Vegetarian 85-8

August 15, 1985

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I. NOTES OF INTEREST

A. Vegetable crops calendar


October 1, 1985. Pepper Institute. LaBelle Civic Center, LaBelle, Florida.


II. PESTICIDE UPDATE

A. Aldicarb Misuse on Watermelons (Update)

A special alert from the office of the U.S. Secretary of Agriculture stated that the U.S. Environmental Protection agency and Union Carbide Corporation have notified USDA that evidence has been received that the chemical aldicarb is being misused by some growers. Aldicarb is a key ingredient in Temik.

Such misuse can seriously imperil public confidence in American farm products. A recent widely-publicized case in California caused watermelon growers throughout the country to suffer economic losses. In that instance, it now appears that only a few growers in California were actually involved. Yet, melon producers across the country reported that sales sharply declined.

The Alabama Department of Agriculture and Industries reported Temik residue had caused three people to become ill after eating a melon believed to have come from a Florida farm.

In a release from the Florida Department of Agriculture and Consumer Service, George Fong, Chief of the Chemical Residue Laboratory, stated that the tests of the melons taken from the suspected fields in Holmes County revealed no trace of aldicarb. Fong also indicated that the announcement of a suspected linkage with Florida farms "was premature".

Fong pointed out Florida has the most stringent restrictions on the use of aldicarb, an efficient nematicide, of any state in the nation.
The use of Temik on watermelons is a label violation. Labeling laws are designed to protect both growers and consumers. It is imperative that growers, for their own protection and the protection of the public, use agricultural chemicals in accordance with label instructions provided by the manufacturer.

Violations reduce sales and public confidence in all farm products, as we have seen from the California incident. The public must be reassured of the safety of food produced and sold in the U.S.

(Stall & Hochmuth - Veg. 8-85)

III. COMMERCIAL VEGETABLES

A. 1985 Florida Pepper Institute.

The 1985 Florida Pepper Institute will be held Tuesday, October 1, 1985, at the LaBelle Civic Center, LaBelle, Florida. The meeting will start at 1:00 P.M. with registration and finish approximately at 4:45 P.M.

The meeting is designed to update pepper growers with the latest recommendations in production of peppers and acquaint them with new and promising research that is in progress.

A program of the Institute is as follows:

1985 Florida Pepper Institute

Moderator - R. L. Brown - Collier County Extension Director

1:00 PM  Registration

1:30   Welcome - D. J. Cantliffe - Chairman
       Vegetable Crops Dept. - Gainesville

1:45   Pepper Fertilizer Management - G. J. Hochmuth
       Vegetable Crops Dept. - Gainesville

2:15   Drip Irrigation of Peppers - S. J. Locascio
       Vegetable Crops Dept. - Gainesville

2:45   Pepper Varieties - D. N. Maynard
       Vegetable Crops Dept. - Bradenton

3:00   Pepper Plant Establishment - Jonathan Schultheis
       Vegetable Crops Dept. - Gainesville

3:15   Refreshments
B. Improving Our Vegetable Fertilizer Management

Vegetable production has become a very capital intensive business requiring growers to continually seek ways of improving farming efficiency. One significant factor in total production costs is fertilizer. Often individuals argue that fertilizer costs are small relative to labor, machinery, etc. As a result, fertilizer management is often overlooked as a contributing factor in farming efficiency. However, fertilizer costs for many vegetables can be very high (greater than 10% of total production costs). In addition, there are hidden costs of poor fertilizer management that need to be considered. One "cost" is from soluble salt damage to plants from excess fertilizer which can result in reduced yields and quality. These salts tend to build up and can damage succeeding crops and even contribute to groundwater pollution, a factor that could eventually affect our access to groundwater for irrigation.

There are several practices we should encourage growers to consider to help improve their fertilizer management capabilities. Some of these are time-tested, logical practices, but some involve relatively new tools.

1. Avoid over-fertilization. The use of soil testing should be encouraged. Sixteen elements are required by plants, many of which are commonly supplied by fertilizers. Without proper soil testing, it is impossible to accurately plan a fertilizer program. Nutrients in fertilizer are expensive and if used in excess can lead to crop damage. Soil and plant tissue testing are the only accurate means of guiding the calculation of fertilizer needs.

The "crop nutrient requirements" in the tables of the new Commercial Fertilization Guide are amounts of N, P₂O₅, and K₂O believed to be needed for maximum production under many conditions. It is extremely important to realize that these amounts are used as fertilizer ONLY when the soil test shows very low amounts of these
nutrients in the native soil. We must make sure everyone thinks of fertilizer as a supplement to the soil fertilizer "bank". Therefore, when we use the Fertilizer Guide, be sure to call attention to the text appearing under the section "Crop Fertility Requirements".

2. Applicator calibration. Fertilizer spreaders need regular maintenance and calibration to ensure proper application rates and placement. Because of the corrosive properties of fertilizer materials, frequent (several times per year) cleaning and calibration is necessary.

