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Summary

The present investigation was planned to study the fungicides, evaluating the antagonistic fungi and antagonistic bacteria, essential oils, microelements, macroelements, inducer and growth regulators in laboratory, greenhouse and field on disease severity and yield of bulls was also studied.

Results obtained could be summarized as follows:-

1- After 3 and 5 days of inculation, ridomil 72, ridomil plus 50%, Galben cupper 46% and Diathane M 45 were effective on radial growth and spore germination while, kocid 2000 was less effective.

2- Under laboratory conditions, results should that *T. hamatum*, *T. harizianum*, *T. viride* were best antagonistic fungi in reducing the mycelial growth of *Alternaria porri*, while *G. roseum* was less effective in this study. Also, in case of antagonistic bacteria, the highly inhibition of mycelial growth came from *B. subtilis* however, *P. fluorescens* gave a slight reduction.

3- cinnamon, mint and clove at all concentrations after 3 and 5 days at inoculation increased inhibition mycelial growth and spore germination (reached 100%), while camphor oil did not gave any reduction in mycyleial growth and gave slight reduction in spore germination.

4- Under laboratory conditions, all microelements (copper, ferrous, manganese and zinc) decreased the radial growth with all tested

concentrations after 3 and 5 days of inoculation. Spore germination decreased by increasing the concentration with all tested microelements. Also, the microelements effect of cupper and zinc were more persistent than either ferrous and manganese.

5- *In vitro* experiments, all macroelements (nitrogen, potassium and calcium) gave the low decreased of the radial growth all tested concentrations after 3 and 5 days of inoculation while, spore germination, the inhibition was observed especially with nitrogen and potassium treatments.

6- Under laboratory conditions, all tested antioxidants after 3 and 5 days of incubation gave complete inhibitions at 15mM concentration except hydroquinone with the same concentration. The same trend was observed with spore germination.

7- *In vitro* experiments, all tested induce resistance on radial growth and spore germination after 3 and 5 days of incubation decreased by increasing concentration. H_2O_2 was the best induce resistance while $CaCl_2$ was the less effect in this study. In case of spore germination, KCl was the best treatment with 25.34%, while $CaCl_2$ was the less reduction in spore germination.

8- *In vitro* experiments, all tested growth regulator i.e. (GA3, IBA, NAA) inhibition the radial growth and spore germination. NAA was the best treatment in this study while, GA3 treatment was less effect of inhibition.

9- In greenhouse experiments, results showed that spraying of fungicides decreased that the percentage of infection and disease severity with all tested fungicides compared with the control. ridomil plus 50%, Rridomil 72, and Galben cupper respectively were the most effective whereas, Diathane M 45 and kocide 2000 were the least in this respect.

10- In case of bioagents, the disease incidence and disease severity decreased with bioagents treatments. In this respect *T. hamatum* and *T. harizianum* were the most effective whereas *P. fluorescens* and *G. roseum* were the least.

11- Spraying with essential oils on onion transplants in greenhouse decreased the disease incidence and disease severity. Mint and clover were the best as essential oils while, cinnamon and negilla were the least.

12- Under greenhouse conditions, spraying transplants with different microelements reduced the disease incidence and disease severity especially copper and zinc ferrous while, manganese and zinc were the least effect in this respect.

13- In vivo experiments, spraying transplants with different macro-elements reduced the disease incidence and disease severity. Treatments with NPK and NK were the most effective while, treatment with N and P were the least.

14- In greenhouse experiments, spraying with antioxidants on onion transplants decreased the disease incidence and disease severity

compared with control. Salicylic acid and oxalic acid were the best whereas; citric acid and hydroquinone were the least in this study.

15- Spraying with induce resistances on onion transplants in greenhouse experiments reduced the disease incidence and disease severity. H_2O_2 was the most effective while; $CaCl_2$ and KCl were the least.

16- In greenhouse experiments, spraying with growth regulators decreased the disease incidence and disease severity compared with control. IBA was the best treatment while, NAA was the least in this respect.

Under field conditions:-

17- Disease incidence and disease severity decreased with spraying transplants in different fungicides in the two seasons. On the other hand, increased the yield (Ton/fed.) in *all* seasons with the same treatments. Ridomil plus 50% and Galben cupper 46% were the most effective while, kocide 2000 was the least in this respect.

18- Spraying onion transplants with bioagents in field induced low disease incidence and disease severity in *all* seasons with the increased the yield (Ton/fed.). *T. hamatum* and *B. subtilis* were the most effective whereas *G. roseum* and *T. viride* were the least.

19- Treating onion plants with essential oils gave a reduction in disease incidence and disease severity. The highly reduction was showed in cinnamon and clove treatments. On the other hand, spraying with

essential oils gave increasing the yield (Ton/fed.) with all treatments compared with control in *all* seasons.

20- Results showed that treating transplants with microelements decreased the disease incidence and disease severity with all tested microelements in *all* seasons. On the other hand, the yield (Ton/fed.) increased with all microelements treatments compared with control. Copper and zinc treatments were the best while, ferrous and manganese were the least.

21- Disease incidence and disease severity decreased with macroelements in *all* seasons also, the yield (Ton/fed.) the best treatments were NK and K and compared with the other treatments.

22- Treating transplants with some antioxidants decreased the disease with all treatments compared with control also, the same results were found in yield (Ton/fed.). Salicylic acid and oxalic acid were the best treatments in *all* seasons while, citric acid treatment was the least in this respect.

23- Spraying onion transplants with some induce resistances gave a reduction in the disease incidence and disease severity compared with control. The highly reduction was showed in $CaCl_2$ and H_2O_2 treatments. On the other hand, the yield (Ton/fed.), treatment gave the best results in *all* seasons.

24- Results showed that spraying onion transplants with some growth regulators decreased the disease incidence and disease severity with all treatments compared with control in three seasons. Also, the same trend was found of the yield (Ton fed^{-1}.). GA3 was the best treatment in this study.