01	05/22	04/15	04/01	04/08	13.9
KS3580	03/27 l	05/10 e	05/01	03/29	03/28	04/02	04/28 e	04/22	04/10	04/16	04/22	04/01	05/18 e	04/09	04/03	04/10	14.5
Ericka	03/21	05/13	05/03	03/29	03/25	03/31 e	05/08	04/19 e	04/09	04/17	04/21	03/31	05/25	04/07 e	04/02	04/07 e	14.6
MO-503-1	03/12	05/13	05/03	03/27	03/27	04/01	05/01	04/24	04/12	04/19	04/22 l	04/01	05/22	04/14	04/04	04/10	15.0
Leo	03/19	05/12	05/05	03/26	03/27	04/03	04/30	04/22	04/11	04/20	04/22 l	04/01	05/19 e	04/16	04/02	04/08	15.0
MO-513-9	03/19	05/12	05/04	03/26	03/27	04/02	05/02	04/25 l	04/12	04/20	04/22 l	04/01	05/24	04/12	04/01	04/09	15.2
KS1701	03/19	05/12	05/03	03/30 l	03/29	04/01	05/01	04/25 l	04/11	03/21 l	04/24 l	04/02	05/20 e	04/15	04/02	04/10	15.8
KS3203	03/17	05/13	05/02	03/28	03/30	04/02	05/02	04/23	04/13	04/20	04/22 l	04/01	05/21 e	04/16	04/05	04/11	15.9
Jetton	03/27 l	05/17	05/09 l	03/23	03/24	03/29 e	05/09 l	04/25 l	04/08	04/20	04/23 l	03/31	05/25	04/10	03/31	04/10	15.9
W4689E	03/17	05/19 l	05/10 l	03/29	04/03 l	03/31	05/11 l	04/22	04/12	04/19	04/22	04/02	-----	04/09	04/10 l	04/08	14.7
KS3505	03/27 l	05/13	05/04	03/30 l	04/01 l	04/03	05/02	04/25 l	04/14	04/22 l	04/24 l	04/03	05/22	04/19 l	04/06	04/10	17.7
Ceres	03/17	05/18	05/07 l	03/29	03/31	04/02	05/05	04/26 l	04/12	04/21 l	04/22 l	04/03 l	05/27 l	04/22 l	04/04	04/10	17.7
PI535849	03/19	05/13	05/04	03/30 l	04/01 l	04/03	05/04	04/26 l	04/15 l	04/22 l	04/24 l	04/02	05/28 l	04/16	04/06	04/13	17.8
Falcon	03/17	05/18	05/06	03/28	03/30	04/02	05/08	04/27 l	04/09	04/21	04/22	04/03 l	05/29 l	04/22 l	04/05	04/11	17.8
ST9/94	03/25	05/19 l	05/10 l	03/29	03/31	04/01	05/12 l	04/22	04/12	04/18	04/22	04/01	05/28 l	04/14	04/04	04/12	17.9
Casino	03/25	05/13	05/03	03/30 l	04/02 l	04/04 l	05/06	04/24	04/13	04/20	04/22 l	04/05 l	05/20 e	04/18	04/10 l	04/14 l	18.0
KayStar 11	03/27 l	05/19 l	05/08 l	03/29	03/31	04/03	05/06	04/22	04/12	04/19	04/22	04/05 l	05/26	04/22 l	04/05	04/14 l	18.6
Selkirk	03/25	05/16	05/06	03/30 l	04/03 l	04/04 l	05/04	04/25 l	04/14	04/20	04/24 l	04/04 l	05/28 l	04/19 l	04/08 l	04/15 l	19.0
Polo	03/27 l	05/17	05/04	03/30 l	04/02 l	04/04 l	05/05	04/26 l	04/16 l	04/23 l	04/24 l	04/02	05/28 l	04/20 l	04/08 l	04/14 l	19.3 l
Bor	03/27 l	05/17	05/07 l	03/31 l	04/01 l	04/05 l	05/06	04/27 l	04/17 l	04/24 l	04/24 l	04/03 l	05/26	04/22 l	04/09 l	04/15 l	19.9 l
Mean	03/20	05/15	05/05	03/28	03/29	04/01	05/04	04/23	04/11	04/19	04/22	04/01	05/25	04/14	04/02	04/10	16.2
LSD (.05)	1	1	4	2	2	2	3	2	2	3	3	3	3	4	4	2	0.7
CV (%)	3.6	5.2	46.7	1.9	2.1	3.5	1.7	6.3	12.8	10.5	1.4	1.7	8.7	16.6	119.4	10.5	1.7

Note: Values marked "e" are not statistically different from the earliest value, and those marked "l" are not statistically different from the latest value.



Table 12. Maturity Dates for 11 Locations of the Advanced Canola Nursery, 1996-97.

