caribbean
food
crops society

Eighteen
Annual Meeting
August 22 to 28th 1982
Dover Convention Centre
BARBADOS

Vol. XVIII

PRELIMINARY EVALUATION OF 180 TOMATO CULTIVARS IN THE MONAGAS STATE OF VENEZUELA

Juan C. Ohep and Jesús E. Macadán[1/]

ABSTRACT

Two unreplicated tests were established to evaluate the performance of 180 tomato cultivars. The first test included 95 cultivars grown during the August-December 1981 season. Prior to the first harvest, all the entries were rated for the severity of Bacterial Spot Early Blight, Septoria Leaf Spot and Tobacco Mosaic Virus. In each of the six harvests, the fruits were separated in small and commercial and then counted and weighed. Yield of commercial fruits above 25 mt/ha were observed in the cultivars: Arizona, AT 70/24, CL-143-0-1-0-3, CL-1095, Campbell 1327, Campbell 34, Castlehy 1034, Castlex 489 G, Early Castlepeel, Harvester, Hessoline, Mexico, Nuova Super Roma, MH 134 E, Peto 98, Porfidio, Romanova, Rossol and Royal Chico. The second test was established from September 1981 to February 1982. It included 85 cultivars and only the yield data were recorded. Yields above 25 mt/ha were obtained with the cultivars Burgis, Castlex 489 G, Enterpriser, Floradade, Floradel, Hayslip, Piacenza, T2 IMP VF, Triumph, the lines XC-8104, CX-8105, E-6209, E 9209 from Campbell Institute, L-495 and L 550 from Louisiana State University and three crosses from Auburn University named GL-01, GL-03 and GL-04. Data of disease indexes on the first test and fruit firmness in both tests are presented.

INTRODUCTION

Tomatoes are the main vegetable crop grown in Venezuela. They are used directly in the diet and as an industrial commodity. In the Monagas state, 260 ha were harvested during 1980, which represented less than 5% of the area harvested nationally. The production is located along the valleys of the Guarapiche, Aragua and Colorado rivers. Small areas are grown in other parts of the state.

The cultivars used by the growers include Napoli VF, Río Grande, Roma VF, Manalucie, Walter, VF 198 and a local selection of indeterminate growth and fruit shape varying from pear to oblate. Every year new varieties are sold by the seed distributors, without studying their adaptation to local conditions.

The damage caused by diseases, mainly Early Blight and Tobacco Mosaic Virus, limits the yield potential of the cultivars grown. Early Blight

---

1/ Fondo Nacional de Investigaciones Agropecuarias. Estación Experimental Maturín, Apartado 184, Maturín 6201 A, Venezuela.

can be managed with the use of fungicides if the climatic conditions are not severe; when TMV occurs it can cause a great yield reduction.

The evaluation of cultivars has been the most studied aspect of the tomato in the Monagas state. Until 1980 around 50 cultivars have been introduced and tested by the Universidad de Oriente and the Centro de Investigaciones Agropecuarias. In an experiment with seven varieties, fruit yield between 28 and 38 mt/ha was obtained with Homestead FM 61, Chico III and Roforto VFN (Ohep, 1977). In another locality, Ortega (1981) and Rodríguez (1981) obtained the highest total yields with the cultivars Floralou (11,4 mt/ha) and Walter, respectively, while greater early yields were observed with Rio Grande and VF 198. The results of other experiments, indicate that with the use of proper plant density and irrigation practices, the yields of Roma VFN and Royal Ace can be as high as 35 and 45 mt/ha, respectively (Mata, 1977 and Rodulfo, 1977).

The characteristics frequently studied in the cultivar evaluation tests, were plant growth, earliness and fruit yield. In 1981, a project was started in the Guarapiche valley which also considered the severity of diseases and fruit quality (Ohep, 1977). This paper includes the results obtained in two tests started in 1981.

MATERIALS AND METHODS

First Experiment

The test was conducted during the August-December period. Ninety five cultivars from France, Italy, Nigeria, Taiwan and the United States were included (Table 7). Twenty five seedlings of each cultivar were transplanted in a 10 m row.

Prior to the first harvest, each entry was rated for the severity of Early Blight (EB), Tobacco Mosaic Virus (TMV), Bacterial Spot (BS), and Septoria Leaf Spot (SLS). Five plants of each plot were rated using the same scale for EB and SLS and different ones for BS and TMV (tables 3 and 7). The fruits were harvested in the mature green to red stage six times during one month. The culls were counted and discarded, and the rest were separated in commercial and small, then counted and weighed. A sample of five red fruits was taken from the third and fourth harvests for the firmness test. Each fruit was hand pressed and assigned a value according to the following scale: 1=very soft (cracked), 2=soft (deformed without cracking), 3=medium (slight deformation), 4=firm (no deformation) and 5=very firm (no deformation even under greater pressure). The fruits were also classified by their shape (Figure 1) and the plant growth habit recorded (indeterminate and determinate). A correlation analysis was carried out with the data of commercial fruit yield and the disease indexes.

