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Resource productivity and resource use efficiency in soybean production

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ABSTRACT

Soybean [*Glycine max* (L.) Merrill] is the world's natural source of protein. Soybean is the most important oilseed crop of the world. Soybean is grown successfully in various agro-climatic conditions. Investigation was carried out for the year 2007-08 in order to study the marginal productivity and economic efficiency in soybean production in Latur district of Marathwada region of Maharashtra. The cross sectional data were collected from 180 soybean growers. Cobb-Douglas production function was fitted to the data in soybean production. Results revealed that, partial regression coefficients of phosphorus (0.081) and plant protection (0.055) were positive and significant at 1 per cent level of significance. Similarly partial regression coefficients of machine labour (0.427) and nitrogen (0.028) were positive and significant at 5 per cent level of significance. It could be inferred that, if one per cent increased in use of phosphorus, plant protection, machine labour and nitrogen, it would lead to increased the soybean production by 0.081, 0.055, 0.427 and 0.028 per cent, respectively. Thus, it implied that, there was scope to increase these resources in soybean production. The value of coefficient of multiple determination (R^2) was 0.94.

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Key words : Soybean, Resource productivity, Production function, Optimum resource

INTRODUCTION

Soybean [*Glycine max* (L.) Merrill] is the world's natural source of protein. Soybean is grown successfully in various agro-climatic conditions. It is grown in temperate region. It is also grown well in sub-tropical and tropical regions. Though, soybean is a legume crop, yet it is widely used as oilseed crop. Due to very poor cookability on account of inherent presence of trysin inhibitor, it cannot be utilized as pulse crop. In India, farm business is the basic business but due to lack of management, it is not much profitable. Farm business management has assumed greater importance not only in developed and commercial agriculture all around the world but also in developing and subsistence type of agriculture. A farm manager must not only understand different methods of agriculture production, but he must allocate scarce production resources in the farm business. Farm management is concerned with resource allocation. Farmer has set of farm resources such as land, labour, seed, fertilizers, irrigation and so on that are relatively scarce. By managing these scarce resources farmer can achieve the maximum production. According to Kunte *et al*. (2009) about 92 per cent of variation in the production of soybean can be due to the selected resources. It was observed that human labour, bullock labour, manures, fertilizers and working capital were positively influencing soybean production.

MATERIALS AND METHODS

Multistage sampling design was used to selection of district, tehsils, villages and soybean growers. In the first stage, Latur district was purposely selected because of highest area under soybean crop as compared to other districts of Marathwada region of Maharashtra State. In the second stage Latur and Renapur tehsils were selected on the basis of highest area under soybean crop. In the third stage, 12 villages were selected from two tehsils. In the fourth stage, from each of selected villages, 15 soybean growers were randomly selected. In this way, 180 soybean growers were selected for the present study. Data were collected from them with the help of pretested schedule by personal interview method. Data pertained to production of soybean from each soybean grower and use of resources namely area under soybean, hired human labour, bullock labour, machine labour, nitrogen, phosphorus, manure and family labour for the year 2007-08. With the help of correlation matrix of the above variables, independent variables which were significant with respect to dependent variables were taken into consideration. Thus, these independent variables were included in both the linear and Cobb-Douglas production function. On the basis of goodness of fit (R^2) Cobb-

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