

# Oyster Mushroom Cultivation

## Part II. Oyster Mushrooms

### Chapter 8

#### Pest and Disease Management

## PESTS

Oyster mushroom cultivation beds provide very good conditions for pests, plenty of food, warm temperatures, and high humidity. Five kinds of flies and two types of mites are reported as the major pests for oyster mushrooms.

### **Sciarids (*Lycoriella mali*)**

Sciarids are the most important pests of oyster mushroom. Adults are about 2mm with long thread-like antennae (Fig. 1). Larvae are 6-12mm long with a distinct black head capsule (Fig. 2). Larvae feed on mycelia, small pin-heads, and large mushrooms. Such feeding results in cuts in the mycelium, less primodium formation, and cavities in the stipes and caps of large mushrooms. Adults spread diseases and mites. Female adults lay 100-130 eggs at a time on cultivation beds and the eggs hatch after 4-5 days at 20°C. Growth and development of the fly is delayed or poor when temperatures are lower than 15°C or above 30°C.



Figure 1. Female adult sciarid and eggs



Figure 2. Lava of sciarid

### **Scaptosids (*Coboldia fuscipes*)**

This fly occurs mainly during summer crop cultivation. Larvae feed on the mycelium, causing rotting of substrate which results in yield loss. Both adults and larvae are known to transfer mites and diseases. Larvae grow and develop fast at above 25°C, but it takes much longer for their growth and development when the temperature is below 20°C. This indicates that their growth is favored by high temperature during summer cultivation.

Figure 3. Male adult *Coboldia fuscipes*Figure 4. Larva of *Coboldia fuscipes*

### Cecids (*Mycophila* sp.)

Adults are very small, less than 1 mm, which makes them difficult to see inside the growing room (Fig. 5). Larvae are 1-3mm in length suck the nutrients from hyphae and also attack mushroom stipes and caps. Larvae populations can increase rapidly within a short time because they can reproduce by paedogenesis during which each larva releases 14-20 daughter larvae every 6 days. Mushroom bags or beds become orange in color if huge numbers of orange colored larvae occur. Larvae are well known to transfer various bacteria that cause the breakdown of mushrooms.



Figure 5. Adult cecid mushrooms



Figure 6. Larva of cecid



Figure 7. Cecid larvae on

### Phorids (*Megaselia tamiladuensis*)

Adults are 2-4mm and move quickly by hopping on the substrate. Larvae are 4-6mm long with a white and transparent body and they do not have a distinct black head. Larvae feed on mycelia and make cavities in mushroom fruiting bodies. Phorids usually occur during summer cultivation, but they normally cause less damage than other flies.



Figure 8. Adult phorid



### Mites

Mites belong to the class Arachnida, not Insecta. *Tarsonemus* sp. and *Histiostoma* sp. are major mushroom damaging mites. They are small and invisible to the naked eye. Mites feed on mycelia and fruiting bodies, causing yield loss and a decrease in mushroom quality. Mites carry pathogens and nematodes, sometimes causing itchy rashes among growers.

Figure 9. Mite

### Mycetophil (*Mycetophila* sp.)

Adults are big and yellowish (Fig. 10). Larvae are 15-20mm long and grayish brown and construct cocoons with threads on the substrates or mushrooms. Young fruiting bodies become brown and stop growing. Larvae also cause large cavities in the stipes (Fig. 11).



Figure 10. Adult mycetophil



Figure 11. Infection with mycetophil larvae

### Control Measures

- Sanitation and hygiene is the most important control method of pests. Keep the “**Basic Practices for Disease and Pest management**”
- Clean and disinfect mushroom houses thoroughly before cultivation.
- Remove any waste, weed, mushroom debris, and water containers inside or outside mushroom houses that attract flies or on which flies can live.
- Exclude flies with a mesh with apertures not greater than 0.5-0.6mm on air inlets. Keep doors closed insofar as possible, particularly during spawning and mycelium growth phase.
- Maintaining a low fly population during spawn run is of major importance as early flies give rise to the initial infestation which culminates in the high populations that appear later in the cropping cycle.
- Pasteurize substrates thoroughly. This is very important, especially for mite control.
- Burning mosquito coils is known as a very effective control method of adult flies inside mushroom houses.