The Blueberry News

Official Newsletter of the Florida Blueberry Growers' Association
Fall Issue, 2000

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Editor: Jeff Williamson

Fall Blueberry Short Course

Tuesday, November 21, 2000
Florida Farm Bureau Building
5700 SW 34th Street
Gainesville, Fla.

8:30 a.m. Late Registration - late registration at the door is $20 per person and does not guarantee a meal.

9:15 a.m. Welcome - Florida Farm Bureau Federation, Ag Policy representative, Florida Farm Bureau, Gainesville, Fla.

9:25 a.m. Opening remarks and USA Blueberry Council update - Mr. Jerry Mixon, FBGA president, Haines City, Fla.

9:40 a.m. Update on thrips and gall midge infestations on blueberries in the S.E. United States and implications for their control - Dr. Blair Sampson, research entomologist, USDA-ARS, Small Fruit Research Station, Poplarville, Miss.

10:10 a.m. Review of effective weed control practices in blueberries - Dr. Tim Crocker, extension horticulturist, Horticultural Sciences Dept., IFAS, University of Florida, Gainesville, Fla.

10:30 a.m. Break

10:45 a.m. Postharvest Quality: Recent Studies on Cooling and Handling - Dr. Steve Sargent, extension postharvest horticulturist, Horticultural Sciences Dept., IFAS, University of Florida, Gainesville, Fla.

11:15 a.m. Overview on the state of Florida s Blueberry Industry - Dr. Paul Lyrene, blueberry breeder, Horticultural Sciences Dept., University of Florida, IFAS, Gainesville, Fla.

11:35 a.m. FBGA Business Meeting - Mr. Jerry Mixon, FBGA president, presiding

12:15 p.m. Catered lunch at the Horticultural Research Unit (see directions below).

1:00 p.m. Field tour of breeding plots at the University of Florida Horticultural Research Unit - Dr. Paul Lyrene, blueberry breeder, Horticultural Sciences Dept., IFAS, University of Florida, Gainesville, Fla.

Information about the short course -

Registration - Enclosed, please find a ***pre-registration form*** for the Fall Short Course. **This form must be returned postmarked by November15 to guarantee your meal and to receive the early registration rate of $10.00 per person for FBGA members and $20.00 per person for non-members.** Note that FBGA membership is on a per farm bases. Being a FBGA member allows you and any employee or family member associated with your blueberry operation to attend FBGA meetings at the discounted membership rate of $10.00 per person. Your pre-registration includes the morning short course, lunch, and an afternoon tour. Please note that the registration fee does not cover your FBGA dues which are due Jan. 1 of each year.

Directions to the Farm Bureau Building in Gainesville - Traveling north on I-75, take the first Gainesville exit on the south side of town (Williston Rd. or Hwy 121 exit). Go about 1,000 feet east toward Gainesville on Hwy 121 and turn south (right) on Hwy 23 (Rocky Point Rd or S.W. 34th Street). The Farm Bureau building is less than 1 mile south on the right side of the road. For parking, drive around to the opposite side of the building which is the side that faces I-75. If you are traveling to Gainesville on Hwy 441, turn west on Williston Rd. and go toward I-75. Turn south on 34th Street (Rocky Point Rd.) Just before you get to I-75.

The Horticultural Research Unit is located at 7002 NW 71st Street (just off N.W. 53rd Ave.). Directions to the Horticultural research Unit will be given at the meeting.

