UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

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Plant Pathology Fact Sheet

Rose Rosette Disease

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Introduction

Rose rosette is a devastating disease that is a threat to virtually all cultivated roses (*Rosa* spp.) in Kentucky, regardless of cultivar. Even rose cultivars known for their exceptional disease resistance and hardiness are susceptible to rose rosette disease. Losses can occur in home and commercial landscapes, nurseries, and botanical garden plantings.

Symptoms

Rose rosette symptoms are initially observed during spring, intensifying as the season progresses. Symptoms are highly variable, depending on cultivar, plant age, and growing conditions. Some common symptoms include:

- Increased growth/rapid elongation of shoots (FIGURE 1)
- Abnormal red discoloration of shoots and foliage (FIGURES 1 and 3)
- Witches broom (prolific clustering of small shoots) (FIGURES 1 and 3)
- Spiral pattern of cane growth
- Shortening of internodes (shorter stem length between leaves)
- Distorted or dwarfed leaves (FIGURE 1)

FIGURE 1. ROSE BUSH SHOWING MULTIPLE SYMPTOMS OF ROSE ROSETTE DISEASE: LEAF DISTORTION, WITCHES BROOM, ABNORMAL RED DISCOLORATION, AND INCREASED SHOOT ELONGATION.

- Overabundance of thorns (FIGURE 2)
- Atypical flower coloration (e.g. mottling of otherwise solid-colored roses)
- Deformed buds and flowers
- Increased susceptibility to other diseases, such as powdery mildew
- Lack of winter hardiness

Initial infections progress until all new growth is affected. Plants decline from disease or are ultimately killed by winter injury. Rose bushes may succumb in just one season, or symptoms may continue to intensify for several seasons before plant death.

FIGURE 2. AN OVER-ABUNDANCE OF THORNS IS A SYMPTOM OF ROSE ROSETTE DISEASE. NOTE THE MORE NORMALLY APPEARING THORN DEVELOPMENT ON THE RIGHT-HAND CANE.
FIGURE 3. ROSE ROSETTE CAN CAUSE A PROLIFERATION OF SHOOTS (WITCHES BROOM) AND ABNORMAL RED DISCOLORATION.

Diagnosis can be difficult in the early phases of disease development when symptoms are mild or may be confused with other problems. For example, distortion and witches broom symptoms may be suggestive of chemical injury from glyphosate (e.g. Round-up) or growth regulator (e.g. 2,4-D) herbicides. Additionally, newly emerging leaves of some cultivars normally have a reddish coloration. While this discoloration disappears as foliage of healthy plants expands, symptoms persist when plants are affected by rose rosette disease. Plants exhibiting these or other abnormalities should be closely monitored. Unfortunately, often by the time plants exhibit multiple symptoms definitively implicating rose rosette, disease is well-advanced and may have already spread to neighboring roses.

Cause and Disease Development

Pathogen

The disease-causing agent has only recently been identified as a virus, which has been named rose rosette virus (RRV). RRV is transmitted by an eriophyid mite (discussed below) and through grafts. Once introduced into a plant, the virus becomes systemic. The virus is not soil-borne; however, it can persist in live roots that remain in the soil from previously infected roses. A diagnostic assay is available but most diagnostic laboratories use a combination of symptoms and site history to make a determination.

