1984 (as amended), movement of grapevine propagation material from one area to another within the Republic of South Africa is prohibited, unless the movement is authorised by means of a permit or the material is certified as pest free. The Department of Agriculture, Forestry and Fisheries renders inspection services and issues permits to ensure compliance with the applicable control measures.

The above-mentioned interventions will assist in preventing the spread of Aster Yellows Phytoplasma from infested areas to non-infested areas.

Sources of information

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Need more information?

– to report occurrence/suspected occurrence of the disease –

Directorate: Plant Health
Division: Early Warning Systems
Tel: 012 319 6384
Email: JanHendrikV@daff.gov.za

– for awareness and promotion enquiries –

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Aster Yellows disease

'*Candidatus* Phytoplasma asteris' in South Africa

Description

Aster Yellows disease is caused by a systemic, phloem limited, bacterium-like, plant pathogen.

Grapevine Yellows is a collective name for diseases such as Flavescence doree, Bois noir, Vergilbungkrankheit, Australian Grapevine Yellows, North American Grapevine Yellows and Aster Yellows. Grapevine Yellows is caused by a wide variety of phytoplasmas.

The Grapevine Yellows that occurs in the Western Cape of South Africa is caused by the Aster Yellows Phytoplasma ('*Candidatus* Phytoplasma asteris').

Origin and global distribution

Grapevine Yellows disease was first detected in France in 1955 and can currently be found on a wide

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range of host plants in the world wherever air temperatures are about 32 °C. It is known to be widespread in Europe, Asia and America.

The Aster Yellows Phytoplasma detected in grapevines in the Western Cape Province of South Africa can also be found in Europe, Israel, North America, Australia, Italy, Chile and Tunisia.

Symptoms

All Grapevine Yellows diseases have similar symptoms, including delayed budding, growth reduction, leaf discolouration, downward rolling of leaves and reduced quality and quantity of fruit. Symptoms are not uniform and may appear on some or all shoots of infected vines. The foliage often turns yellow in white cultivars and reddish in red cultivars.

Infected shoots often fail to lignify and appear thin and rubbery and later become brittle, sometimes with bud necrosis. Affected branches blacken and die off during the winter. The most distinctive symptom of the disease is the drooping posture that develops on sensitive cultivars during summer. Fruit set is reduced on grapevines infected early in the season, as the inflorescences dry out and fall off. In later infections, bunches become brown and shrivelled.

Transmission

The phytoplasma is primarily transmitted from plant to plant by leafhoppers, plant

Reddening symptom (Photograph: Jeff Joubert)

Yellowing symptom (Photograph: Jeff Joubert)

Aborted flowers (Photograph: Jeff Joubert)

hoppers and psyllids which feed on the sap of the plants. In the case of grapevine, it is usually leafhoppers that transmit the phytoplasma. An insect vector, *Mgenia fuscovaria*, is known to transmit the disease in South Africa. Phytoplasma is not carried from the infected insect to the next generation. The nymphs have to feed on an infected host plant in order to transmit the disease. Transmission can also occur by grafting infected plant material.

Host range

Aster Yellows Phytoplasma has a wide range of host plants (about 200), including weeds, cover crops, vegetables, vines (grapevines) and flowers. In South Africa, the pathogen has been found on the following wine grape varieties: Chardonnay which is very sensitive, Chenin Blanc, Colombar, Cabernet Sauvignon, Shiraz, Merlot, Sauvignon Blanc, Ruby Cabernet and Semillon. It has also been found on varieties of table and dried grapes such as Regal, Datal, Sultanina and Kaapse Korente. In other countries, such as Greece and Israel, it has been found on the following table grape varieties: Waltham Cross, Italia, Queen of the Vineyard, Muscat d' Alexandrie and Alphonse Lavallee.

Identification methods

The disease causing organism can be detected and identified by the polymerase chain reaction (PCR) technique. In South Africa, this test can be done by the Department of Agriculture, Forestry and Fisheries' diagnostic laboratory in Stellenbosch.

Control methods

In infected vines, the entire branch that shows symptoms should be removed in order to keep the inoculum numbers low. However, heavily infected plants and those less than three years of age, should be removed entirely. This must be coupled with good sanitation measures in order to be effective.

A full surface weed coverage control programme should be implemented where the pest occurs and where it is suspected to occur, throughout the off-peak season as a control measure against vectors of the pathogen.

Certified planting material free from Aster Yellows Phytoplasma should be used when new vineyards are established. When specific insects are identified as vectors, those insects can be chemically controlled. In South Africa, the use of chlorpyrifos (3 applications 14 days apart during summer) to control leafhoppers is recommended.

Economic implications

Aster Yellows can cause crop losses if allowed to spread uncontrolled. The disease can pose a challenge to the wine industry, because it leads to low annual turnover and could, therefore, result in job losses. The disease continues to be of great economic importance in France, particularly for the cultivars Chardonnay and Baco 22A, and in northern Italy, where it is causing serious problems to Chardonnay, Pinot Blanc and other susceptible cultivars.

Legislative implications

In terms of the Agricultural Pests Act, 1983 (Act No. 36 of 1983), Control Measures R.110 of 27 January