Holm oak (*Quercus ilex*) pests

Holm oak bark scale *(Nidularia pulvinata)*

Introduction

The Holm oak bark scale (*Nidularia pulvinata*) is a scale insect that feeds on sap of oak trees. Although not widespread, outbreaks can be lethal to stressed trees, particularly in urban areas.

The insect is currently distributed in the Mediterranean region (France, Italy, Spain, Portugal, Turkey and Algeria) and has recently been reported at one location in southern UK.

Infestations by the Holm oak bark scale weaken the host tree by sucking sap, potentially leading to stress that makes host plants more susceptible to other pests and diseases.

Host

The main host is the holm oak (*Quercus ilex*) , and it has also been found on Kermes oak (*Q. coccifera*) and Mount Tabor oak (*Q. ithaburensis*). It does not feed on English oak (*Q. robur*) or sessile oak (*Q. petraea*).

Biology

The life cycle of the Holm oak bark scale, follows a typical pattern seen in many scale insects. It begins with eggs laid by sessile adult females, usually in a protective wax structure called an ovisac. Upon hatching, the mobile crawlers disperse across the host plant or to neighbouring plants. Once settled, they feed on the phloem.

Adult males undergo a pupal stage before emerging as short-lived, winged adults focused on mating. The wingless mated adult females overwinter. They are yellowish brown before turning dark reddish brown, convex and oval with maturity. This species generally completes one generation per year, synchronized with the host plant's growth and environmental cues, ensuring optimal exploitation of nutritional resources.

Feeding by the insect can cause branch dieback, flagging, reduce growth rates and occasional death of trees.

Symptoms

For details of the symptoms, scan or click on the QR code to access the accompanying poster.

More information

- Scalenet: http://scalenet.info/catalogue/Nidularia%20pulvinata/
- UK Plant Health Risk Register: https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/viewPestRisks.cfm?cslref=34271

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Holm oak gall midge *(Dryomyia lichtenstenii)*

Introduction

The Holm oak gall midge (*Dryomyia lichtenstenii)*, is a gall midge from the family Cecidomyiidae, a small fly whose larvae induce distinctive galls on the leaves of evergreen oak trees (*Quercus* spp.).

The insect is currently distributed in the Mediterranean region (France, Italy, Spain, Portugal) and North African region (Morrocco, Turkey and Algeria) and has been recently recorded in the south of the UK (2022).

Infestations by the Holm oak gall midge can weaken the host tree health by altering nutrient distribution through sap sucking, potentially leading to stress that makes host plants more susceptible to other diseases and creating entry points for pathogens.

Host

It only develops on three species of evergreen oak: Holm oak (*Quercus ilex*), Ballota oak (*Q. rotundifolia*), and Cork oak (*Q. suber*). It does not develop on English oak (*Q. robur*) or sessile oak (*Q. petraea*).

Biology

The Holm oak gall midge life cycle begins when adult midges lay eggs on a suitable host. After hatching, the larvae induce the formation of small galls (about 3x2 mm) on the leaves, which provide both protection and nutrients.

Unlike scale insects that directly feed on plant sap, *Dryomyia lichtensteinii* manipulates plant tissues to create these specialized growths. These are usually several galls per leaf and each gall contains a single larva.

The larvae feed, develop and pupate inside the galls, before emerging as adult midges. They complete one generation per year. The cycle then repeats as new adults lay eggs on suitable host plants.

This process is closely tied to the holm oak's growth and environmental conditions, ensuring optimal survival and reproduction.

Symptoms

For details of the symptoms, scan or click on the QR code to access the accompanying poster.

More information

- British Journal of Entomology & natural History: https://www.researchgate.net/publication/362605775_Dryomyia_lichtensteinii_Diptera_Cecidomyiidae_a_holm_oak_gall_midge_new_to_the_British_Isles
- Plant Parasites of Europe: https://bladmineerders.nl/parasites/animalia/arthropoda/insecta/diptera/nematocera/cecidomyiidae/cecidomyiinae/lasiopteridi/dasineurini/dryomyia/dryomyia-lichtensteinii/

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Holm oak Phylloxera
(Phylloxera quercus)

Introduction

The Holm oak Phylloxera (*Phylloxera quercus*), is an insect in the Phylloxeridae family. These are several closely related species in Europe and their taxonomy has not been fully resolved. They are aphid-like, sap-sucking insects that feed mainly on oaks.

Phylloxera quercus is primarily found in southern Europe (Italy, Spain, France), North Africa (Algeria) and the Middle East (Iraq). It has been intercepted in England on several occasions on holm oak trees imported from the Mediterranean, but there is uncertainty regarding whether it is present or not in the UK.

They feed on the leaves of oak trees and in severe cases, heavy infestation can lead to general decline in the tree's vigour, especially in the case of young or stressed trees.

Host

Holm oak (*Quercus ilex)* is the main host for *P. quercus*. Other recorded hosts are: English oak (*Q. robur*), Kermes oak (*Q. coccifera*), Downy oak (*Q. pubescens*) and Pyrenean oak (*Q. pyrenaica*). In Britain, the oak leaf phylloxera, P. glabra, is common on English oak (*Q. robur*), but this species does not occur on holm oak.

Biology

The Holm oak Phylloxera has a complex life cycle involving sexual and asexual (parthenogenetic) generations and winged and wingless adults. The life cycle typically begins with eggs that overwinter in bark crevices or other sheltered areas of the host plant.

As spring arrives and the leaves emerge, the eggs hatch into nymphs that migrate to the foliage, where they begin feeding on the underside of the leaves. This feeding activity causes visible damage, such as yellowish necrotic spots or bronzing of the leaf surface. Asexual reproduction enables rapid population growth during the growing season.

The insects undergo multiple generations throughout the warmer months, with the final generation returning to the bark or other protected areas to lay overwintering eggs. This cycle ensures their survival and continued infestation of host plants year after year.

Symptoms

For details of the symptoms, scan or click on the QR code to access the accompanying poster.

More information

- UK Plant Health Register: https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/downloadExternalPra.cfm?id=3906
- EPPO Global Database: https://gd.eppo.int/taxon/PHYXQU
- Plant Parasites of Europe: https://bladmineerders.nl/parasites/animalia/arthropoda/insecta/hemiptera/sternorrhyncha/phylloxeroidea/phylloxeridae/phylloxera/phylloxera-quercus/

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