

1991 REPORT

Ontario Soybean Variety Trials



**Conducted in 1988-90
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; Research Station, Smithfield.

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.

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 (1988-90) 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

1990 TRIALS

<i>Location</i>	<i>Heat Unit</i>		<i>Row Width</i>		<i>Co-operator</i>
	<i>Ratin</i>	<i>Soil Type</i>	<i>-cm-</i>		
Malden	3500	Clay loam	60		Jon Parks
Woodslee	3400	Clay	60		Research Station
Tilbury	3350	Clay	60		Robert Farquharson
Chatham	3300	Clay loam	60		Stan Wonnacott
Inwood	3050	Clay	60		Jack & Kevin Marriott
Ridgetown	3250	Clay loam	60		RCAT.
Dutton	3100	Clay	60		Glen Walters
Talbotville	2900	Clay loam	35		Jim Brokenshire
Centralia	2800	Clay loam	35		C.CAT.
Woodstock	2700	Clay loam	35		OAC.
St. Pauls	2750	Clay loam	35		Bernard Murray
Winchester	2825	Clay loam	35		K.CAT.
Elora	2550	Silt loam	35		O.A.C.
Brussels	2600	Clay loam	35		Jeff Cardiff
Ottawa	2650	Sandy loam	25		Research Station

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

<i>Variety</i>	<i>Heat Units Required</i>	<i>Hilum Colour</i>	<i>Seeds Per Kilogram</i>	<i>Phytophthora</i>	<i>Distributor</i>
				<i>Root Rot Reaction % Plant Loss</i>	
Maple Ridge ²	2400	yellow	6290	14	SeCan members
Baron ²	2450	dark	5520	11	W.G. Thompson & Sons
KG20	2500	yellow	5520	16	King Agro
Maple Belle*	2500	yellow	5814	21	SeCan members
Maple Isle	2500	yellow	5320	18	Public variety
OAC Frontier	2550	brown	5920	24	Cargill Grain Co. Ltd.
Apache ²	2600	gray	5500	11	W.G. Thompson & Sons
Bicentennial	2600	brown	5070	8	SeCan members
KG30	2600	dark	6620	22	Pride Brand Seeds
KG40*	2600	yellow	5950	12	King Agro
Maple Arrow*	2600	brown	5240	14	Public variety
Maple Glen	2600	yellow	5200	25	SeCan members
J-051	2600	gray	6490	35	Jacques Seed Co.
KG41*	2600	yellow	5400	5	King Agro
PS42	2600	light gray	5000	11	Pride Brand Seeds
S00-88*	2600	brown	5260	11	Northrup King Seeds Ltd.
OAC Scorpio	2600	yellow	5610	42	SeCan members
9061	2650	yellow	6890	23	Pioneer Hi-Bred Ltd.
OAC Libra	2650	black	6040	17	SeCan members
AC Bravor*	2700	brown	5430	15	First Line Seeds Ltd.
0877	2700	light gray	5890	19	Pioneer FE-Bred Ltd.
J-081	2700	yellow	5550	25	Jacques Seed Co.
KG60*	2700	buff	5250	7	King Agro
Evans	2700	yellow	6180	24	Public variety
Maple	2750	buff	6580	13	SeCan members
OAC Aries	2750	dark	5780	30	SeCan members
OAC Eclipse ^s	2750	brown	5380	12	SeCan members
OAC Musca	2750	tan	5600	10	SeCan members
KG62	2800	yellow	5940	18	King Agro
Marathon	2800	yellow	5350	17	W.G. Thompson & Sons
PS61 *	2850	yellow	5890	10	Pride Brand Seeds
Crusader	2850	yellow	6140	19	W.G. Thompson & Sons
OAC Dorado	2850	brown	5770	27	SeCan members
PS72	2900	yellow	6700	14	Pride Brand Seeds
S09-70	2900	yellow	6290	15	Northrup King Seeds Ltd.
9111	2900	light gray	5020	16	Pioneer Hi-Bred Ltd.
Talon*	2900	buff	5470	5	W.G. Thompson & Sons
A1511**	2900	buff	6140	9	Cargill Grain Co. Ltd.
A1564	2900	yellow	5860	22	Cargill Grain Co. Ltd.
B152*	2900	yellow	5490	8	Northrup King Seeds Ltd.
G-3135*	2900	brown	5130	19	Funk Seeds
Haroson*	2900	buff	6100	10	SeCan members
Hodgson	2900	buff	6160	22	Public variety
PS80	2900	yellow	6290	7	Pride Brand Seeds
S15-50*	2900	gray	6700	6	Northrup King Seeds Ltd.

