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UNIVERSITY of GUELPH

RIDGETOWN COLLEGE

Processing Tomato Cultivar Trials Research Report 2005

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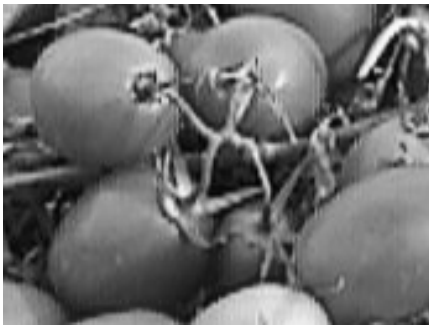
Introduction

The following pages represent a summary of the results from the 2005 processing tomato cultivar evaluation trials. One of the main goals of this project has been to evaluate performance of cultivars over a range of soil types and microclimates. The results have been summarized to show average performance over all sites, as well as performance at each site separately.

The reader will find results from both the field performance (ie. yield trials), fruit characteristics (including size, uniformity, firmness and others), processing performance (ie. peeling trials) and juice quality characteristics in order to provide a more complete picture of a cultivar's suitability for the industry.

What's Changed for 2005?

For 2005 the Ridgetown multilocation variety trial site was located in a commercial processing tomato field instead of a research station site.



Who Had a Part in This Project?

This research was made possible through monetary and in-kind support provided by the following agencies:

- Ontario Tomato Research Institute
- Kraft Canada Inc., Dresden
- H.J. Heinz Company of Canada, Leamington
- Agriculture & Agri-Food Canada, Pest Management Research Centre, London
- HeinzSeed
- Tomato Solutions Inc.
- O.A.R.D.C. - O.S.U.
- Gem Seeds
- Ontario Ministry of Agriculture, Food and Rural Affairs
- University of Guelph

Field space and plot maintenance were generously provided by Kraft Canada and H. J. Heinz Company of Canada.

The diligent work and unflagging enthusiasm of Richard Wright, Technician; Jennifer Newport, and Beth Eagen, Technical Assistants; and many others is gratefully acknowledged.

Plot Establishment

Locations:	3
Replications per location:	3
Entries in trial:	36

Plant populations

- The Dresden site was planted at a rate of 14,000 plants per acre
- The Leamington site was planted at a rate of 13,000 plants per acre
- The Ridgetown site was planted at a rate of 12, 000 plants per acre

Planting dates:

- Dresden 18 May 2005
- Leamington 17 May
- Ridgetown 26 May

Processing Tomato Cultivar Trial Entries 2005		
GEM Seeds	**Heinz Seed**	**Kraft Canada**
GEM 111 GEM 331 GEM 611 GEM 818	H 2501 H 3202 H 3402 H 3702 H 8204 H 9035 N2 H 9364 H 9423 H 9661 H 9704 H 9706 H 9997	CC 337 N 1069 N 1477 N 1480E
OARDC - OSU	**Seminis**	**Tomato Solutions**
FG00-115 FG00-117 FG01-158 FG01-160 OX 325 O 7983 O 8245	Hypeel 696	TSH 04 TSH 07 TSH 08 TSH 12 TSH 16 TSH 18 TSH 20 TSH 22

Yield Evaluation Trials

How Was Harvest Date Determined?

Plots at each site were visited twice each week.

A plot was harvested when 80% or more fruit were red ripe.

To see how much actual difference in maturity there is between varieties refer to Appendix 1.

Many of the tables in this report have varieties ranked in order of maturity from earliest to latest - check the titles to be sure.

How Was the Yield Actually Measured?	
For each plot, 5 representative plants, with no adjacent plants missing, were cut off at the soil level. Fruit were then shaken from the vines into a wheel barrow and then sorted into 5 categories:	
red ripe	fruit that had less than 5% visible yellowish exterior colour
breakers	more than 10% coloured and less than 10% green
processing green	less than 100% green showing some visible blush of colour (yellow, pink)
grass green	green or white green
limited use/ rots	any fruit with a rotten spot 2 cm in diameter or greater, other blemishes, includes MOT
Weights were taken for each of these categories and converted to yield on a tons/acre basis.	

Cultivar or Variety - What's the difference?

*The term 'cultivar' is a shortened form of 2 words; '**culti**vated **var**iety'.*

This term was chosen by plant scientists to distinguish a variety which occurs in cultivation, (as a result of human activity), from a botanical variety, which can sometimes be found in nature.

Although cultivar is the correct term you will see both used interchangeably in this report - mostly to avoid repetition of the same word over and over.

WHAT DOES THIS TABLE TELL ME?

Table 1 Answers the question, "Which cultivar has the ability to produce the most tomatoes, regardless of the grade?"

You can find the best ones very quickly by looking at the top of the table.

"But, why do you bother to report 'yield potential'? Tomatoes are paid for on the basis of grades."

We report yield potential because the management system and microclimate of each grower will be slightly different. In an actual production situation, growers would be in a better position to minimize rots/greens through the use of Ethrel, and thus achieve yields closer to the potential than we were able to in our plots.

Will someone please tell me what all the little letters behind the numbers mean?

One of the challenges with field research on plants is that we have to cope with variations in soil, microclimate, and a whole host of other factors that affect plant growth.

Although the numbers 45.4 and 44.6 are numerically different, the question scientists try to answer is,"Are they actually different given the amount of variation that we find from plot to plot?" "Is the difference between those numbers due to the treatment (in this case genetics) or did we just get lucky and happen to pick the right plants to measure yield on?" "Is the difference real, or is it just because of the plants we happened to pick?"

Scientists use those letters, as part of something called a 'means separation procedure', to show which varieties are really different - or which varieties they are different from and similar to.

Only those cultivars that perform better than the checks are marked. If a check cultivar has the letter 'B' after it, then the cultivar means followed by the letter B are better than check B. If there are no trial entries with the letter C after them, then there are no entries significantly better than check variety C.

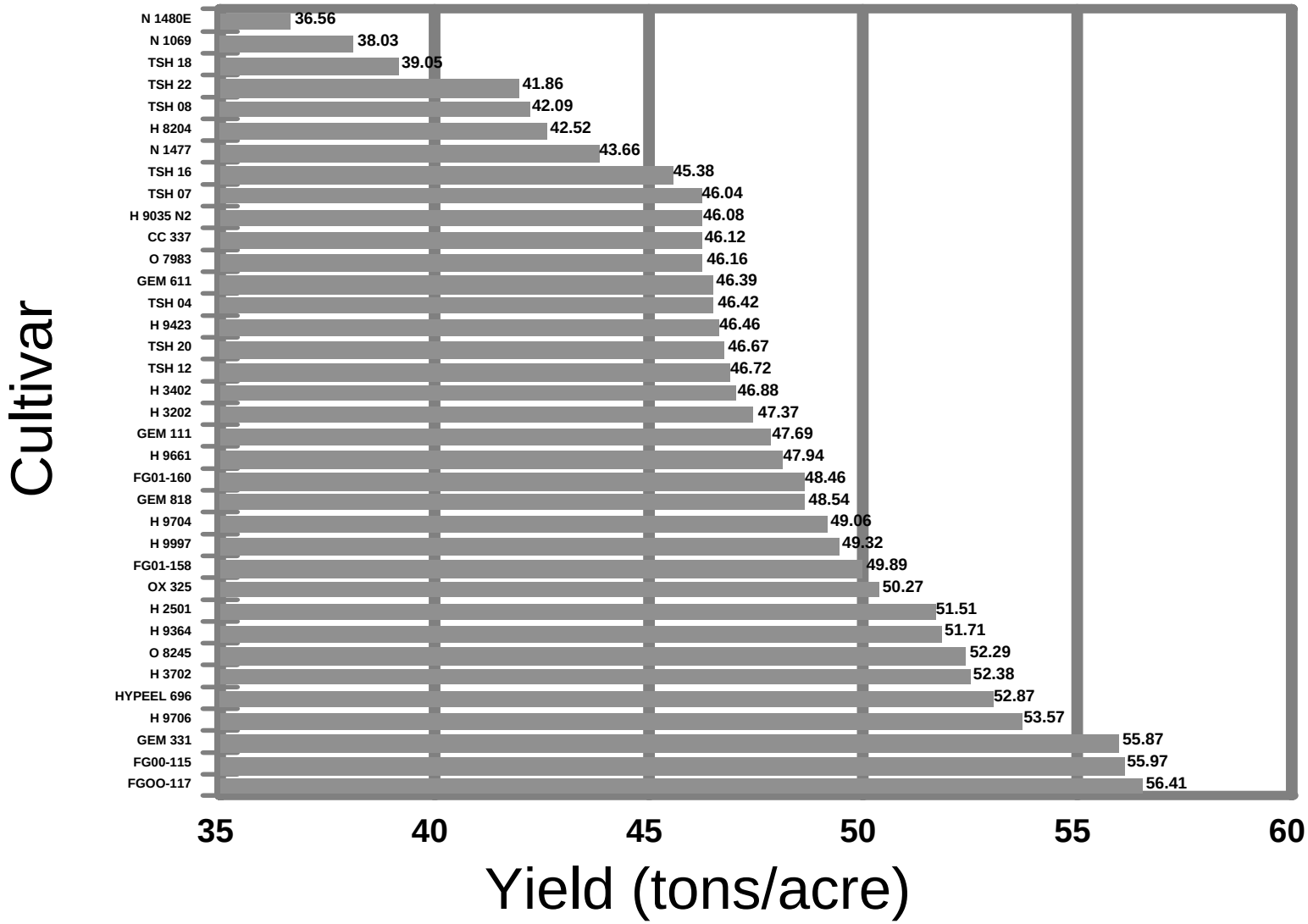
In a cultivar trial like this one, note the trends or rankings since these are probably as important as understanding the statistics.