Second Experiment

This was established in another plot of the field used in the first experiment. Eighty five cultivars introduced from Canada, France, Hawaii, Italy, The Netherlands, and the United States were included (Table 8). The procedure followed was the same described for the other experiment, except that the disease rating was not carried out.

RESULTS AND DISCUSSION

There is a great variation among the tomato genotypes available, due to its early world distribution and the breeding work carried out worldwide. This was observed in the results obtained with the 180 cultivars tested.

Commercial fruit yield ranged from 5.491 to 32.000 kg/ha in the first test and from 11.250 to 32.813 in the second one (Tables 7 and 8). Thirty seven cultivars yielded above 25 mt/ha (Tables 1 and 5) and these are selected for further evaluation. This group includes cultivars originally bred for the fresh market and others for processing. They can be all grown for the fresh market, since in Venezuela both types of tomatoes are consumed directly. Only those entries with small fruits (Harvester, Peto 98, Piacenza and the CL lines from Taiwan) are not suitable for the fresh market. Since no processing quality analyses were carried out in these tests, those cultivars developed for processing and with high yield observed, can be considered for this purpose. All the entries with commercial yield above 25 mt/ha, had not been tested or grown commercially in the Monagas state.

Tomatoes are marketed in Venezuela packed in wood boxes of 40 kg capacity. Fruit loss up to 25% has been recorded (Linarez, 1979), mainly because of fruit softness. For this reason fruit firmness was rated among the entries. Forty eight cultivars had fruits medium to very firm (Table 2 and 6). Some of these cultivars were also included in the group of high commercial yield. The use of cultivars with those two characteristics, may allow a greater offer to the market without increasing the production area. More tomatoes can be produced and less are lost in transit to the market.

During the growing season tomatoes are frequently affected by several diseases. In the tests, EB and TMV occurred in greater extent than BS and SLS. Fusarium Wilt and Southern Blight appeared in few plants. In the first experiment 11 cultivars had low values of TMV index and 17 of Early Blight (Table 3). A negative significant correlation coefficient between TMV index and commercial fruit yield suggested that low yield is associated with the presence of the disease. Observations made during three years by the authors indicate that if TMV symptoms appear before fruit set, yield is greatly reduced. The use of TMV tolerant cultivars may overcome this problem.

The results obtained in these tests indicate the possibility of obtaining high fruit yield with cultivars not previously used in the Monagas state. Further evaluation of the outstanding cultivars will continue during both the dry and the rainy seasons in order to study their performance under the growing conditions of the Monagas state.

LITERATURE CITED

Linarez, L., O.E. Aspectos económicos sobre la producción y comercialización del tomate (Lycopersicon esculentum, Mill.) en el Estado Monagas. Tesis de Grado. Universidad de Oriente, Escuela de Agronomía, Jusepín. 1979. 86 p.

Mata, V., C.V. Efecto de tres frecuencias de riego en cuatro cultivares de tomate (Lycopersicon esculentum, Mill.) en el valle del río Guarapiche. Tesis de Grado. Universidad de Oriente, Escuela de Agronomía. Jusepín. 1977. 59 p.

Ohep G., J.C. Subprograma Hortalizas. Informe Anual 1977. Centro de Investigaciones Agropecuarias de la Región Nororiental. Maturín. 1977. 13 p.

Ohep G., J.C. Proyecto de Investigación: Introducción y selección de cultivares de tomate para el valle del río Guarapiche. Centro de Investigaciones Agropecuarias de la Región Nororiental. Maturín. 1981. 17 p.

Ortega L., M. Introducción de once cultivares de tomate (Lycopersicon esculentum, Mill.) en la sabana de Jusepín, Estado Monagas. Tesis de Grado. Universidad de Oriente, Escuela de Agronomía, Jusepín. 1981. 49 p.

Rodríguez, C. Introducción de 18 cultivares de tomate en Jusepín. Tesis de Grado. Universidad de Oriente, Escuela de Agronomía. Jusepín. 1981. 49 p.

Rodulfo S., F.R. Efecto de la distancia de siembra en cuatro cultivares de tomate. Tesis de Grado. Universidad de Oriente. 1977. 48 p.

