******VEGETARIAN NEWSLETTER******

GOES ON THE WEB!!!

This September issue will be the last printed version of the Vegetarian Newsletter.

VEGETABLE CROPS CALENDAR

- 2000 Florida Postharvest Horticulture Institute and Industry Tour

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VEGETARIAN NEWSLETTER GOES ON THE WEB!!!

This September issue will be the last printed version of the Vegetarian Newsletter. At the Vegetable Agent In-Service in Live Oak in August, vegetable extension faculty and specialists gave several convincing reasons for making this "upgrade" to our venerable publication:

- issues will not be delayed by "snail-mail",
- we won't be restricted to 8 printed pages of articles and will be able to incorporate color images and graphics,
- the material will be in electronic format to facilitate use by agents
- significant savings in printing/mailing will be realized.

During the upcoming months we will be fine-tuning our new look to be as user friendly as possible. We will also begin archiving previous issues for access from the site. I want to thank Susie Futch, Senior Secretary for extension, and Tami Spurlin, Computer Support Specialist, Horticultural Sciences Department, for their creative assistance in making this transition possible.

So, beginning with this issue, you will be able to access the Vegetarian Newsletter via our link at the home page of the Horticultural Sciences Department.

Find the "new" Vegetarian Newsletter at: www.hos.ufl.edu

Please contact me if you have any questions or comments.

Steve Sargent

Vegetable Crops Calendar

2000 Florida Postharvest Horticulture Institute and Industry Tour.
Institute - March 6th, University of Florida, Gainesville, with video-links to several sites in Florida.
Industry Tour - March 7-10th Statewide
For more information contact: Steve Sargent, (352) 392-1928 ext. 215, e-mail sasa@gnv.ifas.ufl.edu or Abbie Fox (352) 392-1928 ext. 235, fax (352) 392-5653, e-mail ajfox@gnv.ifas.ufl.edu

Commercial Vegetables

Save Fertilizer and Improve Water Quality by Using Plant Sap Test Meters

1,800 Acres of vegetables are being produced in central Florida with the aid of plant sap test meters...

They cost about $350 for each nitrogen and potassium plant sap test kit. Growers can measure nitrogen and potassium concentrations in their vegetable plants in about ten minutes — right in the field — and know exactly whether they need to apply the next sidedress application of fertilizer to their crops...or not. Average savings of one sidedress application per season are being reported — a savings of about $30 per acre or $54,000 per year for the farms using plant sap meters in Central Florida. Several growers who used the meters on a weekly basis to grow sweet corn and watermelons reported exceptionally high crop yields, in addition to the fertilizer savings.

The environment wins too — 72,000 pounds of nitrogen and potassium fertilizer were not applied because growers knew the exact amount of these nutrients in their crops and that they didn't need more. That means a lot less chance of excess fertilizer leaching into the ground water during irrigation cycles or rainfall. It takes a lot of energy to produce fertilizer — energy savings means less imported oil and more independence for American farmers and consumers.

Over-fertilization can cause a lot of problems for your plants and the fruits you harvest from them. It can reduce vegetable crop yields by increasing salt concentrations around the root zone and stressing the plant. Postharvest quality of vegetables can be hurt too. Here are just a few examples:

1. Excessive nitrogen increases graywall and blotchy ripening in tomato.
2. Excessive potassium reduces fruit size and firmness in strawberries.
3. Excessive nitrogen enhances leaf and tip burn in lettuce.
4. High nitrogen increases soft rot in potato storage.

Extension agents and crop advisors can improve field diagnosis of plant problems by knowing the nitrogen and potassium content of the

2000 Meeting of Florida State Horticultural Society.
Oct. 31-Nov. 2. Stuart, FL.
plant. Nitrogen is the mineral element used most by plants and it is the most readily leached from soils. Potassium is the next most used mineral element in plants and has important roles in water potential, photosynthesis, and respiration. When growers are convinced that these elements are in adequate supply they can more readily focus on the remaining scenarios with confidence that they are being steered in the right direction.

