Assessment of conservation agriculture from an agronomic, economic and social perspective in Punjab, Pakistan

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Abstract

Conservation agriculture seeks to conserve and make more efficient use of natural resources combined with external inputs. Resource conservation technologies are being introduced for better utilization of available resources, reducing cost of production and enhancing productivity. Zero Tillage (ZT) and Conventional Tillage (CT) are two systems used in the Rice-wheat areas of Pakistan. The Rice-wheat system is one of the most of important systems in Punjab, Pakistan. Sowing of wheat through zero tillage technology under rice-wheat system in Punjab is becoming popular but at the same time researchers, extension experts and farmers may have some reservations in their mind. In Pakistan, ZT technology was introduced in the year 1996-97.

This study highlights the merits and demerits of ZT compared to the CT. The purpose of the study was to examine the effect of zero tillage on, wheat yield, soil fertility, and economic and environmental benefits compared to conventional tillage. Data were collected through questionnaire survey of 60 sample farmers. The results showed that the number of ZT drills and area under ZT method of wheat sowing has increased significantly through demonstrations by the directorate of On Farm Water Management (OFWM). The area under, wheat in ZT was 93% in Sheikhupura and 94% in Okara district. The study revealed that cost of land preparation for wheat sowing was higher (84 USD/ha) in CT. Average yield in ZT was 4151 Kg/ha as compared to 3768 Kg/ha in CT. The total expenditure per hectare in ZT was 68% lower while the net income was also higher in ZT (609 USD/ha) compared to CT (418 USD/ha). Farmers saved 7 USD/ha per irrigation in ZT. Weed incidence was found higher in CT compared to ZT. Concerning farmers' perceptions, 100% of the respondents showed willingness to continue with ZT in future. However the biggest constraint in the rapid adoption of ZT technology was the inadequate number of ZT drills.

It is suggested that farmers are educated about the ZT technology through extension efforts for its rapid adoption. The non availability of ZT drills needs immediate attention in order to promote Zero Tillage as it not only facilitate timely sowing of wheat but is also cost effective.

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