

FERTILITY STATUS OF RUBBER GROWING SOILS OF MUVATTUPUZHA TALUK IN KERALA

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Introduction

Muvattupuzha Taluk is situated on the bank of river Muvattupuzha and is part of Ernakulam District. This Taluk comprises of 18 villages. The annual rain fall is 3254 mm and 62% of the rain is obtained during the south west monsoon. (Table 1). Muvattupuzha Taluk comes under highland region as per the

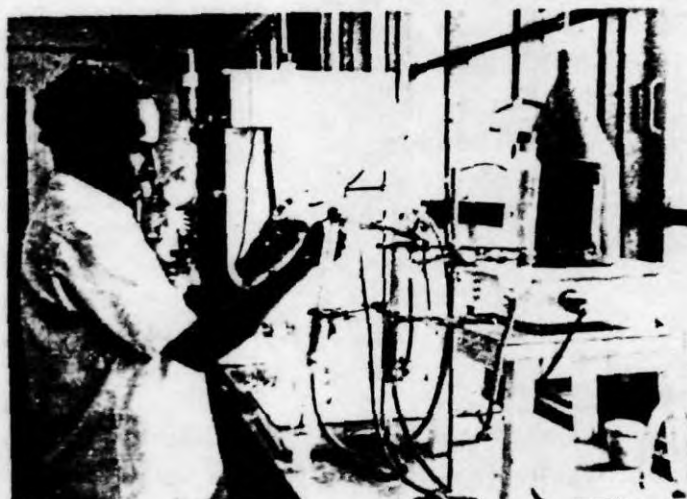


Table 1: Rainfall distribution and temperature of Ernakulam district

Rainfall (mm)		Temperature (°C)		
Annual	3254	Year	Maximum	Minimum
South west monsoon	2008	1990	31	24
		1991	31	24
		1992	31	22
North east monsoon	707	1993	31	22
		1994	31	24

classification of the state into 13 agroclimatic zones. This extends for an area about 22482 ha which is 3% of the total highland region in Kerala State. (Land Resources of Kerala 1993). In Ernakulam District the second major crop is rubber and this covers an area of about 54270 ha with a

production of about 53595 tonnes which accounts for 12% of area

and 13% of production in Kerala State. (Land resources of Kerala 1993). Most of the rubber cultivation is concentrated in Muvattupuzha Taluk. Laterite type of soil occurs here (Table 2). Fertility status of rubber growing soils of Kerala State was studied earlier (Karthikakutty Amma et al., 1991). The present paper contains a glimpse

Table 2. Soil types of Muvattupuzha taluk

Depth	Texture	Slope	Drainage
Very deep	Gravely clay	Moderately steep	Well
"	"	Gently sloping	"
"	Clay	Very gentle	Moderately well drained

on the fertility status of rubber growing areas of Muvattupuzha Taluk.

Materials and methods

This study is based on the result of 5681 soil samples collected from the small holdings of Muvattupuzha Taluk. The samples brought to the laboratory from 18 villages are analysed for pH, Organic carbon, available P and available K as described by Karthikakutty Amma (1991). The soil test values collected were summarised villagewise and classified as low, medium, high for organic carbon, available P, and available K as per fertility standards (Table 3). Nutrient index for each element was calculated as per the method suggested by Ramamoorthy and Bajaj (B. Ramamoorthy & J.C. Bajaj 1969). The percentage of samples which are falling into low category with respect to any nutrient is multiplied by a factor 1, those into medium by 2 and those into high with 3. The sum of these are divided by 100 and the value obtained is the nutrient index for that particular village with respect to that particular nutrient. Nutrient index value is the basic information for the study of fertility status of any region. Villages with a nutrient index value below 1.64 is

Table 3. Common fertility standard

Element	Standard		
	Low	Medium	High
Organic carbon	<0.75	0.75-1.5	>1.5
Available Phosphorus	<1.00	1.00-2.5	>2.5
Available Potassium	<5.00	5.00-12.5	>12.5

considered as low, between 1.64-2.33 as medium and above 2.33 as high were summarised in (Table 4). Fertility map of organic carbon, available P, available K was also prepared for 1994.

Result and discussion

A persual of the data of Table -II indicates that rubber growing soils of Muvattupuzha Taluk shows medium value for

organic carbon. Nutrient index value for organic carbon is within the critical limit and it varies from 1.56-2.17. Among the 18 village Marady and Muvattupuzha show nutrient index value below the critical level and it has the value 1.56 and 1.57 respectively which is also very near to critical value. In general it can be seen that the organic carbon status is shown as medium in almost all villages.



