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Resource Productivity, Resource Use Efficiency And Optimum Resource Use In Rainfed Pearl Millet Production

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ABSTRACT

Pearl millet (*Pennisetum americanum L.*) is an important cereal crop in the world. In India, its area is 9.27 million hectares with production of 6.35 million tonnes. It is popularly known as *bajra*. Investigation was carried out during the year 2003-2004 in order to study resource productivity, resource use efficiency and optimum resource use in rainfed pearl millet production. The result revealed that if use of hired human labour, nitrogen, manure and family human labour would be increased by one per cent each, that led to increase the production of pearl millet grain by 0.262, 0.074, 0.068 and 0.148 per cent, respectively. Use of manure was the most profitable resource followed by hired human labour and nitrogen. The existing size of rainfed pearl millet farm was 0.83 hectare while optimum size of its farm was found to be 0.60 hectare.

Key words : Pearl millet, production function, regression coefficient, marginal product, input price, optimum resource

INTRODUCTION

Pearl millet (*Pennisetum americanum L.*) is mainly grown for grain purpose in Africa, China, India, Pakistan and South-East Asia. It is a high energetic and nutritious food. It is also rich source of iron. It was introduced from Africa to India and stands the fourth in area after wheat, rice and sorghum. It is popularly known as *bajra*. In the country, its area is 9.27 million hectares with production of 6.35 million tonnes. The crop is mainly grown in Rajasthan, Maharashtra, Gujrat, U.P. and Haryana. In Maharashtra, area under bajra crop is 1.76 million hectares in *kharif* season under rainfed condition with production of 1.08 million tonnes. Regarding area under the crop, linear growth rate of 1.21 per cent showed significant positive trend in the state (Ahuja *et al*, 1997). In Marathwada region of Maharashtra, rainfed *bajra* crop is grown in Aurangabad and Beed districts on 1.90 and 2.06 lakh hectares, respectively (Anonymous, 1999). Sub-optimal input use in *bajra* production irrespective of varieties and hybrids led to a very high cost of production and caused low return. Since, no serious attempt has been made to identify the key input factors and their contribution in *bajra* production. The present investigation, therefore, is devoted to develop an optimal resource plan for rainfed *bajra* production.

MATERIALS AND METHODS

Multistage sampling technique was used to select districts, tehsils, villages and *bajra* farms. In the first stage, Aurangabad and Beed districts were purposely selected on the basis of predominant area of rainfed *bajra* crop in the cropping pattern of respective districts. In the second stage, four tehsils namely Aurangabad, Gangapur, Paithan and Sillod were purposely selected from Aurangabad district while four tehsils namely Beed, Georai, Kej and Patoda were purposely selected from Beed district on the basis of the highest area under rainfed *bajra* crop. In the third stage, one village was purposely selected from each of selected tehsils of both the districts on the basis of the highest area under rainfed *bajra* crop. In the fourth stage, the list of *bajra* growers from each of the selected villages was obtained and eight rainfed *bajra* growers were randomly selected irrespective of high yielding varieties and hybrids of *bajra.* Thus, 64 rainfed *bajra* farms were selected for the study. Cross sectional data were collected in relation to production of *bajra* and use of resources namely area of *bajra,* hired human labour, family human labour, bullock labour, nitrogen, phosphorus, potash and manure on farms for the year 2003-2004.

Cobb-Douglas production function was found to be the best fit to the data to estimate the resource productivity and resource use efficiency and optimum resource use with respect to each of the explanatory variables (Singh, 1986). The fitted equation was as follows.

$$Y = aX_1^{b_1} . X_2^{b_2} . X_3^{b_3} . X_4^{b_4} . X_5^{b_5} . X_6^{b_6} . X_7^{b_7} . X_8^{b_8} . e^u$$

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