ABSTRACT

LUXMAN ARIEF. Land Use Planning and Coffee Based Farming Development for Sustainable Agricultural System in Ketahun Hulu Watershed Bengkulu Province, under academic supervision of SURIA DARMA TARIGAN and NAIK SINUKABAN.

Ketahun Hulu watershed is part of Ketahun watershed, administratively it is mainly located in Lebong district and a small portion of it is located in North Bengkulu and Rejang Lebong districts of Bengkulu province. This study was aimed to identify landuse and agrotechnology characteristics in Ketahun Hulu watershed, and to arrange land use planning and coffee based farming development for sustainable agricultural systems in the Ketahun Hulu watershed. To achieve a sustainable agriculture, there are 3 (three) indicators that should be fulfilled: a) total farmer’s income should be high enough support a life worth living, b) erosion should be less than tolerable soil loss (ETol), c) agrotechnologies should be acceptable and replicable to the farmers. This study was focus on intensive observation sites covering 14,844 hectares located in one of sub watershed that represent characteristics of the watershed. Land capability was evaluated using Klingebiel and Montgomery method, erosion was predicted using USLE equation developed by Wischmeier and Smith (1978), and farming income was analyzed using cash flow analysis method. Results of this research showed that predicted erosion in the existing cropping pattern and agrotechnologies in Ketahun Hulu watershed generally greater than ETol; it ranged from 2.47 – 683.18 tons/hectare/year while ETol was ranged from 13.45 – 36.38 tons/hectare/year. Total incomes of farmers were much lower than a decent income (Rp. 18.000.000,-/householder/year). Alternative agrotechnologies to meet the indicators of sustainable agricultural systems were recommended with two alternatives. To increase farmer’s income to meet the income of decent living, the source of income such as livestock was introduced in to the existing farming systems. Simulation of agrotechnologies show that alternatives of agrotechnology can reduce erosion to lower than ETol and to increase farmer’s income up to a decent income. Alternative agrotechnology 1 which consisted of grass strip plus litter mulch, fertilizer and livestock including 30 chickens and 5 goats can reduce erosion to lower than ETol (2.45 – 22.77 tons/hectares/year) and increase farmer’s income up to a decent living (Rp. 18.855.000,- to Rp. 24.915.000,-/householder/year). Alternative agrotechnology 2 which consisted ridge terrace plus litter mulch, fertilizer and livestock including 30 chickens and 5 goats can reduce erosion to lower than ETol (2.47 – 22.77 tons/hectares/year) and increase farmer’s income up to a decent living (Rp. 18.635.000,- to Rp. 24.695.000,-/householder/year). Spatial planning of recommended agrotechnologies was extrapolated into the watershed in Ketahun Hulu Watershed.

Keywords : Erosion, Sustainable Agricultural System, Watershed