

Chemical injury to the crop was not observed during any year nor did vigor ratings differ significantly. However, the consistent reduction in yields (Table 3) associated with superior weed control by metribuzin at 1.5 lb (1.7 kg/ha) (Table 2) suggests poor crop tolerance at this rate. In 1970 and 1971 there were no significant differences in tuber specific gravities due to herbicide treatments.

Discussion

It is apparent that weed species varied over the 3 years of this study. However, *Digitaria sanguinalis* (L.) Scop., was the most prevalent of the grass weed species and *Amaranthus spp.*, the most prevalent of the broadleaf species in each year.

Weather conditions also varied considerably from year to year, thus interacting with performance of herbicides, weed population pressures and potato yields. Conditions were ideal for testing herbicides in 1970. Weeds germinated early in the season, and population pressures were extremely high at harvest. In 1971, due to a hard freeze 2 weeks after herbicide application, weeds did not appear until the middle of the season. Pressure was moderate at harvest, and yields were severely reduced. In 1972, moisture from heavy and frequent rains eroded the rows so that rebedding was necessary for drainage. This resulted in low weed populations. While significant yield differences among treatments were not detected in 1971 or 1972, weeds accounted for 67% of total variability in potato yields in 1970.

In comparing the performance of herbicides tested over 2 and 3 year periods, metribuzin was the most effective preemergence herbicide. The combinations of EPTC plus metobromuron and linuron plus alachlor gave acceptable control over both broadleaf and grass species. Alachlor and EPTC gave good control of grasses, but were less effective in controlling broadleaf weeds. Metobromuron, chlorbromuron and linuron, were effective in controlling most broadleaf weeds. Of the three, metobromuron gave the best control of grasses.

Although a number of herbicide treatments gave more effective season long weed control than did mechanical cultivation, differences in yield favoring superior herbicides were only evident in 1970. Since weather conditions in 1972 dictated rebedding, it appears that mid-season cultivation will be necessary in certain seasons. Due to the variable weather conditions in north Florida, pre-emergence and mid-season post directed application of herbicides should be considered.

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CANTALOUPE CULTIVARS FOR FLORIDA

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Abstract. Field trials of cantaloupe cultivars were conducted on Kanapaha fine sand at Gainesville, and on Astatula fine sand at Leesburg, during the period 1969-1973. Comparisons between recently released cultivars and standard types are made in terms of yields of marketable melons, fruit size, soluble solids and other quality factors. Reference is also made to growth habit, disease resistance and other pertinent characteristics.

Production of cantaloupe (*Cucumis melo* L.) in Florida has been limited by low quality resulting primarily from incidence of foliar disease at or near harvest time (1, 2, 3) and by deleterious effects of rainfall. Depending upon the season, gummy stem blight (*Mycosphaerella melonis*), downy mildew (*Pseudoperonospora cubensis*),

powdery mildew (*Erysiphe cichoracearum*) and/or alternaria blight (*Alternaria cucumerina*) might significantly affect plant growth, fruit yield and quality.

Extensive cultivar trials have been conducted in the southeastern U.S. at State Experiment Stations, and the USDA Vegetable Breeding Laboratory at Charleston, S.C., to evaluate new introductions and releases in comparison with established cultivars.

The results of five years of cultivar trials at Gainesville and Leesburg are reported here.

Materials and Methods

Gainesville

Yield trials of cantaloupe cultivars were conducted on Kanapaha fine sand at the Horticultural Unit, Gainesville, during the period 1969-1973. Plants grown in peat pots were transplanted to spacing of 2.5 ft apart on rows 6.3 ft apart (.75 m on rows 1.93 m apart) in early March.

The crop was fertilized with 1,000 lb. per acre (1,140 kg/ha) of 6-8-8 (N-P₂O₅-K₂O) incorpo-

rated into the bed at time of bedding, followed by 600 lb. (675 kg/ha) of 6-8-8 applied as a side-dressing 1 month after transplanting. Fritted micronutrients (FTE 503) were included in the fertilizer at a rate of 40 lb/ton (20 kg/metric ton) each year. At layby, 150 lb. (170 kg/ha) per acre of 15-0-14 were applied broadcast in the middles.

