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Economics of different weed management methods in both the species of jute

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ABSTRACT

Field experiment on weed management in jute was conducted for two years (2001 and 2002) at the Instructional Farm of Bidhan Chandra Krishi Viswavidyalaya (22.93^{0}N, 88.53^{0}E) having sandy loam, neutral, medium fertile soil to study the economics involved with different weed management methods in jute. The maximum fibre yield of capsularis and olitorius jute was 2917 and of 4010 kg/ha respectively with two hand weeding (21 and 35 DAS) which was at par with the fibre yield (2817 and 3638 kg/ ha) from Fluchloralin +one hand weeding at 35 DAS for capsularis and olitorius jute. The highest net return per rupee investment (NRPRI) in capsularis jute was 1.64 in Fluchloralin+one hand weeding (35 DAS) treatment which was closely followed by the NRPRI (1.61) with one hand weeding (21 DAS) treatment. In olitorius jute it was 2.70 with Fluchloralin + one hand weeding (35 DAS) treatment which was closely followed by the NRPRI (2.69) with one hand weeding (21 DAS) treatment. The lowest NRPRI of olitorius jute was 1.82 only with no-weeding treatment. The same data for capsularis jute was 1.30 with unweeded control treatment and with one hand weeding (35 DAS) treatment.

Economy of number of Asian countries, who are major producer of jute viz. India, Bangladesh, Nepal, Thailand and China depend on production of raw jute fibre (Mahapatra and Saha, 1999). In the entire life cycle of jute from cultivation to usage and disposal – it is friendly to the environment and produces no toxic materials at all (Abdullah and Asaduzzaman 1998). As reported by Saraswat (1980), about 35% of the total cost of cultivation of jute goes to weeding alone if done manually and at the same time 50-80% fibre yield loss may occur due to presence of weeds during the critical period of 30-45 days after sowing (Mishra, 1997). June can not compete with weeds during the initial critical growth phase, although during the later phase of crop growth, jute takes upper hand when competing with weeds due to its higher genetical potential of growth. Even then the competition from weeds during the early phase (21-45 days) in jute affect the fibre yield substantially and thereby farmers have to face low production as well as higher input cost (Biswas, 1999) which ultimately resulted low profitability. Older varieties of capsularis and olitorius jute had been tested for their profit giving limits when exposed to different weed management schemes. But in the recently released varieties of jute such studies on profitability with reference to weed

management options has not been recorded. Therefore, an attempt has been made to study the effect of different weed management practices on the profitability in recently released capsularis (JRC 698) and olitorius jute (JRO 66) varieties.

MATERIALS AND METHODS

The field experiment was conducted for two years (2001 and 2002) at the Instructional Farm of Bidhan Chandra Krishi Viswavidyalaya situated at 22.93^{0}N, 88.53^{0}E and 9.75 m AMSL. The experimental soil was sandy loam in texture, neutral in reaction (pH 6.9) with medium fertility (organic carbon 0.61%, total N 0.065%, available P 18.32 kg/ha and available K 109.85 kg/ha). The treatment combinations were T_1 : unweeded control, T_2 : hand weeding (HW) once at 21 days after sowing (DAS), T_3 : HW at 35 DAS, T_4 : HW twice at 21 and 35 DAS, T_5 : Fluchloralin as pre plant incorporation (PPI) at 1 kg a.i./ha and T_6 : Fluchloralin at 1 kg a.i./ha as PPI along with one HW at 35 DAS. The experiment was laid in 6 m x 4 m plot size in randomised block design with 6 treatments replicate 4 times.

RESULTS AND DISCUSSION

Fibre yield

The maximum fibre yield of capsularis jute was 2917 kg/ha with two hand weeding (21 and 35 DAS) which was at par with the fibre yield (2817 kg/ha) from Fluchloralin + one hand weeding at 35 DAS (Table 1).

