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10 million mushroom farmers can't be wrong. Can they?

Siu Wai Chiu and David Moore

Department of Biology, Chinese University of Hong Kong, Hong Kong S.A.R., China and School of Biological Sciences, The University of Manchester, U.K.

Lentinula edodes (shiitake or shiang-gu) is indigenous to China and was first cultivated there more than 800 years ago. Today, China accounts for about 70% of world production, this amounting to 91,500 metric tonnes of the dried crop, ten times that in fresh weight, in 1997. One-third of the Chinese production is exported, and makes a significant contribution to the income of peasants in China. Shiang-gu is about the third most popular cultivated mushroom in the world - consumed throughout China, Taiwan, Japan and Korea with increasing worldwide popularity. The crop is grown mostly by open outdoor cultivation using wood logs on a very large number of small farms (one commentator suggests there are 10 million mushroom farmers in China!). The industry raises several conservation issues which our recent analyses of molecular and conventional genetic markers have addressed. A very limited gene pool is exploited in the cultivated strains in China, yet there is an enormous biodiversity in the species in the wild. *L. edodes* strains show strong somatic incompatibility reactions and individual territories can be small (a few hundred mm). The widespread nature of the species and absence of other means of dispersal indicate that basidiospores are the major, even only, method of natural distribution. As the crop is harvested *after* initiation of basidiospore release and the crop is grown outdoors, cross contamination between wild and cultivated strains is inevitable. This puts the natural gene pool under threat. A broader conservation issue is that most peasant farmers simply cut their logs from unmanaged wooded hillsides. Our studies suggest that a move to indoor cultivation, less dependence on multispore spawns and exploitation of a wider range of natural genotypes would better safeguard both cultivated and natural populations of the fungus and avoid denuding hillsides of mature trees.