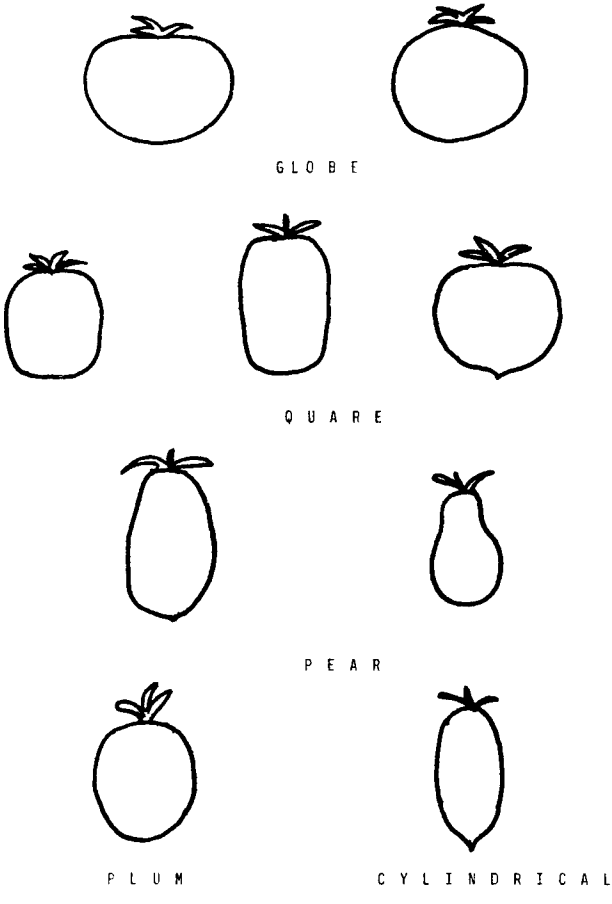

FIGURE 1. TOMATO FRUIT SHAPES CONSIDERED IN THE CULTIVAR TESTS OF 1981.

TABLE 1. CHARACTERISTICS OF THE HIGH YIELDING TOMATO CULTIVARS INCLUDED IN THE FIRST TEST OF 1981.

NAME	COMMERCIAL		FRUITS		
	YIELD (Kg/ha)	AVERAGE Wt. (g)	FIRMESS	SHAPE	PLANT GROWTH
CL 1094 - F_5 - 57	28.304	68	1,2	GLOBE	D
NUOVA SUPER ROMA	30.113	46	3,0	PEAR	D
ARIZONA	28.717	55	4,0	PLUM	D
MEXICO	30.139	62	3,4	PLUM	D
PORFIDO	25.909	54	3,0	PLUM	D
HESSOLINE	26.111	45	1,4	PEAR	D
ROSSOL	31.213	49	1,8	PEAR	D
ROMANOVA	27.619	52	2,4	PEAR	D
CASTLEHY 1034	25.789	121	1,6	GLOBE	I
CASTLEX 489 G	27.446	94	3,4	SQUARE	D
HARVESTER	31.250	42	2,0	PLUM	D
CAMPBELL 1327	27.625	107	1,0	GLOBE	D
PETO 98	25.938	48	3,8	PLUM	D
CAMPBELL 34	32.000	82	1,8	SQUARE	D
EARLY CASTLEPEEL	27.005	61	3,8	PLUM	D

TABLE 1. CONTINUATION .....

MH VF 134 E	27.697	54	3,8	PLUM	
AT 70 124	25.921	49	2,0	PEAR	
ROYAL CHICO	25.350	49	3,0	PEAR	
CL - 143 - 0 - 10 - 3	25.156	36	1,0	PLUM	

TABLE 2. TOMATO CULTIVARS WITH HIGH VALUES OF FRUIT FIRMESS OBTAINED IN THE FIRST EXPERIMENT OF 1981.

NAME	FIRMESS *	NAME	FIRMESS *
NUOVA SUPER ROMA	3,0	ROYAL CHICO	3,0
TODO ROYO	3,6	C 38	5,0
TANZIMECH	3,8	CAL J	3,0
ARIZONA	4,0	PETOGRO	4,0
MEXICO	3,4	PETOMECH	3,8
ROYAL BALL	3,6	CASTLEMART	3,4
AT 30	3,2	CATLEHY 1017	3,4
PORFIDO	3,0	CAMPBELL 37A	3,4
INTERMECH	3,8	CASTLEX 489 G	3,4
MERILAND	3,4	CASTLESTAR E 77	3,2
VF - 198	3,8	CASTLELONG	4,2
RIO GRANDE	3,8	PETO 98	3,8
VF - 134	4,4	EARLY CASTLEPEEL	3,8
KS - 5715	3,6	MH VF 134 E	3,8
TRIUMPH	3,6	VC 82 B	3,6
LAURANO 70	3,8	MH VF 6203	3,2
BULL	4,0	MH VF 3203	3,4

*
1= VERY SOFT , 2= SOFT , 3= MEDIUM , 4= FIRM , 5= VERY FIRM

[illegible] TOMATO VARIETIES WITH LOW SEVERITY INDEXES OF TOBACCO MOSAIC VIRUS AND EARLY BLIGHT [illegible] EXPERIMENTS OF 1971.

