

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 widely grown in temperate areas of the world were distinct growing and dormant season 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 seeds, 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. These 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.

As asparagus planting was established from one-year-old crown 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 EauGallie fine sand (sandy, siliceous, hypothermic, Alfic Haplaquods). The Syn lines were derived from 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 tiller discs. A six-inch deep trench was made in the bed to accommodate the crowns which were spaced on 18-inch center in the row. The trench was backfilled to about 3 inches. Back-filling 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 tillers 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 US 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 lbs/acre for 'Syn 4-MD10'. This is far below the annual average of 3633 lbs/acre produced in Washington, 3000 lbs/acre produced in California, and 2433 lbs/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

(Maynard, Vegetarian 97-03)

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.