

STUDIES ON THE FERTILITY STATUS OF SOILS OF ALLEPPEY DISTRICT, KERALA STATE

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Alleppey District is a very important area with regard to food production in Kerala State. Out of the total area of 186790 hectares of this district, distributed under 17 National Extension Service Blocks, about 162298 hectares are under cultivated crops. The soils of this district are of three main categories, namely, sandy, clayey and laterite. A soil testing laboratory is functioning in this District from November 1966 for assessing the fertility status of soils collected from farmers' fields and making fertilizer recommendations. As field to field soil testing of the entire district could be completed only after a number of years, it was felt useful to prepare the soil test summaries based on the available analytical results of the soil samples analysed from this district, as such information would be highly useful for farmers as well as extension and research workers. An attempt is hence made in this paper to discuss the soil test summaries based on nutrient index calculated from the analytical data of nearly 20,000 soil samples.

Materials and Methods

Soil samples analysed were collected at a depth of 15 to 25 cm. The analyses were done by methods of Muhr *et al* (1953).

Available nitrogen was estimated as organic carbon in the soil. Bray's No. I reagent was used for extracting the soil phosphorus. Estimation of potash was done by the turbidimetric method. The determination of soil texture was made by the "Feel" method (Anonymous, 1951). Calculation of "Nutrient Index" was done as suggested by Parker *et al* (1951).

Results and Discussion

Results of analyses of the nutrient status of the soils are given in Table 1. It may be seen that with regard to available nitrogen status, blocks having mainly sandy type of soil were low, those having mainly laterite soil, medium and those having clayey soil, medium to high. Ten out of the 17 blocks with sandy soils were high in available phosphorus. The remaining seven blocks consisting mainly of laterite and clayey soils were having medium phosphorus indices. The need for phosphatic fertilizers seems to be not high in this district.

Table I
Nutrient status of soil of different blocks of Alleppey District

Block	Nitrogen	Phosphorus	Potassium
Ambalapuzha	M	H	L
Aryad	L	H	L
Bharanikkavu	M	H	L
Champakulam	H	M	L
Chengannur	M	M	L
Haripad	M	H	L
Kanjikuzhi	L	H	L
Koipuram	M	M	L
Kulanada	M	M	M
Mallappally	M	M	L
Mavelikara	M	H	L
Muthukulam	L	H	L
Pandalam	M	H	L
Pattanakkad	L	H	L
Pulikeezh	M	L	L
Thycattusseri	L	H	L
Veliyanad	M	L	M

L=Low M=Medium H=High

The contents of potash were poor in the soils of most blocks. The poor status of this nutrient appeared to be due to the open texture and heavy leaching of soils by rain. The need for potash fertilizer seems to be very high in these soils.

The soil test data also revealed that most of the soils in this district were acidic in reaction. The clayey soils showed a pH range of 3.0 to 4.5, the laterite soils from 5.0 to 6.0 and the sandy soils from 5.5 to 7.0. These results point out the necessity of liming for improving the fertility status of the soils.

The soluble salt contents of almost all the soils samples were normal. However, high contents of salts were found in certain soil samples collected from Pattanakad, Veliyanad, Champakulam, Ambalapuzha and similar blocks which were either near to the sea or flooded with sea water in certain seasons.

Fertility map and fertilizer recommendations

In Figure 1 is represented a soil fertility map of Alleppey District based on the nutrient indices calculated from the soil test data.