NAME	TMV INDEX *	NAME	EE INDEX **
CL 103 - 2 - 4	1,8	CL 1561-6-0-22-4	1,8
CL 1561-6-0-22-4	1,8	(387)	2,0
(387)	1,8	INDIANA 73	2,0
ROMA GIGANTE	1,8	ROYAL BALL	2,0
ROMANOVA	1,4	NEVADA	2,0
[illegible] 38	1,8	SIRIO	1,8
CASTLEHY 1054	2,0	ROMA GIGANTE	2,0
CASTLEHY 105	1,8	HEINZ 1370	1,8
HARVESTER	1,6	UC 105 J	1,6
PELICAN	1,8	CASTLEHY 1017	2,0
EARLY CASTLEPEEL	1,8	**CASTELHY 1050**	2,0
		CAMPBELL 37 A	2,0
		HARVESTER	1,6
		SUNRAY	2,0
		PELICAN	2,0
		EARLY CASTLEPEEL	1,8

* TMV = TOBACCO MOSAIC VIRUS. 0= NO SYMPTOMS OBSERVED. 1= TOP 1/3 OF THE PLANT WITH SYMPTOMS, 2=TOP 1/3 AND MEDIUM 1/3 OF THE PLANT WITH SYMPTOMS , 3= ALL PLANT WITH SYMPTOMS AND 4= ALL PLANT WITH SYMPTOMS AND STUNTED.

** EE = EARLY BLIGHT. 1= NO SYMPTOMS OBSERVED, 2= 1 TO 5 % OF FOLIAR AREA WITH LESIONS. 3= 5 TO 25 % OF FOLIAR AREA WITH LESIONS, 4= 25 to 50 % OF FOLIAR AREA WITH SYMPTOMS AND 5= MORE THAN 50 % OF FOLIAR AREA WITH SYMPTOMS.

Table 4.--Regression Coefficients Obtained Between the Yield of Commercial Fruits (YCF) and the Severity Indexes of Tobacco Mosaic Virus, Early Blight, Bacterial Spot and Septoria Lead Spot

	TMV	E B	B S	SLS
YCF	-0,2755	-0,0003	0,0226	-0,1621

Table value for N = 95 and p 0,05 = 0,1946.

TABLE 5. CHARACTERISTICS OF THE HIGH YIELDING TOMATO CULTIVARS INCLUDED IN THE SECOND TEST OF 1981.

NAME	COMERCIAL YIELD (Kg/ha)	COMERCIAL AVERAGE Wt. (g)	FRUITS FIRMESS	FRUITS SHAPE	PLANT GROWTH
FLORADEL	26.250	117	1,8	GLOBE	I
T2 IMP VF	30.724	70	3,8	SQUARE	D
BURGIS	27.188	104	2,0	GLOBE	D
HAYSLIP	30.714	116	2,2	GLOBE	D
ENTERPRISER	33.824	88	1,2	GLOBE	D
PIACENZA	25.875	32	2,2	CYLIND.	D
GL 01	28.385	115	2,6	GLOBE	I
GL 03	32.813	97	1,6	GLOBE	D
GL 04	29.000	109	2,2	GLOBE	I
L - 495	25.197	73	1,8	PEAR	I
L - 550	28.385	94	2,4	GLOBE	D
CX - 8104	31.625	85	2,8	SQUARE	D
CX - 0105	29.963	68	2,6	SQUARE	D
E - 9209	26.364	63	4,2	SQUARE	D
E - 6209	32.813	64	3,8	SQUARE	D
CASTLEX 489 G	27.000	88	4,0	SQUARE	D
TRIUMPH	33.750	69	3,2	PLUM	

TABLE 6. TOMATO CULTIVARS WITH HIGH VALUES OF FRUIT FIRMESS OBTAINED IN THE SECOND EXPERIMENT OF 1981.

NAME	FIRMESS *	NAME	FIRMESS *
MACISTE	3,6	E - 6203	3,8
VF 198	3,4	GS - 22 - F_1	3,8
T 2 IMP VF	3,8	FLORADADE	3,8
CX - 806	3,2	KEWALO	3,0
CX - 8101	3,4	BOONYCE	3,4
CX - 8102	4,2	OHIO 7880	3,8
CX - 80 11	3,8	TRIUMPH	3,2

* 1= VERY SOFT, 2= SOFT, 3= MEDIUM, 4= FIRM and 5= VERY FIRM

TABLE 7. CHARACTERISTICS OF THE TOMATO CULTIVARS EVALUATED IN THE FIRST EXPERIMENT OF 1981.

