

Yield performance of different strains of *Agaricus bisporus* (Lange) Imbach

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SUMMARY

Six strain of *Agaricus bisporus* namely S-649, S-46, U-3, Pant-31, pant-52 and Pant-215 were evaluated for their yield performance in terms of number and weight of the fruit bodies on prevailing room temperature. The maximum number of the fruit bodies i.e. 2161/100 kg compost harvested from the strain U-3 followed by strain S-649 and Pant-215. However, the highest yield 15-82 Kg/100 kg compost was obtained from the strain Pant-52 followed by strain Pant-215 and Pant-31 and the average weight per fruit body of the strain Pant-52 was also higher as compared to others.

Key words: *Agaricus bisporus*, Button mushroom, Champignon, Strain, Yield.

Agaricus bisporus (Lang) Imbach is the most popular among the artificially cultivated edible mushrooms, which is variously known as button mushroom or white mushroom or champignon. This mushroom belongs to Phylum-Basidiomycota, Class-Basidiomycetes, Sub-Class-Agaricomycetidae, Order-Agaricales and Family-Agaricaceae (Kirk *et al.*, 2001). It contributes about 31.81% to the total mushroom production of the world (Chang, 1999) and 90% to the total mushroom production in India (Singh, 2003). Cultivation of button mushroom (*A. bisporus*) in India is of comparatively recent origin being introduced about four decades back in the hilly and temperature zones of H.P. and J.&K. state. At present its popularity has spread throughout the country and is being cultivated on compost prepared by long or short method of composting. The yield and quality of the mushroom is determined by genetic make-up of the strain, environmental condition and physiological & nutritional requirement of different strains. In the present investigation, yield potential of the different strains of *Agaricus bisporus* was compared to select suitable strain for button mushroom production in Tarai region.

MATERIALS AND METHODS

Cultures of different strains viz. S-649, S-76, U-3, Pant-31, Pant 52 and Pant 215 were obtained from culture and spawn unit of Mushroom Research and Training Centre, Pantnagar and multiplied on 2% Malt extract Agar medium. Spawn was prepared on boiled and autoclaved wheat grain in glass bottles by inoculating a small bit of 10 days old mycelial culture under aseptic condition and incubated at $25 \pm 1^\circ\text{C}$ for 20 days.

Substrate was prepared by short method of composting (Shandilya and Dwivedi, 1991) using wheat straw as base material and chicken manure 50%, wheat bran 12%, urea 1.45% and CaSO_4 (Gypsum) 3% of the base material by weight. Spawning was done @ 0.7% of the compost weight and spawned compost filled in the polyethylene bags @ 10 kg/bag maintaining eight

replications for each strains.

These bags were kept in the crop room for spawn run, casing mixture was prepared by using 2 years old spent compost and FYM in 3:1 ratio casing mixture was treated with 4% formaline solution and kept covered with a plastic sheet for 48 hrs. After complete spawn run the bags were cased applying 1.5 inch thick treated casing mixture. During spawn run and cased run period temperature and relative humidity of the crop room were maintained manually in between $20\text{-}25^\circ\text{C}$ and 85-95% respectively. After complete case run the temperature and relative humidity were lowered and maintained in between $15\text{-}20^\circ\text{C}$ and 80-85% respectively for pinning and development of fruit bodies. Yield data upto 42 days (including first harvest period) recorded in terms of number and weight of the fruit bodies and analyzed statistically.

RESULTS AND DISCUSSION

Spawn and compost prepared and spawning/casing was done as per the methodology. Temperature and humidity of the crop room maintained manually by means of spraying of water. The yield data of the six strains tested was presented in table-1 reveals that the strain Pant-52 gave the maximum yield (17.50 kg) followed by Pant-215 (17.21 kg) which were at par to each other in terms of weight of the fruit bodies in the first year. The strain Pant-31 ranked at next place in order to superiority and at par with the weight of the fruit bodies obtained from strains S-649 and U-3. However, in the second year strain Pant-31 performed significantly better than other strains by yielding 15.20 kg mushroom/100 kg compost. The next strains in order to superiority was Pant-215 followed by Pant-52 and U-3 which were statistically similar in terms of yields i.e. weight of the fruit bodies. The strain S-76 gave significantly poor yields as compared to all other strains in both the years.

The maximum number of fruit bodies harvested from strains U-3 during both the years followed by Pant-31 and Pant-215 in the first year and S-649 and Pant-215 in second year of evaluation.

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