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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.

May 14, 1997. 42nd Vegetable Field Day, 8:15 AM–1:30 PM. Gulf Coast Research and Education Center, 5007 60th St. East, Bradenton. Contact Dr. Don Maynard.

II. COMMERCIAL VEGETABLES

A. Evaluation of Asparagus Production in Florida.

Asparagus (Asparagus officinalis L.) is native to the Mediterranean area, and has been used as an herb and vegetable for at least 2000 years. The plant is a dioecious, herbaceous perennial widely grown in temperate areas of the world where distinct growing and dormant seasons occur. The dormant season may be related to low temperature or low moisture availability. More recently, production schemes for tropical climates have been developed.

Asparagus plantings are established directly from seed, from containerized transplants, or from 1 year old field-grown crowns. After a 1 to 2 year establishment period, asparagus for market is harvested for about 2 months, fern growth for replenishment of crown carbohydrates occurs for several months, and a dormant period lasts for several months. There are many variations on this general theme depending on the production regime being employed and local climatic conditions.

California, Washington, and Michigan are the leading asparagus producing states in the United States. New Jersey, Illinois, and several other states produce asparagus for local markets. As far as can be ascertained, there is no recent published report on asparagus production in Florida. Tests (up to 275 acres in size) on the organic soils around Lake Okeechobee were reported in Bul. 36, "Asparagus growing in Florida", Florida Department of Agriculture, Sept. 1930.

An asparagus planting was established from one-year old crowns at the University of Florida’s Gulf Coast Research and Education Center, Bradenton in February 1991 and terminated in April 1996. ‘Apollo’, ‘UC 157 F1’, and ‘Viola’ (California Asparagus Seed and Transplants, Inc., Davis, CA) and ‘Syn 4-362M’ (Jersey General), ‘Syn 4-51’ (Jersey Prince), ‘Syn 4-53’ (Greenwich), ‘Syn 4-56’ (Jersey Giant), and ‘Syn 4-MD10’ (Jersey King) (Nourse Farms, Inc., South Deerfield, MA) were planted in raised beds of Eau Gallie fine sand (sandy, silicaceous, hypothermic, Alfie Haplaquods). The Syn lines were derived from the varieties shown in parenthesis, but were not all male hybrids.

Soil samples were obtained from the experimental area before fertilization and annually thereafter, and analyzed by the University of Florida Extension Soil Testing Laboratory. Soil pH fell to 6.2 in 1996, but ranged between 7.1 and 7.8 in other years. Phosphorus concentration ranged between 22 ppm (medium) and 40 ppm (high) except for 1994 when it fell to 10 ppm (low). Magnesium concentration ranged from 56 ppm (high) to 92 ppm (high) throughout. Dry fertilizer application was made preplant at 50-87-83 lb/acre N-P-K and in 1994 at 0-76-0 lb/acre N-P-K. Nitrogen and potassium were applied weekly by fertigation.

Peaked beds, 12 inches high on five-foot centers, were prepared with hiller discs.
A six-inch deep trench was made in the bed to accommodate the crowns which were spaced on 18-inch centers in the row. The trench was backfilled to about 3 inches. Backfilling was completed later when spears had emerged and were established. Each 15-plant plot was replicated three times and arranged in a randomized complete-block design. Netafim Typhoon drip irrigation tubing (20 mil, 24-inch emitter spacing) was installed in the bed center after the final backfilling. Anchoring of the tubing with wire wickets was necessary because of the peaked bed shape. The tubing was operated at 10 psi and delivered 0.38 gallons per hour per emitter or 0.32 gallons per minute per 100 linear feet. The irrigation system was operated on an “as needed” basis to supplement rainfall. Tensiometers placed 6 inches deep in the bed center were used to monitor soil moisture. The irrigation system was timed to deliver 30 and 45 minutes of water per cycle (equivalent to 0.03 and 0.05 inches per cycle), and a single daily cycle was typically used. By mid-April the 45 minute daily cycle was used.

Fern growth was rampant. It was mowed and removed in late December 1991 and each December thereafter. The beds were renovated with disc hillers in 1991 but not in subsequent years because of the threat of crown damage. Paraquat was applied for weed management prior to spear emergence.

