

INFLUENCE OF SPLIT APPLICATION OF P AND K ON DIRECT SEEDED SEMI-DRY VIRUPPU RICE

The basal application of phosphatic and potassic fertilisers to the direct-sown *viruppu* rice is still a slow moving technology in Kerala where more than 75 per cent of the *viruppu* rice is either sown broadcast or dibbled with a nominal dose of cattle manure or wood ash and the crop is denied of P and K in the early stage. One reason for the slow movement of this very important technology is the apprehension that the applied fertilisers might hamper the germinating seeds in the absence of enough soil moisture resulting in a poor stand. This is evident from the fact that P and K are applied as basal doses when sprouted seeds are sown in puddle.

In the absence of any data on the split application of P and K for direct-sown rice in the laterite soils of Kerala, an experiment was conducted at the Regional Agricultural Research Station, Pilicode and 13 different locations in cultivators' fields in Kasaragod and Cannanore districts during the three *viruppu* seasons of 1982, 1983 and 1984 to assess the adverse effect, if any, on the rice yield due to the application of P and K at sowing. Two different sets of treatments were given in the research station and different locations, though the nature of two splits of P and K fertilisers was the same in both the cases. The first split was applied at the time of final preparation of land prior to sowing (designated as at sowing) and the second on the 21st day of 80-100% germination. In all the cases, half of the total nitrogen was given along with the second split, and the other half between the 40th and 45th day of germination. Urea (46% N), Mussooriphos (22% P_2O_5) and muriate of potash (60% K_2O) were the fertilisers used to give 40, 20 and 20 kg of N, P_2O_5 and K_2O respectively per hectare for the test variety *Allikkannan* (140 days) a popular tall *indica*, which was preferred as the modern varieties commanded only around 35 per cent of the *viruppu* rice area in the northern districts of Kerala.

In the research station, there were six treatment combinations laid out in a RBD with four replications in subplots of 30 m² each. The treatments and the mean yields of grain and straw are furnished in Table 1.

The treatment differences are not statistically significant in the case of grain and straw during all the three years. The pooled data also show the same trend. The data indicate that application of P and K at sowing is not harmful to the crop.

In the cultivators' fields only four treatments were fixed with a control (no fertiliser) so that the difference due to fertilising the direct-sown crop also could be demonstrated. One set in one location was considered as one replication, there being four to five locations every year. The subplot size was 20 m². The experiment was laid out at Vellur, Kanhangad West, Kanhangad East, Nileshwar and Thekumbad in 1982, Vellur, Udinoor, Kodakkat and Thekumbad in 1983 and Thoyammal, Nileshwar North, Nileshwar and Payyannur in 1984. In all these locations the soil type was coastal sandy loam with low organic carbon, medium P and low K.

Table 1
Grain and straw yield of *Allikkannan* rice at the RARS, Pilicode
(mean of 3 seasons, 1982—1984)

Tr No.	Treatments		Mean yield of 3 year (kg/ha)				Mean No. of plants/m ²
	At sowing	21st day of germination	Grain	% on control	Straw	% on control	
1	Full P & K	(Control)	2542	100	5525	100	65
2	0.75 P & K	0.25 P & K	2348	92.4	4831	87.4	62
3	0.67 P & K	0.33 P & K	2418	95.1	5316	96.2	63
4	0.50 P & K	0.50 P & K	2340	92.0	5478	99.1	65
5	0.25 P & K	0.75 P & K	2526	99.4	5416	98.0	65
6	Zero P & K	Full P & K	2395	94.2	5222	94.5	63
Z test			Not satisfied		Not satisfied		

The treatment differences on yield are not statistically significant during the three years. The mean yield data given in Table 2 though not statistically significant, indicate the advantage of fertilising the crop at seeding or during the initial phase of crop growth.

Table 2
Mean yield of three years (1982—'84) at 13 locations in Kasaragod
and Cannanore districts

Tr. No.	Treatments		Mean yield of 3 years (kg/ha)		% increase over control		Mean No. of plants/ m ²
	At sowing	21st day of germination	Grain	Straw	Grain	Straw	
1	Cattle manure (a 2 t/ha No fertilisers)	(Control)	2115	3938	100	100	52—54
2	Full P and K		2400	4925	113.5	125.1	53—54
3	Half P and K	Half P & K	2495	4730	117.9	120.1	53—56
4	Zero P and K	Full P & K	2367	5008	111.9	127.2	51—53
Z test			Not satisfied				

Further it can be seen that the yield variation due to split application of P and K is negligible (4.4 to 6.0 per cent).

Thus the results of the experiment indicate that the apprehension that the fertilisers applied as basal dose to direct-sown *viruppu* rice might hamper the germination of the seeds resulting in a poor stand, and low yield is ill-based.