

PROCESSING TOMATO BREEDING, 2004

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Thirty-seven advanced selections from the Ridgetown program were released to OTRI member breeders for 2004 planting. Fourteen acres of breeding plots were established at Ridgetown for 2004. There were 1,129 breeding lines from F₂ to F₆ generations planted this year. They originated from selections made at Ridgetown during fall 2003, and were the lines retained following screening for disease resistance during the winter.

There is still a significant amount of Harrow enhanced germplasm that has not been planted out. These lines still resemble the wild types and will be kept for future work. It is estimated that some of the more adapted material from Harrow with which we are working is still at least 2 or 3 backcrosses away from being close to resembling commercial varieties.

Selection in 2004 tended to focus on traits such as acceptable vine size, acceptable maturity, and acceptable fruit size. Where these traits already existed in the lines, then early maturity, firmness, colour, yield and field-holding ability were important traits under selection. In fall 2004 1,048 selections were made.

The Ridgetown breeding program has the goal of providing a continued source of enhanced germplasm for OTRI member breeders in order to broaden the genetic base of processing tomatoes in Ontario. The program at Harrow developed enhanced germplasm faster than other breeders were able to effectively use the material. Some of these lines still cling to their wild traits. The Ridgetown project will continue to develop the Harrow enhanced germplasm to promote long term sustainability of the Ontario tomato industry.

Horizontal resistance breeding under field conditions was continued again this year. There were 2 populations under selection for resistance to anthracnose. New work was initiated this year on breeding for horizontal resistance to bacterial spot. Two populations were established and inoculated on 26 July with a mixture of races T₂, T₃ and T₄. One of the primary goals this year was to gain experience working with this pathogen. Inoculation was successful and selections were made in each population. Next year the inoculation method will be modified to establish bacteria on the plants at an earlier stage of growth.

PROCESSING TOMATO YIELD TRIAL, 2004
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Thirty-six entries were evaluated for yield at 3 locations. Plots were harvested when 80% of the fruit were red ripe.

Processing tomato yield trial, 2004. Yield (tons/acre) averaged over 3 locations.

Name	Total	Red	Breakers	Processing Green	Grass Green	Limited Use Rots	Red & Breakers	Red, Breakers, Processing	Red, Breakers, Processing & Grass Green
TSH 18	45.54	38.77	2.77	0.58	0.69	2.74	41.53	42.11	42.80
N 1069	44.85	38.67	2.95	0.63	0.72	1.87	41.62	42.25	42.97
TSH 04 (C)	49.40	43.36	2.60	0.76	0.75	1.94	46.95	46.71	47.46
TSH 16	51.46	44.65	2.67	0.77	1.06	2.32	47.32	48.09	49.15
O 7983	52.99	45.80	3.41	0.77	0.84	2.16	49.21	49.98	50.82
N 1480E	35.47	28.58	3.78	0.62	0.99	1.50	32.36	32.98	33.97
TSX 22	41.19	34.65	3.16	0.88	0.92	1.58	37.81	38.69	39.61
TSH 07	49.63	43.32	3.35	0.90	0.82	1.23	46.67	47.57	48.39
GEM 818	52.74	44.59	4.28	0.81	1.27	1.79	48.87	49.68	50.95
FG00 - 115	54.21	47.15	2.89	0.78	0.76	2.63	50.04	50.83	51.59
TSH 08	47.66	41.45	3.22	0.80	1.09	1.10	44.67	45.47	46.56
GEM 611	54.92 C	47.35	3.95	1.25	1.10	1.27	51.29	52.54 C	53.65 A C
TSX 21	45.22	38.65	2.53	0.61	0.92	2.52	41.18	41.79	42.70
GEM 89	56.01 A C	48.75 A	3.29	0.96	1.08	1.93	52.04 C	53.00 C	54.08 A C
GEM 94	55.94 A C	47.79 A	3.58	0.95	1.74	1.89	51.30	52.52	54.06 A C
H 3102	45.27	38.39	2.52	0.78	1.11	2.47	40.91	41.68	42.80
HYPEEL 696 (B)	52.26	44.95	2.69	0.86	1.16	2.59	47.64	48.50	49.67
H 9997	45.98	39.57	2.49	0.73	1.00	2.18	42.07	42.80	43.80
GEM 15	53.42	46.15	4.02	0.70	0.59	1.95	50.17	50.87	51.46
H 3702	43.54	37.10	2.73	1.08	1.26	1.39	39.81	40.89	42.15
CC 337	50.83	44.74	3.08	0.61	1.23	1.16	47.82	48.43	49.67
H 3002	55.71 A C	47.74 A	3.95	0.84	1.25	1.95	51.68 C	52.52 C	53.76 A C
FG00 - 118	54.88	44.75	5.40	1.18	1.25	2.30	50.14	51.33	52.58
N 1477	44.18	36.98	2.98	1.23	1.65	1.33	39.96	41.19	42.84
H 3202	48.75	43.22	2.60	0.34	1.05	1.55	45.81	46.15	47.21
GEM 111	52.60	43.27	4.11	1.59	1.93	1.70	47.38	48.97	50.90
GEM 331	56.55 A C	48.56 A	3.89	0.96	0.77	2.36	52.45 C	53.41 A C	54.18 A C
TSH 20	49.93	42.43	4.21	0.77	1.13	1.38	46.64	47.42	48.55
H 3402	46.59	40.35	2.71	0.60	1.35	1.55	43.08	43.68	45.03
H 2501	47.51	39.96	3.99	0.82	0.57	2.16	43.95	44.78	45.34
H 5203	45.44	38.25	3.16	1.16	1.08	1.79	41.41	42.57	43.66
H 9704 (A)	49.48	42.03	4.83	0.65	0.66	1.40	46.87	47.52	48.08
OX 325	52.23	43.89	4.81	0.88	0.76	1.89	48.70	49.58	50.34
OX 9816	51.09	36.02	6.87	2.26	3.32	2.63	42.84	45.14	48.46
OX 323	53.67	43.16	5.38	1.47	1.64	2.01	48.54	50.01	51.66
H 9706	57.00 A C	44.04	6.43	1.98	3.35	1.19	50.47	52.45 C	55.80 ABC
Probability	0.0000	0.0000	0.0000	0.0081	0.0213	0.0012	0.0000	0.0000	0.0000
LSD	5.5075	5.5591	1.4671	0.6824	1.1390	0.7794	5.6615	5.5629	5.4566
CV	14.19%	16.92%	51.67%	93.97%	123.0%	53.43%	15.86%	15.27%	14.61%
Mean	49.837	42.196	3.646	0.932	1.189	1.873	45.842	46.775	47.963

