

1993 REPORT

Ontario Soybean Variety Trials



**Conducted in 1990-92
by the
Ontario Oil & Protein
Seed Crop Committee**

ONTARIO OIL & PROTEIN SEED CROP COMMITTEE

This organization is made up of representatives of OMAF, Agriculture Canada, the University of Guelph, the Ontario Seed Growers Association, the Canadian Seed Trade Association, the Ontario Soybean Growers Marketing Board and the Oilseed Crushers. Tests are conducted each year by the following co-operating agencies.

Research Station, Harrow; Ridgetown College of Agricultural Technology; Centralia College of Agricultural Technology; University of Guelph; Kemptville College of Agricultural Technology; Research Station, Ottawa.

INTERPRETATION OF RESULTS HEAT UNIT RATING

Using the same heat unit system as for corn, each variety is given a heat unit rating based on the relative maturity of that variety. In choosing a variety you should select those varieties approximately equal to or less than the heat units available on your farm. Varieties may differ slightly for heat unit rating from one test area to another.

HILUM COLOUR

Each soybean seed has a hilum which is the point where it was attached to the pod. Varieties differ in hilum colour and can be either yellow, gray, buff, brown or black. Yellow hilum soybeans are generally the only type accepted for the export market. In certain years, however, discolouration of the hilum can occur and as a result the soybeans may not be acceptable for export markets.

SEEDS PER KILOGRAM

This is an estimate of the relative number of seeds of a particular variety in a kilogram of seed. Since seed size can vary from year to year and from seed lot to seed lot these figures should be used as a rough guide only.

PHYTOPHTHORA ROOT ROT

The % Plant Loss is a three-year average (1989-91) obtained in a field heavily infested with Phytophthora. Some races of Phytophthora root rot are not found at this site. Thus the relative ranking of varieties for tolerance may differ in fields that have other races present.

YIELD INDEX

Varieties can only be compared within each test area. Yield index of a variety indicates its performance as a percentage of the average yield of all recommended varieties grown in a test area. Small index differences are not significant.

DAYS FROM PLANTING TO MATURITY

Maturity is affected by planting date and the area where a variety is being grown. Varieties are rated as being mature when 95% of the pods on the plants are ripe. Normally, 3-10 additional drying days are needed before the crop is dry enough for combining.

PLANT HEIGHT

An indicator of the amount of plant growth, it is measured at maturity as the length of the stem from the base of the plant to its tip.

LODGING

A visual estimate at maturity of the standability of the crop. A value of 1 is equivalent to a crop standing completely upright while a 5 represents a crop entirely flat. Within a test area, varieties with lower values are less prone to lodging.

PROTEIN INDEX

This index measures the relative seed protein content among the varieties listed in Table 2-5. Those varieties with a protein index above 100% have above average seed protein content on a dry matter basis, whereas, those varieties with a protein index less than 100% have below average seed protein content. A 5% difference in protein index is approximately equal to a 2% difference in actual dry matter protein content. If a variety had a protein index of 100% and had an actual protein content of 40.0%, then a variety with a protein index of 105% would have an actual protein content of 42% and a variety with a protein index of 95% would have an actual protein content of 38%. All reported protein index values are averages of two years of data from all locations within a testing area.

TESTING METHODS

In each trial, varieties were replicated in a suitable experimental design and received equal fertility, weed control and management. All trials were planted and harvested by machine.

Prior to harvest, plant height and lodging scores were obtained. The grain harvested from each plot was weighed and the yield of soybeans was calculated in tonnes/hectare at 14% moisture. Agronomic data in Tables 2 and 3 represent 3 year averages from between 2-4 locations each year. Agronomic data in Table 4 and 5 has been split on a soil type basis. Data from each area represents 3 year averages from 1-2 locations with similar soil type and heat unit ratings per year.

