Vegetarian 89-07
July 15, 1989

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I. NOTES OF INTEREST

A. Calendar.


July 30 - Aug. 4, 1989. ASHS Convention, Tulsa, OK.


B. New Publications.


II. COMMERCIAL VEGETABLES

A. Transplant Production

Fall '89.

Producers of fall vegetable transplants should be highly concerned with sanitation. Not just within the plant house, but around the plant house and in fields adjacent to the plant house.

It isn't practical to expect production fields in the vicinity to remain vacant until transplant production is complete. Neither is it possible to keep those fields and ditch rows clean while
large scale field planting is going on.

Consider this: when is a weed not just a weed? When that weed is also a host for disease and insects. It’s no secret that tomato, bell pepper and tabasco pepper can readily exchange bacterial leaf spot (Xanthomonas campestris (Pamm.) Dows. pv. vesicatoria (Doidge) Dye) organisms in the plant house, especially when overhead irrigation is used. But when black nightshade (Solanum nigrum L.) and ground-cherry (Physalis spp.) are also hosts for bacterial leaf spot you may be harboring a ready source of inoculum close by. Dr. Schuster at the Gulf Coast Research and Education Center, indicates these weed species are also excellent hosts for the sweetpotato whitefly.

One might expect an interchange of disease and insect pests among plant species within the same family. Other members of the family Solanaceae which may contribute to plant house disease problems include tobacco (tobacco users can readily spread TMV), petunia, jasmine (Cestrum), and Jimsonweed (Datura stramonium).

Fall eggplant, already in the field, can contribute late blight (Phytophthora infestans (Mont.) d By.) and any spring crop tomato residue can provide the aerial spores of crown rot (Fusarium oxysporum Schlect. f. sp. radicis-lycopersici Jarvis and Shoemaker) to add to the problems. In the spring, while fruit production is slowing, but transplant production for northern markets is increasing, old fruit and vines from the crops themselves can present a formidable source of infection.

Unrelated plant species may also contribute to plant house disease problems. For example showy crotalaria (Crotalaria spectabilis) is a host for gray mold (Botyritis cinerea Pers. ex Fr.); cowpea (Vigna unguiculata (L.) Walp.) is a host for another bacterial leaf spot in pepper and bacterial canker in tomato (Pseudomonas syringae van Hall pv. syringae van Hall) as are peach, nectarine, and most citrus species. Unfortunately the study of most plant disease and insect pests centers around economically important plants. This means more unknowns are involved in identifying weed species as pest hosts. Therefore good weed control is a necessity in and around the plant house.

(Vavrina, Vegetarian 89-07)

B. Ethylene - culprit or cure?

Ethylene is used routinely to initiate ripening of such products as mature green tomatoes, honeydew melons, and bananas. However, with greater frequency we recognize deleterious effects upon products such as lettuce, carrots, sweet corn, and watermelons when they have been exposed to even small amounts of ethylene. Generally speaking, exposure of fresh vegetables to ethylene at the packinghouse or in storage is not intentional and thus conclude that exposure has not occurred. Furthermore, deleterious effects of exposure to ethylene are not apparent initially, but show up later at terminal market or during merchandising.

Ethylene concentrations of 150 ppm or more, are used for ripening initiation even though biological systems may be activated at concentrations as low as 0.1 ppm. Fresh products in the vicinity of these ripening facilities where ethylene is used may be a high risk for exposure, but what about products where ethylene is not intentionally used?

Ethylene is contained in the exhaust emissions from diesel trucks and gasoline powered fork lifts produce very high levels of ethylene. There is increased ethylene in metropolitan areas but fortunately for Florida this increase is minimal as compared to a particularly smoggy day in the Los Angeles area where ethylene levels can rise to over 0.15 ppm between 8 a.m. and noon.

At the packinghouse level or in storage, if fork lift emissions are the main source of ethylene, catalytic converters installed on the lift trucks will reduce ethylene levels; converters can reduce ethylene emissions by about 90%.
However, ventilation with outside air seems to be the best method of ethylene control in air refrigerated storage operations. Ventilation is the least expensive ethylene control method and particularly if major ventilation occurred at night when outside concentrations of ethylene would be at the lowest level. The major expense would be cost of fan operation and the extra refrigeration required. Alternative methods would be ethylene scrubbers or UV radiation; both appear to be very energy inefficient and therefore more costly.

