



Berry/Vegetable Times

August 2006



From Your Extension Agent—
Summer Blueberry Care

2006 Calendar of Events

Aug. 8 Pesticide License Testing. Hillsborough County Extension Office, Seffner. 9 am. For more information call Mary Beth Henry, 813-744-5519, ext 103.

August 29 & 30 FSGA Agritech Educational Session & Trade Show, Trinkle Auditorium at HCC in Plant City. For more information call Florida Strawberry Growers Association at 813-752-6822.

Sept. 12 Pesticide License Testing. Hillsborough County Extension Office, Seffner. 9 am. For more information call Mary Beth Henry, 813-744-5519, ext 103.

Dec. 8 & 9 Florida AG Expo. GCREC, Balm. For details—<http://www.floridagrower.net/agexpo/index.html>

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Florida Cooperative Extension Service,
Hillsborough County
5339 CR 579, Seffner, FL 33584
(813) 744-5519 SC 541-5772
Alicia Whidden, Editor
Mary Chernesky, Director
and
Gulf Coast Research
and Education Center
14625 County Road 672,
Wimauma, FL 33598
(813) 634-0000 SC514-6890
Christine Cooley, Layout and Design
Craig K. Chandler, Co-Editor
Jack Rechcigl, Center Director
<http://gcrec.ifas.ufl.edu>

The pruning given to blueberry plants after harvest is to encourage branching and greater leaf canopy so the plant can set a greater number of flower buds for next year's harvest. It is important to have your plants grow as vigorous as possible during the summer and to hold the leaves till late fall. As much as you may want to just go stay in the air conditioning until cooler weather gets here your plants will need attention from you to help get the most growth possible.

First is soil moisture. It may be the rainy season but as we have seen this July and August there can be prolonged times with little or no rain and very high temperatures. Blueberries are planted in pine bark which drains very well; translate that to: it dries out quickly, and a small amount of rainfall may not be enough. This is very true when you are

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Methyl Bromide Alternatives, High Barrier Mulches, and Reduced Rate Application Technologies: What Growers Should be Considering for the Fall!

J.W. Noling, Alicia Whidden, and J.P. Gilreath

The price of methyl bromide, like that of gasoline and diesel, has now exceeded the \$3.00 benchmark. This was not unexpected as we have previously reported, since the methyl bromide price is a direct function of supply and demand. As CUE approved levels and existing supplies of methyl bromide (stocks) are reduced, prices have increased and will continue to do so as long as demand remains high. There are ways, however, to reduce methyl bromide costs, and this is the subject of this newsletter article.

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This past spring we conducted a field day at the FSGA research farm to talk about methyl bromide price and availability and to introduce some new plastic mulch products. All of these plastic mulch products were high barrier and virtually impermeable (VIF) to diffusion of methyl bromide and other fumigant gases. Previous research has demonstrated that field application rates of methyl bromide can be reduced by as much as 50 percent without problem or yield penalty. The purpose of the field day was also to demonstrate that the mulches could be rapidly layed in the field without problem or tractor stoppage. A list of the mulch products which provide enhanced containment of methyl bromide and will allow field application rate reductions of as much as 50% are listed in **Table 1**. The list may not include all VIF mulches commercially available. Growers are strongly encouraged to contact the distributors of these products for pricing information and field evaluations this fall. The savings derived from reduced rates of methyl bromide application should more than compensate for the added material costs for any of these high barrier mulches.

There are other reasons besides cost to reduce fumigant field application rates and to use high barrier mulch. We believe that new EPA regulatory decisions regarding the re-registration of the alternative fumigants (metham sodium, chloropicrin, methyl iodide, dazomet, and others) will absolutely require very dramatic reductions of field application rates. In our opinion, this will mandate use of high barrier mulch films and reduced rate fumigant application technology on the part of growers. For this season, it is still not too late to trial an alternative fumigant like Telone C35 at a reduced rate (17 gal/ treated acre) with the high barrier mulch. At some point we will have to

accept the use of an alternative fumigant and the sooner we begin the evaluation with high barrier mulch the better off we will be.

Table 1. Manufacturing and or Distribution Sources of High Barrier/Virtually Impermeable Plastic Mulch Films.