The soil was fumigated at time of bedding with 16 gals. per acre (150 liter/ha) of 1,3-Dichloropropene (Telone) followed immediately by application of black plastic mulch to shaped beds.

The crops were irrigated, cultivated, and sprayed with pesticides as needed to maintain good crop development.

Leesburg

Field trials of cantaloupe cultivars were conducted on Astatula fine sand at the Agricultural Research Center, Leesburg during the period 1969-1973. Direct-seeded plants were spaced at 2-3 ft (61-95 cm) in rows spaced at 10 ft (3.5 m). Hills were thinned to 1 plant each. In 1969 and 1970, 1,200 lb/acre (1,345 kg/ha) of a 6-10-6 fertilizer was applied in a 10-inch (24 cm) band directly

Table 1. Cantaloupe cultivar performance, Gainesville, 1969-73. Early and total marketable yields.

Cultivar	1969		1970		1971		1972		1973	
	Early ²	Total	Early	Total	Early	Total	Early	Total	Early	Total
	Cwt. per acre ^Y									
Edisto (Std.)	15	176								
Edisto 47 (Std.)			24	231	59	211	16	367	0	285
Planters Jumbo	114	263	88	243	206	272	4	357	6	231
Southland	35	169								
Hales Best Jumbo	41	141	59	76						
Gulfcoast	92	234	44	238	134	279				
Chilton					137	258	3	257	21	258
Saticoy							48	361	30	239
Super Market Hybrid							26	324	114	322
Samson Hybrid							79	275	50	246
Mainrock Hybrid							94	107		
Early Market Hybrid							33	313		
Star Headliner Hybrid							118	293		
Harper Hybrid							132	266	190	196
Classic Hybrid									201	233
Burpee Hybrid									224	243

²Harvest dates included in early yield were: 1969, June 5-12; 1970, June 3-8; 1971, June 22-26, 1972, June 1-14; 1973, June 11-18.

^YTo convert to metric tons per hectare, multiply cwt. x .1121.

below the center of the bed. In 1971 and 1972, 1,080 lb/acre (1,200 kg/ha) of a 1-15-0 fertilizer was placed in a 10-inch (24 cm) band below the center of the bed and 328 lb/acre (368 kg/ha) of a 15-0-19 fertilizer was broadcast over the 40-inch (1 m) bed. Fritted micronutrients (FTE 503) were applied at a rate of 30 lb/acre (34 kg/ha) each year. Supplemental fertilizer was applied at emergence, 100 lb/acre (112 kg/ha) of 15-0-14 and at layby 350 lb/acre (392 kg/ha) of 14-0-14 or 15-0-14.

Cantaloupes were harvested at both locations primarily during June at the half-slip or more advanced stage of maturity, weighed, and soluble solids content was determined with a hand refractometer.

Results and Discussion

Gainesville

Total marketable yield. With notably few exceptions, 'Edisto 47' was equal to or better than most of the cultivars tested (Table 1). 'Super Market' was superior to 'Edisto 47' in yield in

1973, while 'Planters Jumbo', 'Gulfcoast', and 'Chilton' yielded more in 1971. 'Edisto', 'Southland', 'Hales Best Jumbo', and, 'Mainrock' were notably low in yield.

Early yield. Generally, response of the cultivars was inconsistent, especially as illustrated by 'Planters Jumbo', from quite early in 1971 to definitely not early in 1972 (Table 1). Definitely midseason were 'Saticoy', 'Samson', and 'Early Market' hybrids and 'Edisto 47'. 'Harper', 'Classic', 'Burpee', and 'Mainrock' hybrids were quite early.