Vector

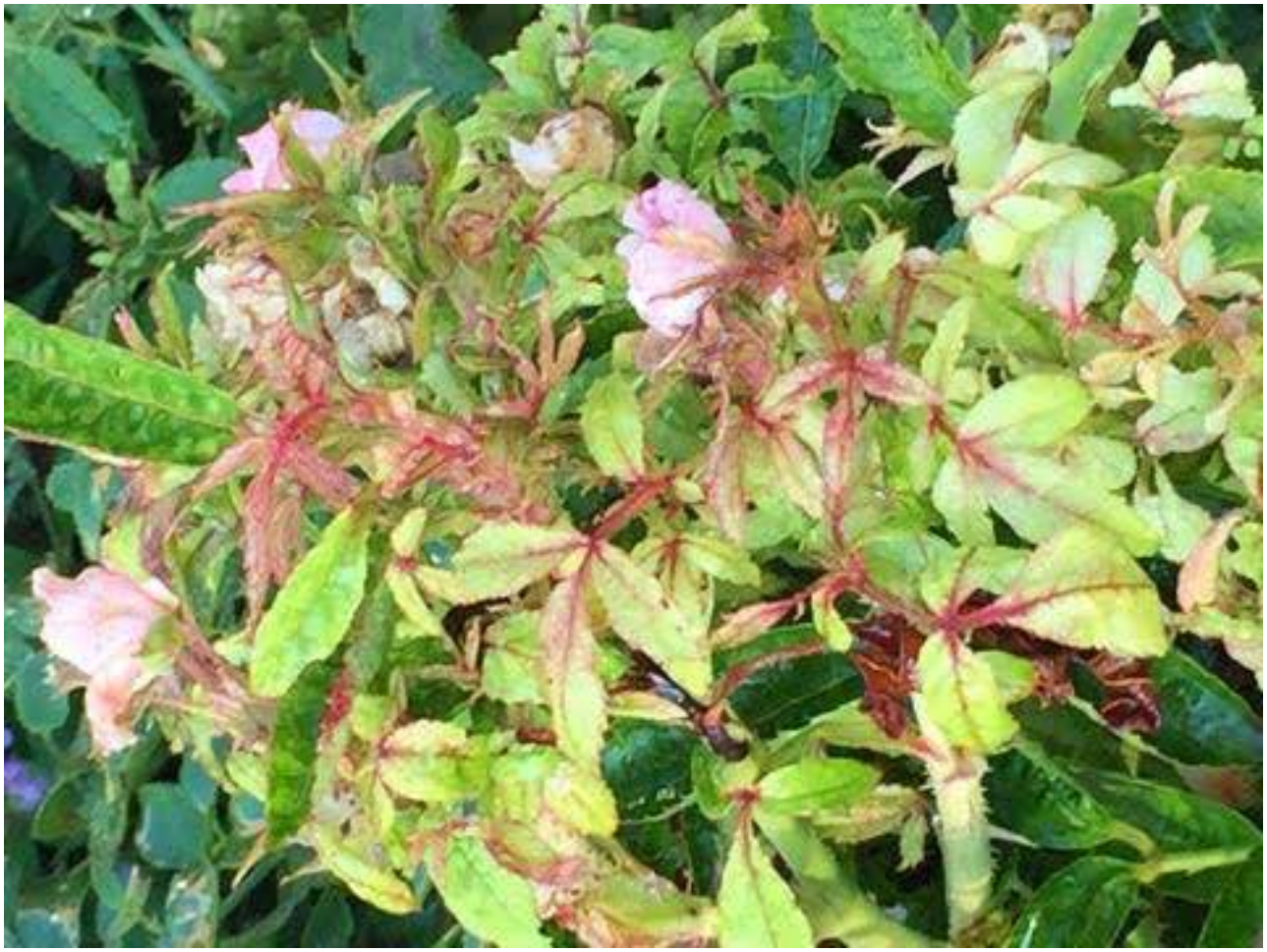
Rose rosette virus is spread by *Phyllacoptes fructiphylus,* an eriophyid mite known as the rose leaf curl mite. These tiny mites are only visible with the aid of a dissecting microscope. Eriophyid mites cannot fly, but they are able to crawl to adjacent plants if leaves or canes touch one another. Mites also move from plant to plant via air currents or by attaching themselves to insects. Adult mites overwinter on rose canes and migrate to developing shoots in spring where they lay their eggs.

