

North Carolina Blueberry News



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COLLEGE OF AGRICULTURE & LIFE SCIENCES

A newsletter for commercial blueberry producers, edited by specialists and agents of the NC Cooperative Extension Service and supported by the NC Blueberry Council, Inc.

IN THIS ISSUE:

- Ž Outlook for the 2003 harvest
- Ž Chill hour totals -- above average!
- Ž Tips for Mummy Berry control
- Ž Freeze protection checklist
- Ž 2003 Blueberry Spray Schedule
- Ž Indar -- Emergency Section 18 label

OUTLOOK FOR THE 2003 BLUEBERRY HARVEST IN NC

Observations have been made at numerous farms in the past two weeks. Overall, flower bud “set” appears to be above average in southeastern North Carolina, based on numbers of buds per fruiting twig. Barring a freeze or other catastrophic event, growers in NC can expect above-average crop volume. ***Flower bud numbers in a given year are dependent upon retention of leaves for as long as possible during the previous season. Bushes that defoliate early do not set as many flower buds, and the following year the crop is reduced as a result.***

Fungal leaf spots are the primary cause of this premature defoliation. As reported in previous issues of this newsletter, the drought that occurred during the summer of 2002 greatly reduced leaf spot diseases, bushes held their leaves for a long time, and this contributed to the excellent bud set.

The only exceptions are older non-irrigated fields on high, sandy sites where drought stress was severe enough to hinder growth of new second- and third-

flush shoots after the 2002 harvest. On some of these sites, the crop has been severely reduced.

Fortunately, these fields are becoming rare as more and more growers adopt irrigation for drought relief and frost/freeze protection.

CHILL HOURS ABOVE AVERAGE IN 2002-2003

Benny Bloodworth, Plant Pathology, NCSU
Chilling was well above average this past winter. Chilling is measured by the number of hours of cool temperatures. Hours with temperatures from freezing to 45 °F are most effective, but hours with temperatures up to about 59 °F also contribute to chilling. The number of chill hours accumulated is related to how well blueberry bushes will break dormancy. Blossoms open more completely and more rapidly following a winter with more hours of chilling. Leafing is usually also better in years with high amounts of chilling, however, high temperatures during blossoming can also prevent uniform leafing. Rabbiteye cultivars are lower chilling and require only 600 to 800 hours, while some northern highbush cultivars like Jersey may require upwards of 1400 hours.

CHILL HOUR TOTALS AS OF MARCH 1ST

Weather Station Site	2003	2002	10 yr average
—	—	—	—
Rowan	1700	911	1406
White Lake	1807	968	1437
Ideal Tract	1617	853	1275
Station	1528	777	1296

MUMMY BERRY CONTROL

Mummy berry caused by the fungus *Monilinia vaccinii-corymbosi* is a disease that can result in considerable damage to blueberry leaf shoots, flower shoots and fruit. The name comes from the pinkish-white, mummified fruit that are produced by infected flowers.

Symptoms and Disease Development -- In early spring, small, brown cup-shaped mushrooms (apothecia) about an inch high and a half-inch across are produced from old, infected mummies (pseudosclerotia) lying on the ground under and around blueberry bushes. In southeastern North Carolina, overwintered pseudosclerotia break dormancy in February and develop mature apothecia about one month later. Spores (ascospores) produced by the apothecia are liberated during cool, wet weather and are carried by air currents to the young emerging leaf and flower shoots. These spores infect and blight the young shoots, and secondary spores (conidia) are produced in great abundance on the blighted leaves.

These conidia are carried by insects to open flowers where the ovaries of the developing berries become infected. At harvest, infected berries become light cream-color rather than normal blue and drop to the ground. These infected fruit, if left on the ground, form overwintering pseudosclerotia and provide a source of disease the following year.

