Abstract

The development of suitable alternative crops on sloping area by farmer participatory approach in Nan province was objected to survey geographical data, crop cultivation, economical and social data from the maize targeted farmers, including the effects on eco-agricultural system, which used to analyze the new alternative way replacing maize production. The local network in Nan province had focused these activities on the target area in Na Noi, Wieng Sa, Santisuk and Pua districts in the period of March-August 2008.

The land usage was classified by Landsat 5 (Thematic Mapper systems) with 25 meters of resolution covering all targeted area. It resulted that the agricultural area for maize crops in these districts almost increased comparing with maize area in 2004 (Santisuk= +2.53%, Wieng Sa = +2.96%, and Na Noi= +5.97%), except in Pua district (-3.27%). But Pua had more fruit crops (+0.87%) and transplanting rice area (+0.16%) whereas the others had less both crop area . All targeted districts had more evergreen forest (Santisuk +0.34%, Wieng Sa +2.93% and Na Noi +1.27%), except Pua (-4.39%). However, Pua was more the deciduous forest (+6.43%), deciduous dipterocarp forest (+0.70%) and tropical evergreen forest (+0.06%). It may change some decreased forest area, especially the forest steppe to be agricultural area.

The impact from maize cultivation on water resource and soil in all target maize area were found to be still suitable conditions. There were nitrate value (0-0.5 mg/L) and pH (7.0-7.5) of water samples. And about soil fertility value, it found that organic matter content in the forests of Wieng Sa and Na Noi district increased twice high more than their maize field. But only in Pua maize field had higher than the forest (3.57 and 2.94 g/100g, respectively). Wieng Sa district had the same organic matter as in the forests (; 3.80-3.94 g/100g). Soil pH value in the forests of Wieng Sa and Na Noi were lower than in the maize field. Whereas Pua and Santisuk had the same soil pH value in both area.

All farmers in the target slope area had mainly earned with maize income for many years, more than 10 years and followed ancestor advice. They had only House-hold labors to grow maize. The way of their living was still nearly agricultural social harmony and cultural conservation. Almost Their area was without the agricultural land ownership documents. The average maize yield was about 550-1,300 kg /rai which got income about 2,000-5,150 bath /rai. Whereas, they had input cost about 1,100-3,500

bath /rai. The cost of chemical fertilizer, applying after emergence, was most important, following by the basal chemical fertilizer and herbicide, respectively. However herbicide application was high frequently in the field. The important effect on ecological system was wild animal and bird disappeared, high weed invasion, shallow water resource and unused water. Almost maize cultivation was faced on drought, soil surface erosion and firing. On the others, it effected on social community, more higher cost, high income but more high in debt, and less their self earning.

All local network members agreed that maize crops were still grained for farmer earnings. Whereas, they got the same opinions as following, to protect and conserve the natural resource, to increase maize yield only in their decreased slop area with soil fertility improvement, and to substitute some new economic tree-crops or fuel crops for maize crops.

All leader maize farmers concerned seriously to make a sacrifice and lavish for maize cultivation, having good cost of material and acceptable source of investment funds, improving soil fertility and suitable natural management, including to receiving some information about crop management, weather forecasting, and new alternative and good substitute crops income.

For analysis on new alternative agriculture replacing maize crop in steepen area by local network participatory in the targeted district, the analysis hierarchy process (; AHP) was used to find out. It found that the “marketing and price level” was the decision criteria which all networks recommended. The “sustainability of alternative agriculture” criterion was also selected. In the final, it resulted that the “combination of agriculture”. alternative way was the first ordering selected by the networks from Wieng Sa, Santisuk and Pua district and was the third ordering in Na Noi district. It may concluded that the “combination of agriculture” should be the new and suitable of alternative way for replacing maize crop in sloping area of all targeted districts area in Nan province. And the pattern of this way may be possible to integrate the other alternative way which also was selected.