Fruit size. Most of the cultivars produced melons of 2.75 to 4 lb. size (1.25 kg or larger) (Table 2). 'Southland' and 'Early Market' were medium size, while 'Mainrock' and 'Harper' hybrid melons were small (under 1 kg).

Soluble solids content. Response of the cultivars to this important quality factor was also variable. The inbred entries were rather similar to the standard, 'Edisto 47', while the hybrids were mostly higher in sugar content (Table 2).

Disease resistance. 'Hales Best Jumbo' and 'Edisto' had low disease resistance levels to the complex of diseases attacking the foliage, prin-

Table 2. Cantaloupe cultivar performance, Gainesville 1969-73.
Percent soluble solids and average weight per melon.

Cultivar	Soluble solids					Weight per melon				
	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973
	percent					pounds ²				
Edisto (Std.)	11.2					3.0				
Edisto 47 (Std.)		9.6	6.9	12.7	10.4		3.1	3.8	3.2	4.9
Planters Jumbo	10.1	6.2	8.5	10.8	9.3	3.7	3.0	3.8	3.7	3.5
Southland	9.5					2.8				
Hales Best Jumbo	10.0	5.8				3.1	2.8			
Gulfcoast	10.4	7.0	7.8			3.2	2.9	2.9		
Chilton			8.1	11.3	11.7			2.7	2.6	3.0
Saticoy Hybrid				14.5	11.2				3.0	3.5
Super Market Hybrid				11.9	9.5				3.0	3.7
Samson Hybrid				12.8	12.6				2.9	3.8
Mainrock Hybrid				13.8					2.0	
Early Market Hybrid				13.4					2.8	
Star Headliner Hybrid				10.2					3.4	
Harper Hybrid				13.8	10.8				2.1	2.4
Classic Hybrid					8.8					3.6
Burpee Hybrid					6.0					3.5

²To convert to kilograms, multiply pounds x .454.

cipally the mildews. This was also true of 'Main-rock', 'Harper', 'Star Headliner', 'Super Market', 'Burpee', and 'Classic' hybrids. 'Samson', 'Saticoy', 'Early Market' hybrids, and the other open-pollinated cultivars (inbreds) had good levels of resistance.

Leesburg

Total marketable yield. In each of the 5 years 'Samson' had the highest or second highest total yield (Table 3). Total marketable yields of 'Gulfcoast', 'Southland', and 'Planters Jumbo' also were consistently high. Yields of 'Super Market', 'Edisto', and 'Gulfstream' were rather low; yield of 'Edisto 47' was not consistent from year to year.

Early yield. The extreme earliness of 'Hales Best Jumbo', 'Harper', and 'Saticoy' (1972) was due mainly to a high degree of disease susceptibility in these cultivars and fruit matured as the vines were dying (Table 3). Most of the remaining lines might be considered midseason with the exception of 'Edisto 47', 'Planter Jumbo', and 'Gulfstream' which matured rather late.

Fruit size. Although some year to year varia-

tion did occur, fruit of 'Planters Jumbo', 'Edisto 47', and 'Saticoy' were generally larger than those of the other cultivars (Table 4). The mean weight of 'Super Market', 'Harper', 'Edisto', and 'Gulfstream' was less than 3 lb. (1.35 kg) per fruit.

Soluble solids content. The soluble solids content of 'Harper' (13.1%) was considerably higher than that of the other cultivars (Table 4). 'Samson', 'Saticoy', 'Edisto 47', and 'Gulfcoast' generally had a relatively high sugar content while that of 'Hales Best Jumbo' and 'Planters Jumbo' was somewhat lower.

Disease resistance. 'Planters Jumbo' and 'Samson' had the best overall disease resistance but the former was susceptible to downy mildew and the latter to powdery mildew (Table 5). 'Hales Best Jumbo', 'Edisto', and the F1 hybrids with the exception of 'Samson' did not have satisfactory disease resistance.

Cultivar Description

Standard

'Edisto 47'. Midseason, with some resistance to

Table 3. Early and total marketable yields of several cantaloupe cultivars at Leesburg, 1969-1973.

