

Present status and prospect for development of mushrooms in Korea

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The production scale of mushroom cultivation in Korea is approximately 600 billion won, which is 1.6% of the Korean gross agricultural output. Annually, ca. 190,000 tons of mushrooms are harvested in Korea. Although the numbers of mushroom farms and cultivators are constantly decreasing, the total mushroom yields are increasing due to the large-scale cultivation facilities and automation. The recent expansion of the well-being trend causes increase in mushroom consumption in Korea: annual per capita consumption of mushroom was 3.9kg ('13) that is a little higher than European's average. Thus the exports of mushrooms, mainly *Flammulina velutipes* and *Pleurotus ostreatus*, have been increased since the middle of 2000s. Recently, however, it is slightly reduced. However, Vietnam, Hong Kong, the United States, the Netherlands and continued to export, and the country has increased recently been exported to Australia, Canada, Southeast Asia and so on. Canned foods of *Agaricus bisporus* was the first exports of the Korean mushroom industry. This business has reached the peak of the sale in 1977-1978. As Korea initiated trade with China in 1980, the international prices of mushrooms were sharply fall that led to shrink the domestic markets. According to the high demand to develop new items to substitute for *A. bisporus*, oyster mushroom (*Pleurotus ostreatus*) was received the attention since it seems to suit the taste of Korean consumers. Although log cultivation technique was developed in the early 1970s for oyster mushroom, this method requires a great deal of labor. Thus we developed shelf cultivation technique which is easier to manage and allows the mass production. In this technique, the growing shelf is mainly made from fermented rice straw, that is the unique *P. ostreatus* medium in the world, was used only in South Korea. After then, the use of cotton wastes as an additional material of medium, the productivity. Currently it is developing a standard cultivation techniques and environmental control system that can stably produce mushrooms throughout the year. The increase of oyster mushroom production may activate the domestic market and contribute to the industrial development. In addition, oyster mushroom production technology has a role in forming the basis of the development of bottle cultivation. Developed mushroom cultivation technology using bottles made possible the mass production. In particular, bottle cultivation method using a liquid spawn can be an opportunity to export the *F. velutipes* and *P. eryngii*. In addition, the white varieties of *F. velutipes* were second developed in the world after Japan. We also developed the new *A. bisporus* cultivar "Sae-ah" that is easy to grown in Korea. To lead the mushroom industry, we will continue to develop the cultivars with an international competitive power and to improve the cultivation techniques. Mushroom research in Korea nowadays focuses on analysis of mushroom genetics in combination with development of new mushroom varieties, mushroom physiology and cultivation. Further studied are environmental factors for cultivation, disease control, development and utilization of mushroom substrate resources, post-harvest management and improvement of marketable traits. Finally, the RDA manages the collection, classification, identification and preservation of mushroom resources. To keep up with the increasing application of biotechnology in agricultural research the genome project of various mushrooms and the draft of the genetic map has just been completed. A broad range of future studies based on this project is anticipated. The mushroom industry in Korea continually grows and its productivity rapidly increases through the development of new mushrooms cultivars and automated plastic bottle cultivation. Consumption of medicinal mushrooms like *Ganoderma lucidum* and *Phellinus linteus* is also increasing strongly. Recently, business of edible and medicinal mushrooms was suffering under over-production and problems in distribution. Fortunately, expansion of the mushroom export helped ease the negative effects for the mushroom industry.