



**Biotica
Research
Today**
Vol 4:6
2022

482
483

Inky Cap Infestation in Mushroom Cultivation

Sivapriya R.* and T. Sahila

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



Open Access

Corresponding Author

Sivapriya R.

e-mail: rpriyasiva24@gmail.com

Keywords

Amino acids, Ammonia, Compost, Mushroom

Article History

Received on: 19th May 2022

Revised on: 27th June 2022

Accepted on: 28th June 2022

E-mail: bioticapublications@gmail.com

How to cite this article?

Sivapriya and Sahila, 2022. Inky Cap Infestation in Mushroom Cultivation. *Biotica Research Today* 4(6):482-484.

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

Mushroom 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. Inky 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 NH_3 . Inky 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 °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

- Avoid 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

The 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 disinfected, 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.

References

- Amin, Z., Wani, F.F., Gulzar, H., Dar, W.A., Sheikh, P., 2021. Diseases of White Button Mushroom (*Agaricus bisporus*) - A Potential Threat to Mushroom Industry. *International Journal of Current Microbiology and Applied Sciences* 10, 2076-2078. DOI: 10.20546/ijcmas.2021.1002.247.
- Chang, S.T., Miles, P.G., 2004. What is the mushrooms? In:

Mushrooms: Cultivation, Nutritional values, Medicinal Effects and Environmental Impact, Second Edition, CRC Press, Beijing, China, pp, 27-28.

Maurya, A.K., Murmu, R., John, V., Keshewani, B., Singh, M., 2019. Important Diseases and Pests of Mushroom. *Agriculture & Food: E-Newsletter* 1(12), 189-193.

Sai Manogna, A., 2021. A Review on Mushroom Diseases and Management. *IJESC*, 28695-28698.

Sharma, S.R., Kumar, S., Sharma, V.P., 2007. *Diseases and competitor moulds of mushrooms and their management*; Solan, Himachal Pradesh: National Research Centre for Mushroom, Indian Council of Agricultural Research. p. 31.