Cultivar	1969	1970		1971		1972		1973	
	Total	Early ²	Total	Early	Total	Early	Total	Early	Total
				Cwt/acre ¹					
Southland				10	240	64	212	40	140
Harper Hybrid				126	222				
Samson Hybrid	192	10	148	18	288	74	182	42	164
Planters Jumbo	190	26	136	2	270	60	170	26	135
Gulfcoast	210	28	138	32	228			44	151
Saticoy Hybrid	150	34	144	24	238	114	164		
Edisto 47		8	106	4	264	30	128	8	132
Burpee Hybrid						110	156		
Hales Best Jumbo	180	108	126						
Gulfstream						36	144	24	127
Golden Perfection						78	142		
Edisto	124								
Harvest Queen						58	122		
Super Market		58	114						
Dulce		14	56						

²Harvest dates included in early yield were: 1970, June 4-12; 1971, June 7-18; 1972, June 2-15.

¹To convert to metric tons per hectare, multiply cwt. by .1121.

Table 4. Soluble solids content and mean fruit weight of several cantaloupe cultivars at Leesburg, 1969-1973.

Cultivar	Soluble solids					Weight per melon				
	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973
	Percent					Pounds ²				
Harper Hybrid			13.1					2.7		
Dulce		11.9					1.3			
Samson Hybrid	11.8	11.0	10.6	11.2	10.4	2.7	2.5	3.5	3.2	3.1
Golden Perfection				11.2					2.3	
Edisto	10.9					2.9				
Saticoy Hybrid	11.5	10.0	10.7	11.1		3.1	3.1	3.9	3.7	
Edisto 47		11.6	9.6	11.4	11.5		2.5	4.1	4.1	3.7
Burpee Hybrid				10.5					3.2	
Super Market		10.3					2.4			
Gulfstream				10.2					2.7	
Planters Jumbo	9.7	9.0	10.8	10.9	8.4	3.1	3.1	4.6	4.3	3.8
Gulfcoast	11.1	9.0	10.2		11.9	3.8	3.1	3.0		2.9
Southland			10.2	8.7				3.4	3.5	
Hales Best Jumbo	9.4	7.5				3.1	3.2			
Harvest Queen				7.0					3.2	

²To convert to kilograms, multiply pounds x .454.

downy and powdery mildews and *Alternaria* blight. Fruit large oval, with slight rib, heavy netting. Thick salmon color flesh, small cavity, and good

Table 5. General disease resistance and downy mildew resistance of several cantaloupe cultivars at Leesburg, 1969-1973.

Cultivar	Disease resistance ²					
	General		Downy mildew		Powdery mildew	
	'69	'71	'73	'71	'72	'73
Planters Jumbo	5	4	5	5	4	3
Samson Hybrid	5	4	5	4	3	4
Edisto 47		4	3	3	3	5
Southland		4	3	4	1	5
Gulfcoast	4	3	4	3		4
Gulfstream			3		3	5
Hales Best Jumbo	2			2	2	
Saticoy Hybrid	1	2				
Edisto	1					
Harper Hybrid		1		1		
Burpee Hybrid					1	

²Rated from 1 to 5 with increasing disease resistance by Dr. D. L. Hopkins; Assistant Plant Pathologist, Leesburg.

level of soluble solids. Introduction from South Carolina A.E.S., Blackville. Suitable for shipping. Recommended.

'*Planters Jumbo*'. Midseason, resistance to downy and powdery mildews and *Alternaria* blight. Large, well-netted, 'Hales Jumbo' type fruit with thick orange flesh and small cavity. Soluble solids content equal to 'Edisto 47'. Introduction from USDA S. E. Regional Vegetable Breeding Laboratory, Charleston, S. C. Suitable for shipping. Recommended.

