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Final Narrative Report

This project was intended to be a demonstration of an integrated agroforestry endeavor and it involved a very labor and time intensive approach for start-up. However, it is expected to be an ongoing venture based upon the initial practices and goals. Although the project met with some unexpected barriers, overall it was a success and served as learning opportunity to avoid costly mistakes in the future.

The primary economic focus of the project was the establishment of ginseng production areas on previously abused lands. Factors to consider included the biological needs of ginseng and other native medicinal plants and the deficiencies of the land itself. The land used for this project presented a geographical challenge to start with as it was a sharply sloped south-facing hillside. The tree species, primarily oak, also presented problems as the course leaves tend to smother ginseng and to make the soil too acid. The soil itself was primarily devoid of nutrients; predominantly dry sand and/or yellow clay. The success of this project hinged upon successfully addressing these problems.

In the Spring of 1999, the underbrush of greenbriers and multiflora rose was cleared out. Then, grids of soil tests were conducted. The soil analysis revealed a PH of less than 3.0 in most areas with very low organic matter and no calcium or magnesium. The soil also showed very poor moisture holding ability.

To improve the soil, three tons of lime per acre were applied and worked into the soil. Organic matter was applied by the truckload and included commercial mushroom compost, horse manure, sawdust, straw, and leaves. Raised beds were constructed up and down the slopes by hand digging ditches. A total of over 400 trees were planted over the project term on areas where the canopy was insufficient to produce enough shade.

The beds were planted in the Fall and soil amendments were periodically added until the moisture levels were suitable for woodland herbs. In the Spring of 2000, about 90% germination occurred. The goldenseal and ginseng remained healthy and vibrant through out the growing season. The incorporation of shiitake mushroom logs proved beneficial where the canopy was light and could be moved around as needed. The logs will become more integrated as they start to decay and leach organic nutrients to the plants. In the meantime, the mushrooms themselves have become a valuable resource, producing 25-50 pounds per week in season.

Nearly 1000 mushroom logs have been inoculated and 15 lbs. of ginseng seed, 40 lbs. of goldenseal root starts, and 50 lbs of black cohosh have been planted. In addition, maiden hair fern, beech fern, wood lily, yellow lady slipper, jack in the pulpit, blood root, anise root and other woodland plants have been introduced. The land has become restored and should continue to improve into the future.

Problems encountered have involved primarily predation on plants and trees. The first planting of trees resulted in nearly a total loss due to drought and deer predation. Deer ate approximately one fourth of the new ginseng as well. The installation of a small solar powered electric fence eliminated the deer problem. A second planting of trees has been successful and most plants are expected to return healthy in the Spring of 2001.

The outreach process has been extensive with two tours of the growing area, discussions at Soil Conservation meetings, conducting two workshops for a non profit organization in a economically depressed area, attending a ginseng conference in Catskill, NY, and working in collaboration with Dave Cooke of West Virginia University Extension.

Early findings of the project include the demonstration of the importance of high levels of organic matter and calcium for these plants. Beds with higher concentrations hold plants with better color and general health. Trees growing on this site show tremendous growth during the past year due to improvements of the soil. Erosion has been eliminated. Water retention in the soil is greatly improved, holding adequate moisture even during longer periods without rain. In addition, it was demonstrated that ginseng could be successfully grown on a south facing slope, turning nonproductive hillside into an integrated, sustainable production site. Furthermore, this process shows promise of applicability in restoring areas which have been subjected to surface mining although the establishment of adequate reforestation would be more long term.

I am pleased to have had this opportunity and will continue my efforts in sustainable agroforestry and in sharing the results with others. I hope to expand the production area further this winter.