NAME	fruit yield (kg/ha) comercial	small	total	average Wt. (g)	fruit firmess[z]	disease TMV[y]	EB[x]	severity indexes BS[w]	SLS[v]	fruit shape[u]		
CL-9-0-01	11.920	3.348	15.268	59	1,0	3,6	4,4	2,2	1,0	GI		
CL-143-0-10-3	25.156	6.520	31.676	36	1,0	2,4	2,6	2,2	1,2	GI		
CL-123-2-4	15.700	2.675	18.375	56	1,6	1,8	2,4	1,2	1,0	GI		
CL-1561-6-0-22-4	17.074	3.381	20.455	45	1,0	1,6	1,8	3,0	3,2	GI		
CL-1591-5-0-1-6	23.500	2.200	25.700	62	1,0	3,0	2,8	1,0	2,0	GL		
CL-1591-5-0-1-7	13.450	2.700	16.150	61	3,0	2,8	2,0	1,2	1,2	GL		
CL-1094-F_5-57	28.304	2.946	31.252	62	1,2	3,4	3,4	1,0	1,6	GI		
CL-1094-F_5-88	9.701	2.120	11.821	72	1,2	3,0	3,6	1,6	2,0	GI		
(1)	15.435	4.565	20.000	48	1,0	3,0	4,2	2,0	1,2	GL		
(387)	21.809	2.270	24.079	60	1,0	1,6	2,0	1,2	1,0	GI		
AT 70/24	25.921	3.224	29.145	49	2,0	2,2	2,4	1,4	1,0	P		
INDIANA 73	21.845	2.381	24.226	49	2,8	2,6	2,0	1,4	1,0	P		
NUOVA SUPER ROMA	30.313	1.761	31.874	46	3,0	3,0	4,0	1,6	1,8	P		
NUOVA PERLITA	13.157	2.533	15.690	62	2,2	2,6	2,8	1,0	1,0	P		
SUPER CALIFORNIA	20.925	2.175	23.100	46	1,8	3,8	4,8	2,2	4,8	P		
TODO ROYO	20.069	1.875	21.994	77	3,6	2,0	2,4	1,4	1,0	S		
CLINTON	15.462	1.984	17.446	67	2,8	2,6	3,0	1,4	1,0	S		
TANZIMECH	22.935	3.125	26.060	52	3,8	3,4	4,4	2,0	1,0	PI		
ARIZONA	28.717	2.895	31.612	55	4,0	3,2	4,0	1,8	1,0	PL		
MEXICO	30.139	2.083	32.222	62	3,4	2,4	2,6	1,0	2,4	PL		
ROYAL BALL	11.657	469	12.126	100	3,6	2,2	2,0	1,0	1,8	GL		

TABLE 7. CONTINUATION .....

ROMANOVA	27.619	2.083	29.702	52	2,4	1,4	2,4	1,2	2,0	P	D	9
ERIDIANO	11.099	970	12.069	46	2,2	3,8	3,4	1,0	3,8	P	D	9
C 38	9.954	1.643	11.597	55	5,0	1,8	3,0	2,2	1,6	PL	D	9
CAL J	18.392	3.170	21.562	54	3,0	3,6	4,4	1,8	1,0	PL	D	10
PETOGRO	19.674	1.276	20.950	54	4,0	2,2	2,6	1,6	1,0	PL	D	10
VENTURA	19.266	3.533	22.799	50	2,8	3,0	3,2	3,0	1,2	P	D	10
PETOMECH	11.994	2.470	14.464	57	3,8	3,8	3,4	1,6	1,0	PL	D	10
EUROPEEL	24.042	3.083	27.125	44	2,0	3,2	2,4	1,4	1,2	P	D	10
CASTLEHY 1034	25.789	853	26.664	121	1,6	2,0	2,4	1,4	1,0	GL	I	11
CASTLEHY 105	23.375	1.020	24.395	131	2,2	1,6	2.2	1,2	1,0	GL	I	11
CASTLEMART	9.910	179	10.089	88	3,4	2,8	2,6	1,0	1,6	CO	D	11
CASTLEHY 1017	24.716	2.784	27,500	90	3,4	2,6	2,0	1,2	2,6	CO	I	11
CASTLEHY 1204	13.690	774	14.464	49	2,4	3,0	2,8	1,0	1,6	CL	D	11
CASTLEHY 1050	21.603	1.250	22.853	120	2,2	2,2	2,0	1,8	1,0	P	I	11
CASTLEHY 1035	19.531	2.760	22.291	136	1,6	2,0	1,8	1,4	1,0	GL	D	11
CAMPBELL 37A	14.880	2.163	17.053	63	3,4	2,6	2,0	1,8	1,4	S	D	11
CASTLEX 489-G	27.446	1.461	28.907	94	3,4	3,0	2,8	1,2	1,6	S	D	11
CASTLE STAR E-77	20.347	1.701	22.048	61	3,2	2,6	2,4	1,2	1,4	CL	D	11
CASTLE LONG	9.275	1.025	10.300	54	4,2	3,8	3,2	1,2	2,0	CL	D	11
FLORADADE	9.643	1.488	11.131	109	1,6	2,0	2,4	1,4	1,0	GL	D	11
RONITA	17.625	1.187	18.812	50	1,6	3,8	4,4	1,0	3,8	P	D	12
LA BONITA	24.700	2.407	27.107	46	2,4	3,2	2,6	1,8	2,0	PL	D	12
HARVESTER	31.250	2.796	34.046	42	2,0	1,6	1,8	1,0	1,0	P	D	12
PONDEROSA	5.491	179	5.070	171	1,2	3,2	2,6	1,4	1,0	GL	I	13
RUTGERS 885-39 VF	22.600	1.458	24.058	100	1,2	3,0	2,6	1,2	1,4	GL	I	13
CAMPBELL 1327	27.625	1.937	29.562	107	1,0	3,4	2,8	1,2	1,0	GL	D	13

TABLE 7. CONTINUATION .....

