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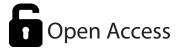


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Inky Cap Infestation in Mushroom Cultivation Sivapriva R.* and T. Sahila

Dept of Plant Pathology, S. Thangapazham Agricultural College (STAC), Tenkasi, Tamil Nadu (627 760), India



Corresponding Author Sivapriya R. *e-mail: rpriyasiva24@qmail.com*

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E-mail: bioticapublications@gmail.com



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Abstract

Mushrooms are free of cholesterol and contain small amounts of essential amino acids and B vitamins. Mushroom is also affected by various diseases caused by fungal and bacterial agents. The commonly cultivated mushrooms include *Agaricus, Lentinus, Flammulina, Pleurotus* and *Volvariella*. For the successful cultivation of mushroom, a good quality spawn is needed but few fungal and bacterial agents infect mushroom spawn and reduce the spawn quality. Mushrooms cultivated under protected culture or growing wild are infested by bacteria, virus and fungi. Inky cap (*Coprinus comatus*) is a common weed on mushroom beds. It is competitor mould disease. The symptom of inky weed is black inky liquid present.

Introduction

ushroom can also be poetically described as a plant "Without Leaves, without buds, without flowers, yet they form fruit." As food, as a tonic and as a medicine, Mushrooms are wonderful creations of nature (Chang and Miles, 2004). In India, Button mushroom (Agaricus bisporus) is the most commonly cultivated mushroom followed by Pleurotus. Inky cap (Genus: Coprinus) any member of a group of about 350 cosmopolitan mushroom species belonging to the order Agaricales named for the disintegration of the mushroom cap liquid following spore discharge. Inky cap is caused by Coprinus commatus. Presence of ammonia in the compost is confirmed with the appearance of black inky liquid (Maurya et al., 2019). The appearance of inky caps during spawn run is commonly observed on the mushroom beds in northern India. The infection generally comes through unpasteurized or partially pasteurized compost or casing soil or air. Ink caps appear if the compost contains too much N, so if too much chicken manure is used, or if the peak heating period is too short. Therefore, genuine indicator moulds which are benefited from insufficiently converted N containing constituents like NH₂. Ink caps can also develop, if insufficient gypsum is added to the compost or if peak heating has taken place at too low a temperature or if the compost is too wet and poor in texture. Inky caps can directly use free NH_{4}^{+} and can also decompose cellulose very well, in addition to lipids and lignin (Sharma et al., 2007).

Symptoms

• Inky caps appear in the compost during spawn run or newly cased beds and outside the manure piles during fermentation. They are slender, bell shapes mushrooms.

• Sometimes grown in clusters in beds and has long sturdy stem which often reaches deep in to the compost layer (Figure 1).



Figure 1: Inky cap weed growing in bed

• Appearance of long cylindrical stalk with small thin cap and turns into black inky liquid (Figure 2). After several days inky caps decay and form a blackish slimy mass due to auto digestion.



Figure 2: Black inky liquid symptom

• It produces dark blue to violet coloured buds with a long white thin stalk, with opens in a few days and disintegrates as a black mass of tissues, covering the entire bed, thus arresting the growth of spawn, development of young buds. The entire bed becomes black in colour show the rotting of the spawn (Amin *et al.*, 2021).

Epidemiology

• Inky caps are genuine coprophillic fungi which have an optimum pH 8. The large masses of spores released through inking of the caps can very easily infect freshly prepared compost.

- Optimal temperature for the mycelia growth of C. comatus was found at 23-26 $^{\circ}$ C.
- Infection spreads through air or casing soil or partially pasteurized.

• High moisture content of the beds, more compaction of beds and poor ventilation.

• Inky caps appear if the compost contains ammonia (Sai Manogna, 2021).

Management

- •µAvoid excessive watering.
- •,Rogue out young fruit bodies.
- Use fresh substrate for preparation of compost. Do not use straw exposed to rains and having fungal growth.
- Ammonia in the compost at spawning should be less than 10 ppm *i.e.*, no smell of ammonia.
- Floor for the preparation of compost should be cemented/ tiled and covered with a roof.
- The location of mushroom unit should be away from chemical industries and should be free from toxic fumes or gases.
- Pasteurization and conditioning of the compost should be for optimum duration at right temperatures as over/under pasteurization may produce poor quality compost and invite disease problems.
- Spawn should be fresh and free from all contaminants.
- Spawning area must be washed and disinfected with 2% formalin.

Conclusion

he cultivation of edible mushrooms can often be affected by some bacterial, fungal, and viral diseases that rather cause dramatic production losses. Therefore, understanding the particular symptoms and accurate management practices are needed for efficient production of mushroom. This competitor mould causes losses when spawning occurs about 20-94% and also causes decrease in weight of fruiting bodies is about 15-95% .The diseases of mushroom can be effectively managed by the IPM treatments viz., all equipment and machinery should be cleaned and disinfect, maintain growing room and surrounding of farm in good sterile condition, be aware of the quality of walls and ceiling, use properly pasteurized compost and casing soil, inspect mushroom beds regularly for diseases especially prior to watering and picking, avoid excessive watering, rogue out infected young fruiting bodies.

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