(Continued on next page)

**TABLE 1. SOYBEAN VARIETY
RECOMMENDATIONS & DESCRIPTION (Continued)**

<i>Variety</i>	<i>Heat Units Required</i>	<i>Hilum Colour</i>	<i>Seeds Per Kilogram</i>	<i>Phytophthora</i>	<i>Distributor</i>
				<i>Root Rot Reaction % Plant Loss</i>	
T8508	2900	brown	5210	8	W.G. Thompson & Sons
KG82	2950	tan	4780	11	King Agro
9161	2950	buff	6280	13	Pioneer Hi-Bred Ltd.
A1895	2950	black	5880	9	Cargill Grain Co. Ltd.
A1929**	2950	brown	6330	10	Cargill Grain Co. Ltd.
A1937	2950	buff	6100	13	Cargill Grain Co. Ltd.
RCAT	3000	black	5400	15	SeCan members
S20-20*	3000	yellow	5400	9	Northrup King Seeds
A2234**	3000	black	5720	4	Cargill Grain Co. Ltd.
9202	3050	yellow	6420	8	Pioneer Hi-Bred Ltd.
G-3197	3050	buff	5260	7	Funk Seeds
S19-90*	3050	gray	5230	6	Northrup King Seeds
RCAT Persian*	3050	yellow	5830	11	SeCan members
PS83	3050	yellow	5750	19	Pride Brand Seeds
9272	3050	buff	6080	14	Pioneer Hi-Bred Ltd.
Elgin	3075	black	5560	17	Public variety
KG92	3075	yellow	5760	10	King Agro
J-220	3075	yellow	6120	12	Jacques Seed Co.
Sals 93	3075	buff	5450	33	Sals Seeds Ltd.
Magic	3075	black	5160	5	W.G. Thompson & Sons
CX226	3100	buff	5830	8	Dekalb Seeds
Elgin 87**	3100	black	5710	8	SeCan members
Jewel	3100	yellow	6300	28	W.G. Thompson & Sons
Conrad	3125	brown	5970	3	SeCan members
CX174	3125	buff	5380	14	Dekalb Seeds
A2543	3150	black	5790	8	Cargill Grain Co. Ltd.
Corsoy 79	3150	yellow	6070	10	Public variety
9292	3150	brown	5340	10	Pioneer Hi-Bred Ltd.
Combat*	3150	yellow	6090	6	W.G. Thompson & Sons
J-103	3150	yellow	5810	28	Jacques Seed Co.
J-231	3150	brown- black	4980	17	Jacques Seed Co.
S26-06*	3175	buff	5160	13	Northrup King Seeds
A2630	3200	brown- black	6890	5	Cargill Grain Co. Ltd.
9303	3275	yellow	5530	8	Pioneer Hi-Bred Ltd.
KG100	3300	black	6130	14	King Agro
Dominator*	3300	yellow	5720	8	W.G. Thompson & Sons
A2943	3300	brown- black	5960	12	Cargill Grain Co. Ltd.
S31-33 ³	3350	black	5320	11	Northrup King Seeds

* 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 (1988-90) 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