<p>ORGALLOY® www.atofinachemicals.com Atofina Chemical Inc. 2000 Market Steet, Philadelphia, PA 19103-3222 PH: (215) 419-7000 FAX: (215)419-7591 1 (800) 225-7788</p>
<p>BROMOSTOP® www.bromostop.com Bruno Rimini Corp. 305 Ballards Lane London N12 8 NP United Kingdom PH: +44 (0) 20 8446 3646 FAX: +44 (0) 20 8446 7654 Email: simon@bromostop.com Florida Distribution: Intergro Inc. Attention: Jim Stoutz (813) 245-8799 (800) 783-0416</p>
<p>HYTIBAR® www.klerks.com Klerk's Plastic Products Manufacturing Inc. 546 L & C Distribution Park, Richburg, S.C. 29729 PH: (803) 789-4000 FAX: (803) 789-4001 Florida Distribution: Intergro Inc. Attention: Jim Stoutz (813) 245-8799 (800) 783-0416</p>
<p>BLOCKADE VIF® www.pliant.com Pliant Corporation. Florida Distribution: Pliant Sales Representative Attention: Dennis Sutton 2007 74th NW, Bradenton, FL 34209 PH: (941) 761-8293 FAX: (941) 792-5603 Mobile (941) 704-1712</p>
<p>GINEGAR OZGARD VIF www.ginegar.com Ginegar Plastic Products LTD. Florida Distribution: Crop Protection Inc. Attention: Charlie Young 2607 Sammond's Road, Plant City, Florida PH: (813) 754-3083 Fax: (813) 754-3896 Mobile (813) 927-5491</p>
<p>CANSLIT BLACK METALIZED MULCH Imaflex Inc. / Canslit Inc. 5710 Notre Dame West Montreal, Quebec, Canada H4C 1V2 Tel: (514) 935-5710 FAX: (514) 935-0264 Email: info@imaflex.com Florida Distribution: Intergro Inc. Attention Jim Stoutz (813) 245-8799 (800) 783-0416</p>

<p>Table 2 Summary of recommended fumigant injection equipment modifications required for use of high barrier / VIF mulch and reduced rate applications of soil fumigants.</p>
<p>Replace tubing from manifold to chisels with smaller diameter poly tubing to compensate for the new reduced flow capacity requirement and to increase line back pressure needed to insure accurate, uniform flow. (ie., yellow, red, or black polytubing.</p>
<p>To the manifold - flow divider, install individual sight gauges to observe uniformity of fumigant liquid flow to each chisel outlet.</p>
<p>Install a low pressure gauge (0-30 psi) immediately upstream of the manifold or flow divider to insure at least 15 psi of backpressure.</p>
<p>Insure that the flow meter registers a minimum of 10% flow</p>

At the UF IFAS / FSGA field day in May, we also stressed how successful use of high barrier VIF mulch involves more than just reducing gas flow and laying the more gas impermeable mulch film in the field. Reduced rate applications requires a new level of sophistication and application technology, such as changes in fumigant metering and flow systems, as well as balancing gas flow between chisels by ensuring sufficient back pressure on each gas delivery line by reducing line size from the manifold to the gas knives. **Table 2** summarizes application and fumigant injection equipment modifications required to use high barrier / VIF plastic mulch. These are but a few new considerations and equipment modifications required to successfully use VIF and reduced rates of methyl bromide or any other fumigant. We want to encourage growers who plan to use the high barrier VIF mulches to contact their fumigant distributors and address these issues before the strawberry fumigation season begins in late August. For additional, more comprehensive

information, growers are also encouraged to review “*Application Considerations for Successful Use of VIF and Metalized Mulches with Reduced Fumigant Rates*”. <http://edis.ifas.ufl.edu/HS270>)

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growing in pots. Pay attention to the moisture in the root zone no matter what growing system you use. Be sure plants are staying well watered, whether from Mother Nature or you.

