ABSTRACT

RACHMI WIDIRIANI. An ecofarming Model for Sustainable Farming System on Upland Agricultural Landuse Area. Supervised by SUPIANDI SABIHAM (Main Supervisor), SURJONO HADI SUTJAHJO and IRSAL LAS (Co-Supervisors).

The main objective of this study was to design an ecofarming model for sustainable farming system on upland agricultural landuse areas, both in Lembang, West Java and Dongko, East Java. The slopes of the land in both areas study were vary between 15%-45%. The first step of the study is aimed to analyze sustainability index of the research areas, using Multi Dimensional Scalling (MDS)-Rapfarm. For the second study, the dynamic system simulation is used as an approach to solve the complexity problem of upland agriculture which is threatened by erosion. The model was constructed by dominant variables as the result of leverage analysis and by five sub models analysis: LEISA (low external input for sustainable agriculture), sustainable agriculture practices, agribusiness-marketing, social capital and government rules.

The result of the MDS analysis showed that sustainable multi-dimension index of Lembang district was 35,47 and Dongko district was 24,16. These values indicated that the environmental condition of both study areas were categorized as not sustainable. Estimation of actual erosion rate in Lembang was 147,29 ton/ha/year and in Dongko was 245,95 ton/ha/year. The results of each sub model revealed if LEISA sub model is being implemented, so that the farmers of Lembang district will get benefit from organic matter processing up to Rp 6.844.278.833/year on average, meanwhile the farmers of Dongko district will get Rp.1.298.287.172/year approximately. The sustainable land management required an integrated management on land conservation, ideal ratio of perennial to annual vegetation as 25%:75%, and minimum livestock per acre for organic matter supply (8 cows/ha or 22 goats/ha). Alternative core-plasma cooperation between agro supplier and farmer is chosen to help the farmers in product marketing, as the market structure is olygopsony. The Government is required to provide more operational policies that clearly distinct the border of protected area and the area that used for agricultural activities such as farming and pasture. Social capital can be conducted by strengthen the local values as a basis for building component of trust, network relationship, and community co-operation. Thus, there were three recommended scenarios of eco-farming model created based on government decision, real condition in the field, and the limitation of community capabilities. Application of this model should be accompanied by an understanding of each sub-model that built the model, including a deep understanding on local values that applied in the communities.

Key words : upland farming system, erosion, dynamic model, eco-farming, sustainability