

### Abstract

This study aimed to (1) improve productivity and fertility remediation technology in agricultural areas of the community for examine the sustainable agriculture system, (2) impel the development process of rice- bank by the community (3) study the value alternative plant and (4) collection, conservation, restoration and utilization of the local knowledge and biodiversity. From the study of local seeds quality production in field showed that the average yields of rice were 550 kg / ha., then planted in the rain season 2558. The efficiency of mycorrhizas in upland rice's potassium (P) uptake showed the infected mycorrhiza strain *Glomus Mossae* had high effective. Remediation of fertility in rice field were experimented on soil and water conservation system in 2 upland rice farmers. In the conservation and biodiversity utilization were restored of 13 rare plants in the community; food plant 3 species and herbs 10 species, and 4 indigenous plants were translated from Doi Chang to Wadogro communities. The reserve area of local plants was performed by community, about 41 plants could classified by utilization, 2 food plants, 6 medicinal plants, 30 medicinal food plants and 4 other plants (belief ritual) and taught about the advantages and utilization of them by the wisdom man in the community. For mushrooms cultivation, rice straw materials were chose for making spawn in plastic bag, and inoculated the mycelium of straw mushrooms. The mushroom cultivation in the growing house was performing in 2 areas, Mae Ra Meung and Wa Do Kro. And training to mycorrhizal mushroom cultivation by inoculated mycelium with the host plants. Basic health care found that the community had 2 kinds of the potential traditional herbs and medicine for used, and 1 traditional medicine for malaria. Textbook of 105 highland local plants and medicinal plants were printed. The rice bank was set up by 19 members from Wa Do Kro for solve the lacked rice to consume, according to His Majesties bestow on the first rice bank of Thailand at Pa Pae, Mae Sa Reang, Mae Hong Son province.

**Keywords:** Food Security, income household increased