Entries are ranked according to average maturity from 3 test sites. Means followed by the same letter are significantly better than the check cultivar denoted by that same letter. Yields in this table are based on harvested fruit from 9 plots; 5 plants from each plot.

PROCESSING TOMATO QUALITY TRIAL, 2004
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Results of quality evaluations on juice samples of 36 processing tomato cultivars, 2004.

Name	Agtron	Soluble Solids	pH	Modified Boswick (cm)
CC 337	22.00	4.50 A	4.39 B	6.23
FG00 - 115	23.33	4.30 A	4.37	6.77 A
FG00 - 118	26.00 A	4.27 A	4.32	6.00
GEM 15	28.33 A C	3.97	4.31	7.50 ABC
GEM 89	19.00	4.50 A	4.38	7.13 AB
GEM 94	29.00 A C	4.20 A	4.38	7.07 AB
GEM 111	24.67 A	4.03	4.32	6.97 A
GEM 331	25.67 A	4.23 A	4.35	6.87 A
GEM 611	24.33	3.83	4.36	7.00 AB
GEM 818	24.33	3.93	4.31	6.57 A
H 2501	22.00	4.30 A	4.28	6.77 A
H 3002	29.33 A C	4.37 A	4.27	6.70 A
H 3102	24.33	4.53 A C	4.32	7.33 ABC
H 3202	25.33 A	4.50 A	4.37	5.70
H 3402	22.33	4.43 A	4.36	6.23
H 3702	21.00	4.33 A	4.26	6.30
H 5203	25.33 A	4.40 A	4.32	5.97
H 9704 (A)	20.33	3.77	4.34	5.33
H 9706	27.33 A	4.23 A	4.33	6.47 A
H 9997	18.67	3.93	4.41 AB	6.00
HYPEEL 696 (B)	28.00 A	4.23 A	4.32	6.00
N 1069	19.00	4.43 A	4.30	7.67 ABC
N 1477	24.00	4.03	4.39 B	6.67 A
N 1480E	20.33	4.27 A	4.41 AB	7.27 AB
O 7983	28.00 A	4.23 A	4.32	7.33 ABC
OX 323	20.33	4.43 A	4.39 B	6.77 A
OX 325	25.67 A	4.13	4.40 B	7.43 ABC
OX 9816	25.33 A	4.20 A	4.42 AB	6.50 A
TSH 04 (C)	24.00	4.13	4.36	6.30
TSH 07	20.33	4.30 A	4.41 AB	6.57 A
TSH 08	25.33 A	4.40 A	4.37	6.17
TSH 16	19.00	4.37 A	4.43 ABC	7.40 ABC
TSH 18	21.67	4.27 A	4.35	6.80 A
TSH 20	21.00	4.23 A	4.42 AB	7.23 AB
TSX 21	25.67 A	4.13	4.39 B	7.50 ABC
TSX 22	21.00	4.50 A	4.32	6.17
Probability	0.0001	0.0705	0.0003	0.0159
LSD	4.2121	0.3758	0.0638	0.9986
CV	13.09%	6.50%	1.08%	10.97%
Mean	23.648	4.246	4.364	6.685

Means followed by the same letter are significantly better than the check cultivar denoted by that same letter. Modified bostwick measurement is based on juice subjected to hot break. Means are based on 3 samples.