1- MANAGEMENT OF FLAX POWDERY MILDEW AND EFFECT OF CLIMATIC CONDITIONS ON AGRONOMIC TRAITS AND FIBER TECHNICAL CHARACTERS

Field trials of flax plants were sown during two successive growing seasons 2006 and 2007 at Gemiza Agriculture Research Station, Gharbiya governorate, Egypt. The effects of relative humidity (RH) and temperature on flax powdery mildew (Oidium lini Sikoric) were studied in controlled environments to define conditions that affect disease development in flax. In this study, four cultivars; Sakha2, Giza8, Liflora and Escalina were evaluated for disease development. Two different fungicides; Bayfidan, Tobas 100-EC and two novel antifungal compounds; Bion and Tannic acid were foliar sprayed at three intervals to control powdery mildew. Data showed that the germination of conidia and symptoms appearance at a constant temperature at 25°C failed to occur at 0% RH but by increasing the RH to 50, 60 and 75% infection process occurred by conidia and symptoms appeared. The highest level of conidia germination and infection establishments expressed as high diseases incidence percentage was observed at 25°C and 75-100% RH. Disease control with fungicides and antifungal compounds showed significant differences among all treatments sprayed with Tobas 100-EC, Bayfidan, Bion and Tannic acid compared with the control. Significant effects were observed on yield, yield components, technological characters for fiber and chemical character of seed oil.

2- EFFECT OF DIFFERENT PLANT EXTRACTS AND ESSENTIAL OILS ON SOME IMPORTANT FUNGAL PATHOGENS CAUSING DAMPING-OFF AND ROOT ROT DISEASES IN SUGAR BEET.

In this study; we screened seven essential oils and 8 different plant extracts for fungitoxic effect against three soil borne pathogens infect sugar beet. The seven essential oils were from commercial products derived from Camphor, thyme, anise, lettuce; groundnut, rocket and caraway oil and used in 3 concentrations (0.5, 1 and 2% w/w). The eight extracts of higher plant species are belonging to seven different plant families including; Pimpinelle anism, Glycerrhiza glabbara L.; Nigella sativa; Eruca sativa; Eugenia caryophyllus, Artemisia Judaica, Allium cepa and Allium sativum were used to prepare their crude extracts that used in 3 concentrations.(25, 50 and 75% w/v). In laboratory; among essential oils, Thyme, Anise and Comphor oils were the most effective, toxic and inhibit mycelial growth of on fugal species. On the contrast, the other essential oils of lettuce, ground nut, rockets and caraway did not cause any toxic effect against all pathogenic fungi under study compared with controls. Among 8 plant extract tested garlic and onion extracts were the most effective and toxic for all fungi tested. The persistence of antifungal activity was different among extracts. All showed decreasing zone of inhibition with time, except Cloves, Artemisia, Onion and Garlic which retained its full activity against the three fungi for the whole incubation period especially at 50 and 75% concentrations. However, the suppressive effect of other extracts against the other pathogens was either not affected or slightly decreased with time. The highly toxic and promising plant extracts and essential oils of garlic, onion, Artemisia, anise oil, thyme oil were tested in greenhouse and field experiments. In greenhouse and Field experiment, data showed that plant extracts, thyme oil and anise oil were effective in controlling pre-
post emergence damping-off and significantly decreased root rot incidence and severity compared with the controls and fungicide. Yield component of total soluble sugars (T.s.s.), sucrose percent in root and sugar purity were increased. All seed treatments with selected plant extracts and oils, significantly increased these yield parameters. Anise oil showed the most significant effect and increase of T.S.S and sucrose percent in roots of sugar plants assayed from plants grown from seed in plots treated with Anise oil in both 2006 and 2007 growing seasons compared with controls and fungicide treatments. Thyme oil and onion extract showed moderate but improved increase in these yield components.