

# Log Culture of *Auricularia Polytricha* Utilizing Different Woody Substrates in Hawaii<sup>1</sup>

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Production of high value timber products does not generate revenue until the first harvest, often requiring 20 or more years. The development of non-timber forest products has the potential to offset negative cash flow, lower risk, and result in greater economic and biological diversity than production of a single timber product. However, development of multiple product forest cropping systems is complex and requires enhanced scientific understanding and management skills.

Wood ears (*Auricularia polytricha*), also known in Hawaii as pepeiao, are the fruiting bodies of saprophytic fungi that grow on a number of different hardwood species in Hawaii. Pepeiao are used in soups and stir-fry dishes and are popular in oriental cuisine in the USA and Asia. We have developed a production system that can be adapted for forest understory as a secondary crop.

Pure cultures of the fungus were obtained from spores produced by wood ears collected in the wild in Hawaii. The fungal mycelium was grown on agar and stored at 18°C. For inoculation of koa and other logs, a method of bagasse with 2% wheat bran added. Spawn

cultures in boxes were inoculated with agar plugs from the mycelium culture and grown for one to two weeks at room temperature. The small boxes of spawn were used to inoculate large (1 gal) plastic bags of spawn. *Acacia koa* (koa), *Aleurites moluccana* (kukui), and *Hibiscus tilicea* (hau) logs were selected as substrate for the cultivation of pepeiao. The logs were cut into roughly 3 foot lengths and holes 2 cm deep were drilled and spaced at 4 inch intervals along the axis into each log.

The spawn culture was packed into the holes and sealed with paraffin to prevent drying. The logs were then placed in the forest understory in a shady, humid environment. After three months, wood ears began to appear on the logs and they are harvested every one to two weeks. Production data indicate significant differences in fruiting body yields from the different woody substrates. All woody substrates produced fruiting bodies, however, most prolific production was from *Aleurites moluccana*, which had yields almost 8 times greater than *Acacia koa*. *A. koa* produced fruiting bodies earliest and *Hibiscus tilicea* only produced a small number of fruiting bodies.

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