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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.


March 7-14, 1996. Florida Postharvest Horticulture Institute and Industry Tour. Contact Steve Sargent, Coordinator.

II. COMMERCIAL VEGETABLES

A. Tomato Culture--How Does It Affect Yield and Disease?

Preface: The following was reported in a New Jersey Extension publication and is recent info to an often asked question in these days of declining profitability in tomatoes. Dr. Jay Scott cautions however that the cultivar tested here was "designed" for stake culture and the results of cultivars bred for ground culture (i.e. those from Dr. Gardener's program in North Carolina) may be quite different.

Field studies conducted in New Jersey in 1993 and 1994 were used to compare fresh market tomatoes grown on the ground with tomatoes grown using the short stake cultural system. The effects of cultural systems on foliar diseases caused by fungi, yield, and postharvest fruit rot were determined.

These studies, supported by the New Jersey Agricultural Experiment Station/Rutgers Cooperative Extension Sustainable Agriculture Grant program, were performed at the Snyder Research and Extension Farm in northwest New Jersey. The soil was a Quakertown silt loam. In both years, 'Celebrity' tomatoes were grown at an 18-inch plant spacing and a 6-foot row spacing. Both stake and ground tomatoes were grown using raised beds with black plastic mulch and trickle irrigation. Staked plants were pruned to the sucker below the first fruit cluster. Bravo 720, at two pints per acre, was used to control disease. The crop was harvested weekly, graded, and weighed. During peak harvest, marketable fruit were stored for one week at 60 to 70°F to simulate grower or consumer practices and then examined for postharvest fruit loss.

In both years, the incidence of foliar disease was lower on the stake than on ground culture plants (Table 1). The major foliar disease in both years was early blight. Septoria leaf spot was also present.

Total yield was not affected by culture. However, marketable yield was higher for the stake than the ground culture tomatoes (Table 1). In 1994, yield of jumbo fruit was higher for stake than ground culture plants.

The cultural system had a major effect on postharvest losses. Ground culture marketable fruit stored for seven days averaged 30% loss to various decays. Losses of stake culture fruit averaged 12.5% (Table 1).
Table 1. Effect of culture on disease, yield and post-harvest losses.

<table>
<thead>
<tr>
<th>Culture</th>
<th>Disease Rating</th>
<th>Total Yield (T/acre)</th>
<th>Mkt. Yield (T/acre)</th>
<th>Post-Harvest Loss (%)</th>
<th>Loss due to Anthracnose (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground</td>
<td>6.5 b</td>
<td>46.3</td>
<td>19.8 a</td>
<td>34.1 b</td>
<td>25.60 b</td>
</tr>
<tr>
<td>Stake</td>
<td>4.6 a</td>
<td>46.3</td>
<td>24.2 b</td>
<td>10.1 a</td>
<td>5.41 a</td>
</tr>
</tbody>
</table>

Anthracnose, a field initiated decay, is a primary concern in tomato production. In our studies, anthracnose accounted for an average of 6% of the ground culture losses versus an average of 0.6% of the stake culture losses. Other losses were due to common decay organisms that require a microscopic injury to initiate decay, and consisted principally of black mold, sour rot, bacterial soft rot, and rhizopus rot. These were all lower on stake than ground culture fruit.

These studies clearly demonstrated the advantages of growing fresh market tomatoes on stakes. Staking reduces disease incidence, promotes larger fruit and greater marketable yields, and reduces postharvest losses from anthracnose and other common decay organisms. In fact, culture was more important than fungicide applications in reducing postharvest losses.

(Martha Maletta, Hunterdon County Horticultural Consultant; William H. Tietjen, Warren County Agricultural Agent; Winfred P. Cowgill, Jr., Hunterdon County Agricultural Agent; Stephen A. Johnston, Specialist in Plant Pathology, New Jersey Grower, Rutgers Coop. Ext. Newsletter, April, 1995)

(Vavrina and Scott, Vegetarian 95-9)

B. Getting the Most Out of Strawberry Cooling.

Recent studies in the Postharvest Physiology Laboratory have demonstrated the importance of rapid, thorough cooling of strawberries and the use of film wraps in extending fruit quality during simulated shipping. Tests were also conducted to determine cooling rates for standard flats and the newer clamshell containers in standard-sized flats.

1. Cooling Delays Lower Strawberry Quality

Cecilia Nunes, a doctoral student from Portugal, has just completed three seasons of research with Florida strawberries. Along with Dr. Jeff Brecht from the Horticultural Sciences Department and myself, Cecilia found that delays of only 6 hours from harvest were sufficient to reduce several quality parameters following a week at 34F and 1 day at 70F. For example, strawberry firmness decreased by almost 50% with a 6-hour delay as compared with those which were immediately cooled. Likewise, significant losses were found in ascorbic acid content (Vitamin C), total soluble solids and bright red surface color while water loss increased.

The negative effects of the cooling delay on the above quality parameters were
somewhat offset by overwrapping pint containers with plastic film. Strawberries which were stored in overwrapped containers lost only about 25% of the fresh weight that unwrapped fruits lost. Although beneficial, overwrapping did not substitute for rapid cooling, but in conjunction with rapid cooling, quality was outstanding.

2. Cooling Comparisons of Mesh and Plastic Clamshell Containers

This past spring, Drs. Brecht and Mike Talbot (Agricultural & Biological Engineering) performed several direct comparisons of these containers under commercial cooling conditions. Their tests included mesh containers in the standard flat (37.5"x39") or the 12"x20" flat on the 40"x48" pallet, and clamshell containers (both pints and quarts) on the standard flat or the 16"x20" flat on the 40"x48" pallet.

