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Research Paper

Analysis of total factor productivity growth of sorghum [*Sorghum bicolor* (L.) Moench] in Western Maharashtra

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ABSTRACT : In the present study an attempt has been made to distingwish the effects of technological change and inputs use efficiencies in sorghum rainfed crop from Western Maharashtra during the two sub periods of 1985-1994 and 1995-2001. The total factor productivity (TFP) approach was followed in analyses of data. Analyses had indicated that there were contineous rise in the input, output and TFP indices during both the periods and in all divisions of Western Maharashtra. Therefore, the growth rates of these three indicators were worked out. Based on the finding, it is concluded that there was positive and larger impact of technology in production of sorghum. It is because the new sorghum varieties *viz.* Phule Mauli, Phule Chitra, Phule Uttara, C.S.V.-23, S.P.V.-462, C.S.H.-22, etc. were cultivated in greater proportion and proper time of sowing (first week of july), integrated pest and disease management, etc. which have got stabilized in Western Maharashtra

KEY WORDS : Sorghum, Productivity growth

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INTRODUCTION

Sorghum [*Sorghum bicolor* (L.) Moench] is the world's fourth most important cereal in term of area and production. About 90 per cent of the world's sorghum area is concentrated mainly in the developing countries of Africa and Asia. It is one of the main staple food crops for the world's poor and food insecure people. The crop is genetically suited to the hot and dry agro – ecological regions characterized by low rainfall.

As far as Maharashtra state is concerned, Sidhu and Byerlee (1992) had ably analyzed the technical change and sorghum productivity in the Western Maharashtra as a whole rather than for each division of western Maharashtra. Therefore, in the present paper an attempt has been made to assesses the total factor productivity growth in respect of sorghum in different divisions of western Maharashtra thereby to know the impact of technologies and the efficiencies of all inputs together during two different periods.

MATERIALS AND METHODS

Analysis of total factor productivity (TFP):

Total factor productivity concept implies an index of total output per unit of total factor inputs. TFP growth measures the increase in output *i.e.* not accounted for by the increase in total inputs. Changes in total factor productivity index can be used as one of the measures such as output per unit of individual inputs and have limitations as indicators of real productivity change *i.e.* partial productivity measures. Thus, total factor productivity index that measures the growth in net output *i.e.* not accounted for by the growth in basic factor input such as land, labour capital, superior to partial approach as it is composite measure of productivity, which related of output all inputs simultaneously.

The accounting approach is popular because it is simple to calculate and requires no econometric estimation and therefore, the data requirement is minimal. The use of TFP indices gained prominence since 1976, 1978 proved that Theil-Tornquist discrete approximation to the Divisia index is consistent in aggregation and superlative to a linear homogenous trans logarithmic production function. Thus, the Divisia-Tornqvist index was used in the present study for computing Total Output Index (TOI), Total Input Index (TII) and Total Factor Productivity index (TFPI) in sorghum of the three divisions *viz.*, Nasik, Pune and Kolhapur in Western