

PERFORMANCE OF SOME FODDER LEGUMES IN RICE FALLOWS

The performance of a number of legumes in rice fallows has been evaluated and superior varieties identified by a number of workers (Shelton, 1980; Santhakumari *et al.*, 1980 and George *et al.* 1981). Varkey and Jacob (1978) reported that C-152, New Era, Ptb-1 and Ptb-118 could be successfully grown in the rice fallows during the third crop season. Subramonian and Palaniappan (1980) found M-3 and Co-3 to be varieties of black gram suited to the rice fallows. In Kerala, the usual practice during the third crop season is to leave the land fallow. It was felt that the cultivation of fodder legumes during this period could be beneficial both in the time and space dimensions and in that it would augment the nutrient status of the soil. Fodder legumes would also supply nutritive, succulent and palatable green fodder.

A field trial was laid out in the Agricultural Research Station, Mannuthy, Kerala in January 1986 in order to identify fodder legumes performing well in rice fallows and supplying good tonnage of green fodder. The treatments included six fodder legumes, viz., sannhemp, soya bean, rice bean, velvet bean, cowpea and black gram and a fallow, laid out in a randomised block design with three replications. The legume seeds were broadcasted and grown under rainfed conditions. Fertilizers were applied as per the package of practices recommendations of the Kerala Agricultural University (KAU, 1986). The fodder legumes were harvested thrice and just before each cut, observations were recorded on height of plants, number of leaves, nodule count, leaf-stem ratio and N, P and K contents. At

Table 1. Mean height, number of leaves and number of nodules of fodder legumes in rice fallows

Treatment	Mean height/plant (cm)			No. of leaves/plant			No. of nodules/plant		
	Harvest number			Harvest number			Harvest number		
	I	II	III	I	II	III	I	II	III
Sannhemp	81.33	84.37	77.53	24.00	30.97	57.90	4.73	2.80	1.90
Soya bean	30.67	28.77	22.87	8.67	13.57	13.67	2.33	3.07	1.80
Rice bean	24.67	33.63	30.53	9.00	16.13	19.27	4.07	3.23	3.37
Velvet bean	34.67	44.80	53.40	22.33	29.33	46.17	30.00	21.33	12.33
Cowpea	30.67	33.33	29.07	11.00	11.83	15.87	9.67	4.80	7.70
Black gram	27.0	30.50	19.70	9.67	10.77	13.77	5.40	4.70	1.73
CD (0.05)	7.85	7.07	9.18	3.41	9.93	25.19	9.49	2.75	9.22
SEm±	2.49	2.24	2.91	1.08	3.15	7.99	3.01	0.87	2.93

Table 2. Leaf-stem ratio (dry weight) and fodder yield (fresh weight) of legumes in rice fallows

Treatment	Leaf-stem ratio			Average fodder yield (t/ha)			
	Harvest number			Harvest number			Total
	I	II	III	I	II	III	
Sannhemp	1.03	0.62	0.18	6.35	8.35	6.30	21.00
Soya bean	2.94	2.88	0.81	1.79	2.06	0.72	4.57
Rice bean	4.52	3.65	0.60	1.85	3.61	1.10	6.56
Velvet bean	2.98	2.68	2.29	1.09	1.82	0.87	3.78
Cowpea	3.47	2.23	0.38	2.76	3.86	1.35	7.96
Black gram	4.08	2.77	0.64	2.57	2.82	0.85	6.24
CD (0.05)	0.585	0.871	1.049	1.27	1.60	1.44	3.07
SEm \pm	0.19	0.28	0.33	0.40	0.51	0.46	0.98

each harvest the freshweight of the fodder was recorded and expressed as t/ha.

From the study it was found that sannhemp and velvet bean recorded the maximum height and number of leaves per plant while with respect to the number of nodules per plant velvet bean was superior to all other legumes (Table 1). The legume crops differed significantly in their leaf-stem ratio (dry weight). However, there was no general trend of variation as seen from Table 2. There was no significant variation in the nutrient content of the different legume crops at the three harvests. The fresh weight of fodder at all three harvests was found to vary

significantly (Table 2). The highest yield was recorded by sannhemp (6.35, 8.35 and 6.3 t/ha **respectively**), followed by cowpea (2.76, 3.86 and 1.35 t/ha respectively). Sannhemp was found to be significantly superior to all other legume crops at all three cuts and this is in accordance with the findings of Shelton (1980).

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REFERENCES

- George, A., Nair, K.P.M. and Salam, M.A. 1981. Effect of graded doses of nitrogen, phosphorus and potassium on the yield and quality of black gram variety KM-1 grown in rice fallows. *Agric. Res. J. Kerala* 19(2) : 10-14
- KAU, 1986. Package of Practices Recommendations 1986. Kerala Agricultural University, Directorate of Extension, Trichur
- Santhakumari, S., Sasidharan, N.K. and Kurup, A.E.S. 1980. Performance of black gram varieties in rice fallows. *Agric. Res. J. Kerala* 18(1) : 100-101
- Shelton, H.M. 1980. Dry season legume forages to follow paddy rice in N.E. Thailand. I. Species evaluation and effectiveness of native *Rhizobium* for nitrogen fixation. *Exp. Agric.* 16 : 57-66
- Subramonian, A. and Palaniappan, S.P. 1980. Evaluation of black gram varieties for growing in rice fallows. *Indian J. agric. Sci.* 50 : 606-607
- Varkey, P.A. and Jacob, S. 1978. Screening of cowpea varieties for the rice fallows. *Agric. Res, J. Kerala* 17(1) : 120-121

