December 26, 1978

Prepared by Extension Vegetable Crops Specialists

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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLES AND HORTICULTURE)
AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA

FROM: James Montelaro, Professor & Extension Vegetable Specialist

VEGETARIAN NEWSLETTER 78-12

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS, STATE OF FLORIDA, IFAS, UNIVERSITY OF FLORIDA, U.S. DEPARTMENT OF AGRICULTURE, AND BOARDS OF COUNTY COMMISSIONERS COOPERATING
I. NOTES OF INTEREST

A. CORRECTION - Last Month’s Freeze Protection Article

We appreciate being told when we make a mistake. This happened shortly after our November newsletter was mailed out. One of our readers called attention to the statement under 8(f) at the bottom of page 4. It read "Turn system off when temperature rises above 32°F." We forgot to say "wet bulb temperature". The reader suggested keeping the system on until all ice melts. This is probably the safest approach.

(Montelaro)

B. Symposium - Plant Production Structure & Environment Control

Dr. Richard Henley, Foliage Extension Specialist at ARC, Apopka asked us to call this symposium to the attention of our vegetable transplant growers and other interested parties. It will be held on January 17, 1979 at the Howard Johnson Motel (Florida Center), Orlando, Florida. Together with the symposium featuring nationally recognized speaker, there will be "trade fair" where equipment and materials will be available for inspection.

Additional information can be obtained from Dr. Richard Henley, ARC, Route #3, Box 580, Apopka, Florida 32703 or from this office.

(Montelaro)

II. COMMERCIAL VEGETABLE PRODUCTION

A. Bacterial Wilt & Nematode Interaction in Tomatoes

Southern bacterial wilt is a common disease of many vegetable crops in Florida. It can be especially serious on crops of tomato, potato, eggplant and pepper. Leaves of infected plants show severe wilt symptoms for a short period of two or three days followed by death of the plant. The organism involved is a soil-borne bacterium present in most of our Florida soils. Crop loss may range from a few scattered plants to a significant portion of any planting.

Development of the disease is unpredictable, at best. A tomato crop may not be seriously affected even though it follows a crop completely devastated on the same land the previous season. Why this happens has not been explained satisfactorily by many years of research on this disease. It has been demonstrated that the disease organism "enters the plant roots through wounds" (Walker, J. C. Diseases of Vegetable Crops. Page 443. 1952). This point may have been demonstrated in a tomato crop grown in Florida this fall where as many as 75% of the plants in a part of a 20-acre field were observed to be infested with bacterial wilt. Close examination of the roots of severely wilted plants clearly showed that root wounds were abundant as a result of a heavy root-knot nematode infestation.
In the other part of the 20-acre field, little or no nematode injury could be found. Similarly, very little, if any, bacterial wilt was observed. The difference in nematode control (and bacterial wilt as well in this case) was due to differences in effectiveness of the fumigant. The heavily infested portion of the field was too dry for the fumigant to be effective. A rain provided adequate moisture for the remainder of the field where nematode control was good. Differences between the two were obvious even to the casual observer.

This discussion does not mean to imply that root-knot nematode is the sole predisposing factor in bacterial wilt development. We believe it has shed light on the interaction of one problem with another. These types of interactions are ever present and are indeed hard to unravel. One lesson to be learned from this experience is the importance of attention to details not only in fumigation but in every other cultural operation as well.

(Montelaro, Dunn*, Simone*)

Note: Dr. R. A. Dunn and Dr. G. W. Simone are Extension Nematologist, Extension Plant Pathologist, respectively, IFAS, Gainesville, Florida.

B. The Importance of the Seed Salesman in Modern Vegetable Production

Vegetable growers realize how important the seed salesman is in keeping them informed of the performance, and quality characteristics of the newest varieties. Seed salesmen gain information from plant breeders, variety trials, and the seed producer. Most of the seed sales personnel maintain a close working relationship with IFAS plant breeders and workers evaluating new cultivars.

In Florida, the role of the seed salesman is made more challenging by the large number of vegetables grown and the wide range of planting and harvest dates. For major crops such as tomato, beans, peppers, and cabbage, the seed salesman may need to keep track of several dozen varieties for each crop.

Seed production and distribution has become a highly sophisticated system. For example, snap bean seed should be grown in dry climates to reduce the potential of anthracnose, and bacterial blights. Pepper, although related to tomato, must be given greater care in handling and storage than tomato. Sweet corn seed must be dried and stored very carefully after harvest to maintain vigor, whereas the seed of the cabbage and squash family achieve a fairly stable seed moisture as they mature in the fruit. Each vegetable seed has specific storage and handling characteristics.