TEST LOCATIONS & SOIL TYPES 1992 TRIALS

<i>Location</i>	<i>Heat Unit Rating</i>	<i>Soil</i>	<i>Row Width -cm-</i>	<i>Co-operator</i>
Malden	3500	Clay loam	60	Jerome Deslippe
Woodslee	3400	Clay	60	Research Station
Tilbury	3350	Clay	60	Robert Farquharson
Chatham	3300	Clay loam	60	Stan Wonnacott
Inwood	3050	Clay	60	Ray Lloyd
Ridgetown	3250	Clay loam	60	R.C.A.T.
Dutton	3100	Silt loam	60	Don Skipper
Talbotville	2900	Clay loam	35	Tom Oegema
Centralia	2800	Clay loam	35	C.C.A.T.
Woodstock	2700	Clay loam	35	O.A.C.
St. Pauls	2750	Clay loam	35	Bernard Murray
Winchester	2825	Clay loam	35	K.C.A.T.
Elora	2550	Silt loam	35	O.A.C.
Brussels	2600	Clay loam	35	Jeff Cardiff
Ottawa	2650	Sandy loam	40	Research Station

**TABLE 1. SOYBEAN VARIETY
RECOMMENDATIONS & DESCRIPTION**

<i>Variety</i>	<i>Heat Units Requir</i>	<i>Hilum Colour</i>	<i>Seeds Per Kilogram</i>	<i>Phytophthora Root Rot Reaction % Plant</i>	<i>Distributor</i>
Maple Ridge ²	2400	yellow	5560	15	SeCan members
Baron ²	2450	dark brown	5530	15	W.G. Thompson & Sons Ltd.
Nordet	2450	buff	5500	12	King Agro
KG20	2500	yellow	5430	9	King Agro
Maple Belle*	2500	yellow	5620	32	SeCan members
Maple Isle	2500	light brown	5240	19	Public variety
AC Harmony	2550	brown	6430	13	SeCan members
OAC Frontier	2550	brown	5750	24	Cargill Grain Co. Ltd.
Apache ²	2600	yellow	5180	11	W.G. Thompson & Sons Ltd.
Bicentennial	2600	brown	4630	12	SeCan members
KG30	2600	dark brown	6370	22	Pride Brand Seeds
KG41*	2600	yellow	5240	7	King Agro
Maple Arrow*	2600	brown	5080	9	Public variety
Maple Glen	2600	light brown	4780	18	SeCan members
OAC Scorpio	2600	yellow	5200	30	SeCan members
PS42	2600	light gray	4810	9	Pride Brand Seeds
S00-88*	2600	brown	5050	8	Northrup King Seeds Ltd.
Galt	2650	black	5400	10	First Line Seeds Ltd.
9061	2650	yellow	6710	20	Pioneer Hi-Bred Ltd.
AC Bravor*	2700	brown	5350	11	First Line Seeds Ltd.
KG60*	2700	buff	5050	4	King Agro
Maple	2700	buff	6120	8	SeCan members
OAC Eclipse*	2700	brown	5110	6	SeCan members
OAC Libra	2700	black	5680	20	SeCan members
0877	2750	light gray	5570	13	Pioneer Hi-Bred Ltd.
Marathon	2750	yellow	4990	12	W.G. Thompson & Sons Ltd.
OAC Dorado	2750	brown	5400	10	SeCan members
J-081	2800	yellow	5110	15	Jacques Seed Co.
J-083	2800	yellow	5750	22	Jacques Seed Co.
T8902	2800	yellow	5310	9	W.G. Thompson & Sons Ltd.
A1511**	2850	buff	5780	5	Cargill Grain Co. Ltd.
Crusader	2850	yellow	5700	10	W.G. Thompson & Sons Ltd.
Haroson*	2850	buff	5700	9	SeCan members
PS61*	2850	yellow	5620	5	Pride Brand Seeds
Secord	2850	yellow	5300	7	First Line Seeds Ltd.
9111	2900	light gray	4820	9	Pioneer Hi-Bred Ltd.
A1662**	2900	black	5200	5	Cargill Grain Co. Ltd.
Hodgson	2900	buff	5730	20	Public variety
KG62	2900	yellow	4530	9	King Agro
S09-70	2900	yellow	5840	4	Northrup King Seeds Ltd.
S15-50*	2900	gray	6340	4	Northrup King Seeds Ltd.
Talon*	2900	buff	5250	2	W.G. Thompson & Sons Ltd.
A1895	2950	black	5520	5	Cargill Grain Co. Ltd.
A1929**	2950	brown	5460	5	Cargill Grain Co. Ltd.
A1937	2950	buff	5920	11	Cargill Grain Co. Ltd.
Brock	2950	brown	5320	3	First Line Seeds Ltd.
G-3135*	2950	brown	5000	20	Funk Seeds
J-144	2950	black	5320	4	Jacques Seed Co.

