https://doi.org/10.29321/MAJ.10.A03239

Madras agric. J. 64 (9) : 586—588, Sep., 1977

Factors Influencing the Extent of Adoption of Hybrid Bajra in Coimbatore Taluk

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A study was undertaken to evaluate the factors influencing the extent of adoption of hybrid *bajra (Cumbu)* in Coimbatore Taluk. It revealed that the operational holding had a negative influence while the percentage of operated irrigated area had a positive influence on the extent of adoption under garden land conditions.

The new agricultural strategy envisages the cultivation of high yielding varieties as part of a national effort to raise production of basic food grain crops. Hybrid *bajra* (*Pennisetum typhoides*) gave 114 per cent more yield than local *bajra* (Zeaudeen, 1968). Inspite of its promising high yield and the intensive extension drive undertaken by the State Department of Agriculture, not all the farmers adopted them for cultivation. The decision was influenced by the socio-economic characteristics of the farmer. The objective of the present study is to evaluate the factors influencing the extent of adoption of hybrid bajra in Coimbatore Taluk.

METHODOLOGY

The study was undertaken during 1966-67 in Coimbatore taluk. Ten villages and sixty farmers were selected at random, at the rate of six farmers in each village. Only 58 farmers were considered in this study.

Seven factors, viz., extent of operational holding (acres), percentage of operated area irrigated, intensity of cropping, literacy index, size of family (number of adults), age of the operator (years), and experience in farming (years), were considered to influence the extent of adoption of hybrid *bajra*. Simple correlations were computed between independent variables and the dependent variable. As the factors, literacy index, size of family, age of the operator, and experience in farming, showed very low and non-significant correlations with the dependent variable, it was decided to drop these four variables from the purview of the functional analysis. Later, when the partial correlation coefficients of the fitted function were tested, it revealed that intensity of cropping was highly significant thereby indicating the existence of multicollinearity and hence, it was decided to eliminate this variable also. The function was finally fitted with the remaining two variables. The fitted function was of the following form:

$$Y = a\, x_1^{b_1}\, x_2^{b_2}$$

where,

Y = Percentage of area under hybrid

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bajra to total extent of the farm;

X_1 = Extent of operational holding, as a measure of extensiveness of farm operation, measured in acres;

X_2 = Percentage of operated area irrigated;

'a' = is the level coefficient, and 'b's are the slope coefficients to be estimated.

Marginal Value Product of x_i, the i^{th} factor is given by the following equation:

$$MVP = \frac{6\bar{Y}}{6\bar{X}i} = bi \frac{\bar{Y}}{\bar{X}i}$$

RESULTS AND DISCUSSION

The equation was estimated by the ordinary least squares method. The estimated parameters were as follows:

$$Y = 0.54 X_1^{-0.27*} X_2^{0.87**}$$

(0.55) (0.12) (0.26)

$R^2 = 0.35$

$n = 58$

Figures in the parentheses are the standard errors of regression coefficients

* Significant at 5 per cent level

** Significant at 1 per cent level

The coefficient of determination (R^2) was 0.35 which indicates that nearly 35 per cent of the variation in the percentage of area under hybrid *bajra* to the total extent of the farm is influenced by the two independent variables considered in this study. The functional analysis revealed that of the two factors considered, extent of operational holding had a significant negative relationship while the percentage of operated area irrigated had a signicant positive influence on the percentage of area under hybrid *bajra* to the total extent of the farm.

From the above function, it could be interpreted that every one per cent increase in the extent of operational holding, the percentage of area irrigated to total area remaining the same would result in a decrease in the percentage of area under hybrid *bajra* by 0.27 per cent. *Bajra* occupies a secondary place in the cropping pattern of this taluk. This finding is in line with the findings of Schluter and Longhurst (1972), who concluded that the proportion of acreage under ADT-27 rice in Thanjavur district decreased as farm size increased.

It could also be interpreted from the above function that every one per cent increase in the percentage of operated area irrigated, would result in an increase in the percentage of area under hybrid *bajra* by 0.87 per cent. Water is an important limiting factor in agricultural production, and as hybrid *bajra* is an irrigated crop, farmers having limited land with assured irrigation facilities may prefer to adopt it in view of the increased yields they get within a short span of three months.

The related measures of marginal value productivities were also derived from the function Marginal value products for the factor extent of operational holding and percentage of operated area irrigated were obtained at the

geometric mean level. Marginal value product of the extent of operational holding so obtained from the estimated regression equation was - 0.22 per cent which indicated the likely decrease in the percentage of area under hybrid *bajra* that would accrue by the addition of one more unit of this factor, other factor held constant. The marginal value product of the percentage of operated area irrigated was 0.48 per cent which indicated the additional percentage of area under hybrid *bajra* that would accrue by the addition of one more per cent of this factor, other factor held constant. It would be seen on an average, the marginal value product of both the factors is less than one.

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