Agents doing work with vegetables who would like to be part of the Nutrient and Water Management Action Team, a subgroup of FL107 SMP, please contact Richard Tyson (407-665-5554) or Dr. Marion White (407-330-6735).

(Tyson, Multi-county Agent, Vegetarian 99-09)

More on PLU Numbers

In the June Vegetarian (99-06), some PLU (product look-up) numbers were given which apply to some greenhouse vegetables. The list given was incomplete and could be misleading to some in the industry. For example, by looking at the listed vine ripe number (4805), a person might assume there is only one number assigned to vine ripe tomatoes. In reality, the code listed is assigned to small vine ripe tomatoes. There is also a PLU code for large vine ripe tomatoes.

The Produce Electronic Identification Board (PEIB) administers the generic numbering system for UPC and PLU codes for the produce industry. A complete list may be obtained by purchasing the PEIB’s most recent edition of “A Guide to Coding Fresh Produce” from Produce Marketing Association, P. O. Box 6036, Newark, DE 19714-6036 or call 302-738-7100.

Thanks goes to Eboni Wall, Division Assistant, with Produce Marketing Association (PMA) for this additional information. Before you have PLU labels printed, double check to make sure you have the correct number for the product!

(White, Vegetarian 99-09)

Evaluations of Sweet Corn Variety Trial

Florida is the nation’s leader in the production of fresh market sweet corn. In 1997-98, there were 14,225,000 crates (42 lb) produced on 41,300 acres for a value of $106,825,000.

A supersweet sweet corn variety trial was conducted at Long and Scott Farms, Lake Jem, FL, in the spring of 1999 growing season. The trial was limited to cultivars/breeding lines of the gene type homozygous shrunken-2 (sh2), i.e., supersweet. Yellow, white, and bicolor entries were requested from seed companies and were included in the trial.

Seeds were planted into an Immokalee fine sand with hand jabbers on March 11. Plots were single-row; 2.5 ft wide x 25 ft long with 9-inch in-row spacing. Four replications were arranged in a randomized complete block design.

Cultural practices, provided by the cooperating grower, were comparable to the routine practices used by commercial growers to produce sweet corn in central Florida.

One row per variety was harvested by hand at maturity, beginning May 26 and ending May 28. Only marketable first ears and/or marketable second ears were harvested. Individual plots were harvested only once. Ears were counted and weighed; sub-samples of 10 marketable ears per plot were randomly selected, husked, and evaluated for length, width, maturity, tip fill, husk cover, and kernel color (Table 1).

Sweet corn yields, expressed as 42-lb crates/acre, ranged from 200 to 299 crates/acre. The highest yielding entry in the trial was Novartis’ GSS 0966-VP at 299 crates/acre. Ear length ranged from 6.8 inches (Florida XP-7 and R100MVP VAIL-VP) to 7.7 inches (Billy R and Prime PLS-VP). Ear diameter had some variability. Three lines were 1.8 inches and three lines were significantly smaller at 1.7 inches.

Husk cover was variable, with the majority being acceptable to excellent. The most consistent excellent-length husk cover was exhibited by GSS 0966-VP and by Florida XP-7. Flags were variable, with most of them medium to long (>3 inches). Tip fill was uniformly excellent. The overall best line evaluated in this test was GSS 9866-VP from Novartis.

