

## Cedar Apple Rust

### Description

Cedar apple rust is caused by a fungal pathogen called *Gymnosporangium juniperi-virginianae*. This fungus attacks crabapples and apples (*Malus sp.*) and eastern red cedar (Juniper) as well as a few other junipers not commonly grown in Illinois. In order to survive, the fungus must "move" from one type of host to another (e.g., from juniper to crabapple).



### Symptoms

On juniper or eastern red cedar, small (3/8 to 1 and 3/16 inches in diameter) galls develop throughout the tree on needles and small twigs. When mature, these galls swell considerably and repeatedly produce orange, gelatinous telial horns during rainy spring weather. As spring rains subside, the galls die, which may cause death of the twig from the gall to the tip.



On susceptible crabapples and apples, tiny yellow spots appear on the leaves after infection in the spring. As the spots mature, they become yellow/orange and swollen with a red border, and develop tiny black dots (spermagonia) in the center of the lesion. By mid-summer, small cup-like structures with tubes (aecia) are visible on the undersides of mature leaf lesions. The fungus may also infect fruit and even succulent twigs of very susceptible crabapple and apple varieties.

From the telial horns on the juniper, basidiospores are released that infect crabapples and apples. Although these spores may be carried several miles, most infections occur within a several hundred feet from the source juniper. A wet spring period of 4-6 hours at 50-75 F is sufficient for severe infection. Symptoms are described above. Two to four weeks after the tiny dots (spermagonia) appear in the center of each spot, aecia appear on the undersides of leaf lesions. Most people only notice this stage after the aecia have split and take on a ragged appearance. Aeciospores, released from the aecia, become airborne and infect susceptible juniper hosts from midsummer into early fall.

The following spring, galls (consisting of both fungal and host plant tissues) begin to develop on the juniper. These galls continue to grow through the summer, and by fall they are full size (3/8 to 1 and 3/16 inches in diameter), greenish-brown to tan and round to kidney shaped.

In addition, golf ball-like depressions form on the gall at this time that will give rise to telial horns the following spring. The telial horns are brownish in color, but rapidly elongate and become bright orange with spring rain. Shrinking and swelling of telial horns can occur several times with intermittent rainfall. Each time the telial horns swell, basidiospores are released.

After the telial horns have released their spores, the horns collapse, dry and eventually fall off. The galls die at this point, but may remain attached to the juniper for a year or more.

In summary, the complete cycle of cedar apple rust takes 24 months to complete and requires infection

of two different hosts.

## Control

Buy resistant plants. Remove all galls from the juniper before the telial horns form. Check with your local Extension office or garden center for recommended fungicides.

See the other rust sites for additional information on rust diseases. More than one type of rust may be present on any of these plant hosts. Although these rusts are quite similar, certain types of rust galls may produce spores for more than one year. Also see the [rust differences chart](#).

*Written by James Schuster, Extension Educator, Horticulture, and reviewed by Bruce Paulsrud, Extension Specialist, Pesticide Applicator Training and Plant Pathology, University of Illinois at Urbana-Champaign.*

 **More detailed information on Cedar Apple Rust is also available on Hort Answers**

[Top](#)