

Rose Rosette Disease and the Impacts on Propagation[©]

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In order to have our businesses be successful forces in the plant industry, we need to be attentive to our environment and potential pests that might destroy our crops and landscapes. Throughout history we have witnessed many pests that have forever changed our thinking and our practices in horticulture. Pests like Japanese beetle, gypsy moths, emerald ash borer, Dutch elm disease, chestnut blight, sudden oak death, downy mildew of impatiens, and many others have spread rapidly causing plant lovers to reevaluate their plant palettes and practices. I am deeply concerned about a disease that is spreading quickly and that has the potential to change the way we grow and look at the beloved genus of *Rosa*.

Throughout history roses have been admired for their beauty, perfume, food, drink and medicinal properties. The rose has been admired through art in paintings, in china, architectural elements, and illustrations. Everyone seems to appreciate the beauty of the rose. At least 10 countries have selected the rose as their national flower including the United States of America. What would our landscapes be without roses adorning them?

There is a rapidly spreading disease that threatens the genus *Rosa* throughout the Midwest and has also been identified west of the Rockies. The disease of concern has been identified as rose rosette disease (RRD) also termed rose rosette virus (RRV).

Rose rosette disease was first detected and identified in the early 1940s in Manitoba, Wyoming, Nebraska, and California. It is widely believed that it is a disease that is indigenous of the eastern Rockies occurring on the native Woods rose, *R. woodsii*. In the last 60 years it has spread relatively quickly eastward and is now in Iowa, Wisconsin, Illinois, Southern Michigan, New Jersey, New York, and south to South Carolina, Georgia, Alabama, Mississippi, and Texas. Reports of RRD also include Southern Ontario and New Mexico.

The interesting information about the means and reason for its quick spread is attributed to the invasive rose, *R. multiflora*. *Rosa multiflora* is very susceptible to the disease. *Rosa multiflora* was originally brought to the United States of America as a rootstock for grafting. Conservation groups from the 1940s to the 1960s thought that it could be used as a living fence to keep in livestock. It was thought to be a great conservation plant. Because of the wide spread of *R. multiflora* the virus now has a susceptible host throughout North America. In fact RRD was once considered a method of controlling this aggressive plant.

Multiflora rose is extremely susceptible to RRD but it isn't the only rose that has shown symptoms. Climbers, hybrid teas, floribundas, miniatures, shrub roses, and antique roses have all shown symptoms. There is however resistance within the genus. *Rosa setigera* and *R. palustris* seem to be completely immune.

For almost 50 years after the first sighting of RRV there was little interest in the causal agent. In 1988 the connection between the eriophyid mite (*Phyllocoptes fructiphilus*) and roses that showed symptoms of RRD was first noted. It was concluded that the wingless mite was indeed the vector for the infection. In 2011 it was confirmed that the causal agent was truly a virus (Laney et al., 2011).

The RRD virus is transmitted from infected plants to healthy plants by the wingless eriophyid mite, *P. fructiphilus*. The wingless mite is carried by air currents from infected plants to healthy plants. By feeding on the healthy plants, the mite will introduce the virus. It is believed the virus can be transmitted by the mite for up to 10 days.

Humans are another means of transmitting the virus. *Rosa multiflora* has been utilized as a rootstock for decades. If a rose is grafted onto an infected rootstock the results can be an infected plant.

It has been suspected that infected pruning shears can cause the transmission of virus.

This has not been proven but it is a good idea to keep your pruning shears disinfected between plants.

Early detection of RRD is important to help keep nearby plants healthy. Many of the symptoms can mimic damage caused by herbicides. Symptoms can also vary depending on the cultivar or species of the rose.

Common symptoms include:

- New growth has many branches (witch's broom)
- Shoots and leaves are abnormally red
- Rapid growth and elongation of shoots
- Shortening of internodes
- Distorted leaves
- Deformed buds and flowers
- Overabundance of thorns that are pliable
- Lack of winter hardiness

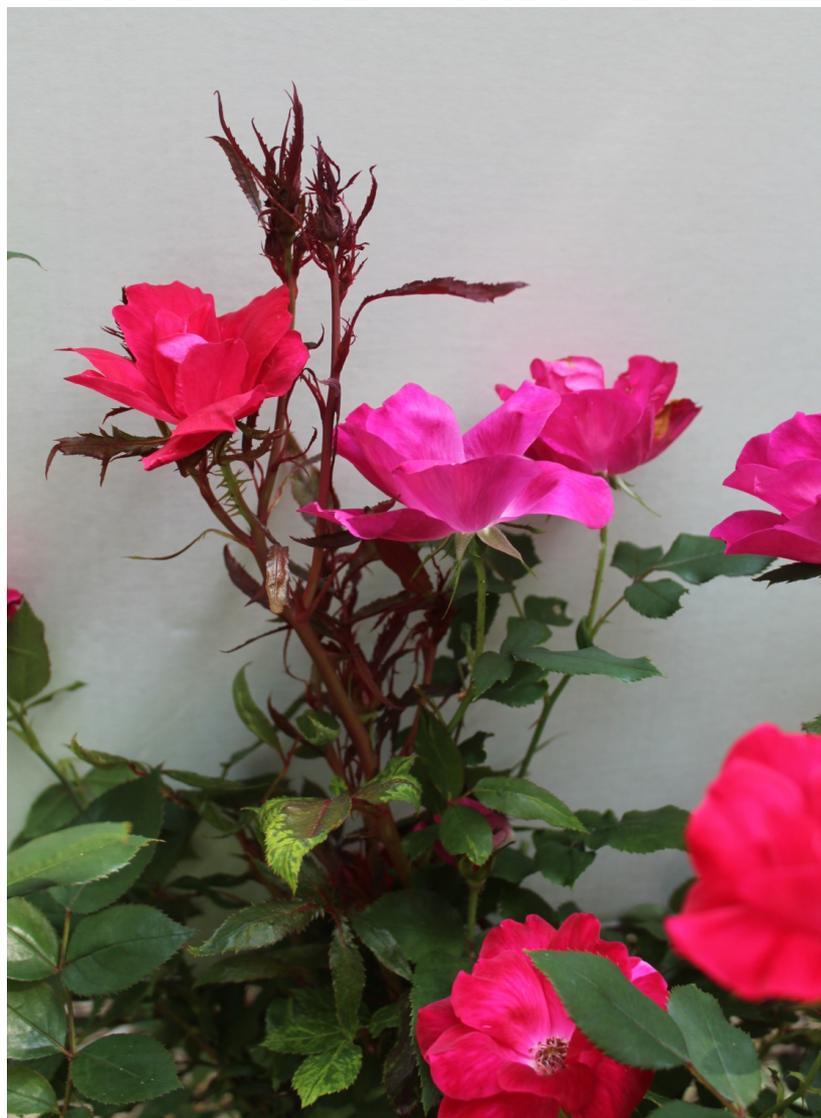


Fig. 1. Leaf symptoms from rose rosette disease (image supplied by Norm Scherr 1629 Briar Ridge, Ann Arbor, Michigan 48108).

The Department of Entomology and Plant Pathology at Oklahoma State University are at the cutting edge of diagnosing the RRD virus (Olsen, 2013). The test they are doing isn't 100% accurate but they are getting good results.

There is no cure for RRD. Plants that show symptoms should be destroyed as a means of sanitation. All parts of the plant including roots need to be disposed of in a timely matter. Any *R. multiflora* in within 100 yards of your roses should be eliminated if possible. Using miticides can be effective to eliminate the eriophyid mite vector. The scouting and elimination of infected plants is the most judicious solution.

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