Cultural practices (raking, disking) were used to control this disease prior to the use of fungicides. For many years, growers hand-raked fields to remove overwintering mummies. While raking is no longer practical on a large commercial scale, growers can still reduce disease by disking to bury sclerotia. ***Burying mummies at depths of one inch or more will prevent germination.***

Resistance -- All highbush cultivars appear to be susceptible to fruit infection, but to varying degrees. For instance, Reveille is fairly resistant, while Blueridge is highly susceptible. The fruit infection stage of mummy berry is not generally observed on rabbiteye blueberry in NC, but the shoot blight phase may kill 75% or more of leaf and flower shoots, giving the bush a “scorched” appearance.

Avoidance can be used by anyone who is producing blueberries in an isolated location. Unless the disease is present in wild or cultivated bushes nearby, growers and homeowners can successfully avoid mummy berry by planting only dormant (leafless) bare-rooted plants. This avoids introducing pseudosclerotia or infected leaf shoots into the new planting. If a new planting is established with potted plants, rake off and destroy any plant debris on the surface of the soil in the pot to prevent planting of pseudosclerotia along with the new bush. This type of sanitation is especially important with plants purchased from other states, since new races of mummy berry might be introduced into NC as pseudosclerotia in pots.

Fungicides – For many years triforine (Funginex) and benomyl (Benlate) were used to control mummy berry. With the loss of these materials due to voluntary cancellation by the manufacturers, we now have no registered fungicides to control this devastating disease. Fenbuconazole (Indar) has been used successfully under a Section 18 Emergency Exemption granted on an annual basis:

TIPS FOR USING FENBUCONAZOLE (INDAR 75 WSP) ON BLUEBERRY:

1. Read and follow instructions on the enclosed emergency label and on the product package.
2. Apply 2.0 ounces per acre. Begin applications at early green tip (NOW) and make up to 5 applications at 7-14 day intervals through bloom.
3. Indar is reported to be rain-fast within 1 to 2 hrs after application. Good coverage is critical!
4. Do not use Indar alone at full bloom, as this will increase fruit rot diseases. Always include Captan or another labeled fruit rot fungicide as a tank-mix.
5. Indar is not as persistent or as systemic as triforine was – during periods of rapid shoot growth, a shorter application interval will be needed.
6. Do not apply within 30 days of harvest.

BLUEBERRY FREEZE PROTECTION -- A BRIEF REVIEW

AND CHECKLIST

Mike Mainland, Horticultural Science, NCSU

How early in the year? Irrigation for freeze protection on blueberries in southeastern NC has been attempted in late February, but not with very much success. The second or third week of March is usually soon enough to be ready. During the past 33 years there has not been a freeze before April that has destroyed a large part of the crop.

What are the steps in getting ready for freeze protection irrigation?

- T Reinstall suction lines and check primers.
- T Test and service the pumping unit, replace diesel filters and have spare filters.
- T Treat diesel tanks for water and algae.
- T Check lines and sprinklers in the field for leaks and clogged nozzles.
- T Check water pressure on ends of distant lines.
- T Make sure roadways around the field will withstand traffic at night during irrigation.
- T Have a high-intensity spot light ready to plug into the truck to check sprinkler operation.
- T Make sure drainage is open around the field and any control structures can be opened.
- T Fence ponds that are frequented by wild or domestic animals (food safety).
- T Put shielded minimum thermometers in cold, average, and warm areas of fields.
- T Hang a few ribbons in trees or on poles around fields to detect slight breezes.
- T Watch the Weather Channel on cable or from satellite.

Consider additional weather monitoring, such as:

- T Subscribing to a weather service that issues freeze

warnings (AWIS, SKYBIT).

T Purchasing a monitor that calls you when the temperature gets low (Phonetics).

T Hand-held wind meter (inexpensive) or an anemometer to measure wind speed.

T Sling psychrometer or hygrometer to measure wet bulb temperature, dry bulb temperature, relative humidity and dew point.

Freeze night essentials:

T Rain suits and boots for everyone responsible for checking during irrigation.

