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ROSE ROSETTE DISEASE

A QUICK OVERVIEW

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Rose Rosette Disease (RRD) is a lethal disease of roses caused by rose rosette virus (*Emaravirus rosae*). The virus is mainly spread by a microscopic eriophyid mite (*Phyllocoptes fructiphilus*) from infected to healthy plants. Since mites are unable to fly, they spread upwind on air currents and can only survive on rose plants. The disease also can spread over long distances when infected plants are shipped from one place to another. RRD is specific to Rosa spp., and most cultivated roses are susceptible to it. It poses a major threat to the rose industry as well as ornamental landscapers and gardeners.

DIAGNOSIS

Roses may not exhibit symptoms of RRD for months after initial infection. Early symptoms of RRD include excessive thorniness, distorted flower buds, strapped (thin) leaves and thickening of stems (Figure 1A). The expression of these early symptoms varies by cultivar, so comparing the suspected plant with a healthy one of the same cultivar aids in accurately diagnosing the disease (Figure 1B). As the disease progresses, proliferation of shoots with short internodes on one cane (witch's broom or rosette) appears as a characteristic symptom of RRD (Figure 1C). Many RRD infected plants decline and die within 3-5 years. Molecular diagnostic methods are available to confirm the virus infection.

Figure 1. *Symptoms of Rose Rosette Disease. [A] Early symptoms include thickened stems, increased thorniness, strapped (elongated, thin) leaflets, and distorted flower buds. This stage is optimal for plant removal before mites begin to balloon to other plants. [B] Comparing healthy (left) and infected (right) canes of same cultivar for diagnostic purposes (Image: David Byrne, Texas A&M), and [C] Late symptoms include a proliferation of shoots called a witch's broom or rosette. By the time witch's broom(s) appear, mites are likely to have spread to other plants.*

MANAGEMENT STRATEGIES

While RRD is incurable, early detection through regular monitoring and scouting is the key management strategy. Once the disease is confirmed through symptoms and/or laboratory testing, remove the infected plants promptly to protect nearby roses. The removed plants should be disposed of in trash (do not compost) as soon as possible. Additionally, the root ball should be dug up and discarded. If you cannot remove the entire infected plant immediately, then cut out symptomatic branches and dispose of them in trash because eriophyid mite populations can be up to 40 times higher on symptomatic branches compared to non-symptomatic ones. If you cannot easily dispose of the bag containing the infected branches, close and tie the bag tightly and leave it in full sun for four days. Solarization will kill the mites, and plant material can then be disposed of. Monitor roses around the location of the removed plant for at least a few months to ensure the disease has not spread. After removing the roots of the infected plant, it is okay to replant a new rose in the same spot after one to two weeks, as the virus and mites cannot survive in the soil without living host plant tissues. For homeowners in Tennessee, miticides containing bifenthrin can be used; however, residents of other states should check with their extension service to ensure it's legal in that state. Miticide should not be used until four weeks after the first bloom cycle, and treatments should be repeated at 2-to-3-week intervals until frost. Based on current data, the following rose cultivars have shown no symptoms or detectable virus: '*Rosa arkansana* FF,' '*Rosa bracteata* RM,' 'Fuzzy Wuzzy Red,' 'Purple pavement,' 'Morden Blush,' 'Chuckles,' 'Sir Thomas Lipton' and selections of '*Rosa virginiana* FF,' '*Rosa folialosa* ARE,' '*Rosa carolina* FF' and '*Rosa woodsii* RVR.' We, along with out-of-state research partners, are continuing to screen additional cultivars and rose germplasm for RRD resistance at the UT Plateau AgResearch and Education Center located near Crossville, TN.

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