Some typical factors the modern seed salesman is concerned with are presented in the following table. Relationships within crop families are important in understanding the possible disease similarities. Seed yield per acre may help us to appreciate why some seed is more expensive than others. The type of flower may be important in determining the crossability of cultivars within the crop during seed production.

Seed salesmen are largely responsible for the fast adoption rate of new varieties. Extension workers appreciate the vital role seed salesmen play in helping Florida vegetable growers remaining competitive.

(Marlowe)
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<td>400 D</td>
<td>300 T 2 lbs 100 Monoec. 95 6 50 90 5</td>
<td>300 T 4 oz 1 Perfect 95 6 50 90 5</td>
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*Planting rate, D = direct seed, T = transplant, amt. needed to produce plants for 1 acre.

**Flower types = Perfect: male and female in same flower. Monoec. = monoecious male and female flower are separate but on same plant.
C. Planting Decisions for Profitable Watermelon Production

Many watermelon growers complain about low prices received for their product. According to a recent market analysis, watermelon growers in several parts of Florida received the lowest average prices for their melons in the Southeast. However, let's examine some production decisions that affect market prices and determine how we can improve the competitive advantage of Florida's watermelon growers.

During the past 5 years, watermelon acreages have ranged from 47,000 to 65,000 acres with 60% of the acreage planted in North and West Florida. However, only 43,600 to 55,000 acres were harvested during this 5-year period. Prices ranged from 4.36¢/lb. when fewer acres were planted in 1974-75 to 2.61¢/lb. when 65,000 acres were planted in 1975-76. Therefore, growers must recognize the relationship between planted acreage and the price paid to the grower. In economic terms, this relationship is called the law of supply and demand. Because consumers will eat only so many melons depending on weather conditions at the terminal market and relative competition with other crops such as peaches, Florida growers should not expect to plant infinite acreages. Although speculation will always occur, watermelon growers can follow a general rule-of-thumb of about 43,000 acres of melons at current yield levels are needed to generate an average farm level price of 4¢/lb. throughout the state.

Progressive growers often wonder what they can do to improve their share of the watermelon market. Although continued market development for a region is important, it depends on many forces that the individual grower has little or no control over. Therefore, growers may wish to concentrate their immediate attention on improving production efficiencies and economic yields. For example, growers who produce high watermelon yields on a specified acreage tend to maximize profits because fixed costs are spread over a larger volume of fruit. Growers should carefully assess their direct competition from other production regions that supply melons to the national markets during the same period of time. In addition, growers are encouraged to complete the questionnaire involving "intentions to plant" provided by the Florida Crop and Livestock Reporting Service and to consider the report when making final decisions regarding individual plantings. Remember, successful growers recognize the fact that it is far more efficient to produce high yields of quality melons on a few acres than a few, poor quality melons on a lot of acres.

Extension agents are encouraged to develop educational programs and request more detailed information about watermelon planting and marketing decisions from Dr. Bryan Wall, Extension Marketing Specialist (Vegetables), Food and Resource Economics Department, Gainesville.

(William & Wall)

III. HARVEST AND HANDLING

A. Hydaircooling - A New Concept for Precooling Pallet Loads of Vegetables

The research was done here in Florida on this new concept of combining cold water and cold air to speed up cooling and decrease both time and energy required.
This work has also shown that the cooling of the centers of pallet loads is much more effective than with either air or water alone. The equipment is adaptable to cooling of vegetables in any type of container by varying the air-water ratio to fit the type of container and the commodity. Early research was limited to sweet corn in bulk bins, celery in fiberboard containers and the measurement of water quality.

Research is continuing with other vegetables such as cabbage, pepper, and cucumbers that are not normally hydrocooled and on water quality and chlorine stability.

Copies of this and subsequent research published on this subject may be secured from the authors at the following addresses; F. E. Henry, U.S.D.A. Agricultural Engineering Department - IFAS, University of Florida, Gainesville, Florida 32611 or A. H. Bennett, U.S.D.A., ARS, Athens, Georgia.

