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VEGETABLE GARDENING

“Vegetable Gardening in Florida” soon to be released

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The Vegetarian Newsletter is now available on the internet. The website is http://www.hos.ufl.edu/qjhweb/vegetarian.htm

Vegetable Crops Calendar

May 18, 1999. 43rd Vegetable Field Day. Gulf Coast Research & Education Center - Bradenton, FL. Contact Don Maynard (941) 751-7636.

Commercial Vegetables

Sunn Hemp - A New Cover Crop in Florida

The scientific name for Sunn Hemp is Crotalaria juncea L. It comes from the pea family (Fabaceae or Leguminosae). Common names are: Sunn Hemp, Indian hemp, Madras hemp, brown hemp, and sunn. Common variety is 'Tropic Sun', released by the University of Hawaii.

Sunn hemp is native to India and Pakistan. In Southeast Asia sunn hemp has been grown as a green manure crop for centuries and now is cultivated in many tropical regions. Sunn hemp is cultivated in Hawaii, California and to some extent in Alabama.

Sunn hemp is a tall, herbaceous annual, with erect fibrous ridged stems reaching heights up to 7 feet in south Florida. The plant is covered with short, downy hairs. It's taproots are long and strong with many lobed nodules. The plants branch at about 20 inches above the ground when not crowded, but branching is suppressed somewhat in dense stands. In Homestead the plant's showy bright yellow flowers bloom profusely in 90 days.

Sunn hemp grows to a height of 6 to 7 feet tall in just ten weeks. No other cover crop is known to grow so rapidly. In Alabama, sunn hemp is planted immediately after corn harvest to prevent erosion of the soil by heavy rains. Since this plant is a legume, it can fix much of the nitrogen needed by the next crop. Further, sunn hemp can be grown as a high-protein forage for late summer when pastures may perform poorly. In India cloth, twine and rope are made from the fiber of older plants. Seeds are fed to pigs and horses without adverse effects in some areas.

The use of sunn hemp is recommended in south Florida. This plant serves as an excellent cover crop in rotation with vegetables. On each acre, sunn hemp fixes approximately 180 lbs. of nitrogen and adds 2.5 to 6 tons of organic matter. It suppresses weeds and reduces root-knot nematodes, controls erosion and may serve as a windbreak both for vegetables and for tropical fruit crops. Seeds germinate readily and seedlings rapidly produce a thick ground cover. In an experiment conducted in Homestead, sunn hemp yielded a total of 7,700 lbs dry biomass (roots and shoots) and fixed 182 lbs N per acre 3 months after seeding.

Sunn hemp grows well at mean annual temperatures from 47 to 82°F. Warm temperatures with moderate humidity are best. Growth may be slowed by cool seasons, and the plant is susceptible to freezing temperatures below 28°F. Although sunn hemp tolerates poor soil, it's productivity is enhanced on more fertile soils. Sunn hemp tolerates soil pH from 5.0-8.4. It is well adapted for well-drained calcareous soils and for acidic sandy soils. In order to establish a cover crop, sunn hemp should be sown at 15 to 40 lbs. seeds/acre. The lower seeding rates enable the plants to branch profusely. Seed should be planted less than one inch deep. At greater depths the germination is poor. Seeds can be inoculated with cowpea inoculant to improve the fixation of nitrogen. However, in some instances, sunn hemp without inoculation has grown very well and developed many nodules. In south Florida, with adequate soil moisture, the seedlings emerge after three or four days and form a thick cover. Sunn hemp is drought tolerant and no irrigation is necessary during the summer in south Florida. Nevertheless, in Miami-Dade County the field demonstration, have shown that irrigation just before and after seeding improved germination and productivity.

Sunn hemp need not be mowed during the middle of summer. Mowing when the plant is 6 to 12 inches tall produces many lateral branches but the plants do not recover fully. The plant should be plowed down when flower buds have formed or during the early flowering stage. Mowing before disking and plowing facilitates soil incorporation and
For maximum immediate release of nitrogen to the subsequent vegetable crop, sunn hemp should be plowed within 60 days, when the nitrogen concentration is high and decomposition rapid.

Whiteflies and thrips can be found on sunn hemp seedlings during the early summer. However, no vegetable insects, except stinkbugs, have been found on mature plants. Since sunn hemp is resistant to nematodes, it is advantageous to grow it in rotation with nematode-susceptible crops. The extremely rapid early growth of sunn hemp enables it to shad out weeds very effectively. The sensitivity of sunn hemp to herbicides has not been studied.

Shortages of seed have prevented sunn hemp from being grown extensively. Currently the seed costs $1.50 to $4.00 per pound. Probably seed production is more difficult in the subtropics than in the tropics. In the tropics flowering can begin at six weeks, with maturity reached at four months or more. Worldwide seed yields range from 400-900 lb/ac of seed. There are approximately 15,000-33,000 seeds/lb. Seeds remain viable for a number of years. Evaluation of seed production in south Florida is in progress.

