

Applicability of Zimmermann Multi Objective Fuzzy Linear Programming Model Under Large Vagueness

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Problems related to agriculture that deal with nature often suffer from imprecision and vagueness. The most recent method developed in order to deal with these problems quantitatively, is Fuzzy Linear Programming (FLP). In 1978 Zimmermann developed a model to find a solution for the Multi Objective Linear Programming problem. This was done with the use of fuzzy decision theory presented by Bellman and Zadeh in 1970. In the present study, Zimmermann (1985) model was applied to three districts in Sri Lanka which are popular for vegetable cultivation, namely, Badulla, Matale and Nuwara Eliya. Badulla and Matale are in the Intermediate zone and Nuwara Eliya is in the up-country wet zone. These zones differ greatly with respect to temperature, rainfall and soil. This study was undertaken to find out the applicability of Zimmermann (1985) model when there is high vagueness within the system under study. Such a study has not been reported in literature. The applicability of Zimmermann (1985) model under such conditions was measured using how effectively the model chooses right crops for each district.

The most appropriate crops for each district is selected by considering the respective profit which is recorded in the Department of Agriculture. The most appropriate crops selected by the Zimmermann (1985) model were compared with the data obtained by the Department of Agriculture.