widely distributed than the literature presently indicates.

Natural Habitat: Grows in soils rich in lignicolous debris, in mixed woods, well-composted soils, and along forest edges. This mushroom is a complex saprophyte and prefers composting soils rich in plant debris. Also grows in well-manured grasslands.

Microscopic Features: Spores chocolate brown in deposit, nearly ovoid, **5 x 4** u. Cystidia few. Basidia four-spored, heterothallic mating system.

Available Strains: Strains are circulated through private collections and are generally not widely available. Most strains originate in Brazil, and have been further refined in Japanese and Chinese laboratories. Strains that sporulate late in their development are advantageous for maintaining air quality in the growing **room,** limiting cross contamination and fly infestation, and extending shelf life of the crop after harvest.

Mycelial **Characteristics:** Longitudinally striate mycelium, with radiating rhizomorphs overlaying a cottony mycelial undergrowth. Rhizomorphic mycelia in culture produces hyphal aggregates and pseudo-primordia after one month of incubation on **2%** MEA, which fail to enlarge to maturity. Becoming loosely aerial in age, mycelia often exude a yellowish, almond-smelling metabolite. When subculturing this strain, **some** cultures abort in growth due to unknown factors. Maintaining strains closest to its genetic origins is strongly recommended. Repeated subculturing can lead to mutations and senescence.

Fragrance Signature: Musty grain with almond overtones.

Natural Method **of** Cultivation: Mound culture of this mushroom has been practiced in Brazil for the past twenty years. This mushroom benefits from soil microflora and warm temperatures, making it an ideal candidate for outdoor cultivation in the tropics and subtropics during the warmest months. Himematsutake is a prime candidate for the ever-expanding model of mycopermaculture as first described by Stamets (1993), and could be incorporated into the recycling systems of agriculturally based communities.

Recommended Courses for Expansion of Mycelial Mass to **Achieve** Fruiting: Standard techniques as for many other species: agar culture to grain, then grain-to-grain transfers. Mushrooms can **be** generated on rye grain, laid into shallow trays, and cased with unpasteurized soils, although compost-based substrates generate higher yields. Fermentation of straw, supplemented with corn meal and/or urea and/or ammonium nitrate is the basis of a standard formula used in Japan. Sterilized sawdust cultivation is shown here for the first time.

Suggested Agar Culture Media: MYPA

1st, **2nd, and 3rd** Generation **Spawn** Media: Cereal grain spawn throughout, with excellent growth on whole rye grains.

Substrates for Fruiting: Enriched composts or pasteurized substrates supplemented with nitrogenous additives (bran, urea, chicken manure, ammonium nitrate, etc.). Like the button mushroom, *Agaricus blazei* is a secondary decomposer and a lover of well-composted, nitrogen-rich substrates that are then pasteurized and inoculated with grain spawn. In Brazil, Thailand, and elsewhere in the tropics, the composting process is aided by naturally high temperatures, and Phase II is sometimes aided by utilizing solar energy. The composting methods are similar to those described for *Agaricus brunnescens* as outlined in *The Mushroom Cultivator* (Agarikon Press, 1983), co-authored by myself and Jeff Chilton, and *Modern Mushroom Growing* by P. J. C. Vedder (Educaboek, 1978). Composts achieving a 1.5-2% nitrogen level, post Phase II, are ideal. A simple substrate, described in Stamets (1978), is fresh, week-old leached cow manure, commonly available at dairies for a few dollars per truckload. This ready-made substrate is pasteurized at 140-150°F (60-66°C) for a day, and then conditioned at 120-125°F (49-52°C) for two days until the ammonia dissipates. Upon cooling below 95°F (35°C), spawn is mixed through at rates varying from 1 to 2 cups per square foot.