Following are some fresh vegetables with their relative sensitivity to ethylene exposure:

Sensitive:
- Broccoli
- Cabbage
- Carrot
- Cauliflower
- Celery
- Endive
- Lettuce
- Onions
- Radish
- Spinach
- Watermelon

Tolerant:
- Eggplant
- Muskmelon
- Pepper
- Tomato
- Sweet corn
- Endive
- Watermelon

(Gull, Vegetarian 89-07)

C. Fall cucumber production.

Slicing cucumbers are a popular vegetable for fall production in Florida, often selected as the second crop in a double-crop system. Don Maynard always correctly says that cultivar selection is an important first step in a vegetable planting program. Fall cucumber production presents extra problems because of the heat, rainfall, and diseases. To gather information on the performance of fall cucumbers, we conducted a fall slicing cucumber variety trial on plastic mulch at the Live Oak, AREC. We have included a summary of that trial for your use. If you need a complete copy of the report contact us.

Overall, it appears that 'Dasher II' and 'Superset' were the best performing cultivars in this trial. Both were in the highest yielding class for early and total marketable yields. In addition, both cultivars produced high yields of fancy and U.S. No. 1 grade fruit. 'Comet A2' performed in the intermediate class for earliness but ranked low for total yields. This cultivar is evidently early, but does not produce high yields over an extended harvesting season. 'Monarch' and 'Revenue' were intermediate in their performance in both early and total yield when evaluations are made based on quality and yield. 'Centurian' performed well for total seasonal yield, but it appears to be a late cultivar since its early yield from the first two harvests was low. The poorest performing cultivars in this test were 'Striker' and 'General Lee'. Both had low early yields and low total seasonal yields when both quality (fancy and U.S. No. 1 fruits) and yield were considered.
Total yield (7 harvests) of eight slicing cucumber cultivars grown on plastic mulch in fall, 1988 at Live Oak, FL.

Yield by grade category (bushels per acre basis)

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Seed Source</th>
<th>No. 1 Fancy</th>
<th>No. 1</th>
<th>Large</th>
<th>Small</th>
<th>No. 2</th>
<th>Cull</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centurian</td>
<td>Northrup King</td>
<td>261</td>
<td>164</td>
<td>47</td>
<td>78</td>
<td>137</td>
<td>50</td>
<td>687</td>
</tr>
<tr>
<td>Comet A2</td>
<td>Asgrow</td>
<td>184</td>
<td>154</td>
<td>73</td>
<td>120</td>
<td>120</td>
<td>58</td>
<td>651</td>
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<tr>
<td>Dasher II</td>
<td>Peto</td>
<td>285</td>
<td>179</td>
<td>35</td>
<td>126</td>
<td>120</td>
<td>57</td>
<td>745</td>
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<tr>
<td>General Lee</td>
<td>Ferry Morse</td>
<td>197</td>
<td>151</td>
<td>44</td>
<td>138</td>
<td>110</td>
<td>36</td>
<td>641</td>
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<tr>
<td>Monarch</td>
<td>Asgrow</td>
<td>176</td>
<td>152</td>
<td>151</td>
<td>87</td>
<td>132</td>
<td>60</td>
<td>699</td>
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<tr>
<td>Revenue</td>
<td>Ferry Morse</td>
<td>252</td>
<td>129</td>
<td>80</td>
<td>108</td>
<td>109</td>
<td>48</td>
<td>678</td>
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<tr>
<td>Striker</td>
<td>Asgrow</td>
<td>252</td>
<td>156</td>
<td>39</td>
<td>106</td>
<td>92</td>
<td>47</td>
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<tr>
<td>Superset</td>
<td>Peto</td>
<td>239</td>
<td>153</td>
<td>50</td>
<td>116</td>
<td>126</td>
<td>56</td>
<td>684</td>
</tr>
</tbody>
</table>

(B. Hochmuth, G. Hochmuth, Vegetarian 89-07)

D. Assessment of mechanical damage in tomato packinglines.

A study was begun this past spring to determine the extent of damage occurring to tomatoes during typical handling operations. During May and June three tomato cultivars ('Solar Set', 'NK-4459', 'Sunny') were sampled at two ripeness stages (mature green (MG) and breaker (BR)) and at three points during packing. The sample locations were in the float tank, after final grading (prior to sizing), and after stacking the carton on the pallet. The samples were held at 22°C until all fruits reached the firm, red ripe stage and then were evaluated for external mechanical injury and internal bruising (IB).