3. pH control. Part of the reason for pH control is to assure maximum availability of plant nutrients. Proper pH control is especially important for the micronutrients. Without pH control, many nutrients can be tied up in the soil in forms not available to plants, thus reducing overall fertilizer efficiency. Where possible, the pH should be maintained in the range of 6.0 to 6.5. On acid soil, lime with dolomite (if magnesium is needed) or calcitic lime. It is not economical to try to change the pH of calcareous soils. Here, we can resort to methods such as banding or foliar applications of nutrients to combat the high pH effect.

4. Unproven fertilizer sources. Avoid using sources of nutrients that have not been proven beneficial in a sound fertility program. Often these materials are not cost effective and simple field demonstration tests may prove this. We should learn to READ THE FERTILIZER TAG and make a critical analysis of whether or not certain materials in the fertilizer are really needed. Sometimes a material may be needed but there may be other, less costly, ways to supply it. Again, first prove that the material is needed, and then see that you can supply it in an effective and cost-efficient manner via the fertilizer bag.

5. Slow release N sources. While more expensive, these nitrogen sources such as sulfur-coated urea or isobutylidene-diurea may be useful in certain fertilizer programs particularly long-term crops such as pepper or strawberry. Research at Gainesville has shown some benefit with these fertilizers. Be sure that they are carefully planned into the program so they will provide the nutrients in correct quantities when the plant needs them.

6. Fertilizer placement. For soil-mobile elements such as nitrogen and potassium, placement will have a great effect on plant utilization. These nutrients should be placed near the plant. For wide-row crops such as watermelons, tomatoes, peppers, etc., this means some type of "modified broadcast" or banding placement. Avoid uniform broadcasting for wide-row crops on sandy soils since the fertilizer not in the bed area may be lost to leaching. Phosphorus, in most cases does not move in the soil and can be broadcast uniformly. Many of our "old" vegetable lands are high in phosphorus and may not need continued routine fertilizer phosphorus additions. A more appropriate technique might be to apply small amounts of phosphorus (10 to 20 lbs P per acre) as a starter. This can be applied as a band or as liquid starter solution at seeding or
transplanting and may be most effective for cool planting seasons.

7. **Fertilizer timing.** For mobile elements, often the best approach is to apply the nutrients in several portions during the early part of the growing season. Split-applications will thus avoid whole-sale leaching losses that may occur if all fertilizer was applied in one application. Split-applications also may help prevent soluble salt damage when high rates of fertilizer are needed.

The use of plastic mulch should not necessarily prevent us from thinking in terms of split-application. Split-applications can be made where drip-irrigation tubes are present or where a liquid fertilizer injection wheel can be used.

8. **Mulching with polyethylene.** Full-bed plastic mulch use is a cultural technique with many benefits, one of which is reduction of fertilizer nutrient leaching. Leaching may still occur where water tables are maintained too high or are fluctuated in a seep irrigation system. Heavy, flooding rains or excess overhead irrigation also may leach nutrients. Therefore, where plastic mulch is used, irrigation management is still important to prevent leaching.

An alternative to full-bed mulch is the "strip mulch" system developed several years ago. In this system, a narrow 10 to 12 inch strip of polyethylene is laid over the fertilizer band to help reduce leaching.

9. **Cover crops.** After harvest is complete, it may be a good idea to plant a cover crop. This crop will utilize left-over nutrients in the soil for growth and thereby "trap" them from being leached. The nutrients are then returned to the soil upon plowing under the cover crops and subsequent decomposition of the organic matter. Some cover crops (legumes) may even increase soil nitrogen, reducing fertilizer nitrogen needs.

10. **Double cropping.** Where economical, planting a successive vegetable crop provides a good way to utilize residual fertilizer. To ensure maximum yields of the second crop, a soil test should be conducted to determine fertilizer needs above the residual. Of course, if the grower has practiced many of the prior suggestions in this article, there should be little residual fertilizer. In fact, levels of residual fertilizer can be an indicator of how well the fertilizer for the first crop was managed. Therefore, double cropping should be thought of as a method to re-use inputs, such as mulch, drip tubes, etc., rather than fertilizer.

11. **Micronutrients.** Like major nutrients, micronutrient fertilizer programs should be based on soil and tissue testing. Routine applications of these nutrients without soil or tissue evidence of need might lead to toxicities due to buildup in the soil. Furthermore, these nutrients add to the cost of the fertilizer, and if not needed, lead to wasted inputs. If micronutrients are needed, ensure the fertilizer is formulated to provide adequate amounts and that the micronutrient fertilizer sources are evenly distributed in
the fertilizer. Often micronutrients are added as a specified number of "units" (one unit equals 20 pounds) per ton of fertilizer. Make sure that your intended rate of application of that fertilizer will provide you with the required amounts of micronutrients per acre. A homogenized or granulated fertilizer may be a good choice to provide even distribution.

12. Foliar fertilization. Foliar applications of N, P$_2$O$_5$, or K$_2$O are rarely justified where sound soil fertilizer programs are practiced. It is difficult to apply enough of these nutrients to leaves (especially early in the growth cycle) to satisfy crop needs. Growers who use these fertilizers should compare economics of this method of fertilization with ground applications. The argument that it is "cheap insurance and easy to apply" may not be valid.

