# Summary

Wheat is considered to be the most important cereal crop in the world. Egypt considered to be a wheat important country. Wilt and root-rot diseases are considered one of the common diseases in Egypt and the world. The investigation under study has taken into consideration three dimensions, pathological studies, biological control and serological studies.

## Pathological Studies :-

Isolation from rhizosphere and diseased wheat plants showing wilting and root-rot symptoms reveal that.

1- Seventy-four isolates of fungi were isolated from 62 samples of diseased wheat plants collected from 7-governorates in Delta Egypt.
2- Out of the 74 isolates, 3 species of *Fusarium* i.e. *Fusarium semitectum* (40 isolates), *Fusarium solan*i (12 isolates), *Fusarium oxysporum* (10 isolates)as well as of *Epicocum* sp.(7 isolates) and *Alternaria* sp. (5 isolates) were identified.
3- *Fusarium semitectum* was the most frequent one, which represent (54%) of the total isolates, followed by *Fusarium solan*i (16.2%), *Fusarium oxysporu*m (13.5%), then *Epicocum* sp. and *Alternaria* sp.which was the least one (9.5 and 6.8 %), respectively.

## Biological Control Studies :-

Biological studies included the effect of some bio-control agents against *Fusarium semitectum*. The obtained results could be summerized as follow**:-**

1- *Trichoderma* spp. were more effective than *Gliocladium* spp and bacterial bio-control agents in reducing the radial growth of *Fusarium semitectum*.
2- *Trichoderma viride* was the most effective followed by *Trichoderma hamatu*m.
3- Among the bacterial bio-control agents,*Streptomyces***,**isolate no.2 was the most effective followed by *Bacillus subtilis*,isolate no.1
4- Concerning with the culture filtrates of the bio- control agents, the dilution of 1:10 was the most effective in reducing the radial growth of *Fusarium semitectum* with all the tested bio-agents comparing with the other dilutions.

**Under green-house conditions:**

1-The application of the bio-control agents as seed-soaking was the best in increasing the percentage of survival plants, specially with *Trichoderma viride*.
2-Concerning with the use of bacterial bio- control agents, both of seed-soaking and cultured in talc powder gave moderate values of survival plants.

3- Evaluation of 5-bread wheat cultivars i.e. Gemmeiza-9, Gemmeiza-10, Sakha-94, Giza-168, Sids-1 against *Fusarium semitectum* reveal that, all of them showed moderate values of survival plants ranged from 45.00% (Sids-1) upto 68.33%(Gemmeiza-9).

## Serological Studies :

Two methods of serology i.e. ouchterlony double diffusion test and crossed-immunoelectrophoresis technique were followed to determine the common antigen relation-ship sharing between each of *Trichoderma viride*, *Pseudomonas fluorescens* and *Fusarium semitectum* in an attempt to explain their antagonism against the pathogenic fungus.The obtained results could be summerized as follow**:-**

1- In general, crossed-immunoelectrophoresis technique was more sensitive than ouchterlony double diffusion test since gave the grater number of precipitin bands in homologous-reactions

2- In heterologous reaction, between the antigen of *Trichoderma viride* and antibodies of *Fusarium semitectum*, gave greater number of common antigens(2-bands) while antigen of *Pseudomonas fluorescens* (one bands).

3- Serological methods proved that its results run in the same line with the results of biological control studies.