The Impact of Physicochemical Properties of a Paper-Based Casing Material on the Growth of *Agaricus bisporus* (J. Lge) Imbach

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Compost containing *Agaricus bisporus* (J. Lge) Imbach mycelium is stimulated to form fruiting bodies by the placement of a typically peat-based casing layer over the compost layer. This casing layer needs to exhibit specific structural characteristics to maintain the subphase mycelial growth and stimulate fruiting, both initially and for subsequent flushes. Although peat has traditionally been used as the base for many commercial casing products, increasing environmental and economic concerns have prompted the search for alternative materials that can be used for this purpose.

A series of alternative casing layer blends have been developed using brown coal, recycled newsprint, and composted green waste. The blends were formulated with varying amounts of each component, with efforts being made primarily to simulate the important physical proper-ties of the casing layer, namely bulk density and porosity. The chemical properties of the blends, such as pH, moisture, specific electrical conductivity, and carbon/nitrogen content, along with hydrological or structural characteristics such as water-holding capacity and wettability, were also evaluated.

It was found that a range of developed casing blends possessed the appropriate physical and chemical characteristics such that fruiting of *A. bisporus* was obtained. It was also found that blends containing higher proportions of brown coal resulted in higher yields of fruiting bodies, comparable to those obtained using a commercial peat-based casing product. These blends also resulted in the production of fruiting bodies that were relatively uniform in size and shape, two important considerations in commercial mushroom production.