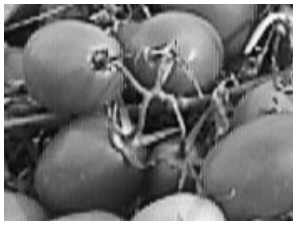
Table 1. Processing Tomato Cultivar Trial, 2005. Yield Potential (tons/acre) over 3 locations.

Name	Yield Potential (tons/acre)		
FGOO-117	56.41	A	C
FG00-115	55.97	A	C
GEM 331	55.87	A	C
H 9706	53.57		C
HYPEEL 696 (B)	**52.87**		**C**
H 3702	52.38		
O 8245	52.29		
H 9364	51.71		
H 2501	51.51		
OX 325	50.27		
FG01-158	49.89		
H 9997	49.32		
H 9704 (A)	**49.06**		
GEM 818	48.54		
FG01-160	48.46		
H 9661	47.94		
GEM 111	47.69		
H 3202	47.37		
H 3402	46.88		
TSH 12	46.72		
TSH 20	46.67		
H 9423	46.46		
TSH 04 (C)	**46.42**		
GEM 611	46.39		
O 7983	46.16		
CC 337	46.12		
H 9035 N2	46.08		
TSH 07	46.04		
TSH 16	45.38		
N 1477	43.66		
H 8204	42.52		
TSH 08	42.09		
TSH 22	41.86		
TSH 18	39.05		
N 1069	38.03		
N 1480E	36.56		
PROBABILITY	0.0000		
LSD	6.0951		
CV	16.44%		
Mean	47.617		

Means followed by the same letter are significantly better than the check cultivar with that same letter. Yields in this table are based on harvested fruit from 9 plots;5 plants from each plot.

Yield Potential over 3 Locations, 2005





WHAT DO THESE TABLES TELL ME?

Table 2

This table answers the question, "What were the best all 'round varieties for yield?". The table shows the results averaged over 3 different trial locations.

The "**Total**" column shows the same numbers as in table 1 (ie. yield potential), but the cultivars are ranked according to maturity. This is probably a more fair way of comparing total yield since, at least historically, early maturing cultivars have tended to have lower yields than later cultivars.

The "**Red"** column shows the yield of red ripe fruit at harvest in tons per acre. The other columns, **"Breakers**", "**Processing Green**", "**Grass Green**", and **"Limited Use & Rots**", show the yield, in tons per acre, of each grade category at harvest.

Depending on the grade option that grow under/receive under, you may have interest in one of the last 3 columns.

For example, the second last column, "**Red, Breakers, Processing Green**" is the total of those 3 separate columns. This shows the yield results you might expect if that happens to be the grading option you deal with.

Table 3
Table 4
Table 5

Each of these tables follows the same format as Table 2. The important difference is that these tables show the results for each trial location separately.

If possible, it is valuable to look at the results from a trial location with a soil type and/or microclimate similar to the one you are working with.

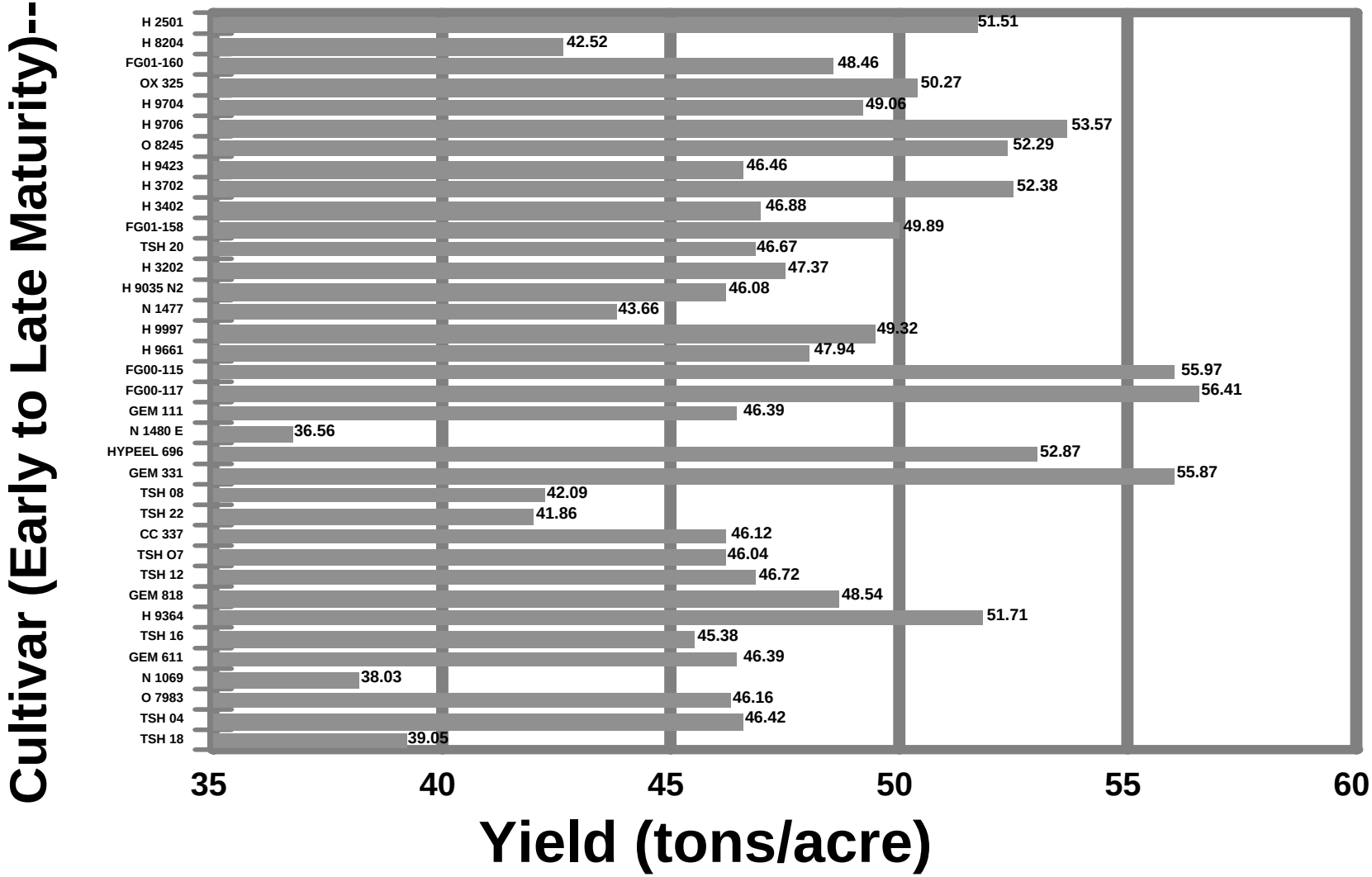
Table 2. Processing tomato yield trial, 2005. Yield (tons/acre) averaged over 3 locations.

Name	Total	Red	Breakers	Processing Green	Grass Green	LimitedUse Rots	Red & Breakers	Red, Breakers, Processing Green	Red, Breakers, Processing & Grass Green
TSH 18	39.05	34.43	1.62	0.35	2.13	0.52	36.05	36.39	38.52
TSH 04 (C)	**46.42**	**38.14**	**2.96**	**0.58**	**4.29**	**0.44**	**41.11**	**41.69**	**45.98**
O 7983	46.16	41.07	1.51	0.59	2.16	0.82	42.58	43.17	45.34
N 1069	38.03	31.22	1.68	0.68	3.41	1.05	32.90	33.58	36.99
GEM 611	46.39	41.71	1.58	0.39	2.10	0.61	43.29	43.68	45.78
TSH 16	45.38	39.08	1.96	0.65	2.76	0.93	41.04	41.69	44.45
H 9364	51.71	45.64 C	1.91	0.77	2.37	1.03	47.55 C	48.31 C	50.68
GEM 818	48.54	42.30	1.81	0.80	2.90	0.74	44.11	44.90	47.80
TSH 12	46.72	40.01	2.64	0.85	2.50	0.72	42.64	43.49	45.99
TSH O7	46.04	39.97	1.88	0.97	2.61	0.60	41.85	42.82	45.44
CC 337	46.12	39.89	2.35	0.67	2.79	0.42	42.24	42.91	45.70
TSH 22	41.86	35.83	1.83	0.87	1.95	1.37	37.66	38.53	40.48
TSH 08	42.09	36.53	2.32	0.57	2.16	0.52	38.84	39.42	41.57
GEM 331	55.87 A C	47.99 C	3.22	1.29	2.53	0.85	51.21 C	52.49 C	55.03 A C
HYPEEL 696 (B)	**52.87 C**	**47.38 C**	**2.22**	**0.68**	**1.87**	**0.72**	**49.60 C**	**50.28 C**	**52.15 C**
N 1480 E	36.56	30.84	2.07	0.58	1.71	1.35	32.91	33.49	35.21
GEM 111	46.39	42.71	1.88	0.39	1.60	0.73	44.59	45.36	46.96
FG00-117	56.41 A C	47.96 C	3.16	1.23	2.88	1.20	51.11 C	52.34 C	55.22 A C
FG00-115	55.97 A C	50.45 A C	2.22	0.58	1.11	1.62	52.66 A C	53.25 A C	54.35 C
H 9661	47.94	41.25	1.98	1.01	2.55	1.16	43.22	44.23	46.79
H 9997	49.32	42.95	2.45	0.66	1.72	1.54	45.39	46.06	47.78
N 1477	43.66	38.33	2.00	0.92	2.07	0.34	40.33	41.25	43.32
H 9035 N2	46.08	41.86	1.66	0.36	1.49	0.73	43.51	43.87	45.36
H 3202	47.37	42.69	1.65	0.79	1.27	0.98	44.34	45.13	46.40
TSH 20	46.67	40.46	2.21	0.70	2.53	0.78	42.67	43.36	45.89
FG01-158	49.89	41.61	4.04	0.67	2.12	1.46	45.65	46.32	48.44
H 3402	46.88	43.35	0.76	0.65	1.22	0.90	44.11	44.76	45.98
H 3702	52.38	46.13 C	2.66	0.89	2.01	0.69	48.78 C	49.68 C	51.69
H 9423	46.46	41.93	1.46	0.55	2.02	0.51	43.39	43.93	45.95
O 8245	52.29	46.94 C	2.98	0.55	1.21	0.61	49.92 C	50.47 C	51.69
H 9706	53.57 C	48.69 C	2.14	0.77	1.67	0.29	50.83 C	51.60 C	53.27 C
H 9704 (A)	**49.06**	**44.85 C**	**1.24**	**0.72**	**1.89**	**0.36**	**46.09**	**46.81**	**48.70**
OX 325	50.27	46.61 C	1.43	0.48	0.91	0.85	48.03 C	48.51 C	49.42
FG01-160	48.46	40.21	3.92	0.76	2.50	1.07	44.13	44.89	47.40
H 8204	42.52	38.20	0.99	0.27	1.05	2.02	39.18	39.45	40.50
H 2501	51.51	44.98 C	2.54	0.71	1.48	1.80	47.52 C	48.23 C	49.71
Probability	0.0000	0.0000	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000
LSD	6.0951	5.3904	0.9911	0.3702	0.8708	0.6133	5.7349	5.8326	6.0520
CV	16.44%	16.57%	59.55%	67.56%	53.29%	87.70%	16.77%	16.78%	16.63%
Mean	47.617	41.782	2.137	0.704	2.098	0.898	43.918	44.622	46.720

