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SUMMARY

Mung bean is considered one of the most important leguminous crops in many countries. Root –rot and wilt diseases are among the most serious diseases which attack mung bean plants causing high amounts of losses in stand and seed yield .

This research aims to study these diseases under local conditions and methods of control.

Results of the present investigation could be summarized as follows :

1- Survey of root –rot and leaf spot diseases and isolating fungi that cause these diseases was carried out from lower and meddle Egypt .

2- The most important fungi i.e. *Rhizoctonia solani*, *Fusarium oxysporum* , *Fusarium solani* , *Macrophomina phaseolina*, *Sclerotium rolfsii* , *Fusarium moniliforme* , *Alternaria alternata*, and *Aspergillus niger* were isolated from diseased mung bean plants obtained from different localities.

3- The percentage of leaf spot disease incidence in all varieties were lowest at all locations . Hence , studies were concentrated on root-rot and wilt fungi.

4- All isolated fungi were pathogenic and caused pre-and post-emergence damping-off and root-rot with different degrees.

5- Pathogenicity studies revealed that *Rhizoctonia solani* and *Fusarium oxysporum* were the most prevalent and important pathogens on mung bean in Egypt . Hence, studies were concentrated on these important fungi.

6- *Rhizoctonia solani* was the most frequently isolated pathogen followed by *Fusarium oxysporum, Macrophomina phaseolina, Fusarium solani* and *Sclerotium rolfsii.*

7- The green house experiments showed that :

a) *Rhizoctonia solani* resulted in the highest percentage of pre – emergence damping – off followed by *Fusarium solani* .

b) Fusarium oxysporum resulted in the highest percentage of post – emergence damping – off followed by *Macrophomina phaseolina.*

c) Kaumy – 1 variety was more resistant than V 2010.

8- the percentage of infection with mung bean root- rot and wilt diseases differed at different levels of inoculum . low level of inoculum of *Rhizoctonia solani* is required to cause high percentage of infection followed by *Fusarium oxysporum* , *Sclerotium rolfsii* and *M. phaseolina.* the percentage of diseased plants remained constant regardless of any additional increase up to the level of 3 % from the weight of the soil .

9- a) culture filtrate of *Rhizoctonia solani* and *Fusarium oxysporum* reduced seed germination and length of radical roots when compared with control .

Rhizoctonia solani was more effective in decreasing seed germination compared with *Fusarium oxysporum,* while *Fusarium oxysporum* was more effective in decreasing length of radical roots compared with *Rhizoctonia solani.*

b) placing cut ends of seedlings in different dilutions of culture filtrates of the two pathogens showed necrotic spots in leaf tissues curling of the leaves , browning of the veins followed by defoliation and softening of the cut end. severity of these symptoms depended on the pathogen , period of immersion and culture filtrates concentration.

10- Six mung bean varieties were tested against root-rot and wilt diseases under green house and field conditions:

a) kaumy –1 was the most resistant compared with other varieties , whileV2010 was very susceptible compared with other varieties under green house conditions.

b) under field conditions VC 2719 was the lowest percentage followed by kaumy-1.

In general the percentage of root-rot / wilt disease differ from variety to another and from location to another.

c) the percentage of leaf spot disease in all varieties were lowest at all location under field conditions .

11- seed treatment with Rizolex-T or Topsin M- 70% under green house conditions , improved percentages of seedling stand as compared with the untreated control, however . the degree of effectiveness depends on the fungus and the fungicide used.

Rizolex- T was the most effective fungicide against *Rhizoctonia solani* and *Fusarium oxysporum* compared with Topsin M- 70%.

12- Biological control studies show that :

a) under green house condition, sharp decrease in pre- and post – emergence damping – off was noted by using *Trichoderma harzianum* against *Rhizoctonia solani* and *Fusarium oxysporum*. . On the other hand, sharp increase in survival plants was noted by using *Trichoderma harzianum* against *Rhizoctonia solani* and *Fusarium oxysporum* .

b) *Trichoderma harzianum* was more effective against *Rhizoctonia solani* and *Fusarium oxysporum* compared with *G. virens* and *B. subtilis* under green house conditions.

c) *In vitro* studies *Trichoderma harzianum* was more effective in inhibiting mycelial radial growth on *Rhizoctonia solani* and *Fusarium oxysporum* than other biocontrol agents , while *Bacillus subtilis* was more effective on *R. solani* than on *F. oxysporum* and *G. virens* was more effective on *F. oxysporum* than on *R. solani.*