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PREVENTION OF LAHAR FLOWS AND AGRICULTURAL DEVELOPMENT IN THE DISASTER-STRICKEN AREA OF MT. PINATUBO EXPLOSION, IN THE PHILIPPINES

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Mt. Pinatubo, a volcano located in the middle of Luzon Island in the Philippines, erupted violently in June 1991 after lying dormant for 600 years. At least 250,000 families totaling more than one million people suffered from the eruption. The gigantic eruption, which released more than seven billion m^3 of ejecta, totally changed the natural environment within a radius of 60 km from the volcano. Hills were covered with volcanic ash and valleys were completely buried by lahar. Temporarily, the lush green colors of the vegetation completely disappeared.

People of the Aeta tribe, aborigines of the Philippines, who were living in the Pinatubo mountains and revere Mt. Pinatubo as the divine mountain " Apo Na Mariyari ". The Aeta were forced from their villeges by the eruption and must now live in evacuation centers and other resettlement areas provided by the Philippine government. Drinking water is still not sufficently safe and they are totally dependent on aid for foodstuffs and medical treatment. The tiny children live frightened lives in the gloomy shanties. Surrounding the camps is barren land and the people have no farm tools for cultivation. The Aeta cannot return to the Pinatubo area for fear of further lahar flows. Disease and starvation haunt them if they stay where they are.

During the dry season, volcanic ash on the ground is blown by the wind while the cracked lahar adheres to the ground and inhibits any sort of natural revegetation. In the rainy season, the ash and lahar turn to fierce avalanches that can destroy homes.

An urgent priority is to promote afforestation, plant grasses and other erosion controls, and construct embankments, shore protection, and debris barriers to prevent avalanches. The assistance we should now give is the reestablishment of agriculture and the restoration of a high quality of vegetative cover to the devastated lands as well as the prevention of lahar flows.

Planting kudzu-vine is a promising method to consolidate the soil surface. Kudzu-vine (Pueraria lobata OHWI) grows wild widely on the moors and in the hills of Japan. It rapidly extends its long stems in every direction and roots at its nodes to anchor the stems to the ground. Kudzu-vine forms a so-called solid " network " which is comprised of overwintering stems and nodal roots. It prevents the spread of volcanic ash and lahars. Also, since kudzu-vine is a nitrogen-fixing plant, producing nodules on its roots that capture nitrogen from the atmosphere, planting kudzu is very effective to improve the devastated lands. Sustainable agriculture will then be started in the improved lands. Also, the high protein content of kudzu leaves make it a useful fodder for livestock. Once kudzu stands are established, the Aeta people could raise water buffalo, cattle, sheep, goats, pigs, rabbits, and domestic fowl. This will contribute animal protein resources for the Aeta.

In Japan, a seed collection campaign is under way in which many people can participate. Through this campaign, the good will in the hearts of the people will swell and grow, tying together the people of the Philippines and Japan, and hopefully inspire the world community to action.

The experience, knowledge and technology accumulated during the implementation of lahar-flow prevention measures in the Pinatubo mountains must be applicable when considering the worldwide problem of " desertification " or land degradation. With this opportunity of kudzu planting project in the Pinatubo mountains, I hope that there will be a stronger desire to investigate more appropriate plants for preventing soil erosion and other practical aspects of biotechnology.

At the present time, it is forbidden to enter the area within a radius of 10 km from Mt. Pinatubo, but people will be able to enter before long. The question is what sorts of agriculture can the Aeta people conduct in the ravines buried with lahar and on the rocky mountains where only cogongrasses grow vigorously. My recommendation is to introduce kudzu plants into vast cogon-grasslands surrounding Mt. Pinatubo. It would improve the nutritive value of herbage and the paratability of livestock, so that the livestock productivity of the grassland is enhanced. This will lead to self-sustenance of the Aeta tribe as a stock farmer.

It may be good to adopt a homegarden style of cultivation for the Aeta tribe to become sufficient in their supply of food. Homegardens are distributed widely in the humid tropics of Southeast Asia, centering in Indonesia. It forms the mainstay of the agricultural production system along with paddy rice cultivation. The homegarden style farming is said to be favorable for maintaining the ecosystems of farming villages in the tropics. This farming systems is characterized by growing crops together, which include fruit trees such as banana, coconut palm and pineapple, starch crops such as cassava, taros, yams, and maize, vegetables, spice crops and medicinal crops. It is not difficult for the Aeta people to introduce this kind of farming system if they can make good use of their experience in shifting cultivation.