TABLE 1 (Continued). SOYBEAN VARIETY RECOMMENDATIONS & DESCRIPTION

Variety	<i>Heat</i>		<i>Seeds Per Kilogram</i>	<i>Phytophthora</i>		<i>Distributor</i>
	<i>Units Required</i>	<i>Hilum Colour</i>		<i>Root Rot Reaction</i>	<i>% Plant Loss¹</i>	
OAC Shire	2950	black	5480	8	SeCan members	
T8508	2950	brown	5100	9	W.G. Thompson & Sons Ltd.	
9161	2950	buff	5620	11	Pioneer Hi-Bred Ltd.	
AP1989	3000	yellow	5460	14	Mapleseed Inc.	
G-3197	3000	buff	4930	6	Funk Seeds	
9202	3000	yellow	5180	9	Pioneer Hi-Bred Ltd.	
OAC Talbot	3000	yellow	5130	7	Top Notch Feeds Ltd.	
RCAT Alliance*	3000	black	5130	12	SeCan members	
RCAT Persian*	3000	yellow	5710	11	SeCan members	
S19-90*	3000	gray	5020	4	Northrup King Seeds Ltd.	
S20-20*	3000	yellow	5240	5	Northrup King Seeds Ltd.	
A2234**	3050	black	5020	3	Cargill Grain Co. Ltd.	
Bell ³	3050	black	5100	5	SeCan members	
PS83	3050	yellow	5400	16	Pride Brand Seeds	
Elgin	3075	black	5260	10	Public variety	
KG92	3075	yellow	5350	9	King Agro	
J-220	3075	yellow	5520	5	Jacques Seed Co.	
Jewel	3075	yellow	5950	23	W.G. Thompson & Sons Ltd.	
Magic	3075	black	4670	6	W.G. Thompson & Sons Ltd.	
CX 210	3100	black	6000	10	Dekalb Seeds	
Elgin 87**	3100	black	5350	8	SeCan members	
Sals 93	3100	buff	4850	14	Sals Seeds Ltd.	
Tecumseh	3100	black	6760	6	First Line Seeds Ltd.	
A2427 ³	3150	brown-black	6600	10	Cargill Grain Co. Ltd.	
A2506**	3150	black	5800	2	Cargill Grain Co. Ltd.	
Conrad	3150	brown	5710	4	SeCan members	
G3202	3150	buff	4670	6	Funk Seeds	
J-231	3150	brown-black	4000	12	Jacques Seed Co.	
KG 93	3150	yellow	5300	10	King Agro	
S25-07 ³	3150	buff	5700	5	Northrup King Seeds Ltd.	
Combat*	3175	yellow	6060	7	W.G. Thompson & Sons Ltd.	
9302*	3175	buff	4700	3	Pioneer Hi-Bred Ltd.	
RCAT Angora*	3175	yellow	5240	6	SeCan members	
S-240 ² *	3175	brown-black	5590	4	Ferguson Seeds	
S26-06*	3175	buff	4810	8	Northrup King Seeds Ltd.	
A2615**	3200	buff	5850	4	Cargill Grain Co. Ltd.	
A2630	3200	brown-black	6210	2	Cargill Grain Co. Ltd.	
9273	3200	brown-black	5750	4	Pioneer Hi-Bred Ltd.	
Dominator*	3250	yellow	5130	4	W.G. Thompson & Sons Co.	
9303	3275	yellow	4740	8	Pioneer Hi-Bred Ltd.	
Resnik**	3325	black	5700	5	Ferguson Seeds	
T2967	3325	brown-black	5810	7	W.G. Thompson & Sons Ltd.	

