



RESEARCH PAPER

Recent production technologies of rice (*Oryza sativa* L.) for its sustainable cultivation in Haryana

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Abstract : The rice crop in the Indo-Gangetic Plains is with particular reference to Haryana is vital for food security in India. Its sustainability is at risk as the current production practices are inadequate resulting in high cost of cultivation and inefficient use of inputs such as water, labour and energy. In a field study, we evaluated resource conserving and cost-saving alternative tillage and crop establishment options with an aim to improve productivity and input use efficiency. Treatments included manual transplanting, mechanical transplanting and direct-seeding of rice after conventional and reduced tillage. Tillage and crop establishment method had a significant effect on rice yield. Dry-DSR and unpuddled mechanical transplanting have almost equal (average of both years) grain yield *i.e.* 41.71 and 41.80 qtl ha⁻¹, but a marginal higher yield 42.90 qtl ha⁻¹ under DSR_{vatter} than mechanical transplanted and DSR_{dry} was observed. On an average of both years, manual transplanted rice in puddled and unpuddled conditions has produced 7-9 per cent less grain yield than mechanical transplanted and direct seeded rice. The growth duration of manual transplanted rice was 8-10 days more than direct-seeded rice, while, it was 4-5 days more in mechanical transplanting than DSR treatments. In both years, the direct-seeded rice sown in vatter condition received the lesser water and puddled manual transplanted rice consumed more water. Saving in cost under DSR-drill and mechanical transplanter in comparison to manual transplanting was 76 and 26 per cent, respectively. Saving of 85 to 97 per cent labour requirement was observed in DSR-drill and mechanical transplanter over manual transplanting. The B:C ratio of both the DSR systems (2.81 and 2.88) was higher than puddled (2.31) and unpuddled manual transplanted rice (2.52) and unpuddled mechanical transplanted rice (2.39), respectively. Direct-seeded rice can be more efficient and profitable alternatives to current practice (puddled transplanted rice).

Key Words : Rice, Sustainable cultivation

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