

The Blueberry News

Official Newsletter of the Florida Blueberry Growers' Association
Spring Issue, 2002 ([Print Version](#))

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Spring Blueberry Field Day IGAP Blueberry Farm Thursday, March 7, 2002

9:00 a.m. Registration - (pre-registration required for lunch).

9:30 a.m. Opening remarks - Mr. Jerry Mixon, FBGA president and grower, Haines City, Fla.

9:45 a.m. Comments on blueberry pollination - Dr. Kenna MacKenzie, entomologist, Atlantic Food and Horticulture Research Centre of Agriculture and Agri-Food Canada in Kentville, Nova Scotia

10:15 a.m. Observations on Dormex in 2002 - Dr. Jeff Williamson, extension horticulturist, Horticultural Sciences Dept., University of Florida, Gainesville.

10:35 a.m. Observations on thrips and gall midges in 2002 - Dr. Paul Lyrene, blueberry breeder, Horticultural Sciences Dept., University of Florida, Gainesville.

11:00 a.m. General discussion

11:15 a.m. Preview of field tours - Mr. Ken Patterson, blueberry grower, IGAP, Hawthorne, Fla.

11:30 a.m. Lunch - Pre-registration required

12:30 p.m. Visit blueberry fields

Directions to the field Day - IGAP Blueberry Farm is not far from Hwy 301. If traveling from the south, continue north on Hwy 301 until about 4 miles north of Citra. If traveling from the north, continue south on Hwy 301 until about 6 miles south of Hawthorne. Turn east on 177 Ave. Continue to the end of the road and turn left; go about 100 yards and turn right. You will still be on 177 Ave. Go to the end of the road and turn right onto 243rd St. Go to the end of the road and turn left on 193rd Ave. Continue to the end of this road and you will be at IGAP Farm 3 and the nursery. This will be the meeting place for the field day.

A Message from the President

I hope you didn't blink—winter has come, and it appears to be gone. Most areas report sufficient chill hours to induce good vegetative and fruit bud break. In fact, by now most of you are probably seeing some of both in your fields. Keep alert to flower thrips and even the beginning of gall midge. It is about time to bring in bees if you have not already done so. Make sure your hives are vibrant with no roaches or frames that are in poor shape. With as many flowers as our fields can produce, we need every bee we can get. As great as the warm weather is, be on guard for a February cold snap. It would be an unusual late winter/early spring if we did not have at least a couple of nights (or as in the case of 1994, 10 to 12 nights) where we have to diligently watch weather conditions.

We have a great field day planned at Island Grove Ag Products Farm in Hawthorne. We are planning on a couple of very timely talks a discussion on gall midge and thrips, and hopefully we will get to meet our new small fruit entomologist Dr. Oscar Lieburd. We will also get to tour a new planting so those new to the industry will get to see the elements involved in planting blueberries.

It also looks like we have a label on Spintor insecticide, which will prove valuable in our battle against thrips during the bloom period. As well, Jeff is working with the Florida Fruit and Vegetable Association on a Section 18, (emergency use) label for Indar fungicide for control of rust and septoria leaf spots.

As you can see there are a lot of things going on. I look forward to seeing you at the Spring Field Day.

Jerry Mixon, Jr
Mixon Family Farm and FBGA President

Spintor Approved for Use on Blueberries in Florida

By Jeff Williamson

On January 25, 2002, I was informed that a supplemental label for use of Spintor 2SC to control thrips has been accepted by the Florida Department of Agriculture and Consumer Services. Growers who wish to use this product must have a copy of the supplemental label in their possession.

An advantage of Spintor over other insecticides that are currently labeled for thrips control in Florida blueberries is that, if properly applied, Spintor can provide control of thrips during the bloom period. However, Spintor 2SC is toxic to bees. Therefore, care must be taken not to apply this product when bees are in the field actively foraging. More information on this use restriction can be found in the Environmental Hazards section of the main label affixed to the container. You may also view the supplemental label and the main label for Spintor 2SC at the following web site - www.hos.ufl.edu (click on "news", then click on "spintor re-approved").

