Indian J. Agron. **41** (2) : 334–335 (June 1996)

Effect of sowing condition on yield of *paira* crops grown after rainy-season rice (*Oryza sativa*)

N. R. DAS AND N. BHANJA

Department of Agronomy, Faculty of Agriculture, Bidhan Chandra Krishi Viswavidyalaya, Nadia, West Bengal 741 252

Received: May 1996

In low-lying rice (*Oryza sativa* L.) lands under rainfed conditions in eastern part of India, grasspea (*Lathyrus sativa* L.) is commonly grown as *paira* or *piara* or *utera* crop (crop that is sown by broadcast, before harvest pf preceding rice crop under muddy condition and raised under no-tillage rainfed relay system, with soil residual moisture) for higher yields and continuous crop (Das and Sarkar, 1990). With the introduction of short-duration rice varieties, it is now possible to grow other *paira* crops (Das and Sen, 1992). But the conditions of soil and water at sowing of *paira* crop, are very important for higher crop prosecution. Since such information is not available, an experiment with 4 *paira* crops after transplanted in rainy season (*kharif*) rice was initiated on 4 soil-water conditions.

The field experiment was conducted at Bidhan Chandra Krishi Viswavidyalaya Farm, Kalyani, during the winter season 1991–92, with 4 crops, viz. 'Nirmal' grasspea (*Lathyrus sativa* L.) 'B 77' lentil (*Lens culinaris* L.) 'B 9' Indian mustard [*Brassica junca* (L.) czernj. & Cosson] and 'Neelam' linseed (*Linum usitattisinum* L.); and 4 soil-water conditions (*hardy* – no excess moisture, hard soil, *hair cracking* (no excess moisture, soil not so hard but hair cracks), *muddy* (excess moisture slight here and there, soil in soft muddy condition), and 2 cm water depth above soil), fitting in split-plot design replicated 4 times, where soil-water conditions were in the main plot and crops in the subplots. Soil was clayey loam having average soil fertility (0.62% organic C, 0.06% total N, available P_2O_5 17 kg/ha, available K_2O 165 kg/ha and pH 6.9). Seeds of grasspea, lentil, Indian mustard and linseed @ 50, 30, 8 and 20 kg/ha respectively were broadcast over the standing transplanted rainfed rainy-season (*kharif*) rice ('IR 36') 1 day before harvest in respective treatment conditions, created by addition of water and drying at sowing. Only 20 kg N/ha through urea was applied by broadcast over the standing *paira* crops 15 days after sowing (DAS). Rice was harvested on 28 October 1991; while grasspea, lentil, Indian mustard and linseed were harvested on 15 March, 1 March, 15 February and 10 March, 1992 respectively. Winter *paira* crops received about 150 mm rainfall during their growth period.

The maximum seed and stover yields were obtained from grasspea, followed by Indian mustard and lentil, whereas linseed showed the poorest performance in respect of seed and stover yields, under rainfed no-tillage relay crop after transplanted *kharif* rice. Among these 4 crops grasspea established in a better way under different situations. Das and Sen (1992) reported that un-

Table 1. Effect of water regimens at sowing of rainfed winter crops, on yields (q/ha) of grasspea, lentil, Indian mustard and linseed, after transplanted *kharif* rice

Water-regimen conditions in soils	Rainfed winter *paira* crop after *kharif* rice								Mean	
	Grasspea		Lentil		Indian mustard		Linseed		Seed	Stover
	Seed	Stover	Seed	Stover	Seed	Stover	Seed	Stover		
Hardy	6.9	26.8	4.1	15.3	4.4	20.1	3.6	14.0	4.8	19.1
Hair cracking	14.4	57.1	5.9	23.1	8.7	33.9	5.6	22.3	8.7	31.6
Muddy	22.6	83.4	12.5	51.7	13.1	52.1	10.4	38.9	14.7	56.5
2 cm depth water	22.3	84.9	3.2	12.5	3.2	11.6	2.6	9.6	7.8	29.7
Mean	16.6	63.1	6.4	25.7	7.4	29.4	5.6	21.2	9.0	34.4

	Water regimen (W)		Crops (C)		W x C	
	Seed	Stover	Seed	Stover	Seed	Stover
CD (P = 0.05)	4.7	7.1	6.1	6.5	5.4	7.2

der rainfed *paira* conditions grasspea gave the highest yields.

For rainfed winter *paira* crops, after transplanted *kharif* rice, muddy condition at sowing was the best statistically in respect of seed and stover yields, followed by hair cracking, whereas hardy condition showed the poorest performance in yield production of crops (Table 1). It was interesting to note that grasspea with 2 cm depth of water at sowing gave significantly the highest seed and stover yields, whereas lentil, Indian mustard and linseed gave the poorest seed and stover yields. Lentil, Indian mustard and linseed showed the best seed and stover yields when sown as *paira* crop in muddy conditions. At all *paira* conditions, grasspea gave some yields unlike other crop (Das and Sen, 1992).

It was concluded that grasspea can be sown as *paira* crop at muddy or at 2 cm depth of water for better yields, whereas lentil, Indian mustard and linseed can be sown at muddy conditions after transplanted *kharif* rice under rainfed no-tillage relay cropping system.

REFERENCES

Das, N. R. and Sarkar, A. 1990. Effect of source and level of phosphorus on rice-grasspea (*Lathyrus sativus*). *International Rice Research Newsletter*, **15** (1) : 23.

Das, N. R. and Se, S. 1992. Planting rainfed winter crops in rice-fallows under different N and tillage treatments. *International Rice Research Newsletter*, **17**(4) : 19.