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EFFICIENCY OF LIQUID ORGANIC FERTILIZER FROM POULTRY SLAUGHTER WASTE AND JEEVAMURTHA IN HYDROPONIC CHILLI CULTIVATION

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ABSTRACT

Sri Lankan agriculture sector is vital to the country's economy but faces challenges: expensive inorganic fertilizers, limited land availability, climate change and disease outbreaks leading to reduced local agricultural production. he increasing population leads to a demand for food. It shows the requirement of sustainable agricultural development. Improper livestock waste management contributes to environmental pollution. This study proposes organic farming combined with modern agricultural technology and livestock waste management as a solution. To make hydroponics more affordable, the study focuses on liquid organic fertilizer production from poultry slaughterhouse waste and cattle farming waste. A non-circulate hydroponic system is used for chilli cultivation evaluating two liquid organic fertilizers: "Poultry tonic" and "Jeevamurtha." Four treatments were used with controller, Albert's solution used as control. Treatments 2 and 3 using poultry tonic at dilution concentrations of 75 ml/10 L and 50 ml /10 L. For Jeevamurtha treatments (Treatment 4 and 5) two Sri Lankan Department of Agriculture recommended dilution concentrations are used. Data collection was done over two months, measuring EC, pH, shoot length, number of leaves and leaf area index. Results show both organic fertilizer treatments have pH and electrical conductivity values under the ideal range. Treatment 1 with inorganic fertilizer exhibits the best efficiency in plant growth. Among organic treatments, Treatment 5 (Jeevamurtha at 1 L/30 L) performs best, followed by Treatment 2 (poultry tonic at 75 ml/10 L) based on shoot length and number of leaves no any significant treatment effect on leaf area index. The study recommends Jeevamurtha at 1 L/30 L and poultry tonic at 75 ml/10 L for hydroponic chilli cultivation for providing sustainable agricultural alternatives for Sri Lanka.

Keywords: hydroponic, organic, inorganic, chili