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# Mushrooms

*Coprinus comatus*



agriculture,  
forestry & fisheries

Department:  
Agriculture, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA

## Background

### • ORIGIN

There are different assumptions concerning the origin and cultivation of mushrooms. Some sources suggest that the earliest cultivation of mushrooms was during the 17th century by a French horticulturist in Paris, while some suggest that it was in Canada. Both may be correct, since various species of mushrooms are available and originate from different countries.

### • CLIMATIC AND GROWTH MEDIA REQUIREMENTS

Mushrooms of good quality can only be produced in structures with controlled climate and environmental conditions. This means that all the climatic factors such as temperature, water, light, relative humidity and the growth medium can be manipulated to suit the crop's requirements. The daily temperature range suitable for the production of mushrooms is between 14 °C and 20 °C during its growth season. Furthermore, fluctuations in temperature can greatly reduce yields.

Mushrooms do not use soil as a growth medium. Organic material is rather required. This material should be able to supply all the required nutrients because mushrooms cannot photosynthesise. Compost is the most preferred and common medium. Types that can be used include wheat straw and cow, chicken and horse manure. Cotton seed meal is also suitable. The compost should also have a pH ranging between 6,5 and 8 to favour mushroom growth. Gypsum can be used to manipulate this state.

### • USES

In South Africa, mushrooms are regarded as a luxury food item. However, mushrooms are used as vegetables for soups and flavouring. They are consumed in a cooked state, either steamed or fried. They are also canned for convenient use. Mushrooms are a good source of proteins, vitamins, calcium, phosphorus, potassium and small quantities of iron.

## Cultural practices

### • PLANTING

The mycelium is directly mixed with compost, either manually or mechanically. No specific spacing is required. Broadcasting is rather done. The mycelia grow and mature into well-developed mushrooms until harvest in this medium.

### • FERTILISATION

The compost should be able to supply the mushroom with all the nutrients required, bearing in mind that mushrooms cannot photosynthesise. The compost is able to support all the nutritive requirements of the mushroom because of the supplementing process it undergoes during its developmental stage.

### • IRRIGATION

Mushrooms are very sensitive and can be damaged by a strong splash of water. They require a soft, medium-pressure spray of water. This can also avoid the scaling (layering of the compost with peat or other material) of the casing pore as a re-

sult of the force of water. The suitable system for irrigation is therefore the roseface (water break) head. Irrigation should be done throughout the plant's life cycle, excluding the mature stage. Irrigation causes discolouration on mature mushrooms.

### • WEED CONTROL

During the compost development, the sterilisation process raises temperatures to very high levels, such that even weed seeds' viability deteriorates. Therefore, if decomposition, sterilisation and development of compost are not done correctly, all seeds will be destroyed. There should also be no seed distribution if precautions are taken to keep the area enclosed.

### • PEST AND DISEASE CONTROL

Pests include flies, midges, mites and nematodes. High standards of hygiene integrated with the provision of disinfectants, fungicides and various insecticides should be able to control the destructive pests.

Common diseases include die-back, mummy disease, bacterial blotch, dry bubble (*Verticillium* disease), moulds, etc. Sanitation is the major control mechanism. A careful watch for pests and diseases must be maintained and timely measures must be taken to control them. It has been found that the addition of 200 ml of chlorine to the water supply will guard against bacterial diseases without having any harmful effects. Similarly, the dusting of beds with zineb powder immediately after casing, and between flushes, will help to prevent fungus diseases from developing.