Line	Kibler AR	Ft. Collins CO	Walsh CO	Calhoun GA	Griffin GA	Carbondale IL	Parsons KS	Portageville MO	Columbia MO	Munday TX	Orange VA	Means 06/01/97
Debut	06/01 e	07/08	06/29 e	05/24 e	05/21 e	----	06/16	05/23 e	06/15 e	05/28 e	06/01 e	7.9 e
Aspen	06/05	07/15	07/03	05/24 e	05/26	06/20 e	06/15	05/31	06/22	05/30 e	06/07 e	12.7
Bridger	06/05	07/19	07/05 l	05/28 e	05/28	06/21 e	06/15	06/05	06/20	06/02	06/10	14.5
Winfield	06/05	07/16	07/03	05/25 e	05/30	06/21 e	06/15	06/10	06/21	06/04	06/10	14.8
KS3579	06/09	07/13	07/02	05/28 e	06/03	06/21 e	06/15	06/11	06/24 l	06/03	06/13	16.1
Leo	06/09	07/15	07/03	05/28 e	06/03	06/20 e	06/15	06/11	06/24 l	06/06	06/13	16.4
Ericka	06/09	07/16	07/03	06/04	06/05 l	06/19 e	06/15	06/07	06/19	06/06	06/13	16.5
Falcon	06/09	07/17	07/02	05/31	06/03	06/21 e	06/15	06/09	06/23 l	06/08 l	06/13	16.8
KS3580	06/14	07/15	07/02	06/04	06/02	06/20 e	06/15	06/12	06/23	06/04	06/17	17.4
Ceres	06/09	07/17	07/05 l	06/03	06/05 l	06/19 e	06/15	06/11	06/23 l	06/07 l	06/13	17.6
MO-513-9	06/09	07/14	07/02	06/05	06/07 l	06/23	06/18	06/12	06/24 l	06/06	06/13	18.0
MO-503-1	06/05	07/17	07/03	06/04	06/05 l	06/23	06/17	06/13 l	06/26 l	06/08 l	06/17	18.3
KS1701	06/09	07/16	07/02	06/09 l	06/08 l	06/22 e	06/17	06/14 l	06/24 l	06/07 l	06/13	18.4
W4689E	06/09	07/22	07/04 l	06/06 l	06/06 l	06/20 e	06/15	06/11	06/24 l	06/11 l	06/17	18.9
PI535849	06/09	07/16	07/03	06/07 l	06/09 l	06/22 e	06/18	06/12	06/24 l	06/08 l	06/20	19.1
Jetton	06/14	07/21	07/05 l	05/31	05/26	06/26 l	06/15	06/12	06/26 l	06/05	06/27 l	19.2
KS3203	06/09	07/17	07/02	06/05	06/07 l	06/22	06/16	06/13 l	06/24 l	06/10 l	06/23 l	19.2
KS3505	06/13	07/14	07/03	06/04	06/09 l	06/24 l	06/17	06/13 l	06/24 l	06/09 l	06/20	19.3
ST9/94	06/13	07/20	07/06 l	06/04	06/06 l	06/22 e	06/17	06/11	06/26 l	06/09 l	06/17	19.5
Selkirk	06/16 l	07/17	07/02	06/09 l	06/09 l	06/21 e	06/18	06/11	06/22	06/10 l	06/20	19.8
KayStar 11	06/14	07/19	07/04 l	06/03	06/07 l	06/23 l	06/15	06/14 l	06/24 l	06/10 l	06/23 l	20.0
Casino	06/14	07/19	07/03	06/08 l	06/08 l	06/24 l	06/18	06/14 l	06/25 l	06/10 l	06/20	20.5
Polo	06/13	07/19	07/05 l	06/08 l	06/09 l	06/24 l	06/15	06/13 l	06/26 l	06/10 l	06/27 l	20.8 l
Bor	06/11	07/21	07/05 l	06/10 l	06/09 l	06/24 l	06/18	06/15 l	06/25 l	06/11 l	06/30 l	22.0 l
Mean	06/10	07/17	07/03	06/03	06/04	06/21	06/16	06/10	02/23	01/04	06/17	17.7
LSD (.05)	1	2	2	4	4	3	NS	3	4	4	8	1.1
CV (%)	6.1	7.9	37.1	1.8	1.4	7.9	1.1	1.3	1.3	39.9	28.6	1.4

Note: Values marked "e" are not statistically different from the earliest value, and those marked "l" are not statistically different from the latest value.

Table 13. Plant Height (in) for 17 Locations of the Advanced Canola Nursery, 1996-97.

