

Vegetarian Newsletter

A Vegetable Crops Extension Publication

University of Florida
Institute of Food and Agricultural Sciences
Cooperative Extension Service



Vegetarian 00-04

April 2000

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Vegetable Crops Calendar

Master Composter Program, March 28-May 3, ELC Wabasso/Indian River County. Contact Doug Kutz 407-633-1702 in Brevard County or Dan Culbert 561-770-5030 in Indian River County for more information.

Vegetable Agents 2000 In-Service Training, April 24-26, Indian River Research & Education Center. Contact Betsy Lamb at SunCom 240-3922 for more information.

Commercial Vegetables

Biological Alternatives to Methyl Bromide - Workshop/Field Day in Homestead

In United States about 60 million pounds of methyl bromide are used each year. About 75 percent of this is used in agriculture to fumigate soil before planting crops and about 11 percent is used to fumigate harvested commodities. The remaining 14 percent goes to production of other chemicals and fumigation of structures like warehouses, food processing plants, museums and transport vehicles.

Under the Montreal Protocol of 1991, methyl bromide was defined as the chemical causing the depletion of Earth's ozone layer and ordered to be phased out in United States in 2005. The developing countries will be able to continue using this fumigant much longer.

Scientists have been conducting intensive research on chemical and biological alternatives to methyl bromide to control insects, nematodes, weeds and soil born pathogens. Some of the possible promising biological alternatives to methyl bromide were discussed during the Workshop/Field Day at TREC in Homestead on March 22, 2000.

For the last six months, Dr. Aref Abdul-Baki, plant physiologist with the U. S. Department of

Agriculture, Agricultural Research Service, Vegetable Laboratory in Beltsville, worked with the researchers at UF TREC in Homestead on testing and developing alternative cropping systems for vegetable production in south Florida with use of the cover crops instead of methyl bromide. The results of this cooperation were presented during this educational program.

Dr. Abdul-Baki started the presentation with discussing his work in Beltsville on developing the alternative production systems using legume hairy vetch as a cover crop and as a mulch in sustainable tomato production system. This includes establishing a cover crop, converting it into an organic mulch, planting the tomato crop and managing the crop. He also discussed possible tropical cover crops for vegetable production in south Florida which were tested at TREC for last few years by Drs. Bryan and Li. Sunn hemp, velvet bean, iron clay pea and aeschynomene were named as the possible cover crops.

After this presentation, the participants were invited to visit several research and demonstration plots located at TREC. They also observed the mowing and rolling (crimping) of the cover crop Sunn hemp. Tomato plants can be planted on beds with a special planter directly into the rolled cover crop without plastic and tillage.

Next presenters, Drs. Bryan and Zinati from TREC provided information about their research plots with tomatoes grown after cover crops in fumigated and non fumigated plots.

The third topic discussed during the program was not directly related to the methyl bromide research, but also very important for south Florida vegetable growers, who are looking for ways to improve soil fertility. Drs. Li and Zhao from TREC presented their research on using composts, fertilizer and irrigation treatments for tomato production. Tomatoes grow better on soils amended with composts. Optimized irrigation practice saved as much as 50% water usage. Twenty-four people attended this program, including growers and industry representatives.

If you are interested in obtaining more information, please contact Teresa Olczyk at 305-248-3311 ext. 232 , e-mail address: twol@gnv.ifas.ufl.edu

(Olczyk, Vegetarian 00-04)

Yield Losses in Tomato Due to Nutsedges

A major concern in the pending loss of methyl bromide use in Florida tomato production is the control of nutsedges. Both yellow (*Cyperus esculentus*) and purple (*Cyperus rotundus*) nutsedge is found in Florida tomato production areas. Until recently, the impact of nutsedge competition on tomato yield was not known. Studies over a three year period in three locations by Pablo Morales-Payan, a graduate student at the University of Florida, have answered several of these questions.

The extent of weed interferences with crops is density dependent. The object of one experiment was to determine the density thresholds below which suppressive (control) actions would be unnecessary. To find the threshold, tomatoes were grown with either purple and yellow nutsedge at populations ranging from 10 to 150 plants/m².

