

IMPACTS OF WATER SUPPLY UNCERTAINTY AND STORAGE ON EFFICIENT IRRIGATION TECHNOLOGY ADOPTION

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ABSTRACT

In the framework of a stochastic dynamic programming model, we explore whether water pricing alone can guarantee the adoption efficient irrigation technologies under water supply uncertainty. The finding of the paper is consistent with the general view that water pricing is valid alternative for increasing the efficiency of water usage. However, we find that even a flexible water price cannot guarantee a higher adoption of efficient irrigation technology in all cases. A risk averse farmer may invest more in efficient irrigation only if the variance in water supply is very high. We also find that if farmers invest in water storage capacity, then the value of efficient irrigation increases, and the rate of adoption will be higher. It establishes a complementarity relationship between investment in storage capacity and adoption of efficient irrigation technology. The relationship becomes stronger with increasing variance in water supply.

PALAVRA-CHAVE: Stochastic dynamic optimization, water pricing, irrigation efficiency