with XCV and nothing was done to prevent bacterial spot. Perhaps if spray programs to control XCV were used (1, 5), some subtle differences between the Florida grown cultivars, not evident here, might emerge. However, if limited to these cultivars, it does not appear from these data that the cultivar choice of growers would do much to prevent bacterial spot.

The correlation of fruit spot infection with most foliage ratings was expected since the proximity of XCV to the fruit would likely lead to greater fruit infection. There was little fruit set at the bottom of the plants, and this may relate to the lack of correlation with that foliage rating (Table 2). However, the r^2 values accounted only for about one-third of the variation, and it would appear that fruit and foliage susceptibility are only partially related. Whereas 'Flora-Dade' had the greatest disease of both foliage and fruit, 'C-28' had less foliage disease but a similar percentage fruit infection compared to most genotypes. Variation among replications was great for fruit spot, thus limiting significant differences between 'Hayslip' (23%) and other genotypes which had less than 9% fruit spot. This variability indicates the difficulty one might have in making accurate field ratings as to the relative susceptibility of cultivars to bacterial spot on fruit.

Table 2. Correlation coefficients (r^2) between fruit infection and foliage infection ratings.

Foliage ratings[z]	Fruit-spot (%)
R1B	.146
R1T	.349**
R1	.291*
R2	.296*
R0	.348**

[z]R1B = First rating, bottom one-half of plant; R1T = First rating, top one-half of plant; R1 = (R1B + R1T)/2, R2 = Second rating (R2B + R2T)/2), R0 = combined rating (R1 + R2)/2.

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NEMATODE POPULATION INCREASES ON SIX LIGHT-FLESHED SWEETPOTATO CULTIVARS AND EFFECTS ON YIELD[1]

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Additional index words. Ipomoea batatas, root-knot nematode, reniform nematode.

Abstract. **Yields of 6 light-fleshed sweetpotato (**Ipomoea batatas **L.) cultivars were evaluated during 1982 in fumigated and unfumigated plots in a split-plot experiment performed on a Rockdale series soil containing an initial population of 1.7** Meloidogyne incognita **(Kofoid & White) Chitwood and 93** Rotylenchulus reniformis **Linford & Oliveira per 100 cm³ of soil. Fumigation with ethylene dibromide significantly ($P \leq 0.01$) reduced populations of both nematode species, but did not affect yields of marketable roots. At harvest, levels of** M. incognita **differed among cultivars, and populations of both nematode species had increased greatly over the initial levels. The cultivars 'Santa Barbara' and 'Blanco' gave the highest yields of marketable-size roots, although 'Blanco' exhibited more damage from the sweetpotato weevil,** Cylas formicarius elegantulus **(Summers), than did 'Santa Barbara'. 'Verde' performed poorly, producing more vine than root biomass, while 'Engorda Muchacho', 'Campeon de Santo Domingo', and 'Picadito' were intermediate in their yields.**

Production of the light-fleshed sweetpotato, or boniato, is increasing in southern Florida, with commercial area now estimated at 1400-2400 ha in Dade County (14). Although 7 cultivars of the light-fleshed sweetpotato have been grown in southern Florida, only 'Blanco', originated there (14). 'Campeon de Santo Domingo' and 'Amarillo Dominicano' came from the Dominican Republic, and 4 cultivars originated from Cuba: 'Verde', 'Engorda Muchacho', 'Picadito', and 'Santa Barbara', also known as 'Amarillo de Cuba'. The qualities and descriptions of these cultivars have been discussed elsewhere (14). All have lightly-pigmented flesh, varying in color from white to light yellow.

