

Study on Weed Vegetation of Jute Seed Crop in Two Agro-climatic Zones of West Bengal

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Weed vegetation of a particular situation is determined by climatic, edaphic and biotic factors. Different crop varieties grown under specific sets of agro-ecological conditions generally have characteristic weeds (Crafts and Robbins, 1973). Ecological conditions like warm, humid weather and medium to high land situation favour weed infestation in jute crop (Mitra, 1999). Thus, weeds have great influence on productivity of jute and weeding along with thinning accounting for maximum (37%) share in operation-wise cost (Pathak, 2001).

The presence, composition, abundance, importance and ranks of weed species infest the jute crop for seed production in different agro-climatic zones of West Bengal which have not been studied in details; although these informations are extremely necessary to formulate effective weed control measures. Hence, a study was made to investigate the distribution of weed flora within variable jute seed crop stands in New Alluvial Zone (NAZ) and Red and Laterite Zone (RLZ) of West Bengal.

Two experiments were conducted during **kharif** season of 2004 each at Mohanpur (22°93'N,

88°53'E; 9.8 m altitude), Nadia in New Alluvial Zone and Raghunathpur (23°36'N, 86°42'E; 169 m altitude), Purulia in Red and Laterite Zone of West Bengal, India. A split-plot design replicated thrice was adopted with three sowing dates as main plots and two species of jute as sub-plots. Plots were seeded with Bidhan Pat 3 (*capsularis*) and Rupali (*olitorius*) on 25 June, 15 July and 5 August at Mohanpur; while with JRC 321 (*capsularis*) and JRO 632 (*olitorius*) on 9 June, 22 June and 7 July at Raghunathpur. Seeds were sown in rows 30 cm apart and a uniform fertilizer dose 30 : 30 : 30 (N : P₂O₅ : K₂O kg ha⁻¹) was given.

Mean air temperatures during 28 days after sowing (DAS) for three sowing dates were 29.4 and 29.5°C at Mohanpur and Raghunathpur, respectively. Rainfall for a period of 28 DAS generally had positive influence on weed vegetation across two sites. Weed infestation in 9 June sown crop was almost double as compared to 22 June and 7 July sowings at Raghunathpur.

Mean weed density at Mohanpur and Raghunathpur was 31.0 and 55.0 m⁻², respectively (Table 1). Grass, sedge and broadleaf weeds over

Table 1. Effect of sowing dates and species on weed density (No. m⁻²) in jute seed crop

Treatment	Mohanpur, Nadia				Treatment	Raghunathpur, Purulia			
	Grass	Sedge	Broadleaf	Total		Grass	Sedge	Broad leaf	Total
Sowing dates					Sowing dates				
25 June	10.7	11.8	8.9	31.4	9 June	33.4	39.6	10.3	83.3
15 July	9.3	10.0	7.2	26.5	22 June	17.0	17.8	5.8	40.6
5 August	12.6	14.2	8.3	35.1	7 July	16.7	17.6	6.7	41.0
LSD (P= 0.05)	1.89	2.31	NS	-	LSD (P=0.05)	4.87	3.50	0.72	-
Species					Species				
<i>Capsularis</i>	8.9	10.0	6.9	25.8	<i>Capsularis</i>	23.8	23.4	8.0	55.2
<i>Olitorius</i>	12.8	13.9	9.4	36.1	<i>Olitorius</i>	21.0	26.5	7.2	54.7
LSD (P=0.05)	1.00	1.25	NS	-	LSD (P=0.05)	2.12	3.12	NS	-

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Table 2. Distribution of weed species (No. m⁻²) in jute seed crop at Mohanpur, Nadia and Raghunathpur, Purulia

Weed species	Mohanpur, Nadia			Raghunathpur, Purulia		
	<i>Capsularis</i> (Bidhan Pat 3)	<i>Olororius</i> (Rupali)	Mean	<i>Capsularis</i> (JRC 321)	<i>Olororius</i> (JRO 632)	Mean
Grass						
<i>Cynodon dactylon</i>	8.0	11.6	9.8	22.5	21.0	21.8
<i>Digitaria sanguinalis</i>	0.2	0.2	0.2	0.0	0.0	0.0
<i>Echinochloa colona</i>	0.6	0.3	0.5	1.3	0.0	0.7
<i>Eleusine indica</i>	0.2	0.4	0.3	0.0	0.0	0.0
<i>Setaria glauca</i>	0.1	0.1	0.1	0.0	0.0	0.0
Sedge						
<i>Cyperus rotundus</i>	8.7	12.4	10.6	23.4	26.5	25.0
<i>Cyperus iria</i>	1.3	1.5	1.4	0.0	0.0	0.0
Broadleaf						
<i>Ageratum conyzoides</i>	0.2	0.2	0.2	1.7	1.4	1.6
<i>Alternanthera philoxeroides</i>	3.8	4.9	4.4	1.2	1.2	1.2
<i>Amaranthus viridis</i>	0.5	0.2	0.4	1.3	0.6	1.0
<i>Blainvillea latifolia</i>	0.4	0.5	0.5	0.0	0.7	0.4
<i>Bonnaya brachiata</i>	0.0	0.0	0.0	3.0	2.9	3.0
<i>Eclipta alba</i>	0.0	0.2	0.1	0.0	0.0	0.0
<i>Euphorbia hirta</i>	0.1	0.0	0.1	0.0	0.0	0.0
<i>Gynandropsis pentaphylla</i>	0.7	0.3	0.5	0.0	0.0	0.0
<i>Ludwigia parviflora</i>	1.8	2.9	2.4	0.2	0.7	0.5
<i>Melochia corchorifolia</i>	0.4	0.1	0.3	0.0	0.2	0.1
<i>Phyllanthus niruri</i>	0.0	0.3	0.2	0.0	0.0	0.0
<i>Physalis minima</i>	0.4	0.7	0.6	0.0	0.0	0.0

two locations accounted for 38.7, 43.0 and 18.3%, respectively of the total weed population. Sedges recorded maximum relative dry weight at Mohanpur (51.2%) and Raghunathpur (64.4%). Population of grasses and sedges varied between *capsularis* and *olitorius* species in both NAZ and RLZ. But both the species of jute were similar with respect to broadleaf weeds, which follow the observations of Sarkar and Bhattacharya (2005).

The experimental field was infested with 18 weed species at Mohanpur and 10 species at Raghunathpur (Table 2). Of which, nine weeds (*Cynodon dactylon*, *Echinochloa colona*, *Cyperus rotundus*, *Ageratum conyzoides*, *Alternanthera philoxeroides*, *Amaranthus viridis*, *Blainvillea latifolia*, *Ludwigia parviflora* and *Melochia corchorifolia*) were common in two agro-climatic zones. However, *C. dactylon* and *C. rotundus* appeared as important ones in both the zones; which

together contributed about 62.6 and 84.6% of total weed density at Mohanpur and Raghunathpur, respectively.

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