External injuries scored were: bruises, cuts/punctures and abrasions. Internal bruising is apparent after slicing the ripe tomato through the equator; the locular gel appears shrunken and yellow-green in color, and the seeds are often disorganized. IB occurs when mature green or breaker tomatoes receive an impact of sufficient force to disrupt normal ripening. In many instances of IB there is no externally visible bruise on the tomato surface.

The results showed that tomatoes handled MG were generally more sensitive to abrasions, while those handled at BR were more sensitive to external bruises. After sorting and grading operations the number of externally damage-free tomatoes increased an average of 20% over the samples taken from the float tank, indicating the importance of the grading operation.

Incidence of internal bruising in BR tomatoes was double that of MG tomatoes. Samples of BR for 'Solar Set', 'NK-4459' and 'Sunny' had 57.1%, 68.2% and 40.0% of the locules with IB, respectively. IB also increased proportionally with handling; handling after grading caused the incidence of IB to increase 5.2% to 23.8% for these cultivars. MG tomatoes had significantly more locules with seeds than BR (averages of 5.0 and 5.0, respectively) which might provide MG more rigidity, and, therefore, more resistance to IB during handling.

Studies are being undertaken to identify transfer points during handling which are likely to cause mechanical injuries and to determine the maximum threshold levels for tomato impacts to avoid injuries.

(Sargent, Vegetarian 89-07)
III. HOME GARDENING

A. 1989 Horticulture Institute a Success.

Sixty-six 4-H’ers and about 15 adult leaders attended the week-long 4-H Horticulture Institute, June 19-23, 1989, at Camp Ocala (Lake County) Florida. Campers came from all over Florida, from Broward County to Wakulla County.

We call it an Institute rather than a camp, due to the educational focus on horticulture. There were 20 classes as follow:

1. Cacti and Succulents (Virgle Schwable, Marion Master Gardener).
2. Shiitake Mushrooms (Clay Olson, Taylor Co. Ext. Director)
3. Forest Ecology (Nancy Powell - Extension Forester)
5. Television Videotaping (Andrea Smith - IFAS Editorial)
6. Butterfly Gardening (Joe Schaeffer - IFAS Wildlife)
7. Gardening with Leftovers (Betsy Davis - Highlands Co. Ext. Hort)
8. Vegetable Print Presses (David Hall, Ext. Botanist)
10. Plant Growth Regulators (Jeff Williamson, Fruit Specialist)
11. Interior Scaping (Richard Henley, Hort. Specialist)
12. Soils (David Griffis, Volusia County)
13. Lake Water Quality (Sandy Fisher, IFAS Water Specialist)
14. Composting (Shirley Anderson, Alachua Co. Ext. Hort)
15. Chilled Fruits (Jeff Williamson, IFAS)
16. Vegetables in Containers (David Brown, Duval Ext. Hort)
17. Landscaping to Conserve Energy (Bob Black, Urban Hort.)
18. Snacks from Fruits (Alice Ayers, Lake Co. Ext.)
19. NJHA (Bob Renner, Marion Co. 4-H)
20. Horticulture Posters (Keith Fuller, St. Johns Co. Ext. Hort.)

In addition to attending these classes, the 4-H’ers, who ranged from 10 to 17 years of age, learned how to give horticulture demonstrations and identify horticultural products. In fact, during the week contests were held in both these events.

Wednesday was tour day. The horticulture learning experiences were a visit to Pinebay U-Pick Farm, which deals in fruits and ornamentals and to a large sweet corn muck farm. The recreation portion took place at Wild Waters of Ocala.

As one can readily see the entire Institute was made possible through the efforts of a fairly large team. In addition to the instructors, we had a lot of interaction with the Camp Ocala staff. They helped us with recreation, swimming, cooking, KP, and other camp activities. Several other adults were there to assist with camp registration, discipline, and operation.

I wish to thank all who helped with the 1989 Institute, and especially Tom Greenwalt (4H), Kathleen Ruppert (OH), Linda Landrum (Volusia Ext. Hort.), and Eleanor Foerster (Osceola Ext. Hort.), for key roles.

Financial support for the Institute came mostly from camper registration fees, but
we also received funds from Zellwin Farms and the Florida 4H Foundation.

Evaluations turned in by campers indicate that the 1989 4H Horticulture Institute was successful in its objective of bringing 4 H'ers who have a mutual interest in learning more about plants and horticulture, together for a week of fun, learn, and return.

(Stephens, Vegetarian 89-07)

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