Plant-parasitic nematodes are a problem of sweetpotatoes in most regions in which they are grown. In particular, the root-knot nematodes, *Meloidogyne* spp., and the reniform nematode, *Rotylenchulus reniformis* Linford & Oliveira, are the most widespread and troublesome nematode pests (5, 9, 15), and the damage caused to the host by each species has been described (4, 8). Most nematological studies have involved orange-fleshed cultivars, which have exhibited a variety of responses to root-knot nematodes (3). A number of cultivars are now available which have various degrees of resistance to the common species of *Meloidogyne* (16). Differences in cultivar reaction to *R. reniformis* have also been demonstrated (6, 10). In addition,

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the use of fumigant nematicides has resulted in increased yields through control of *R. reniformis* (1, 2) or *M. incognita* (Kofoid & White) Chitwood (17). Preliminary examination of some light-fleshed cultivars in Florida revealed differences in population buildup for *Helicotylenchus dihystera* (Cobb) Sher, but not for *R. reniformis* (11). Attempts to control these nematodes by foliar and/or soil applications of oxamyl were unsuccessful (13). Because of the differences observed in nematode response to various orange-fleshed cultivars, it is reasonable to anticipate differences in response to light-fleshed cultivars as well. Therefore it was desirable to perform a more extensive examination of the response of each of the common cultivars grown in southern Florida to both *M. incognita* and *R. reniformis.*

The purpose of the present study was to compare the response of locally-grown light-fleshed cultivars to some common nematodes of southern Florida, and to determine if nematode control by soil fumigation influences yield. In addition, the performance of these cultivars in terms of marketable yield and root total production was evaluated.

Materials and Methods

Experimental plots were established on raised beds of Rockdale fine sandy loam soil (pH = 7.6) at the Tropical Research and Education Center in Homestead, Florida. The experimental design was a split plot with soil fumigation treatments as the main plots and cultivars as the subplots. The design was replicated 6 times. Prior to fumigation, pendimethalin (2.34 liters/ha) was applied to the site and fertilizer (7-6.1-11.6 N-P-K) was incorporated into the beds at a rate of 448 kg/ha. On May 18, 1982, 58.9 liters a.i./ha of ethylene dibromide (65.4 liter/ha of Soilbrom 90EC) were applied to one-half of the experimental plots. The fumigant was injected into the soil at a depth of 12-15 cm through three chisels spaced 0.3 m apart. All beds, fumigated or unfumigated, were then covered by a thin gray-on-black plastic mulch until May 21, 1982. Stem cuttings of 6 light-fleshed sweetpotato cultivars (Blanco, Campeon de Santo Domingo, Engorda Muchacho, Picadito, Santa Barbara, and Verde) were planted on May 27. Cuttings were spaced 0.3 m apart, with 10 plants per plot. Distance between beds was 1.8 m, and distance between adjacent subplots in the same bed was 0.6 m. One month after planting, an additional 224 kg/ha of fertilizer (7-6.1-11.6) was added to each plot and incorporated by cultivation. Plots were hand-weeded periodically thereafter and the vines were trained to restrict them to the appropriate plots. On 2 occasions within the first 2-3 months after planting, permethrin at 112 g a.i./ha was applied to all plots for control of the sweetpotato weevil, *Cylas formicarius elegantulus* (Summers).

Soil samples for assay of plant-parasitic nematodes were collected on May 25 and November 15, 1982. Each sample consisted of soil collected with a hand trowel to a depth of 15 cm from 10 locations per plot. In the laboratory, each soil sample was passed through a 4.0-mm sieve to remove rock and a 100 cm^3 subsample was processed for nematodes by a modified sieving and centrifugation procedure (7, 12).

The vines from each plot were harvested and weighed on November 17, 1982. A subsample of 500-1000 g from each plot was dried to a constant weight at 80°C to determine the percent dry weight. Roots were harvested on November 18. They were graded by size into marketable, oversized, and small classes. Marketable-size roots were further divided into those showing damage from the sweetpotato weevil and those which were undamaged. Each category of roots was weighed separately for each plot. Three subsamples of approximately 300 g each were collected from marketable-size roots of each cultivar and dried in an oven to determine the percent of dry root weight by cultivar. All nematode and harvest data were analyzed by an analysis of variance (ANOVA) for a split-plot design, followed by Duncan's New Multiple Range Test for those cases in which a mean separation test was appropriate.