NEVADA	22.418	2.717	25.135	53	2,2	2,2	2,0	1,8	1,2	S	D	2
AT 30	13.566	2.206	15.772	60	3,2	3,2	2,8	1,4	1,0	S	D	2
VESUVIO	17.685	2.639	16.205	33	1,8	3,0	4,2	2,0	1,0	P	D	2
SIRIO	16.847	2.663	19.510	38	2,2	2,6	1,8	1,0	1,2	P	D	2
PORFIDO	25.909	2.045	27.954	54	3,0	3,6	4,4	1,0	4,8	S	D	2
MAREMMA	18.462	1.706	20.168	55	2,6	3,0	4,6	2,2	1,0	P	D	2
INTERMECH	18,750	3.320	22.070	60	3,8	3,2	3,0	1,4	1,0	PL	D	2
MERILAND	16.920	1.211	18.131	51	3.4	2.8	2,4	1,0	1,4	S	D	2
CALIFORNIA	12.593	1.969	14.562	51	1,6	3,4	3,6	1,0	1,8	P	D	2
ROMA GIGANTE	23.206	951	24.157	55	1,2	1,8	2,0	1,6	1,0	P	D	3
ROMA V. F.	23.571	1.577	25.148	55	2,2	3,2	2,6	2,2	2,6	P	D	4
HEINZ 1370	21.730	2.019	3.749	110	1,4	2,2	1,8	1,2	1,0	GL	D	4
VF - 198	13.317	2.692	16.009	57	3,8	3,8	3,0	1,8	1,0	S	D	5
RIO GRANDE	21.597	1.551	23.148	66	3,8	3,4	3,8	2,0	1,2	PL	D	6
TEIDE VERANO	17.784	2.273	20.057	45	1,8	3,4	4,4	2,0	1,2	P	D	7
VF - 134	19.375	1.219	20.594	58	4,4	2,8	2,6	1,4	1,0	PL	D	8
HESSOLINE	26.111	3.472	29.583	45	1,4	4,0	4,2	1,0	4,8	P	D	7
ROSSOL	31.213	2.058	33.271	49	1,8	2,2	2,0	1,2	1,0	P	D	7
HELLINE	14.250	2.725	17.025	51	1,0	3,4	2,8	1,6	1,0	P	D	7
KS - 5715	15.167	2.667	17.834	51	3,6	2,4	2,0	1,6	1,0	S	D	8
TRIUMPH	24.062	781	24.843	67	3,6	4,0	4,2	1,2	3,8	PL	D	8
LAURANO 76	23.925	2.350	26.275	80	3,8	2,0	2,0	1,0	1,2	S	D	9
UC - 105 J	20.972	4.212	25.139	40	2,6	2,0	1,6	1,8	2,0	GL	D	9
DENEB	24.175	2.925	27.100	61	3,4	3,0	4,2	2,6	1,0	P	D	9
BULL	19.631	1.960	25.591	60	4,0	3,2	3,4	1,8	1,2	PL	D	9
ROYAL CHICO	25.350	3.550	28.900	49	3,0	2,8	2,6	1,6	1,2	P	D	9

TABLE 7. CONTINUATION .....

NEW YORKER	19.352	2.870	22.225	72	1,2	4,0	4,2	2,2	1,8	GL	D	13
HEINZ 1350	9.167	750	9.917	120	1,0	3,2	3,0	1,2	1,2	GL	D	13
FIREBALL	13.819	1.319	15.138	74	1,0	3,6	3,6	1,4	1,2	GL	D	13
GLAMOUR	14.688	909	15.597	96	1,4	2,6	3,8	2,0	1,0	GL	D	13
SUNRAY	11.302	781	12.084	97	1,2	3,2	2,0	1,4	1,0	GL	D	13
WESTOVER	9.750	605	10.355	127	1,2	2,6	2,6	1,1	1,0	GL	D	13
CASTLEX VEN I	14.158	1.995	16.153	51	2,2	3,0	2,8	1,4	1,0	P	D	11
A U 76 FMV	19.087	1.490	20.577	96	1,0	2,4	2,6	1,2	1,4	GL	I	14
PELICAN	20.156	1.562	21.718	141	1,4	1,6	2,0	1,6	1,2	GL	I	15
PETO 98	25.938	3.534	21.472	48	3,8	2,4	1,8	1,0	1,2	PL	D	16
CAMPBELL 39	22.467	2.270	24.737	60	2,0	3,4	3,4	1,4	1,4	S	D	16
CAMPBELL 34	32.000	2.312	34.312	82	1,8	2,8	4,0	1,4	3,4	S	D	16
EARLY CASTLEPEEL	27.005	3.932	30.937	61	3,8	1,6	1,8	1,4	1,2	PL	D	16
MH VF 134 E	27.687	2.219	29.906	54	3,8	3,2	5,0	1,2	5,0	PL	D	17
UC 82 B	9.489	2.017	11.506	54	3,6	3,6	3,2	1,4	2,0	PL	D	17
M H VF 6203	22.935	3.424	26.359	64	3,2	3,2	4,4	2,0	1,0	PL	D	17
M H VF 3202	15.625	500	16.125	88	3,4	3,0	2,4	1,6	1,0	PL	D	17
ACE 55 VF	11.153	0	11.153	150	2,2	3,6	3,8	1,0	3,4	GL	D	17
TROPIC	10.736	465	11.201	98	1,6	4,0	4,0	1,0	2,4	GL	D	17
FLORADEL	10.921	1.382	12.303	102	1,0	3,2	2,2	1,2	1,0	GL	I	17
WALTER	15.083	2.167	17.250	104	1,0	2,8	2,2	1,2	1,0	GL	D	17
SPRING GIANT BUSH F 1	16.600	2.275	18.935	96	1,4	2,8	2,2	2,2	1,6	GL	D	3

[s] see TABLE 9.

