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I. NOTES OF INTEREST

A. Purpose of the Vegetarian.

The Vegetarian is an excellent newsletter. One of its primary aims is to provide the latest, up-to-date, timely information for county extension faculty with responsibilities for commercial and/or urban vegetable programs. We would expect county faculty to serve as the major information providers to the clientele in the counties, of information contained in the Vegetarian. Clientele who want personal copies of Vegetarians should contact their local extension office.

(App, Asst. Dean, Agricultural Programs, Vegetarian 89-09)

B. Calendar.


October 31-November 2, 1989. Florida State Horticulture Society Annual Convention Hyatt Regency Tampa, FL.

November 14-15, 1989. Vegetable Packinghouse Operations Meetings. An evening seminar will be held in Immokalee (Nov. 14) and Delray Beach (Nov. 15) to discuss postharvest operations in packinghouses, particularly reducing mechanical injury during handling, precooling and the potential use of controlled atmospheres for domestic and export shipping. (Contact Steve Dobbs, Collier Co. or Ken Shuler, Palm Beach Co.).


C. New Publications (Vegetables)


II. COMMERCIAL VEGETABLES

A. Icebox Watermelon Varieties.

Icebox watermelons are small-fruited types weighing between 6 and 12 lbs. They have been available for some time, but have never attained commercial importance in the United States. ‘New Hampshire Midget’ was introduced by the New Hampshire Agricultural Experiment Station in 1951. Although new in concept, it failed to become commercially acceptable because of susceptibility to fusarium wilt, relatively weak rinds, large and numerous seeds, and only fair quality. ‘Sugar Baby’, another icebox variety was developed by M. Hardin of Geary, Oklahoma and introduced by Woodside Seed Co. in 1956. It has some of the same shortcomings as ‘New Hampshire Midget’, but has attained a fair degree of popularity in various parts of the world outside of the United States.

Although the number of icebox watermelon varieties remain quite small in comparison to large-fruited types, some recently-introduced and soon-to-be released varieties offer promise for enhancement of this segment of the watermelon industry. Social and demographic changes in the U.S. population favor production of smaller size watermelons that are more compatible with smaller household size.
Icebox watermelon variety trials have been conducted over the past several years at several locations in Florida. Generally, ‘Mickylee’ and ‘Minilee’, developed by Dr. Crall at the Central Florida Res. & Ed. Ctr., Leesburg, have produced high yields and quality in these trials.

Ten icebox watermelon varieties were evaluated in the spring of 1989 at the Gulf Coast Research & Education Center in Bradenton. Seeds were planted in 1.5 inch cell Todd planter flats on February 2 and the transplants were set in the field on March 1. The watermelons were harvested three times beginning on May 16 and ending on June 15.

Highest yields from the first harvest were obtained from ‘Southern Belle’, ‘Sugar Baby’, ‘Baby Fun’, ‘NVH 4319’, and ‘Baby Gray’. Total yields were highest from ‘Tiger Baby’ (626cwt/A), ‘Baby Fun’, ‘S86 C8-5’ (CFREC-Leesburg), and ‘SSDL’ (CFREC-Leesburg), but ‘Baby Fun’ fruit weight was too great for it to be considered a true icebox melon. Soluble solids were the highest in ‘S86 C8-5’ (13.1%), ‘SSDL’ (12.9%), and ‘Baby Fun’ (12.6%). Observations on hollowheart were made with every cell separation noted. ‘S86 C8-5’, ‘Minilee’, ‘SSDL’, ‘Tiger Baby’, and ‘Mickylee’ had the highest incidence of hollowheart. It should be pointed out that some of the hollowheart was so slight that it would not affect consumer acceptance.

Notations on internal quality indicated that some fruit of ‘NVH 4319’, ‘Southern Belle’, and ‘Sugar Baby’ had poor internal color, whereas flesh color of ‘S86 C8-5’ and ‘SSDL’ was outstanding.

One of the important characteristics in icebox watermelons is uniform size for convenient packing. ‘Tiger Baby’, ‘S86 C8-5’, ‘Sugar Baby’, ‘Mickylee’, ‘NVH 4319’, and ‘Southern Belle’ produced at least 70% of fruit in the 6 to 12 pound weight class.

Based on the characteristics measured in this trial, ‘Tiger Baby’, ‘S86 C8-5’, ‘SSDL’, and ‘Mickylee’ had the best overall performance.

(Maynard, Vegetarian 89-09)

B. Delay in Ripening Initiation of Florida Green Tomatoes.

Construction of special rooms for ripening tomatoes with exogenous ethylene began in Florida about 20 years ago. Prior to that time some tomato ripening initiation with exogenous ethylene had taken place in existing rooms which had been appropriately modified. Otherwise, packed mature-green tomatoes were shipped without exposure to ethylene.