(Ea, Vegetarian 99-04)

EAA Leafy Vegetable Phosphorus Fertility Demonstration Trials

Crop production in the Everglades Agricultural Area (EAA) is conducted under a climate of environmental regulation, with a particular focus on phosphorus (P). The Everglades Forever Act (1994) requires that total P (TP) in annual EAA runoff entering adjacent wetlands be reduced by 25% relative to "historical" levels. Growers have implemented BMPs designed to reduce TP levels in farm drainage waters. These TP levels are comprised of particulate and dissolved P fractions. Particulate P fractions range from farm ditch/canal sedimentary material to flocculent organic detritus associated with living/decaying aquatic flora. The dissolved P fraction can include material originating from fertilizer sources but also includes a significant background level from P naturally released during mineralization of the organic soil matrix. While drainage stream TP levels reflect contributions from numerous sources, public perception tends to focus on fertilizer. This perception is likely fueled by occasional news reports that oversimplify the Everglades cleanup discussion by referring to EAA runoff as "fertilizer-laden", "fertilizer-laced", and/or "fertilizer-tainted".

Within this scenario, EAA leafy vegetable growers have expressed a timely interest in pursuing P fertility investigations on popular leaf crops. Given the recent publication of revised IFAS organic soil P fertilizer recommendations for crisphead lettuce (Hochmuth et al., 1994), romaine, escarole, and endive (Hochmuth et al., 1996), growers want to conduct verification trials on their fields, using their current equipment, varieties, and production practices (liquid fertilizers, etc.). With this in mind, a series of demonstration plantings were planned for the 1998 and 1999 growing seasons with 3 growers using "commercial-scale" plots on both low fertility (following sugarcane) and higher fertility (following vegetables) fields. The 2 most popular liquid fertilizer formulations are a 10-34-0 and an 8-28-0 (basically the 10-34-0 with Mn, Zn, and B). Applying either source at different P-input rates was deemed unsatisfactory since N inputs would also vary which could confound the interpretation of observed responses. To minimize N-rate differences, fertilizer blends were formulated with similar N analyses (10%) but varying in P contents from 0 to 34%. Micronutrients and K were applied uniformly across all plots.

Three demonstrations were planted in late-1998 (Oct. 30 and Nov. 24 at Farm A; Dec. 4 at Farm B). Tropical Storm Mitch (Nov. 4) washed out the Oct. 30 planting. At both farm sites, crisphead lettuce (South Bay 1490) and romaine (Floricos 83) were planted on raised beds with 36-inch centers (2 rows/bed) and a 12-inch row spacing. Early-season thinning to a roughly 12-inch plant spacing resulted in a final stand population of approximately 29,040 plants/acre.

Treatments included 5 liquid fertilizer sources (10-0-0, 10-9-0, 10-17-0, 10-26-0, and 10-34-0), applied at equal volumetric rates to each assigned plot. Band-applying sources at 65 and 180 gal/acre at Farm A and B, respectively, achieved a wide range of P inputs (0, 56, 113, 182, and 250 lb P2O5/acre at Farm A; 0, 156, 312, 503, and 602 lb P2O5/acre at Farm B). Based on water extractable soil-test P levels of 13 (Farm A) and 6 (Farm B), revised IFAS recommendations for crisphead lettuce and romaine were 117 and 175 lb P2O5/acre for Farm A and B, respectively.
Subsequent to planting, the grower employed standard production practices throughout the growing season. Plant tissue samples were collected mid-season and at harvest for nutrient analysis (data not reported). Harvested plot area for each commodity was 720 ft² (120 ft x 2 beds; 480 linear ft) and 540 ft² (180 ft x 1 bed; 360 linear ft) for Farm A and B, respectively. At harvest (Farm A - Feb. 4; Farm B - Feb. 15), work crews cut and packed plants into 24-count boxes which were weighed.

Preliminary harvest data are listed in Table 1. At Farm A, average lettuce and romaine head weights were fairly similar across all fertilizer treatments except for the control (10-0-0). However, the higher P rates (10-26-0 and 10-34-0) supported greater net harvest weights for both commodities. Total number of harvested 24-count boxes varied across treatments, with some evidence of increasing box numbers with increasing P input rates. Survival and P fertilization appeared somewhat correlated, with a general trend for greater harvested heads/acre with increasing P rates. Stronger responses were observed at Farm B, which initially had a lower soil-P fertility status and received higher P rates. All reported response variables (Table 1) tend to increase with P application. Within the first month of planting at Farm B, clear differences across treatments were observed, with poor seedling survivability associated with the control and lower P treatments (control, 10-9-0, and to some extent, the 10-17-0). Survivability was likely associated with extremely low rainfall conditions which prevailed throughout the growing season (Dec.=0.51 inches in 7 events; Jan.=2.60 inches in 8 events; Feb.=0.18 inches in 2 events). Why P inputs might influence survivability under dry conditions is not known. Perhaps deeper and more prolific root systems were encouraged with increasing P inputs, but this was not measured.