After you have made sure your plants are receiving enough water, you need to provide adequate fertilizer so the plant is able to grow lots of leaves and set the maximum flower buds in the fall. Fertilizer is very susceptible to leaching from heavy rains. The use of slow release fertilizer helps prevent leaching of nutrients in heavy rain and you don’t have to apply as often. This is the least labor intensive method of fertilization but is the most expensive. Just be sure you still have adequate amounts for good summer growth; heavy rainfall and high temperatures will release fertilizer faster. You may need to replenish your slow release fertilizer or use another type such as dry or liquid. Dry or liquid fertilizer is cheaper but both are easily leached and must be applied more frequently. Be sure you are giving adequate amounts through the summer so plants can achieve maximum growth. Always pay attention to rain patterns and adjust your fertilization schedule as necessary.

Leaves need to remain on the bushes till late fall. However, during the summer leaves can stay wet for long periods and with the high temperatures leaf spot can become a big problem. If leaves are heavily infected, plants will typically drop most of their leaves in late summer or early fall and this will decrease the amount of flowers set for next year’s harvest. Scout your plants for signs of disease and then take appropriate control measures. For control of leaf spot use a strobilurin, such as Abound and Cabrio, in a rotation with Bravo.

Usually insects are not a problem in Central Florida on blueberries but some growers had an insect problem in early summer. The young foliage on their plants was being eaten. If plants were small this could be a big problem. Several types of beetles may be responsible. Dr. Oscar Liburd identified one type that several



growers found. It is the chrysomelid beetle. The larvae can eat roots and the adults do the damage on the

foliage. Notice the notch in the leaf in the picture. I would like to hear from you if you had a problem with this.

A last note is to be careful working out in the heat and humidity. Be cautious of heat stress. Drink plenty of fluids and take frequent breaks preferably in the shade.

Be safe in the heat!

Alicia Whidden

Hillsborough County Extension Service
813-744-5519, ext. 134
awhidden@ufl.edu

Early Season Disease Management

Jim Mertely and Natalia Peres

By now, most runner plants have been ordered for the fall strawberry crop. This is a good time to think about disease management and the products needed to get our strawberry plants off to a healthy start.

The first consideration is whether to dip plants in fungicides before planting. Dip treatments could have prevented painful losses several years ago, when

nurseries had problems with the anthracnose fungus *Colletotrichum acutatum*. Anthracnose-infected transplants from these nurseries grew poorly or died from extensive root infections (Fig 1). More recently, nursery owners have improved their control of *C. acutatum*, thus removing the main justification for pre-plant dips. Nevertheless, it pays to be vigilant when dealing with this pathogen. If dark, sunken lesions are found on the petioles of some transplants (Fig. 2), bring them to your county extension office or the UF Plant Diagnostic Lab on County Road 672 to determine the cause. Dip treatment with Abound® or Switch® may be recommended if *C. acutatum* is found. Transplants should be dipped at recommended rates, and set as soon as possible after treatment to avoid phytotoxicity.

Crown rots are another problem which may strike unexpectedly. There are two principal crown rot diseases, both of which first appear after plant establishment in the fall. They are *Colletotrichum* crown rot caused by *C. gloeosporioides*, and *Phytophthora* crown rot caused by several species of *Phytophthora*. The symptoms are similar for each disease, i.e., reddish brown discoloration in the crown leading to plant collapse and death (Figs. 3 & 4), but the pathogens are distinctly different and are controlled in different ways.

C. gloeosporioides survives on native vegetation and infects young plants from the top. During normal seasons, this pathogen is controlled by routine applications of captan.

The roots of runner plants may be invaded by *Phytophthora* species in the nursery. The pathogen eventually enters the crown to cause a typical crown rot in the production field. Last season, many 'Sweet Charlie' and 'Carmine' transplants were infected by *Phytophthora*, including those planted at GCREC. When our plants began dying, we injected Ridomil Gold® through the drip system, and sprayed the foliage twice with potassium phosphite, which is available under several brand names. These aggressive actions illustrate two different strategies for controlling *Phytophthora* crown rot.

Using them together after the plants begin to collapse is fairly effective, but expensive. Commercial growers should consider a preventive treatment, that is, deploy one product or the other by mid-November, or as soon as the plants have sufficient roots or foliage for absorption. If the treatment is started before plants begin to collapse, this one-product strategy should provide good insurance against *Phytophthora*.

