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Effect of Weed Control in Sabaigrass (*Eulaliopsis binata*)

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Sabaigrass or bubei (local name) is an important cultivated perennial grass in Mayurbhanj district of Orissa used for making rope and paper pulp. It is suited to rainfed marginal and sub-marginal acidic soils and usually propagated by slips. The growth of plant during initial years of establishment is very slow and it suffers due to serious weed competition. As the demand of manual labour for purposes other than agriculture is increasing day by day, controlling weeds by the use of herbicides is receiving wider attention. Sabaigrass farmers opined that burning the field suppressed the growth of weeds particularly spear grass (*Heteropogon contortus*). The present investigation was carried out to evaluate some of the weed management treatments including herbicides.

The field trial was conducted during rainy seasons of 2001 and 2002 at Chhenadhua Farm, Baripada under Orissa University of Agriculture & Technology in Mayurbhanj district of Orissa. The climate was sub-humid with 2123.4 and 1584.2 mm rainfall during 2001 and 2002, respectively. The weed control treatments burning the field with dry sabaigrass leaves before planting the crop and after each harvest; intercultivation; hand weeding at 20 and 40 days after planting; burning fb intercultivation; burning fb one hand weeding at 40 days after planting; 2, 4-D Na salt at 0.75 kg ha^{-1} as post-emergence at 20 days alter planting; isoproturon at 0.75 kg ha^{-1} as post-emergence at 20 days after planting and weedy check were laid out in randomized block design with three replications. Sabaigrass slips (10 tillers as a clump, keeping a stump length of 7.5 cm) were planted at spacing of 90 x 60 cm in pits (15 cm deep) on July 15, 2001. Tips of the slips were cut to reduce transpiration level, prevent drying and give better chance of survival. The first harvest of grass was made 15 moths after planting, thereafter it was harvested in September and December each year. Rate of herbicides, fertilizers, cost of planting material and labour wages prevailing during crop period were used for calculating net returns.

The major weed species infesting the field were : *Heteropogon contortus* (56.6%) *Dactyloctenium aegyptium* (12.4%), *Sida rhombifolia* (6.2%), *Tephrosia purpurea* (4.6%), *Digitaria setigera* (3.5%), *Dichanthium annulatum* (2.4%), *Ocimum*

Table 1. Effect of control measures on yield and economics of sabaigrass (Mean data of two years)

Treatment	Weed density (No. m^{-2})	Weed dry weight 60 DAP	Dry grass yield (kg ha^{-1})	Net return (Rs. ha^{-1})	Benefit : cost ratio
Burning	66	56.0	1930	2023	1.53
Intercultivation	62	50.2	2013	1832	1.43
Manual weeding 20 and 40 DAP	65	54.1	2007	1414	1.31
Burning fb intercultivation	32	23.7	2298	2627	1.61
Burning fb manual weeding 40 DAP	35	26.0	2248	1801	1.36
2, 4-D at 0.75 kg ha^{-1} post-em.	40	38.0	2156	3056	1.89
Isoproturon at 0.75 kg ha^{-1} post-em.	49	44.7	2041	2396	1.64
Weedy	95	73.7	1650	1650	1.38
LSD (P=0.05)	5.0	6.3	188	540.6	

Cost of herbicide (Rs. kg^{-1}) : 2, 4-D Na salt (80% WP) 190, isoproturon (75% WP) 230 and sabaigrass sale price (Rs. kg^{-1}) 3.

americanum (1.6%), *Borreria* sp. (4.8%), *Cyperus iria* (2.6%) and *Cynodon dactylon* (1.4%). Burning followed by intercultivation or manual weeding (20 and 40 days) reduced the dry weight of weeds by more than 60%. Weed control efficiency in other weed control treatments including herbicides was very poor (less than 50%) (Table 1).

Different cultural or mechanical measures significantly increased the dry grass yield over weedy check (Table 1). Burning followed by intercultivation gave the highest yield (2298 kg ha^{-1}) followed by burning+hand weeding at 20 and 40 days (2156 kg ha^{-1}). However, the difference between them was non-significant. 2, 4-D Na salt at 0.75 kg ha^{-1} recorded highest dry grass yield followed by isoproturon at 0.75 kg ha^{-1}. Similar yield variations due to herbicide application were also reported in other grasses by Rice and Stritzke (1989) and Malik (1990). The highest net return of Rs. 3056 ha^{-1} was obtained with the use of 2, 4-D Na salt at 0.75 kg ha^{-1}, followed by burning+intercultivation (Rs. 2627 ha^{-1}). The benefit : cost ratio obtained with the use of herbicides was more than that of cultural and mechanical measures.

REFERENCES

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