Ten years ago all major packers of Florida mature-green tomatoes had special rooms for ripening initiation. A major modification of these ripening rooms was made to prevent the accumulation of carbon dioxide which impeded the ripening process. This new system became known as the “flow-through” system. Most mature-green tomatoes packed in Florida passed through these ripening initiation rooms.

An increasing number of packed mature-green tomatoes are now being shipped from Florida without exposure to ethylene. Some of these tomatoes are treated enroute and others are treated at terminal market. There is concern by the Florida tomato industry that delayed ripening initiation may diminish the quality of the fruit. Preliminary tests were conducted to determine the effect of delayed exposure to ethylene on fruit response.

Packed mature-green tomatoes exposed to ethylene, without delay, ripened to color 5 (light red) in 16 days while those fruits that had a 3-day delay before exposure to ethylene required 24 days to ripen. Tomatoes that had a 1- and 2-day delay before ethylene treatment took 20 and 22 days, respectively, to ripen. There
was a linear increase in fruit decay with time in storage. In previous tests, ascorbic acid diminishes with increasing storage time. To optimize tomato quality, fruit should be exposed to ethylene without delay. Thus, ripening initiation should be done in Florida instead of entransit or at terminal market.

(Gull - Vegetarian 89-09)

C. Evaluating Handling/Shipping Operations for Precooling.

The key to produce quality maintenance is "timeliness"; timely and careful harvest and transport to the packinghouse, rapid packing and precooling, and rapid transport to the market or buyer. Temperature management is essential in maintaining vegetable quality during postharvest handling operations, particularly for Florida shippers selling produce in distant markets. For many crops, precooling is the recommended procedure to extend storage life sufficiently for shipping and retailing. The purpose of this article is to review the chief concerns which must be addressed when evaluating a particular packinghouse operation for implementation of precooling.

Temperature Requirements. Precooling is the rapid removal of 7/8 of the field heat to temperatures approaching proper storage temperature and is the first line of defense in slowing the biological processes which reduce product quality. Although many larger packinghouses incorporate precooling in their handling operations, smaller packinghouses often rely on short-term storage in refrigerated rooms or in some circumstances load directly into refrigerated trailers for shipment.

The storage life or relative perishability of a crop is reflected in its respiration rate. Once harvested, a vegetable continues life processes independent of the plant, and as a result, must utilize its own reserves. Many crops, such as greens, celery and lettuce, are cut at harvest which causes additional stress. Respiration is the process of life by which oxygen is combined with stored carbohydrates and other components to produce heat, chemical energy, water, carbon dioxide and other products. The respiration rate varies by commodity; those commodities with a high respiration rate utilize the reserves faster and are more perishable than those with a lower respiration rate. Therefore these crops must be rapidly precooled to slow their metabolism in order to provide maximum storage life for shipping and handling operations. Also, once a product is cooled, the cold chain must not be broken during subsequent handling in order to avoid development of condensation.

Horticultural crops may be grouped into two general categories based on sensitivity to storage temperatures. Those crops which are chilling sensitive should be held at temperatures generally above 50°F; the optimal temperature depends upon the crop. Storage below this threshold will give rise to chilling injury. Chilling injury is a physiological disorder which is characterized by such symptoms as development of sunken lesions on the skin, increased susceptibility to decay, increased shrivel, and incomplete ripening (poor taste, texture, aroma and color). The degree of chilling sensitivity, and therefore the lowest safe storage temperature, is crop dependent. Those crops not as sensitive to chilling injury may be stored at lower temperatures to 32°F. The degree of chilling is also dependent on the length of exposure to low temperatures. Short exposure times will result in less injury than longer exposure to chilling temperatures. Storage in a high relative humidity environment (above 90%) is normally also recommended for most fresh crops to reduce water loss.

Optimal storage recommendations and precooling methods for individual vegetable commodities have been compiled and are available upon request. A method for determining actual precooling sche-
dules was published previously (Vegetarian 89-05).

Evaluating Harvest and Handling Operations. The entire harvest/packing-house operation must be evaluated, since the addition of a precooling procedure will affect all other operations. Field handling procedures may have to be modified, such as the adoption of field packing, the use of harvest aids or harvest into bulk containers. Produce harvested during early morning hours will have a lower pulp temperature than that harvested during the afternoon, thereby reducing cooling time and energy costs. Holding time in the field should be minimized and containers should be shielded from direct exposure to the sun. A brief period under adverse ambient conditions can rapidly reduce quality and provide false confidence in assumed storage life of the product being shipped. Choice of container style and construction material may be affected by the precooling method, such as the ability to withstand prolonged contact with water or ice, or the necessity of larger vent openings to permit rapid air movement.

