Madras agric. J. 62 (2) : 87—89 February, 1975.

A Note on the Nutrient Composition of Fruiting Branches of Black Pepper (*Piper nigrum* L.)

Black pepper (*Piper nigrum* L.,) is an important cash crop of India, cultivated mostly in Kerala State. Dewaard (1964) and Sim (1971, 1974) from Malaysia have reported the nutrient composition of the black pepper. However, information on the nutrient composition of the plant under South Indian conditions is scanty. This note reports the results of preliminary investigation on this aspect.

Typical samples of lateral fruiting shoots of one year growth were collected from well maintained and mature pepper vines of Panniyur I, a hybrid and Kalluvally, a typical local variety grown in laterite soils. The dry matter of the samples was determined on oven-dry basis and they were analysed for N, P, K, Ca and Mg according to Jackson (1967). The results are presented in Fig. 1 and Table 1.

The results, in general, indicate that K is maximum in the stem, followed by leaf and fruit spike; N is more or less equal in the leaf and fruit spike but higher than the stem; P in all the components is almost equal and least of all the constituents; and Ca and Mg contents are maximum in the leaf and least in the fruit spike. Panniyur I, a promising hybrid appears to be more nutrient exhausting than the typical local variety, Kalluvally for N, P, K, Ca and Mg. On the assumption that the lateral fruiting shoots would form the greatest part of the bearing vine (Sim, 1971) the data in the Table 1 seem to afford a

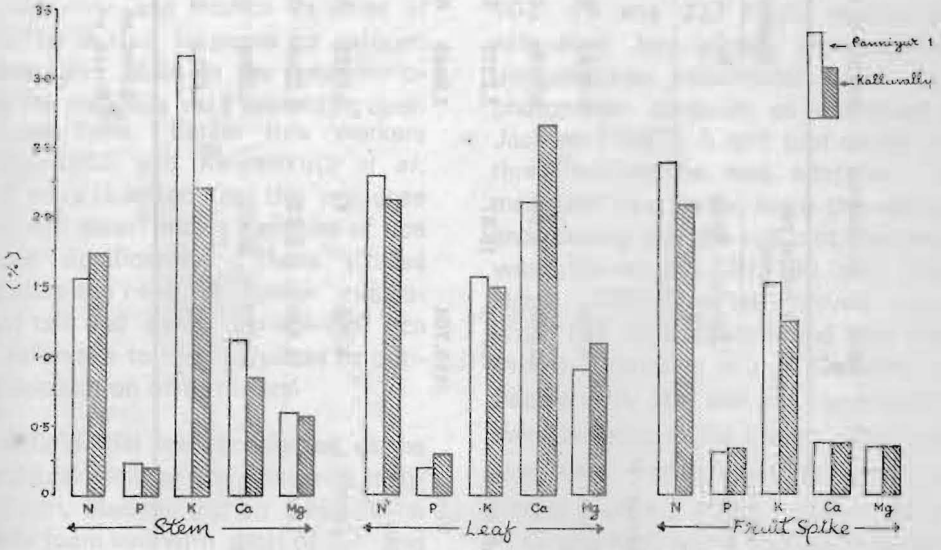

Fig. 1. N, P, K, Ca and Mg contents of stem, leaf and fruit spike.

TABLE 1. Distribution of nutrients in the lateral fruiting shoots (one-year growth) of black pepper.

Variety/ Component	Dry matter per shoot		Quantity of nutrients in dry matter (g)					Sequence of distribution of nutrients.
	Quantity (g)	Ratio	N	P	K	Ca	Mg	
Panniyur - 1*								
Stem	4.886	1	0.0767	0.0110	0.1574	0.0562	0.0311	K > N > Ca > Mg > P
Leaf	22.669	4.64	0.5304	0.0469	0.3649	0.4859	0.2048	N > Ca > K > Mg > P
Fruit spike	92.149	18.87	2.2375	0.2737	1.3998	0.3231	0.3047	N > K > Ca > Mg > P
Total	119.704		2.8446	0.3316	1.9221	0.8652	0.5406	N > K > Ca > Mg > P
Kalluvally**								
Stem	3.008	1	0.0532	0.0063	0.0677	0.0263	0.0184	K > N > Ca > Mg > P
Leaf	10.920	3.63	0.2386	0.0317	0.1666	0.2956	0.1196	Ca > N > K > Mg > P
Fruit spike	61.712	20.52	1.3006	0.1959	0.7869	0.2103	0.2026	N > K > Ca > Mg > P
Total	75.640		1.5924	0.2339	1.0212	0.5322	0.3406	N > K > Ca > Mg > P

* Based on the analysis of 15 samples.
** Based on the analysis of 5 samples.

preliminary idea for a more realistic approach to manure the crop, provided the number of lateral fruiting shoots produced per vine per year is known. Further, in the course of nutrition and growth of pepper, the order of contents of nutrients removed appears to be: N> K> Ca> Mg> P.

We thank Dr. K. V. Ahamed Bavappa, Director and Mr. M. C. Nambiar, Project Co-ordinator for their interest.

M. NAGARAJAN
N G. PILLAI

Division of Chemistry,
Central Plantation Crops Research Institute, Kasaragod-670 124.

REFERENCES

DEWAARD, P. W. P. 1964. Pepper cultivation in Sarawak. *World Crops* 16 : 24-30.

JACKSON, M. L. 1967. Soil Chemical Analysis Prentice Hall of India, Pvt. Ltd., New Delhi.

SIM, E. S. 1971. Dry matter production and major nutrient contents of black pepper (*Piper nigrum* L.) *Malay Agric. J.* 48 : 73-92.

SIM, E. S. 1974. A nutrient survey of black pepper smallholdings in Sarawak. *Malay. Agric. J.* 49 : 365-81.

Madras agric. J. 62 (2) : 89—91 February, 1975.

Studies on the Comparative Response of Nitrogen on Tall and Dwarf Indica Varieties of Rice

Japonica and *Indica* varieties of rice differ in their response for nitrogen considerably. Even in the same *indica* group the response vary depending upon the plant type. Earlier rice workers (Lenka, 1969, and Kalyanikutti *et al.* 1969) have reported that the response of tall and dwarf indica varieties of rice differed significantly. These studies emphasize the need for further evaluation of tall and dwarf varieties of rice with reference to their response to optimum application of fertilizers.

A field trial was conducted at the Agricultural College and Research Institute Farm, Madurai during 1969-70 on a sandy loam soil with a pH of 7.4 and available N, P_2O_5 and K_2O levels of 102, 19 and 337 kg/ha respectively estimated by alkali permanganate, photoelectric calorimeter, and flame photometer methods as described by Jackson (1967). A split plot design with three replications was adopted. The main plot treatments were the varieties and spacing and the sub plot treatments were (0, 40, 80, 120, 160 and 200 kg N/ha). TKM 6, a tall *indica* variety with 115 days duration and two dwarf *indica* varieties *viz.*, Cauvery and Padma with 105 and 110 days duration were included in the study. The seedlings were transplanted in a gross plot size of 4.00 x 2.40 m. uniform dose of P_2O_5 and K_2O were applied at 80 kg/ha to all plots. Nitrogen was applied in two