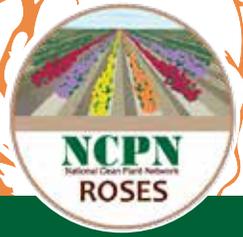


FACT SHEET

National Clean Plant Network



Start clean, stay clean.

Rose Rosette Virus

Rose rosette disease (RRD) is a debilitating disease of rose plants caused by a virus. Because there is no cure, prevention of introduction by using clean planting stock and destroying infected plants are the most important steps for control.

The first report of the virus affecting cultivated rose species was in the 1970s, but rose rosette virus (RRV) did not become a significant pathogen on commercial roses until the 1990s. Since then, efforts to disseminate information about the disease have made people more aware of the disease and the need to remove infected plants. The spread and range of this disease is still being monitored in the United States. Visit <http://roserosette.org> for more information and to report RRD suspects.

Symptoms

Some of the more typical symptoms for RRD include abnormal reddening of leaves and stems, unusual and rubbery thorns, excessive thorniness, deformed leaves, and witches' broom (multiple stems grow out of one node, causing a bunching effect) (see photos).

Cause and Disease Movement

Rose rosette virus is the viral pathogen that causes RRD. This virus affects roses in more than 25 states in the United States and has been reported in India. Early reports of this disease emerged from Canada, California and Wyoming in the 1940s. It has spread throughout much of the United States via *Rosa multiflora* plants. This rose species was introduced into the United States in the 1800s as an ornamental garden plant and as a source of rootstock for grafting. *Rosa multiflora* was so well adapted, that in "the 1930s and 40s it was promoted by various state departments as an ideal plant for living fences, wildlife food and erosion control."

Rose rosette virus can replicate only inside of living cells. The virus is transmitted by a small eriophyid mite, *Phyllocoptes fructiphilus*. Although the mite is most readily spread by the wind, it can also walk to neighboring plants. *P. fructiphilus* acquires the virus when it feeds on an infected rose plant and transmits the virus when it feeds on non-infected plants. Disease transmission occurs more often in the summer; however, in warmer parts of the United States, transmission can occur year-round. The virus is systemic, meaning it can infect the entire plant. There is no set time for when symptoms appear; it may depend on the cultivar, age, size, and general health of the plant.



'Witches broom' symptom caused by RRD (L) and normal growth (R), Mademoiselle Franziska Kruger.



'Excessive thorniness' symptom caused by RRD (L) and normal growth (R), *Rosa roxburghii*.

Control

There are no known treatments to eliminate the virus from an infected plant, and currently all rose cultivars appear to be susceptible. Scientists across the United States are focusing efforts to identify viral treatments, improve mite vector control strategies and develop resistant cultivars and rootstocks. When symptoms of rose rosette disease occur, rule out possible mimics such as nutritional deficiencies, pest damage and chemical misapplication. To get a confirmed diagnosis, submit symptomatic samples for virus testing to the Texas Plant Disease Diagnostic Lab (<https://plantclinic.tamu.edu/>), or the Oklahoma State Plant Disease and Insect Diagnostic Lab (<http://entopl.okstate.edu/pddl/services>). Early detection and removal of infected roses is the best way to reduce the spread and impact of this disease. When removing the infected plant, bag it before cutting the plant down or quickly place the cut plant material in a trash bag to help isolate and prevent the eriophyid mite vectors from escaping.

Much scientific research about various aspects of rose rosette disease is ongoing, and as new research information becomes available, recommendations may change. For more information about what we currently know concerning rose rosette disease, see RoseRosette.org.

Sources

Allington, W. B., et al. 1968. Transmission of Rose Rosette Virus by the Eriophyid Mite *Phyllocoptes fructiphilus*. *Journal of Economic Entomology*. 61: 1137–1140, <https://doi.org/10.1093/jee/61.5.1137>.

Amrine, J. and T. Stasny. 1993. Biocontrol of Multiflora Rose, p. 9-21. In: McKnight, B. (ed.) *Biological Pollution*. Indiana Academy of Science, Indianapolis, Indiana.

Laney, Alma, et al. 2011. A Discovery 70 Years in the Making: Characterization of the Rose Rosette Virus. *Journal of General Virology*. 92: 1727-1732, [doi:10.1099/vir.0.031146-0](https://doi.org/10.1099/vir.0.031146-0).

Shires, Madalyn, et al. 2018. *Rose Rosette Virus*. Texas A&M AgriLife Extension Service. <http://www.agrilifebookstore.org/Rose-Rosette-Virus-p/eplp-022>.

Ong, Kevin, et al. 2015. *Rose Rosette Disease Demystified*. Texas A&M AgriLife Extension Service. <http://www.agrilifebookstore.org/Rose-Rosette-Disease-p/eplp-010>.

Pemberton, H.B., K. Ong, M. Windham, J. Olsen, and D.H. Byrne. 2018. What is Rose Rosette Disease? *HortScience* 53(5):592-595. <https://doi.org/10.21273/HORTSCI12550-17>.



Carefree Spirit plant with abnormal new leaf growth caused by RRD.



Distorted leaves with red pigmentation caused by RRD in a row of landscape roses.