Line	Ft. Collins CO	Walsh CO	Calhoun GA	Griffin GA	Carbondale IL	Hays KS	Kingman KS	Manhat. KS	Parsons KS	Hutch. KS	Portageville MO	Columbia MO	Holly Sp. MS	Sidney NE	Bushland TX	Munday TX	Orange VA	Means
Debut	35 s	31	46 s	49 s	33	35	35 s	43	45	42	44 s	46 s	38 s	28 s	30 s	37 s	47 s	39 s
Aspen	33 s	28 s	46 s	55	35	30 s	32 s	42	41 s	34 s	39 s	47 s	46 s	----	29 s	44	48 s	39 s
Jetton	37	26 s	49	55	36	33 s	36 s	43	42 s	39	41 s	46 s	41 s	40 t	30 s	41 s	51 s	40 s
KS3579	34 s	29	40 s	59	42	35 s	35 s	42	40 s	42	43 s	51	45 s	31 s	30 s	41 s	51 s	40 s
Ericka	34 s	27 s	43 s	59	31	35 s	34 s	48	39 s	40	43 s	46 s	49	39 t	30 s	44	54 t	41
Bridger	37	28 s	48	57	38	32 s	33 s	36 s	41 s	38 s	43 s	49 s	50 t	----	32 s	45	50 s	40
Winfield	36 s	29	51	60	33	35	36 s	40 s	43 s	42	41 s	51	42 s	38 t	30 s	49 t	52 t	42
ST9/94	39	27 s	52	58	34	36	38	39 s	45	42	45	49 s	49	41 t	31 s	48	52 st	42
Leo	37	29	47 s	61 t	38	38 t	42 t	40 s	42 s	42	44 s	50 s	45 s	33 s	35 t	49 t	53 t	42
W4689E	40	30	52	62 t	36	33 s	36 s	46	42 s	39	48 t	48 s	50 t	37 t	31 s	49	54 t	43
Falcon	38	30	51	61 t	39	38 t	38	45	41 s	47 t	42 s	52	53 t	38 t	31 s	44	51 st	43
Polo	40	30	52	62 t	40	36	38	49 t	45	40	46	45 s	50 t	40 t	33 t	45	52 t	44
Ceres	38	28 s	52	61 t	40	37 t	41	49 t	42 s	44	46 t	50 s	47 s	41 t	35 t	50 t	50 s	44
KS1701	39	30	54	60	38	38 t	39	48	44 s	45 t	43 s	54 t	51 t	40 t	31 s	51 t	53 t	44
KS3580	34 s	30	44 s	62 t	46	37 t	42 t	48	44	44	45 s	54 t	48	42 t	34 t	49	55 t	44
PI535849	39	32	58 t	64 t	43	35 s	----	43	47 t	41	41 s	55 t	42 s	43 t	34 t	47	56 t	44
KayStar 11	40	31	55	64 t	41	39 t	41	44	41 s	44	47 t	51	51 t	40 t	33 s	52 t	56 t	45
Casino	39	31	57 t	62 t	43	36 t	40	44	50 t	45 t	50 t	53 t	55 t	34 s	35 t	53 t	53 t	46
MO-503-1	39	32 t	57 t	65 t	44	36	43 t	50 t	47 t	48 t	44 s	53 t	52 t	39 t	34 t	46	53 t	45
MO-513-9	39	31	59 t	66 t	41	39 t	42 t	52 t	49 t	47 t	46 t	57 t	52 t	39 t	33 t	50 t	54 t	46 t
KS3203	40	32	53	64 t	36	37 t	41	54 t	48 t	48 t	50 t	55 t	58 t	44 t	32 s	50 t	56 t	47 t
Bor	44 t	35 t	64 t	65 t	41	38 t	43 t	44	51 t	45 t	46 t	56 t	43 s	43 t	34 t	54 t	56 t	47 t
Selkirk	43 t	34 t	59 t	63 t	46	39 t	38	50 t	47 t	48 t	46	54 t	54 t	41 t	37 t	53 t	55 t	47 t
KS3505	40	31	64 t	66 t	42	41 t	46 t	51 t	51 t	49 t	52 t	53 t	51 t	39 t	32 s	54 t	55 t	48 t
Mean	38	30	52	61	39	36	39	46	44	43	45	51	48	38	32	48	53	43
LSD (.05)	3	3	7	5	NS	5	5	6	5	4	6	4	9	7	4	5	5	1
CV (%)	5.21	5.51	8.57	5.54	14	7.95	7.99	7.45	6.51	5.24	8.60	5.37	12	11	7.64	6.10	5.43	7.49

Note: Values marked "s" are not statistically different from the shortest value, and those marked "t" are not statistically different from the tallest value.

Table 14. Lodging (%) for 9 Locations of the Advanced Canola Nursery, 1996-97.

