State of production, utilization and research of cultivated mushrooms and other edible fungi in Czechoslovakia

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There is a high consumption of edible fungi in Czechoslovakia. In the past the fruit-bodies of edible higher fungi were picked up in woods and sold in large quantities on the market. A great part of the dried and canned edible fungi was assigned for export. Mainly Boletus edulis, Cantharellus cibarius, and other cultivated mushrooms and other edible fungi in Czechoslovakia. - Karstenia 18 (suppl.).

The cultivation of mushrooms Agaricus bisporus, A. bitorquis, and other fungi as Pleurotus ostreatus etc. has developed in the last 10 years. The production of the cultivated mushrooms is still low (1 200 - 1 500 t), however, the new plants with a big production capacity are under construction. The fungus Pleurotus ostreatus is cultivated by some agricultural establishments. The cultivation of Pleurotus velutipes and some species of the genus Pleurotus is developing.

A centre for the theoretical research of the cultivated edible fungi is the Institute of Microbiology of the Czechoslovak Academy of Sciences. Mycological Station in Prague selects new strains of the cultivated mushrooms, investigates new composts and new methods for cultivation and protection of cultivated fungi against diseases.

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not contain much calcium. The cultures are planted into earth (15–20 cm high straw layer) or in polyethylene bags. In a mushroom house in Nový Jičín (Veterinary School, Brno) pilot cultures of Flammula velutipes have been planted.

All the growers are organised in the Section of Mushroom Growing of the Czechoslovak Society of Science and Technology - Society of Agriculture. This society publishes a special journal ("Mycologist") and arranges periodical meetings, conferences and training courses for the growers.

In Czechoslovakia the cultivation and consumption of mushrooms has increased tenfold during the last decade. The greatest part of cultivated mushrooms is consumed in restaurants and hotels, and processed by the food industry to special salads, cheeses with mushroom, etc. At the present time the demand for mushrooms is higher than its supply, but we hope the situation will improve within the next decade. It is interesting that the utilisation of irradiation of selected strains of bacteria before fermentation yield a larger crop of this fungus.

The mycelium of various P. ostreatus strains utilised different sources of nitrogenous and carbonaceous nutrients. It grew slowest in a nutrient medium without nitrogen. The experiments have proved that the fixation of atmospheric nitrogen by two Pleurotus strains can be as high as 2.6-4 mg per 1 g of fermented glucose. However, the results of these experiments have to be verified by other methods (Junková & Staněk 1972).

In other experiments, many strains of higher fungi utilised bacterial polysaccharides (ghycans, gluco-mannans) better than glucose alone.

More others fungal species were cultivated experimentally. A. aegerita grew in a mixture of straw and maize cobs with an addition of sawdust and other materials. The yield of fruit-bodies, which were very tasty, was relatively low. Dr. M. Semeraříeova, C. Sc., however, obtained some new strains which provided higher yields (Esser et al. 1974).

In order to improve mushroom cultivation considerable attention is being paid to obtaining the most productive strains of Agaricus spp., including A. bisporus, a species not usually cultivated up till now, which is suited for the cultivation at a higher temperature and is virus resistant. At the Mycological Station new strains of Agaricus spp. were obtained after irradiation of germinating spores with gamma rays (Staněk & Konštantová 1971).

The technology of substrate preparation is undergoing considerable changes, too. A method of composting "in tunnel" has been studied at the Mycological Station and introduced in practice with Agaricus and Pleurotus spp. The use of pig slurry for preparing the mushroom compost and of allylisothiocyanate for treating mushroom substrates has been studied and is already applied in practice.

In a series of papers the influence of moisture content in substrate, substrate composition and other factors on yields of oyster mushroom P. ostreatus and F. velutipes was observed (Jablonský 1974, etc.). The fruiting of P. ostreatus has also been investigated in substrates with various carbon dioxide concentrations (Sohánh et al. 1974).

Considerable attention has been paid to the study of mushroom diseases at the Mycological Station. The effect of allylisothiocyanate on germination of virus-containing basidiospores of A. bisporus has been investigated in order to examine its possible application against virus diseases of mushroom cultures, for instance by treating cultures before their
termination (Juzlová et al. 1974). At the beginning of 1971, already, a method for protection of mushroom cultures with benomyl against cobweb (mildew: Dactylium dendroides), bubble (Mycogone penicillosa) and verticilliosis (Verticillium malthousei) has been used with success (Staněk 1971).

References


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