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

³ Resistant to the known 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= 5=flat</i>	<i>Protein Index (%)</i>
Maple Ridge	2400	2.66	86	104	59	1.4	101
Baron	2450	2.72	88	103	64	1.7	98
KG20	2500	2.86	92	107	68	2.1	98
Maple Isle	2500	2.81	91	109	63	1.3	98
Maple Belle	2500	2.75	89	108	65	1.4	98
OAC Frontier	2550	2.96	95	111	64	1.4	96
Maple Glen	2600	3.21	104	114	68	1.6	101
Maple Arrow	2600	3.09	100	115	77	2.0	101
Bicentennial	2600	3.18	103	118	76	2.4	103
OAC Scorpio	2600	3.24	104	118	77	2.4	98
KG30	2600	3.06	99	117	78	1.8	98
KG40	2600	3.00	97	117	65	1.6	101
KG41	2600	3.27	105	117	72	1.4	101
PS42	2600	3.46	112	118	70	1.8	101
S00-88	2600	3.10	100	118	79	1.6	98
Apache	2600	3.12	101	118	71	1.7	101
J-051	2600	3.04	98	118	70	1.6	98
9061	2650	3.22	104	120	71	1.7	96
OAC Libra	2650	3.23	104	120	86	3.0	98
AC Bravor	2700	3.40	110	122	80	2.6	101
0877	2700	3.28	106	124	85	2.8	98
Evans	2700	3.08	99	124	86	2.7	98
OAC Eclipse	2750	3.32	107	123	81	1.9	98
Maple Donovan	2750	3.38	109	124	81	2.4	98
Average Yield (t/ha)		3.10					

TESTING AREAS- 3-year average of 12 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	2.77	97	109	64	1.4	103
Apache	2600	2.66	83	111	70	1.6	104
Bicentennial	2600	2.73	95	112	73	1.7	106
OAC Scorpio	2600	2.52	88	112	71	1.9	100
OAC Libra	2650	2.93	102	116	83	2.1	97
0877	2700	2.85	99	117	81	1.8	102
Maple Donovan	2700	2.85	99	117	78	1.7	102
J-081	2700	2.74	95	117	83	1.5	99
KG60	2700	2.90	101	118	69	1.8	102
Evans	2700	2.73	95	119	85	2.1	101
OAC Aries	2750	2.73	95	119	91	2.1	98
OAC Musca	2750	2.83	99	119	92	2.0	95
KG62	2800	3.01	105	121	75	1.6	100
Marathon	2800	2.89	101	121	84	2.1	100
OAC Dorado	2850	2.91	101	121	77	1.5	97
PS61	2850	2.87	100	122	77	1.4	98
Crusader	2850	2.98	104	122	88	1.8	97
S09-70	2850	2.85	99	122	81	1.7	100
9111	2850	3.05	106	122	68	1.4	99
Haroson	2900	3.06	107	122	86	1.9	99
Hodgson	2900	2.94	102	123	86	1.8	99
S15-50	2900	3.08	107	126	90	1.6	98
PS72	2900	2.74	95	126	84	2.2	102
A1564	2900	2.92	102	126	92	2.2	105
Talon	2900	3.07	107	126	86	1.8	100
KG82	2950	2.88	100	129	85	1.8	98
Average Yield (t/ha)		2.87					

