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Agric. Econ. – Czech

Chatterjee S., Gupta S.:

Extent of technological change in rice cultivation over four decades in West Bengal, India

Agric. Econ. – Czech, 59 (2013): 281-291

Rice is a principal food crop which occupies nearly a one-fourth of the gross irrigated area in India. However, the present study attempts to judge the

essence of the Green Revolution in rice cultivation and its actual reflection regarding the factor contribution over four decades in West Bengal, India. The study measures the extent of technological change in rice cultivation using the Divisia-Tornqvist Theil index model for computing the total factor productivity (TFP) of rice for the state of West Bengal. Subsequently, the spatial change in the TFP as well as a comparative study on productivity, input use, break-up of cost components and economic return in the paddy cultivation over different size classes across all agro-climatic zones of West Bengal has been made in order to identify the most promising zone regarding technological advancement in rice cultivation. The study reveals that technological change in rice cultivation has occurred in the state of West Bengal for the entire four decades while its extent has not been equally disseminated in decades. The effect of the productivity change was robust in the 2nd decade (1981 – 1982 to 1991 – 1992) with a 4.19% TFP growth rate indicating that the good effect of the Green Revolution has began to start regarding the technological

change in rice cultivation over West Bengal. On the other hand, the TFP_{rice} results in the state have given a dismal picture in the later phases under study where it starts declining with the change of time. At the end decade (2001 – 2002 to 2009 – 2010), the TFP growth has been found to be negative (– 0.69) reflecting ill effects of a higher use of inorganic fertilizers, insecticides and pesticides to corrupt the soil fertility status of the state. It is the quality HYV seed that dominates among all factor contributors for the overall TFP_{rice} change along with the human labour use. Farm mechanization enters after the 90s indicating a major reform in the context of the technology adoption by the rice growers in the state. The region-wise scenario of rice cultivation in the state has proved that the Gangetic Alluvial tract has been the better technology adopter with higher TFP indices as compared to the problematic regions like the Red Lateratic zone and the Coastal Saline belt, the reason of which might be the improved fertility status of soil with a large number of progressive paddy growers operating in terms of a better knowledge gaining, a

better education and extension.

Keywords:

factor contributor, green revolution, HYV seed, spatial change, technological change, Total Factor Productivity (TFP)

[fulltext]