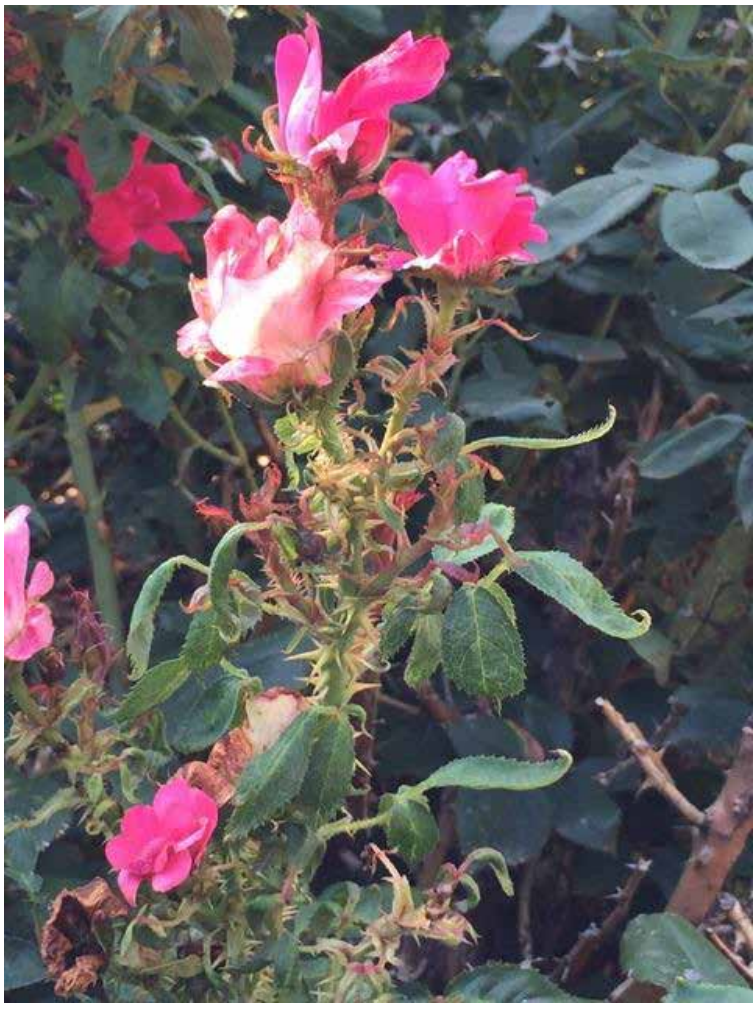
Pathogen source

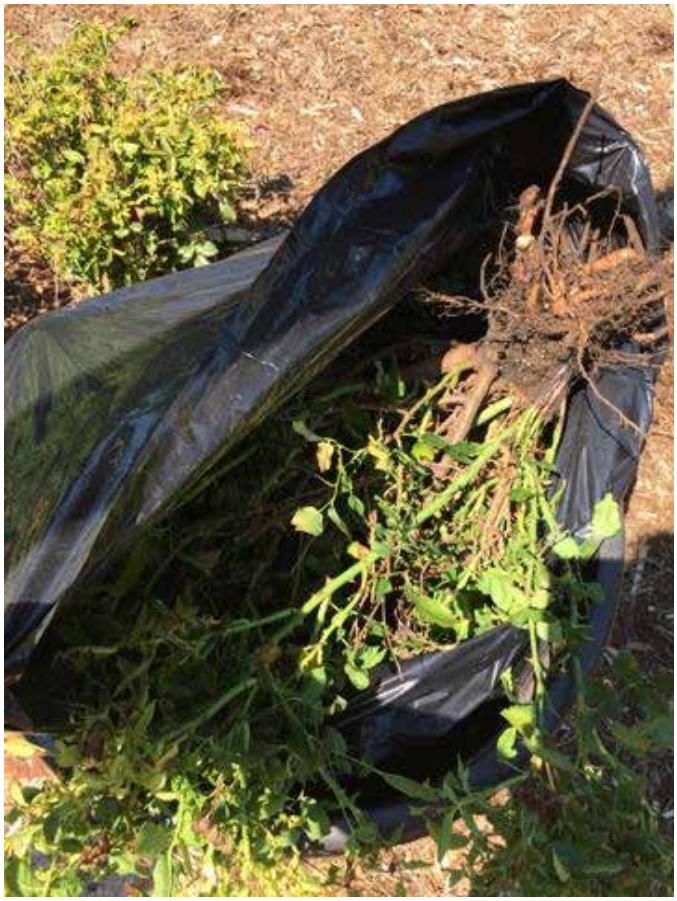
Multiflora roses (*Rosa multiflora*), originally introduced from Japan as a conservation plant and “living fence,” is highly susceptible to RRV. This wild rose, which is now considered an invasive/noxious weed, is the primary host and an important source of the virus. Cultivated roses growing near infected multiflora roses have a high risk of infection.

