restaurants the yuca is preferred as a vegetable to the more extensively grown malanga. As the synonyms imply yuca is also used throughout the tropical regions as a source of starch and in the production of tapioca.

Yields are variable with an average of 5 tons per acre. Based on an average price of $6.00 per 50 lb. sack the value of the yuca crop is $240,000.

As in the other crops, much work needs to be done on variety selection, production techniques, insect and disease control and post-harvest problems.

Summary

The subtropical vegetable industry of Dade County has grown rapidly in the last six years both in size and in value. Acreage has increased from 3200 acres in 1971 to 10,600 acres in 1977 while farm values for these crops have risen from $1.9 million to $9.7 million. As Latin farmers and others begin to solve many of their production and marketing problems it is anticipated that the industry will continue to expand. Vitally needed research has been started and as this research becomes available improved varieties and production techniques will be utilized to further increase the value.

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EFFECT OF CULTIVATION ON CABBAGE YIELD AND HEAD WEIGHT[1]

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Abstract. **Combinations of sweep sizes and cultivation depths were used to study the effect on marketable weight, average head weight, and percent marketable heads cut at first harvest over 3 seasons of cabbage grown in 'flat' culture. Plots receiving one cultivation with a rolling cultivator approximately 2 weeks after transplanting had a higher average marketable weight and average head weight than the other nine cultivation treatments studied. Cultivating to a depth of 4 to 5 inches with combinations of 22, 18, and 8-inch sweeps reduced the average marketable weight per plot and the average head weight. Cultivating deep with wide sweeps tended to reduce the percent marketable heads. Lowest yields were obtained when the combination of 22 and 18-inch sweeps were used to cultivate throughout the season.**

Cultivation of vegetable crops is an old and well established practice. However, there is a great deal of misconception as to the benefits from cultivation. Some of the benefits given are: weed control, conservation of moisture, increased aeration (favoring nitrification) and increased absorption and retention of heat (6).

Cabbage has an extensive shallow root system that fills the soil to the surface at an early stage of development (1, 8, 9). About the time the heads are two-thirds mature, the roots may spread laterally for 3.5 feet. A mature plant may draw upon more than 200 cubic feet of soil for water and nutrients (9). The fibrous roots are found chiefly in the upper layer of the soil. Disruption of this root system by cultivation will have an effect upon the plants ability to take-up water and nutrients.

Studies on cultivation of cabbage have established that the most important benefit derived is from weed control (2, 3, 4, 5, 7, 9). Only minor differences were found between no cultivation and cultivation in moisture content of the soil, soil temperature, and nitrification (3, 5, 7).

The objective of this study was to determine the effect of the common practice of using wide sweeps at a depth of 4 to 5 inches throughout most of the growing season on cabbage yield and average head weight.

Materials and Methods

Three plantings of cabbage were made on Manatee and Myakka (formerly mapped as Leon) fine sand to investigate the effect of sweep size, cultivation depth, and frequency of cultivation on marketable yield and head weight.

A soil fumigant was applied 6 weeks prior to transplanting for nematode control. A broadcast application of 500 lb/acre of a 5-5-8 fertilizer was applied and disked in before transplanting. Two additional applications of 500 lb/acre of a 5-5-8 and one application of 500 lb/acre of a 10-4-10-3 fertilizer were applied as a side placement on 13, 31, and 42 days, respectively, after transplanting. The November and December plantings received an additional fertilizer application of 500 lb/acre of a 5-5-8 on the 57th day after transplanting. This was due to apparent slow growth related to cold weather.

The cultivar, 'Little Rock', was transplanted on February 12, 1976. The cultivar, 'Market Prize', was transplanted on November 16 and December 13, 1976. A "flat" culture method of growing the cabbage was used with rows 30-inches apart and plants set 12 inches apart in-the-row.

Cultivation treatments when applicable, followed one day after side placement of fertilizer to aid in its incorporation. All plots were cultivated with a rolling cultivator two weeks after transplanting. On the 32nd day 22-inch, 8-inch, or no sweeps were used to cultivate the plots. Plots (treatments) 2, 3, 4, and 9 were cultivated to a depth of 4 to 5 inches. Plots 5, 6, 7, 8, and 10 were cultivated to a depth of

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1 to 1.5 inches. Additional cultivations were made on 43, 58, and 71 days after transplanting. Sub-soilers, 12-inch flat sweeps designed to be run 12 inches deep, were used on the 86th day on the November and December plantings to break a hard crust formed by tractor traffic. First harvest was 87, 118, and 122 days, respectively, for the February, November, and December plantings. Cultivation treatments and day of cultivation are summarized in Table 1.

