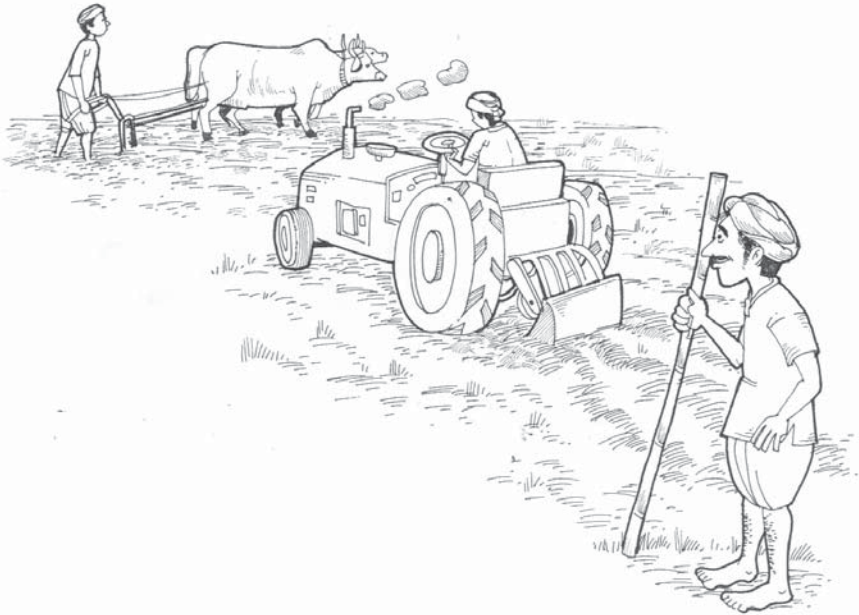


Location-specific Crop Establishment Options



Natural resources management problems are complex and location-specific. Following an ecoregional approach, the Rice-Wheat Consortium addressed these problems through farmer participatory research programs in the Indo-Gangetic Plains (IGP). Crop establishment techniques vary in different transects of the IGP. Therefore, crop and soil management practices (e.g., tillage, nutrients and water) have to be fine-tuned according to the crop establishment requirements in a particular transect. Rice in the IGP has been grown traditionally by raising nursery in a separate field and transplanting seedlings in the puddled main field or by direct seeding, either dry seeding or seeding in a puddled field. Researchers have worked with farmers in growing rice and wheat crops in sequence following various tillage and crop establishment options. These options have been generated for timely crop establishment, low production costs, increased productivity and improved soil quality. The improved options allow farmers to experiment with more diverse systems as sufficient time, labor and land are available. Thus, farmers obtain higher yields and income than the traditional practice.

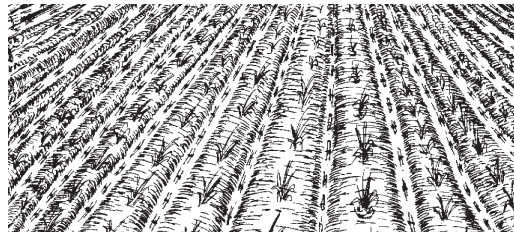
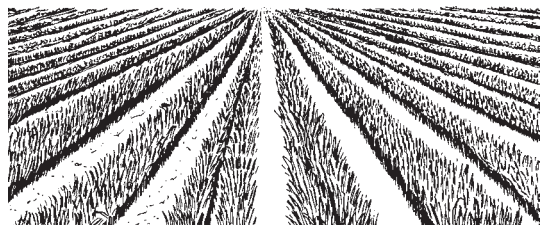
Non-puddled Planting and Zero-Till

Non-puddled transplanted or direct seeded rice is grown in combination with wheat planted with zero-till or reduced till. These combination options are potentially important for many areas across the IGP. Zero-till reduces cost to plow, increases yields, reduces weed population, and saves irrigation water by 20%. Reduced till is useful in eastern IGP where rice weeds carryover to the next wheat crop and interfere with surface seeding. It also reduces costs of power source and planting.



Raised Bed Planting

Permanent raised bed planting system is a more sustainable system which has potential for adoption by farmers in large areas. It offers scope for diversification and intensification of the cropping systems in the IGP even during the monsoon season. In this system, seed rates and crop lodging are low. It saves irrigation by 35 to 40%. Yields are good and large panicles with bold grain are produced. Intercropping of maize or sugarcane with wheat is beneficial using this system.



Rice-Wheat Crop establishment options in IGP Transacts						
Wheat Rice	Conventional Tillage	O-Till	SS	Red. Till Tractor		Bed planting
				2W	4W	
P-TR <small>Conventional</small>	General	TUM	ML	ML	TU	
P-DSR	TU	TUM	ML	ML	TU	
NP-TR	TUM	TUM	TUML	ML	TU	*TUM _L
NP-DSR	TUML	TUM	TUML	ML	TU	TUML*

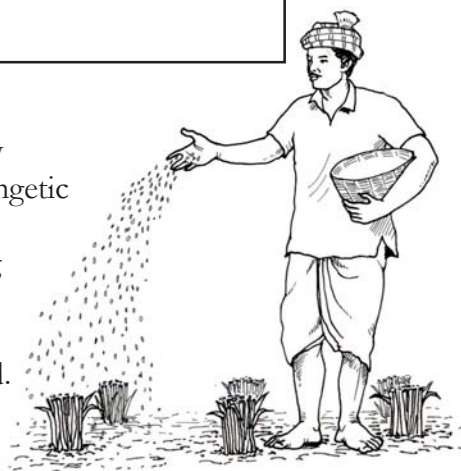
Techniques:
 PTR = Puddled transplanted rice
 PDSR = Puddled direct seeded rice
 NPTR = Non-puddled transplanted rice
 NPDSR = Non-puddled direct seeded rice
 *Bed Planting promotes diversification

Regions:
 T = Trans-Gangetic Plain
 U = Upper Gangetic Plain
 M = Middle Gangetic Plain
 L = Lower Gangetic Plain

Important for large areas in specific IGP Transact
IMPORTANT FOR MANY AREAS
 May be important in some areas:

Surface Seeding

Surface seeding of wheat and other crops is potentially important in many areas of the Middle and Lower Gangetic Plains. This practice is intended to reduce rice fallows. Surface seeding is applicable in wetlands where drilling operation is not possible due to excess moisture. In surface seeding, there is no cost to plow as the land is not tilled. Sowing is timely and weed growth is deterred. Surface seeding increases yields and net income.



Adapted from:

Gupta, R.K., P.R. Hobbs, J.K. Ladha and S.V.R.K. Prabhakar. 2002. Resource Conserving Technologies: Transforming the Rice-Wheat Systems of the Indo-Gangetic Plains. Rice-Wheat Consortium - A Success Story. Asia Pacific Association of Agricultural Research Institutions. Bangkok, Thailand.

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