ABSTRACT

SUNARTI. Sustainable farming systems for Rubber and Oil Palm Planning in Batang Pelepat Watershed Bungo District Jambi Province. Under direction of NAIR NAIK SINUKABAN, BUNASOR SANIM, and SURIA DARMA TARIGAN

Land for rubber and oil palm farmings in Batang Pelepat watershed were generally cultivated without adequate fertilization and soil and water conservation techniques. This practice caused high erosion and in turn gradually decreased land productivity and farmer’s income. The objectives of this research were: (1) to identify land characteristics and farming systems of rubber and oil palm (FSROP) types, (2) to study impacts of FSROP on land characteristic, run off and erosion rate, crop production and farmer’s income and (3) to design sustainable FSROP. Identification of FSROP characteristics were carried out by using descriptive analysis. Impacts of FSROP on ROE was measured in small erosion plot and analyzed using variance analysis and Duncan New Multiple Range Test (DNMRT). The sustainable FSROP was formulated by simulation technique using universal of soil loss equation (USLE) and multiple goal programming models. The results of the research showed that farming system in Batang Pelepat watershed consisted of five types of rubber farming systems and two types of oil palm farming systems. All of those farming systems were not able to fulfill indicators of sustainable agriculture (ISA). Cultivated land resulted higher ROE than forest. However among the cultivated land sesap karet caused the lowest ROE (3.53 mm and 13.93 ton/ha/year). The sustainable FSROP could be accomplished by application of combination agrotechnologies including balance fertilization using urea, SP-36, KCl and MgSO4. Meanwhile, the ISA were accomplished by application of Legum Cover Crop (LCC) and contour cropping (on slope 3–14%) and LCC and gulud terrace (on slope 15–30%). The sesap karet I (mixed of rubber-manau-kayu sungkai) performed the most optimum ISA. The sesap karet I generated erosion of 0.61 – 3.46 ton/ha/year and the farmer’s income Rp18 320 000 –18 590 000/ha/year.

Key Word: agrotechnology, rubber, oil palm, erosion, run off, income