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 .

Yield Potential ranked by maturity, 2005



Red, Breaker & Processing Green Yield
2005

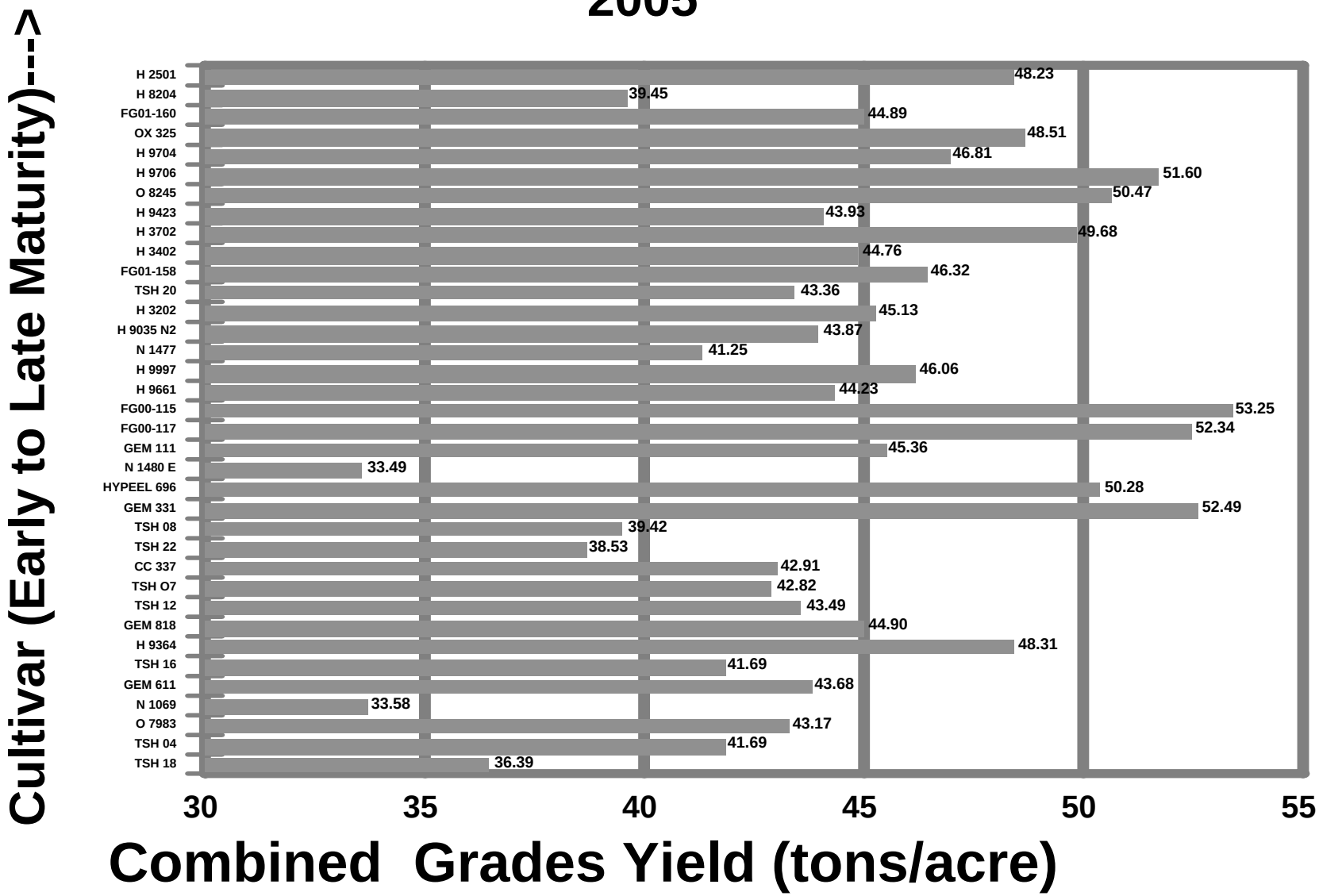


Table 3. Processing tomato yield trial, 2005. Yield (tons/acre) from the Dresden site (berrian sand - low organic matter).

Name	Total	Red	Breakers	Processing Green	Grass Green	LimitedUse Rots	Red & Breakers	Red, Breakers , Processing	Red, Breakers, Processing & Grass Green
TSH 18	43.73	38.71	0.62	0.47	3.39	0.55	39.33	39.79	43.18
TSH 04 (C)	**42.29**	**34.68**	**0.47**	**0.15**	**6.70**	**0.28**	**35.15**	**35.30**	**42.01**
O 7983	45.80	39.82	1.58	0.47	3.59	0.34	41.40	41.87	45.46
N 1069	42.15	34.39	0.79	0.96	4.92	1.10	35.18	36.13	41.05
GEM 611	48.63	43.46	1.46	0.49	2.51	0.70	44.92 C	45.41 C	47.92
TSH 16	46.38	38.07	2.81	0.70	3.49	1.30	40.88	41.59	45.07
H 9364	52.02	46.46 C	1.33	0.62	2.96	0.64	47.80 C	48.41 C	51.38
GEM 818	51.67	43.99 C	1.34	0.87	4.60	0.86	45.34 C	46.21 C	50.81
TSH 12	48.27	41.24	2.99	1.01	2.03	1.00	44.23	45.24 C	47.27
TSH O7	45.31	38.94	1.40	1.34	3.21	0.42	40.33	41.68	44.90
CC 337	44.89	38.91	1.99	0.64	2.75	0.60	40.89	41.53	44.29
TSH 22	36.55	29.71	1.95	0.85	2.92	1.12	31.66	32.51	35.43
TSH 08	41.73	38.24	1.52	0.19	1.45	0.34	39.76	39.95	41.40
GEM 331	56.52 C	50.75 C	1.88	0.84	2.07	0.98	52.63 C	53.47 C	55.54 C
HYPEEL 696 (B)	**60.06 C**	**56.77 C**	**1.00**	**0.52**	**1.00**	**0.78**	**57.77 C**	**58.28 C**	**59.28 C**
N 1480 E	35.54	31.16	1.64	0.53	1.18	1.03	32.80	33.33	34.51
GEM 111	55.55 C	50.02 C	1.95	0.79	2.02	0.78	51.97 C	52.75 C	54.77 C
FG00-117	50.80	44.36 C	1.94	1.02	2.82	0.66	46.30 C	47.32 C	50.14
FG00-115	61.21 C	56.09 C	2.06	0.62	1.53	0.92	58.14 C	58.76 C	60.30 C
H 9661	47.18	39.84	1.21	0.90	3.92	1.30	41.05	41.95	45.87
H 9997	44.67	39.15	1.97	0.48	1.98	1.10	41.11	41.59	43.57
N 1477	46.37	41.09	1.62	0.62	2.72	0.32	42.71	43.33	46.05
H 9035 N2	53.59 C	48.72 C	1.28	0.14	2.58	0.87	50.01 C	50.15 C	52.72 C
H 3202	48.71	44.36 C	1.44	0.76	1.67	0.48	45.80 C	46.56 C	48.22
TSH 20	58.72 C	51.27 C	2.81	0.61	3.18	0.85	54.08 C	54.69 C	57.87 C
FG01-158	55.96 C	49.72 C	2.83	0.27	2.35	0.79	52.54 C	52.82 C	55.17 C
H 3402	54.47 C	51.70 C	0.49	0.21	1.43	0.63	52.20 C	52.41 C	53.84 C
H 3702	56.72 C	51.83 C	1.44	0.46	2.12	0.86	53.27 C	53.73 C	55.85 C
H 9423	56.25 C	51.24 C	0.77	0.64	3.00	0.60	52.01 C	52.65 C	55.65 C
O 8245	50.08	46.64 C	1.74	0.30	0.80	0.61	48.38 C	48.68 C	49.48
H 9706	60.48 C	56.00 C	1.82	0.74	1.75	0.17	57.82 C	58.55 C	60.31 C
H 9704 (A)	**52.53 C**	**48.10 C**	**0.84**	**0.56**	**2.81**	**0.23**	**48.94 C**	**49.50 C**	**52.30 C**
OX 325	58.34 C	55.01 C	0.97	0.40	1.62	0.35	55.98 C	56.38 C	58.00 C
FG01-160	59.80 C	49.45 C	5.55	0.47	3.74	0.59	55.00 C	55.47 C	59.22 C
H 8204	49.94	44.55 C	0.84	0.30	2.20	2.05	45.39 C	45.70 C	47.89
H 2501	50.40	45.45 C	1.16	0.39	2.09	1.31	46.61 C	46.99 C	49.09
Probability	0.0005	0.0000	0.0002	0.0929	0.0026	0.0066	0.0000	0.0000	0.0003
LSD	9.9421	8.8119	1.3266	0.5350	1.8843	0.6359	9.2165	9.3151	9.8025
CV	14.50%	14.48%	58.99%	66.40%	52.40%	61.14%	14.60%	14.57%	14.52%
Mean	50.370	44.719	1.652	0.592	2.642	0.764	46.371	46.963	49.606

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 3 plots; 5 plants from each plot .

