IMPACTS OF BETHMA CULTIVATION ON AGRICULTURAL PRODUCTION EFFICIENCY: A CASE STUDY OF MAHAWELI SYSTEM H AREA

S.THIRUCHELVAM AND H. M. SOMARATNA*

*Department of Agricultural Economics, and *Department of Agricultural Extension, Faculty of Agriculture, University of Peradeniya*

Bethma (share) cultivation system is a traditional custom in areas under the command of small tanks in Sri Lanka whereby water supplies, which are not adequate for the full command area, are allocated to part of the area, and all farmers are given proportional land shares in the irrigated part. Since only half the extent could be cultivated with the available water in the Kalawewa reservoir during the Yala season, the Mahaweli System H area embarked on a water management programme that involves Bethma cultivation from the 1983 Yala season. There has been a growing concern regarding the relatively low agricultural production efficiency in the shared land under Bethma. However, no attempt has been made to study this problem in this system. This study examined agricultural production technical efficiency and the factors affecting technical efficiency under the Bethma cultivation in Madatugama block of the Mahaweli System H area.

A two stage stratified random sampling procedure was used to select 40 owners and 40 share cultivators of chillie and big onion in the 101 and 103 irrigation management units of Madatugama Irrigation Block. Data on chillie and big onion production and cost of cultivation in Yala 2000, and farmers' participation in farmer organization activities were collected during September 2000. Output index of chillie and big onion was regressed as a function of land area, labour, cost of seeds, agrochemicals and power. Technical efficiency was regressed as a functions' of farmers' age, education and debt level. Dummies were used for part time employment ownership and farmers' participation in farmer organisations. This stochastic frontier production function was estimated in a single stage using FRONTIER Version 4.1 for each irrigation management unit separately.

The results of the stochastic frontier model exhibited a higher average technical efficiency of 87% with no significant difference between the owner and share cultivators in Unit 101. However, there was 24% less technical efficiency among the sharecroppers than the owner cultivators in Unit 103. The model further revealed that with higher farmer participation, the mean technical efficiency increased with a lower coefficient of variance. High debt level and poor participation in farmer organizations had a significant influence on low technical efficiency among the sharecroppers in Unit 103. The descriptive analysis on farmer organization performance on implementation of the Bethma cultivation programme indicated that the existing technical, legal and institutional frameworks were not adequate.

Based on these results, it was concluded that the impact of Bethma cultivation on agricultural production efficiency had a mixed success. The owner cultivators are more technically efficient and the sharecroppers have the scope to increase their output level. This conclusion indicates the need for strengthening farmer organizations and provision of advisory services to farmers to increase the agricultural production efficiency in the Bethma system.