

SOIL CHARACTERISTICS OF SOME CANE (RATTAN) BEARING AREAS IN ARUNACHAL PRADESH – A PRELIMINARY INVESTIGATION

Mridul Goswami*, K. Haridasan* & S.K. Barik**

ABSTRACT

Cane occurs naturally as an undergrowth in evergreen, semi-evergreen, wet evergreen and to some extent in moist deciduous tropical and subtropical forest in Arunachal Pradesh. Very little is known about the soil properties of cane bearing areas. This paper attempts to highlight the physical and chemical properties of soil from natural cane bearing areas in Arunachal Pradesh.

INTRODUCTION

In India rattans which is one of the most important group of non timber forest produce are mainly confined to three major regions viz., in the Western Ghats of peninsular India, North-East India and Andaman and Nicobar Islands (Lakshmana 1993). These plants are popular as important raw materials for the furniture industry all over the world and most valuable for forest dwellers as they furnish raw materials of daily use, for arts and crafts and importantly livelihood. Out of 5 genera and 60 species found in India, Arunachal Pradesh alone accounts for 4 genera and 17 species. Although rattan concentration more in tropical forest, a few species viz. *Plectocomia himalayana* and *Calamus acanthospathus* are found in subtropical forest also. Cane proliferates in areas of abundant and well distributed rainfall, where the soil is fine clay and rich in humus (Balagopalan *et. al.* 1992). But the knowledge about the soil properties required for cane growth are very scanty (Backman & Brady, 1967). This paper highlights the soil physical and chemical properties of natural cane growing areas in Arunachal Pradesh where regeneration was found to be more.

MATERIALS AND METHODS

Composite soil samples were collected during winter season at 0-20 cm depth from different cane bearing areas of Arunachal Pradesh and analysed in the laboratory by standard methods (Jackson, 1967, Walkley & Black, 1954).

* Systematic Botany Division, State Forest Research Institute, Van Vihar, P.B. No. 159, Itanagar-791111, Arunachal Pradesh.

** Centre for Environmental Studies, North Eastern Hill University, Shillong-793014

RESULTS AND DISCUSSION

Physical and chemical properties of soil from cane bearing areas in Arunachal Pradesh are shown in Table 1.

Table 1 : Physico-chemical properties of soil from cane bearing areas in Arunachal Pradesh.

Location	Cane sp.	Colour of the soil	Clay %	Salt %	Sand %	Textural class	Water holding capacity %	pH	Electrical conductivity (m mhos/cm)	Organic carbon %	Available nitrogen (kg/ha)
Routa (West Kameng)	<i>Calamus leptospadix</i>	Yellowish brown	16.1	32.1	51.8	Sandy loam	56	5.65	0.51	3.31	148.9
Lama camp (West Kameng)	<i>Plectocomia himalayana</i>	Yellowish brown	33.1	41.1	28.8	Clay-loam	64	6.22	.088	1.87	183.2
Sessa (West Kameng)	<i>C. flagellum</i> <i>C. erectus</i>	Dark reddish brown	13.1	25.1	61.8	Sandy loam	58	6.68	0.54	.89	138.2
Khuppi (West Kameng)	<i>C. flagellum</i> <i>C. gracitis</i> <i>C. leptospadix</i>	Dark reddish	14.6	27.4	65.6	Sandy loam	59	6.36	0.13	1.64	150.8
Tipi (West Kameng)	<i>C. flagellum</i> <i>C. erectus</i>	Brown	26.2	37.7	36.1	Loam	50.	5.28	.08	4.87	140.5
Khari (East Kameng)	<i>C. flagellum</i> <i>Daemonorops jenkinsianus</i>	Dark reddish brown	14.6	51.3	34.1	Silt loam	53	5.20	.067	5.26	160.8
Haldibari (Namdapha)	<i>Zalacca secunda</i> <i>C. flagellum</i>	Dark yellowish brown	19.6	41.3	39.1	Sandy loam	56	5.33	.23	1.64	172
Deban (Namdapha)	<i>C. leptospadix</i> <i>C. flagellum</i> <i>Z. secunda</i>	Dark yellowish brown	23.6	40.3	36.1	Clay loam	60	5.25	0.36	1.58	225
Kamlung (Namsai)	<i>C. leptospadix</i>	Brown	15.6	36.3	48.1	Loam	49	5.58	0.41	0.43	148

It is evident from the results that cane prefers all type of loamy and dark colour soil, which can absorb more heat and water than light soil. Water holding capacity of soils from cane bearing areas varies from 49 to 60%. The pH range of the soil varies from 5.2 to 6.68 which indicate that canes prefer strong to medium acidic soil condition. Electrical conductivity, which is the measure of total dissolved salts ranges from 0.088 to 1.64 m mhos/cm. Organic matter is a very important factor which regulates soil fertility, was found rich in cane bearing areas i.e. 0.43% to 5.26%. It is found from the investigation that the total available nitrogen varies from 38.2 kg/ha to 65 kg/ha of natural cane bearing areas in Arunachal Pradesh.

CONCLUSION

Thus it can be summarized that canes prefer dark colour as well as all types of loamy soil having moderate water holding capacity. Strong to medium acidic soil with rich in organic matter and available nitrogen are required for good regeneration of canes.

ACKNOWLEDGEMENTS

The authors are thankful to the Director SFRI, Itanagar and authorities of the Dept. of Environment and Forests, Govt. of Arunachal Pradesh, Itanagar for extending facilities and encouragement. These works were carried out under financial assistance from ICFRE Dehradun for a project on conservation of rattan which is duly acknowledged.

REFERENCES

- Backman, H.O. & Brady, N.C. 1967. **The nature and properties of soils**, New Delhi.
- Balagopalan, M. & Sankar, S. 1993. Ecological condition of cane (rattan) growing areas with special reference to soil properties. In Proc. Rattan (cane) Seminar India, **Rattan management and utilisation** Ed : S. Chand Basha & K. M. Bhatt, KFRI & IDRC. 118-123.
- Jackson, M.L. 1958. **Soil chemical analysis**. Prentice Hall Inc. New Jersey.
- Lakshmana, A.C. 1993. **Rattans of south India**. Evergreen Publishers Bangalore.
- Walkley, A & I.A. Black. 1954. **Diagnosis and improvement of Saline and Alkali soils**. USDA, Washington.