In the pooled value of fibre yield of olitorius jute (Table 2) the highest and the lowest fibre yield was 4010 and 1616 kg/ha with two hand weeding (21 DAS and 35 DAS) treatment and unweeded control treatment respectively. Earlier, Biswas (1990) recorded the highest fibre yield of 3735 kg/ha with Fluchloralin + hoeing in JRC 7447.

Net return

The highest net return was Rs. 20,581/- in capsularis jute with Fluchloralin + one hand weeding (35 DAS) treatment and the same figure for olitorius jute was Rs. 36.172/- in two hand weeding treatment which was closely followed by the net return of Rs. 33,985 in Fluchloralin + one hand weeding (35 DAS) treatment.

Net return per rupee investment

The highest net return per rupee investment (NRPRI) in capsularis jute was 1.64 in Fluchloralin + one hand weeding (35 DAS) treatment which was closely followed by the NRPRI (1.61) with one hand weeding (21 DAS) treatment (Table 1). The lowest NRPRI (1.30) were with unweeded control treatment and with one hand weeding (35 DAS treatment. Mishra and Bhol (1996) observed the highest net return with Fluchloralin (1 kg a.i./ha) + one hand weeding at 35 DAS in JRC 7447. In the same variety of capsularis jute, Mishra and Nayak (1995) recorded a net profit of Rs. 10,908/- with the application of Fluchloralin at 1 kg a.i./ha along with hoeing at 35 DAS.

Table 1 Effect of different weed management methods on the economics of capsularis jute

Treatments	Fibre yield (kg/ha)	Stick yield (kg/ha)	Total return (Rs.)	Total cost (Rs.)	Net return	Ner return per rupee investment
T_1 : Unweeded Control	1308	4113	16737.84	7273.49	9464.35	1.30
T_2 : HW once 21 DAS	2435	5159	28659.58	10999.49	17660.09	1.61
T_3 : HW once 35 DAS	2145	4545	25247.74	10999.49	14248.25	1.30
T_4 : HW twice 21+35 DAS	2917	6180	34329.73	14725.49	19604.24	1.33
T_5 : Fluchloralin	1915	4057	22537.12	8841.89	13695.23	1.55
T_6 : Fluchloralin + HW 35	2817	5968	33148.75	12567.89	20580.86	1.64

Sale price of capsularis jute fibre = Rs. 9.65/kg, Sale price of capsularis sticks = Re. 1/kg.

Table 2 Effect of different weed management methods on the economics of olitorius jute

Treatments	Fibre yield (kg/ha)	Stick yield (kg/ha)	Total return (Rs.)	Total cost (Rs.)	Net return	Ner return per rupee investment
T_1 : Unweeded Control	1616	3945	20508.31	7273.49	13234.82	1.82
T_2 : HW once 21 DAS	3197	7803	40568.08	10999.49	29568.59	2.69
T_3 : HW once 35 DAS	2942	7181	37333.97	10999.49	26334.48	2.39
T_4 : HW twice 21+35 DAS	4010	9790	50897.43	14725.49	36171.94	2.46
T_5 : Fluchloralin	2538	6196	32214.21	8841.89	23372.32	2.64
T_6 : Fluchloralin + HW 35	3668	8955	46552.96	12567.89	33985.07	2.70

Sale price of capsularis jute fibre = Rs. 9.65/kg, Sale price of capsularis sticks = Re. 1/kg.

The highest NRPRI in olitorius jute was 2.70 with Fluchloralin + one hand weeding (35 DAS) treatment which was closely followed by the NRPRI with one hand weeding (21 DAS) treatment (2.69). The lowest NRPRI was only 1.82 with no-weeding treatment (Table 2).

In general it may be concluded that olitorius jute gave higher NRPRI (2.70) as compared to capsularis jute (1.64). In both the species of jute pre-plant incorporation of Fluchloralin at 1 kg a.i./ha along with one hand weeding at 35 DAS proved as the suitable weed management method for getting higher NRPRI.

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