



Standardisation of leaf sample size for NPK analysis in cashew (ANACARDIUM OCCIDENTALE L.)



by

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INTRODUCTION

Cashew (*Anacardium occidentale L.*) is grown under wider spacings of 8 m×8 m on a variety of soils. Besides the heterogeneity in the soil fertility, the segregating nature of the crops itself contributes an appreciable variation in the nutritional composition among the population.

And, as the production-attributes are directly dependent on the nutritional status of the plant population, a representative leaf sample size would be of primary importance in deriving at a particular conclusion regarding the nutritional status of the given population.

Table 1. Coefficient of variation for NPK contents among different groups of composite leaf samples (January).

No. of samples	NITROGEN			PHOSPHORUS			POTASSIUM		
	3	6	9	3	6	9	3	6	9
No. of trees/sample	3	6	9	3	6	9	3	6	9
One tree	8.89	11.64	6.14	19.84	27.45	26.86	8.11	9.68	10.18
Two trees	2.72	3.78	4.03	25.83	37.41	22.47	5.91	7.81	8.36
Three trees	2.38	3.48	3.58	15.75	21.88	25.29	4.25	5.97	6.75
Four trees	2.13	3.10	3.18	18.63	28.39	15.63	4.33	5.42	7.69
Five trees	1.86	2.33	2.30	5.85	10.76	11.41	7.67	7.96	8.27

Table 2. Coefficient of variation for NPK contents among different groups of composite leaf samples (May).

No. of samples	Nitrogen			Phosphorus			Potassium		
	3	6	9	3	6	9	3	6	9
No. of trees/sample	3	6	9	3	6	9	3	6	9
One tree	7.57	6.59	8.45	11.19	10.36	13.08	8.08	9.97	8.22
Two trees	4.74	4.17	5.67	7.04	7.88	9.61	15.06	20.31	5.81
Three trees	1.83	4.73	4.24	11.24	4.84	6.94	5.38	7.53	6.83
Four trees	1.75	3.60	2.90	3.56	4.63	5.56	11.03	14.64	4.40
Five trees	1.94	7.77	2.67	10.36	4.61	5.24	2.62	3.12	3.71

MATERIAL AND METHODS

For this study, twenty 8-year old cashew trees spaced at 8 m×8 m from one hectare of land, grown on laterite soil were selected. Fully matured leaves were collected from all round the trees during January (Pre-fruiting season) and the May (Post-fruiting season). Leaf samples were dried and analysed for NPK contents (Jackson 1973).

By employing moving average techniques, mean values from all the trees were worked out under five categories i.e., mean of one value, mean of two values, mean of three values, mean of four values and mean of five values. All such mean values under the above five categories were then grouped into 3, 6 and 9 composite values and then coefficient of variation was worked out for all the mean values.

RESULTS

1. An increase in the number of composite samples from 3 to 9 had little effect on the coefficient of variation in both the season under study with respect to nitrogen and potassium contents.
2. An increase in the number of trees per composite sample under different groups of composite samples brought down the coefficient of variation with respect to nitrogen and potassium during pre and post fruiting seasons.

3. An increase in the number of trees from 1 to 4 per composite sample under 3-9 groups of composite samples had very little effect on the coefficient of variation with respect to leaf phosphorus during pre-fruiting season. However, five trees per composite sample under different groups of composite samples could bring down the coefficient of variation.

4. An increase in the number of trees per composite sample under 6 and 9 composite samples considerably brought down the coefficient of variation with respect to leaf phosphorus content during post-fruiting season. However, three composite samples with different number of trees per sample did not follow a particular trend.

5. Keeping in view of the tedious work involved in leaf sample collection, processing and analysis, it is concluded that three composite samples consisting of five trees per composite sample during pre-fruiting season and six composite samples consisting of three trees per composite sample during post-fruiting season would be sufficient for chemical analysis from one hectare land which keeps the coefficient of variation at minimal level for all the three major nutrients.

Reference

1. Jackson, M. L., 1967. Soil chemical Analysis, Prentice Hall, New Delhi.