Paul Lyrene has prepared an excellent article for this newsletter which you should find helpful when making determinations about the potential threats posed by thrips and blueberry gall midges.

Visiting Scientist

Dr. Kenna MacKenzie, the berry crops entomologist at the Atlantic Food and Horticulture Research Centre of Agriculture and Agri-Food Canada in Kentville, Nova Scotia, is spending six months in Florida. Lowbush blueberry pollination forms the backbone of her research program in Nova Scotia. She also works on pollination of other fruit crops including cranberry and apple, and pest management issues in many berry crops. She is an expert in *Vaccinium* pollination having worked on three important North American crops, cranberry, lowbush blueberry and northern highbush blueberry. While in Florida, Kenna is planning to work on pollination problems in southern blueberries as well as thrips management in collaboration with Dr. Paul Lyrene and Dr. Oscar Liburd. She is working out of Dr. Lyrene's lab in the Horticultural Sciences Department at the University of Florida.

Gall Midges and Thrips in Florida Blueberries

By Paul Lyrene.

Gall midges (*Dasineura oxycoccana*) are tiny flies that pass 6 to 10 generations per year on blueberries in Florida. The adult flies live only a few days. Even if gall midges decimate your crop, you may not ever notice them unless you know when and how to look for them. The female flies lay eggs into expanding blueberry flower buds and tender new vegetative growth, just as the bud scales are separating. Within a week, the developing flower buds or shoots are dead. The soft new tissues have been dissolved by enzymes from the developing midge larvae. The larvae are tiny, white-to-orange maggots, almost too small to see without magnification. After a few days, the larvae become pupae, which are small and orange, and after a few more days adult flies emerge. Gall midges overwinter as larvae or pupae in the soil beneath the bushes. In Gainesville, a week or two of warm weather in January, February, or March can cause flies to emerge from the soil, and if there are flower buds at susceptible stages on susceptible varieties, many of the flower buds may be killed before the flowers appear. Highly-susceptible rabbiteye varieties such as Windy and Premier are at great risk if gall midges are flying as the flower buds begin to swell, and Aliceblue, Beckyblue, Climax, and Bonita are only slightly more resistant. Killed flower buds stop development. The damage later looks like freeze injury. In times past, much gall midge damage to the flower buds was blamed on freezes.

Blueberry gall midges only attack blueberries, cranberries, and their close relatives. Numerous other types of gall midges attack other plants, but each is confined to its own host species. Most gall midge damage I have seen on blueberry flower buds in Florida has been on susceptible rabbiteye varieties, not highbush. Rabbiteye varieties whose flower buds seem quite resistant to gall midges include Brightwell and Powderblue. The flower buds of most southern highbush varieties seem rather resistant to gall midge damage, but I wouldn't totally discount midges as a threat to southern highbush flower buds.

The main problem from gall midges on southern highbush blueberries comes from their ability to prevent normal leafing of the plant in the spring. This is a serious problem in Florida, in view of the great importance of early leafing to early-ripening blueberries. Almost all the sugar needed to produce large, sweet blueberries is made in the leaves during the 60 days (more or less) between flowering and ripening. Sparse leafing during this period can make the berries smaller, insipid, prone to green or pink undersides, and later ripening. Not all poor leafing problems can be blamed on gall midges - some varieties leaf poorly even without midges, but midges are serious enough to demand daily scouting in the blueberry field during spring leafing. What are the indications that gall midges have been damaging blueberry leaf buds? Normally, within

a month after the plants start growing in the spring, the strongest new shoots should be 8 to 12 inches long, each shoot with 6 to 8 large, well-formed leaves. If, instead, the plant is full of short, weak, shoots, each bearing only a few twisted, misshapen leaves, and if new growth on the plant seems thin and sparse, gall midges may be the culprits.

