

NUTRIENT REMOVAL BY RICE CROP AND WEEDS

Weeds compete with rice plant severely for the absorption of nutrients when water is not a limiting factor in the field (Smith, 1968). Significant reduction in the uptake of nutrients by crops in presence of weeds was reported by several workers. (Swain, 1967; Sankaran *et al.*, 1974)

An experiment was conducted at the Rice Research Station, Kayamkulam under the Kerala Agricultural University during *virippu* season of 1981 with the object of finding out the nutrient uptake by rice and weeds in semidry dibbled crop of rice. The Rice Research Station, Kayamkulam is situated in the Onattukara region of Kerala State. This region is located 9°8'N latitude and 76°31'E longitude at an altitude of 3.05 m above mean sea level. This area enjoys a humid tropical climate. The main lowland crops are two season rice followed by sesamum. The treatments consisted of seven herbicide treatments (bentazon 1.5 and 2.0 kg ai/ha, pendimethalin 1.0 and 1.5 kg ai/ha, benthocarb 1.5 and 2.0 kg ai/ha and nitrofen 1.875 kg ai/ha, all applied on the same day of dibbling), three handweeding treatments (handweeding on 15th day, 30th day and 15th + 30th days), one unweeded control and one completely weed free treatment which were replicated thrice and laid out in randomised block design.

The nitrogen uptake by the crop in the weed free condition was 108.7 kg/ha while that in the weedy check was 49.5 kg/ha (Table 1). The uptake of N by the crop in the weed free plot (108.7 kg/ha) was more than the combined uptake of N by rice and weed in the weed free plot (84.9 kg/ha). According to Swain (1967) nitrogen absorption by rice increased three times in the absence of weeds.

In the case of P_2O_5 the uptake by the crop was doubled in the absence of weeds. The uptake by the crop in the unweeded control was 30.9 kg/ha while that in the completely weed free condition was 61.1 kg/ha. The same trend was observed in the case of K_2O also. This is a clear indication of the adverse effect of weeds in reducing crop yields. It can also be noted that the nutrient uptake by the crop and weed together in the unweeded control is less than that by the crop alone in the completely weed free condition with regard to all the three nutrients. This is in accordance with the finding of Shetty and Gill (1974) wherein the total uptake of nutrients by the crop and weed together in unweeded plot was less than the uptake of nutrients by the crop alone in the weed free treatment.

Table 1
Nutrient uptake of crop and weed, kg/ha

Sl. No.	Treatments	Crop			Weed		
		N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
1	Bentazon, 1.5 kg ai/ha	87.0	47.8	87.4	4.9	2.6	9.1
2	Bentazon, 2.0 kg ai/ha	93.1	57.7	92.4	2.1	0.9	5.1
3	Pendimethalin, 1.0 kg ai/ha	76.1	43.3	76.5	6.8	5.0	10.3
4	Pendimethalin, 1.5 kg ai/ha	78.0	44.2	78.2	6.9	6.1	10.8
5	Benthiocarb, 1.5 kg ai/ha	92.1	55.1	94.3	2.2	2.4	4.5
6	Benthiocarb, 2.0 kg ai/ha	106.2	59.3	108.8	0.5	0.0	1.5
7	Nitrofen, 1.875 kg ai/ha	97.5	59.0	98.2	0.5	0.7	1.6
8	Handweeding on 15th day	69.8	38.2	70.2	12.6	5.1	15.5
9	Handweeding on 30th day	61.7	36.4	62.7	11.3	7.0	18.6
10	Handweeding on 15th and 30th day	87.7	53.1	87.1	6.2	2.1	6.8
11	Unweeded control	49.5	30.9	50.5	35.4	22.5	38.4
12	Completely weed free	108.7	61.1	109.5	—	—	—
CD (0.05)		11.50	4.02	12.10	3.30	1.58	3.35

College of Agriculture
Vellayani 695 522, Trivandrum, India

S. Lakshmi
K. P. M. Nair
G. Raghavan Pillai
V. Muraleedharan Nair

References

- Sankaran, S., Rethinam, P., Rajan, A. V. and Raju, K. 1974 Studies on the nutrient uptake of certain field crops and associated weeds and its effect on seed production. *Madras agric. J.* **61**: 624-628
- Shetty, S. V. R. and Gill, H. S. 1974 Critical period of crop weed competition in rice. *Indian J. Weed Sci.* **6**: 101-107
- Smith, R. J. 1963. Weed competition in rice. *Weed Sci.* **16**: 252-255
- Swain, D. J. 1967. Controlling barnyard grass in rice. *Agric. Gaz.* **78** (8) 473-475