In addition to diligence in proper temperature management, the use of appropriate handling techniques is essential in maintaining product quality. Mechanical injury incurred during harvest, packing and handling operations also reduces storage life. Cuts, punctures and impact bruises are caused by excessive impacts during handling; compression bruises and abrasions are normally caused during transport due to inadequate protection by the shipping container and by overpacking. These injuries reduce quality in several ways: there are increases in water loss, respiration rate and susceptibility to decay, and ripening and senescence are accelerated due to increased production of ethylene gas by the injured product. palletization should also be evaluated due to the benefits of reduced mechanical injury by elimination of handling steps.

Packing line, cold room and loading dock locations should be in close proximity to each other and to the proposed site of the precooler to minimize handling and rewarming times. Rewarming will increase potential for decay because of condensation which forms on the surface of the vegetables. These facilities may require modification to accommodate the new handling procedure. Additional utilities must be available, such as water for hydrocooling, block ice for top icing and slushing, and increased electrical supply for larger refrigeration capacity or ice making equipment. Culls and waste water must be disposed in a manner which meets local environmental regulations.

Produce which has not been adequately precooled should not be loaded into refrigerated trailers, since most trailers are designed to only maintain temperature and as such do not have the additional refrigeration capacity necessary to remove field heat from an entire load of produce. Shipping inadequately precooled loads will result in reduced quality upon arrival due to elevated rates of respiration and decay, and increased water loss.

A regular sanitation program is essential to prevent build-up of pathogenic populations. Existing field containers and packing line components (conveyors, brush rolls, transfer points, etc.) should be cleaned prior to the start of the packing season with a disinfecting solution such as liquid sodium hypochlorite. Periodic cleaning should be performed during the packing season as well. Ripening rooms and cold storage rooms should likewise be disinfected at the start, during and at the end of the season.

Precooling should be considered an integral component of any packing/shipping operation. Application of the above approach for systematically evaluating individual farm operations will provide a basis for understanding current conditions and the options which are available for
improving efficiency and product quality to, hopefully, result in higher profits.

(Sargent, Vegetarian 89-09)

III. PESTICIDE UPDATE

A. Mancozeb and Maneb Labels Have Been Dealt Lethal Blows for Vegetables.

Labels of mancozeb and manebl products (Dithanes, Manzates, Penncozeb, Manebs, Manex) have been restricted severely in the past two to three years. Three weeks ago I presented information to growers in Palm Beach County that was based upon the accepted EPA protocol for reregistration of the above products. I indicated to the growers that the ongoing protocol would allow us the remaining uses of mancozeb and manebl products for about 2 years at which time further label reductions could occur. Unknown to most of the agricultural industry, negotiations between manufacturers and the EPA have resulted in severe label reductions for both manebl and mancozeb effective as soon as new labels are printed. Again, manufacturers have been "asked" to play by NEW protocols, "or else." Containers of manebl and mancozeb that are purchased prior to the advent of the new labels will be usable as stated on the old label. New sticker-type labels will be placed on those containers that remain for sale by January 1, 1990. Products shipped from the manufacturers will have the new labels as soon as they are printed and no later than January 1, 1990.

Specifically, ALL CUCURBITS, CELERY AND CARROTS will be deleted from mancozeb labels. BEANS, ALL CUCURBITS, ALL CRUCIFERS, EGG-PLANT, LETTUCE, ENDIVE, PEPPERS, SPINACH, AND TOMATOES will be deleted from all manebl labels.

The bottom line is that manebl will be labeled on the following vegetables: ASPARAGUS, SWEET CORN, ONIONS, POTATOES, AND TOMATOES. Also, all seed treatment uses are left in tact.

The value of the vegetable crops in Florida at the farm level that are impacted upon is in excess of $550,000,000. In addition, $39,600,000 worth of agronomic crops are also impacted upon.

Tolerances still exist for those crops to be deleted from the labels which might allow us to pursue state or emergency labels. However, I have been told that this approach may not be advisable because such action might blemish the marketability of Florida-produced vegetables. The consumer has been told (via actions or words) by consumer advocates, the EPA, the NRDC, some Hollywood types, grocers and produce buyers that mancozeb and manebl fungicides present risk to our health. Even some Florida growers have decided not to use these products and run the risk of total loss of their crops, so that they might preserve the marketability of their crop.

Agriculture is facing serious problems on many fronts. Growers now have reduced land (particularly prime agricultural land) on which to farm because of urban sprawl, suburban sprawl and government-sponsored land conservation plans. Our ability to use crop rotation as a pest control method is in serious jeopardy. Agricultural chemicals are being taken away or voluntarily withdrawn in a wave of hysteria CAUSED BY A RELATIVELY FEW PERSONS AND ORGANIZATIONS. Hype and political action now determine agricultural production practices. American growers are being squeezed on all fronts. The most effective commodity for balance of trade for the United States has been quality agricultural products and this is severely threatened with recent actions against agricultural chemicals. Many of us are concerned with increasing importation of our food supplies. Other countries
produce food without testing for residue and quality, so growers there use unknown quantities of chemicals, some of which are not available for use in the United States. Chemicals in other countries may be applied by hand with no calibration whatsoever. One fruit may have no residue while another fruit nearby might contain massive amounts of residue. In the United States, except for vegetable gardens, pesticides are usually applied with equipment that is calibrated to deliver uniform amounts that will not exceed label restrictions. What are we gaining by buying a product from another country that may have excessive chemical residues, and a product that is in shipment longer where toxin-producing microbes have more time to multiply? It makes no sense to go that route. If the food supply in the United States has been so dangerous, why are humans in the United States living longer today than in the past?