Table 4. Processing tomato yield trial, 2005. Yield (tons/acre) from the Leamington site (berrian sandy loam).

Name	Total	Red	Breakers	Processing Green	Grass Green	Limited Use Rots	Red & Breakers	Red, Breakers, Processing	Red, Breakers, Processing & Grass Green
TSH 18	43.10	38.71	2.56	0.17	1.13	0.53	41.27	41.44	42.57
TSH 04 (C)	**56.98**	**46.97**	**6.55**	**0.85**	**2.05**	**0.56**	**53.53**	**54.37**	**56.42**
O 7983	56.35	51.13	1.95	0.49	1.27	1.51	53.08	53.58	54.84
N 1069	41.63	36.52	2.04	0.45	1.74	0.88	38.56	39.01	40.76
GEM 611	60.58 A	55.50 A C	2.20	0.37	2.02	0.49	57.70 A	58.07 A	60.09 A
TSH 16	54.25	48.76	1.36	0.63	2.42	1.08	50.11	50.75	53.17
H 9364	61.19 A	54.50	2.70	0.73	1.43	1.83	57.20 A	57.93	59.36 A
GEM 818	59.24 A	52.19	2.01	1.01	3.09	0.94	54.19	55.21	58.29
TSH 12	50.69	45.35	1.54	0.32	2.75	0.74	46.89	47.20	49.95
TSH O7	53.97	48.54	2.23	0.90	1.74	0.55	50.78	51.68	53.42
CC 337	54.64	49.35	2.14	0.60	2.12	0.44	51.48	52.09	54.21
TSH 22	45.69	40.13	1.36	0.92	1.67	1.62	41.49	42.41	44.08
TSH 08	53.42	46.12	3.08	1.03	2.53	0.65	49.20	50.23	52.77
GEM 331	60.15 A	54.08	2.84	0.76	1.36	1.12	56.91	57.67	59.03 A
HYPEEL 696 (B)	**59.94 A**	**51.55**	**4.00**	**0.78**	**2.56**	**1.04**	**55.55**	**56.33**	**58.89 A**
N 1480 E	40.39	35.13	2.57	0.54	0.91	1.24	37.70	38.24	39.14
GEM 111	48.29	43.47	1.87	0.82	1.24	0.89	45.34	46.16	47.40
FG00-117	60.07 A	51.47	2.37	0.67	2.83	2.74	53.83	54.50	57.33
FG00-115	54.15	47.45	2.04	0.30	0.81	3.57	49.49	49.78	50.59
H 9661	48.66	44.04	2.07	0.47	1.25	0.83	46.11	46.58	47.83
H 9997	49.49	43.56	2.87	0.96	1.24	0.87	46.42	47.38	48.62
N 1477	46.17	41.43	1.96	1.01	1.37	0.40	43.39	44.40	45.76
H 9035 N2	50.44	46.59	2.12	0.28	0.62	0.84	48.71	48.99	49.61
H 3202	56.22	50.69	2.34	1.01	0.87	1.32	53.03	54.04	54.91
TSH 20	46.98	40.82	2.11	0.95	2.44	0.66	42.93	43.87	46.31
FG01-158	52.25	41.54	5.51	0.79	1.36	3.07	47.04	47.83	49.19
H 3402	51.31	46.71	1.27	1.32	1.09	0.92	47.98	49.30	50.39
H 3702	57.42	51.43	3.06	0.96	1.26	0.72	54.48	55.43	56.70
H 9423	46.46	42.59	2.30	0.42	0.69	0.46	44.89	45.31	46.00
O 8245	60.50 A	51.73	6.00	0.99	1.25	0.53	57.73 A	58.72 A	59.97 A
H 9706	59.86 A	53.29	3.24	1.18	1.78	0.37	56.53	57.71	59.49 A
H 9704 (A)	**50.29**	**47.08**	**1.84**	**0.57**	**0.40**	**0.41**	**48.91**	**49.49**	**49.89**
OX 325	55.29	51.47	1.16	0.47	0.29	1.91	52.63	53.09	53.38
FG01-160	53.07	43.71	4.77	1.41	1.51	1.68	48.47	49.88	51.39
H 8204	48.49	44.49	1.48	0.30	0.41	1.81	45.97	46.27	46.68
H 2501	55.76	48.41	3.80	1.29	0.60	1.65	52.21	53.50	54.10
Probability	0.0006	0.0007	0.0009	0.1655	0.0013	0.0356	0.0009	0.0012	0.0012
LSD	8.5626	7.7557	1.9635	0.6598	1.1356	1.3965	8.2153	8.4482	8.7527
CV	11.90%	12.16%	54.60%	65.42%	55.50%	90.41%	12.20%	12.36%	12.43%
Mean	52.871	46.847	2.647	0.741	1.503	1.135	49.493	50.234	51.736

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 3 plots; 5 plants from each plot .

Table 5. Processing tomato yield trial, 2005. Yield (tons/acre) from the Ridgetown site (berrian sandy loam).

Name	Total	Red	Breakers	Processing Green	Grass Green	Limited Use Rots	Red & Breakers	Red, Breakers, Processing	Red, Breakers, Processing & Grass Green
TSH 18	30.31	25.86	1.67	0.42	1.86	0.50	27.54	27.95	29.82
TSH 04 (C)	**39.99**	**32.78**	**1.87**	**0.76**	**4.11**	**0.47**	**34.65**	**35.41**	**39.52**
O 7983	36.32	32.27	1.00	0.80	1.63	0.62	33.27	34.07	35.70
N 1069	30.32	22.74	2.22	0.64	3.56	1.17	24.95	25.59	29.15
GEM 611	29.97	26.17	1.08	0.30	1.77	0.65	27.25	27.55	29.33
TSH 16	35.51	30.40	1.72	0.61	2.37	0.40	32.12	32.73	35.10
H 9364	41.93	35.95	1.70	0.95	2.72	0.61	37.65	38.60	41.32
GEM 818	34.70	30.71	2.08	0.50	1.00	0.41	32.79	33.29	34.29
TSH 12	41.19	33.43	3.38	1.23	2.73	0.43	36.81	38.03	40.76
TSH O7	38.83	32.43	2.01	0.68	2.88	0.83	34.43	35.12	38.00
CC 337	38.84	31.42	2.92	0.78	3.49	0.22	34.34	35.12	38.61
TSH 22	43.32	37.65	2.20	0.84	1.26	1.38	39.84	40.68	41.94
TSH 08	31.11	25.23	2.35	0.49	2.49	0.56	27.57	28.07	30.55
GEM 331	50.96	39.13	4.95	2.26	4.17	0.45	44.08	46.34	50.51
HYPEEL 696 (B)	**38.61**	**33.82**	**1.67**	**0.73**	**2.06**	**0.34**	**35.49**	**36.22**	**38.28**
N 1480 E	33.74	26.24	2.01	0.66	3.05	1.78	28.24	28.91	31.96
GEM 111	39.22	34.64	1.83	0.70	1.53	0.52	36.47	37.17	38.70
FG00-117	58.37	48.04	5.16	2.00	2.99	0.19	53.20	55.20	58.19
FG00-115	52.55	47.81	2.55	0.84	0.98	0.38	50.35	51.19	52.17
H 9661	48.00	39.86	2.66	1.65	2.49	1.34	42.52	44.16	46.66
H 9997	53.80	46.14	2.50	0.56	1.94	2.65	48.65	49.20	51.15
N 1477	38.44	32.48	2.43	1.13	2.12	0.29	34.90	36.03	38.15
H 9035 N2	34.22	30.26	1.57	0.66	1.26	0.48	31.82	32.48	33.74
H 3202	37.19	33.03	1.15	0.61	1.28	1.13	34.18	34.79	36.07
TSH 20	34.32	29.28	1.72	0.54	1.95	0.83	31.00	31.54	33.49
FG01-158	41.46	33.57	3.78	0.96	2.64	0.51	37.35	38.31	40.95
H 3402	34.87	31.63	0.52	0.43	1.13	1.15	32.16	32.59	33.71
H 3702	43.00	35.13	3.48	1.26	2.64	0.48	38.61	39.87	42.52
H 9423	36.68	31.94	1.32	0.58	2.36	0.48	33.26	33.84	36.20
O 8245	46.30	42.44	1.20	0.38	1.58	0.68	43.65	44.03	45.61
H 9706	40.37	36.78	1.37	0.40	1.47	0.35	38.15	38.55	40.01
H 9704 (A)	**44.36**	**39.37**	**1.05**	**1.02**	**2.47**	**0.45**	**40.42**	**41.44**	**43.91**
OX 325	37.19	33.35	2.15	0.57	0.83	0.30	35.49	36.06	36.89
FG01-160	32.52	27.46	1.46	0.41	2.26	0.94	28.92	29.32	31.58
H 8204	29.13	25.55	0.64	0.20	0.54	2.21	26.19	26.39	26.93
H 2501	48.36	41.07	2.67	0.45	1.74	2.43	43.74	44.19	45.93
Probability	0.0317	0.0319	0.0194	0.0048	0.0045	0.0091	0.0297	0.0204	0.0250
LSD	12.9691	11.3317	1.8396	0.7306	1.4516	1.0449	12.2019	12.3909	12.7615
CV	24.06%	24.65%	64.00%	69.05%	49.63%	96.61%	24.98%	24.83%	24.16%
Mean	39.611	33.780	2.112	0.777	2.149	0.795	35.891	36.668	38.816

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 3 plots; 5 plants from each plot .