Line	Kibler AR	Carbondale IL	Hutchinson KS	Kingman KS	Parsons KS	Portageville MO	Columbia MO	Holly Springs MS	Munday TX	Means
Falcon	0 *	1 *	3 *	10 *	0 *	7 *	15 *	1 *	0 *	4 *
Ceres	3 *	2 *	3 *	7 *	0 *	5 *	17 *	4 *	0 *	4 *
ST9/94	0 *	1 *	3 *	12 *	2 *	13 *	5 *	6 *	0 *	5 *
Jetton	0 *	1 *	2 *	5 *	0 *	17 *	27 *	0 *	0 *	6 *
KS3580	12 *	1 *	3 *	12 *	0 *	0 *	15 *	10 *	2 *	6 *
Casino	2 *	2	5 *	22 *	0 *	3 *	10 *	13 *	0 *	6 *
KS3203	10 *	2	5 *	13 *	3 *	2 *	12 *	9 *	2 *	6 *
MO-503-1	0 *	1 *	7 *	22 *	3 *	7 *	20 *	4 *	7	8 *
MO-513-9	3 *	2 *	9 *	23 *	0 *	8 *	18 *	8 *	0 *	8 *
KS3505	2 *	2 *	7 *	23 *	0 *	5 *	15 *	28 *	2 *	9 *
KayStar 11	0 *	1 *	10 *	32	8 *	3 *	15 *	16 *	0 *	10 *
KS3579	12 *	2 *	12 *	23 *	10 *	8 *	18 *	5 *	0 *	10 *
W4689E	2 *	1 *	10 *	33	7 *	7 *	12 *	22 *	0 *	10 *
Winfield	5 *	2 *	5 *	30 *	8 *	10 *	7 *	32 *	0 *	11 *
Selkirk	42	2	12 *	17 *	3 *	13 *	7 *	5 *	2 *	11 *
KS1701	25 *	1 *	7 *	32	5 *	10 *	7 *	24 *	0 *	12
Ericka	37	2	7 *	43	20	42	5 *	4 *	0 *	18
Bridger	22 *	2	22	37	5 *	37	28 *	17 *	7	20
Leo	42	2	17	77	17	15 *	40	22 *	10	27
Bor	17 *	2	47	80	3 *	2 *	37	48	7	27
Aspen	5 *	2	17	83	60	23 *	27 *	37 *	0 *	28
PI535849	35	2 *	43	95	7 *	38	28 *	50	3 *	34
Polo	30 *	1 *	25	73	12 *	38	80	47	13	36
Debut	100	3	57	82	100	93	63	67	8	64
Mean	17	2	14	37	11	17	22	20	3	16
LSD (.05)	31	1	12	25	13	23	29	39	5	7
CV (%)	113	36	59	42	71	84	82	124	130	87

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

Table 15. Shattering (%) for 8 Locations of the Advanced Canola Nursery, 1996-97.

Line	Ft. Collins CO	Walsh CO	Kingman KS	Parsons KS	Portageville MO	Columbia MO	Holly Springs MS	Munday TX	Means
Jetton	1	0	5 *	0 *	0	0 *	1	0 *	1 *
Polo	2	1	3 *	0 *	2	0 *	2	2 *	1 *
KS3580	1	1	7 *	0 *	2	1 *	2	0 *	2 *
Aspen	2	4	0 *	3 *	0	0 *	3	2 *	2 *
Falcon	2	1	12 *	0 *	3	0 *	1	0 *	2 *
Leo	3	1	5 *	0 *	7	0 *	2	2 *	2 *
Debut	1	1	0 *	12	0	0 *	9	0 *	3 *
Ceres	2	0	15	0 *	2	0 *	5	0 *	3 *
Ericka	1	0	17	0 *	3	1 *	1	0 *	3 *
PI535849	1	1	3 *	3 *	3	2 *	5	5 *	3 *
KS1701	1	2	17	0 *	2	1 *	3	2 *	3 *
KS3579	1	1	15	0 *	5	1 *	2	2 *	3 *
Bor	1	0	3 *	0 *	5	1 *	5	13	4
MO-503-1	1	2	15	0 *	7	1 *	1	3 *	4
Winfield	1	2	15	0 *	7	2 *	3	0 *	4
KayStar 11	1	2	18	0 *	3	1 *	1	5 *	4
W4689E	2	0	8 *	0 *	10	1 *	2	8	4
MO-513-9	1	0	18	0 *	7	1 *	2	3 *	4
KS3203	1	0	17	0 *	5	0 *	2	8	4
Casino	3	0	12 *	0 *	5	0 *	2	15	5
Bridger	3	0	23	0 *	8	1 *	3	5 *	5
KS3505	2	3	22	0 *	17	1 *	2	3 *	6
ST9/94	2	0	47	0 *	5	1 *	3	8	8
Selkirk	3	1	27	0 *	17	7	3	12	9
Mean	2	1	13	1	5	1	3	4	4
LSD (.05)	NS	NS	14	4	NS	3	NS	8	3
CV (%)	76	178	63	350	141	178	95	124	124

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

Table 16. Moisture (%) for 13 Locations of the Advanced Canola Nursery, 1996-97.

