

DETERMINANTS OF ADOPTION OF HYV RICE IN WEST BENGAL

Abstract

The persistence of incomplete adoption of HYV cultivation in backward agricultural regions has invited many explanations - namely, risk aversion, incomplete learning, resource constraint and preference for traditional crop. Evaluation of importance of each of these explanations in a particular empirical context is important in identifying barriers to greater adoption. The thesis extends existing models of farmer's adoption behaviour and develops a suitable empirical methodology to evaluate the importance of alternative explanations in the specific context of HYV rice cultivation in West Bengal using farm level Cost of Cultivation data. In particular, the impact of social learning, uncertainty and binding liquidity constraint on farmer's decisions relating to adoption was examined. A measure of farmer's social learning about new HYV rice cultivation was proposed and the analysis of the pattern of adoption at the village level suggested that the process of diffusion of HYV cultivation was consistent with an active process of social learning. In relation to uncertainty, estimation of a stochastic yield function in three stages using non-linear regression technique showed that cultivation of rice involved significantly higher risk compared to traditional rice while inputs were largely risk neutral in both technologies. A model of farmer's decisions relating to adoption was developed to analyse the effects of uncertainty, binding liquidity constraint and supervision, and the results were consistent with a wide variety of observed patterns of adoption compared to predictions of existing models. Since a farmer's decisions relating to technology crucially depends on whether he faces a binding liquidity constraint or not, a switching regression technique with endogenous sample separation was employed to determine a farmer's probability of facing a binding liquidity constraint. Finally, decision functions relating to allocation of land and input were estimated in a simultaneous equation framework. Results suggested that all the three factors viz., liquidity constraint, risk aversion and social learning had significant impact on these decisions. While institutional failures in the areas of extension services, irrigation and rural credit were largely responsible for the low spread of HYV rice in West Bengal, the agrarian policy of encouraging small farmers did not have any negative impact on the diffusion of new technology.