* Varieties with resistance to most races of the *Phytophthora* root rot organism in Ontario.

** Varieties with resistance to all races of the *Phytophthora* root rot organism in Ontario

¹ Three-year average (1989-91) in a field heavily infested with *Phytophthora*. Not all races of *Phytophthora* root rot are found at this site. Thus the relative ranking of varieties for plant loss may differ in fields that have other races present.

² Metribuzin herbicide should not be used on Maple Ridge, Baron, Apache, or S-240.

³ Resistant to the major races of Soybean Cyst Nematode (SCN) in Ontario

TABLE 2. AGRONOMIC DATA
2500-2800 HEAT UNIT AREAS

<i>Variety</i>	<i>Heat Unit Rating</i>	<i>Yield (t/ha)</i>	<i>Yield Index (%)</i>	<i>Days from Planting to Maturity</i>	<i>Plant Height (cm)</i>	<i>Lodging 1 = standing 5=flat</i>	<i>Protein Index (%)</i>
Baron	2400	2.51	87	106	65	1.6	100
Maple Ridge	2400	2.49	86	107	60	1.2	101
Nordet	2450	2.64	91	109	68	1.7	99
KG20	2500	2.79	96	110	70	1.5	100
OAC Frontier	2500	2.73	95	112	59	1.2	98
Maple Belle	2500	2.69	93	112	66	1.3	98
Maple Isle	2500	2.40	83	112	62	1.2	100
AC Harmony	2550	2.82	97	113	70	1.2	95
Maple Glen	2600	3.06	106	116	70	1.4	103
KG30	2600	2.88	100	116	78	1.5	100
PS42	2600	3.30	114	117	68	1.5	103
Maple Arrow	2600	2.89	100	117	77	1.6	99
KG41	2600	3.05	106	119	72	1.2	99
Apache	2600	2.87	99	119	72	1.5	104
Bicentennial	2600	3.01	104	120	74	2.1	103
S00-88	2600	2.94	102	120	78	1.4	99
OAC Scorpio	2600	2.92	101	120	77	2.1	100
AC Bravor	2700	3.14	109	122	79	2.1	101
Galt	2700	3.04	105	122	84	2.3	97
OAC Libra	2700	3.05	105	123	84	2.4	99
9061	2700	2.90	100	123	70	1.4	99
OAC Eclipse	2700	3.20	111	125	80	1.5	99
Maple Donovan	2700	3.03	105	125	83	1.9	100
0877	2750	3.04	105	127	83	2.3	102
Average Yield (t/ha)		2.89					

TESTING AREAS: 3-year average of 11 Trials at Brussels, Elora, Ottawa and Winchester.

