

Effect of Different Fungicides on Growth, Sporulation and Germination of *Beauveria bassiana* (Balsamo) Vuillemin

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SUMMARY

An experiment was carried out to study the effect of different fungicides *i.e.* wanis, propiconazole, kitazin, validamycin, triadimefan and bitertenol on sporulation, germination of *Beauveria bassiana* (Balsamo) Vuillemin. There were eight concentrations *i.e.* 5000, 2500, 1000, 500, 300, 200, 150 and 100 ppm of each test fungicide which were replicated thrice. It was found that all the test fungicides reduced the growth, sporulation and germination compared to control. Among the test fungicides, wanis (botanical extract) was found to be compatible with *B. bassiana* on the basis of spore germination while higher linear growth and sporulation was recorded in validamycine treated media. Fungicides propiconazole was proved to be highly detrimental for *Beauveria bassiana*.

Key words :

Beauveria,
Fungicide,
Sporulation,
Germination.

B*eauveria* and *Metarhizium* are important entomopathogenic fungi which have been proved as a potential substitute of chemical insecticides with other control measures and use of such entomopathogenic fungi has greatly increased due to broad spectrum of pathogenic activity (Martin *et al.*, 2000). This has also proved helpful in avoiding the adverse effects of widespread use of pesticides (Strasser *et al.*, 2000). The disease causing organisms are more or less persistent in every soil type like clay, sand, etc. (Vanninen *et al.*, 2000). However, besides microbial agents, fungicides are also regularly used to control insect pests, plant diseases and weeds which reduce the effectiveness of these entomogenous fungi by affecting their growth, sporulation and germination (Beevi and Jacob, 1987). Therefore, it is necessary to identify those fungicides which affect the growth, sporulation and germination of entomopathogenic fungi in order to maintain their effectiveness. In light of above fact, a laboratory experiment was carried out to test the effect of different fungicides on growth, sporulation and germination of *Beauveria bassiana*.

MATERIALS AND METHODS

An experiment was carried out in Department of Entomology at G.B. Pant University of Agriculture and Technology, Pantnagar to study the effect of different pesticides on growth, sporulation and germination of *Beauveria bassiana*. The

fungicides used for the study were wanis, propiconazole, kitazin, validamycin, triadimefan and bitertenol. There were eight concentrations out of which three (*i.e.* 5000 (0.5%), 2500 (0.25%) and 1000 (0.1%) ppm) were higher than recommended dose (500 ppm (0.05%) while four (*i.e.* 300 (0.03%), 200 (0.02%), 150 (0.015%) and 100 (0.001%) ppm) and each concentration were replicated thrice for each experiment.

The fungus, *Beauveria bassiana*, was grown on SDA medium at $25 \pm 2^\circ\text{C}$ and 95 ± 5 per cent relative humidity for experimental use. The poison food technique (method) was used to observe linear growth and conidial germination. Double strength of different pesticides solutions was prepared for further study. Simultaneously, double strength of SDA medium was also prepared for each concentration of fungicides. The media were autoclaved for 15 minutes at 15 lb psi separately to sterilize the media. After cooling of medium to about $30-40^\circ\text{C}$, previously prepared double strength pesticide solutions were mixed in medium, separately, under aseptic condition under laminar flow. About 25 ml of poisoned medium was poured in Petridishes and kept for solidification. The solidified medium was inoculated with five mm disc of 10 days old actively growing culture of *Beauveria bassiana*. The Petridishes were incubated at $25 \pm 2^\circ\text{C}$ and 95 ± 5 per cent RH for growth of inoculated fungus. The SDA medium without pesticides was also poured in Petridishes and

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