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On-Farm Study of Small-Scale Mushroom Cultivation as a Means of Creating a High-Quality Soil Amendment from Wood Products

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Small-scale agriculture faces an altogether different set of issues than conventional agriculture; one such issue is fertility management. In low overhead market gardens, the expense of a tractor is often not justifiable and compost management can become labor intensive. Thermo-composting requires moving large volumes of material in a time sensitive manner. In addition, compost ingredients such as manure and food scraps can be difficult to handle and odiferous and must be carefully managed so as not to become a health hazard. Alternatively, by cropping mushrooms on woody products, the labor of compost production can be pelletized. Mushroom compost offers a safe and environmentally benign alternative to composted manures and food scraps, while reducing physical strain.

Worldwide, mushroom cultivation has been used to manage agronomic waste products while simultaneously obtaining food and profit. This feasibility study examines the logistics of small-scale oyster mushroom production on the diversified farm.

For the purposes of this on-farm study, two model systems are being examined, one using pasteurized rice straw and the other pasteurized alder (chips/sawdust/supplemented). For each of these systems the hours of labor, operating expenses, yields, biological efficiency, duration of incubation, duration of fruiting, and amount of compost produced (kg spent mushroom substrate) will be documented.

Spent mushroom substrate will be applied directly to the field after cropping. Spent mushroom substrate will be tested for nutrient composition over a 6-month period. Samples will be taken once a month for straw and woodchip substrates.

Due to factors such as mushroom strain, substrate, environment, and technique, results will vary from system to system. However, this study will provide some indication of the amount of labor, finances, and facilities required for mushroom cultivation. Findings will be synthesized into a poster presentation. This presentation will encompass the feasibility study results and a discussion of alternative applications of spent mushroom substrate on the farm. The discussion will include results from an on-farm trial using mycelium as a dietary supplement in pastured poultry.