Handling Evaluations

After plot harvest, samples from the second replication at each site were retained for fruit handling evaluation trials.

Step 1: Weigh out a 3 kg sample of fruit and drop the sample onto a concrete floor from a height of 4 feet.

Only the fruit with cracks extending into the flesh are weighed.

This test estimates resistance to cracking or firmness. It answers the question, “Which cultivar is firmest?”

This procedure also simulates mechanical handling on the tomatoes that will be peeled at a later step.

Step 2: Count the number of fruit that have stems still attached.

This will provide an answer to the questions, “Is the cultivar jointless?”, “Are there any stems attached after harvest?”.

Depending on the end use, and methods used, some processors are able to tolerate a few attached stems, while others are not.

Step 3: Count the total number of fruit in the 3 kg sample.

This provides an answer to the question, “What is the average fruit size?”

Step 4: The uniformity of fruit size is estimated, on a weight basis by grading the fruit into 4 categories.

(a) 1" or less - fruit in this category are smaller that most users will want to deal with

(b) greater than 1" and less than or equal to 1 1/2" - this is a fairly typical size for wholepeel tomatoes

(c) greater than 1 1/2"and less than or equal to 1 3/4" - this is also a fairly typical size for whole, canned tomatoes

(d) greater than 1 3/4" - these fruit tend to be a bit too large, depending on the size of can

Wholepeel tomatoes need to have “cosmetic appeal” - in other words, they need to look good. A can of very uniformly sized, shaped, and coloured tomatoes will be more attractive to look at than a can of tomatoes that contains a mixture of sizes, shapes and colours (degrees of redness).

Consumers tend to equate attractive food with good quality food. The more uniform the tomatoes, the more likely the repeat sale.

Table 6. Average fruit size and uniformity of fruit size, 2005.

Name	Average Fruit Size	Size (1)% <1"	Size (2)% >1" & <1.5"	Size (3)% >1.5" & <1.75"	Size (4)% >1.75"	Size (2+3)%
H 2501	87.13 ABC	0.00	6.40	22.68	70.82	29.07
H 9997	67.83 ABC	0.00	13.65	30.72	55.97	44.36
H 8204	61.33 B	0.00	27.57	23.59	48.84	51.16
H 9706	59.83	0.00	34.84	37.61	27.66	72.45
H 9661	59.80	0.11	21.15	34.12	44.62	55.27
H 9423	59.13	0.00	21.02	28.13	51.08	49.14
FG01-158	58.77	0.11	30.71	33.82	35.36	64.53
FG00-115	58.20	0.00	37.11	40.89	22.00	78.00
O8245	57.23	0.11	22.64	44.72	32.53	67.36
H 9364	55.17	0.22	49.70	36.74	13.34	86.43 AB
TSH 20	53.67	0.44	56.63	41.05	1.77	97.68 AB
TSH 18	53.47	0.11	44.62	38.60	16.45	83.22 A
H 9704 (A)	**53.37**	**0.00**	**29.24**	**35.67**	**34.98**	**64.91**
H 3702	53.30	0.00	42.97	42.75	14.06	85.72 AB
TSH 04 (C)	**53.10**	**0.00**	**55.63**	**35.51**	**8.86**	**91.14 AB**
H 9035 N2	52.70	0.11	45.52	33.54	20.61	79.06
TSH 22	51.90	1.33	86.52	12.04	0.00	98.56 AB
HYPEEL 696 (B)	**51.87**	**0.11**	**44.10**	**23.52**	**32.27**	**67.62**
H 3202	51.80	0.56	53.79	37.42	8.24	91.21 AB
O 7983	51.47	0.33	50.39	38.60	10.35	88.99 AB
GEM 331	51.47	0.11	36.37	32.42	31.21	68.79
GEM 818	51.33	0.11	34.72	34.40	30.44	69.11
FG00-117	50.73	0.33	45.97	43.55	10.15	89.51 AB
FG01-160	50.60	0.11	48.85	25.62	25.42	74.47
GEM 111	50.37	0.11	40.09	36.39	23.41	76.48
GEM 611	49.80	0.00	41.61	35.58	22.70	77.19
OX 325	49.67	0.55	49.90	39.54	10.00	89.44 AB
N 1477	48.80	0.44	58.88	36.11	4.79	94.98 AB
N 1480 E	46.37	0.56	81.11	18.22	0.00	99.33 AB
H 3402	45.63	0.89	65.18	29.60	4.22	94.78 AB
CC 337	45.60	1.22	90.08	8.59	0.00	98.67 AB
TSH 16	45.30	0.34	74.43	21.66	3.45	96.10 AB
TSH 08	43.87	0.22	64.17	34.94	0.78	99.11 AB
TSH 12	42.73	0.55	79.53	18.70	1.00	98.22 AB
N 1069	38.70	2.11	87.90	9.10	0.78	97.00 AB
TSH 07	38.27	2.67	86.49	8.16	2.68	94.65 AB
Probability	0.0000	0.0028	0.0000	0.0001	0.0000	0.0000
LSD	9.3250	0.9528	17.3886	13.9513	16.4125	16.5319
CV	12.98%	181.7%	26.14%	33.42%	60.23%	15.27%
Mean	58.624	0.385	48.874	33.474	20.023	79.548

Means in the average fruit size and size (2+3) columns followed by the same letter are significantly better than the check cultivar denoted by that same letter. The sum of different size categories across rows may not total 100 due to rounding off. Means are based on 3 samples. Each sample consisted of 3kg of fruit.

Table 7. Percent fruit with stems still attached after shaking from plant, 2005.

Name	Stems %
N 1069	15.60
H 9661	12.59
H 3702	12.21
H 9704 (A)	**9.54**
H 9035 N2	7.85
CC 337	7.50
N 1480E	7.36
TSH 18	7.05
H 2501	5.41
TSH 22	5.25
H 3402	5.23
H 8204	4.85
H 9997	4.66
H3202	4.41
H9706	3.98
TSH 12	3.36
H9364	3.19
H 9423	3.12
TSH 07	3.02
GEM 111	2.98
TSH 16	2.62
FG01-158	2.60
HYPEEL 696 (B)	**2.39**
O 8245	2.06
FG01-160	1.73
GEM 818	1.42
GEM 611	1.25
OX 325	0.64
GEM 331	0.64
O 7983	0.57
TSH 08	0.52
FG00-115	0.00
N1477	0.00
TSH 04 (C)	**0.00**
TSH 20	0.00
FG00-117	0.00
Probability	0.0005
LSD	5.7406
CV	104.3%
Mean	4.045

