

Iris yellow spot virus in onions

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Introduction

Onions (*Allium cepa* L.) as bulb onions are an important crop for the Riverina region of New South Wales and many other growing regions in Australia. Onions produced in the Riverina are grown for the fresh market with the majority of plantings taking place in May to June with later crops sown up to early August. The early harvest being carried out from mid November to December and the late harvest in February/March. The region also has a thriving vegetable seed industry where onion seed is also produced. These onions are grown from seed to seed or from bulb to seed. Organic onion production is also carried out in the Riverina. Onion production in the Riverina is based on the hybrid brown onions that are commonly grown in southern Australia.

Onion diseases and pests

The main disease of onions in the Riverina is Downy Mildew (*Peronospora destructor*) which occurs in the spring period when there are regular rainfall events. Other diseases which are more sporadic include black mould (*Aspergillus niger*) and occasionally Botrytis neck and bulb rot (*B. allii* and *Botrytis cinerea*). The main insect pests of onions are onion thrips (*Thrips tabaci*), cutworm (*Agrotis spp.*) and onion maggots (*Delia platura*).

Onion Thrips

Onion thrips (*Thrips tabaci*) is a tiny (<1.5 mm long), slender, free-moving insect that is often found in large numbers in onion. Adults are pale yellow to light brown and have a pair of wings fringed with long hairs. The immature stages have the same body shape as adults but are lighter in colour and are wingless.

Both adults and nymphs feed by piercing and rasping the leaf surface and drinking the liquid. The feeding areas later appear as silvery patches on the leaves. When feeding areas are large, the plant's ability to photosynthesise and maintain water balance is greatly reduced, resulting in yield loss or reduced bulb size. Onion thrips may also enter harvested bulbs and breed there, thus

reducing marketability of bulbs. Apart from direct damage, onion thrips is a vector of Tomato spotted wilt virus (TSWV) in tomatoes and Iris yellow spot virus (IYSV).

Iris Yellow Spot Virus in Australia

Iris Yellow Spot Virus (Family Bunyviridae, Genus *Tospovirus*) is transmitted by onion thrips and affects onions, garlic, leeks, iris and lisianthus. The disease was found in the United States in 1989 and has since been found in Australia, New Zealand and many other countries. It was first reported in Australia in 2003 (although it was suggested to have been in Australia since 1998), infecting onions in three states and leeks in one state. In the Riverina it was found on onions being grown for seed, with typical lesions on the flower stalks and but more recently on a crop of bulb onions. Its occurrence in Australian bulb onion crops has not been determined; however it has the potential of causing serious damage to Australian onion production. The virus has been detected overseas as various strains. IYSV is not seed-borne. The virus is picked up by feeding thrips larvae and is carried for the life of the insect.

Symptoms

Symptoms of IYSV may be superficial but often seen as a cream, elliptical spots on the leaves. The spots also appear on onion scapes or flower stalks of onions. As both infected leaves and scapes age, they can collapse at the site of the spots.

The spots may be clear as in Figure 1 or less obvious as in Figure 2. Although the spots may at first be insignificant, the disease has the potential of devastating the whole crop.

Control options

The level of IYSV and its contribution to any yield loss in onions is not fully known in Australia. However, as the onion thrips are the vectors of IYSV, controlling these thrips can reduce possible impacts of the virus.

These options include:



Figure 1. IYSV symptoms on an onion leaf.



Figure 2. IYSV on an onion leaf.

- Controlling onion thrips with insecticides is the common method of management. There are a number of registered insecticides available.
- Reduce the chance of carrying IYSV from one season to the next by reducing carry-over of onions either as volunteers or cull piles by removal or burying.
- Destroy crop trash as soon as possible after harvest. This also helps reduce carry over of the disease from early crops to later crops.
- Onion crops that are stressed are at an increased risk of damage due to IYSV. Well managed crops have shown some tolerance to

the disease. Onion crops need to be kept free of stresses such as water and nutritional stress to reduce the potential of yield loss from the disease.

New project

A project funded by Horticulture Australia and supported by the Australian Onion Industry Association and NSW DPI, has commenced in August, 2011. The project will first focus on the occurrence of IYSV on onions in Australia and once this is completed further control options will be evaluated.

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