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

Maria Eugénia Gouveia, Valentim Coelho
email: egouveia@ipb.pt  Fax: 0035027325405
CIMO/Instituto Politécnico de Bragança. Escola Superior Agrária Campus Sta Apolónia, Apt. 1172 5301-855 Bragança

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 these 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), chlorotetracycline (50mg/L), chloramphenicol (50mg/L) and benomil (10mg/L ) and incubated at 23-25 ºC in dark.

Saprophytic microflora 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 microsclerotia 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 necessary to control disease severity and its spatial spread.

Detection and identification 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