Line	Calhoun GA	Griffin GA	Kingman KS	Manhat. KS	Parsons KS	Hutch. KS	Portageville MO	Columbia MO	Holly Sp. MS	Sidney NE	Munday TX	Orange VA	Archer WY	Means
Winfield	10.8 *	7.5 *	9.0	9.0 *	10.6	10.0 *	7.4	8.0	10.0 *	18.7 *	9.5 *	6.3 *	9.6	9.7 *
Debut	---	9.0	13.0	8.8 *	11.1	15.1	7.8	7.5 *	9.5 *	17.0 *	8.7 *	6.3 *	---	9.9 *
KS3580	11.7	7.7 *	7.7 *	10.8 *	14.3	9.7 *	7.4	8.1	9.9 *	17.9 *	10.8 *	7.3 *	9.1	10.3 *
Aspen	12.0	7.9 *	9.5	11.5 *	12.2	12.8	6.8 *	8.0	11.0	---	8.5 *	6.7 *	9.6	10.6
Leo	11.8	8.0 *	11.5	9.0 *	13.7	13.0	7.9	8.5	10.1 *	19.1 *	9.7 *	7.0 *	9.3	10.8
Ericka	12.2	7.4 *	11.0	9.0 *	12.4	10.9 *	7.3	8.9	10.5 *	22.3 *	10.1 *	8.2 *	9.5	10.8
Bridger	11.5	7.3 *	10.8	8.6 *	13.4	15.0	7.6	8.3	10.3 *	---	9.1 *	8.3	9.6	10.9
W4689E	12.0	8.4	9.2	13.6	14.3	13.4	6.6 *	8.9	10.9	18.8 *	10.9 *	6.7 *	9.8	10.9
KS3579	11.9	7.6 *	9.5	9.6 *	14.1	11.9 *	7.6	7.8 *	10.1 *	24.3	9.8 *	7.0 *	9.5	10.9
PI535849	11.2 *	8.1 *	10.5	13.7	13.5	16.5	7.3	7.7 *	10.3 *	19.9 *	11.1	6.3 *	9.9	11.3
KS3203	12.0	8.0 *	8.4 *	9.7 *	13.7	13.5	7.3	8.5	10.5 *	23.1 *	12.4	9.4	9.5	11.4
MO-513-9	11.8	8.0 *	8.5 *	12.6	13.1	13.3	7.0 *	8.9	10.7	25.2	11.1	6.6 *	9.9	11.4
Selkirk	11.3 *	8.4	10.2	12.6	15.0	12.6	6.8 *	7.9	10.7	21.2 *	13.4	7.8 *	9.5	11.7
Jetton	11.9	7.6 *	8.3 *	14.4	15.0	15.0	7.3	9.5	11.0	---	12.9	7.8 *	9.6	11.7
KayStar 11	11.8	8.0 *	8.5 *	9.4 *	15.9	13.0	6.8 *	8.6	10.9	27.3	14.2	6.7 *	9.3	11.7
KS3505	11.4	7.8 *	10.0	9.8 *	15.1	15.0	7.1	9.6	11.1	27.3	11.8	7.0 *	9.5	11.9
KS1701	11.6	8.0 *	9.4	12.0 *	15.9	15.4	7.2	9.1	10.9	24.7	10.8 *	8.3	8.8	11.9
Casino	12.3	8.9	9.1	10.0 *	13.2	13.8	7.4	8.8	11.6	24.0 *	15.1	9.2	9.5	11.9
ST9/94	11.5	7.8 *	7.3 *	12.2	13.0	10.7 *	7.6	8.2	10.5 *	35.7	11.8	7.6 *	9.6	12.0
MO-503-1	11.6	7.8 *	10.4	12.4	13.8	13.3	7.0 *	8.0	10.9	29.1	12.2	7.5 *	9.7	12.0
Polo	11.9	9.0	9.2	12.1	16.5	16.6	7.4	8.0	10.7	21.4 *	12.2	7.3 *	9.8	12.1
Ceres	12.5	8.3	7.8 *	14.7	12.7	12.2	7.3	8.9	11.2	30.2	14.8	6.3 *	---	12.2
Falcon	12.1	8.3	8.0 *	14.4	14.3	12.6	7.2	8.4	11.0	36.8	15.7	8.3	10.3	13.1
Bor	11.4	8.3	11.9	17.6	14.8	18.9	7.7	8.1	15.5	22.1 *	13.2	9.2	10.3	13.3
Mean	11.7	8.0	9.5	11.3	13.8	13.5	7.3	8.4	10.8	23.6	11.7	7.5	9.6	11.4
LSD (.05)	0.63	1.0	1.5	3.7	NS	2.3	0.5	0.4	1.1 *	6.9	2.5	2.0	---	0.8
CV (%)	3.3	7.5	9.6	20.1	18.3	10.3	3.8	2.8	6.4	17.9	12.9	16.0	---	15.0

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

Table 17. Test Weights (lb/bu) for 13 Locations of the Advanced Canola Nursery, 1996-97.