Table 4. Nutrient index of rubber growing soils of Muvattupuzha Taluk

Sl.No.	Name of Village	Organic C	Available P	Available K
1.	Koothattukulam	1.80 (M)	1.10 (L)	1.75 (L)
2.	Palakuzha	2.00 (M)	1.50 (L)	1.00 (L)
3.	Manjalloor	2.10 (M)	1.31 (L)	1.12 (L)
4.	Kalloorkad	2.10 (M)	1.39 (L)	1.33 (L)
5.	Maneed	2.00 (M)	1.63 (L)	1.79 (L)
6.	Valakom	1.96 (M)	1.20 (L)	1.22 (L)
7.	Muvattupuzha	1.56 (L)	1.63 (L)	1.38 (L)
8.	Arakuzha	1.86 (M)	1.32 (L)	1.46 (L)
9.	Thirumarady	1.99 (M)	1.80 (M)	1.18 (L)
10.	Onakkoor	1.97 (M)	1.14 (L)	1.49 (L)
11.	Memuri	2.04 (M)	1.46 (L)	1.28 (L)
12.	Ramamangalam	2.00 (M)	1.20 (L)	1.10 (L)
13.	Piravom	1.80 (M)	1.10 (L)	1.13 (L)
14.	Elanji	2.17 (L)	1.42 (L)	1.63 (L)
15.	Veloorkunnam	1.64 (M)	1.33 (L)	1.42 (L)
16.	Mulavoor	1.83 (M)	1.13 (L)	1.00 (L)
17.	Marady	1.57 (M)	1.75 (M)	1.13 (L)
18.	Enanalloor	2.00 (M)	1.62 (L)	1.38 (L)

Systematic maintenance of cover crop will be insisted upon.

Regarding available phosphorous the nutrient index value of almost all



soils is low. The variation in nutrient index value is from low to medium and it varies from 1.1 to 1.8. No village shows a high value for available phosphorous. Only in Marady and Thirumarady, medium value is noticed. This clearly indicates the low status of available P in the soils of Muvattupuzha Taluk. This may be due to the laterite type of soils with high content of Iron and Aluminium and this makes the phosphorus unavailable to plants by the process of phosphorous fixation.

Data on available potassium status was low in all villages except Koothattukulam and Maneed. The nutrient index value is ranging from 1-1.79. Almost all villages is having index value less than 1.5. It indicates the low status of potassium in this region. High rainfall in this region together with Kaolinite nature of laterite soil is the reason for the low status of available K.

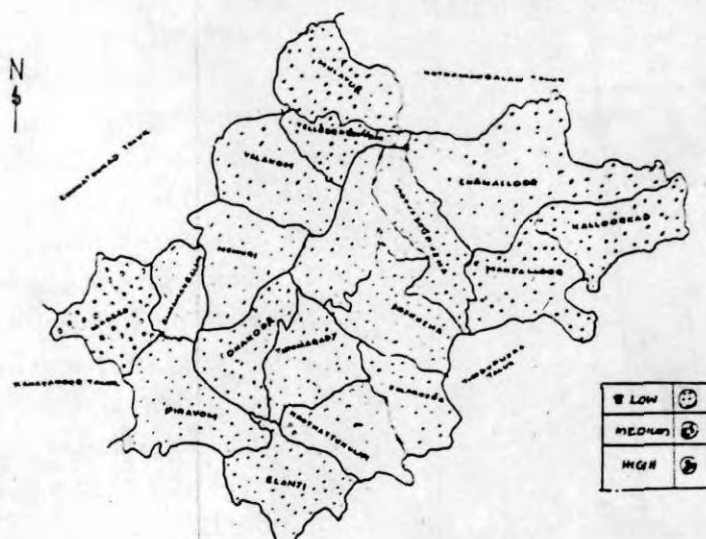
The present study indicates that soils of rubber small holdings of Muvattupuzha Taluk are medium in organic carbon status and low in available phosph-

MOOVATTU PUZHA TALUK



Organic Carbon

MOOVATTU PUZHA TALUK



Available Potassium

horus and available potassium. The poor nutrient status warrants the application of Nitrogenous, phosphatic and potassic fertilisers for ensuring sustainable yield in rubber holding of Muvattupuzha Taluk.

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References

1. Appraisal of Fertility status of Meghalaya - Journal of ISSS- Vol 37-1989.
2. Fertility status of some soils of Alfisols - Journal of ISSS - Vol 41 - 1993.
3. Nutrient status of turmeric growing soils - Journal of Plantation crops - 1997.
4. Hand book of Natural Rubber Production in India - 1980.
5. Rubber Board Bulletin - 1991.
6. Critical values of soil test methods of Nitrogen for Rice - Journal of ISSS - Vol 36-1988.
7. Land Resources of Kerala.