

A Study on the Relation between the Texture, N and P in Soils of South Arcot

by

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Introduction: Soils are classified as fertile if they contain readily available nutrients in optimum amounts. The availability of plant nutrients is governed by a complex set of factors of which texture plays an important role. Appreciable number of soil samples were received by the Soil Testing Laboratory, Cuddalore from almost all blocks in South Arcot District during the period from 1965 to March 1968. A total of 5729 samples were analysed and with results obtained a systematic study was made to find out the relation between texture and available N, texture and available P and available N and P. Based on analytical results soil samples were grouped and the data were analysed statistically and discussed in this paper.

The analytical methods followed are given in Table 1.

TABLE 1. *Analytical methods followed*

Analytical constituent	Analytical Methods followed
Texture	Feel method (Thompson, 1957)
Available nitrogen	Alkaline Permanganate method (R. V. Subbiah, 1954)
Available phosphorus	Olsen's method (Olsen, 1954)

The following classifications were followed:

<i>Texture:</i> Sandy	— Usually contains more than 80% sand
Sandy Loam	— Usually contains less than 20% clay
Loam	— Usually contains 20 to 30% clay
Clay	— Usually contains more than 30% clay

TABLE 2. *Rating of soils for available N and available P*

Rating	Available N kg/acre	Available P kg/acre
Very low	0 to 82	0 to 2.22
Low	83 to 114	2.23 to 4.54
Medium	115 to 181	4.55 to 9.0
High	above 182	above 9.1

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The distribution of soil samples in major textural groups are indicated in the Table 3.

TABLE 3. Major textural groups

Textural groups	Total number of samples	% over total
Sand	834	14.6
Sandy loam	1213	21.2
Loam	1858	32.4
Clay	1824	31.8
Total	5729	100

Significant at 5% level S.E. — 38.90 C.D. — 78.34
Standard deviation — 496.99 Co-efficient of variation — 36.64

Bar diagram: Loam clay Sandy loam Sandy

The higher percentage of soil samples were occupied by loam closely followed by clay soils. The position of sandy soils is comparatively unimportant since it forms lowest rank.

Relation between texture and available N: The study on the relationship between N and texture is made. It is noted that the soils of loamy and clayey are rich in N status. The soils of sandy and sandy loam are poor in N. The results are furnished in Table 4.

TABLE 4. Available N in major textural groups

Texture	Very low %	Low %	Medium %	High %	Standard deviation	Coefficient of variation
Sand	86	12	1.9	0.1	41.0	164
Sandy loam	76	19.7	3.7	0.6	35.0	140
Loam	69.1	24.8	5.5	0.6	31.3	125.2
Clay	62.9	30.4	6.3	0.4	28.3	111.2

Significant at 1% level S.E. — 4.51% C.D. — 10.91%

All types of soils are poor in available N. They require a good balance of N for better yields.

Relation between texture and available P: The relation between the texture and available P is given in the Table 5.

TABLE 5. Availability of P in major textural groups

Texture	Very low %	Low %	Medium %	High %	Standard deviation	Coefficient of variation
Sand	19.3	29.9	32.4	18.4	7.1	28.4
Sandy loam	20.3	33.6	29.8	16.3	8.1	32.4
Loam	22.8	30.7	30.4	16.1	7.0	28.0
Clay	24.7	33.3	25.9	16.1	7.1	28.4

Significant at 1% level S.E. — 0.87% C.D. — 1.97%

The data gathered go to show that all classes of soils are "LOW" in available P.

Clayey soils are poor in available P, closely followed by loamy soils. This may be due to the fixation of P by clays. Sandy and sandy loam soils are richer in available P than fine textural loamy and clayey soils.

The variation of available P among the soils of South Arcot is significantly more than the variation of available N.

TABLE 6. *Nitrogen available phosphorus*

Level of phosphorus	Level of nitrogen				Mean of phosphorus	Standard deviation	Coefficient variation
	Very low	Low	Medium	High			
Very low	981	257	41	4	5.6	62.7	22.4
%	(17.1)	(4.5)	(0.7)	(0.07)			
Low	1292	451	87	3	8.0	32.5	32.0
%	(22.5)	(7.9)	(1.0)	(0.05)			
Medium	1181	406	78	4	7.3	9.2	29.2
%	(20.6)	(7.1)	(1.3)	(0.07)			
High	619	246	67	12	4.1	4.8	16.4
%	(0.8)	(4.4)	(1.2)	(0.02)*			

* Figures in parenthesis indicates percentage

TABLE 7

Level of nitrogen	Mean of Nitrogen	Standard deviation	Coefficient of variation
Very low	17.7	5.1	70.8
Low	6.0	1.8	24.0
Medium	1.2	1.0	4.8
High	0.1	0.10	0.4

The results clearly indicate that in the soils of South Arcot the availability of N is not depending upon the availability of P and vice versa.

Loamy soils and clayey soils are predominant in South Arcot than sandy and sandy loam soils. Clayey and loamy soils are rich in available N than heavy textured soils.

With regard to P the soils of loamy and clayey are poor, than sandy and sandy loam. Most of the soils are very low in available N and low in P. The level of available P is a little higher than available N. There is no definite relation between available N and P whereas there is a definite relation between texture and available N and texture and available P.

Since the soil factors contribute upto 40% of the yield they can be easily managed to an advantageous position by following recommendations

based on Soil Test Results. Soils of South Arcot require judicious nitrogenous fertilisers along with phosphatic manures as to increase the production.

Acknowledgements: The authors are grateful to Thiru C. K. Rajagopal, Agricultural Chemist, Aduthurai for kind suggestions in preparing this article. The discussion in this paper are based on the results of the Analysis done by the Analytical Assistants who worked in the Soil Testing Laboratory, Cuddalore since its inception in 1965. Our thanks are also due to the previous Assistant Soil Chemist who had guided the Soil Testing work in the Soil Testing Laboratory, Cuddalore.

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Effect of Salinity on the South Indian Field Crops Yield in Ragi (*Eleusine coracana* Gaertn)

by

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Introduction: Salinity is one of the problems posed by nature. Tamil Nadu with vast coastline and extensive areas of black cotton soil suffers from salinity havoc in considerable area. Reclamation of saline soils with various methods is being done. However, selection of saline tolerant crops is important to bring the saline lands under plough and to grow some crops in the reclamation phase. Different plant species respond to salinity, differentially. Even saline tolerant varieties in field crops are also met with. *Eleusine coracana* usually considered to be a saline tolerant crop is being cultivated in areas under saline conditions. Hence a study on the influence of salinity on the varieties of this crop will provide useful information on their response to saline conditions. An investigation has been taken up to study the influence of salinity on three varieties of ragi and the yield performance of these varieties are discussed in this paper.

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