**An Analysis of Energy Balance of the Teaching Farm of Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka**

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Agriculture requires energy as an input for production. Efficient use of energy inputs helps to improve more efficient, sustainable, and environmental friendly production. Also, it contributes to the economy and profitability. The objectives of this study were to evaluate the energy balance of crop and livestock production, net energy ratio (NER), and water use efficiency of crops from the period of 2020 – 2022 using the life cycle assessment (LCA) approach on the farm of the Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka. In this study, inputs and outputs used in the calculation of energy in crop production include human labor, seed, fertilizer, pesticide, machinery, electricity, crop products and their residuals. The inputs used in the calculation of energy in livestock production include human labor, amount of feed, and electricity while milk, eggs, meat produced and manure are considered as output energy. Data were obtained from farm records, communications with farm laborers, and previously published literature. The results showed that the total average energy inputs, outputs, and energy balance in crop production (GJ year-1 ) were 75.71 (400.24 GJ ha-1year-1), 107.06 (717.11 GJ ha-1year-1 ), and -31.35 (-316.87GJ/ha/year) , respectively. Total average energy inputs, outputs, and energy balance in livestock production (GJ year-1) were 867.44, 108.70, and 758.73 , espectively. The water use efficiency (WUE) of crop production was -31.35 MJ m-3. The total energy balance of the faculty farm was 736.2 GJyear-1. The net energy ratio (NER) of the crop production, livestock production, and overall farm were 1.71, 0.13, and 0.23 respectively. The results of the study indicate a negative energy balance in crop production (-31.35 GJ year-1). It indicates energy efficiency in crop production is good. The energy balance in livestock production and overall farm show a positive energy balance (758.73GJ year-1, 736.2 GJyear-1, respectively ). It means that the energy efficiency of livestock production needs to develop.

**Keywords:** *crop production, energy balances, life cycle assessment, livestock production*