Line	Kibler AR	Calhoun GA	Griffin GA	Kingman KS	Manhat. KS	Parsons KS	Hutch. KS	Holly Sp. MS	Sidney NE	Bushland TX	Munday TX	Orange VA	Archer WY	Means
W4689E	50.3 *	49.8 *	52.3 *	50.6 *	49.1	48.0	47.2 *	48.1 *	----	49.6	52.6 *	36.2	54.7	49.0 *
KS3580	49.1 *	49.2	51.0	50.2	50.1 *	47.3	47.8 *	48.0 *	48.1 *	50.7 *	52.6 *	35.8	54.5	48.8 *
Ceres	49.8 *	50.1 *	52.4 *	50.9 *	49.0	48.4	47.6 *	48.4 *	44.9	51.7 *	53.0 *	35.1	52.9	48.8 *
Falcon	50.2 *	48.6	52.5 *	50.6 *	48.8	48.5	47.8 *	48.6 *	42.3	51.5 *	53.6 *	35.0	53.1	48.6 *
PI535849	49.6 *	48.9	50.3	50.0	48.6	48.9	46.4	46.3 *	----	51.3 *	52.2	35.6	53.4	48.5 *
Ericka	48.7	48.6	51.5	49.8	50.4 *	48.7	48.0 *	46.4 *	44.6	51.1 *	52.6 *	35.3	53.6	48.4
KS3579	49.7 *	48.9	51.4	49.0	50.2 *	47.8	47.9 *	47.7 *	44.0	50.9 *	52.1	35.4	54.0	48.4
KS3203	49.6 *	49.5 *	50.9	49.6	49.8 *	47.6	47.4 *	48.0 *	46.0	50.3	51.6	34.7	53.6	48.4
KS3505	50.2 *	49.0	50.9	49.8	50.1 *	47.1	46.8	47.1 *	42.7	51.1 *	52.6 *	35.1	54.0	48.2
KayStar 11	50.4 *	49.1	51.2	49.6	49.8 *	46.6	46.6	47.5 *	44.5	50.9 *	51.9	34.8	53.6	48.2
MO-513-9	50.2 *	49.3 *	51.1	50.1	49.0	48.0	46.0	46.5 *	45.0	49.5	52.1	35.2	53.5	48.1
MO-503-1	49.8 *	48.9	50.9	49.6	49.0	46.6	47.1 *	47.9 *	43.8	50.8 *	52.1	35.3	53.5	48.1
Leo	49.8 *	48.7	51.1	49.4	49.9 *	47.4	47.0	47.1 *	42.7	51.1 *	52.2	34.9	53.6	48.1
KS1701	48.9 *	49.0	51.2	49.9	48.9	46.1	47.3 *	47.2 *	44.7	50.2	51.3	35.6	53.9	48.0
Bridger	48.5	47.3	50.0	49.6	50.0 *	47.9	46.0	46.7 *	----	50.0	51.8	35.1	52.7	48.0
Aspen	49.7 *	48.4	51.1	50.0	50.0 *	43.2	47.2 *	43.8	----	50.0	51.8	35.4	53.8	47.9
Jetton	49.4 *	48.9	50.7	48.7	48.1	45.9	46.2	47.1 *	----	49.1	52.4	34.5	53.2	47.8
Winfield	48.9	47.2	50.1	49.2	48.9	48.2	47.1 *	47.0 *	44.8	50.1	51.8	35.2	53.3	47.8
Polo	50.4 *	48.9	50.7	49.8	49.1	46.3	46.0	43.1	45.0	50.3	52.0	34.1	53.8	47.7
ST9/94	49.6 *	49.3 *	51.8	49.2	48.2	47.9	47.1 *	46.5 *	38.7	50.8 *	52.7 *	35.1	52.5	47.6
Casino	49.8 *	49.7 *	51.4	50.0	49.8 *	46.0	47.1 *	47.3 *	38.8	49.9	51.6	35.0	52.8	47.6
Selkirk	48.4	48.0	51.1	49.5	49.3	42.1	47.2 *	47.6 *	43.4	51.2 *	52.5 *	35.1	53.0	47.6
Bor	49.6 *	48.7	50.7	49.4	47.4	46.3	46.2	40.2	47.2 *	50.9 *	51.2	34.4	53.3	47.3
Debut	39.2	----	49.4	49.7	50.9 *	44.7	46.6	44.5	----	49.1	42.8	33.4	54.3	45.9
Mean	49.1	48.9	51.1	49.8	49.4	46.9	47.0	46.6	43.5	50.5	51.8	35.1	53.5	47.9
LSD (.05)	1.5	0.8	0.5	0.6	1.5	NS	1.0	2.8	1.7	1.3	1.1	NS	----	0.6
CV (%)	1.9	1.2	0.5	0.7	1.8	6.2	1.2	3.6	2.4	1.6	1.3	2.7	----	2.5

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.

