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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.


B. Steve Sargent to go on Faculty Developmental Leave.

I have accepted an invitation by a Brazilian government research center to spend the next year working with colleagues in the area of postharvest technology. I will be on Faculty Developmental Leave from July 9, 1993 to June 30, 1994. During this period we plan to document postharvest losses in fresh commodities during handling from farm to consumer in the greater Rio de Janeiro region. This information will permit development of feasibility studies to determine the level of technology which might be implemented in order to reduce losses estimated from 30 to 50%. I will also be developing collaborative research projects with other postharvest researchers in Brazil on problems of mutual interest related to handling of tropical and subtropical crops.

In my absence, Dr. Mike Talbot (Agricultural Engineering Department) has agreed to handle questions regarding postharvest handling problems. Dr. Talbot's phone number is 904-392-9164 (SUNCOM: 622-9164).

(Sargent, Vegetarian 93-06)

II. COMMERCIAL VEGETABLES

A. Tipburn and Internal Rot in Chinese Cabbage.

This seems to be the year for problems in Chinese cabbage. You may remember the pepper spot article in the March Vegetarian discussing that problem seen last winter. Two new phenomena surfaced in the spring crop, namely tipburn and internal rot. Several similarities exist between pepper spot and tipburn, similarities that can be corrected (or alleviated) through simple management practices and a better understanding of Chinese cabbage physiology.

Tipburn appears as a grayish or ashen discoloration generally on the leaf margins distal to (away from) the core on the internal leaves. Internal rot is an actual breakdown of the tissues within the head essentially in the same location as that observed with tipburn. With internal rot, tissues become translucent and water soaked. Internal rot appears to be associated with calcium (Ca) deficiency in the head and is the product of overly vigorous growth in Napa (more rounded) varieties.

Tipburn and internal rot severity is affected by the environment (especially warm, humid conditions), variety, and physiological or nutritional factors. These disorders have traditionally been associated with Ca deficiency, abnormally high fertilizer rates, and improper water management (Collier and Tibbits, 1982).

Both tipburn and internal rot are generally believed to involve a Ca deficiency. Ca moves in the transpiration stream, but it is not a very mobile ion; in low or non-transpiring tissue (such as leaves in the interior of the head) Ca may often be deficient. Perhaps the most well...
known example of Ca deficiency is blossom end rot of tomato or watermelon.

Recent work from Japan in both solution and field culture has shown that ammonium (NH₄-N) toxicity can be indirectly related to tipburn in warm season Chinese cabbage. It was proposed that high levels of NH₄-N caused root damage which resulted in a localized water stress, decreasing the flow of Ca to head tissue. As Ca is preferentially absorbed at the root tip, root damage would reduce uptake. However, NH₄-N converts rapidly to NO₃ in our warm soils (within 30 days) so some NH₄-N in the sidedress material should not cause a problem.

Recent research in Palm Beach county (Ken Shuler) showed 120 lbs/A is sufficient to produce commercially acceptable yields of Chinese cabbage depending on the amount and frequency of leaching rain. N applications should be split (3) with about 50% (60 lbs/A or less) of the N applied at early heading.

Chinese cabbage is most sensitive to tipburn at head formation. So as with pepper spot, heavy side dressings of nitrogen (N) should be avoided at this time. Interestingly, overly wet soils (causing low oxygen) also damage roots!

Research at the SWFREC has shown that under plastic mulch, regardless of N source, as N rate increases tipburn decreases. A one-time application of 120 lbs N per acre at planting caused only half the tipburn exhibited at 60 lbs N per acre. Decreasing tipburn incidence through increased N application has also been reported from Denmark for radicchio and crisp head lettuce.

For bare ground culture, the Japanese have found that suppression of initial plant growth by shading (covering with rice straw) effectively reduced both tipburn and internal rot. However, low N side dressings, and rigid control of soil moisture (reduced fluctuations) played a major role in reducing tipburn and internal rot in their studies.

General recommendations to reduce incidence of tipburn and internal rot include:

1. Use tolerant cultivars (Napa types most susceptible).
2. Use appropriate rates of N and K.
3. Use split application of N and K (avoid excessive N sidedressings at heading).
4. Irrigate uniformly.