Results and Discussion

Data for various plant parameters measured at harvest are shown (Table 1). The overall F value from the ANOVA was highly significant ($P \leq 0.01$) for each of these parameters, as were the subplot effects (cultivar differences). No significant ($P \geq 0.05$) interactions between fumigation and cultivars were found, indicating that differences among cultivars did not depend on treatment differences. For these data, significant effects from fumigation were observed only infrequently. For this reason, data from fumigated and unfumigated plots were pooled by cultivar (Table 1). Significant ($P \leq 0.05$) treatment effects occurred with total dry root and whole plant weight. Even in these cases, weights of most cultivars were similar in fumigated and unfumigated plots. The exceptions were 'Blanco', which had a mean dry total root weight of 7.06 kg in fumigated plots and 5.26 kg in unfumigated plots, and 'Engorda Muchacho' which had a mean dry total root weight per plant of 4.84 kg in fumigated plots and 3.80 kg in unfumigated plots. Respective dry total weights per plant were 9.16 kg in fumigated and 7.24 kg in unfumigated plots for 'Blanco', and 6.03 kg in fumigated and 4.88 kg in unfumigated plots for 'Engorda Muchacho'. These differences were attributed to increases with fumigation in the weight of roots over marketable size for both 'Blanco' and 'Engorda Muchacho'. Fumigation had no significant effect on weights of marketable-size root weights or harvest indices.

Superior marketable root production was observed for 'Santa Barbara' and 'Blanco' (Table 1). However, while

Table 1. Harvest weights per plant by light-fleshed sweetpotato cultivar.

Cultivar	Fresh weight (kg) of marketable-size roots[z]			Dry weight (kg) of:[z]				Harvest index[w,z]
	Undamaged[y]	Culled[y]	Total	Marketable-size roots	Total roots[x]	Vines	Total plant	
Santa Barbara	6.48 a	5.57 bc	12.05 ab	3.94 ab	6.08 a	1.47 c	7.55 ab	0.807 a
Blanco	4.40 bc	9.69 a	14.10 a	4.21 a	6.16 a	2.04 b	8.20 a	0.750 bc
Engorda Muchacho	5.76 ab	6.43 b	12.20 ab	3.38 b	4.32 b	1.13 c	5.45 c	0.787 ab
Campeon de Santo Domingo	3.51 c	6.86 b	10.37 b	3.40 b	4.48 b	2.36 b	6.84 b	0.653 d
Picadito	3.90 c	6.02 bc	9.93 b	3.16 b	3.45 c	1.40 c	4.85 cd	0.706 c
Verde	1.81 d	3.73 c	5.54 c	1.37 c	1.62 d	2.75 a	4.37 d	0.361 e

[z]Mean of 12 replications. Mean separation within columns by Duncan's multiple range test, 5% level.
[y]Roots were culled if damage from the sweetpotato weevil was evident.
[x]Including marketable-size roots, roots over marketable size, and smaller root material.
[w]Total root dry weight as a percentage of total plant dry weight.

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EFFECT OF PLANT SPACING AND PLANTING DATE ON SWEET CORN GROWN ON MUCK SOIL IN THE SPRING[1]

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Additional index words. Zea mays, culture, ear size.

Abstract. **Four within-row plant spacings and 3 planting dates were evaluated for their effects on yield, ear size, and ear tip fill of 2 sweet corn (*Zea mays* var. *rugosa*) cultivars grown on Lauderhill muck. Within-row spacings were 5, 7, 9, and 11 inches between plants and planting dates were March 16, 30, and April 13, 1984. The 2 cultivars evaluated were 'Florida Staysweet' and 'Summer Sweet 7200'. The average yield as measured by the number of ears was lowest for the March 16 planting and highest for the April 13 planting. The closest spacing of 5 inches generally yielded the highest number of ears. The average ear weight and length increased with an increase in within-row planting spacings. There were from 1 to 3 days spread in ear maturity from the 5-inch to the 11-inch spacings. The 5-inch spacing had more variability within the ear maturity and less desirable ear tip fill than the other spacings.**