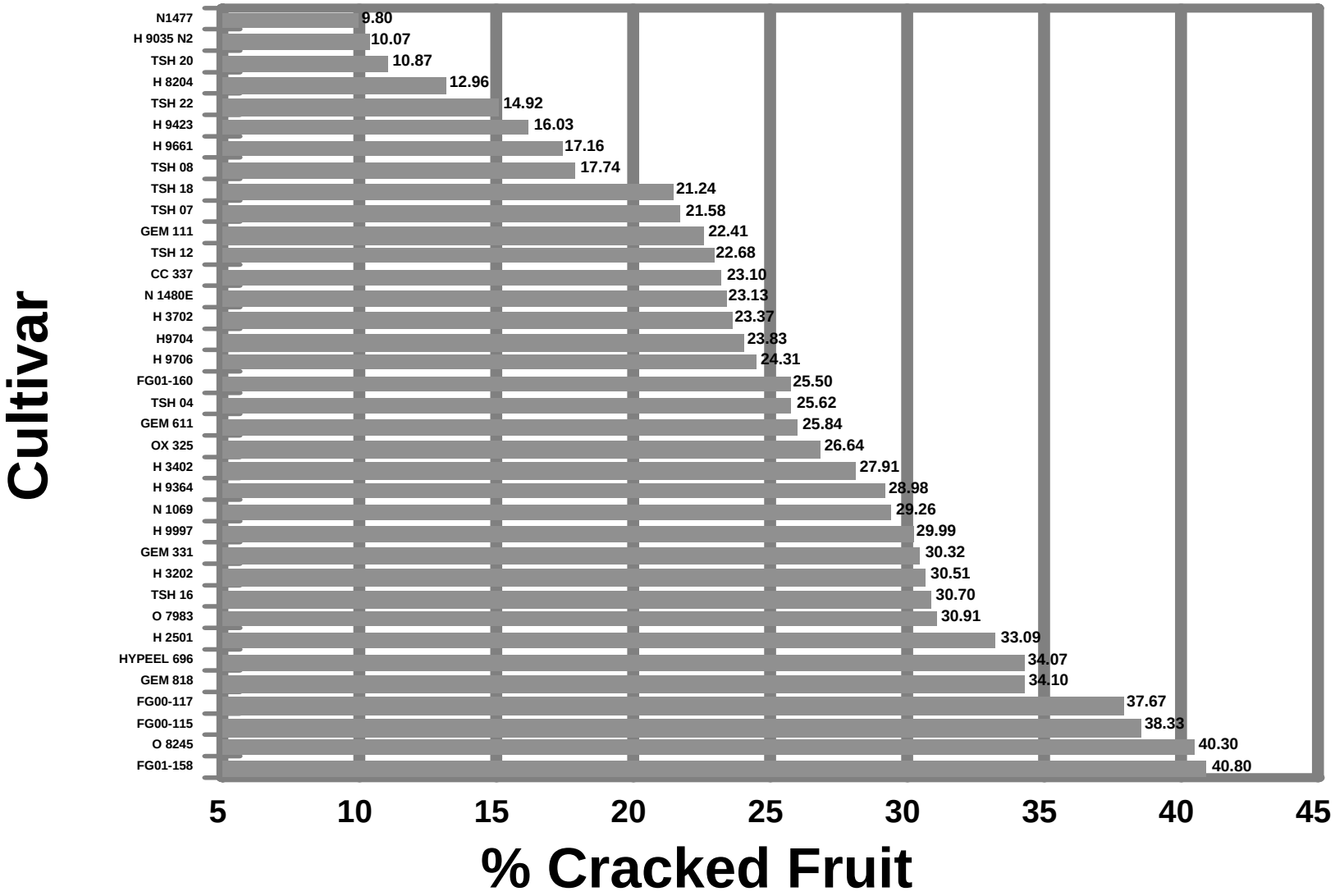
Means are based on 3 samples. Each sample consists of 3 kg of fruit.

Table 8. Percent fruit (by weight) with cracks extending into the flesh after dropping on concrete from a four foot height, 2005. This test estimates firmness.

Name	Cracked Fruit (%)
FG01-158	40.80
O 8245	40.30
FG00-115	38.33
FG00-117	37.67
GEM 818	34.10
HYPEEL 696 (B)	**34.07**
H 2501	33.09
O 7983	30.91
TSH 16	30.70
H 3202	30.51
GEM 331	30.32
H 9997	29.99
N 1069	29.26
H 9364	28.98
H 3402	27.91
OX 325	26.64
GEM 611	25.84
TSH 04 (C)	**25.62**
FG01-160	25.50
H 9706	24.31
H9704 (A)	**23.83**
H 3702	23.37
N 1480E	23.13
CC 337	23.10
TSH 12	22.68
GEM 111	22.41
TSH 07	21.58
TSH 18	21.24
TSH 08	17.74
H 9661	17.16
H 9423	16.03
TSH 22	14.92
H 8204	12.96
TSH 20	10.87
H 9035 N2	10.07
N1477	9.80
Probability	0.0007
LSD	12.4472
CV	35.95%
Mean	25.437

Means followed by the same letter are significantly better than the check cultivar denoted by that same letter. Means are based on 3 samples. Each sample consisted of 3 kg of fruit.

Percent Cracked Tomato Fruit, 2005



Peeling Evaluations

After going through the handling evaluations (Steps 1 through 4) described above, the 3 kg fruit samples were peeled.

Step 5: The tomatoes were submerged in caustic potash (30% solution by weight) with Turgitol surfactant (0.3% by volume), at 102 +/- 1°C for 40 seconds.

The sample was rinsed twice in water and the peels were removed mechanically.

The peeled tomatoes were rinsed in a citric acid solution (pH 3.5) to neutralize any remaining caustic solution.

The tomatoes were drained and weighed.

The weight measured here (in kg) was divided by the initial weight (3 kg) to determine what percent of the weight was lost in the chemical action of the caustic and the aggressive action of the peeling equipment.

What does this tell me?

These results, shown in Table 9, answer the questions, “What is the peeling recovery?”, “How much is lost in the peeling process?”, or conversely, “How much remains after the peels are taken off?”.

There is some evidence that peeling recovery is also a good indicator of firmness.

Table 9. Percent (by weight) of fruit recovered after peeling but before sorting, 2005. Demonstrates how much remains after exposure to caustic and peeler.

Name	Peeling Recovery (%)
H 9423	84.19
H 9704 (A)	**84.19**
H 2501	83.31
HYPEEL 696 (B)	**83.00**
GEM 331	82.93
GEM 111	82.63
H 3402	82.62
H 8204	82.54
H 9706	82.32
TSH 08	82.18
TSH 22	81.90
TSH 16	81.83
H9997	81.76
TSH 04 (C)	**81.70**
H3202	81.61
OX 325	81.45
H 9035 N2	80.91
TSH 18	80.54
TSH 20	80.51
H 3702	80.45
TSH 12	80.33
O 8245	80.31
H 9661	80.30
FG00-117	79.65
N1477	79.55
H 9364	79.22
O 7983	79.11
GEM 818	79.11
FG01-158	78.78
N 1069	78.65
FG01-160	78.43
GEM 611	77.90
TSH 07	77.44
CC 337	77.17
FG00-115	75.93
N 1480E	75.45
Probability	0.0013
LSD	3.3662
CV	3.07%
Mean	80.553

Means followed by the same letter are significantly better than the check cultivar denoted by that same letter. Means are based on 3 samples. Each sample consisted of 3kg of fruit.

Step 6: After peeling, the tomatoes were sorted for colour, peels still attached, and blemishes.

The Colourmet spectrophotometer was used as a standard for acceptable colour.

After sorting the fruit that were good enough to be canned were weighed.

This weight was divided by the weight of peeled tomatoes. The resulting number, the Percent Cannable (Table 10), shows the percent of fruit that have no significant colour defects, and that peeled relatively easily.

What does this tell me?

This answers the following questions, “How much sorting will be required in the factory?”, “What percent of tomatoes will have to be put into the juice/sauce line after peeling?”, “How good do the tomatoes look after they’ve been peeled?”.

NOTE ON STEP 6:

The peeling process in this study was kept the same for all cultivars and it should be noted that the caustic concentration was 30% by weight for 2005.

In actual practice, processors will adjust the time, temperature and concentration of caustic, in the peeling procedure in order to efficiently remove the peels from most cultivars.

Table 10. Percent (by weight) of cannable tomatoes when sorted after peeling, 2005. Shows how little or how much sorting is required after peeling.

Name	% Cannable	
CC 337	99.61	C
H 9035 N2	98.94	
TSH 12	98.41	
TSH 07	98.13	
GEM 331	97.42	
TSH 20	97.40	
TSH 08	97.02	
H 9704 (A)	96.66	
H 9706	96.60	
TSH 22	95.98	
H 9997	95.89	
TSH 16	95.71	
GEM 611	95.42	
N 1477	94.75	
H 9423	94.31	
H 8204	94.12	
H 3702	93.17	
N 1480E	93.10	
GEM 111	92.86	
H 3202	92.80	
HYPEEL 696 (B)	92.71	
GEM 818	92.48	
FG01-158	92.37	
OX 325	92.00	
H3402	91.84	
TSH 04 (C)	91.47	
H 2501	91.12	
N 1069	91.02	
FG00-117	90.66	
O 7983	90.26	
TSH 18	89.51	
H 9661	88.81	
H 9364	88.42	
FG01-160	87.45	
FG00-115	85.77	
O 8245	85.31	
Probability	0.2560	
LSD	7.8687	
CV	6.20%	
Mean	93.319	

Means followed by the same letter are significantly better than the check cultivar denoted by that same letter. In this case no entries were better than the poorest check. Means are based on 3 samples. Each samples consisted of 3 kg of fruit.

Step 7: This step consists of making a calculation of % Canning Recovery with data already gathered.

In step 6 above, we looked at % Cannable by comparing the weight of the tomatoes after peeling, with the weight after sorting.

In this step the % Canning Recovery is calculated by comparing the weight of tomatoes before peeling with the weight after sorting.

What does this tell me?

These results answer the questions, “Of the initial weight of tomatoes received at the factory, what % will actually end up in the can?”, “If 100 tons of tomatoes are put in the flume, how many tons will end up in a can?”

The actual % canning recovery that processors get will probably be very different than what we report here.