Other important meetings and conferences

Southeastern fruit and vegetable growers will be joining together to hold several outstanding meetings at the Hyatt Regency on the historic waterfront of Savannah on Thursday, Jan. 4 - Sunday Jan. 7, 2001. Conference groups include 10th Biennial Southeast Blueberry Conference (Thursday, Jan.4 - Friday, Jan. 5), Georgia/S.C. Wine Grape Conference (Saturday, Jan.6 - Sunday, Jan. 7), Georgia Roadside Market Conference (Friday, Jan. 5), Vegetable Conference (Saturday Jan. 6 - Sunday Jan. 7), and the Southeast Peach Conference (Saturday, Jan. 6 - Sunday, Jan7). The conferences feature outstanding regional and national speakers on small fruit and vegetable production. A large trade show (Friday Jan.5 - Saturday, Jan. 6) will be held featuring suppliers for the fruit and vegetable industries. Registration before Dec. 18 is $25.00 for Thursday, $30.00 for Friday, $55.00 for Saturday (includes lunch), or $95.00 for the entire conference including the banquet on Friday night. For registration information, call the Georgia Fruit and Vegetable Grower s Association at (toll free 1-877-994-3842), e-mail:cthjr_asg@charter.net or FAX (706) 883-828215. A special single or double room rate is available at the Hyatt for $99.00 per night by calling 912-238-1234 and mentioning that you are attending the fruit and vegetable conference.

FREEZE PROTECTING FLORIDA BLUEBERRIES - Part 2.

By Paul Lyrene

The following is the second part of an article taken from a presentation made by Paul Lyrene at this year s Florida State Horticultural Society meetings in Lake Buena Vista. Due to it s length, Part 1 was presented in the Summer issue of *Blueberry News* and part 2 is presented here.

Overhead Irrigation the Afternoon or Evening before the Freeze

Experienced fruit growers have long known that irrigating their fields the afternoon before an expected freeze can sometimes reduce the damage caused by the freeze. There are four situations in which this practice is potentially useful to blueberry growers.

First situation. It is a calm afternoon, and minimum temperatures are forecast to be on the borderline between damaging and safe. A wet ground may allow the grower to avoid having to turn on the system during the night. In such situations, even minimum overhead irrigation during the night should be effective in preventing damage, but there are disadvantages to irrigating on frost nights, and being able to avoid a run is highly desirable. If the temperature does become critical during the night, a wet ground will reduce the probability that damage will occur before the system is turned on.

Second situation. The dew point is low and the wind speed is expected to be erratic during the night. Or, temperatures are expected to fall to or below the damaging point with light winds, with a rising wind expected later in the night. Even though a rising wind in the night is frequently bringing in colder, drier air behind a secondary cold front, the effect may be to raise the temperature of the blueberry flowers, as cold surface air is mixed with warmer air above the inversion and the wind raises the flower temperature to the temperature of the surrounding air. On some occasions, growers may be able to protect the crop with overhead irrigation before the wind increases, but lose the crop due to evaporative cooling after the wind begins. On the other hand, dry plants might have survived the cold wind without damage, but could not survive the lower temperatures that occurred before the wind broke the inversion. On some such nights, fields that have been thoroughly wet late in the afternoon before the freeze have escaped damage because a higher temperature was maintained before the wind began, whereas crops were lost in dry fields that were not irrigated at all and in fields in which irrigation was run throughout the night.

Third situation. The grower lacks sufficient pumping capacity to protect the entire acreage against a freeze of the expected severity. A decision is made to change the sprinkler heads to a larger orifice diameter in half of the field and close off the valve to the other half. It may be

possible to reduce damage in the half that cannot be irrigated during the night by thoroughly wetting the soil during the afternoon before the freeze.

Fourth situation. This may be the most common situation in which growers could improve their crops by adopting a practice that is seldom being used at present. Frequently, during January and February, after blueberry flower buds have begun to swell in response to warm periods in the winter, a freeze will occur in which the dew point is so low, the air so cold, and the probability of some wind during the night so high that no experienced grower would choose to run the irrigation at night for fear of causing massive damage from evaporative cooling, frozen emitters, broken branches, and uprooted plants. Furthermore, many of the flower buds may still be quite dormant, and will survive if nothing is done. Frequently, so early in the year, the flower buds may show a wide range of developmental stages. For example, 20% of the buds might be killed if the temperature falls to 24 ^{0}F, an additional 20% will be killed if it falls to 21 ^{0}F, an additional 20% will be killed at 18 ^{0}F, and 20% would survive 16 ^{0}F. A low-risk strategy for the grower would be to thoroughly wet the ground the afternoon before freezing temperatures began, with the goal of raising minimum temperatures in the field by two or three degrees and reducing the fraction of the crop lost. Because fruit prices are often higher in years with light crops, and because blueberry plants can sometimes partially compensate losses in fruit number by increasing fruit size, saving part of the crop could be quite rewarding for the grower.