Hopefully, early season anthracnose and crown rots will not be severe this year. However, early applications of broad-spectrum fungicides such as captan or thiram often result in higher yields and better quality later in the season, even in the absence of major diseases. Sprays should begin as soon as the plants are watered in, and continue on a regular schedule throughout the season. Since disease pressure is generally low during the early season, low rates of captan or thiram are adequate to protect the first crop. However, higher rates may be necessary in February and March as warmer temperatures and spring rains increase disease pressure on the main crop.

During certain times of the season, standard applications of captan or thiram can be replaced by or supplemented with other products to better control powdery mildew, Botrytis fruit rot, and anthracnose fruit rot. Future issues of Berry/Vegetable Times will carry articles about these diseases.



Fig. 1. Root necrosis (*C. acutatum*)



Fig. 2. Petiole lesions (*C. acutatum*)



Fig. 3. Crown rot discoloration



Fig. 4. Crown rot plant collapse

The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products names and does not signify that they are approved to the exclusion of others of suitable composition. Use pesticides safely. Read and follow directions on the manufacturer's label.

Abacus[®], Abba[®], Agri-Mek[®], and Epi-Mek[®] Have the Same Active Ingredient

Jim Price and Curtis Nagle

Abamectin, active ingredient of Agri-Mek[®] (by Syngenta), has been a good miticide for the Florida strawberry industry. There was a period several years ago though, when spider mites became resistant to it because there were insufficient rotational partners and abamectin was overused. Since then several good miticides (including acequinocyl Kanemite[®], bifenazate Acramite[®], etoxazol Zeal[®], hexythiazox Savey[®], and spiromesifen Oberon[®]) have been developed, registered, and rotated into management schemes and abamectin has become effective again. These days it consistently performs well in miticide trials at UF GCREC.

There is a chance now that abamectin could become overused again simply through growers' misunderstanding the nature of some products newly available. Epi-Mek[®] abamectin (by Syngenta) has appeared on the strawberry pesticide market and recently a new abamectin product, Abba[®] (by Makhteshim Agan of North America), has been registered for spider mite control. Another product, Abacus[®] abamectin (by Rotam USA, LLC), is nearing registration and other abamectin products may be registered in the intermediate future. Abacus[®], Abba[®], Agri-Mek[®], and Epi-Mek[®] are all formulations of the same abamectin active ingredient. The registered labels restrict their use to 64 ounces per season but none explain that, for resistance management purposes, 64 ounces should be the total abamectin product applied among all sources.

Additionally, to reduce the chances that the resistant spider mite form will

reappear, abamectin always should be applied strictly according to label instructions which include use of 16 ounce per acre. There never should be more than four applications delivered per season. These practices assure the most complete elimination of resistant forms and reduce the chances for selecting for resistance in other spider mite generations that season. As always, the above rotational partners should be used after two abamectin applications separated by 7-10 days.

Spider mites do not threaten the welfare of the Florida strawberry industry today, but only because the industry possesses excellent chemical and biological tactics of management. It would be a big loss if abamectin were overused again and became unfit to carry its weight in spider mite management schemes.

Representatives from GCREC and FSGA visit New Zealand and Australia in July

Craig Chandler and Natalia Peres

Dr. Chip Hinton, Executive Director of the Florida Strawberry Growers Association, and Natalia Peres and Craig Chandler of GCREC spent four days in New Zealand and 10 days in Queensland Australia, visiting strawberry farms, making presentations to groups of growers, researchers, and industry reps, and working with members of the Better Berries Team at the Maroochy Research Station in Nambour. This was done at the invitation of government scientists in the two countries. Also, while in Australia, Dr. Hinton, representing the Florida Strawberry Research and Education Foundation (a sister organization to FSGA), signed a five year agreement with the Queensland Department of Primary Industries and Forestry to collaborate in raising funds to support research that is considered important to both organizations. Initially, funds will be used to conduct research on diseases that affect transplant quality. Photos on page 7.



The owner of the largest strawberry farm in New Zealand, Francie Perry, is on the far left, along with her son-in-law and daughter, Grant and Katie Perich.



Chip Hinton of the Florida Strawberry Growers Association signs an agreement of cooperation with Queensland government.



Two types of harvesting carts used on many Australian strawberry farms.



Sunray Strawberry Farm's new truck. On the back it reads "You are following another load of Yummy Queensland Strawberries".