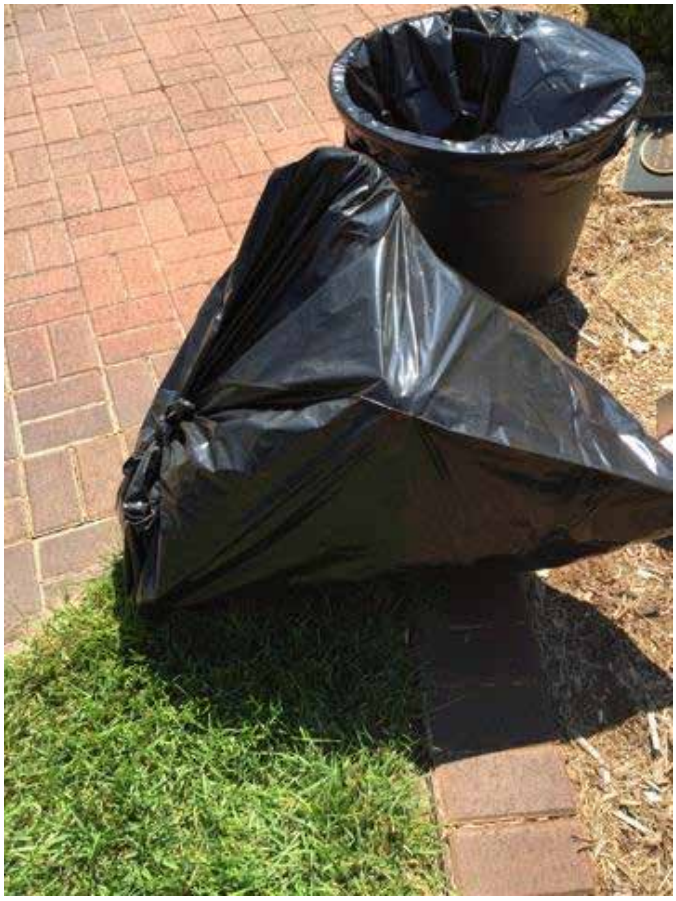
Disease Management

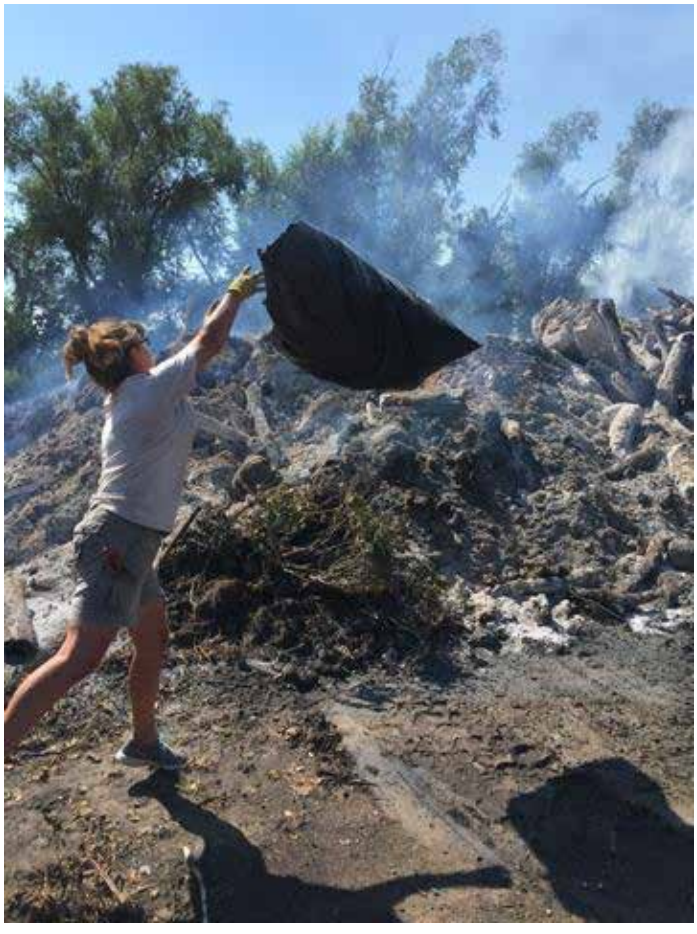
Growers should take precautions to reduce the risk of introduction of rose rosette virus. There is no cure for rose rosette disease once bushes become infected. Thus, early detection is essential to prevent the virus from spreading to nearby roses.