Factors that Affect Freeze Damage in Blueberry Fields

Several factors affect the severity of damage to blueberry plants, flowers, and fruit in particular freezes. Some of these factors are fairly well understood; others have received little study.

Temperature, wind speed, and dew point. A low dew point is always worse than a high dew point. Dry air loses heat faster after sunset. Water vapor in all levels of the atmosphere absorbs part of the heat radiated from the ground and re-radiates it back to the earth s surface. Moist air increases the amount of frost formed and increases the amount of latent heat released in the field at night. Dry air lowers the temperature that the flower can attain at a given air temperature and increases evaporative cooling when irrigation is run. Wind can be bad or good. If overhead irrigation is being applied, wind is a serious problem, because it increases evaporative cooling, removes heat from the field, and interferes with the even distribution of the water. If water is not being applied, the wind is beneficial. It prevents formation of a cold pool of air near the ground beneath the inversion and it prevents the flowers and berries from becoming colder than the air that surrounds them, which occurs on still nights because flowers and berries lose heat rapidly from radiation and air loses heat only slowly.

Plant tissue and stage of hardiness. Young blueberry plants are sometimes damaged in field nurseries during the winter if they have not been properly hardened. New spring vegetative flushes can be killed by the same temperatures that kill open flowers and fruit. Completely dormant branches and flower buds are very cold-hardy in midwinter. However, any January warmth promotes growth and expansion of the flower buds, and some loss of hardiness accompanies each subsequent stage of flower bud development. Styles, ovary tissue, ovules, corollas, and pedicels are similar in their freezing points, but some marginal freezes may kill the styles but not the corollas, or the ovules but not the ovaries. The relative sensitivity of these organs seems to vary from one freeze to another. A partial crop can sometimes be rescued by spraying gibberellic acid on the ovaries of flowers whose styles or ovules have been killed by marginal freezes. If the dew point is high, and the temperature is only slightly below freezing, open blueberry flowers may be heavily coated with frost with no damage to any flower parts. On the other hand, if the air is dry, flowers may be killed with no frost on the plants, even on still nights.

Physical conditions in the field. Pine bark mulch lowers the air temperature at flower level in the field by as much as 5 ^{0}Fon calm nights with low dew points. If the dew point is high, the pine bark has less effect. The effect of thoroughly wetting the pine bark the afternoon before the freeze has not been studied. Dry soil and any weeds, alive or dead, in the field lower the temperature in the field. Any object in the field on which frost can form, might be expected to lower the temperature of the blueberry plants by contributing to the dehydration of the air. Dry soil lowers the temperature compared to wet soil by two mechanisms. First, dry soil provides little moisture to replenish the water vapor that is lost from the air by frost formation. This allows the temperature and dew point in the field to continue to fall after dew and frost begin to form. Second, dry soil conducts heat poorly from the warm depths of the soil to the cold surface. Wet soil has been reported to have a temperature conductivity approximately eight times greater than that of dry sand. The lay of the land, with respect to elevation and air drainage patterns, greatly affects field temperatures on calm nights with low dew point, but is less important as the wind and/or dew point increase.

Conditioning weather before the freeze. The ability of citrus leaves and stems to harden in response to several weeks during which night temperatures fall below about 50 ^{0}F before a freeze is well known. Experienced blueberry growers are convinced that blueberry flowers and flower buds at all stages of development also have some ability to increase their cold hardiness in response to cold days preceding the freeze. This phenomenon merits further study in blueberry.