**TABLE 3. AGRONOMIC DATA
2700-2900 HEAT UNIT AREAS**

<i>Variety</i>	<i>Heat Unit Rating</i>	<i>Yield (t/ha)</i>	<i>Yield Index (%)</i>	<i>Days from Planting to Maturity</i>	<i>Plant Height (cm)</i>	<i>Lodging 1 = standing 5=flat</i>	<i>Protein Index (%)</i>
Maple Glen	2600	3.09	98	114	76	1.6	103
Apache	2600	2.84	90	117	81	1.6	103
Bicentennial	2600	2.94	93	118	83	2.0	102
S00-88	2600	2.95	94	118	85	1.7	97
KG60	2650	3.25	103	121	78	1.9	102
OAC Libra	2700	3.17	100	122	95	2.6	98
Maple Donovan	2700	3.02	96	122	88	1.9	100
OAC Eclipse	2700	3.12	99	123	86	1.6	96
0877	2750	3.10	98	125	90	1.9	101
OAC Dorado	2750	3.27	103	125	89	1.4	98
Marathon	2750	3.34	106	125	96	2.3	102
J-081	2800	2.86	91	126	94	1.5	103
T8902	2800	3.35	106	126	99	2.4	99
J-083	2800	3.31	105	126	93	1.6	98
PS61	2850	3.09	98	127	90	1.6	98
Secord	2850	3.18	101	127	89	1.8	103
Haroson	2850	3.23	102	127	98	2.1	98
Crusader	2850	3.19	101	127	99	2.1	98
KG62	2900	3.30	105	128	89	1.7	100
9111	2900	3.21	102	128	77	1.4	101
S09-70	2900	3.15	100	128	96	1.7	101
Hodgson	2900	2.99	95	129	99	2.0	100
Talon	2900	3.22	102	129	97	2.2	98
OAC Shire	2900	3.43	109	129	82	1.9	102
T8508	2950	3.41	108	131	94	2.0	100
S15-50	2950	3.08	98	133	100	2.0	99
Average Yield (t/ha)		3.16					

*TESTING AREAS: 3 year average of 12 Trials at Exeter, Woodstock,
St. Pauls, and Winchester.*

**TABLE 4. AGRONOMIC DATA
2900-3300 HEAT UNIT AREAS**

<i>Variety</i>	<i>Area 1</i>				<i>Area 2</i>			
	<i>Heat Unit Rating</i>	<i>Yield Index %</i>	<i>Plant Height (cm)</i>	<i>Lodging</i>	<i>Yield Index %</i>	<i>Plant Height (cm)</i>	<i>Lodging</i>	<i>Protein Index %</i>
				<i>1= 5=fiat</i>			<i>1= 5=flat</i>	
A1511	2900	100	64	1.0	92	80	2.2	102
Crusader	2900	87	67	1.3	95	96	2.3	97
Haroson	2900	100	72	1.2	95	90	2.3	98
Hodgson	2900	81	68	1.2	94	95	1.9	99
S15-50	2900	94	73	1.2	92	98	2.2	100
A1662	2900	110	71	1.3	100	91	2.0	106
A1895	2950	101	72	1.0	97	86	2.3	103
A1929	2950	106	71	1.0	99	86	1.8	99
A1937	2950	93	78	1.3	98	100	2.8	101
Brock	2950	103	65	1.0	106	89	2.1	98
G-3135	2950	84	59	1.1	91	92	2.7	101
J-144	2950	92	63	1.2	105	86	2.1	105
9161	2950	95	68	1.0	101	90	2.0	96
T8508	2950	96	66	1.0	103	90	2.0	99
OAC Shire	3000	100	60	1.0	106	78	2.1	100
AP1989	3000	109	74	1.1	104	92	2.2	97
G-3197	3000	98	60	1.0	100	84	1.9	99
9202	3000	100	67	1.0	98	85	1.7	99
OAC Talbot	3000	94	61	1.0	101	87	2.4	98
RCAT Alliance	3000	103	78	1.3	97	100	2.1	103
RCAT Persian	3000	103	73	1.0	95	96	2.2	99
S19-90	3000	105	65	1.0	107	85	1.5	102
S20-20	3000	107	69	1.0	106	93	1.6	99
A2234	3050	108	69	1.0	106	89	1.9	100
Bell	3050	101	72	1.0	100	88	2.9	103
Elgin	3050	98	69	1.0	99	86	2.8	97
PS83	3050	97	70	1.2	104	97	2.2	101
Elgin 87	3100	110	70	1.3	99	88	3.1	101
Conrad	3150	105	74	1.2	108	92	2.8	100
KG 93	3150	97	66	1.0	100	89	1.9	103
RCAT Angora	3150	113	68	1.4	100	85	3.2	98
S26-06	3175	104	73	1.0	101	87	1.9	100
9273	3200	107	69	1.0	101	87	1.8	98
Average Yield (t/ha)		3.14			3.54			