Table 18. Total oil (%) for 18 Locations of the Advanced Canola Nursery, 1996-97.

	Kibler AR	Ft. Collins CO	Walsh CO	Calhoun GA	Griffin GA	Carbondale IL	Kingman KS	Manhattan KS	Parsons KS	Means
ST9/94	42.9 *	38.1 *	37.1 *	46.5 *	41.4	39.7 *	42.0 *	36.6 *	40.5 *	39.9 *
Winfield	41.8 *	38.6 *	38.1 *	46.5 *	43.0 *	38.4	39.6	39.7 *	40.5 *	39.8 *
Bridger	42.2 *	36.7	36.5	45.4	42.4 *	38.0	38.2	38.9 *	39.1 *	39.1
Leo	41.4	37.5	37.8 *	45.7 *	41.9 *	36.8	39.1	38.4 *	38.2	38.9
KayStar 11	41.5	35.3	35.6	46.1 *	41.1	38.4	39.5	40.0 *	38.7 *	38.8
PI535849	42.6 *	39.0 *	38.0 *	46.4 *	40.2	38.8 *	31.6	37.6 *	37.7	38.7
Bor	42.1 *	37.0	36.3	44.4	40.2	37.5	37.8	33.5	38.7 *	38.5
Selkirk	40.8	36.0	36.8 *	44.1	38.6	39.1 *	39.7	38.7 *	37.7	38.5
MO-513-9	40.8	37.2	37.2 *	44.1	39.8	37.9	38.6	37.8 *	37.6	38.4
KS3203	40.5	37.6	36.0	44.1	39.4	37.6	39.6	38.8 *	37.6	38.2
Ceres	39.9	34.8	35.7	44.6	39.0	38.2	39.7	37.8 *	38.3 *	38.2
KS3580	41.1	37.3	36.4	44.7	40.0	37.0	38.8	38.9 *	38.0	38.2
Jetton	40.4	35.2	34.7	45.0	41.2	38.4	39.5	37.2 *	39.6 *	38.1
Falcon	40.5	35.1	37.1 *	44.4	40.0	38.2	39.6	36.6 *	39.6 *	38.1
Casino	39.7	35.7	36.2	43.5	38.1	36.8	39.3	38.5 *	37.2	38.0
MO-503-1	41.0	37.2	36.5	44.1	40.1	37.9	38.4	37.9 *	35.0	38.0
KS3505	40.7	34.6	36.9 *	43.6	39.3	37.7	38.3	38.4 *	37.0	37.9
KS1701	39.9	36.7	35.2	44.1	39.0	37.7	38.7	38.9 *	37.3	37.7
Ericka	38.9	35.5	35.1	42.7	39.5	36.3	37.4	37.9 *	36.1	37.5
KS3579	40.7	33.3	36.0	43.6	40.7	38.1	38.4	37.8 *	37.1	37.4
Polo	39.8	37.2	36.1	43.8	38.8	37.4	37.1	36.6 *	35.8	37.4
Aspen	39.3	35.3	35.0	42.7	40.2	36.0	37.7	36.2	36.2	36.8
W4689E	40.0	31.7	33.1	42.9	36.9	36.5	36.2	34.1	36.3	36.1
Debut	34.5	34.8	35.9	40.4	36.6	35.7	33.5	33.3	36.3	35.0
Mean	40.5	36.1	36.2	44.3	39.9	37.7	38.3	37.5	37.7	38.0
LSD (.05)	1.4	1.2	1.4	0.8	1.1	1.2	2.2	3.5	2.2	0.5
CV (%)	2.1	2.0	2.3	----	----	1.9	3.5	5.7	3.6	3.6

(continued)

Table 18. Total oil (%) for 18 Locations of the Advanced Canola Nursery, 1996-97 (continued).