Foliar application may be useful for certain micronutrients, and perhaps phosphorus, where high pH soils or cold winter temperatures reduce nutrient uptake. An example would be on the alkaline soils of Dade county. Micronutrient deficiencies diagnosed anywhere in the state can often be effectively controlled by foliar applications.

When using foliar micronutrients, be sure to properly calculate rates and calibrate sprayers. There is a fine line between sufficient amounts and toxicity.

13. Pesticides. Use caution when applying micronutrient-containing fungicides. Examples are copper (Kocide, etc.), manganese (maneb), and manganese and zinc (mancozeb). Avoid overuse of these chemicals since the micronutrients they contain could build up in the soil to toxic levels.

14. New tools. Relatively new tools, such as fertigation with drip irrigation or overhead irrigation and the use of an injection wheel, can provide growers with increased fertilizer management capabilities. These tools basically allow the grower to increase his precision of fertilizer timing so that fertilizer is applied corresponding to crop demand periods. If properly managed, these systems can improve the overall fertilizer program efficiency. For more on fertigation, see Vegetarian issues 85-2, 4, 5, and 6.

The injection wheel is a new implement for applying liquid fertilizer to mulched beds. From research studies conducted at Immokalee, Bradenton, and Gainesville, there seems to be promise for using this tool for split-applications of mobile nutrients to mulched beds. In addition, it is an excellent tool for re-fertilization of mulched beds for double cropping.

15. Crop cultivars. It is becoming widely accepted that vegetable crop cultivars may vary greatly for fertilizer requirements. Cultivars of different plant size and yield potential differ for fertilizer need. However, even cultivars of similar size and yield potential under high fertility have been shown to vary greatly in growth and yield under reduced fertilizer. Growers have observed this, and researchers are now beginning to breed fertilizer efficiency
traits into new cultivars. The area of "bio-technology" will play a role in this research. Eventually, our soil testing and fertilizer recommendations will use this factor in the overall process of making fertilizer recommendations.

Summary. This article is meant to be a guide to help determine areas where fertilizer efficiency might be improved. Fertilizer is, after all, an input that must be managed in a manner to maximize profits. Often, problem areas may go unnoticed to the eye but may become apparent after some simple field demonstrations. Growers should be encouraged to review their fertilizer programs on a regular basis and to seek help from the extension service in carrying out field demonstration trials.

(Hochmuth - Veg. 8-85)

IV. VEGETABLE GARDENING

A. State 4-H Horticulture Judging and Identification Event

As has been the case for at least the past 23 years, a state competitive event was held for 4-H'ers in the identification and judging of horticultural plants. The most recent event was conducted July 30, 1985, in Fifield Hall, University of Florida, Gainesville. Nine county teams entered. The final placings were as follows:

Table 1. Team results, State 4-H Hort I.J. Contest (2700 Possible)

<table>
<thead>
<tr>
<th>Placing</th>
<th>County</th>
<th>Team Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marion</td>
<td>2553</td>
</tr>
<tr>
<td>2</td>
<td>St. Johns</td>
<td>2024</td>
</tr>
<tr>
<td>3</td>
<td>Volusia</td>
<td>1891</td>
</tr>
<tr>
<td>4</td>
<td>Osceola</td>
<td>1806</td>
</tr>
<tr>
<td>5</td>
<td>Sarasota</td>
<td>1704</td>
</tr>
<tr>
<td>6</td>
<td>Leon</td>
<td>1600</td>
</tr>
<tr>
<td>7</td>
<td>Nassau</td>
<td>1224</td>
</tr>
<tr>
<td>8</td>
<td>Duval</td>
<td>1172</td>
</tr>
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</table>

Table 2. Individual Placings (Possible score: 900)

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<th>Placing</th>
<th>Contestant</th>
<th>County</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>David Lane</td>
<td>Marion</td>
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</tr>
<tr>
<td>2</td>
<td>Joanna Theus</td>
<td>Marion</td>
<td>850</td>
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<tr>
<td>3</td>
<td>Kelly Brady</td>
<td>Marion</td>
<td>848</td>
</tr>
<tr>
<td>4</td>
<td>Larry Perryman</td>
<td>Marion</td>
<td>786</td>
</tr>
<tr>
<td>5</td>
<td>Dana Robinson</td>
<td>St. Johns</td>
<td>785</td>
</tr>
<tr>
<td>6</td>
<td>Laura Lee Harrelson</td>
<td>St. Johns</td>
<td>742</td>
</tr>
<tr>
<td>7</td>
<td>Sean York</td>
<td>Sarasota</td>
<td>696</td>
</tr>
<tr>
<td>8</td>
<td>Caroline Nylen</td>
<td>Volusia</td>
<td>666</td>
</tr>
<tr>
<td>9</td>
<td>Sandra Hartman</td>
<td>Volusia</td>
<td>659</td>
</tr>
</tbody>
</table>
The winning team from Marion County, coached by Agent Bob Renner, will compete against best teams from other states as part of the convention activities of the National Junior Horticultural Association (NJH), October, 1985, Lexington, Kentucky.

(Stephens Veg. 8-85)

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