FARMERS GUIDE

Mushroom Production
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RATIONALE

The strong advocacy of the government on the use of environment-friendly technologies has given rise to the renewed interest on Organic-Based Agriculture but with the changing emphasis on the value-added components as additional incentives to farmers. To make compost making attractive to farmers, value-added technologies such as Mushroom Cultivation and Biogas Production are being introduced to give farmers extra income while preparing their own compost.

Reasons for the Slow Growth of the Mushroom Industry in the Philippines (Quimio, 1990)

- Lack of enough expertise
- Lack of government support for mushroom support and extension programs
- Lack of supply of planting materials
- Low priority in most national production programs.
Why Grow Mushrooms?

- Mushrooms could grow on various agricultural wastes such as rice straw, banana leaves, sugarcane bagasse, tobacco midribs, etc..
- Mushroom beds and spent mushroom substrates could be used as organic fertilizers/soil conditioners.
- Mushroom growing provides year-round additional income to farmers.
- Mushroom growing does not need much space. You can grow them on abandoned buildings, basements, barren lands, etc…
- Mushrooms are considered as luxury food. They are good sources of proteins and other food nutrients.

Nutritive Value of Some Edible Mushrooms

<table>
<thead>
<tr>
<th>Mushrooms</th>
<th>Thiamine</th>
<th>Riboflavin</th>
<th>Niacin</th>
<th>Ascorbic Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volvariella volvacea (straw mushrooms)</td>
<td>0.35-1.2</td>
<td>1.63-3.30</td>
<td>64.88-91.9</td>
<td>20.2</td>
</tr>
<tr>
<td>Pleurotus spp. (oyster/abalone mushrooms)</td>
<td>1.6-4.8</td>
<td>4.7</td>
<td>108.7</td>
<td>0</td>
</tr>
<tr>
<td>Auricularia spp. (Ear mushroom)</td>
<td>0.2</td>
<td>0.9</td>
<td>1.6</td>
<td>-</td>
</tr>
<tr>
<td>Lentinula edodes (Shiitake mushroom)</td>
<td>7.8</td>
<td>4.9</td>
<td>54.9</td>
<td>0</td>
</tr>
</tbody>
</table>
Species of Mushrooms Grown in the Philippines

1. *Volvariella volvacea* (straw mushrooms). This is locally known as “kabuting saging” or “kabuting dayami”. This mushroom is characterized by button-like heads and is commonly cultivated in rice straw beds.

2. *Pleurotus* spp. (oyster/abalone mushrooms). This can be “room cultivated” and can be grown in jars, trays and in plastic bags using rice straw or sawdust as substrates.

3. *Auricularia* spp. (Ear mushroom). This is locally known as “taingang daga”. This mushroom grows in logs but it can also be grown on sawdust.

4. *Lentinula edodes* (Shiitake mushroom). This mushroom is usually cultivated on natural logs but this can also be cultivated using sawdust as substrate. Optimum temperature which favor spawn run range from 180°C to 270°C.
Stages in Mushroom Development

FRESH MUSHROOM

STARTER CULTURE (PURE CULTURE)

Media preparation
Sterilization
Tissue Culture
Incubation

Inoculation Incubation (3-7 days)

SUBSTARTERS (SUBCULTURE)

Substrate preparation
Sterilization
Inoculation Incubation (2-3 weeks)

MOTHER SPAWN

PLANTING SPAWN

Indoor Beds • Outdoor Beds • Fruiting Bags • Logs
Culture of Straw Mushroom
(Volvariella volvacea)

Bedding materials:
- Rice straw
- Banana leaves and stalks
- Abaca waste materials
- Water lily
- Other agricultural waste

Procedure:

1. Rice straw is tied with any available binding material into bundles of approximately 6 to 8 inches in diameter.

2. Cut both ends of the bundled rice straw

3. Soak the bundled rice straw in water for 3 hours or overnight.
4. Prepare a wooden platform with poles on the 4 corners as foundation.

5. Drain the bundled straw and lay them on the foundation. Pile into heaps of 5 to 6 layers.

6. Water the bed well.

7. Stop watering when water starts to run off the bed.

8. Plant the spawn. Insert the spawn 4 inches from and along the sides of the bed and 4 inches apart. Set the next layer of straw on top of the other. Put the butt ends together in the opposite direction.
9. During summer, the bed should be at least 1 1/2 feet high. More layers or higher beds may be constructed during cooler seasons to provide enough heat (at least 35°C) for rapid development of the mycelium. Cover the bed with a plastic sheet for the 1st 5-6 days.

10. 10 to 15 days after spawning, pinheads or small fruiting bodies should begin to appear. This will be ready to harvest after 2 to 3 days.

**Harvesting**

Mushrooms start to grow 2 weeks after planting. The whole mushroom including the stump should be taken from the bed. Don’t disturb the small buttons. Mushroom in the button stage are better preferred than the fully opened ones.
Care of the Mushroom Bed

- Cover the mushroom bed with plastic sheet to increase the temperature from 350°C to 38 0°C and to control the humidity.
- Watering starts 4-5 days after preparation of the bed.
- Depending on the intensity of atmospheric temperature
  - During dry months- watering is a must
  - Wet months- optional
- Watering should be concentrated on the sides. Stop watering when mushroom starts to develop. Watering maybe resumed in between flushes.

Utilization of Used Mushroom Beds and Spent Mushroom Substrates (Composting)

Gather the half-composted mushroom beds and prepare them into compost. Follow the procedures for the traditional, rapid or bio-enriched methods whichever is preferred by the farmers.
REFERENCES


Soil Biology Section
Soil & Water Resources Research Section
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