	Hutchinson KS	Columbia MO	Portageville MO	Lubbock TX	Munday TX	Orange VA	Petersburg VA	Suffolk VA	Archer WY	Means
ST9/94	40.3 *	40.1 *	41.6	36.3 *	37.1 *	42.9 *	40.3 *	39.6 *	35.6 *	39.9 *
Winfield	39.6 *	39.9 *	40.8	36.9 *	37.2 *	42.9 *	39.6 *	37.2	36.5 *	39.8 *
Bridger	37.7	39.3 *	40.9	37.0 *	37.5 *	42.6 *	37.8	38.8 *	35.3	39.1
Leo	39.3 *	38.0	39.8	----	36.3 *	42.8 *	39.1 *	38.8 *	34.6	38.9
KayStar 11	39.4 *	40.2 *	40.7	31.3	36.1 *	41.9	38.6	39.5 *	35.0	38.8
PI535849	36.7	40.2 *	39.9	36.1 *	35.7 *	43.7 *	39.1 *	37.9	34.8	38.7
Bor	37.5	39.6 *	39.8	36.6 *	34.8 *	42.3	39.1 *	39.8 *	35.4 *	38.5
Selkirk	39.2 *	38.7	40.4	32.5	34.4	42.2	38.0	39.3 *	35.8 *	38.5
MO-513-9	38.0	38.9 *	40.1	35.1 *	36.3 *	42.1	37.6	37.4	34.5	38.4
KS3203	37.9	38.6	41.2	34.4	35.2 *	40.4	36.5	38.4 *	34.5	38.2
Ceres	40.3 *	38.8	39.8	35.4 *	33.8	41.5	37.7	38.7 *	33.8	38.2
KS3580	38.2 *	38.2	39.8	35.0 *	34.7	40.7	37.4	37.6	33.1	38.2
Jetton	38.3 *	38.2	39.8	34.9 *	35.1 *	41.6	38.1	36.3	32.6	38.1
Falcon	39.2 *	39.3 *	40.7	33.2	33.5	41.4	37.2	37.4	32.9	38.1
Casino	38.1	38.3	39.3	36.1 *	35.8 *	41.3	38.2	39.2 *	33.1	38.0
MO-503-1	38.8 *	38.2	39.3	----	35.8 *	41.3	36.5	37.5	33.9	38.0
KS3505	38.4 *	38.3	39.8	35.0 *	34.6	41.9	37.3	36.6	34.4	37.9
KS1701	37.7	38.9	34.0	35.9 *	36.0 *	40.9	36.6	37.6	33.4	37.7
Ericka	37.4	37.6	39.8	35.0 *	35.2 *	40.2	37.6	37.1	34.9	37.5
KS3579	37.1	37.8	40.8	33.0	36.3 *	41.0	32.1	36.1	33.6	37.4
Polo	34.2	38.1	39.5	34.0	34.7	41.6	37.1	37.2	33.9	37.4
Aspen	33.1	37.3	35.9	35.0 *	36.9 *	40.6	35.0	35.6	34.0	36.8
W4689E	35.3	37.0	38.8	33.1	36.3 *	39.5	36.0	35.1	31.4	36.1
Debut	33.6	36.3	38.4	----	31.0	39.6	33.7	35.8	33.9	35.0
Mean	37.7	38.6	39.6	34.5	35.4	41.5	37.4	37.7	34.2	38.0
LSD (.05)	2.1	1.3	NS	2.2	2.8	1.2	1.4	1.8	1.2	0.5
CV (%)	3.5	2.1	7.2	3.8	4.8	1.7	2.3	2.9	2.2	3.6

\* Upper LSD group - Differences among those marked with an asterisk are not statistically significant.



### **Senior Author**

Charlie Rife, Dept. of Agronomy, Kansas State Univ., Manhattan

### **Other Contributors**

William Heer, KSU South Central Experiment Field, Hutchinson  
Herbert Sunderman, KSU Northwest Research-Extension Center, Colby  
William Stegmeier, KSU Agricultural Research Center-Hays  
James Long, KSU Southeast Agricultural Research Center, Parsons  
Merle Witt, KSU Southwest Research-Extension Center, Garden City  
Barney Gordon, KSU North Central Experiment Field, Belleville  
Harry Minor, University of Missouri, Columbia  
David Baltensperger, University of Nebraska, Scottsbluff  
Lenis Nelson, University of Nebraska, Lincoln  
Duane Johnson, Colorado State University, Ft. Collins  
Richard Auld, Texas Tech University, Lubbock  
David Bordovsky, Texas A&M University, Vernon  
Michael Schmidt, Southern Illinois University, Carbondale  
Robert Bacon, University of Arkansas, Fayetteville  
James Krall, University of Wyoming, Torrington  
Sabry Elias, Alabama A&M University, Normal  
Paul Raymer, University of Georgia, Griffin  
Roscoe Ivy, Mississippi State University, Prairie  
R. Saunders, Mississippi State University, Holly Springs  
Brent Beans, Texas A&M University, Bushland  
David Starner, Virginia Tech University, Orange  
Harbans Bhardwaj, Virginia State University, Petersburg

---

**Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan 66506**

SRP 803

February 1998

---

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age, or disability. Kansas State University is an equal opportunity organization. These materials may be available in alternative formats. 2.5 M