Nine-inch long spears were harvested for 2 weeks in late January 1992. In subsequent years, harvest commenced from mid-January to late-February depending on the weather and continued for six to eight weeks. Spears were graded for size according to United States Standards for Grades of Fresh Asparagus as very small, < 5/16 inch; small, 5/16 to < 8/16 inch; medium, 8/16 to < 11/16 inch; large, 11/16 to < 14/16 inch; and very large, > 14/16 inch in diameter measured one inch from the butt, and otherwise conforming to the standards for U.S. No. 1.

Cercospora leaf spot (Cercospora asparagi Saccardo) occurred each summer, but was readily managed by periodic applications of maneb.

In 1992, with a 2-week harvest interval, ‘UC 157’ F₁ produced the highest yields in all spear size categories. In 1993, with a 6-week harvest period, ‘UC 157’ F₁ again produced the highest yields. There was no yield difference among the entries in 1994 for an 8-week harvest cycle. In 1995, ‘Syn 4-56’ and ‘Syn 4-MD10’ yields were greater than those of other entries in a 7-week harvest interval. The asparagus was harvested for 7 weeks in 1996, but there were no yield differences among the entries. For the 5-year totals, ‘Syn 4-362M’ and ‘Syn 4-51’ yields were lower than those of the highest yielding entries, ‘Syn 4-MD10’ and ‘Syn 4-56’. Yields of the other entries did not differ from the high and low yields. Highest yields overall were obtained in 1994 with a slight decrease in 1995 and a drastic decrease in 1996 suggesting that the longevity of asparagus plantings in Florida may be considerably shorter than those in principal producing areas.

Average annual yields per acre in this trial ranged from 841 lbs/acre for ‘Syn 4-51’ to 1530 lb/acre for ‘Syn 4-MD10’. This is far below the annual average yields of 3633 lb/acre produced in Washington, 3000 lb/acre produced in California, and 2433 lb/acre produced in New Jersey.

Greatest average spear weight and the highest proportion of very large and large
spears were produced by the purple-colored variety ‘Viola’ for most of the experimental period. Spear weight was greatest in 1993, the second harvest season, and declined each year thereafter. This is another indication that asparagus planting longevity in Florida is relatively short.

Even though ‘Viola’ had the largest spears in this trial, only 2% were very large and 8% were large while 33% were medium, 31% small, and 26% very small. This can be contrasted with ‘Syn 4-51’ which had 61% of its spears in the very small size category.

Based on the results of this trial, it does not appear that asparagus is a viable economic alternative crop for the southern peninsula of Florida. However, new varieties are being developed constantly so there may be some that are suitable for production here in the future.

(Maynard, Vegetarian 97-03)

B. Role of Preplant Fertilizer With Drip Fertigation

Injecting fertilizer into the drip irrigation system is providing several benefits for nutrient management on the vegetable farm. Fertigation is particularly beneficial for the management of the nutrients such as nitrogen and potassium which are mobile in many light-textured soils. One often-asked question regarding fertigation programs is “What proportion of the total fertilizer amount should be placed in the soil as a preplant application versus the amount to inject?”

Our research and experience here in Florida shows that the answer depends on at least three issues. One issue is the nutrient in question and the second issue relates to the native fertility of the soil being used. The third and probably the largest issue is the relative water management capability with the drip irrigation system. We can look at these three issues individually.

Plant nutrients. Certain nutrients are better managed with fertigation - the soil mobile elements such as N and K. However, a nutrient such as phosphorus (P) should be placed in the soil when the bed is formed and the mulch applied. Phosphorus does not leach from the vast majority of soils so placing all P in the soil does not place it at risk to leaching from an untimely over irrigation event. In addition, P can precipitate with calcium (Ca) in irrigation water containing large amounts of Ca as is the case here in Florida with our water pumped from limestone aquifers.

Most recommendations call for all P to be applied preplant but, if an injection of P is required, precautions should be taken to insure that P remains solublized during the injection. This is usually accomplished by acidification of the injected P solution or by injecting phosphoric acid.