Season long interference by yellow nutsedge reduced total marketable tomato yield by 50%. Total marketable yield loss of tomatoes was as high as 81% with purple nutsedge. Marketable yield loss of 10% was seen at season long interference with the populations of 25 plants/m² (2.3/ft²) for both yellow and purple nutsedges. The percent of yield loss was most dramatic in the medium sized tomato fruit from interference by both species. At 100 plants/m², purple nutsedge caused yield losses of 43% extra-large fruit, 52% for large sized fruit and 98% for medium sized fruit. Yellow nutsedge interference with 50 plants/m² reduced extra-large sized fruit by 40%, large-sized fruit by 50% and medium sized fruit by 75%.

Recommended N, P and K rates for tomato are relatively well established. However, recommendations are generally based on weed-free nutrient rate studies, which may not be adequate when troublesome weeds are present in the field. Studies using varying N rates with tomatoes competing with both nutsedges showed that the best tomato yields were obtained at N rates of 180 to 224 lb/A. This coincides with the recommended rates for Florida.

Tomato was less competitive at N rates below 180 lb/A and the nutsedges were more competitive at rates above 224 lb/A. Manipulating N rates does not seem to be an option to overcoming nutsedge interference in tomato.

The duration of weed interference is of great importance in the outcome of the crop-weed interaction. The season-long date reflects the maximum interference effects of nutsedges. The quantification of the impact of nutsedge interference during periods of the crop growth would determine the period of weed suppression necessary to avoid yield reductions above predetermined acceptable losses.

Purple Nutsedge

To avoid tomato yield losses above 5%, the crop must be kept purple nutsedge free during the period of 2-10 weeks after transplanting. This means that nutsedge can compete for the first two weeks after transplanting and can emerge and compete at the 10th week for the best of the season without reducing yield more than 5%. To avoid tomato yield losses above 10%, purple nutsedge must be suppressed during the period of 3-6 weeks after transplanting.

Yellow Nutsedge

For yellow nutsedge interferences, tomato yield losses above 5% can be avoided by suppressing the weed during the period of 2 to 10 weeks after transplanting. A 10% yield loss can be avoided by yellow nutsedge suppression during the period of 4 to 9 weeks after transplanting.

Summary

The studies conducted indicate that to reduce yield losses of tomato due to interference by yellow and purple nutsedges, the grower should:

1. Reduce the population of nutsedge in the field to less than 25/m² (2.3/ft²).

2. Grow the tomato under optimum recommended nitrogen fertilizer rate. Overfertilization will enhance the nutsedge competition while underfertilization will reduce the tomato plants competitive ability.
3. Control the nutsedges in the bed, when possible, from 2 to 10 weeks after tomato transplanting.

(Stall, Vegetarian 04-00)

Two New Strawberry Cultivars

'Earlibrite' Strawberry

There is a need in west central Florida and other winter strawberry production areas for an early ripening cultivar to replace or be an alternative to 'Sweet Charlie'. 'Sweet Charlie' has benefitted the Florida strawberry industry through its relatively high production of fruit early in the season, when market prices are generally high. But the average size of 'Sweet Charlie' fruit is small, and the texture of its fruit is often soft, making shipment and shelf life of 'Sweet Charlie' problematic. 'Earlibrite' strawberry has produced high early-season (December through February) yields of large, flavorful fruit at the University of Florida's Gulf Coast Research and Education Center in Dover (GCREC-Dover) and in three commercial fields in west-central Florida. It is recommended for trial in areas with mild winter climates. The clone was named 'Earlibrite' because of its high early-season production of bright red fruit, and to honor Earl Albregts, a soil scientist who spent his entire professional career (1967-1996) at GCREC-Dover.

Origin

'Earlibrite' originated from a 1993 cross between 'Rosa Linda' and FL 90-38. 'Rosa Linda', a 1996 release from the Florida Agricultural Experiment Station, was used as a parent because of its high early-season yield potential and its desirable fruit shape. FL 90-38, a 1991 selection, was used as a parent primarily because of its ability to produce attractive fruit early in the season. The original plant of 'Earlibrite' was selected in 1993 from a field nursery at GCREC-Dover. 'Earlibrite', tested as selection FL 93-100, has been evaluated in replicated plot trials at Dover and in observational trials for several years at the University of Florida's Suwannee Valley Research and Education Center, Live Oak.