When the blueberry plants are first sprouting in the spring the new leafy shoots emerging from the buds look like small green flames from tiny candles. These new shoots are in great danger from gall midge attack. And always, at the tip of a growing shoot, is a tiny furl of soft tissues that can feed gall midge larvae. If midges lay eggs in the soft new tissues, the tips will die within a few days, and a weak, short branch will be produced in place of the long, vigorous shoot that should have been. The shoots will have only one to three small, twisted leaves and a tiny black tip where the midges killed the growing point. Blueberry plants have lots of leaf buds. A few weeks after the first buds are killed by midges, a second group will try to grow. If some force of nature or some action by the grower has reduced the gall midge population in the field, these second shoots may succeed where the first failed, giving you the growth you should have had some weeks earlier. Unfortunately from late February through early April in Florida, gall midges tend not to vanish if they were abundant earlier. The midges stop flying during cold periods in the spring, but when it is cold enough to stop the midges, blueberry shoots will cease to grow. When it warms up enough for the resumption of shoot growth, the midges will become active again. Natural selection has adjusted the midges' life cycle so that they emerge to lay their eggs when there is something for the larvae to eat, namely soft, new blueberry tissue.

Blair Sampson, USDA Small Fruit Research Station, Poplarville, Mississippi has found that blueberry gall midges are often heavily parasitized during the summer by tiny wasps that lays eggs in the larvae, killing them before they become adults. Once these wasp populations build during the summer, gall midges can almost vanish from the field, and the blueberry plants can usually produce new growth flushes through the summer without major interference from gall midges. However, in our blueberry breeding greenhouses in Gainesville, where small rooted cuttings are flushing through the summer, gall midges, if not controlled, can kill almost every shoot tip through the summer and fall. The parasitic wasps seem unable to establish in our greenhouses. Meanwhile, rooted cuttings just outside the greenhouse in August and September sometimes grow well without visible gall midge damage.

Next, I will discuss thrips. Thrips are small, active insects with rasping mouthparts. Although they are a lot larger and more conspicuous than gall midges, they still are not much more than a quarter of an inch long. They are yellowish in color and shaped like a cigar. They commonly can be found running around inside open blueberry flowers, but they can also fly. I have seen times when the air in fields around Gainesville seemed to be full of them. I have also seen times during blueberry bloom when a car parked beside a blueberry field quickly became covered with hundreds of thousands of alighting thrips. At such times, it is possible to hold a white paper under a cluster of blueberry flowers, shake the cluster over the paper, and dislodge 10 or 20 thrips, which then run across the paper looking for a place to hide.

Unlike gall midges, thrips have a wide host range, feeding on the flowers of many species of plants. They have been shown to cause poor fruit set on lime trees in Florida. Jerry Vanerwegen reports that thrips are abundant when titi trees are blooming in the swamps of Clinch County Georgia. The flowering heads of *Rumex hastatula*, called Florida buckwheat or sour sorrel, a red-stemmed weed that is abundant in fields and pastures in north Florida in winter, are often loaded with thrips just before the blueberry flowers get to the vulnerable stage. If abundant in the field when the blueberries flower, thrips can greatly reduce fruit set. Most commonly, this results from thrips damage to the stigma and style. As soon as a flower opens far enough for the slender body of a thrips to enter, the thrips starts rasping away on the style and stigma. After a short time of feeding, pollen tubes can no longer grow down the damaged style to the blueberry ovules. The result is no seeds and no ripe fruit. It may just be one of my superstitions, but it also seems to me that bees are less active in blueberry fields that have a lot of thrips. The normal time to notice a problem from earlier thrips damage is 2 to 4 weeks after the flowers were damaged, when the small green berries, which failed to develop after the petals dropped, start raining onto the ground. Years ago, many of us blamed this fruit drop on poor pollination (which was not entirely wrong), and tried to rescue the crop by spraying gibberellic acid. GA sprays helped rescue some crop but seldom gave really great crops.