Blueberry variety. It has long been known by growers that flowers and developing flower buds of rabbiteye blueberry (*Vaccinium ashei* Reade) are less cold hardy than highbush buds and flowers at the same stages of development. Among southern highbush cultivars, which are advanced-generation interspecific hybrids between a deciduous, northern blueberry species (*Vaccinium corymbosum* from New Jersey) and an evergreen blueberry species from the Florida peninsula (*V. darrowi* Camp), there appears to be wide variation in flower bud cold tolerance. Just prior to anthesis, the range in killing temperatures of flowers of different varieties at similar stages of development in the field appears to be on the order of 2 or 3 ^{0}F.

Summary and Conclusions

Freezes in late fall or winter can damage or kill young blueberry nursery plants that are growing vigorously and have not hardened off. Hard freezes after the plants have renewed growth in the spring can kill new shoots. Stem blight can invade freeze-killed shoots and further damage or kill the plant.

The main threat from cold on blueberries in Florida, however, is to flowers and fruit. To counter the threat, growers install overhead irrigation systems, the size of which depends on the grower s estimation of the future value of the fruit, the probability of freezes of different levels of severity at his or her site, the cost of the system, and the availability of water.

Once an irrigation system has been installed, it is used on almost all calm nights when the fruit or flowers are threatened by cold. Over the past 20 years, the number of nights per year that have required protection has varied from 0 to 15 for various locations and various years in Florida. In a few years, the crops were largely lost in the Gainesville area in late February and early March due to freezes with temperatures too low, winds too strong, and air too dry to be countered by applying overhead irrigation at 0.3 inch per hour. If the night is windy and the dew point is below 25 ^{o}F, it is usually best not to turn on an overhead irrigation system unless a very large volume of water can be applied.

Overhead irrigation is an important but partial solution to the freeze problem in Florida blueberries. No complete and easy solution is at hand. Lower-chill varieties that would improve blueberry yields in south Florida would allow the industry to flee southward. Varieties that would thrive on hilltop soils in Florida would allow growers to abandon frosty, low areas. Use of pine-bark growing medium is a step in this direction, but pine bark itself makes the air much colder in the field on calm nights. Grafted blueberry plants, using the upland-adapted sparkleberry (*Vaccinium arboreum* Marsh.) as rootstock for highbush blueberry scions may be feasible, but would greatly increase plant costs. Development of varieties that require more heat to induce flowering and have a shorter flowering-to-ripening interval should yield progress. At present, however, growers must consider overhead irrigation and occasional crop losses among the risk factors that increase the cost of producing early blueberries in Florida.

References

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BLUEBERRY PRODUCTS AND SERVICES

8335 for price and availability. License no. 472255191.

My Blue Heaven Blueberry Nursery. Southern highbush varieties. Centrally located in Dade City. Give us a call, we re happy to help. Debra Troyer (352) 567-4256, 18414 Lawrence Rd., Dade City, FL 33523. Lic. no. 47221916.

Southern Highbush Blueberry plants for-sale - Several varieties. Call for prices and availability. Bob Waldo, Hudson, FL, (727) 863-4214. Lic. no. 47227344.

Strickland Blueberry Farms and Nursery. 4956 Slaten Rd., Plant City, FL 33567 Phone (813) 754-3866. FAX: (813)754-8717. Gulfcoast and Sharpblue in 1, 15 and 25 gal. containers. Large quantities available. Come see an alternative planting method. Lic. no. 47220729.

ADVERTISING INFORMATION

We welcome advertising from blueberry nurseries and suppliers. The cost is 30 cents per word per issue of the newsletter in which your message appears. Send your blueberry-related message and a check payable to **FLORIDA BLUEBERRY GROWERS' ASSOCIATION** to our address given below under membership information.

MEMBERSHIP INFORMATION

To join or renew your membership to the Florida Blueberry Growers Association, mail a check payable to **FLORIDA BLUEBERRY GROWERS ASSOCIATION** to our address: 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).