



## MOSAIC DISEASES OF IRIS

At least seven aphid-borne and soilborne viruses affect bulbous and rhizomatous iris. Bulbous iris are much more commonly and seriously affected by viral diseases than are rhizomatous types.

Two viruses, tobacco rattle and tobacco ringspot, are generally not important. They are transmitted by nematodes and usually occur only sporadically where their soilborne vectors (tobacco rattle by several species of *Paratrichodorus* and *Trichodorus*; tobacco ringspot by species of *Xiphinema*) are present. Iris mild mosaic virus (IMMV), iris severe mosaic virus (ISMV), yellow bean mosaic virus, cucumber mosaic virus (CMV), and narcissus latent virus are spread from infected to healthy plants by the feeding of many species of aphids. Most spread occurs when aphid populations increase toward the end of the season, bringing in infections that do not cause symptoms until the following season. Increased aphid populations can be expected following a mild winter. The prevalence of overwintering virus and aphid host plants, the presence of weeds, and the types of crops and aphid control in the general area all can influence aphid populations in an iris garden or field.



Figure 1. Severe mosaic in iris leaves.

CMV has been isolated from rhizomatous iris, but rhizomatous iris are not affected by IMMV and ISMV. The **only** common and widespread viruses of iris are IMMV and ISMV.

### IRIS MILD MOSAIC (IMMV)

This disease is found worldwide in bulbous iris but normally only induces an indistinct, fine, light yellow-green, mosaic-like streaking in young leaves and flower stems. It may produce more intense mottle on the flower stalk and bud sheath and occasionally one to several dark spots develop at the tip of the flower fall in blue and white-flowered cultivars. As the plant matures, the symptoms become more prominent on both old and new



Figure 2. Severe mosaic in Wedgewood iris flowers. Infected plants will not recover and should be dug up and destroyed. Aphids transmit the virus from plant to plant (USDA photograph).

For further information contact Nancy R. Pataky, Extension Specialist and Director of the Plant Clinic, Department of Crop Sciences, University of Illinois at Urbana-Champaign.

leaves. Late in the growing season, a mosaic pattern with gray necrotic areas develops along the leaf margins of certain cultivars, for example, Professor Blaauw.

The severity of symptoms depends on the sensitivity of the cultivar and the growing conditions. In Professor Blaauw a fairly mild mosaic pattern develops; in Ideal the mosaic symptoms can be quite conspicuous. Mild mosaic symptoms are more prominent on forced plants and on field plants grown in sandy soil, especially when the bulbs were previously grown in a heavy loam or peat soil.

IMMV normally has little effect on iris flower size, shape, quality, or yield. It is most prevalent in Dutch iris (*Iris tingitana* x *I. xiphium*), English iris (*I. Xiphoides*), Spanish iris (*I. Xiphium*), *I. reticulata*, and *I. danfordiae*.

## **IRIS SEVERE MOSAIC (ISMV)**

Called “yellow latent disease” in Israel and “gray disease” in the Netherlands (ISMV).

On emerging plants, mild symptoms consist of yellowish green stripes in the outer leaves or on developing middle leaves. Severely affected plants show wide, pale green and yellowish-green stripes (Figure 1). The entire plant may show various degrees of stunting, from slight stunting to severe dwarfing which results in a short flower stalk for cut blooms. The quality of the flower is also inferior due to dark, teardrop markings (color breaking) in diseased standards or falls, or both, of white, blue, and lavender cultivars (Figure 2). Clear, featherlike markings appear in yellow flowers. Such flowers do not last long. Flowers may be reduced in size and are often twisted to one side. Bud sheaths may show bluish green blotches on a pale green background or, less commonly, yellowish streaks.

The most intense mottling symptoms appear on the bud sheaths and youngest leaves and stems under cool conditions. As the temperature rises in late spring and summer and the plants mature, the symptoms become much less obvious. Affected leaf and stem tissues may be yellow or have yellowish streaks or patches of normal green surrounded by yellow. Not all infected plants show both leaf and flower symptoms, especially those grown from small bulbs. Mosaic symptoms develop more strongly on forced plants grown indoors than outdoors.

Infected iris plantings often produce fewer and smaller bulbs than normal. Growth from infected bulbs may show only mild symptoms the first year.

ISMV is common and a major problem on many Dutch, Spanish, and *I. tingitana* types, especially the cultivar Wedgewood. It has also been reported infecting crocus.

## **Control**

1. Dig and burn or bury infected iris plants when first discovered; they will not recover. The youngest leaves show the most obvious symptoms early in the season under a slightly overcast sky. Thoroughly examine and destroy (rogue) infected iris plants at least four times during a season: early spring, mid-spring, during the flowering period, and late in the season.
2. Purchase only large, healthy bulbs and rhizomes from a commercial grower who has “cleaned up” his stock. Virus-free plants, started in tissue culture by meristem propagation, are available, but are more expensive. These plants are mass produced in aphid-proof greenhouses and then grown in

isolation until sold. At present, bulbs grown in the Pacific Northwest are freer of viruses than those grown in the Netherlands.

3. Keep down weeds in and around the garden and field. A wide variety of weeds may harbor both viruses and aphids.
4. Keep aphids under control. Spray regularly with an insecticide following recommendations of University of Illinois Extension Entomologists.