These 2 demonstration trials were exploratory efforts. Plans for the 1999 season are to include a third grower and also to conduct trials on low and higher initial soil -P fertility levels. The EAA leafy vegetable growers are committed to investigating P fertility issues and will likely expand these efforts to include other crops like escarole, endive, red leaf, and Boston leaf.

Table 1. Romaine and crisphead lettuce harvests under varying P inputs.

<table>
<thead>
<tr>
<th>Fertilizer Source (trt)</th>
<th>Romaine</th>
<th>Crisphead lettuce</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total heads</td>
<td>Total 24-cnt boxes</td>
</tr>
<tr>
<td></td>
<td>head/acre</td>
<td>box/acre</td>
</tr>
<tr>
<td></td>
<td>head/acre</td>
<td>box/acre</td>
</tr>
<tr>
<td>Farm A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-0-0</td>
<td>26696</td>
<td>1112</td>
</tr>
<tr>
<td>10-9-0</td>
<td>26802</td>
<td>1117</td>
</tr>
<tr>
<td>10-17-0</td>
<td>27785</td>
<td>1158</td>
</tr>
<tr>
<td>10-26-0</td>
<td>27316</td>
<td>1138</td>
</tr>
<tr>
<td>10-34-0</td>
<td>28753</td>
<td>1196</td>
</tr>
<tr>
<td>Farm B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-0-0</td>
<td>15407</td>
<td>642</td>
</tr>
<tr>
<td>10-9-0</td>
<td>16597</td>
<td>692</td>
</tr>
<tr>
<td>10-17-0</td>
<td>19002</td>
<td>817</td>
</tr>
<tr>
<td>10-26-0</td>
<td>25390</td>
<td>1058</td>
</tr>
<tr>
<td>10-34-0</td>
<td>29665</td>
<td>1236</td>
</tr>
</tbody>
</table>

Each mean represents the average of 4 replications.
Vegetable Gardening in Florida" soon to be released

Finally, after 5 years in the developmental process, my book, Vegetable Gardening in Florida, is slated to come off the press this month or next. Although it was produced by IFAS, it is being printed by the University Press of Florida, Gainesville. SP 237 will be offered for sale at about $16.00 per copy. I believe it will be worth that small price, as it is filled with colorful illustrations and photographs (no black and whites). The cover is especially attractive and features IFAS artist Sal Salazar's painting of the Marjorie Kinnan Rawlings house and vegetable garden on Orange Lake, at Cross Creek, Florida. It will be obvious that Publications chief Julie Graddy and her staff have contributed much talent into the layout and design of this book.

As its author, I have put together information on most every important aspect of growing a vegetable and herb garden here in Florida. In so doing, I have utilized knowledge gained during my 38 years as State Extension Vegetable Gardening Specialist. This knowledge comes from my acquaintance with the results of vegetable studies done by UF-IFAS and universities in other states, along with an exposure to gardens located all over our state.

I am particularly indebted to the following specialists in supporting departments for their inputs: Bob Dunn (Nematology), Jerry Kidder (Soils), Don Short (Entomology), and Gary Simone (Plant Pathology). We have purposefully left out chemical pesticide recommendations so as not to out-date the publication when these things change so frequently.

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Preface
Introduction
Chapter 1. Selecting a site. Location, sunshine, root competition, and soil.
Chapter 2. Planning the garden.
Selecting vegetables, paper plans, succession planting, companion planting, tools.

Chapter 3. Climatic and weather effects. Temperature effects, frost protection, row covers.


Chapter 6. Using garden fertilizers.
Application amounts and methods, side-dressing, fertilizing legumes.


Chapter 8. Alternative gardening.
Organic gardening, hydroponics, mini-gardening.

Chapter 9. Seeding the garden. Use good seeds, plant tested varieties, seed treatment, planting the seed, seed storage, seed longevity.

Chapter 10. Starting with transplants.
Advantages, which vegetables to transplant, growing transplants, transplanting suggestions, starting with other plant parts.

Chapter 11. Care of the garden.
Thinning seedlings, cultivation and weed control, mulching, supporting tall-growing crops, tomato pruning, watering the garden, trickle irrigation.

Chapter 12. Insects.
Insects that live in the soil, insects that damage leaves and fruit, managing insects.

Chapter 13. Diseases.
Diseases of roots and stems, diseases of leaves, diseases of fruit, disease control.

Chapter 14. Other pests.
Nematodes, birds, rodents, and other animals.

Chapter 15. Pesticides.
Application, sprayers and spraying, pesticide precautions.

Chapter 16. Individual vegetable crops.
Amaranth-yams.

Chapter 17. Herbs in the Florida garden.
Location and soil preparation, propagation, harvesting and curing, individual herbs (anise-thyme).

Canning, freezing, storing, and exhibiting produce.