

Cultivation of Winter Mushroom (*Flammulina velutipes*)



Directorate of Mushroom Research
(Indian Council of Agricultural Research)
Chambaghat, Solan - 173 213 (HP)

INTRODUCTION

Winter mushroom (*Flammulina velutipes*) is one of the wood decaying fungi growing on the trunks or stumps of aspens, willows, elms and other broad leaf trees from the end of autumn to early spring. It ranks sixth in terms of total world mushroom production. This mushroom is particularly known for its taste and preventive as well as curative properties for liver diseases and gastroenteric ulcers. In addition, winter mushroom has also been reported to contain immunomodulatory, antitumor and antibiotic substances.

PRODUCTION SYSTEM

Winter mushroom can be grown during the coldest period of year. This is grown on sawdust supplemented with rice bran / wheat bran. Sawdust of broad leaf trees supplemented with rice bran / wheat bran is commonly used as substrates for cultivation of this mushroom. Sawdust is wetted thoroughly with water for 16-18 hours. Generally, equal quantity of sawdust is mixed in equal quantity of water. After wetting 5 per cent wheat bran is added in the sawdust and mixed

thoroughly. This mushroom can be grown in a variety of containers like polypropylene bags, plastic bottle, vinyl bag, filter bag and jars etc. However, polypropylene bags (2 kg) are generally used for the cultivation. Two kg substrate is filled in each bag. The bags are plugged with non-absorbent cotton by inserting a ring on the mouth of the bag (Fig.1). The filled bags are sterilized in autoclaves for 1½ hour at 22 p.s.i. After the bags have been sterilized and cooled down to 20°C, they are inoculated with wheat grain based spawn @ 4 % dry wt. basis (Fig.2&3). Saw dust spawn can also be used which growers may purchase from specialized spawn makers. Sawdust spawn is prepared by mixing ten parts of saw-dust with one part of rice bran and enough water to provide 60-65% moisture content.

The inoculated bags are incubated at 22-25°C. Mycelium spreads over the whole bag in 20-25 days (Fig.4). When mycelium spreads to 90% of the bag space, the plug is pulled off, the neck of the bag is unfolded and the surface of the media is made smooth for fruiting (Fig.5). Bags are then placed in the dark at a

temperature of 10 -14 °C and relative humidity 80 -85% is maintained.

A moisture level in the bags is important for fruiting. Primordia are formed in 10-14 days after reducing the temperature to 10-14°C. The initiation of fruit bodies starts in dark (Fig.6) but light is necessary for the further development (Fig.7). At 10 - 14°C, the fruit bodies grow rapidly, but they are slender, long and of poor quality. For this reason, the growth of fruit bodies is controlled by lowering the temperature to 3-5°C and providing aeration for 1-2 hours daily, which encourage stiff, white and drier fruit bodies. This control is continued for 3-4 days, from the period when the cap's differentiation is observed with the naked eye to the period when the length of the stem reaches 10-12 cm.

When the fruit bodies are 14-18 cm long, the fruit bodies are harvested (Fig.8). They are packed in PP bags or can be sun dried. It takes about 50-60 days from spawning to the first harvest. After harvesting second flush appears in about 15 days. Only two flushes are harvested. About 360-400 g fresh mushrooms can be harvested from a bag of two kg.

Flow Chart of *Flammulina* production

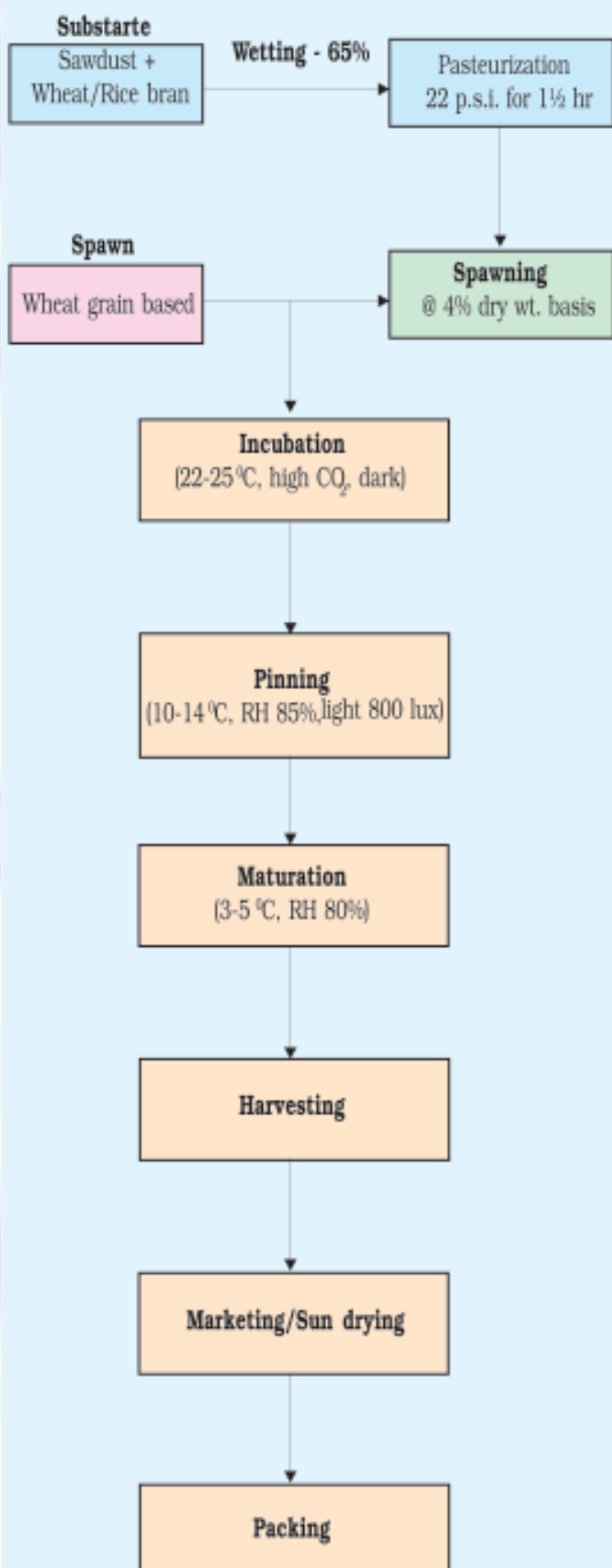




Fig. 1. Filled bags



Fig. 2. Inoculation of sterilized bags



Fig. 3. Inoculated bag



Fig. 4. Spawn run bags



Fig. 5. Bags ready for fruiting



Fig. 6. Initiation of primordia



Fig. 7. Developing primordia



Fig. 8. Crop ready to harvest

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Director

Directorate of Mushroom Research
Chambaghat, Solan- 173213 (HP) India

Phone: 01792-230767, 230541, 230451;

Fax: 01792-231207

E-mail: directordmr@gmail.com

Website: www.nrcmushroom.org

Authors : V.P. Sharma and Satish Kumar