AREA 1: 3-year Average of 3 Trials at Inwood (Clay) and Dutton (Silt Loam)
AREA 2: 3-year Average of 6 Trials at R.C.A.T. (Clay Loam) and Talbotville (Clay Loam)

**TABLE 5 AGRONOMIC DATA
3300-3500 HEAT UNIT AREAS**

<i>Variety</i>	<i>Area 3</i>				<i>Area 4</i>			
	<i>Heat Unit Rating</i>	<i>Yield Index %</i>	<i>Plant Height (cm)</i>	<i>Lodging</i>	<i>Yield Index %</i>	<i>Plant Height (cm)</i>	<i>Lodging</i>	<i>Protein Index %</i>
				<i>1= Standing 5=flat</i>			<i>1= Standing 5=flat</i>	
Haroson	2900	93	68	1.8	92	82	2.2	97
S15-50	2900	93	74	1.6	92	88	1.9	99
A1895	2950	93	67	1.6	98	75	2.0	102
A1937	2950	98	76	1.9	94	87	2.1	100
9161	2950	96	65	1.3	100	82	1.6	99
9202	3000	98	67	1.2	97	79	1.6	99
RCAT Persian	3000	98	70	1.6	94	89	2.3	98
S19-90	3000	102	66	1.2	104	79	1.4	99
S20-20	3000	107	68	1.1	97	82	1.5	99
A2234	3050	104	68	1.2	104	78	1.7	98
Bell	3050	97	69	1.8	96	79	2.4	104
KG92	3075	104	65	1.5	92	76	2.3	97
J-220	3075	98	63	1.4	97	76	2.0	100
Jewel	3075	95	66	1.5	94	80	2.1	100
Magic	3075	93	73	2.1	101	86	2.9	100
CX210	3100	100	79	1.4	104	92	1.7	97
Elgin 87	3100	103	69	1.9	97	79	2.5	99
Sals 93	3100	105	74	1.5	100	84	1.9	100
Tecumseh	3100	101	65	1.2	104	81	1.5	99
A2427	3150	94	76	1.3	100	87	1.7	104
A2506	3150	99	65	1.3	107	80	1.5	100
Conrad	3150	104	72	1.8	105	82	2.3	99
G3202	3150	103	68	1.3	109	80	1.6	102
J-231	3150	97	75	1.4	98	85	1.8	101
S25-07	3150	93	89	1.7	92	99	1.6	99
Combat	3175	96	80	2.0	94	99	2.4	102
9302	3175	102	65	1.1	100	76	1.2	99
RCAT Angora	3175	102	69	2.1	103	80	2.8	96
S-240	3175	100	74	1.6	98	88	1.8	104
S26-06	3175	102	71	1.3	102	80	1.7	99
A2615	3200	107	67	1.2	110	78	1.3	101
A2630	3200	100	66	1.1	102	80	1.1	101
9273	3200	106	65	1.1	103	81	1.6	98
Dominator	3250	108	81	1.5	106	97	1.8	99
9303	3275	106	73	1.3	100	87	1.7	100
Resnik	3325	98	77	1.6	105	89	1.8	103
T2967	3325	103	75	1.3	107	90	1.4	105
Average Yield (t/ha)		3.02			3.54			

AREA 3: 3-year Average of 4 Trials at Woodslee (Clay) and Tilbury (Clay)

AREA 4: 3-year Average of 6 Trials at Malden (Clay Loam) and Chatham (Clay Loam)