Each plot was 7.5 feet wide (three, 30-inch rows) by 50 ft long. A randomized complete block design with four replications was used. Yield data, average head weight, and percentage marketable on the first harvest were taken on the middle row of the 3 rows, starting 10 feet from the end for a distance of 25 feet. Data were taken by counting, grading, and weighing each plot when the majority of heads were judged to be ready for a once-over harvest.

Results and Discussion

Yield per plot, average head weight, and percentage marketable cabbage from the three planting dates as affected by the ten cultivation treatments are summarized in Table 2. The November planting had the lowest marketable yield, average head weight, and percentage marketable heads cut on first harvest. Treatments 1, 8, and 9 were consistently higher in marketable yield and average head weight. They were generally higher than the other treatments for percentage marketable heads cut. Treatments 2 and 3 were consistently the lowest in marketable yield, average head weight, and percentage marketable heads cut. Treatments 1, 8, and 9 (Table 1) received the least number of cultivations and all cultivations were completed before head formation.

When the data for the 3 planting dates are combined according to the size of sweeps used in cultivating, 'no cultivating' after the 32nd day after transplanting had a significantly higher yield and average head weight than either the 8-inch sweeps or the combination of 22 and 18-inch sweeps (Table 3). Yield was significantly lower for the combination of larger sweeps than for the 8-inch sweeps. There were no significant differences in the average head weight between these two sweep treatments. The percentage of marketable heads cut on first harvest increased as the size of sweeps used decreased, with no sweeps having the highest percentage (86%). Indications are that as larger sweeps are used throughout the season, yield, head weight, and percentage heads cut are reduced.

Table 3. First harvest marketable yield, average marketable head weight, and per cent marketable for three planting dates of cabbage as affected by sweep sizes used in cultivating.

Size of sweeps	Yield[z]	Head wt.[y]	Per cent[x]
None	80.8[w] a	3.30 a	86
8 inch	69.8 b	3.03 b	79
22 + 18 inch	62.2 c	2.93 b	69

[z]Marketable weight per plot (2.5 x 25 feet) in pounds.
[y]Average marketable head weight in pounds.
[x]Per cent of marketable heads on first harvest.
[w]Mean separation of Duncan's multiple range test, 5% level.

Table 1. Treatments in a cabbage cultivation study on Manatee and Myakka fine sands.

Treatment	Cultivation (days after transplanting)					
	14	32	43	58	71	86
1	rolling cultivator	none	none	none	none	none
2	rolling cultivator	22D[z]	22D	18D	18D	sub-soil
3	rolling cultivator	22D	8D	8D	8D	sub-soil
4	rolling cultivator	22D	8D	sub-soil	sub-soil	sub-soil
5	rolling cultivator	22S[y]	22S	18S	18S	sub-soil
6	rolling cultivator	22S	8S	8P[x]	8P	sub-soil
7	rolling cultivator	22S	sub-soil	sub-soil	sub-soil	sub-soil
8	rolling cultivator	22S	none	none	none	sub-soil
9	rolling cultivator	8D	8D	none	none	sub-soil
10	rolling cultivator	8S	8S	none	none	sub-soil

[z]22 inch sweeps; 4 to 5 inches deep (D).
[y]22 inch sweeps, 1 to 1.5 inches deep (S).
[x]8 inch sweeps with tips pointed (P).

Table 2. Summary of yield per plot, average head weight, and percentage marketable cabbage from 3 planting dates as affected by number, size of sweeps, depth, and frequency of cultivation.

