Iris Yellow Spot Virus

Guide H-255

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Disease at a Glance

Cause:	Iris yellow spot virus (IYSV); a tospovirus
Vector:	Onion thrips (*Thrips tabaci*)
Hosts:	Onions, garlic, leek, iris, lisianthus, weeds (jimsonweed, tobacco, redroot pigweed)
Source:	Infected onion thrips Infected transplants Infected volunteer plants
Symptoms:	Eyespot- to diamond-shaped lesions (fig. 1) Lesions yellow- to straw-colored Scape swells at point of infection Leaves and seed stalks fall over
Management:	No cure once infected–sanitation, destruction of infected plants and culls Maintain optimal growing conditions (prevent stress) Crop rotation Thrips and weed control Cultivar selection (reduced susceptibility to thrips and/or the virus)

Figure 1. Onion plant infected with Iris Yellow Spot Virus.

Iris yellow spot virus (IYSV) was first discovered in the United States in 1989 infecting onions grown for seed in Idaho. The virus is a tospovirus, closely related to two serious virus diseases: tomato spotted wilt virus and impatiens necrotic spot virus. The disease is primarily a problem on onions (*Allium* spp.), garlic (*Allium sativum*), iris (Iris spp.) and lisianthus (*Eustoma grandiflorum*). Weed hosts include jimsonweed (*Datura stramonium*), tobacco (*Nicotiana* spp.) and redroot pigweed (*Amaranthus retroflexus*).

This disease is considered an emerging or re-emerging pathogen in the United States. Since 1989, the disease has spread to nine states including: Washington, Oregon, California, Nevada, Colorado, Utah, Arizona, Georgia and New Mexico. It was first found in New Mexico in 2002. The disease also occurs in Brazil, Israel, Iran and the Netherlands.

Iris yellow spot virus typically doesn't kill plants; however, the virus reduces plant vigor and bulb size. Onions grown for seed will have reduced seed yield and quality. Additionally, the virus weakens plants, making

them more susceptible to other diseases, pests and environmental stresses. The severity of the disease depends on the plant's overall health at the time of infection. Otherwise healthy plants may show few symptoms and maintain decent growth. Plants under environmental or cultural stress may show severe symptoms resulting in significant economic losses.

Plants infected with IYSV will have characteristic yellow- to straw-colored lesions. Lesions may be more or less round with or without a necrotic center or may be diamond shaped (fig. 1). Lesions will appear on both the seed stalk and the leaves. Seed stalks may swell at the point of infection. Late in the season, infected seed stalks and leaves will lodge (fall over).

The virus is transmitted by onion thrips (*Thrips tabaci*) but is not transmitted by other common *Thrips* species, such as Western flower thrips (*Frankliniella occidentalis*). The virus is transmitted by both larvae and adults, but only larvae can acquire the virus from infected plants. Virus transmission is persistent: Once a thrips has acquired the virus, it can transmit the virus for the remainder of its lifetime. The disease has a potential to spread rapidly in fields with large numbers of viruliferous thrips. Losses of up to 100 percent have been reported in Brazil and the Pacific Northwest. Distribution of infected plants in the field will be associated with feeding activity by the vector. In many cases, the damage is first noticed on field edges, in areas of stressed plants, or in locations with thin plant stands. The virus is not seed-borne and does not appear to be found in the bulbs. Likewise, the virus does not survive in soil.

Once plants are infected with IYSV, there is no cure. Infected plants should be removed and destroyed, along with cull piles and volunteers. Maintaining good cultural management practices will help to reduce stress on the plants, thus lessening the disease's effect. Good management practices include maintaining good fertility and adequate water. Additionally, good thrips and weed management are recommended. Onion thrips are best managed with insecticides. Although no cultivars are known to be resistant to the virus, research has shown that cultivars vary in their susceptibility to both the virus and the thrips vector.

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