

## Compatibility of Fungal Isolates Used in Biocontrol of Insect Pests and Fungal Pathogens

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### Abstract

Different fungi used as biocontrol agents against insect pests and fungal pathogens were used in this experiment for observing the compatibility. Experiments were conducted using a dual culture technique and its modification i.e. agar blocks on slides. Local isolates of *Beauveria bassiana*, *Metarhizium anisopliae*, *Lecanicillium lecanii* were paired with *Trichoderma* sp. and *Trichothecium roseum*. All the combinations were found to be compatible. These results suggest the possibility of coapplication of these fungi in integrated pest and disease management.

**Key words :** Compatibility, Fungal isolates, Biocontrol, Insect pests, *Beauveria bassiana*, *Metarhizium anisopliae*. Fungal pathogens.

In northeast India due to high humidity and rainfall, incidence of insect pests and diseases is quite high (1, 2). Reluctance of farmers of this region towards pesticide use and stress on organic farming has stimulated the research on ecofriendly methods especially biological control of insect pests and diseases management. Many fungal biocontrol agents are effective against various diseases and insect pests (3—5). For getting good economic returns, farmers have to manage insect pests and diseases. Thus, the compatibility of these biocontrol agents is crucial for effective insect pest and disease management. Information is available on the compatibility of biocontrol agents with chemicals (6—8). But there is no information on the compatibility between fungal entomopathogens and fungal biocontrol agents used for insect pests and disease management. We planned an experiment to understand the compatibility of local isolates of *Beauveria bassiana*, *Metarhizium anisopliae*, *Lecanicillium lecanii* with *Trichoderma* sp. and *Trichothecium roseum* under *in vitro* conditions.

(Second author wishes to thank CAU for all the support).

### Methods

*B. bassiana*, *M. anisopliae* and *L. lecanii* were

paired with *T. roseum* and *Trichoderma* sp. using dual culture technique and its modification i.e. agar block culture with three replications. Potato dextrose agar (PDA) blocks of 2 cm<sup>2</sup> were kept on a slide and were inoculated on opposite ends similarly, PDA in petri dishes was also inoculated on opposite ends (9). Observations were taken when margins of test fungi came in contact with each other.

### Results and Discussion

Slide dual culture experiments clearly revealed that all the combinations are compatible (Table 1).

**Table 1.** Compatibility between different fungi used for biocontrol of insect pests and fungal plant pathogens.

Fungal entomopathogens	Fungi used against fungal plant pathogens	Compatibility reaction
<i>Beauveria bassiana</i>	<i>Trichothecium roseum</i>	Compatible
<i>Metarhizium anisopliae</i>	<i>Trichothecium roseum</i>	Compatible
<i>Lecanicillium lecanii</i>	<i>Trichothecium roseum</i>	Compatible
<i>Beauveria bassiana</i>	<i>Trichoderma</i> sp.	Compatible
<i>Metarhizium anisopliae</i>	<i>Trichoderma</i> sp.	Compatible
<i>Lecanicillium lecanii</i>	<i>Trichoderma</i> sp.	Compatible

No hyperparasitism was observed in any of the pairing, suggesting the possibility of coapplication of these fungi in integrated pest and disease management. Normally, whenever the compatibility between different fungal isolates is discussed, people in general get the perception that they can be multiplied together but this is not the case our results just suggest that they can be applied together not multiplied together. Krauss et al. (10) have also reported that coapplication of mycoparasites with entomopathogens did not affect their biocontrol efficacy although the reisolation success of entomopathogens from insects was reduced significantly. Earlier Baiswar and Chandra (11) had also conducted compatibility experiments on *T. harzianum*, *T. viride* and *T. roseum*, *T. harzianum* and *T. viride* were found to be compatible but *T. roseum* was completely overgrown by the *Trichoderma* spp. suggesting non compatibility. Further formulation and field studies are necessary for using these combinations successfully under natural conditions.

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