Description

'Earlibrite' is a short day cultivar. It has a more compact plant habit than 'Sweet Charlie' or 'Camarosa', currently the standard strawberry cultivars grown in west-central Florida. The compact plant habit leads to the production of fruit that are exposed, and therefore easy to harvest. This exposure, however, also makes the fruit vulnerable to rain damage (i.e. cracking and cat-facing). Fruit of 'Earlibrite' tend to be very large. Marketable fruit of 'Earlibrite' had an average weight of over 20 grams in trials at GCREC-Dover. Large fruit size is an important breeding objective, and a key factor in the improvement of harvest efficiency. Primary fruit are often globose-conic in shape; whereas secondary and tertiary fruit are conic to wedge-shaped. External fruit color is a deep

orange red; internal color is a light orange red. The calyx is generally medium in size and slightly recurved, a feature that may provide some structural resistance to *Botrytis* fruit rot (caused by *Botrytis cinerea*). Fruit of 'Earlibrite' are moderately firm and have a flavor intensity and sweetness comparable to 'Sweet Charlie' and 'Camarosa', as determined by a trained taste panel. 'Earlibrite' also has some of the aromatic qualities of its parent 'Rosa Linda'.

Performance

'Earlibrite', in the replicated trials at GCREC-Dover, produced total yields not significantly different than those of 'Sweet Charlie' and 'Camarosa'. 'Earlibrite' grown in three commercial fields in the Dover/Plant City area during the 1999-2000 season produced early-season fruit yields comparable to those of 'Sweet Charlie'. 'Earlibrite' has also been an early producer of large fruit in the observational plots in north Florida, but in this location it generally lacks vigor and is less productive than 'Camarosa' and 'Chandler'.

'Earlibrite' is susceptible to anthracnose fruit rot (caused by *Colletotrichum acutatum*), but, in most years, this disease has not been a serious problem. We anticipate that growers in central Florida will finish harvesting 'Earlibrite' in early March, which is typically before environmental conditions are favorable for disease development. 'Earlibrite' appears to be less susceptible than 'Sweet Charlie' to *Botrytis* fruit rot and less susceptible than 'Camarosa' to powdery mildew (caused by *Sphaerotheca macularis*). 'Earlibrite' can, however, be severely affected by the twospotted spider mite (*Tetranychus urticae*).

Availability

The Florida Agricultural Experiment Station at the University of Florida's Institute of Food and Agricultural Sciences has applied for a U.S. plant patent on 'Earlibrite', and this cultivar has been uniquely characterized using a set of oligonucleotide DNA primers in RAPD analysis. 'Earlibrite' is licensed to the Florida Strawberry Growers Association by Florida Foundation Seed Producers, Inc. Information on nurseries sub-licensed to propagate 'Earlibrite' can be obtained from the Florida Strawberry Growers Association, P.O. Drawer 2550, Plant City, FL 33564.

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'Strawberry Festival' Strawberry

Most of the strawberries produced in Florida are shipped fresh to locations throughout the eastern U.S. and Canada. Therefore, Florida growers need cultivars that produce fruit that are attractive and flavorful, and maintain these qualities during and after long-distance shipment. 'Strawberry Festival' strawberry has produced commercially acceptable yields of firm, attractive, and flavorful fruit in trials at the University of Florida's Gulf Coast Research and Education Center in Dover (GCREC-Dover) and in two commercial fields in west central Florida. It is recommended for trial in

areas where strawberries are grown in the annual hill plasticulture system. The clone was named 'Strawberry Festival' in recognition of the Florida Strawberry Festival[®], an annual festival in Plant City that celebrates the abundant crop of berries harvested in eastern Hillsborough County during late February and early March.

Origin

'Strawberry Festival' originated from a 1995 cross between 'Rosa Linda' and 'Oso Grande'. 'Rosa Linda', a 1996 release from the Florida Agricultural Experiment Station, was used as a parent because of its high early season yield potential and its desirable fruit shape. 'Oso Grande', a University of California cultivar, was used as a parent because of its ability to produce large, firm fruit. The original plant of 'Strawberry Festival' was selected in 1995 from a field nursery at GCREC-Dover. 'Strawberry Festival', tested as selection FL 95-41, has been evaluated in replicated plot trials at Dover and in observational trials for two years at the University of Florida's Suwannee Valley Research and Education Center, Live Oak.