Improved cultural practices such as higher plant populations, the use of higher-yielding cultivars, irrigation, and fertilization have increased sweet corn production (2, 4, 7, 8, 9, 10). For Florida, 36-inch rows with 8 inches between plants is recommended (5). Ear size and appearance are improved slightly at wider row and plant spacings, but the number of marketable ears is reduced correspondingly. When plant spacing is increased, ear length increases (1, 10). Ear width increased from 4 to 12-inch spacings and then decreased slightly at 14 to 16-inch spacings (1). Guzman (4) found the maximum ear length was obtained in the spring season and the maximum ear width in the winter.

Plant spacing has been shown to affect the average marketable ear weight (7, 9, 10) and marketable yield as measured by the number of ears (2, 5, 8). The season of the year interacts with ear size and spacing (4). Cultivars have been found to respond differently to plant spacings (3, 6, 10). The later maturing, taller hybrids of corn were better adapted to competition in high populations than were the earlier maturing hybrids (3).

The objective of this study was to learn the affect of various in-row plant spacings on two shrunken-2 high sugar retention cultivars planted at intervals during the spring season.

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Materials and Methods

Two sweet corn hybrids, 'Florida Staysweet' and 'Summer Sweet 7200', were planted on March 16, 30, and April 13, 1984, in a Lauderhill muck soil. Row spacing was 36 inches on center with in-row spacings of 5, 7, 9, and 11 inches between plants. Seeds were sown thickly and then hand thinned to the desired spacings when the plants were about 4 inches high.

A complete randomized block design was utilized in the experiment with each planting date's design identical. Plots contained 2 rows, 25 feet long, and were replicated 6 times.

Data were collected when each cultivar and spacing were judged to be at optimum fresh market maturity. Measurements were made immediately after harvest. All ear measurements are on husked ears.

Ear tip fill was assigned a value of 1 to 5, depending upon the length of the unfilled kernels at the ear tip. A score of 1 indicated over 1 inch of the tip was not filled; 2 = 3/4 to 1 inch of the tip was not filled; 3 = 1/2 to 3/4 inch of the tip was not filled; 4 = 1/4 to 1/2 inch of the tip was not filled; and 5 = 1/4 inch or less of the tip was not filled. A score of 2.5 or less was considered unmarketable. Ten ears per replication were randomly selected and husked for the length, width, and ear tip fill measurements.

Results and Discussion

As the in-row plant spacing increased from 5 inches to 11 inches, the yield, as determined by the number of marketable ears and marketable ear weight, decreased (Table 1). The yields for 'Florida Staysweet' planted at 5 and 7-inch spacings were not significantly different, but were for 'Summer Sweet 7200.' Both cultivars showed an increase in the average fresh ear weight as the in-row spacing increased. The increase was significant between 5, 7, and 11-inch spacings. There was an increase, but it was not significant, between the 9 and 11-inch spacings and the 7 and 9-inch spacings. Ear size as measured by the husked ear length and width measured one inch from the base generally increased as the in-row spacings increased (Table 1). Ear tip fill was significantly better for spacings greater than 5 inches for both cultivars. 'Florida Staysweet' had a greater range of ear tip fill for the different spacings than did 'Summer Sweet 7200' (4.9 to 4.6 vs. 4.9 to 4.8). The lowest average score of 4.6 was still in the acceptable range for meeting market standards. However, more small ears and unmarketable ears were produced by both cultivars planted at the 5-inch spacing than at other spacings. The 2 close spacings (5 and 7 inches) averaged 1.5 days less time to mature than the 2 wide spacings (9 and 11 inches) for 'Summer Sweet 7200.' The fresh market maturity of Florida Staysweet'