

DETECTION OF *Verticillium dahliae* Kleb. FROM OLIVE TREES WITH CHRONIC DECLINE AND DIEBACK OF BRANCHES AND SHOOTS



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Introduction

Verticillium wilt of olive (*Olea europaea* L.) is economically important in all the Mediterranean region. *Verticillium* wilt of olive was first described by Ruggiere (1946) in Italy and after wards reported from all regions of olive cultivations. Recently had a great increasing particularly in newly established olive orchards (Mercado-Blanco et al, 2002).

Verticillium dahliae Kleb. is a soil-born pathogen of several important commercial crops affecting vegetables, fruits, flowers and various woody ornamentals.

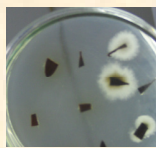
Symptoms in olive trees appears chronically or they may be acute. Characteristics of chronic symptoms include small growth, dieback of shoots and branches and partial defoliation.

In Portugal *Verticillium* wilt has not been considered an important disease and few studies were carried out about this disease. Recently an increasing number of cases of chronic decline, slow growth and defoliation have been reported in all regions where extensive plantations of olive orchards had occurred. Some of this cases are studied for diagnostic purpose.



Pathogen Isolation and Identification

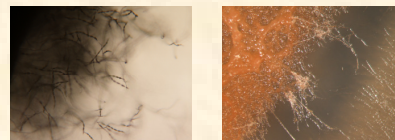
Some attempts for *V. dahliae* isolation are made using small pieces of olive shoots or leaves. Plant tissues are surface disinfected and small pieces are excised and transferred to Petri dishes on PDA (Potato Dextrose Agar, Difco 39 g/L) and supplemented with streptomycin sulfate (50mg/L), chlortetracycline (50mg/L), chloramphenicol (50mg/L) and benomil (10mg/L) and incubated at 23-25 °C in dark.



Positive isolation of *V. dahliae* was easily obtained from small shoots of olive trees with recent symptoms when it was done in the beginning of Summer. In pure culture *V. dahliae* can be identified by its white micelium, verticillate conidiophores and black microclerotia in the medium (Montes et al, 1997).

Positive isolation of the suspected has not been always obtained even through the some laboratory procedure was adopted

Saprophytic micoflora such as *Alternaria*, *Fusarium*, *Penicillium* and *Trichoderma* is frequently presents.



Failure and inconsistency in *V. dahliae* isolation from diseases trees is a common experience and seasonal changes were frequently observed.

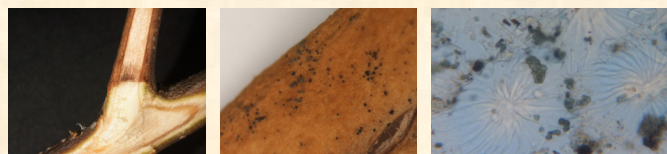
Isolation is more consistently positive throughout the year from high susceptible olive cultivars.

Verticillium Wilt - Risk Assessment

Symptoms of *Verticillium* wilt in olive tree, very often are also associated with adverse environmental or agronomic conditions or inclusively with mechanical damages which hampered diagnosis of biological cause.

Consultants and growers should continue to access wilt injury in olive. Expedite methodologies like the observation of discoloration in the annual growth and the presence of microsclerotia on leaves are generally sufficient for diagnosis of *Verticillium* wilt.

Microsclerotia in dead and dying tissues are a good indication of *V. dahliae* and can be observed by teasing tissues apart or by clearing. They are subglobose, black and 50-80 µm in diameter.



Leaves from diseased olive trees harbour the pathogen and can contribute to increase the number of microsclerota in soil and disseminate disease to long distances (Rijkers et al, 1992).

Chemical available fungicides are not able to control the disease and integrated management practise are necessities to control disease severity and its spatial spread.

Detection and identificação of *Verticillium dahliae* in olive trees with slow growth and chronic decline impose new strategies for risk assessment of *Verticillium* wilt in Portugal and for developing reliable methods of detection of the pathogen in plant tissues and soils and to improve disease control measures.

References

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