Shiitake Log Management and Fruiting Induction

Writer: Sangdon Park / Date :2001-08-01 / hits: 314 In temperate monsoon regions, August is the month to try the first fruiting induction of logs inoculated with mid and high temperature adaptable strains in the previous year. In August, various bacteria spread actively over the logs, growers should make sure to provide a logging site with the optimum environment. This should include good ventilation to minimize the damage by bacteria as well as to regulate the temperature and good drainage to prevent stagnant water. Log management of shiitake mushroom and fruiting induction:

- 1. Sizzling temperature and high humidity characterize August in temperate monsoon regions. Careless treatment easily increases the log temperature, which can result in the death of mycelia and bring devastating damage to the logs. Growers should practive good log management to prevent damage to logs.
- 2. The major problem of outdoor log site is the temperature difference between the top and bottom logs layers which causes differences in mycelial colonization. Therefore, turning over the logs is essential, and the appropriate frequency depends on region and mushroom strain.
- 3. Indoor environments provide more favorable conditions for mycelial growth as they increase accumulated temperature and allow for intensive and labor-saving cultivation. More and more growers are building room for log colonization of mycelia.
- 4. Adequate amounts of irrigation should be provided to help mycelial colonization of logs. Do not, however, water logs with pins and logs that are not fully dried. Make sure that the temperature of the upper logs doesn't exceed 32'C by placing thermometers at each corner of the beds in the growing room and carefully monitoring them.
- 5. Turning over the logs to ensure efficient ventilation is the most important process during the season of high temperature and high humidity. This process helps mycelia colonize logs uniformly and thoroughly by providing it relatively even temperatures between their upper and lower parts. Weeding around the log site is the another way to help ventilation, as it prevents temperature increases at the site and minimizes damage by bacteria.
- 6. Growers should frequently monitor moisture content, degree of colonization of logs and damage by bacteria by cutting the logs from time to time or by peeling the bark off a random spot far from the area inoculated with spawn.
- 7. It's best to induce fruiting in the inoculated year if possible. If they are going to induce fruiting, growers are recommended to conduct a test on small or medium sized logs which fruited naturally among the logs of year-round fruiting strains or mid and high temperature adaptable strains.
- 8. It is very important to induce fruiting in the inoculation year. If mycelia start growing in the inoculated year and fruiting bodies form, they make cracks around the mushroom through which nutrition is absorbed and, air is allowed in. As you know, shiitake mycelia are aerobic fungi. This air makes the mycelia more vigorous, allows mycelia to grow up to the crack, aids better mycelial colonization and consequently, accelerates mushroom fruiting in the second year. However, fruiting induction on immature logs is not desirable.
- 9. In order to ensure the formation of primordia, effective drying and watering of logs is required. Dryness after forming of mushroom primordia slows down mycelial activity to

the point of death. furthermore, growers should dry the log slowly as sudden drying causes poor nutrition absorption.

- 10. Those logs that formed primordia under their bark require watering. Watering induces fruiting by lowering log temperature. A difference fo more than 10'C between log and water temperature is recommended. Because the quantity and quality of mushrooms are affected by mushroom strain, log condition, watering time and watering amount, growers should provide the most favorable environment in order to harvest high quality mushrooms. This advice is based on direct and indirect cultivation experience.
- 11.You can control the quantity of mushrooms by the amount of watering. If watering is provided for many hours, only strong primordia will survive while weak ones wither to death.
- 12.Watering hours depend on water temperature, air temperature and watering amount. The desirable number of hours for watering would be 20 hours for a water temperature between 15 and 20'C, and 30 hours for a water temperature below 15'C. Make sure the temperature difference between logs and water is more than 10'C.
- 13.For outdoor logs, growers should make arrangement for rainy season and unexpected showers by preparing plastic and growing mushrooms according to a concrete plan. Too much enthusiasm without thorough planning may result in quality degradation.
- 14.Logs should be managed properly based on the characteristics of the strains. Mature logs of thermophilic strains should left stationary in order to let the logs accumulate nutrition before fruiting induction. Mycelia of thermophilic strains react to the stimulation (moving of logs) and fruit mushroom.
- 15.Logs of strains other than thermophilic should be turned over 1-3 times to allow mycelia to colonize the logs thoroughly.
- 16.In summer, the temperature difference between water and air should be more than 10'C for fruiting. Although an increase in water temperature doesn't affect fruiting, mushroom stipes will be long and caps will open earlier than necessary at 30'C and above resulting in quality degradation. Temperature should be maintained below 25'C in order to produce good quality mushroom.
- 17.If moving inoculated logs before watering, you should water on the moving day.
- 18.Under the same circumstances, inoculated logs left unwatered for 4 days fruit only 50-60 % in quantity compared to those watered on the day of the move. It is most desirable to water immediately after the move for effective mushroom fruiting.
- 19.After harvest, alternate watering and drying of the logs for 10-15 days, after which mushrooms will fruit again. Extend it to 20-30 days if you have a lot of logs and want to give them enough rest.
- 20. You should pay careful attention to summer cultivation, as it requires frequent harvests and effecient storage and marketing. Production without a detailed plan will result in production failure due to unexpected hindrance. Most of improtantly, keep in mind that mushrooms still grow after cropping.

- 21.If you don't water logs after harvest, mycelia will lose their vigor and primordia will not be formed resulting in poor fruiting. Therefore it is recommendable that you provide logs of thermophilic strains with enough moisture.
- 22.Fruit induction of immature logs results in small quantities, deformed mushrooms, and the need to discard the logs in some cases.
- 23.In the case of shiitake strains whose mycelial colonization takes a long time, it is not desirable to inoculate too many spawns as it will age the logs, decrease the yield and degrade the quality of mushrooms.
- 24.Many shiitake growers produce low quality mushroom due to poor log colonization and unprofessional management of harvest and marketing. The key to successful cultivation is to produce high quality mushroom.