*TESTING AREAS: 3 year average of 8 Trials at Centralia, Woodstock,
St. Pauls, Smithfield 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>Lodging</i>		<i>Yield Index %</i>	<i>Lodging</i>		<i>Protein Index %</i>
			<i>Plant Height (cm)</i>	<i>1= Standing 5=flat</i>		<i>Plant Height (cm)</i>	<i>1= Standing 5=flat</i>	
Crusader	2850	91	71	1.3	95	91	2.2	98
Haroson	2900	98	72	1.2	98	88	1.8	98
Hodgson	2900	89	73	1.3	94	92	1.7	99
A1564	2900	90	78	1.4	98	97	2.2	105
PS80	2900	95	78	1.3	94	98	2.1	100
T8508	2900	102	67	1.0	104	89	1.6	98
S15-50	2900	97	80	1.2	96	96	1.9	98
B152	2900	93	63	1.0	98	85	1.4	95
A1511	2900	106	72	1.0	96	86	1.9	100
G-3135	2900	95	66	1.1	100	89	2.0	100
9161	2950	100	72	1.1	100	88	1.4	100
A1895	2950	100	71	1.2	99	86	2.1	104
A1929	2950	103	72	1.1	96	87	1.4	100
A1937	2950	98	81	1.5	101	95	2.3	100
S20-20	3000	107	73	1.0	106	92	1.4	99
RCAT Alliance	3000	100	80	1.2	100	100	1.7	103
RCAT Persian	3050	101	73	1.1	101	95	1.9	101
G-3197	3050	102	62	1.0	100	82	1.5	98
S19-90	3050	105	70	1.1	104	88	1.3	99
9202	3050	102	69	1.0	103	85	1.6	98
A2234	3050	106	74	1.1	104	92	1.4	102
PS83	3050	103	75	1.2	103	96	1.8	102
Elgin	3075	103	71	1.3	100	87	2.4	96
Elgin 87	3100	108	76	2.1	103	88	2.6	98
CX174	3100	101	75	1.3	93	95	2.0	101
Jewel	3100	98	68	1.2	105	92	2.3	100
S26-06	3200	108	77	1.0	109	89	1.6	103
Average Yield (t/ha)	3.17				3.75			

AREA 1: 3-year Average of 5 Trials at Inwood (Clay), Fingal (Silt Loam) and Dutton (Clay)

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=5=flat</i>			<i>1=5=flat</i>	
Haroson	2900	99	69	1.5	96	92	2.4	97
S15-50	2975	96	76	1.5	95	101	2.1	97
A1895	2975	93	66	1.4	98	84	2.3	104
A1937	2975	102	75	1.6	101	98	2.5	101
S19-90	3000	98	65	1.1	108	89	1.3	97
9161	3000	92	65	1.3	101	88	1.9	101
RCAT Persian	3025	98	70	1.4	98	99	2.6	100
A2234	3050	102	68	1.2	100	89	1.9	101
9202	3050	95	66	1.1	101	88	2.1	97
9272	3050	103	67	1.3	101	87	2.1	100
Magic	3075	99	74	2.1	103	95	3.5	100
J-220	3075	98	67	1.5	100	87	2.8	98
Jewel	3100	102	64	1.3	99	95	2.8	99
0(226	3100	94	64	1.3	94	86	2.3	98
Elgin 87	3100	103	74	1.7	98	91	3.0	95
SALS93	3100	100	74	1.4	97	92	2.3	96
KG92	3100	105	66	1.3	100	89	2.6	93
Corsoy 79	3100	94	84	2.2	93	113	3.2	102
Conrad	3125	99	73	1.6	104	91	2.4	100
CX174	3125	101	75	1.4	96	97	2.4	99
J-231	3150	96	74	1.4	99	97	2.1	100
Combat	3150	103	82	1.8	98	113	3.0	103
A2543	3150	104	66	1.1	106	80	1.6	107
9292	3150	105	70	1.2	101	87	1.7	100
J-103	3150	94	67	1.3	94	92	2.5	95
S26-06	3175	103	73	1.3	106	89	1.7	101
A2630	3200	105	69	1.0	102	91	1.4	102
9303	3275	110	72	1.2	104	97	2.2	99
Dominator	3300	108	80	1.5	109	112	2.6	98
A2943	3300	103	81	1.3	102	106	2.1	102
KG100	3300	100	81	1.6	101	102	2.6	104
S31-33	3350	96	78	1.3	91	106	2.6	104
Average Yield (t/ha)		3.04			3.76			

AREA 3: 3-year Average of 5 Trials at Woodslee (Clay) and Tilbury (Clay)

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