'*Gulfcoast*'. Early, resistant to downy and powdery mildews and gummy stem blight. Large, nearly round, well-netted 'Hales Best Jumbo' type fruit, with very thick, deep orange flesh and small cavity. Soluble solids are comparable to 'Edisto 47'. Suitable for shipping. Introduction from Auburn University, Auburn, Ala. Recommended.

'*Chilton*'. Midseason, resistant to downy and powdery mildews and to gummy stem blight. Fruit large, mostly round, well-netted, with definite ribs. Flesh very thick, deep orange in color with soluble solids higher than 'Edisto 47'. Introduction from Auburn University, Auburn, Ala. Suitable for shipping. Recommended.

Hybrid

'Burpee'. Plant vigorous, early, low resistance to mildews. Fruit medium size, well-netted, with prominent ribbing, round to slightly oval shape. Flesh deep orange, thick, firm, with good flavor.

'Classic'. Early, vigorous, tolerant to Fusarium wilt. Deep salmon flesh, with good aroma and texture.

'Early Market'. Early, resistant to Fusarium wilt and powdery mildew. Fruit medium small, round-oval with definite ribbing and good net. Flesh thick, firm and very sweet, with small cavity. Recommended.

'Harper'. Early, resistant to Fusarium wilt. Fruit nearly round small well-netted, mild ribbing. Flesh thick, salmon color, of excellent flavor.

'Mainrock'. Early, tolerant to Fusarium wilt. Fruit elongated medium size, with medium netting and definite ribbing. Flesh salmon-orange, thick of excellent flavor.

'Samson'. Midseason, resistant to Fusarium wilt and tolerant to mildews. Fruit medium to large size, nearly round, well-netted, faint ribbing, with

small cavity. Flesh thick, firm, deep salmon color and of very good flavor. Suitable for shipping. Recommended.

'Saticoy'. Midseason, tolerant to Fusarium wilt, and mildews. Fruit medium to large size, oval, thin net, with no ribbing. Flesh firm, thick, deep orange in color with excellent flavor. Suitable for shipping. Recommended.

'Star Headliner'. Early, tolerant to Fusarium wilt and powdery mildew. Fruit medium size, oval shape, heavily netted, with definite ribbing. Flesh firm, strong orange color with good flavor. Suitable for shipping.

'Super Market'. Midseason, tolerant to Fusarium and downy mildew. Fruit medium size, round, heavy net, with slight ribbing. Flesh thick, salmon color, firm and of good quality. Suitable for shipping.

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TOMATO PINWORM CONTROL

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Abstract. Recent increases in populations of the tomato pinworm, *Keiferia lycopersicella* (Walsingham), reached epidemic proportions in some localities in 1973. Injuries by the small larvae occur in tomato leaves, flowers, young fruit, old fruit and stems where the insect is abundant. In three chemical control experiments sprays of chlordimeform combined with Dipel (a *Bacillus thuringiensis* preparation) parathion, leptophos, carbophenothion and azinfosmethyl were effective. A general relationship was found in which the use

of materials that were effective in reducing leaf injuries and worm holes in fruit also increased fruit yield of the plants.

Infestations of the tomato pinworm *Keiferia lycopersicella* (Walsingham) in Florida have been observed for decades as small populations. Occasionally serious injuries were reported (6) and (7). Observations by Kelsheimer from 1942 to 1969 showed tomato pinworms were present but with the use of DDT and parathion tomato pinworms almost disappeared (verbal communication). In Dade County Florida they were observed occasionally over essentially the same period. In 1970 there was an apparent increase in tomato pinworm infestations; in 1971 there was a further increase and in 1972 the insect reached epidemic (serious) proportions in Florida. Neither DDT nor parathion had been used for several years previous to 1970. It was evident that the factors which had previously kept large populations in check were no longer effective. Initial control studies, therefore, were inaugurated and are summarized below.

Florida Agricultural Experiment Stations Journal Series No. 5114.

Acknowledgment is given to the help of Mrs. Sara Walker for her untiring efforts in the execution of these experiments.