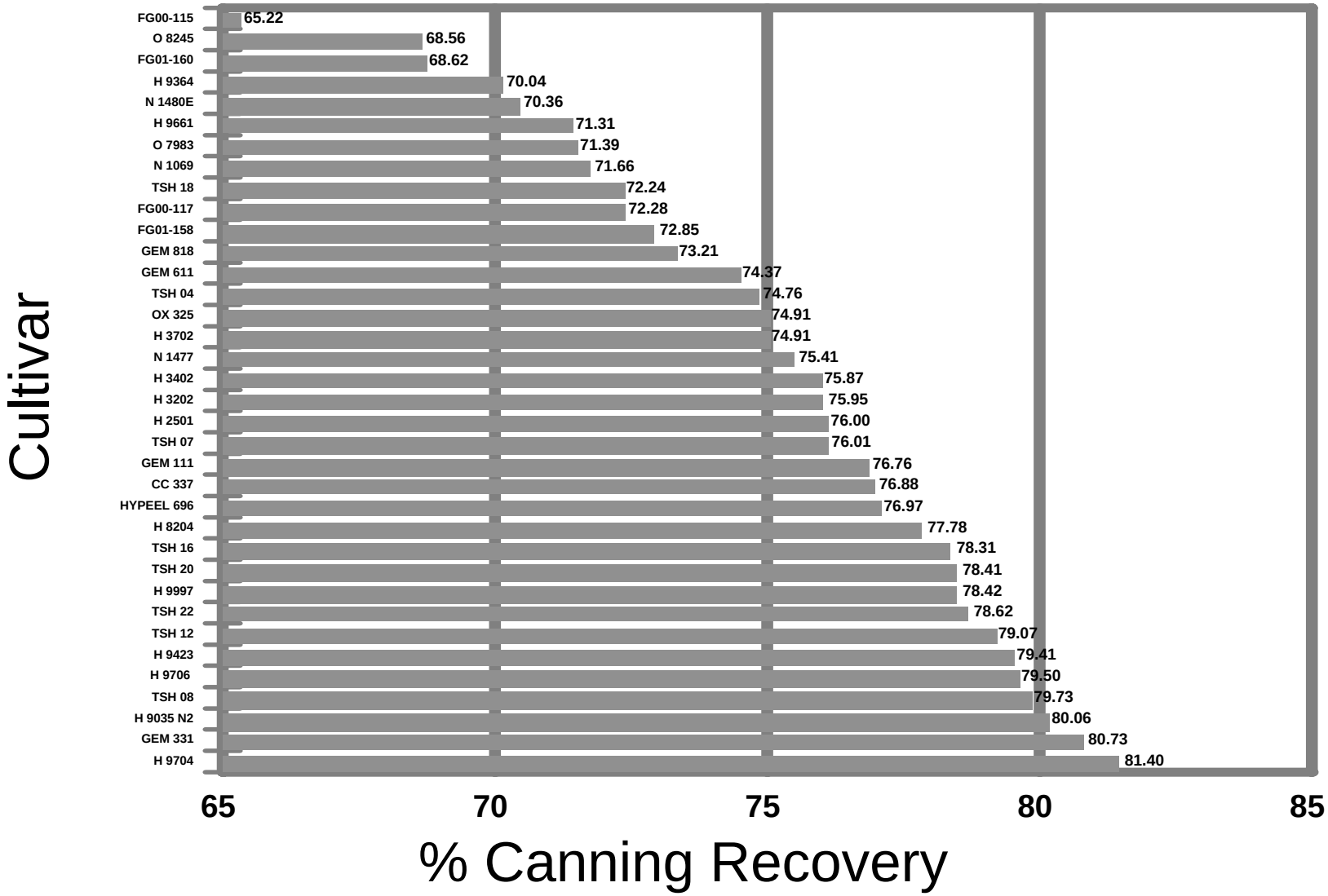
In this case it’s more important to look at the ranking of cultivars, rather than the actual numbers.

Table 11. Percent (by weight) canning recovery, 2005. Shows the percent fruit suitable for canning based on the initial weight sent through the peeling line.

Name	% Canning Recovery
H 9704 (A)	**81.40**
GEM 331	80.73
H 9035 N2	80.06
TSH 08	79.73
H 9706	79.50
H 9423	79.41
TSH 12	79.07
TSH 22	78.62
H 9997	78.42
TSH 20	78.41
TSH 16	78.31
H 8204	77.78
HYPEEL 696 (B)	**76.97**
CC 337	76.88
GEM 111	76.76
TSH 07	76.01
H 2501	76.00
H 3202	75.95
H 3402	75.87
N 1477	75.41
H 3702	74.91
OX 325	74.91
TSH 04 (C)	**74.76**
GEM 611	74.37
GEM 818	73.21
FG01-158	72.85
FG00-117	72.28
TSH 18	72.24
N 1069	71.66
O 7983	71.39
H 9661	71.31
N 1480E	70.36
H 9364	70.04
FG01-160	68.62
O 8245	68.56
FG00-115	65.22
Probability	0.1061
LSD	7.6998
CV	7.52%
Mean	75.220

Means are based on 3 samples. Each sample consisted of 3 kg of fruit.

Percent Canning Recovery, 2005



Quality Evaluations

When yield was evaluated in the field, a sample of tomatoes were taken to the pilot plant for handling and peeling evaluations. Part of this same sample was used for juice quality evaluations.

Step 8: The tomatoes for quality evaluations were washed and dried and cut in half from end to end.

One half of each tomato was blended, under vacuum, for 40 seconds.

The other half of each tomato went into a covered pyrex dish for microwave heating (to 95 °C for 15 sec) in order to deactivate the pectinase enzyme.

Step 9: Juice from the blended sample was collected through a screen to remove seeds.

Agtron colour, pH , Soluble Solids (°Brix) and Total Solids (on an AVC 80) were measured.

What does this tell me?

The lower the number for Agtron colour, the better the red colour in the juice.

A pH value of 4.3 is considered the threshold for food safety. If the pH is higher than this, there may be concerns about can spoilage unless more acid is added to the can.

Soluble solids were measured on a Palette PR101 digital refractometer. Soluble solids are important in the manufacture of paste since paste is bought and sold on the basis of the solids content. If the soluble solids content is low, then it is more expensive to evaporate more water to get the required solids content.

The total solids provide a measure of all of the solids (excluding the seeds and skin) - both the soluble solids and the water insoluble solids.

Step 10: Microwaved tomato halves were run through a finisher (0.033 mesh) and the juice was cooled to 20 +/- 2 °C.

Consistency was estimated using this juice (50 ml for 30 sec) on a Bostwick consistometer.

What does this tell me?

A low Bostwick reading is important. It indicates that paste made from these tomatoes will be relatively “thick”. In some tomato products sugar can be added but, by definition, no starch or other thickeners may be added. All of the “thickness” of the end product must come from the tomato.

Table 12. Results of quality evaluations on juice samples, 2005.

Name	Agtron	Soluble Solids	pH	Modified Boswick (cm)
CC 337	17.33	5.10	4.33 BC	6.83 A
FG00-115	18.33	4.73	4.40 ABC	7.43 A C
FG00-117	16.00	5.20	4.36 BC	7.20 A
FG01-158	16.67	5.70	4.37 ABC	6.67
FG01-160	18.33	5.27	4.39 ABC	7.33 A C
GEM 111	19.00	5.37	4.26	6.27
GEM 331	20.67 A	5.23	4.25	6.80
GEM 611	17.67	5.50	4.26	6.27
GEM 818	19.67	5.07	4.29	7.37 A C
H 2501	17.67	5.40	4.35 BC	6.00
H 3202	20.33	5.60	4.34 BC	7.10 A
H 3402	19.67	6.20 ABC	4.31	6.30
H 3702	19.00	5.37	4.23	6.87 A
H 8204	19.67	6.00 AB	4.25	4.67
H 9035 N2	20.00	5.03	4.28	6.33
H 9364	19.00	4.83	4.34 BC	7.43 A C
H 9423	19.00	4.90	4.25	6.33
H 9661	21.67 A C	4.63	4.31	6.17
H 9704 (A)	**18.00**	**5.03**	**4.31**	**5.63**
H 9706	20.67 A	4.77	4.37 ABC	6.33
H 9997	15.67	5.03	4.27	5.67
HYPEEL 696 (B)	**21.33 A**	**5.20**	**4.26**	**6.73**
N 1069	17.67	6.00 AB	4.24	6.40
N 1477	16.67	5.23	4.34 BC	6.43
N 1480E	15.67	5.63	4.38 ABC	7.50 A C
O 7983	20.00	5.27	4.25	6.93 A
O 8245	21.33 A	4.80	4.28	7.30 A C
OX 325	20.67 A	5.30	4.34 BC	7.43 A C
TSH 04 (C)	**19.00**	**5.33**	**4.27**	**6.33**
TSH 07	17.67	5.23	4.38 ABC	7.57 A C
TSH 08	20.00	5.50	4.30	6.40
TSH 12	17.67	5.50	4.36 BC	7.20 A
TSH 16	15.00	5.57	4.34 BC	6.73
TSH 18	17.67	5.50	4.23	5.73
TSH 20	15.00	5.33	4.37 ABC	7.10 A
TSH 22	19.67	6.03 ABC	4.37 ABC	6.83 A
Probability	0.0002	0.0387	0.0000	0.0001
LSD	2.5838	0.6912	0.0565	0.9012
CV	10.22%	9.55%	0.96%	9.95%
Mean	18.583	5.317	4.312	6.656

Means followed by the same letter are significantly better than the check cultivar denoted by that same letter for Soluble solids only. The opposite of this is true for Agtron, pH, and Modified Bostwick since lower numbers are better for these measurements. Please see text for explanation of the modified bostwick measurement. Means are based on 3 samples.

Summary

These summary statements are presented in this format with the understanding that end users of cultivars may have preferences for a particular cultivar source based on general characteristics of material released.

Processors and growers are encouraged to evaluate material, on a relatively small scale, from a variety of programs in order to find the cultivars that best meet their particular management methods and ultimate needs.

It should be noted that these conclusions are based primarily on the results from the 2005 season. Having acknowledged this limitation, the following summary comments are provided.

(For each source, the entries are listed in order of observed maturity in 2005.)