In a similar test last year, Florida XP-7 had a similar yield, but several lines were significantly higher. Bandit, Ice Queen, Morning Star, and three numbered lines were the top performers on sandy soil. Seed company interest in sweet corn evaluation on sandy soils in central Florida is not sufficient to support the test as evidenced by the lack of company participation in 1999. Future direction for this program is open and support is solicited. (cont. on pg. 3)
Table 1. Sweet corn variety trial - Lake Jem, FL - Spring 1999.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Source</th>
<th>Days to maturity</th>
<th>Yield/acre</th>
<th>Husk cover</th>
<th>Flags</th>
<th>Tip fill</th>
<th>Kernel color</th>
<th>Avg. ear (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSS 9866-V ²</td>
<td>Novartis</td>
<td>78</td>
<td>299 a</td>
<td>125 a</td>
<td>L</td>
<td>VL</td>
<td>Y</td>
<td>6.9 c</td>
</tr>
<tr>
<td>R100MVP VAIL-VP</td>
<td>Novartis</td>
<td>78</td>
<td>236 ab</td>
<td>99 ab</td>
<td>V</td>
<td>VL</td>
<td>W</td>
<td>6.8 c</td>
</tr>
<tr>
<td>BSS 1605-VP</td>
<td>Novartis</td>
<td>76</td>
<td>213 b</td>
<td>89 b</td>
<td>V</td>
<td>V</td>
<td>B</td>
<td>7.2 b</td>
</tr>
<tr>
<td>Prime PLS-V ²</td>
<td>Novartis</td>
<td>76</td>
<td>211 b</td>
<td>88 b</td>
<td>V</td>
<td>VL</td>
<td>Y</td>
<td>7.7 a</td>
</tr>
<tr>
<td>Billy R AMSA</td>
<td>Agrisales</td>
<td>74</td>
<td>200 b</td>
<td>84 b</td>
<td>VL</td>
<td>VL</td>
<td>Y</td>
<td>6.8 c</td>
</tr>
<tr>
<td>Florida XP-7</td>
<td>Agrisales</td>
<td>75</td>
<td>200 b</td>
<td>84 b</td>
<td>VL</td>
<td>VL</td>
<td>Y</td>
<td>6.8 c</td>
</tr>
</tbody>
</table>

*Mean separation in columns by Duncan's Multiple Range Test, 0.05 level - General Linear Models Procedure. Means follow by the same letter are not significantly different.

Yield expressed as 42-lb crates/acre.

Husk cover: S = short (ears protrudes from husk); M = medium (acceptable); L = long (ear tightly wrapped and completely covered); V = variable; VS = variable- mostly short; VL = variable- mostly long.

Flags: S = short (less than 3 inches); M = medium (3-5 inches); L = long (greater than 5 inches); V = variable; VS = variable- mostly short; VL = variable- mostly long.

Vrip fill: 0 = at least 1 inch of unfilled kernels at the ear tip; 5 = full at tip.

Kernel color: B = bicolor; W = white; Y = yellow.

Measurements on husked ears, an average value of a 10-ear sample/replication.

(White, Vegetarian 08-99)

Offseason (Summer) Management of Vegetable Land

A drive-by survey of over-summering practices for managing vegetable land was conducted in Palm Beach and Martin Counties from late June to mid-July, 1999. Approximately 8,000 acres (85% of the cultivated acreage) was surveyed. There were a total of 78 different farm locations managed by 19 different growers (16 locations were not surveyed). Full-bed plastic mulch culture was practiced on 60 different farm locations by 14 different growers (approximately 6,625 acres devoted to pepper, tomato, eggplant, squash, cucumbers, etc.). Open bed culture was practiced on 18 farm locations by six different growers (approximately 1,375 acres devoted to Chinese vegetables, herbs, sweet corn, and gladioli). Acreages for over-summer practices and culture methods are shown in the following table.

(Shuler, Extension Agent IV, Palm Beach County, Vegetarian 99-09)

<table>
<thead>
<tr>
<th>Over-Summer Practice</th>
<th>Full-bed Plastic Mulch Culture (ac)</th>
<th>Open-bed Culture (ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk</td>
<td>62.5% (4,120)</td>
<td>53.4% (740)</td>
</tr>
<tr>
<td>Cover crop ²</td>
<td>22.4% (1,480)</td>
<td>44.7% (615)</td>
</tr>
<tr>
<td>Over-summer old spring plastic for fall second crop</td>
<td>9.4% (620)</td>
<td></td>
</tr>
<tr>
<td>Flooded</td>
<td>2.7% (180)</td>
<td></td>
</tr>
<tr>
<td>Weeds</td>
<td>2.1% (140)</td>
<td></td>
</tr>
<tr>
<td>Mowed</td>
<td>0.6% (40)</td>
<td></td>
</tr>
<tr>
<td>Summer crop production</td>
<td>0.2% (15)</td>
<td>1.5% (20)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (6,595)</td>
<td>100% (1,375)</td>
</tr>
</tbody>
</table>