(Vavrina, Vegetarian 93-06)

III. VEGETABLE GARDENING

A. Organic Gardening Research and Education Park.

This educational organic gardening site, located across Hull road from Fifield Hall, is open for agents and master gardeners to visit throughout the gardening seasons. The 3rd annual field day was held June 3rd during which the demonstration work was summarized and findings were highlighted. About 65 visitors attended, including agents and several master gardeners.

For those of you who could not attend, the following summary outlines the type of demonstrations going on here. Also, the first three years of the organic soil amendment study has been presented in the Florida State Horticultural Society Proceedings, Vol. 105, May 1993, (just received). The paper is on pages 263-268, "Organic Soil Amendments for Florida Vegetable Gardens," by James M. Stephens and S. R. Kostewicz.
Summary of Demonstrations and Trials

1. **Organic amendments**: 'Whopper' tomatoes are growing in 12 gro-boxes, each containing one of the following organic soil amendments: (a) oak leaves; (b) multiple organics; (c) chicken litter; (d) turkey (sustane); (e) yard-waste-compost; (f) yard-waste-compost plus organic fertilizer (Fertrell); (g) organic fertilizer (Fertrell); (h) guano; (i) llama litter; (j) poultry compost (Red Rooster); (k) crabwaste compost; (e) dairy compost (agraferm).

2. **Organic garden**: Demonstrates the proper way to grow a general vegetable garden organically (includes a mini-garden).

3. **Mounds**: An observational trial showing 'Whopper' tomatoes grown on compost mounds with various kinds and rates of organic fertilizer incorporated.

4&5. **Green manure** (replicated trial): Plot not previously fertilized, compared with plot previously fertilized with animal manure. Both planted with Austrian winter peas and crimson clover.

6. **Edible landscape**: Area along fence and around garden shed planted with vegetables and flowers for aesthetic effect.

7. **Tomato trellis**: Several techniques for staking and trellising tomato plants are demonstrated.

8. **Mixed planting**: Area includes novelty potatoes (blue, gold, topato), strawberries, and daylilies.

9. **Jicama and Southern pea variety demonstration**.

10. **Mulching study** (replicated) using fall cabbage ('93) and spring ('93) okra as test crops.

11. **Cover Crop**: Hairy vetch, seeded last year, has been allowed to re-seed.

12. **Tropicals intercropping**: Demonstration of selected tropical fruits such as papaya and guava, intercropped in North Florida.

13. **Fallow**: Plot kept fallow for future studies.

14. **Sweet potato**: Germ plasm study. Various plasmic combinations are under observation for possible genetic contributions.

15. **Seminole pumpkin**: This pumpkin from Florida's past is under evaluation for selections with potential as jack-o-lanterns.

16. **Living mulch**: A cover crop planted in the winter is inter-cropped with sweet corn to evaluate the effects as a living mulch (replicated).
17. **Student gardens:** The course on organic gardening is taught here in the fall semester; this spring (93) a millet cover crop rate of seeding trial is planted (replicated).

18. **Vegetable specimens garden:** Designated site for the planting and observation of uncommon vegetable kinds and varieties (partially utilized Spring '93).

19. **Composted yard-waste trial:** Pole beans planted to determine effects of various rates and combinations of composted yard waste (replicated trial in it's 3rd year).

20. **Mulched chestnuts:** Chestnuts grown organically on a contour are test crop for winter cover crop cut and evaluated as a mulch (replicated).

21. **Small fruits demonstration:** The organic culture of several door yard fruits including; figs, jujube, black mulberry, blackberry, and grapes, is demonstrated.

22. **Allelopathy study:** A tomato relative L. hirsutum is under evaluation for its allelopathic effects on weed species as an alternative to herbicides.

23. **Insect management studies:** Biorational insect control methods are under investigation by the Entomology Department. (Replicated).

24. **Herb garden:** This herb garden, established Spring 1993, is a cooperative organic display garden with members of the Alachua County Master Gardeners.

(Stephens, Vegetarian 93-06)

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