T Wires to unclog nozzles. The wire surveyor's flags work well, and are not easily lost.

T Half-inch box end wrench, to remove clogged nozzles that will not clear with wire.

T Wrench and spare sprinklers to replace ones that stop turning. (Caution! Unless risers are installed with quick-couples it will be very difficult if not impossible to remove and replace nozzles and sprinklers with pressure on the line.)

The day before an anticipated freeze. If the above preparations are complete, there will not be very much to do before an anticipated freeze. It may even be possible to get a little rest! Forecasts from weather services appear up to 10 days ahead of the anticipated freeze, and by two days ahead they become much more accurate. The best forecast is the morning before the expected cold that night. Test the system again during the day. If there are many clogged sprinklers, unclog them and shut the system down. Start again and again unclog sprinklers.

When do I begin protection? All stages of blueberry flowers and fruit will withstand 28° F. You must decide if the temperature will drop below 28° F before sunrise. Record temperatures every 30 minutes if the temperature is dropping rapidly, or every hour if it is dropping slowly. This will help predict how low it could go. Project the drop rate to sunrise. If it appears that temperatures will go below 28° F and humidity is high, begin pumping when the temperature gets to 33° F in the coldest areas of your

farm. With lower humidity, start at 34-35°, because the flowers and fruit will be chilled an additional 2-3 degrees due to evaporative cooling when the first water hits the plants. Pressure can be low at first, just enough to wet the bushes. As the temperature drops, increase the pressure. By 24° F the pressure should be up to 55-60 psi at the sprinklers. At lower temperatures use all the pressure you have or all you think the system will tolerate.

When can I shut down? If no ice forms and the temperature rises, you can stop at any time. If there is ice, the ice must break freely from branches, indicating a water layer under the ice.

North Carolina Blueberry News
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Darden, (910) 289-2849.

BLUEBERRY PLANTS for sale – Duke. Contact Bill Augustine, (609) 561-8008, cellular (609) 226-1156.b

HARVESTER FOR SALE – Harvey Harvester, rotary picking head, good condition, used last season. \$ 10,000.00. Contact Bill Moore, (910) 283-5888.

COMMENTS REQUESTED -- If you have questions, comments or suggestions for improving this newsletter, contact Bill Cline, (910) 675-2314, E-mail: bill_cline@ncsu.edu

RECOMMENDATIONS OF SPECIFIC CHEMICALS ARE BASED UPON INFORMATION ON THE MANUFACTURER'S LABEL AND PERFORMANCE IN A LIMITED NUMBER OF TRIALS. BECAUSE ENVIRONMENTAL CONDITIONS AND METHODS OF APPLICATION BY GROWERS MAY VARY WIDELY, PERFORMANCE OF THE CHEMICAL WILL NOT ALWAYS CONFORM TO THE SAFETY AND PEST CONTROL STANDARDS INDICATED BY EXPERIMENTAL DATA. ALL RECOMMENDATIONS FOR PESTICIDE USE WERE LEGAL AT THE TIME OF PUBLICATION, BUT THE STATUS OF REGISTRATION AND USE PATTERNS ARE SUBJECT TO CHANGE BY ACTIONS OF STATE AND FEDERAL REGULATORY AGENCIES. ALWAYS READ AND FOLLOW THE LABEL.

Indar Section 18 Emergency Exemption label:

http://www.dowagro.com/label/product_select.asp

2003 Blueberry Spray Schedule:

<http://ipm.ncsu.edu/agchem/chptr7/704.pdf>

BLUEBERRY PLANTS -- FINCH BLUEBERRY NURSERY, PO Box 699, Bailey, NC 27807. (252) 235-4664 or: 1 (800) 245-4662 -- Free Brochure.

MOORE'S MACHINE SHOP – Machining, welding, burning, fabricating. Contact Kenneth R. Moore, Owner/ Operator, Phone/Fax (910) 283-7288.

BLUEBERRY PLANTS for sale – 10,000 Reveille. Contact Ed