[t] I= indeterminate, D= determinate

Table 7. CONTINUATION .....

[u] CL= cylindrical, GL= oblate, P= pear, PL= plum and S= square

[v] SLS= Septoria Leaf Spot caused by Septoria lycopercisi . Scale similar to EB

[w] BS= Bacterial Spot caused by Xanthomonas campestris p.v. vesicatoria . The scale used was 1= no visible symptoms, 2= lesions in the flower clusters, 3= lessions in the flower clusters and the stems, 4= lesions in the flower clusters, the stems and the leaves and 5= lesions in the flower clusters, the stems, the leaves and the fruits.

[x] EB= Early Blight caused by Alternaria solani. For the scale see Table 3.

[y] TMV= Tobacco Mosaic Virus. For the scale see Table 3.

TABLE 8. CHARACTERISTICS OF THE TOMATO CULTIVARS EVALUATED IN THE SECOND TEST OF 1981.

NAME	comercial	small	total	average Wt. (g)	fruit firmess[z]	fruit shape[y]	plant growth[x]	seed source[w]
VF 13L - 34	21.181	1.875	23.056	62	1,8	S	D	18
ROFORTO VFN	19.648	3.750	23.398	69	2,4	P	D	19
MACISTE	18.446	2.825	21.271	65	3,6	S	D	5
ROYAL CHICO	16.042	1.550	17.592	68	2,6	P	D	20
ROME GIANT	20.685	6.150	26.835	46	2,4	P	D	19
MECHEAST 22	17.656	875	18.531	84	2,6	S	D	6
MACERO 11	24.922	2.450	27.372	81	2,2	S	D	18
MESSOLINE	11.964	700	12.664	76	2,2	P	D	7
K S 8664	22.750	4.000	26.750	62	2,6	S	D	9
VF 198	17.763	4.425	22.188	65	3,4	S	D	9
MECHEAST 22	20.134	2.400	22.534	73	2,8	S	D	9
MECHEAST 55	23.125	3.250	26.375	70	2,0	S	D	9
T 2 IMP VF	30.724	4.950	35.674	70	3,8	S	D	9
VF 198	20.856	4.575	25.431	67	2,6	S	D	11
FLORADADE	24.671	3.500	28.171	106	2,8	GL	D	21
WALTER	17.604	1.400	19.004	103	1,2	GL	D	21
FLORIDA MH1	23.215	3.800	27.015	101	2,8	GL	D	21
BURGIS	27.188	1.850	29.038	104	2,0	GL	D	21
FLORADEL	26.250	2.950	29.200	107	1,8	GL	I	21
CL 11 D	19.844	4.260	24.104	42	2,4	GI	I	21

TABLE 8. CONTINUATION ....

HAYSLIP	30.714	1.750	32.464	116	2,2	GL	D	21
FLORIDA 1 A	21.333	1.175	22.508	117	2,4	GL	D	21
FLORIDA 1 B	16.429	300	16.729	131	2,4	GL	D	21
FLORIDA 1 C	22.344	525	22.869	137	2.6	GL	D	21
ENTERPRISER	33.824	7.550	41.375	88	1,2	GL	D	12
PIACENZA	25.875	10.375	26.250	32	2,2	GL	D	12
GLAMOUR	13.000	1.550	14.550	150	2,2	GL	D	13
ROME VF	21.217	10.450	31.667	51	2,0	P	D	13
FLORADADE	27.537	2.650	30.187	131	2,4	GL	D	13
CASTLEMART II	12.067	1.175	13.242	116	1,8	GL	D	11
GL 01	28.385	1.300	29.685	115	2,6	GL	I	14
MS 81 - 10	22.411	3.500	25.911	106	1,6	GL	I	14
MS 81 - 11	15.679	2.850	18.529	97	1,4	GL	I	14
GL 03	32.813	2.875	35.688	97	1,6	GL	D	14
FLORADEL	18.437	1.450	19.887	114	2,2	GL	I	14
GL 04	29.000	4.725	33.725	109	2,2	GL	I	14
FLORADADE	17.325	3.475	20.800	121	2,6	GL	D	11
WALTER	19.135	3.350	22.485	94	2,8	GL	D	22
L - 495	25.197	3.125	28.322	73	1,8	P	I	15
L - 562	20.500	3.550	24.050	94	1,4	GL	I	15
L - 565	22.062	6.000	28.062	74	1,8	GL	D	15
L - 563	23.314	5.025	28.339	109	2,2	GL	I	15
L - 566	24.643	3.575	28.218	80	1,2	GL	D	15
L - 577	20.833	1.875	22.708	104	1,4	GL	I	15
L - 550	28.375	1.750	30.125	94	2,4	GL	D	15
L - 512	20.500	1.850	22.350	64	2,0	GL	D	15
L - 564	13.731	3.250	16.981	72	2,0	GL	D	15

TABLE 8. CONTINUATION.....