If thrips are abundant during blueberry flowering, they can ruin the blueberry flowers even before they open. They do this by maneuvering themselves to the inside of the clusters of still-unopened flowers and feeding on the outsides of the

corollas and on the stems that attach the flowers to the cluster. This kind of damage can cause the flowers to wilt and can keep them from ever opening. In some bad thrips years, thrips can even cause soft spots on southern highbush berries when they begin to ripen. With their great propensity to stay inside of some crack or crevice the thrips will crawl around on the cluster of ripening berries, concentrating their rasping at the points where two ripe berries are touching. There, their feeding will make a soft spot on both berries, just at the point where the berries were touching. Thrips seem to prefer flowers above all other plant tissues. They don't seem to prefer berries. But sometimes as the last of the blueberry flowers are fading, after thrips populations have built up to very high levels in the blueberry field during flowering, they go to the berries because there is no other convenient food. Soon after the last of the flowers are gone, damage to the berries ceases.

Thrips have a short generation time. In Florida, where blueberry flowering is often prolonged, they can greatly increase in number during the flowering season. I remember many years back in the 1980s and early 1990s when late freezes would kill the earliest-opening flowers of the rabbiteye varieties, leaving the later flowers seemingly undamaged. However, these later flowers would often set little or no fruit, seeming to develop brown streaks in the corolla and to dry up without opening. I am now convinced that thrips and gall midges, not hot weather or lack of bees, were the culprits.

Can thrips interfere with early leafing in blueberries in Florida? Yes, if they are abundant when the new shoots are starting to grow. If present during first leafing, thrips can poke their way into the tender, unfurling leaf clusters. Although not as devastating in this regard as gall midges, thrips can damage the young tissues and cause the new leaves to be malformed, sometimes with blackened tips. To learn more about thrips and gall midges, try a GOOGLE search on the web. If you choose the Google advanced search option, where it will bring only articles that contain all the words you put in the search box, the entry : "Dasineura oxycoccana" will get plenty to read about gall midges and "blueberry thrips" will keep you busy reading about thrips. Not to roam too far from the subject, but Google searching on the internet, in my opinion, makes most other ways of acquiring information obsolete. Recently I was trying to find out about *Cylindrocladium* stem rot in blueberry cuttings, and using Google for one hour, I found out more than I could have found out in a week of telephoning and library searching.

I don't have space here to give specific advice on controlling blueberry gall midges and thrips in your blueberry production fields, nor am

I qualified to do this. There are other sources for this information. I would, however, give this general advice. First, learn how to recognize the damage of these two insects. You have to watch your fields day by day during the periods thrips and gall midges could be getting established. If you wait until the damage is obvious, it may be too late. Second, learn which developmental stages of the blueberry plant must be protected from these insects. There is no reason to spray for gall midges during the summer when parasitic wasps are operating and the plants are already fully clothed with new leaves. There is not much danger from thrips if no flowers or advanced-stage flower buds are present in the field. However, you must protect the flower buds of susceptible rabbiteye varieties from gall midges while the buds are swelling, and you must protect the new growth flushes of both rabbiteye and highbush in the early spring from both thrips and gall midges. In addition, in both highbush and rabbiteyes, you must keep thrips populations low in your fields during flowering and immediately before and after flowering.

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Florida Blueberry Growers' Association

P.O. Box 141733

Gainesville, FL 32614

The Association annual dues depend on which membership category you fit best.

1. Regular Florida Member - \$10.00 per acre of blueberries, except a minimum of \$50.00 and a maximum of \$200.00.
2. Out-of -state member - \$50.00

3. Associate member - \$100.00 (Equipment and chemical companies, etc.)
4. Educational and Research - \$10.00 (University and USDA personnel who do not grow blueberries commercially)

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