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### EFFICIENCY OF FOLIAR VS SOIL APPLICATION OF NITROGEN ON GROWTH AND YIELD OF SUMMER PADDY.

The most significant and recent development in the field of plant nutrition is feeding of plants through foliage. This will increase the efficiency of nitrogen and at the same time will help to reduce the doses required. In order to assess the relative efficiency of foliar and soil application of nitrogen an experiment was conducted on summer (Punja) paddy of 1967.

The trial was conducted in Sandy clay loam soil of the farm attached to the Agricultural College, Vellayani, Kerala. The soil of the experimental site contained 0.076% total nitrogen, 0.001% available  $P_2O_5$  and 0.003% available  $K_2O$  with a pH of 5.0. The treatments consisted of 5 levels of foliar application of nitrogen (10, 15, 20, 25 and 30 kg N/ha respectively) and one level of soil application of nitrogen (30 kg N/ha) laid out in randomised block design with five replications. The rice variety ADT-27 was used for the experiment and a uniform dose of phosphorus and potash at 30 kg/ha. was given as basal dressing. Test sprayings using ammonium sulphate analysing 20% nitrogen was conducted and a maximum concentration of 2.5% was used for the treatments. Foliar sprays were given in six equal instalments at an interval of one week, starting from the 20th day after planting based on the work of Rajat De *et al* (1967) at I.A.R.I. Soil application of nitrogen was given in two equal split doses, half at planting and the other half 30 days after planting. Water spray was given to the soil treatment whenever foliar spray was given to other treatments.

The data regarding various growth characters, yield attribute and yield of paddy are given in Table 1. The data revealed that there was no significant difference in height due to various treatments. The fact that 20 kg nitrogen by way of foliar spray was equally effective as that of higher levels of foliar nitrogen as well as soil application of 30 kg nitrogen can be attributed to the effect of quicker and complete absorption of this nutrient by foliar application as compared to soil application (Gasser, 1964).

The progressive reduction in the percentage of productive tillers noticed as a result of increasing nitrogen levels is in conformity with the reports of Oka (1956), the reason being that at higher levels of nitrogen application more vegetative growth was resulted at the cost of productive tillers. On the other hand there might have been shortage of available nitrogen in sufficient quantities at the time of initiation of flower primordia resulting in lesser percentage of productive

tillers in the soil application as the entire dose was given within a period of 30 days after planting. Panicle length being a varietal character was not influenced by a change in the method of application of nitrogen (Nair, 1962).

Table 1

Effect foliar and soil application of urea on growth characters, yield attributes and yield of paddy

Treatments	Height at harvest (cm)	Percentage of productive tillers	Grain per panicle	1000 grain weight	Grain yield kg/ha	Straw yield kg/ha
1. 10 kg N/ha (Foliar)	117.8	86.3	113.7	19.18	2110	2580
2. 15 kg N/ha "	117.6	85.1	113.8	19.19	2150	2605
3. 20 kg N/ha "	118.8	84.5	11.45	19.62	2278	2733
4. 25 kg N/ha "	119.9	81.6	116.0	19.32	2421	2921
5. 30 kg N/ha "	120.6	81.1	117.1	20.54	2584	3079
6. 30 kg N/ha (soil)	121.4	74.0	117.7	20.31	2471	3232
F—Test	N. S	Sig.	Sig.	N. S	Sig.	Sig.
(F.D (0.05)	—	2.86	3.30	—	320-1	352.5

In the case of grains per panicle, the treatment 30 kg nitrogen applied to soil was on par with 20, 25 and 30 kg nitrogen applied to foliage. This may probably be due to the rapid and complete absorption of nitrogen given to foliage as reported by Fisher and Walker (1950). Thousand grain weight was not influenced by the various treatments significantly, though there was slight trend in favour of increasing the weight at higher levels of foliage feeding.

The foliar application of nitrogen has resulted in a progressive increase in the yield of grain. The maximum yield of 2584 kg/ha. was recorded by 30 kg nitrogen to foliage. The fact that the response for 20, 25, 30 kg nitrogen to foliage were no par with 30 kg nitrogen to soil indicates clearly that foliar application of 20 kg nitrogen is almost as effective as that of 30 kg nitrogen to soil. The maximum straw yield of 3232 kg/ha was recorded by 30 kg nitrogen to soil. This may be due to the fact that in this treatment the soil received all the nitrogen before 30th day after planting and this nitrogen would have helped to enhance the vegetative growth rather than productive characters. The observation of Sahu and Lenka (1966) that foliar application generally slackens vegetative growth justifies the superiority of soil application of nitrogen in this regard.

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സംഗ്രഹം

1967. പച്ചവെള്ളാലത്തു് വെള്ളായണി കാർഷികകോളേജിൽ നടത്തിയ ഒരു പരീക്ഷണത്തിൽ ADT 27 എന്നയിനം നെല്പിന് 20 കിലോഗ്രാം. നൈട്രജൻ പർണ്ണപോഷണം വഴി നൽകുന്നതു് 30 കിലോഗ്രാം. നൈട്രജൻ മണ്ണിൽ rhhffis നൽകുന്നതിനു തുല്യമാണെന്നു കണ്ടു.

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