GEM Seeds: GEM611, GEM818, GEM331, GEM111
GEM611 - good yield combined with early maturity, good peeled colour, similar to last year
GEM818 - good harvestable yield similar to last year
GEM331 - similar to last year: very high harvestable yield, and excellent peeled colour
GEM111 - good yield

Heinz Seed: H9364, H9661, H9997, H9035 N2, H3202, H3402, H3702, H9423, H9706, H9704, H8204, H2501
H9364 - good earliness combined with high yield
H9997 - large fruit, good yield, very good consistency
H9035 N2 - very firm, excellent peeled colour and canning recover
H3202 - similar to last year: good red ripe yield, very good SS.
H3402 - good consistency, excellent SS similar to last year
H3702 - very high marketable yield
H9706 - excellent yield, very good canning recover, consistent performance for these traits over many years
H9704 - very good yields, excellent canning recovery, consistent performer
H8204 - very firm fruit, excellent consistency, and SS
H2501 - high yield, large fruit

Kraft: N1069, CC337, N1480E, N1477
N1069 - early maturity, very good SS similar to last year.
CC337 - similar to last year - very good peeled colour
N1480E - very uniform fruit, very good SS
N1477 - very good firmness similar to last year

OARDC-OSU: O7983, FG00-117, FG00-115, FG01-158, O8245, OX325, FG01-160
O7983 - early season reference for comparison of performance over many years
FG00-117 - very good yields
FG00-115 - very good yield similar to last year
FG01-158 - very good yield
OX325 - very good yield

Seminis: Hypeel 696
Hypeel 696 - mid/late season check, consistent performer for good yield

Tomato Solutions: TSH18, TSH04, TSH16, TSH12, TSH07, TSH22, TSH08, TSH20
TSH 18 - very early maturity, good soluble solids, very good consistency
TSH04 - good yield, early maturity, consistent performer over years
TSH 16 - very good peeled colour, and SS
TSH 12 - excellent peeled colour, very good canning recovery, good SS
TSH07 - good peeled quality over many years
TSH22 - very firm, very good SS
TSH08 - consistently good firmness and peeled colour for last 5 years
TSH20 - consistently good firmness, excellent peeled colour

THE FINAL WORD . . .

SO WHAT SHOULD I EVALUATE OR GROW NEXT YEAR?

With 36 entries in the trial and many traits that influence success with a cultivar, this can be a difficult question.

The best way to answer this question is to run your own, larger scale, trials. There are several ways, however, to decide which varieties you should include in your trials. Here is a very simple method (there may be other preferable ways):

First, decide which traits are your highest priorities. Then go to the relevant tables in this report and assign a score of 1 to every variety that is equal to, or better than the average for that trait. Then tally the results and choose those with top scores.

For example, if we choose a combination of field and processing traits: 'rot' (a lower number is better), 'yield potential', 'red ripe yield', 'cracking (a low number indicates firm fruit), '% peeling recovery', '% cannable', 'Agtron colour', and 'soluble solids', then the following cultivars (in order of maturity) tend to be very high scoring (5 or more points out of 8):

TSH04	GEM611	TSH 16	H9364	GEM 818	TSH12
TSH08	TSH22	GEM331	GEM111	FG00-117	FG00-115
H9997	H9035 N2	H3202	TSH20	FG01-158	H3402
H9423	H9704	H9706	OX325	H8204	H2501

From this example you can see that in 2005 many cultivars performed well.

You can try this method yourself by picking and choosing which traits are most important to you and finding which entries will get a perfect score, or at least the highest score.

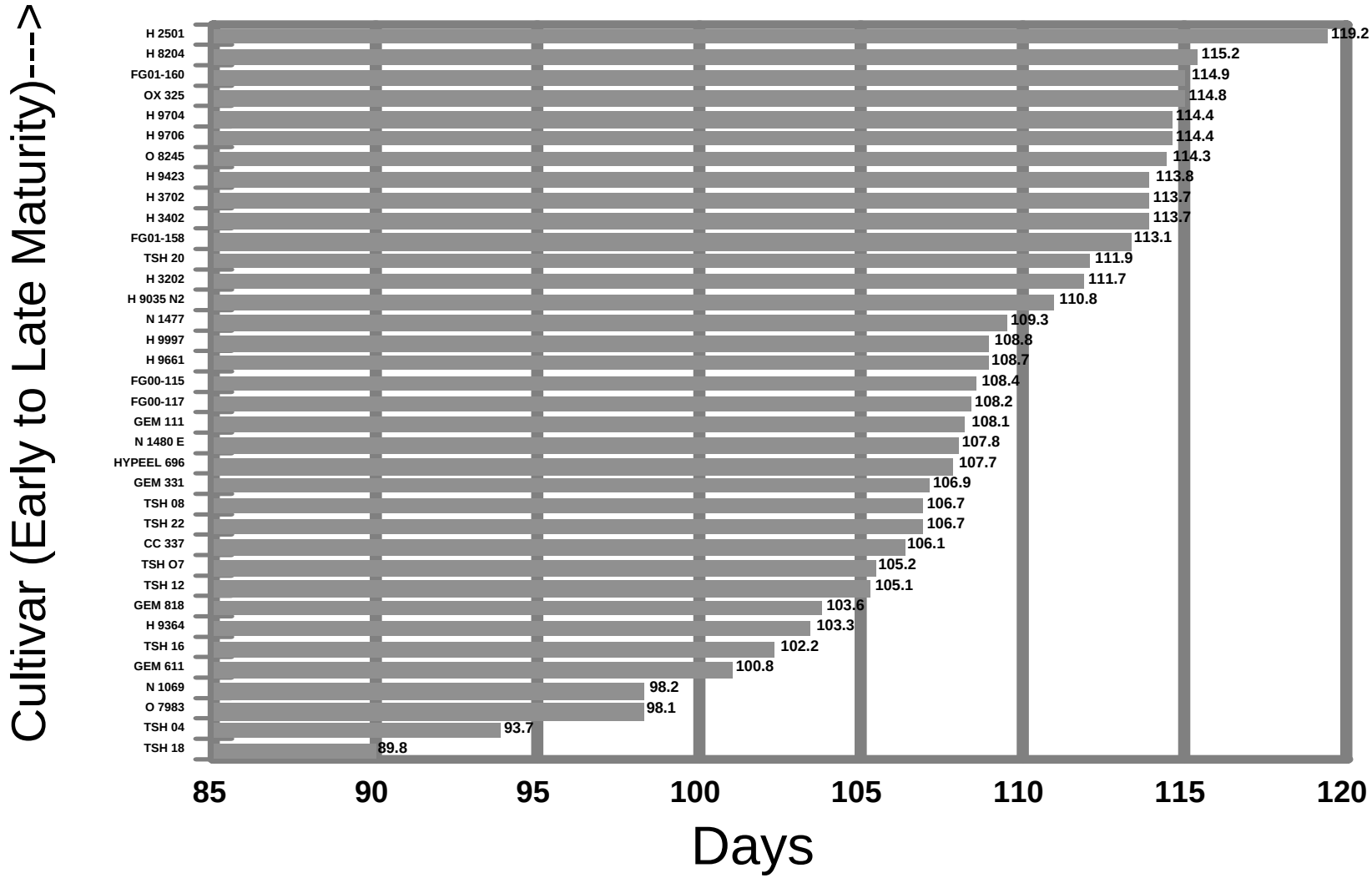
Please note that this simple method provides only a guide for picking cultivars for trial.

This method is not a substitute for proper, on-site trials and evaluations of varieties under your specific management system, soils and microclimate.

Appendix 1. Maturity ranking 2005, based on results from all three yield sites (Dresden, Leamington and Ridgetown).

Name	Days to Harvest
TSH 18	89.8
TSH 04 (C)	**93.7**
O 7983	98.1
N 1069	98.2
GEM 611	100.8
TSH 16	102.2
H 9364	103.3
GEM 818	103.6
TSH 12	105.1
TSH O7	105.2
CC 337	106.1
TSH 22	106.7
TSH 08	106.7
GEM 331	106.9
HYPEEL 696 (B)	**107.7**
N 1480 E	107.8
GEM 111	108.1
FG00-117	108.2
FG00-115	108.4
H 9661	108.7
H 9997	108.8
N 1477	109.3
H 9035 N2	110.8
H 3202	111.7
TSH 20	111.9
FG01-158	113.1
H 3402	113.7
H 3702	113.7
H 9423	113.8
O 8245	114.3
H 9706	114.4
H 9704 (A)	**114.4**
OX 325	114.8
FG01-160	114.9
H 8204	115.2
H 2501	119.2

Maturity Index 2005



Appendix 2 - Visual Ratings on Peeled Tomatoes

The table on the next page shows the average visual rating given to the peeled tomato samples.

This rating is based on a general impression of peeled colour, wholeness, uniformity of colour and freedom from peels, defects, disease and the overall appeal of the sample.

The scale ranged from 1 (bad) to 5 (excellent).

This is another case where the ranking is more important than the actual score received.

Rating in this way provides a means to communicate the overall impression of a cultivar that is very difficult or time consuming to measure or describe in any other way.

Appendix 2. Visual appearance rating on peeled fruit, 2005. Rating scale of 1 (poor) to 5 (excellent). See text for explanation.

Name	Rating
TSH 20	5.00
H 9423	5.00
H 9704	**4.83**
TSH 22	4.83
N 1477	4.67
H 9035 N2	4.67
CC 337	4.67
H 3402	4.67
H 3702	4.50
TSH 04	**4.50**
TSH 18	4.50
GEM 111	4.50
H 2501	4.50
H 8204	4.50
TSH 12	4.33
GEM 818	4.33
TSH 07	4.33
TSH 16	4.33
H 9997	4.33
OX 325	4.33
GEM 331	4.33
H 3202	4.17
GEM 611	4.17
TSH 08	4.17
N 1480E	4.17
FG01-158	4.17
FG00-117	4.00
FG01-160	4.00
H 9364	4.00
HYPEEL 696	**4.00**
N 1069	3.83
H 9661	3.67
FG00-115	3.67
O 8245	3.33
H 9706	3.17
O 7983	3.17
Mean rating	4.259

Means are based on 3 samples.