² The cover crop used most frequently was a sorghum/sudangrass hybrid; there were very small acreages of sesbania.
Sweet Onion Variety Trial, Spring 1999

Sweet (short-day) onions are a relatively minor crop in Florida. Production exists as both dry bulbs (mature) and green tops (immature). Limited production exists throughout the state. One of the biggest deterrents for increased production is competition from established markets from the south Texas and south Georgia areas. However, the potential exists for expanded production, especially in the areas of local sales and direct marketing.

The objective of this trial was to evaluate the performance of sweet onion varieties under north Florida conditions.

The transplants for this trial were produced from field beds at the NFREC, Quincy. Twenty four entries were seeded on 7 Oct 1998. Seed were planted at rate of about 30 seed per ft into rows spaced 12 inches apart. Preplant fertilization of seedbeds was 30-40-40 lbs/a of N-P-K. Dacthal 75 W at 9 lbs ai/a was applied over the top after seeding. Seedbeds were top-dressed once with 34 lbs N as.

Entries were harvested as they matured, where mature was defined as when about 25% of the tops of an entry had fallen down naturally. Bulbs were lifted, allowed to dry for a few hours, and tops and roots removed. Bulbs were then placed in bushel baskets and dried for 72 hours at 100°F in large drying rooms. After drying time was complete, onions were removed, allowed to cool down and graded. Grading consisted of discarding culls (small onions, splits, off color and decayed) and sizing into medium (1.5-2 inches), large (2-3 inches) and jumbo (>3 inches) categories. Bulbs were then weighed and counted.

Harvest occurred from the period of 21 April to 13 May. Total yields ranged from 1145 to 50 lb bags/a for 'SSC 6361' to 209 to 50 lb bags/a for 'Linda Vista'. No other entry produced yields as high as 'SSC 6361'. Yields were excellent in 1999 except for the late entries due to several rain storms near harvest time. 'SSC 6361' produced the largest bulb at 16.5 oz and 'DPS 1041' produced the smallest at 8.4 oz. Percent marketable bulbs ranged from a low of 30.0% for 'Linda Vista' to a high of 96.7% for 'RCS 1919'. Percent bolting level was very low (<1%) on all entries.

