SUMMARY

Metarhizium anisopliae, Metarhizium flavovridae, Beauveria bassiana, Beauveria brongniartii and *Paecilomyces farinosus* were used as a biological control agents for the Egyptain cotton leaf-worm *Spodoptera littoralis* (Boised.), which represents the most severe destructive cotton pest in Egypt and many other countries and leads to a decrease in the national income of our country and pink bollworm was reported as a serious pest of cotton in 1940, it has since become the most injurious insect pest cotton in many cotton-growing regions of the world.

The main points which were discussed in this study could be summarized in the following topies:

1-Mass production of the five fungal isolates under study in different growth media.

2-Efficiency of the fungal isolates as a biological control agents against the Egyptain cotton leaf worm *S.littoralis* and *P.gossypiella* under laboratory conditions.

3-Protein analysis for fungal isolates by sodium dodocyle sulphate polyacrylamide gel electrophoresis (SDS-PAGE)

4-Determination of aflatoxins by Thin layer chromatographic (TLC) and High performance liquid chromatography (HPLC)

The fungi under study were grown on three different media where *M.anisopliae, M.flavovridae, B.bassiana* and *B.brongniartii* exhibits good growth on Yeast Extract Sucrose whereas *Paecilomyces farinosus* exhibit good growth on Czapek's-Dox Agar medium. The medium constituents were prepared and adjusted at pH 5.5-6.5. After sterilization, Petri-dishes were inoculated with the fungal strains and incubated for two weeks at 25° C&50-60% RH. At the end of the incubation period, the supernatant was separated from the mats. Three concentrations were used viz 40, 60 and 80%, these concentrations were made by using ammonium sulphate.

The 1st instar larvae of *P.gossypiella* were mixed in artificial diet with fungal toxin 40, 60 and 80%. From each concentration take 1 ml and homogenately mixed with 15 gm of artificial diet. The infected larvae were placed in sterile cups containing artifical diet, ten hatched larvae of *P.gossypiella* were placed on the surface of the diet, all stages were reared and treated under constant conditions of 27±1°C and 80±5%RH. Mortality counts were recorded after 48h of treatments, mortality percentage of *M.anisopliae* after 9 days of treatment was 85.970%. Generally *M.anisopliae* was found to be the most effective isolate against 1st instar larvae of *P.gossypiella* followed by *B.bassiana, P.farinosus, M.flavovridae* then *B.brongniartii.*

The previous same techniques were used except for all stages were reared and treated under constant conditions of 25±1°C &50-60%RH, mortality percentage of *B.brongniartii* after 12 days of treatment was 83.36%. Generally *B.brongniartii* was found to be the most effective isolate against 1st instar larvae of *S.littoralis* followed by *P.farinosus, M.flavovridae, M.anisopliae* then *B.bassiana.*

Mortality percentage of *B.bassiana* after 12 days of treatment was 78.53%. Generally *B.bassiana* was found to be the most effective isolate against 2 nd instar larvae of *S.littoralis* followed by *P.farinosus, B.brongniartii, M.anisopliae, M.flavovridae.*

The proteins of five isolates mentioned above was extracted from their supernatant and fractioned by SDS-PAGE. SDS-PAGE revealed a maximum number of 9 bands, which not necessarily present in all samples. For *B.brongniartii* there are five bands at conc.80%, four bands at conc.40, 60%. For *M. anisopliae* there are three bands at conc.80%, two bands at conc.60% and one band at conc.40%. In addition to *M.flavovridae, P.farinosus* and *B.bassiana* appeared (5, 6, 9) bands at conc. 40, 60, 80% for *M.flavovridae,* (3, 4, 5) bands at conc. 40, 60 and 80% for *P.farinosus*, and (1, 1, 2) bands at conc.40, 60 and 80% for *B.bassiana.* Concentration 80% for all fungi was characteristic by large number of bands then 60, 40%.

The five tested entomopathogenic fungi can not produced any types of aflatoxins B_1, B_2, G_1 and G_2 by (TLC) and (HPLC).