

Bramble Information

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AVOID GLYPHOSATE TO MAINTAIN BLACKBERRY YIELDS AND PROFITSHerbert D. Stilesⁱ and Gina E. FernandezⁱⁱⁱSouthern Piedmont Agric. Research & Extension Center, Va. Tech, Blackstone VA, andⁱⁱVernon James Research and Extension Center, North Carolina State University, Plymouth NC

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If you intend to use glyphosate on weeds that established themselves in the "weed-free strip" while your labor force was devoted to blackberry harvesting or other, late-summer farm chores, this bit's for you.

Glyphosate is widely known as a non-selective, post-emergence, systemic herbicide that can kill actively growing crop plants as well as weeds throughout the growing season. In tree fruits, late summer or fall applications of glyphosate are suggested for most effective control of perennial weed species (including blackberry)¹. Although blackberry plants seem especially vulnerable during late-summer, fall and early winter, all plant parts (canes, buds, leaves, and exposed roots) must be protected from contact with glyphosphate at all times of the year.

The time of symptom development and type(s) of symptom expression may differ according to the time-of-year in which blackberry plants are exposed to glyphosate. Leaves tend to die and turn brown within a few weeks after mid-summer applications of this material, and such symptoms may persist into late summer or early fall. Where glyphosate is applied during late-summer through fall it can cause different (or additional) injury symptoms that appear months later when floricanes and crowns start to emerge from winter dormancy.

Some floricanes buds remain totally inactive on plants that were exposed to glyphosate during the previous fall, but others may exhibit large numbers of abnormal-looking, discolored shootlets ([photo 1 glyphosphate injury](#)). At first glance, these miniature, "witches brooms" might be mistaken for early symptoms of a disease, commonly called "rosette" or "double blossom," that is caused by a fungus [*Cercospora rubi* (G. Wint.) Plakidas]² ([photo 2, rosette disease witches broom](#)). Early-spring symptoms of glyphosphate injury also include stunting and white, yellow or reddish discoloration of newly emerging primocanes ([photo 3 glyphosphate injury](#)).

Where glyphosate is the causal agent, rosetted shootlets usually die or remain stunted and produce few leaves or flowers. Floricanes may decline rapidly and are likely to die during spring or early summer. Primocane production may be suppressed or non-existent and the entire crown may die on some plants.

Cercospora would not be expected to cause discoloration or malformation of newly emerged primocanes, nor would it be expected to kill roots or crowns of infected plants. Additionally, many rosetted blackberry shootlets survive and grow into large "witches brooms" ([photo 4 double blossom](#)) with many flowers. Most flowers on such structures are primarily sterile (unable to develop into berries) and they are the sites at which the fungus produces spores that contaminate new primocanes and continue the disease cycle within the planting. Other cultivars do not form rosettes in response to this fungus, instead they produce relatively normal looking shoots with sterile flowers from which fungal spores are similarly produced.

Glyphosate injury symptoms were observed among thorny and thornless blackberry plants at several locations in Virginia and North Carolina during spring 2001. No signs of the double blossom fungus were among symptomatic specimens that were submitted to the clinic. However, we were able to determine that, in the previous year, plants were unintentionally exposed to glyphosphate in several locations (i.e., through drift or use of contaminated spray equipment). Some year-old transplants were killed and numbers of berries were reduced on established plantings. Effects also included a delay or reduction in development of primocane canopies that will be needed for fruit production in 2002.

Glyphosate is an important tool for integrated management of weeds in many agricultural crops. However, recent observations in NC and VA and previous experience indicate that glyphosphate should not be used at any time in bramble plantings. Alternate weed control strategies should be sought unless the aim is to eliminate the blackberry plant and then a high commercial level should be used to ensure that the plants are completely killed.

1- Derr, J.F. and R.S. Chandran. 2001. Herbicides - Postemergence. Pp.99-100 In Virginia, West Virginia and Maryland Cooperative Extension 2001 Spray Bulletin for Commercial Tree Fruit Growers. Available 20 Sept. 2001 <<http://www.ext.vt.edu/pubs/treefruit/456-419.html>>

2- Converse, R.H. 1991. Rosette (Double Blossom). Pp. 13-15 In Compendium of Raspberry and Blackberry Diseases and Insects. St. Paul, Minn.: American Phytopathological Society.

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