Treatment[z]	February			November			December		
	Yield[y]	Head wt.[x]	%[w]	Yield	Head wt.	%	Yield	Head wt.	%
1	108.1	4.35	87	68.7	2.59	67	73.6	3.09	84
2	72.9	3.70	70	44.5	2.39	37	48.7	2.41	83
3	84.3	3.79	72	54.1	2.25	55	49.2	2.44	81
4	92.9	3.83	77	53.3	2.36	62	61.3	2.60	86
5	88.6	3.86	83	62.9	2.47	57	55.2	2.72	81
6	91.9	4.00	85	58.8	2.46	64	58.5	2.69	95
7	89.9	3.83	84	62.4	2.48	61	57.4	2.73	93
8	99.6	4.07	87	64.9	2.56	77	69.8	3.11	98
9	99.6	4.10	87	65.3	2.49	65	60.8	2.81	83
10	94.3	4.10	85	59.6	2.45	65	6.16	2.77	97

[z]Treatments are outlined in Table 1.
[y]Marketable weight per plot (2.5 x 25 ft.) in pounds,
[x]Average marketable head weight in pounds.
[w]Per cent of marketable heads on first harvest.

When the depth of cultivation (Table 4) is considered, 'no cultivating' after the 32nd day resulted in significantly higher yield and average head weight than either cultivating at 1 to 1.5 or 4 to 5 inches deep. Shallow cultivation (1 to 1.5 inches) resulted in significantly higher yields and average head weight than deep cultivation (4 to 5 inches). The percentage of marketable heads cut on first harvest was greatest for the no cultivations and least for the deep cultivations. These results indicate that none or early cultivations will result in higher yield, average head weight, and percentage heads cut. Shallow cultivation resulted in higher yield, head weight, and percentage heads cut than deep cultivation.

Table 4. First harvest marketable yield, average marketable head weight, and per cent marketable for three planting dates of cabbage as affected by depth of cultivation.

Depth in inches	Yield[z]	Head wt.[y]	Per cent[x]
None	80.8[w] a	3.30 a	86
1-1.5	70.1 b	3.05 b	79
4-5	62.4 c	2.86 c	69

[z]Marketable weight per plot (2.5 x 25 ft.) in pounds.
[y]Average marketable head weight in pounds.
[x]Per cent of marketable heads on first harvest.
[w]Mean separation of Duncan's multiple range test, 5% level.

None or one early cultivation with sweeps had significantly higher yield than 3 or 5 cultivations (Table 5). Three cultivations had significantly higher yield and average head weight than 5 cultivations. There was no significant difference in average head weight between 1 and 3 cultivations. The percentage heads cut increased as the number of cultivations decreased. These results indicate that yield, average head weight, and percentage heads cut increases as the number of cultivations decreases.

In summary, cultivating throughout the growing season with large sweeps at 4 to 5 inches deep resulted in the lowest yield, average head weight, and percentage heads cut. None or early cultivations resulted in the highest yield, average head weight, and per cent heads cut. Cultivating after 4 to 5 weeks after transplanting in sandy soils would be of questionable value unless crusting or weeds are problems.

Table 5. First harvest marketable yield, average marketable head weight and per cent marketable for three planting dates of cabbage as affected by number of cultivations.

Number of cultivations	Yield[z]	Head wt.[y]	Per cent[x]
1	80.8[w] a	3.30 a	86
3	75.6 b	3.15 a	82
5	65.3 c	2.95 b	73

[z]Marketable weight per plot (2.5 x 25 ft.) in pounds.
[y]Average marketable head weight in pounds.
[x]Per cent of marketable heads on first harvest.
[w]Mean separation by Duncan's multiple range test, 5% level.

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EVALUATION OF PICKLING CUCUMBER VARIETIES FOR FLORIDA[1]

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Abstract. **Due to the limited amount of recent performance information available on pickling cucumber varieties grown under Florida conditions, commercially-accepted and recently-introduced varieties and several breeding lines were tested at Leesburg and Gainesville. Black-spined, monoecious inbred cucumber varieties have been recommended and planted in Florida for many years. Gynoecious hybrids, which were developed especially for once-over harvesting, were more productive than monoecious varieties with multiple-pick, hand harvesting. 'Explorer' is a standard gynoecious variety in many areas of the country but it was evident that even better varieties are available. 'Carolina' and 'Calypso' did well in all 3 trials and should be considered by commercial growers in Florida.**

Pickling or processing cucumbers (*Cucumis sativus* L.) have not been an important commercial crop in Florida in the past. However, interest in this crop has recently increased and cucumbers for processing were planted on approximately 5000 acres in Florida in 1977. The cucumbers planted for processing in the U.S. in 1976 had a value of about $85 million and were grown on about 135,000 acres (3). Processors in other states are looking to Florida to extend the time during which their plants can operate both in the early spring and late fall. Interest in developing a

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