Three ways exist to get agriculture out of this dilemma. The first would be not to grow crops. Some people have already made this frightful decision. The second way is to use alternate technology to control pests. I support this idea, but what are the alternatives? The third way is for the majority to counter the harassing influences of those few who go to the mass media every time they get a revelation about how they think we ought to produce food. It is my understanding that the American Medical Association has not condemned maneb or mancozeb. I have never heard of anyone attaining a dysfunction directly or indirectly from these materials in my 27 years of experience. What is the problem, the chemical or the those who think there is a problem?

(Kucharek, IFAS Plant Pathologist Vegetarian 89-09)

B. Tomato Transplants Withdrawn from B-Nine SP Label.

According to Ron Ames, Technical Manager, Herbicides & Plant Growth Regulants for Uniroyal Chemical Co., tomato has been deleted from the B-Nine SP (Alar) label as of June 20, 1989. Ames said the present label simply omits tomato from the list of crops registered. A sticker indicating this label deletion will accompany individual B-Nine SP containers and packing boxes. This action represents a voluntary withdrawal of B-Nine SP by Uniroyal. Growers with B-Nine SP purchased under the old label may continue to use it on tomatoes providing they retain the label and associated lot number.

A recent article in American Vegetable Grower (May '89) indicated paclobutrazol (Bonzai), uniconazol (Sumagic), propiconizol (Tilt), and flurprimidol (EL 500) all reduce rank growth in vegetable transplants in a manner similar to B-Nine SP. These plant growth regulators (PGR's) were discovered in the search for fungicide chemistry and do have fungicidal activity. All inhibit the production of gibberellic acid. A positive side effect of treatment with these PGR's may be increased field tolerance to stress (especially temperature and moisture stress) and air pollution.

It should be remembered however, that none of these compounds are registered for use in transplant production. Valent U.S.A. is considering registration of uniconazol on vegetable transplants. Research at the SWFREC (Immokalee) is presently underway to characterize the effect of these compounds on tomato transplants and subsequent production in Florida.

(Vavrina - Vegetarian 89-09)

IV. VEGETABLE GARDENING

A. 1989 Vegetable Gardening Survey.

Palm Beach County horticulture agent Gene Joyner has released the results of his vegetable gardening survey conducted in 1989 for the previous
gardening year (1988-1989). While this is a small survey done in only one county in South Florida, the results will help those of us who work in home horticulture to understand better what our gardening clientele are doing, based on their perceptions. Therefore, I am summarizing the survey results as follows:

**Number participating:** Male 23, Female 23, Total 46. Urban 33, Rural 13.

**Size of garden (Avg):** 20' long x 14' wide (280 sq. ft.).

**Soil Amendments Planned:** Peat Moss (16); Animal manure (21); Top soil (20); Sawdust (2); Compost (5); Grass clippings (5).

**Soil fumigation planned:** Yes 25; No 8.

**Fertilizer planned:** Liquid 19; Dry 18.

**Favorite vegetables:** Tomato, bean, lettuce, radish, carrot, pepper, broccoli, onion, cucumber, eggplant, corn, cauliflower, collards, spinach, herbs.

**Irrigation planned:** Hand 23; Drip 5; Sprinkler 23.

**Cost Estimates (per garden)**
- Seed $9.50
- Fungicides $17.00
- Plants $24.00
- Insecticides $20.00
- Amendments $32.00
- Nematicides $18.00
- Fertilizer $37.00
- Weed control $25.00
- Watering $120.00
- Total $150.00

**Was cost justified?** Yes 21; No 10.

**Preferred pest control:** Chemical 15; Mechanical 6; Combination 23.

**Most used insecticides:** Malathion 15; Diazinon 13; Bt 1; Sevin 15; home-made 2.

**Preferred Sprays for Disease:** Captan 1; Maneb 1; Dithane 1; Copper 13; Benlate 2; Combination 4.

**Most Aggravating Problems:** (1) Insects; (2) Diseases; (3) Weeds.

**How Vegetables Used:** Fresh 32; Canned 11; Frozen 11; Dried 4.

**Extension Information Used:** Yes 23; No 5.

(Stephens, Vegetarian 89-09)

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