

BIOLOGY OF CHILLI COLLAR/FOOT ROT COMPLEX

By

ABHAYA BALASURIYA, B.Sc.(Agric.) Sri Lanka

Thesis

Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF PHILOSOPHY

in

Agriculture

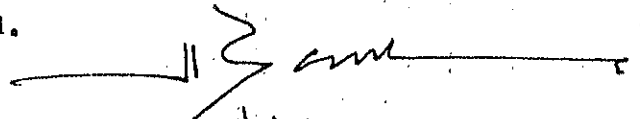
in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA, SRI LANKA

Approved.

  
A. Balasuriya  
Abaya B. Balasuriya

Examination Committee

C 633.84

B14



358845

AGRICULTURE LIBRARY  
UNIVERSITY OF PERADENIYA

358845 / y

## Abstract

Severe crop losses have resulted from a disease complex identified as collar/foot rot in chillies (Capsicum annum (L.) var. acuminatum Fingerh.) in the Jaffna District of Sri Lanka.

Plants grown in the field expressed symptoms at bearing as a sudden wilt. This wilt is of two forms. In the first group a conspicuous white mycelium is seen growing upward at the collar. The causal agent was identified as Sclerotium rolfsii (Sacc.). Thus, it is suggested that this be named collar rot. The second group of wilt may appear similar to the first, except that it will not have any conspicuous mycelial growth at the base of the plant. The pathogens responsible for this are four namely: Macrophomina phaseolina (Tassi.) Goid, Rotryodiplodia theobromae (Pat.), Rhizoctonia solani (Kuhn) and Fusarium spp., Due to the complexity of infection this is named the foot rot.

The two diseases have some dependence on climate. In the maha season (October to February) the collar rot disease (S. rolfsii) predominates, while in yala (March to September) season the foot rot disease complex is more common.

The intensity of the disease is increased with continuous monocropping. Alternate cropping does not give the expected control due to the wide host range of the organisms involved.

The fungi S. rolfsii, M. phaseolina, B. theobromae, P. solani and Fusarium showed better performance on potato carrot agar (PCA) medium. The growth rate of B. theobromae was increased with increasing pH (up to pH 9). The maximum growth rate of P. solani was at pH 8. S. rolfsii, M. phaseolina and Fusarium showed no significant difference in their

growth rates in the range tested (pH 7 to 9).

At low water potentials S. rolfsii, M. phaseolina and R. theobromae became more active, while R. solani and Fusarium apparently do not depend on water potential for their colonization of the tissues.

Ethylene bisdithiocarbamate (Delcene X or Benlate) at 0.25 to 0.5% active ingredient (a.i.) can control all these organisms. Aluminium tris [ethyl phosphonate] (Aliette) should be used either at 0.5% a.i. or higher, depending on the organisms involved.