



## Use of Maize Powder, Rice Bran and Mustard Cake to Increase the Mushroom Production.

### KEYWORDS

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**ABSTRACT** Mushroom cultivation is an emerging trend in small scale industries. Many MSME's are actively engage in their production. It is becoming a trend for the rural entrepreneurs to invest in its production. The major constraints that industry faces ranges from high cost of compost, low yields and unavailability of uniform quality manures in the local market. Here we have used a mixture of Maize Powder, Rice Bran and Mustard Cake at 30% in the ratio of 1:1:1 along with the saw dust. The use of this mixture significantly increased the production of button mushroom i.e. *Agaricus bisporus*. This method can be adopted for large scale cultivation.

### I. Introduction

Mushroom being a heterotrophic organism obtains all its nutritive requirements extracellularly. In this scenario the composition of the media onto which it grows readily affects the quantity as well as quality of the mushroom. Traditionally the mushrooms were grown on the logs of the trees that was replaced by bag cultivation. The current science regarding mushroom cultivation is about finding the best available compost that not only enhances quality and quantity but also remains economical. This is the major challenge that has led to an enormous amount of research in this area. Various sources of nutrition have been used for the cultivation that are produced locally (Schisler 1964; Shandilya 1976; 1980; Hayes and Shandilya 1977; Dhar et al. 1985) such as Wheat Bran, Rice Bran, Maize Powder, Sesame, Almond, Mustard meal, Chicken manure, Horse manure compost etc. A major problem while using chicken manure and horse manure compost for mushroom cultivation at times is its availability, uniformity, changing nutritional values. Rest of the available composts has economic viability problems. In this study we have used a mixture of maize powder, rice bran and Mustard Meal in different proportions for mushroom cultivation. The mixture so obtained was a bit expensive then the mustard cakes but nevertheless the price was compensated totally with the increased production. The yield obtained after using the Maize powder, Rice Bran and Mustard cake in the ratio 1:1:1 was high as compared to when these three are used individually.

### II. Material and Methods

Mustard Meal (De-oiled cake) having protein content (30% of dry weight), Maize Powder and Rice Bran was purchased from Aarti Agro Industries. Fresh grown spawn of *Agaricus bisporus* (lange) sing, strain S11 was purchased from Bharat Mushrooms, Delhi, India,

Maize Powder, Rice Bran, and Mustard Meal was used in the ratio 1:1:1 as well as they were used individually as a supplement to the saw dust. Casing soil treated with formaldehyde (1:1 mixture of 2 year old farm yard manure and garden soil) was used for bed casing.

Short method was used for the preparation of saw dust based compost. Composting for all the ingredients was done for 18 days by two phases composting using peak

tunnel method as advocated by Shandilya et, al. 2-3 days of pre-wetting was followed by outdoor composting on concrete floor for 7 days.

In total 36 trays were used (including the triplet for each observation) each containing 80 kg of compost. Mixing of the spawn and compost was done as per the procedure of spawning method. After that trays were cased with formaldehyde treated soil upto the height of 5cm. Appropriate ventilation specially at the time of pinhead formation and regular watering was provided. Mushrooms were picked for 60 days from each tray and weight was measured daily.

### III. Results and Discussion

Table 1:- 60 days yield (Kg) from composts

Supplements	Level	Yield/m <sup>2</sup> (a) 1 month	Yield/m <sup>2</sup> (b) 2 month	Yield/m <sup>2</sup> (a+b)	Yield/ mT of com- post
Maize powder (MP)	20%	7.4	7.2	14.6	170
	25%	9.6	9.4	19	210
	30%	8	8.2	16.2	187
Rice Bran(RB)	20%	6.4	6.5	12.9	146
	25%	8.8	8.7	17.5	192
	30%	7.2	7.3	14.5	174
Mustard Cake(MC)	20%	9.2	9.5	18.7	206
	22%	12.4	12.2	24.6	2820
	24%	9.4	9.2	18.6	202
MP+RB+MC	20%	9.2	9.3	18.5	199
	25%	14.4	14.3	28.7	247
	30%	10.2	10	20.2	298

It is clear from the data that although the yield obtained from Rice bran, Maize Powder and Mustard cake when used individually were significant especially the mustard cake at 22% but when the compost consisting of all the three in equal proportion at 30% was used for the cultivation of *Agaricus bisporus* the yield increased significantly. The decreased yield at higher concentration of Maize powder, Rice Bran, Mustard cake when used individually may be attributed to the excess of competition, an increased ammonia production or parasitism. On the contrary when the three sources were mixed together in equal proportion and added at the concentration of 25% they somehow complemented each other and there was significant increase in the production of the mushroom. The increase production of the mushroom can be because of the above mixed composition was much more holistic and complete in the terms of nutritive value.

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