Abstract

Due to diverse geography, natural resources and ethnicity, Highland Research and Development Institute (HRDI) has classified agro-ecological zone in the highlands based on major crops cultivation into illicit crop, agroforestry, maize-upland rice, upland paddy and other. Area-based approach is a methodology aiming to solve emerging problems and enhance existing potentials. The pilot site of illicit crop-based zone has conducted in Kun Tuen Noi Development Centre located in remote Omkoi District, Chiangmai where poor Karen communities has depended on rice cultivation and forest products. Poppy opium is illicitly cultivated in the area. In 2010, HRDI started extension program improving rice productivity and Arabica coffee as an alternative cash crop. Rice yield increased by 44.9% in 2016/2017 while Arabica coffee generated by 3,900 kg. Opium poppy reduced by 65.83% in 2015/2016 (Narcotic Crops Survey Office, 2016)

Agriculture system of Kun Tuen Noi disclosed risk and opportunity for development. In productivity aspect, plant hopper outbreak affected upland paddy rice yield decrease by 20-35% in 2015/2016. Regarding stability of organic Arabica coffee, a major cash crop, soil fertility is high priority to ensure consisting yield and quality. As for equity dimension, only 40% of total population gains benefit from the extension of Arabica coffee due to farm feasibility. The participatory research program conducted with 32 farmers in 4 villages comprises of 3 sub-projects; integrated pest management (IPM), soil fertility improvement in organic Arabica coffee farming and alternative crops. The IPM in upland paddy sub-project compared integrated mechanic, agronomy, agro-engineering, biology practices in plant hopper control with the farmer practices. Rice yield will be collected in Nov.-Dec.2017. For soil fertility, the study compares impact of tailor-made compost with commercial ones in taken by coffee plant at flower inducing, pre-cherry and pre-harvesting stage. Avocado (Hass and Buccaneer), mango (E2E2, Nuankham, Chok Anan) and persimmon (P2, Fuyu) were tested in different micro-elevation of 800-1,000 metre. The first-year test revealed that Hass avocado grew well at the two elevation while grafting technique of mango resulted better growth than transplanting of new seedlings. After paddy cultivation experiment showed that sugar snap pea, string bean, coriander and Cantonese were most feasible in farming and marketing aspects.

The study research program empowered social learning of farmers acknowledging potential of local physical and climatic assets. Mostly, the farmers realized their competency developing appropriate agriculture technology for their communities through the research cycle; problem identification, planning,

experiment conduct, observation and conclusion. Moreover, more Karen youth and housewife participated in the research program.

Keywords: agroecology, area-based, community participation