SOIL FERTILITY MAP OF ALLEPPEY DISTRICT

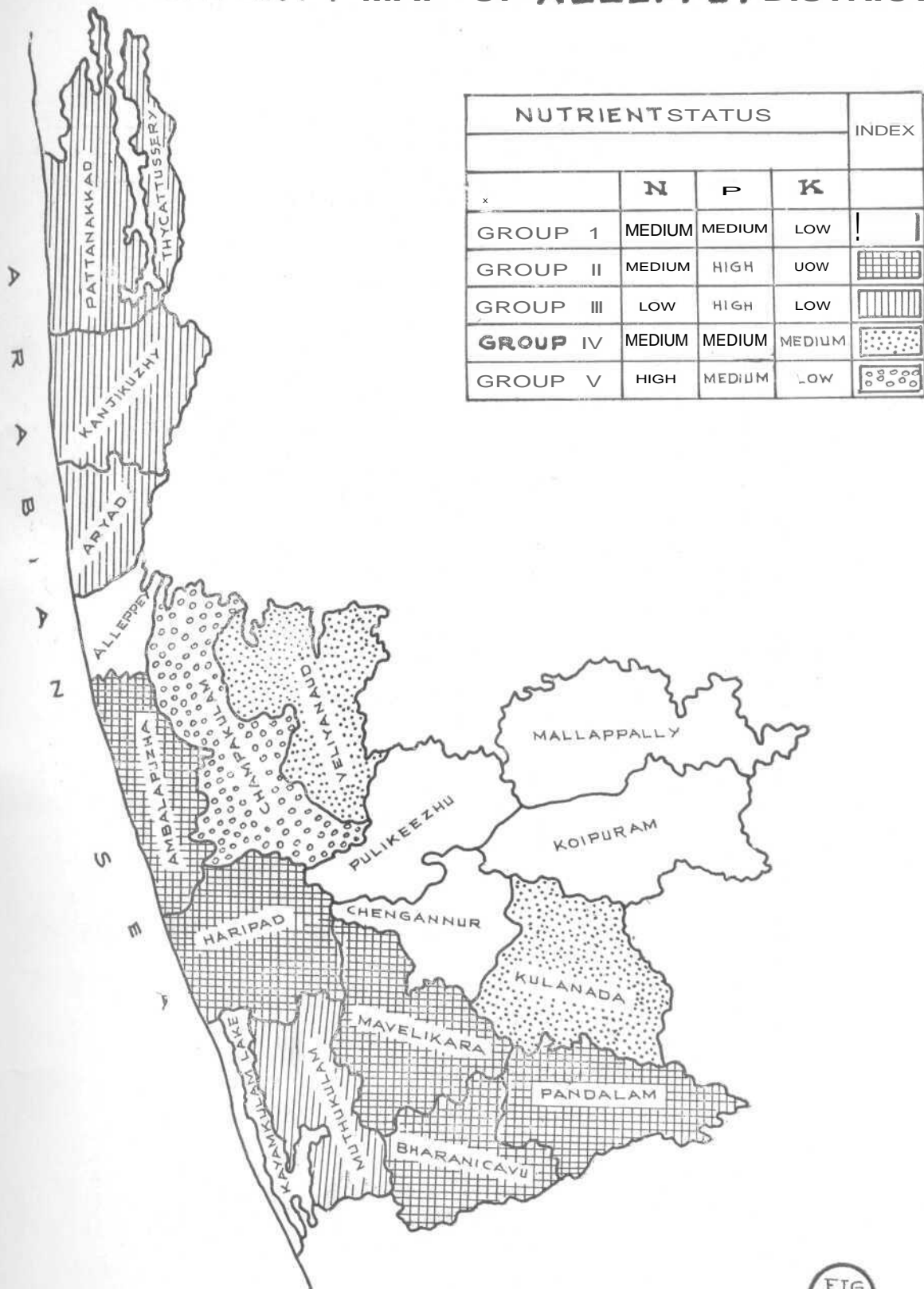


FIG. I

Table 2
Stock-wise fertilizer Recommendations (in Kg/ha or tree) based on soil fertility status

	Group I			Group II			Group III			Group IV			Group V		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Paddy (Kg/ha)															
High yielding varieties	87	55	69	41	69	69	109	41	69	87	55	55	65	55	69
Local varieties	38	83	41	25	41	41	41	2-	41	33	33	33	25	33	1
Cocunut (kg/tree)	0.28	0.28	0.70	0.12	0.70	0.70	0.34	0.2	0.7	0.0	0.45	0.2	0.12	0.28	4.70
Tapioca (kg/ha)	55	55	7	5	4	69	69	4 ₁	69	0	0	0	41	55	9
Banana (kg/plan)	0.08	0.08	0.35	0.23	0.12	0.35	0.35	0.12	0.35	0.23	0.3	0.3	0.2	0.28	0.35
Arecanut (kg/ha)	55	20	0.3	55	21	1.38	69	2 ₁	0	0	28	0	41	28	138
Sugarca (kg/ha)	11	82	0.8	164	610	100	205	61	0	0	0	0	123	82	13
Pepper (kg/standard)	0.10	0.14	0.0	0.0	0.07	1.05	0.15	0.07	1.05	0.20	0.4	0.70	0.05	0.14	0.05

Though individual field recommendations are to be desired, in the absence of such recommendations, block-wise recommendations based on soil test results will be more precise than the general state-wise recommendations. Fertilizer recommendations for the major crops grown in the different blocks based on the soil analyses results are given in Table 2.

Summary and conclusions

An assessment of the fertility status and soil conditions of the Alleppey District was made from the data available from the analyses of over 20,000 soil samples. A block-wise soil fertility map was prepared and block-wise general fertiliser recommendations for the major crops were worked out based on the fertility status of the soils. These recommendations formulated will be highly helpful in preparing production plans and assessing fertilizer requirements.

Acknowledgement

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