L - 517	22.857	2.750	25.607	91	2,0	GL	D	15
L - 253	17.813	575	18.388	102	2,4	GL	I	15
C X - 806	17.562	4.950	22.512	60	3,2	S	D	16
C X - 8102	17.280	7.100	24.380	66	3,4	S	D	16
C X - 8102	24.349	6.325	30.674	75	4,2	S	D	16
C X - 8103	19.706	4.250	23.956	67	3,8	S	D	16
C X - 8104	31.625	6.475	38.100	85	2,8	S	D	16
C X - 8105	29.963	8.125	28.088	68	2,6	S	D	16
C X - 8106	15.972	2.225	18.197	67	2,6	S	D	16
C X - 8011	24.210	6.875	31.085	52	3,8	P	D	16
C X - 8012	17.812	3.950	21.762	73	2,8	S	D	16
E - 9209	26.364	6.275	32.639	63	4,2	S	D	16
E - 6203	32.813	5.800	38.613	64	3,8	S	D	16
E - 9208	17.500	4.400	21.900	69	2,6	S	D	16
GS - 20 F_1	15.855	2.825	18.680	68	1,8	S	D	16
GS - 22 F_1	18.585	3.950	22.535	64	3,8	S	D	16
GS - 33 F_1	21.133	3.750	24.833	70	3,2	S	D	16
VF 145 7879	18.150	5.350	23.500	80	1,2	GL	D	16
CASTLEX 4896	27.000	3.900	30.900	88	4,0	S	D	16
PATRIOT	17.499	975	18.474	113	2,2	GL	D	23
HOMESTEAD	13.419	2.000	15.419	112	1,4	GL	I	23
EPOPAXEL	17.386	2.950	20.336	116	1,8	GL	I	23
FLORADADE	27.344	2.500	29.894	112	3,8	GL	D	23
KEWALO	22.083	5.100	27.183	116	3,0	GL	I	24
MEALANI	21.458	1.900	23.358	86	2,4	GL	I	24
JEEPIEY	17.727	1.675	19.402	77	2,2	EL	D	24

TABLE 8. CONTINUATION.....

CAMPBEL 28	17.761	775	18.536	119	2,0	GL	D	25
HEINZ 1706	11.250	2.000	13.250	63	2,8	P	D	25
BOONYUCE	9.018	475	9.493	84	3,4	GL	D	25
EARLY BRIGHT	10.781	1.075	11.856	78	2,0	GL	D	25
OH 10 7663	15.904	6.075	21.979	57	2,4	S	D	26
OH 10 7880	15.125	5.125	20.250	70	3,8	S	D	26
OH 10 7681	19.519	3.350	22.869	87	2,4	S	D	26
ROMA 200	17.325	4.975	22.300	58	2,8	S	D	6
TRIUMPH	33.750	4.375	38.125	69	3,2	PL	D	8

[w] See Table 9.

[y] I= indeterminate, D= determinate

[y] CL= cylindrical, GL= oblate (globe), P= pear, PL= plum, S=square

[z] 1= very soft, 2= soft, 3= medium, 4= firm, 5= very firm

TABLE 9. SEED SOURCE OF THE TOMATO CULTIVARS EVALUATED IN 1981.

NUMBER	NAME	COUNTRY
01	AV ROC	TAIWAN
02	TANZI ARMANDO SEMENTI	ITALY
03	DESSERT SEEDS	USA
04	I P B	USA
05	CALIFORNIA SEEDS	USA
06	PETOSEED	USA
07	TEZIER FRERES	FRANCE
08	KEYSTONE SEEDS (AGRIGENETICS)	USA
09	RACI SEMENTI	ITALY
10	PETO ITALIANA	ITALY
11	CASTLE SEEDS	USA
12	INST. AGRC. RESEARCH	NIGERIA
13	HARRIS SEEDS	USA
14	W. GREENLEAF (AUBURN U N IV)	USA
15	T. HERNANDES (LOUSIANA ST.UNIV)	USA
16	CAMPBELL I R T	USA
17	FERRY MORSE	USA
18	NIAGARA	USA
19	ROYAL SLUIS	NERTHERLANDS
20	HERBTS BROTHERS	USA
21	J. AUGUSTINE (B H N RESEARCH)	USA
22	ASGROW SEEDS	USA
23	USDA VEG LAB.	USA
24	J. TANAKA (U N IV HAWAII)	USA
25	E. KERR (MINISTRY AGRIC.)	CANADA
26	S. BERRY (OARDC, OHIO ST. U N W)	USA