

Energy Use Efficiency of Rice Farming Systems in Ampara District of Sri Lanka

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This research presents the outcome of an energy use efficiency analysis conducted for rice farming system of Ampara district in Sri Lanka during *Maha* season of 2006-2016 period. Secondary data published by the Socio Economic and Planning Center of the Department of Agriculture from 2006 to 2016 were used to obtain farm input and outputs. The secondary data recorded in the form of monetary values were converted to energy values using standard coefficients. Based on the crop establishment method, the farming systems in Ampara was divided into two sub systems; “*Manawari*” or dry seeding in Ampara east and wet seeding in Ampara west. The farm inputs in both systems were recognized as labor, machinery, fuel, agrochemicals, seeds and irrigation water. Rice grain yield and straw mass were considered as output. It showed that total input and output energy into these farming systems were about 32,051 and 144,624 MJ/ha in Ampara east while it was 31,246 and 130,565 MJ/ha in Ampara west. The highest energy input was accounted by nitrogen fertilizer, which is 47.47 % in the east and 50.56 % in the west. It was revealed that nitrogen fertilizer utilization of rice farms of the targeted area is considerably higher in terms of energy inputs. The finding showed that efficient use of nitrogen fertilizer input is vital to move towards the sustainability. The system energy efficiency in both systems were greater than four, which was an average value compared to other rice farming systems in the world. The energy efficiency analysis showed that it is a convenient tool to quantify and compare different rice farming systems without influences from monetary escalations across time and regional boundaries.

Keywords: Energy efficiency, Energy input, Energy output, Rice farming, Sri Lanka