

June 4, 2000

Brambles Information

Rosette/double blossom

I have received numerous inquiries regarding the identification and control of rosette (double blossom) in blackberries. Here is an excerpt from an article written by Barbara Smith (USDA Poplarville MS) for the 1999 NABGA meeting. If any of you are seeing these symptoms, please contact me and feel free to send a picture.

"As the infected buds begin to develop, several to many branches may grow from each infected node instead of the single branch per node that is characteristic of healthy stems. Nodes or inflorescences are closer together than normal giving the plant a bunched appearance. Young foliage of infected stems is a light green and later becomes yellowish-brown to bronze compared to the dark green foliage on healthy stems. Infected flowers are pink, purple or reddish compared to healthy flowers of the same variety and may have a ruffled or distorted appearance (hence the name "double blossom"). Little or no fruit is produced from infected flowers.

Rosette can be controlled through the following combination of cultural practices and chemical treatments.

- 1) Plant resistant cultivars. Most erect, thorny cultivars are very susceptible to rosette, but two thornless cultivars are tolerant. Navaho and Arapaho develop little or no rosette at most locations. Where these cultivars have been infected, it took longer for symptoms to occur and disease severity was much less than that of other cultivars. The development of rosette resistant cultivars is a primary objective of all blackberry breeding programs in the southeastern U.S.
- 2) Eradicate wild blackberries. Most wild blackberry plants in the southeast are infected with rosette and are the initial source of infection in most fields. Wild blackberries should be removed from the immediate vicinity of cultivated blackberry fields. This eradication of the native wild host reduces the amount of natural inoculum in the area. Since the rosette fungus does not occur in the roots of blackberry plants, fields established from root cuttings should not become infected with rosette if there are no other blackberries with the disease nearby.
- 3) Prune out infected rosettes. Effective disease control can often be accomplished in new plantings by rigorously pruning out any rosetted stems in early spring before the infected buds open. In areas of low disease pressure, this may be the only control practice necessary. The fungus is not systemic within the blackberry plant so only the side stems showing disease symptoms have to be removed.
- 4) Apply fungicides. Spread of the rosette fungus from infected flowers to primocanes can be dramatically reduced if fungicides are applied at the correct time. Most rosette infection occurs during bloom; therefore, fungicide applications must begin at bud break and continue through until petal fall. Infected flowers will continue to bloom during and after harvest, so it is important to continue fungicide applications as long as rosettes continue to bloom. Among the fungicides registered for use on blackberries, Benlate is the most effective for rosette control. Benlate has a

three day pre-harvest interval. Only five applications of Benlate are allowed in a year and it cannot be applied during harvest in "pick-your-own fields." In fields where no "pick-your-own" customers will harvest fruit, Benlate should be applied at mid-harvest. Fungicides cannot stop symptoms development on fruiting canes. The goal of the fungicide treatments is to prevent infection from occurring on the primocanes. There is about a nine-month delay between fungicide application and any evidence of control. By maintaining a rigorous fungicide spray program, as outlined on Table 1, rosette infection should be minimal to none.

Bordeaux mixture may be substituted for pre-harvest Ferbam (NOT LABELED IN NC) or Benlate sprays; however, it should not be applied when the temperature is above 75 F because it may burn the foliage. Bordeaux mixture in the commercial pre-mixed formulations will have label restrictions that must be followed. However, Bordeaux mixture prepared by the grower has no label restrictions. A 4-4-50 Bordeaux mixture may be prepared as follows. (1) Dissolve 4 pounds hydrated lime (calcium hydroxide) in 5 gallons of water and stir to make a "milk of lime" suspension. (2) Dissolve 4 pounds of finely powdered bluestone (copper sulfate) in 30 gallons of water in spray tank. Keep tank agitator running, and (3) slowly add the "milk of lime" suspension to bluestone solution in the tank. (4) Fill the tank with water to 50 gallon mark. The Bordeaux mixture should be constantly agitated and should not remain in the tank for an extended period of time. It is very corrosive and may damage the spray nozzles.

5) Mow down severely infected plantings. Heavily infected blackberry plants should be pruned to about a foot above the ground (usually by mowing) immediately after harvest. In fields where the disease is so severe that harvest is not feasible, the plants may be mowed before harvest. Remove all diseased plant material from the field, and fertilize with a complete fertilizer. Continue irrigation to ensure good regrowth, and begin a fungicide spray program. Mowing the entire planting to the ground is only necessary when the infection is wide-spread. Yield from mowed fields will be drastically reduced the following year. Except along the Gulf Coast where the growing season is longest, most cultivars should not be mowed more than once every three or so years."

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