# Growing House for Shiitake Cultivation

Writer: Sangdon Park / Date :2001-10-01 / hits: 1363 In Asian temperate climate regions where shiitakes are cultivated more than agaricus mushrooms, October is a very significant period for cultivation of shiitakes in that each grower must choose high quality logs and spawns to be used the next year as well as set up their long and short-term plans. In order to produce high quality mushrooms and improve their marketability, growers need to concentrate their energy on making log beds suitable for shiitake cultivation by renewed building or remodeling of growing facilities.

## Advantages of Shiitake Cultivation in Vinyl Houses

- a. Possible to harvest high-quality shiitakes and minimize degradation in quality due to rainfall.
- b. Possible to control harvest time, leading to higher price and to protect shiitakes from pests and disease.
- c. Possible to shorten the period of cultivation by 1 to 2 years, helping growers improve their cash flows.
- d. Possible to expedite mycelial growth on log beds through accumulative temperature which is conducive to this method. It's possible to cut labor cost through intensive cultivation.

## Disadvantages of Shiitake Cultivation in Vinyl Houses

- a. If growers have little knowledge of growing houses, they will have difficulties building ones suitable for their individual situations.
- b. If growing houses are crudely built due to lack of money, cultivation may be hindered by higher temperatures and dryness, strong winds, and heavy snow.
- c. If existing vinyl houses for vegetable cultivation are used, shiitake growth may suffer from poor drainage and ventilation. In addition, the size of these growing houses is to large.
- d. As the design of normal growing houses is almost the same and shiitakes are cultivated in an extremely intensive manner, growers may feel it's inconvenient to construct a vynyl house. In addition, inappropriate locations of growing houses may cause degradation in quality and waste of labor.

## **Considerations to be Taken when Growing House is Installed**

- a. Consider length, width, height, direction, species, and growing method. It is good to install a facility to be used exclusively for mycelial growth on log beds.
- b. Since it is hard to remodel a growing house once it is already installed, growers must pay careful attention to installation.
- c. House builders should do their job with careful consideration of situations faced by their customers. Seeking a cut in installation costs may lead to an unsuitable growing house.
- d. Irrigation facilities within a growing house must be installed 2m above the ground. Each

irrigation pipe needs to cover 3 to 5 lines. In addition, growers must evenly irrigate cultivation areas by adjusting angles of sprinklers.

- e. In order to prevent damage from high winds, growers must streamline ends directly exposed to strong winds. They also need to install electric lamps for night jobs.
- f. In particular, growers must be careful in finishing the upper part of the frame in order to prevent damage to shading cloth and vinyl.
- g. Single blocks of growing houses and south north directions are better than several blocks of growing houses and east west directions in cultivating mushrooms. The center of a growing house must have height so that it will drain well.
- h. Preferably, a growing house should be 30 to 40m long. for no reason should the length exceed 50m. Otherwise, commercial production of mushrooms will be difficult.
- i. Width of a culture house may be adjusted by considering purpose and economy of use. If it is over 10m, however, growers must stand log beds horizontally in order to facilitate ventilation.
- j. For existing vinyl houses that are relatively lengthy or low, radiators and exhaust fans must be installed for ventilation and drainage.



Fig 1. Saddle-shape Culture House

- k. When growers use growing houses from spring to fall, they need to install separate airshafts and exhaust fans over the entrance and horizontally at the highest point of the ceiling (the end parts of both structures forming the roof in fig. 1). By not installing vinyl at the front and rear doors, they can prevent higher temperature and damage from pest and disease.
- 1. When growers produce mushrooms mainly from fall to spring and use growing houses as places where spawns are settled down on log beds, they need to install the saddle-shape house shown in Fig. 1 or a general house covered with vinyl+cashmere+vinyl+shading shown in Fig. 1. In case of general houses, growers need to install ventilators near the ceiling at 3 to 4m intervals.

#### Proposed Models of Shiitakes Culture Houses

#### A. Features

(1) Saddle-shape growing house is useful in areas with higher temperature and humidity and where spawns are settled down on log beds, since it provides good conditions for ventilation.

(2) When airshafts and exhaust fans are installed over the doors of general growing houses, they can be well ventilated. In order to prevent damages to vinyl and shading cloth from opening and shutting, 2 pads are attached to each structure of the culture house as shown in the 'E' detail in fig. 1.

(3) Because the structure of the growing house is not complicated, growers can easily install it with their own resources. With respect to standards, it is proper for the growing house to be 40m long and 8 to 10.3m wide. In addition, the ridge and eaves need to remain 3.6 to 4.3m and 2m high, respectively.

(4) For better ventilation, airshafts are installed at the roof and eaves of the general growing house. Irrigation pipes are located 2m high and have 3 to 5 lines allowing all log beds to receive water evenly.

(5) The two tips of the ceiling directly exposed to winds are streamlined in order to cope with strong winds like typhoons. To ensure the ability to work as necessary and expecially during harvest, electric lamps are installed.

## **B.** Drawings of Culture Houses

(1) Drawing of a Saddle-shape Culture House





(2) Drawing of a General House - Type ¥°





(3) Drawing of a General House - Type  $\frac{1}{2}$ 





(4) Drawing of a General House - Type  $\mathbb{Y}^2$ 





(5) Drawing of General House - Type  $\mathbb{Y}^3$ 



