New edible fungi from Southeast Asia: discovery to production

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Purpose: The forests of Southeast Asia have the potential to be a rich source of cultivatable edible fungi. Although significant amounts of research on the taxonomy and phylogeny of edible mushrooms have been carried out, far fewer studies have focused on the domestication of wild fungi. Today, the most commonly cultivated strains are temperate species, but tropical and subtropical mushrooms are both abundant and highly diverse, with many species having long histories of human consumption. In addition, many new species have recently been introduced to science, including numerous species of high nutritional and medicinal value. The domestication and cultivation of tropical mushrooms therefore provides an enormous opportunity for Southeast Asian countries. Most tropical and subtropical mushrooms, if provided with appropriate conditions, grow and produce fruiting bodies more quickly than temperate species. Tropical and subtropical mushrooms can be produced using cheap, readily available waste products such as sawdust, corn cobs, rice straw, sugarcane bagasse, and other forest and agricultural residues, making them an ideal crop for smallholder farmers.

Methods: We have collected and isolated numerous strains of wild mushroom species from Southeast Asian forests, and have published some initial results documenting our progress in domesticating these species.

Results and conclusions: We showed for the first time that it is possible to domesticate the following fungi: Pleurotus giganteus; a new Thai-French hybrid strain of Agaricus subrubescens; A. flocculosipes; A. subtilipes; Auricularia thailandica; A. cornea (white); Panus roseus; Macropleiota dolichaula; Ganoderma austreale; G. resinaceum; G. gibbosum and G. leucocontextum. These discoveries may create new opportunities for the mushroom growing industry and for smallholder farmers in Southeast Asia in particular.