



Himematsutake growing in Japan on sterilized substrates.

Iwade and Mizuno (1997) proposed a compost formula suited for indoor cultivation that consists of mixing together 375 kg of chopped straw, 10 kg rice bran, 15 kg chicken manure, 8 kg lime, 10 kg ammonium sulfate, and 5 kg superphosphate, to which 700-800 kg water is added. These ingredients are mixed together with temperatures rapidly escalating. The baseline temperatures should not exceed 140° F (60°C), and the pile is turned every few days to insure controlled thermogenesis between 131-140° F (55-60° C). After one week, when the temperature of the compost plateaus and descends to 122° F (55° C), the compost is brought indoors and the temperature elevated again in a well-sealed room to 140°F for 48 hours as a Phase II fermentation. This second elevation in temperature insures the destruction of pest organisms and the promotion of thermotolerant microbial allies. The room is then well ventilated, and when the compost temperature drops to below 86° F (30° C), inoculation with grain spawn can commence. Many of the standard formulas for the

Button or Portobello mushroom will work well for *Agaricus blazei*.

Since heat-sensitive bacteria are essential for fruiting, untreated casing soils are recommended. Canadian sphagnum peat moss amended with 10% gypsum (by volume) produced a good casing with natural resistance to *Trichoderma* contamination. A method to promote primordia is to add a simple water extract of microbially enriched soil directly to the casing layer. Take 2 pounds (1 kg) of soil, add one gallon (4 liters) of water, and then screen through a coarse filter (i.e., a coffee filter or sock), diluting this extract by a factor of ten. Sprinkle 1 gallon of this diluted soil extract evenly over 10-20 square feet of casing layer one week after application. A novel bacterium, yet to be typed, (Bacterium '864': see Chen et al. 1999), appears necessary for primordia formation, similar to the beneficial activity of *Pseudomonas putida* in *Agaricus brunnescens*. When casing soils are heat-treated, *Agaricus blazei* will yield few if any mushrooms.

**Recommended Containers for Fruiting:** Plastic "mega-bags" weighing from 22-50 pounds (10-23 kg) and/or plastic or wooden trays. Trays should have adequate drainage and a layer of porous, non-organic material for aeration (i.e., perforated plastic) to prevent anaerobic activity in the depths of the substrate, especially since this mushroom is grown at comparatively higher temperatures than, for instance, *Agaricus brunnescens*.

**Yield Potentials:** Current biological efficiencies are estimated to average 50-75%. Iwade and Mizuno (1997) reported yields of 30-50 kg sq. meters (= 1.8-3.1 pounds/sq. feet). On supplemented sawdust, 1 pound (.5 kg) of mushrooms can be harvested from 5 pounds (2.5 kg) of substrate. Mushrooms more often form in clusters than singly. The first mushrooms formed by *Agaricus blazei* are much larger in stature than those seen in the first flush of *Agaricus brunnescens*. Outdoor cultivation biological efficiencies may be less, but given the expanse of compost beds that can be laid out, inexpensively, in humid, subtropical and tropical environments, outdoor cultivation can be proportionately more profitable. The window of opportunity for outdoor