Table 1. Onion variety trial, Spring - 1999. NFREC, Quincy.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Source</th>
<th>Days from transplanting</th>
<th>Yield (50 lb sacks/a)</th>
<th>Avg bulb wt (oz)</th>
<th>Percent marketable</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSC 6361</td>
<td>Shamrock</td>
<td>140</td>
<td>1145 a^z</td>
<td>16.5 a</td>
<td>90.2 a-c</td>
</tr>
<tr>
<td>Sweet Success</td>
<td>Sunseeds</td>
<td>146</td>
<td>856 b</td>
<td>15.6 ab</td>
<td>87.7 a-c</td>
</tr>
<tr>
<td>Equanex</td>
<td>Petoseed</td>
<td>146</td>
<td>727 bc</td>
<td>14.5 a-e</td>
<td>80.4 a-e</td>
</tr>
<tr>
<td>Rio Bravo</td>
<td>Rio Colorado</td>
<td>146</td>
<td>719 bc</td>
<td>14.6 a-d</td>
<td>79.3 b-e</td>
</tr>
<tr>
<td>PX 7092</td>
<td>Petoseed</td>
<td>146</td>
<td>718 bc</td>
<td>12.8 c-g</td>
<td>84.4 a-e</td>
</tr>
<tr>
<td>Sweet Magnolia</td>
<td>D. Palmer</td>
<td>149</td>
<td>702 b-d</td>
<td>16.4 a</td>
<td>68.1 e-g</td>
</tr>
<tr>
<td>Savannah Sweet</td>
<td>Petoseed</td>
<td>146</td>
<td>670 cd</td>
<td>14.6 a-d</td>
<td>82.9 a-e</td>
</tr>
<tr>
<td>Sugar Queen</td>
<td>Shamrock</td>
<td>127</td>
<td>646 cd</td>
<td>10.7 g-j</td>
<td>84.1 a-e</td>
</tr>
<tr>
<td>Mr. Max</td>
<td>Rio Colorado</td>
<td>146</td>
<td>621 c-e</td>
<td>14.2 a-e</td>
<td>71.0 d-f</td>
</tr>
<tr>
<td>RCS 1919</td>
<td>Rio Colorado</td>
<td>127</td>
<td>584 c-e</td>
<td>10.0 h-k</td>
<td>96.7 a</td>
</tr>
<tr>
<td>RCS 1027</td>
<td>Rio Colorado</td>
<td>146</td>
<td>583 c-e</td>
<td>13.1 c-f</td>
<td>86.3 a-d</td>
</tr>
<tr>
<td>Timon</td>
<td>D. Palmer</td>
<td>129</td>
<td>570 c-e</td>
<td>8.5 jk</td>
<td>94.6 a-c</td>
</tr>
<tr>
<td>Big Pete</td>
<td>D. Palmer</td>
<td>129</td>
<td>547 de</td>
<td>9.9 i-k</td>
<td>94.6 a-c</td>
</tr>
</tbody>
</table>
Planting Depth as a Growth Stimulant

In March and July articles we discussed vegetable crop growth stimulation by means of biostimulants (chemicals) and biologicals (organisms), respectively. While both of these methods boast documented successes, the benefits of use may not always outweigh the cost of application. Florida growers, who establish their crops from transplants, have long enjoyed an environmental manipulation used to increase plant growth and yield. That environmental manipulation is simply ... plant it deeper!

In the early 1990s the standard planting depth for tomato and pepper transplants in Florida was to a level between the cotyledons and the root ball. However, several years of research at the University of Florida showed a positive linear increase in plant growth and yield occurs with incremental increases in planting depth (Fig. 1).

The phenomenon appears to occur across cultivars, seasons, geographic areas, irrigation methods, and cultural practices in Florida in general. Further unpublished work has shown the technique to be effective with watermelons, but without the yield enhancement. But, additional vine cover and faster development have associated economic benefits as well.

It seems apparent that planting transplants deeper also works well in other areas of the United States. Hanna et al. (HortScience, 1997) have confirmed similar findings for fresh market tomatoes (University of California) have seen increased growth and some yield enhancement in processing tomatoes (personal communication). Benefits derived from this environmental manipulation extend beyond growth and yield as research from Massachusetts (Mangan et al., Proc. Stand Estab. Conf., 1996) showed that deeper planting of processing cherry pepper reduced plant lodging and Miller et al. (JASHS, 1969) found more uniformity in cabbage head size with deeper planting in Virginia.

Unfortunately, while passing attempts to explain this phenomenon have been made, no studies have documented the mechanism(s) involved. But in the mean time you can put this cost-effective technology to work for you, just plant it deeper!

Figure 1.
Plug Transplants for Strawberry Crop Establishment in Florida

Strawberries in Florida are typically planted using bare root transplants. These bare root plants are typically established by applications of overhead irrigation from 7 to 10 days for up to 8 hours a day. (Irrigation periods will vary depending on weather conditions and plant health.) This irrigation represents approximately ⅓ of the total water usage for the entire strawberry season. In addition to the heavy water usage associated with establishing bare root transplants, other difficulties exist. These difficulties include relatively high plant mortality rates and problems often related to overhead irrigation such as nutrient leaching, increased weed pressures, and disease dissemination.