Description and Performance

'Strawberry Festival' is a short day cultivar. It has a vigorous plant that tends to produce numerous runners if planted in early October in central Florida. The fruit is attached to long pedicels, and has a mean fruit weight similar to that of 'Sweet Charlie', currently one of the major cultivars grown in west central Florida. The fruit are mostly conic in shape. The external color of fully mature fruit is deep red and glossy; internal color is a bright red. The calyx is large and showy. Fruit of 'Strawberry Festival' have a very firm texture and excellent flavor. In trials at GCREC-Dover, and in two commercial fields in the Dover/Plant City area, 'Strawberry Festival' has had a fruiting pattern and yield similar to that of 'Camarosa'. 'Camarosa' is currently a major cultivar in Florida, California, and other annual hill growing areas. In the observational plots at Live Oak, 'Strawberry Festival' has been less vigorous and had lower fruit yields than 'Camarosa', but has been more vigorous and had higher fruit yields than 'Sweet Charlie' (Bob Hochmuth, personal communication). 'Strawberry Festival' is susceptible to anthracnose fruit rot (caused by *Colletotrichum acutatum*), *Colletotrichum* crown rot (caused by *Colletotrichum gloeosporoides*), and angular leaf spot (caused by *Xanthomonas fragariae*); therefore we recommend that fruit growers choose their transplant source carefully to avoid starting off their season with infected plants. 'Strawberry Festival' is less susceptible than 'Sweet Charlie' to *Botrytis* fruit rot (caused by *Botrytis cinerea*), and less susceptible than 'Camarosa' to powdery mildew (caused by *Sphaerotheca macularis*).

Availability

The Florida Agricultural Experiment Station at the University of Florida's Institute of Food and Agricultural Sciences has applied for a U.S. plant patent on 'Strawberry Festival', and this cultivar has been uniquely characterized using a set of oligonucleotide DNA primers in RAPD analysis. 'Strawberry Festival' is licensed to the Florida Strawberry Growers Association by Florida Foundation Seed Producers, Inc. Information on nurseries sub-licensed to propagate 'Strawberry Festival' can be obtained from the Florida Strawberry Growers Association, P.O. Drawer 2550, Plant City, FL 33564.

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(Chandler, Vegetarian 00-04)

Vegetable Gardening

Locating Garden Vegetable Seeds and Varieties

I want to share with you one of the best-used tools of my trade as an Extension Specialist advising agents and gardeners. It is my easy guide to finding seed sources and varieties fast.

Thumbing through all those seed catalogs is fun, but can be time consuming since there are so many companies. Most gardeners receive only a few catalogs annually, so may miss out on some important variety offering. How would you like to get just one big fat catalog listing all the varieties offered from the various companies that year? Well, there is one – almost.

The Garden Seed Inventory is now in its Fifth edition (1998). It is a comprehensive inventory of 255 mail-order seed catalogs in the U.S. and Canada. Its 800 pages include descriptions of 7,713 **non-hybrid** vegetables and a coded list of the companies offering each variety. So, for the hybrids, you will still have to rely on your favorite company catalogs.

This new Fifth Edition lists over 1,800 entries that were not included in the previous Fourth Edition (1994). These are not necessarily new varieties, but many are of the heirloom type.

One of the important purposes of the new edition is to outline the recent gains and losses of available varieties of vegetables from commercial companies. The Inventory includes a graph at the beginning of each crop section that shows these changes over the past 20 years. Using cucumber as an example, of the 152 non-hybrids available in 1981, there were only 50 (33 %) available in 1998. However, counting the new additions, there are still 124 (82%) varieties available. Of these 124 varieties, 74 (60%) are listed by only 1 or 2 sources.

One of the features I find especially helpful is the **variety description** segment. After each variety named you will find: a) synonyms; b) days to maturity; c) plant descriptions; d) source history; e) and a source code.

Then, the **source codes** are listed alphabetically in the front of the book, with the name, address, phone number, and ordering information for each company that offers the variety.

Book availability: A soft-cover copy of the Garden Seed Inventory, Fifth Edition, costs \$26.00 post-paid, and may be obtained from and payable to the Seed Savers Exchange, 3076 North Winn Road, Decorah, IA 52101 (Phone 319-382-5990).

(Stephens, Vegetarian 00-02)

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