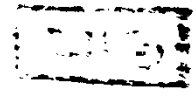
STUDIES ON ASCOCHYTA DISEASE OF PEAS AND ITS CONTROL

By

FATMA SAYED AHMED ABDEL-RAHMAN



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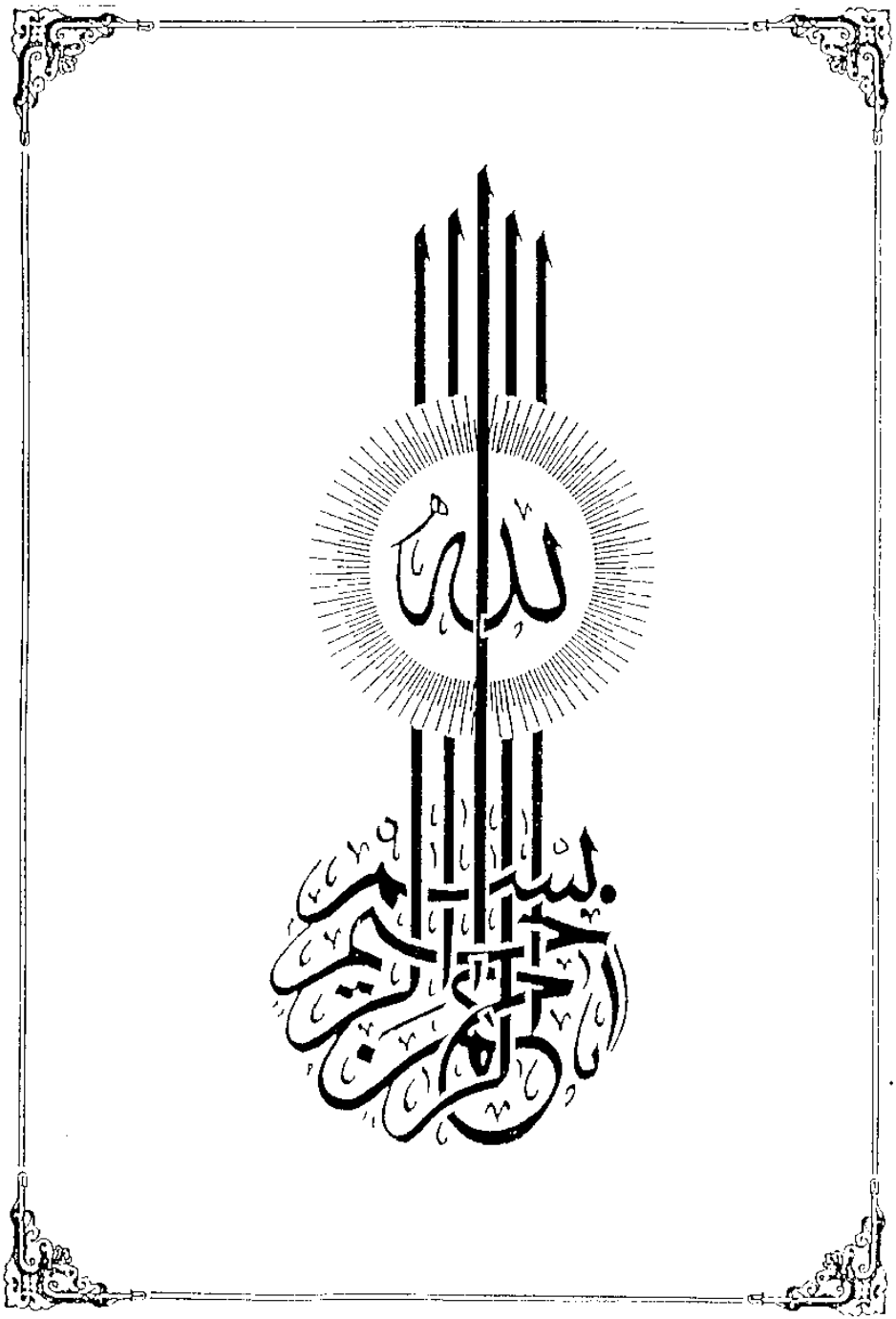

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ABSTRACT

Three *Ascochyta* species have been isolated from diseased peas in Egypt. They were identified as: A.pisi, A.pinodes and A.pinodella which caused leaf and pod spots, blight and foot-rot diseases, respectively. Incubation period for all species on foliage required 72 hr, with 100% R.H. at 20C, while it needed 35 days for A.pinodella when inoculated seeds were planted. The last pathogen, causes foot rot, on wide range of leguminous plants, while the leaf spot pathogen has a narrow host range. Vulgar and Little Marvel pea cvs. were the highly susceplible ones for leaf spot and foot rot diseases, respectively, where Linocln cv. was the highly resistant one for both diseases.

Environmental conditions that favored growth and sporulation as well as disease incidence included natural media, high relative humidity and 20C for all fungi.

Maximum production of fungal metabolites was detected on rice medium using thin layer chromatography (TLC) or bioassays with B.megaterium, brine shrimp and on pea plants. These metabolites induced reduction in seed germination and caused chlorosis and wilt of pea plants. Also inhibitors were higher in infected plants than healthy ones, where Auxines and GA_3 like-substances were lower in infected than in the healthy one. Total and reducing sugars were higher in the susceptible pea cultivar than in the resistant one, which contained higher amounts of phenolic compounds. The activities of PG, PME, CX and oxidative enzymes were higher in infected pea plants than healthy ones.

Histopathologcal studies indicated that the leaf invading fungi penetrated the leaves directly and through stomatal openings while the foot rot fungus starts from the root hairs and invade the stem tissues, which turn black due to the presence of fungal pycnidia.

Seed dressing treatments, specially with Thiram, Benlate, Tecto and Tecto MZ and the use of biocontrol agents i.e. Trichoderma harzianum and Gliocladium roseum were effective in minimizing foot rot disease. Also fungicidal spray using Benlate, Kocide 101, Dithane M45, Tri-Miltox fort and Ridomil MZ58 were effective in the control of the leaf spot disease.

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