In all of these combinations, the 7/8 cooling times were fairly similar, ranging from 0.82 hours to 1.1 hours. Assuming refrigeration capacity is sufficient, the major cause for delayed cooling reported to us by many commercial operators appears not to be due to the clamshell containers, but rather, to cooler management. The most critical point in cooling was observed to be failure to seal off air pathways in the cooling tunnel. The recent adoption of standard 40"x48" pallets has extended cooling times by allowing cooler air to short-circuit through the side openings under the pallet. In operations where these openings were not blocked, cooling times increased by 40%. Gaps between flats or between pallets also permitted significant air short-circuiting. For more information regarding the results of these cooling tests, contact Dr. Talbot at 904-392-9164.

The results from these series of tests indicate that strawberry postharvest quality significantly benefits from rapid cooling within a few hours of harvest, maintenance of high humidity during subsequent storage (such as the use of plastic pallet overwraps) and proper management of the cooling tunnel.

(Sargent, Vegetarian 95-9)

III. VEGETABLE GARDENING


A new publication has just been released by the Horticultural Sciences Department IFAS, University of Florida (1995). It is SP 170, “Vegetable Production Guide for Florida”, edited by professors Don Maynard and George Hochmuth, both Extension Vegetable Specialists with the HOS Dept. The manual is a compilation of chapters written by IFAS faculty, and contains information about the growing and handling of vegetable crops for commercial purposes.

As Extension agents and specialists we know that such a guide is For Commercial Use Only, which means it is not for distribution to home gardeners. But what of its value as a reference piece for Home Horticulture Agents? Does it not contain information that an astute county agent could interpret and use for his home gardening program?

With these questions in mind, I have reviewed SP 170 and within this article shall endeavor to offer my suggestions on how this valuable manual may be helpful to our Home Horticulture Agents.
The following is a critique of each chapter from the standpoint of the information or portions thereof being helpful to non-commercial agents, and the precautions necessary for its use.

**Introduction**

Useful to gardeners information
Crops grown in Florida.
Florida’s rank as a site of production.

Non-useful information
None.

Off-limits (not permitted for gardeners) information.
None.

**Chapter 1. Soil and fertilizer management**

Useful to gardeners

- Description and adaptability of soil types.
- Soil testing concept (limited value).
- Nutrients required by plants.
- Deficiency symptoms.
- Nutrient occurrences in soils.
- Nutrient levels in soil test (limited).
- Tolerance to soil acidity.
- Liming materials.
- Effects on pH by fertilizer and irrigation.
- Manures/sludges.
- Fertilizer nutrient sources/contents.
- Micronutrients and foliar feeding.
- Soluble salts.
- Liquid, dry, and slow-release fertilizers.
- Fertilizer placement and supplement.
- Bed spacing.
- Soil preparation and bedding.
- Cover crops.

Non-useful information
Double-cropping.
LBF system.
Irrigation management.
Plant tissue analysis.
Fertigation.

Off-limits information
None.

**Chapter 2. Variety Selection**

Useful for gardeners
Entire section (limited).

Non-useful information
None.

Off-limits information
None.

**Chapter 3. Seeds**

Useful for gardeners
Entire section.

Non-useful
None.

Off-limits
None.

**Chapter 4. Transplant Production**

Useful
Entire section.

**Chapter 5. Mulching**

Useful
Entire section.

**Chapter 6. Row Covers**

Useful
Entire section.
Chapter 7. Irrigation management

Useful
    Portions - limited.

Non-useful
    Table 16. Historical ET values.
    Table 17. Crop coefficients.

Chapter 8. Pesticide Safety

Useful
    Entire section.

Chapter 9. Respiratory Devices for Pesticides

Useful
    Introduction.

Non-useful
    Use and care of respirators.
    Types of respirators.

Off limits information
    None.

Chapter 10. Calibration of Chemical Applicators

Useful
    None.

Non-useful
    All.

Off-limits
    None.

Chapter 11. Insects of Vegetables

Useful information
    Pgs 58-68 - describing insects.
    Insecticides approved (Caution! - Agent must not use this section for recommendations. Use only for product familiarity.)

Non-useful
    None.

Off-limits information Note:
    Agents need to know what is restricted (R), but must not recommend these insecticides.

Chapter 12. Nematodes

Useful
    All sections except ‘Chemical Control’.

Non-useful
    Chemical control.

Off limits
    Chemical Control including Table 23.

Chapter 13. Weed Management

Useful
    All sections to “Herbicides”.

Non-useful
    See “off-limits”.

Off-limits
    Herbicides, Table 25. Herbicides.

Chapter 14. Yields of Vegetables

Useful information
    All (limited value).

Non-useful
    None.

Off-limits
    None.

Chapter 15. Postharvest Handling

Useful information
    All (limited).

Non-useful
    Portions.

Off-limits
    None.
Chapter 16. Marketing Strategies

Useful
- Local markets.

Non-useful
- Remainder.

Off-limits
- None.

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Chapter 17. Production Costs

Useful
- None.

Off-limits
- None.

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Chapter 18. Organic production

Useful
- All.

Off-limits
- None.

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Chapters 19-37. Crop Fact Sheets

Useful
- Botany - fertilizer.

Non-useful
- Remainder.

Off-limits
- Remainder.

Summary
While this publication (SP170) is directed toward the commercial grower and those who advise them, about 3/4 of the information is general enough to be of value to home gardeners and those who advise them. Since the home gardener is likely to misinterpret the information, the publication should be used only by Extension workers who can read and interpret properly (in my opinion). With that precautionary statement, I feel SP170 is valuable as a for-sale reference piece that belongs on the desk of home horticulture Extension agents as well as commercial Extension agents.

(Stephens, Vegetarian 95-09)

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