IV. VEGETABLE GARDENING

A. Squash - Raw and Naked

Don't be surprised to find raw squash among the dips and vegetable sticks at your next party. Although it is news to many that squash can be eaten raw, the consumption of uncooked squash may be centuries old. In fact, the word squash is derived from the Indian word "askutasquash", meaning "eaten raw or uncooked". But the Indians also cooked squash by boiling or broiling, and charred remains of squash thousands of years old have been found in Mexico.

Maybe the Indian word for squash is derived from the use of raw seeds. The flesh of wild cucurbita species is so bitter that it is inedible, so seeds were likely to have been the first parts eaten.

Cucurbita seeds are an excellent source of protein and oil. The hardness of the seedcoats limits their use in this country. But that is changing. Now, there are available varieties of Cucurbita pepo such as 'Lady Godiva', 'Eat All', 'Sweetnut', and 'Hull-less' which do not have the tough seed coats. Such seeds are delicious uncooked or roasted.

Gardeners growing 'Lady Godiva' or other naked seeded varieties do not need to worry about isolating these plants from the other squash to prevent cross-pollination. Honeybees will probably cross-pollinate 'Lady Godiva' with summer squash, pumpkin, or other varieties of C. pepo, but the seed in the 'Lady Godiva' fruit will still not have a tough seed coat. The seed coat is entirely maternal tissue and is not affected by cross pollination. But home gardeners should not try to save seed from 'Lady Godiva' for planting, because such seed will not produce fruit with naked seed if cross pollinated.
B. Know Your Vegetables - Jojoba

Jojoba (Simmondsia chinensis (Link) S.) is not a vegetable, but has been confused for such a crop because its soft-skinned nuts have long been eaten by Indians as food. It is a wild, desert shrub which produces oil rich nuts. It is for this oil that the plant is most prized.

Jojoba is native to the Sonoran Desert of northwestern Mexico and to neighboring regions in Arizona and Southern California. Nowhere else in the world does it grow as a native plant, but within this region it exists, often in dense stands, scattered over 100,000 square miles of arid lands. Due to this climatic adaptation it is unlikely that jojoba would grow well in Florida's humid, subtropical conditions. In fact, so far there is only speculation as to whether or not the crop could be domesticated even in arid or semi-arid climates.

It is an unspectacular looking shrub that may reach 15 feet in height. Its flat gray-green, leathery leaves and its deep root system make it well adapted to withstand desert heat and dryness.

These shrubs are either male (staminate) which produce pollen, or female which produce flowers. When pollinated, usually in late summer, these pistillate flowers develop into fruit. The following spring, the fruit swells and grows. In the summer's heat the green fruit dries, its outer skin shrivels and peels back, exposing a wrinkled brown soft-skinned nut the size of a small olive.

The nuts contain a vegetable oil that is yellowish and odorless but feels less oily than traditional, edible oils. Half the weight of the nut is oil. The oil is important because its chemical structure is unique among all known vegetable oils. Jojoba oil is a polyunsaturated liquid wax of a type not easily synthesized commercially. The only other source has been the sperm whale which has been killed in great numbers to supply the demand for sperm oil.

Jojoba flowers have no odors or petals to attract pollinating insects. Thus, Jojoba depends almost entirely on the wind for pollination.

The nut does not go through a period of dormancy and it can be germinated soon after harvesting. At about 77°F, germination occurs in less than a week. Stem cuttings have produced roots within 8 weeks in mist propagation at 72°F.

Jojoba shows its best growth in areas with 10 to 18 inches of annual rainfall and where temperatures seldom fall below 25°F. for more than a few hours at night. It grows on a diversity of soil, from porous rocks to clays, in slightly acid to alkaline soils, on mountain slopes and in valleys. But it is always found on well aerated soils.

Some of the potential uses for jojoba nuts and plants have been outlined as follows: lubrication, cosmetics, pharmaceuticals, food cooking oils, salad oil, vegetable oil, shortening, waxes, animal feed supplement (if toxin is denatured) due to 20-30% protein content of oilless meal, animal browse food, and ornamental plant. The roasted nuts smell and taste like roasted coffee beans.
Since this is a wild plant native to arid regions of the west, Florida gardeners are not encouraged to grow jojoba. However, the dry, well-drained, sandy scrub oak lands might offer some opportunity. A major drawback is the lack of a reliable seed source.

Anyone interested in further reading on jojoba should obtain a copy of "Jojoba - Feasibility for Cultivation on Indian Reservations in the Sonoran Desert Region", from the National Academy of Sciences, 2101 Constitution Ave., Washington, D.C. Most of this report was taken from that book.

(Stephens)