Soil type and fertility status. On very sandy soils, the placement of 20 to 25% of the total N and K in the bed with the P has been shown to lead to higher-yielding crops. This small amount of N and K helps the young plants establish a large root system and provides nutrition to the crop during the early growth stages when large amounts of drip-applied water are not needed. The advantage of this preplant N and K is particularly evident in rainy crop establishment seasons, such as the fall in Florida.
Water management. Preplant application of nutrients during bedding implies a certain amount of risk of the preplant nutrients to leaching from either heavy rainfall or an inadvertent over irrigation. Therefore, each grower should evaluate the nutrient leaching risk in light of the potential for leaching. The coarser textured the soil is, then the more critical this evaluation becomes. Water management is the key to optimal nutrient management, especially with drip irrigation. Maximize water application efficiency and management and you can do just about anything with the nutrient application program. The nutrients will stay in the root zone until used by the plant.

Summary. There is no universal recipe for nutrient management with a drip irrigation system. The specific plant nutrients required by the crop, the native soil fertility status, and the water management in the field are key issues that need addressing. What works best with some vegetable growers and in some farming situations may not work for another. The considerations presented here should help with an analysis of the role preplant fertilizer application may play in your drip-irrigated vegetable crops.

(Hochmuth, Vegetarian 97-03)

III. VEGETABLE GARDENING

A. Growing Garden Tomatoes in Cans.

Growing good, big, juicy, red-ripe tomatoes will be the aim of many thousands of Florida home gardeners this spring season. To grow tomatoes, with space limitations, one should consider "canning" tomatoes — that is, growing them in cans.

Tomatoes grown in cans and other containers produce well, and make attractive plants. To enhance the landscape, cans may be placed at strategic locations around the exterior of the home.

Furthermore, tomato fruits produced in this manner are just as tasty and nutritious as those grown in the ground.

This article describes a method of "can culture" used successfully in a home garden in central Florida. The principles used were sound, and the results were outstanding. There is every reason to believe that the system will work just as well for you.

Containers: The gardener used 5-gallon square cooking oil cans. Anything similar, such as paint buckets, bushel baskets or plastic garbage cans may be used. Do not use smaller containers unless varieties suitable for hanging baskets are planted.

Location: A four-foot wide strip of black polyethylene was laid out on the ground. It was long enough to accommodate about 24 cans. The cans were placed on the mulch in full sunlight. Containers may be placed wherever they might be most attractive. Since the containers have their own soil, they can be placed on hard surfaces such as concrete patios or wooden decks (even boat decks).

Soil: Sawdust was used as a soil-substitute. It is important to use well-rotted, old sawdust for best results. Although this gardener did not put anything else in the sawdust at the time it was placed into the cans, it is advisable to mix about a half cup of dolomite in each can to provide sufficient calcium for preventing blossom-end rot.
Varieties: Plants were set directly into the sawdust. The varieties used were 'Floradel,' 'Walter,' 'Big Boy,' and 'Stakeless.' Best production was obtained from 'Walter' and 'Floradel' and least from 'Stakeless.' 'Big Boy' was only fair. Other varieties suggested for use are 'Floramerica,' 'Better Boy,' and 'Solar-Set.' Also, the small-fruited varieties such as 'Summer Cherry' do well in can culture. The latter will also permit growing into the warm summer months.

Fertilizer and Watering: A fertilizer solution was prepared and applied daily to each can. The fertilizer solution was mixed in a five gallon container. The gardener mixed two tablespoonfuls of high analysis soluble fertilizer (Nutri-sol) into five gallons of water. One gallon of this solution was poured into each tomato can once each day. At the end of each week, the fertilizer was omitted and, instead, each container of sawdust was given a thorough wetting with the garden hose. The purpose was to wash out accumulated salts from the fertilizer, since soluble salt buildup can cause root injury.

Alternatives to the methods of fertilizing used might be mixing a slow-release fertilizer into the sawdust before planting; or twice weekly light applications of dry common fertilizer such as 8-8-8 to the sawdust surface followed by watering in.

Staking and Supporting: All varieties should be supported so that they are made to grow in an upright position. Regular methods of supporting such as staking and string-trellising may be used. Caging with wire is perfect.

Further care: The usual care and attention was provided as the plants grew. Some pruning was done to remove unwanted suckers. Pesticides, as needed, were sprayed onto the plants. Weeds were not a problem, since the black plastic kept the weeds away from the area around the cans, and the sawdust contained no weed seeds.