



**SOIL ANALYSIS OF SACRED GROVES OF CHALOBA,
DEVKANDGOAN AND RAMTIRTH IN AJARA TAHSIL**

**Dr. K.P. Patil¹, Dr. R. S. Karpe², Mr. M. R. Shintre², Dr. V. A.Sardesai²,
Dr. M. R. Thombare² & Dr. N. S. Masal³**

¹*Humanities and Social Science Department, School of Liberal Arts, Sanjay Ghodavat
University.*

²*Ajara Mahavidyalaya Ajara.*

³*R.B Madkholkar Mahavidyalaya Chandgad.*

Corresponding Author - Dr. K.P. Patil

DOI - 10.5281/zenodo.7769196

Abstract:

Ajara taluka is located in foothills of Sahyadri ranges where heavy rainfall occurs. Where sacred groves are untouched forests with rich biodiversity. In sacred groves soil become rich in nutrients due to natural decomposition of plant litter by various decomposers. This work was conducted for knowing the N, P, K C and soil pH count in the soil of sacred grove of selected study area. In the present study, three sacred groves namely Ramtirth, Devakandagaon and Chaloba of Ajara tahasil were selected. The soil ultimately becomes rich in nutrients due to decomposition of plant litter by various decomposers. It has been quite enhanced due to the untraded area and less disturbance of people to the selected area. These sacred groves vary considerable in size from few acres to hundred acres. The villagers perform annual ritual and ceremonies to appease the presiding deities and to ensure the well-being of the community. These sacred groves show presence of many herbs, shrubs and ground vegetation covered with grasses.

Keywords: *Sacred grove, leaf litter, soil, preservation, N, P, K C and pH count.*

Introduction:

Sacred groves are uninterrupted patches of plant vegetation on the outskirts of villages or in the plains or a part of forested areas that are dedicated to local folk deities or ancestral spirits. Sacred groves are untouched forests with rich diversity of plants. The growth of plants within sacred groves depends on the various decomposers like Microbes fungi, bacteria, insects etc. leads to the formation

of humus. In Maharashtra, sacred groves are found in tribal as well as non-tribal areas. Many sacred groves are situated in Kolhapur district. The selected area are situated south part of Kolhapur District. The study area covered by moist deciduous forest. It has yearly varied to temperature nearly about 25-27⁰C maximum and 10 -12 ⁰ C minimum, humidity 90-95%. The annual rainfall is nearly above 3000mm. The existence of

Sacred groves depends upon the urbanization, civilization, religious and ecological values which prevent their destruction. Sacred groves preserve the soil flora and fauna. It also plays a critical role in soil and water conservation and only source of water for many animals and birds (Amirthalingam, 2016). In Maharashtra there are 1600 sacred groves are reported. The sacred groves in India are called Devrai. Sacred groves form an important landscape feature in the deforested mountain ranges of the Western Ghats of Maharashtra (Ghate, 2014).

In the present study, three sacred groves namely Ramtirth, Devakandgaon and Chaloba of Ajara taluka were selected. Soil may be a mixture of organic matter, minerals, gases, liquid and organisms that support life. It is a natural medium for the plant growth and plant reproduction. Soil act as a recycling system for nutrients and organic waste. (Andrews *et al.*, 2002).

Materials and Methods:

The soil samples were collected from Ramtirth, Devkandagaon and chaloba of Ajara Taluka sacred grove. The uppermost layer and lower layer were considered as 6 inches below from the uppermost layer. The soil samples were collected in sterilized polythene bags and brought to the laboratory for further investigation. The four random samples of

top layer soil and second layer soil were dried, sieved and taken for estimation.

The nitrogen (N), phosphorus (P), potassium (K) Carbon (C) and pH were estimated from each soil sample with the help of Inductive Coupled Plasma (ICP) spectrometry by Fertilizer Control Order (FCO) method (John Ryan et al, 2001). The analysis of the physical and chemical parameters of soil, three localies in different topographical situations (villages) were selected. The soil samples were collected in month of January and December. The large fields were divided in to subunits. Make a 'V' shaped pit up to plough layer (20 – 30cm depth) with the help of spade in each subunit and remove 2- 3cm slice of soil. Collect the sample from the blade of spade and put in clean plastic boxes. Spread the soil on the drycloth and divided it in to area Reject the opposite two and mix rest of soil. Repeated this procedure until left about 0.5kg of the soil. Put it in clean plastic bags and label on each bag with name of field (village). Tie the mouth of bags with rubber band carefully. The soil samples were air dried as soon as possible and sieve only the fine soils (less than 2mm) were used for analysis. Sample solutions were determined by standard methods. The organic nitrogen, carbon, phosphorus and potassium is estimated by Black's rapid titration method. The potassium and

phosphorus were estimated with the help of Flame Photometer and Spectrophotometer. The pH, conductivity such physical parameters were measured with digital meters. The soil texture is determined by sieve method.

