

Date: 15-10-19

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Biological control of soil borne pathogens  
two ways of biocontrol of Fungi:

i) mycoparasitism

ii) Lysis. (breakdown & disintegration).

Soil borne resting spores.

i) Trichoderma harzianum, it kills or parasitise the Rhizoctonia spp., Sclerotium spp., Pythium, phytophthora, Fusarium

ii) Lateceria arvalis ~~mycoparasitise~~, Rhizoctonia spp., Pythium spp., Sclerotinia spp., Talaromyces flavus  
these all mycoparasitise Verticillium wilt fungus

→ Pythium (yeasts → single celled) → parasitise Botrytis, Penicillium.

Similarly some bacteria also used as biocontrol against different spp.

Bacillus spp., Enterobacter spp., Pseudomonas spp., Pantoea spp. these parasitise phytophthora, Pythium, Fusarium, Sclerotinia spp.

Similarly these are some mycophagous nematode e.g. Aphelenchus avenae involved in mycophagy of Rhizoctonia & Fusarium.

Some bacteria like Pasturia (<sup>old name</sup> Bacillus) penetrans parasitise Meloidogyne javanica & paratylenchus spp.

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A fungus Verticillium lacanii parasitise  
Heterodera glycine

□ Dactylella & Arthrobotrys two fungi parasitize  
meloidogyne spp.

□ Verticillium & Nematophthora (two fungi)  
parasitise The Heterodera spp. & Globodera spp.  
of nematode.

### Biological Control of Aerial Pathogen.

1- Chaetomium, Athalia bombacina two fungus  
effectively control Ascospores / conidiospore  
of Venturia inaequalis (Apple scab fungus).

2. Tuberculina maxima a fungus parasitise  
Blister rust of Pine (Cornostium vebicola)

3. Dactylia filum & Verticillium lacanii  
they control different type of rust.

4. A fungus Ampalomyces quisqualis  
parasitise powdery mildews.

⇒ Control through trap plants

(Insect vectors) they are mostly effective in non persistent insect  
vectors of viruses.

↓  
stylet borne vectors.

If trap plants of rye & corn are cultivated  
in the boundary of pepper, beans

they trap the Aphids and control viruses.

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Trap plants also ~~effectively~~ control the nematodes by secreting some exudates like trap crops. e.g. If in some susceptible variety, you cultivate some trap plants they effectively control nematodes.

Similarly, ~~for~~ *Crotalaria* plants trap the *Meloidogyne* spp.

Similarly Trap cropping of Black night shade plants trap Golden nematode (*Heterodera rostochiensis*).

→ Control through Antagonist plants.

Some plants like Asparagus & Marigold, if we intercrop these plants, they effectively control nematode by secreting some toxins for nematodes.

15-10-19 Practical

→ Hot water Treatment:

Most of the seed with deep seeded fungal, bacterial & viral pathogen are treated with Hot water. Pack the seeds loosely in a cheese cloth bag & seal it. Keep the thermostat hot water treater with magnet stirrer at a constant temp. of 50-58°C. Dip the seed bag in hot water for 5-15 mins according to the nature of seed. Take care about the heat susceptible varieties of cereals, vegetables & fruit seeds so that viability is not ~~lossed~~ lost. Transfer the seed bag