The use of plug transplants for strawberry establishment has the potential for addressing many of the problems associated with the use of bare root transplants. Research conducted the past two years at the University of Florida, GCREC, Dover Strawberry Lab has indicated several advantages of using plugs. First, plugs can be established using only drip irrigation, eliminating the need for overhead irrigation and dramatically decreasing water usage. For example, in the 1998-99 season at Dover, approximately 800 gallons of water per acre were applied through drip irrigation the first two weeks to establish the plug plants. For contrast, approximately 600,000 gallons of water per acre are typically used by growers in this same time period using overhead irrigation. Second, plant health defined by characteristics such as root dry weight and leaf number was significantly better for plugs than for bare root plants. This improved plant health apparently led to the third advantage of using plugs, greater early yield. In the 1998-99 season, early yields (totals from November and December) with plug transplants were 140 flats per acre higher than yields from bare root transplants. Prices received for strawberries during these months are about three times higher than prices received later in the season.

Unless (or until?) water restrictions force growers to use plugs for transplanting strawberries, the primary motivation for using the plugs will naturally be economics. Plugs currently cost nearly twice as much as bare root plants. This is a tremendous cost to incur unless the grower is convinced the up front investment has a good chance of increasing overall profits. However, the economic incentive may already be great enough. Primarily, the increase in early yield can generate economic advantage. Other economic advantages of using plugs may include: possible reductions in disease or weed pressures by not using overhead irrigation for crop establishment and labor reduction by not having to replant as many transplants due to lower mortality rates.

The use of plugs for crop establishment of strawberries has potential to be a tremendous tool for increasing profitability as well as conserving water resources. In the coming season, a demonstration project will be conducted on five farms in Hillsborough County. Each farm will have one-quarter acre of plug transplants and one-quarter acre of bare root transplants which will be directly compared for yield, disease and weed pressures, water use, and certain plant characteristics. In addition, John Duval (our new horticulturist at the Dover Lab) will be evaluating the effects of planting dates on yield and other parameters using both plugs and bare root plants. Economic evaluations will be made using data from both of these projects as well as the data from the first two years of this plug project. These projects will allow us to more accurately evaluate the potential of using plugs for strawberry establishment and to estimate how they might best be used in commercial production. This information can then be used by growers to evaluate how plugs can best be used by them to maximize their farm's profitability and sustainability.

(Waldo, Multi-county Agent, Hillsborough County, Vegetarian 99-09)

Vegetable Gardening

Horticulture Events at 1999 4-H Congress

Our 4-H horticulture committee composed of Bob Black, Jeff Williamson, and myself conducted three plant science events for the 4-H'ers at Gainesville during State Congress, the week of July 26-30, 1999. The following are the results.

1. Horticulture Leadership Track. We provided two days of classes on various topics related to horticulture. Some of the class topics covered such things as: writing a garden record book; lawn mower safety; plant bonsai; insect eating plants; container culture; lake watch; and butterfly gardening. Over 40 4-H members attended. State 4-H specialist Joy Jordan assisted us with this event. Instructors were agents, Ray Zerba, Linda Landrum, Charlie Fedunak, and Bob Renner, along with the specialists.

2. Plant Demonstrations. Both team and individual demonstrations were heard and judged by Heather Miller, Mark Gal, and Jackie Host.
The Marion County team was selected to compete at NJHA convention in November. Hendry County placed second, followed by Volusia at third place.

(Stephens, Vegetarian 99-09)

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**Extension Vegetable Crops Specialists**

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  Professor and Chairman, Horticultural Sciences Department
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  Professor
- John Duvall
  Assistant Professor
- Betsy M. Lamb
  Assistant Professor
- Yuncong Li
  Assistant Professor
- Donald N. Maynard
  Professor
- Stephen M. Olson
  Professor
- Mark A. Ritenour
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- Ronald W. Rice
  Assistant Professor
- Steven A. Sargent
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- Charles S. Vavrina
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