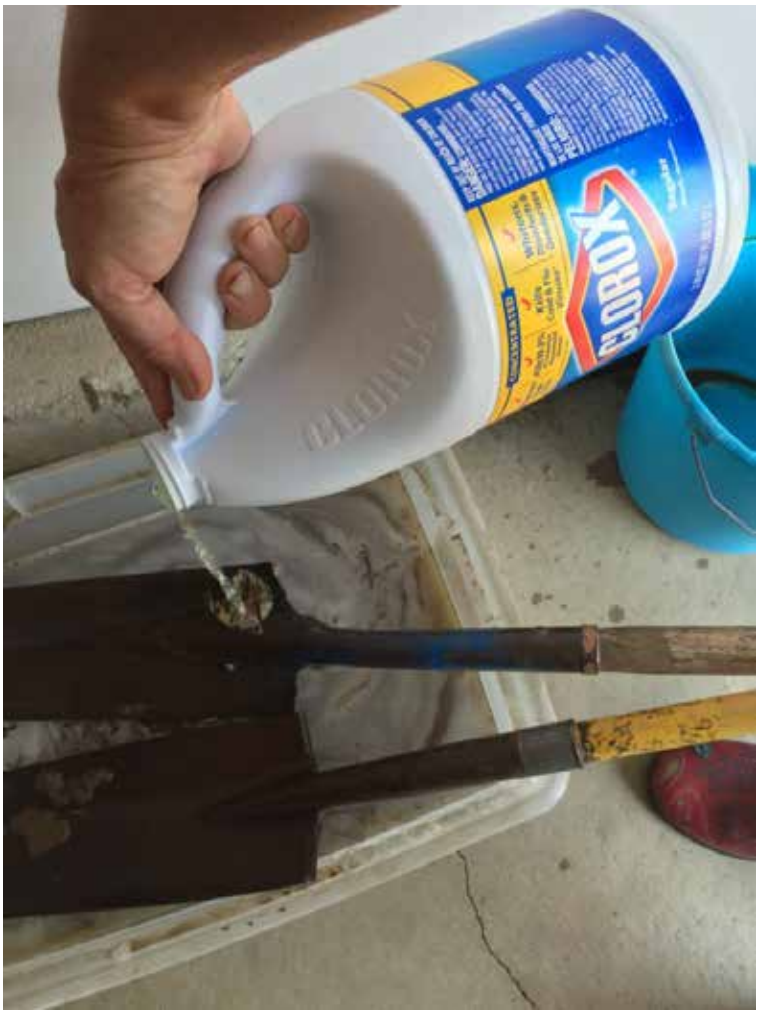








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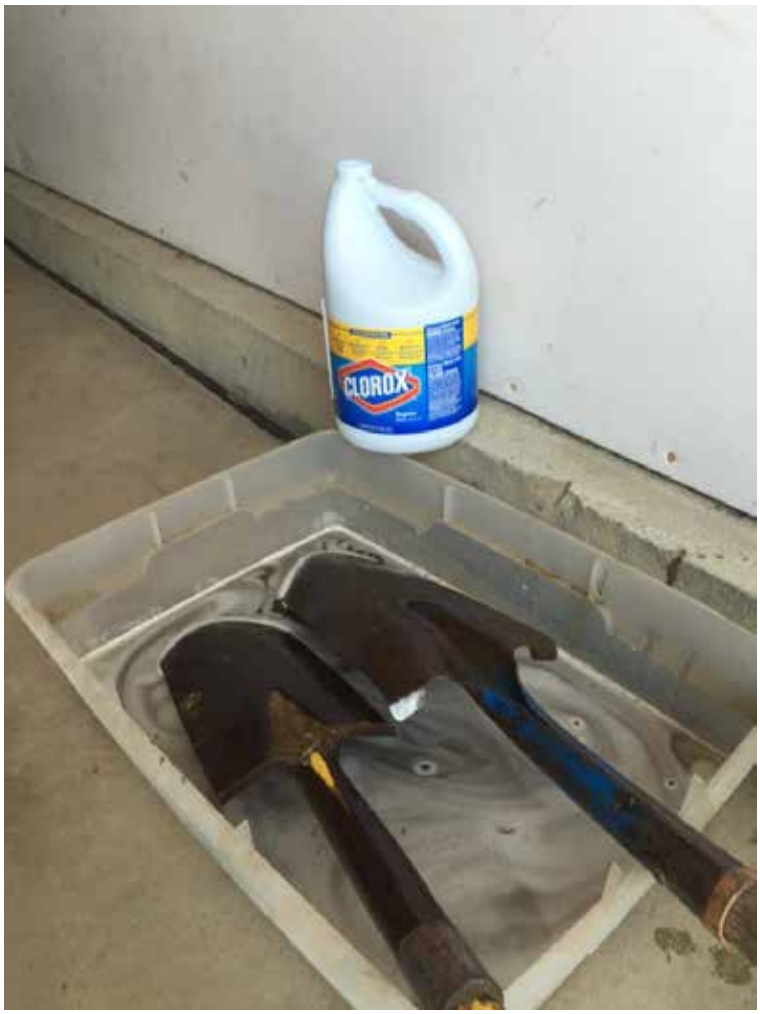
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Preventative steps

- Purchase new roses from a reliable source since rose rosette can be found in nursery stock. Inspect plants before purchase. If symptoms are present, avoid purchasing roses from that supplier.
- Remove multiflora roses from within 100 yards of cultivated roses whenever possible. When multiflora removal is not possible, avoid planting cultivated roses downwind from this weedy plant.
- Space plants so that leaves of one plant do not touch another. This can prevent mites from crawling from one plant to another.
- Use of a miticide to control the vector is not considered practical, especially in the absence of good cultural practices, such as removing diseased plants. Also, keep in mind that most miticides labeled for spider mites will not control eriophyid mites.

Once the disease is detected

- Infected plants, including roots, must be removed completely, Diseased plants should be immediately bagged and removed from the vicinity so that the pathogen is not spread to healthy plants. Alternatively, where permitted, infected plants may be destroyed by burning.
- Care must be taken when digging diseased plants to avoid scattering disease-carrying mites to nearby rose shrubs.
- Remove and destroy any regrowth that occurs from roots remaining in the soil after rose rosette-infected plants are removed.

Additional Resources

The following University of Kentucky publication is available at County Extension offices, as well as on the Internet.

- Roses, ID-118 (2012) *3.25 MB file*
http://www.ca.uky.edu/agc/pubs/id/id118/id118.pdf

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Photos by Alan Windham, University of Tennessee (Fig. 1) & Nicole Ward, University of Kentucky (Figs. 2 & 3)