The obtained analytical data of soils were tabulated. During the present investigation three different sacred groves viz., Ramtirth, Devkandgoan and Chaloba were visited regularly from May 2019 to April 2022. Similarly data on status, deities, trust etc. was collected from local inhabitants by personal discussion as well as visits which are given in Table1.

The soil sample was collected from 3-4 different spots at depth of 0 to 30 cm from 50 meter circumference of the temple site. The collected soil was well mixed, sun dried and used for granulometry as well as analysis of physio -chemical parameters of the soil. The granulometry was carried out by using sieve sets of Jayant Make having different pore size. The other physico-chemical parameters were analyzed by using standard methods mentioned by Trivedy, Goel and Trisal (1997).

Result:

Within the sacred grove the leaf litter on the forest ground gets decaying due to microbial activity. As a result the soil gets enrich with nutrients that support the growth of dense vegetation

The pH range of three sampling site was appropriate while three sampling site was slightly acidic. The acidic nature of soil is due to high humidity with high rainfall and more organic carbon. The water holding capacity of two sites was less than 50% and the soil textures were variable but clay particles are more in all sites. The two sites had equal proportion of sand, clay and loam. Such soils are very useful for cultivation of forest plants.

Nitrogen was large amount is (1.1 to 1.5 %). The Potassium (K) was large in amount (311-523Kg/ha) in all sampling site. The Phosphorus (P) was a usual amount (67-356Kg/ha). Soil organic content of soil is sharply decline when put to cultivation (Bhattacharyya and Pal 1998).But the organic carbon(C) was usual to very large amount (0.44-1.150%). Due to different topographical situation the Ajara region shows different range of physical and chemical properties. The present study reveals that the soil has no extra addition of chemical fertilizers such as Potassium and Phosphorus.

Table 1

Sr. No	Parameters	Name of the Sampling Site and Soil Layer					
		Ramtirth		Devakandagaon		Chaloba	
		Upper Layer of soil	Lower Layer	Upper Layer of soil	Lower Layer	Upper Layer of soil	Lower Layer of Soil
1	N	1.5	1.4	1.1	1.4	1.3	1.1
2	P	362.7	360.8	483.8	488.7	488.1	488.9
3	K	62.83	61.83	60.73	65.73	65.83	65.22
4	C	0.453	0.455	0.988	0.100	1.00	1.150
5	pH Analysis	pH 6.50	pH 6.30	pH 5.45	pH 5.90	pH 5.56	pH 5.50

Conclusion:

The environmental conditions are favorable, the decay of leaf litter responsible for enriching soil conditions by adding nutrients especially N, P, K,C and pH in proper amount that leads to cumulative effect on dense vegetation of the sacred grove. The soil is deficit in major nutrients like nitrogen, phosphorus, potassium, Carbon and pH shows variation.. The natural vegetation under such edaphic and climatic conditions is obviously sparse and stunted spiny and bushy. It mainly shows xerophytic plants. The forests of the area can be classified as Dry deciduous, thorn scrub type forest.

References:

1. Amirthalingam M. (2016); Sacred Groves of India: an overview. *Int. J. Curr. Res. Biosci. Plant Biol.*, 3(4): 64-74.
2. Andrews S. S., Karlen D. L., Mitchell J. P. (2002). A comparison of soil quality indexing methods for vegetable production systems in Northern California, *Agriculture, Ecosystems and Environment*, 90 (2002), 25-45.
3. Brandis, D. (1897). *Indian Forestry*. Oriental University Institute. Working, UK, pp 2-16.
4. Charlotte Jhonson (2009): *Bio. of Soil Science*: 1.1
5. Global Theme on Agro ecosystem Report No.5 (2008)
6. Ghate, V., 2014. Maharashtra: Unique plant diversity of sacred groves. In: *Sacred Groves of India – A Compendium* (Eds.: Nanditha Krishna, Amirthalingam, M.). C.P.R. Environmental Education Centre, Chennai. pp.283–293.
7. Gyanmundra (2007): *Farmers Suicide in India*
8. John Ryan, George Estefan and Abdul Rashid; *Soil and Plant Analysis Laboratory Manual*; Second Edition(2001)