

Impact Assessment of Improved Technology of Mustard Production in Arid Region of Rajasthan: An Econometric Study

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Received: May 2012

Abstract: The performance of modern technology of mustard cultivation and its impact on the farmer community of arid region of Rajasthan has been assessed through a survey of 40 farmers at Osian tehsil in Jodhpur District using production functions and decomposition analyses. The results suggested that the introduction of improved mustard technology exhibited constant effect in comparison to traditional technology. The total difference in the mustard productivity between modern and traditional technology was estimated to be about 50%. The major component of the productivity gap was due to the difference in varietal component contributing approximately 39%, while remaining 11% was shared by different inputs in terms of differences in their use levels between modern and traditional production technology in this crop. The study suggests that with the adoption of modern technology farmers could harvest better yields from their inputs.

Key words: Mustard, production function approach, yield decomposition model, nature of technology change.

Mustard (*Brassica* spp.) is the most important oil seed crop of India after soybean and plays a significant role in the oil economy by contributing about 27% of the total oil seed production. The species of *Brassica* viz., *B. juncea*, *B. napus*, *B. carinata* and *B. rapa*, yellow sarson and brown sarson are grown as oil seed crops in different parts of the country. Among these *B. juncea*, commonly known as Indian mustard or raya, is covering more than 80% of the total area under mustard cultivation due to its tolerance to biotic and abiotic stresses. The area, production and productivity of this crop during 2008-2009 was 6.18 Mha, 7.36 Mt and 1190 kg ha⁻¹, respectively. The crop is grown all over the country, but Rajasthan is the major mustard growing state occupying nearly 45% of the total area and contributes in the same proportion towards the production to the national oil seed pool (Yadava *et al.*, 2010). Agriculture is the backbone of Indian economy and is the main stay of the population, directly or indirectly, for seeking food, clothing, employment and perhaps everything. Poor farmers are less able to cope with shortfalls in crop production and as a consequence, diversify their activities as a precaution. This occurs more frequently in rainfed areas, where uncertainty of crop production is higher due to unpredictable environmental conditions

(IRRI, 1995). New agricultural technologies implied for high yielding varieties, fertilizers, irrigation, market, infrastructure, etc. were introduced during the mid 60's, resulted into self-sufficiency of our country in the field of agriculture. The agricultural production increased from 180 Mt in 1980's to 200 Mt in 2004. The new technologies increased crop production and employment opportunities not only in agricultural sector, but in secondary sectors also. The usual approach in modeling technological relationship in production is based on mean levels of inputs and outputs. The random nature of agricultural production is the major constraint. Thus, variability in yield is not only explained by the non-controllable factors such as input and output price but, also by controllable factors such as varying the levels of outputs (Just and Pope, 1979; Antle, 1983).

An impact is a natural or man-induced changes in the bio-geophysical environment having both spatial and temporal components and can be described as the change in an environmental parameter, over a specified period and within a defined area resulting from a particular activity compared with the situation. Economic impact assessment is a process of measuring development objectives, such as increases in production, income and improvements in the sustainability of production

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