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## G90-980 Rose Mosaic and Rose Rosette Diseases

John E. Watkins

University of Nebraska-Lincoln, jwatkins1@unl.edu

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## Rose Mosaic and Rose Rosette Diseases

The rose mosaic and rose rosette diseases may cause a variety of symptoms, including reduced plant vigor and flower quality. Early detection is essential to control.

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*John E. Watkins, Extension Plant Pathologist*

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- [Rose Mosaic](#)
- [Rose Rosette \("Witches' Broom"\)](#)

Roses have been cultivated as an ornamental for 4,000 to 5,000 years and now are distributed worldwide. Rose virus and [virus-like](#)<sup>1</sup> diseases occur wherever roses are grown. Since roses are vegetatively-propagated through budding or grafting, these pathogenic agents are easily spread during propagation. Infection by virus or virus-like agents may cause a wide variety of symptoms. These can range from latent, symptomless infections to mosaic leaf patterns and distortions, severely distorted canes, and finally, plant death. Virus-infected plants tend to be less vigorous and less likely to survive environmental stresses than healthy plants. In addition, virus diseases often detract from the rose's aesthetic quality.

### Rose Mosaic

#### Cause

Roses are affected by two types of mosaic diseases, rose common mosaic and rose yellow mosaic. The mosaic diseases are the most common virus diseases of roses. The rose mosaic virus is transmitted to healthy plants by budding or grafting virus-infected plant material to healthy plant material. Each year the major rose companies spend thousands of dollars to control the spread of rose mosaic and other virus diseases.



**Figure 1. Wavy line pattern of rose mosaic.**

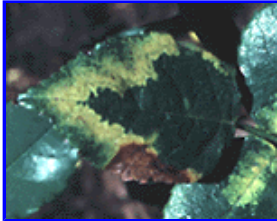
Rose mosaic is found on roses grown in landscapes, nurseries, rose gardens, and commercial field plantings. It occurs virtually everywhere in North America and is common in Nebraska. Like most rose virus diseases, rose mosaic reduces plant vigor and flower quality but rarely kills the plant.

Often more than one virus can be isolated from plants showing symptoms of rose mosaic. Rose mosaic virus (RMV), the causal agent of rose common mosaic, is apparently related to or associated with isolates of prunus necrotic ringspot virus (PNRSV), apple mosaic virus (APMV), and arabis mosaic virus (AMV). All have been reported separately or together in field-grown roses and will produce a variety of symptoms recognized as rose mosaic. Rose yellow mosaic virus (RYMV) causes rose yellow mosaic.

#### Symptoms

Symptom expression of rose common mosaic is erratic and depends on the rose variety, season, and the virus strain. Sometimes infected plants may not show symptoms for a year or more after planting; however, in other cases they may show symptoms shortly after planting and retain them throughout the growing season. Symptoms often appear on the first flush of growth in the spring and on new growth after pruning. Temperatures from 60 to 80 degrees Fahrenheit favor symptom expression.

Rose common mosaic can be recognized by light-green to yellow mottle patterns on the leaves. These patterns may be in the form of wavy lines, rings, or blotches on leaves (*Figure 1*). The chlorosis is often more intense at or near the midvein. The leaf blade around the chlorotic area may be puckered or distorted and may appear as an oak-leaf pattern (*Figure 2*). Even though only a few leaves may show symptoms, the entire plant is affected. Infected plants are usually less vigorous, may be stunted, and produce fewer blossoms. Blossoms may be near normal but paler in color, or they may be smaller and lopsided.



**Figure 2. Oak-leaf pattern of rose mosaic.**

Rose yellow mosaic produces symptoms similar to those of rose common mosaic; however, the chlorotic areas generally are a brighter and lighter yellow and are extensively developed and conspicuous. Also, there is less tendency toward puckering of leaves infected with rose yellow mosaic. The most obvious symptom of rose yellow mosaic is vein-clearing or vein-banding in which the veins appear a bright yellow (*Figure*

3). This vein-banding may occur during prolonged periods at temperatures above 70 degrees Fahrenheit.

The symptom expression and intensity of both rose mosaic diseases will vary during the growing season and from season to season. Symptoms can appear one year and not the next. Infected plants gradually will be weakened and succumb to Nebraska winters.

## Control



**Figure 3. Vein-clearing pattern of rose yellow mosaic.**

Control of rose common mosaic and rose yellow mosaic rests solely with the commercial rose grower to provide virus-free understocks and virus-free budding and grafting material. Most commercial rose growers obtain virus-free propagating material through a program of thermotherapy (heat treatment) and virus indexing. For example, buds taken from plants held at 100 degree Fahrenheit for four weeks are usually free of rose mosaic viruses.

Since there is little natural spread of the rose mosaic viruses, plants that develop mosaic symptoms in the rose garden do not need to be replaced as long as their growth is

acceptable.

## Rose Rosette ("Witches' Broom")



**Figure 4. Stunted deformed canes caused by rose rosette.** (Photo courtesy of F. Crowe)

Rose rosette occurs as a natural infection on wild rose species. This disease, thought to be caused by a mite-transmitted virus, is endemic to the Midwest where *Rosa multiflora* hedges are frequently planted and become infected. The disease occurs sporadically in the United States on cultivated roses.

## Cause

Rose rosette virus is reported to be the cause of rose rosette or witches' broom, although the virus etiology has not been proven.

## Symptoms



**Figure 5. Witches' broom symptom of rose rosette (34K JPG).** (Photo courtesy of F. Crowe)

An early indication of infection by rose rosette virus is rapid stem elongation. Later, certain canes become thickened and excessively thorny (*Figure 4*). Infected canes produce many short deformed shoots, giving the appearance of a witches' broom (*Figure 5*). Leaves are deformed, wrinkled, and pigmented a bright red. Blossoms often are aborted, deformed, or converted to leaf-like tissue. Unlike the mosaic diseases, rose rosette is fatal to infected plants. An infected rose usually dies within two years as symptoms spread throughout the plant.

## Control

The rose gardener should immediately remove plants suspected of having rose rosette. This, along with spraying with a miticide, will reduce the chance of spreading the disease to healthy roses. Eliminate *R. multiflora* plantings from the immediate vicinity of the rose garden. The key to successful control is immediate recognition of rose rosette symptoms and removal of diseased plants.

<sup>1</sup>Virus-like refers to certain diseases whose symptoms and effects are similar to those caused by a virus, but the causal agent has not been determined.

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**File G980 under: PLANT DISEASES**

**A-4, Ornamentals**

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