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Location Based Tree Plantation for Environmental Sustainability

Chirag Patil, Neha Thorat, Komal Pawar, Prof.Vinita Bhandiwad
Vidyalankar Institute of Technology, Mumbai

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ABSTRACT: This contribution analyses the recent global expansion of different types of tree plantations. A literature review collates accounts from recent academic publications and by NGOs, and is accompanied by field research and interview observations about the causal processes, central features and likely futures of contemporary tree plantation expansion. I will analysis the political and spatial causalities explaining varieties and commonalities in expansion style and pace, with elaboration on the applied and empirical significance of these findings for peasant studies. The literature on environmental and developmental impacts of tree plantation expansion is also surveyed. Accurate assessment of the spatial variability of soil properties is key component of the agriculture ecosystem
and environment modelling. The main objective of the present study is to measure the soil properties and their spatial variability. A combination of conventional analytical methods and geostatistical methods were used to analyse the data for spatial variability.

Keywords: Tree plantation, GIS Module, Soil Properties, Soil properties, Organic carbon, GIS,Ordinary kriging, Semi variograms.

I. INTRODUCTION

Since the beginning, trees have furnished us with two of life's essentials, food and oxygen. As we evolved, they provided additional necessities such as shelter, medicine, and tools. Today, their value continues to increase and more benefits of trees are being discovered as their role expands to satisfy the needs created by our modern lifestyles. The need for tree plantation has become even greater these days because of the growing pollution in the environment. Trees are an important part of every community. Our streets, parks, playgrounds and backyards are lined with trees that create a peaceful, aesthetically pleasing environment. Trees increase our quality of life by bringing natural elements and wildlife habitats into urban settings. We gather under the cool shade they provide during outdoor activities with family and friends. Many neighbourhoods are also the home of very old trees that serve as historic landmarks and a great source of town pride Trees contribute to their environment by providing oxygen, improving air quality, climate amelioration, conserving water, preserving soil, and supporting wildlife. During the process of photosynthesis, trees take in carbon dioxide and produce the oxygen we breathe. According to the U.S. Department of Agriculture, "One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people." Trees, shrubs and turf also filter air by removing dust and absorbing other pollutants like carbon monoxide, sulphur dioxide and nitrogen dioxide. After trees intercept unhealthy particles, rain washes them to the ground. There are numerous reasons why tree plantation is important. One of the main reasons among these is that trees exhale the life-giving oxygen without which the existence of mankind is impossible. Trees control climate by moderating the effects of the sun, rain and wind. Leaves The main reason we like trees is because they are both beautiful and majestic. No two are alike. Different species display a seemingly endless variety of shapes, forms, textures and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument-like quality. Most of us react to the presence of trees with a pleasant, relaxed, comfortable feeling. In fact, many people plant trees as living memorials of life-changing events and filter the sun's radiant energy, keeping things cool in summer. Trees also preserve warmth by providing a screen from harsh wind. In addition to influencing wind speed and direction, they shield us from the downfall of rain, sleet and hail. Trees help record the history of your family as they grow and develop alongside you and your kids. We often make an emotional connection with trees we plant or become personally attached to the ones that we see every day. These strong bonds are evidenced by

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the hundreds of groups and organizations across the country that go to great lengths to protect and save particularly large or historic trees from the dangers of modern development. How many of your childhood memories include the trees in your backyard or old neighbourhood? The sentimental value of a special tree is simply immeasurable. Trees also lower the air temperature and reduce the heat intensity of the greenhouse effect by maintaining low levels of carbon dioxide. Planting a tree is a lifelong investment. How well this investment grows depends on the type of tree selected and the planting location, the care provided during planting, and the follow-up care after planting. Getting your new tree off to a healthy start will help the tree mature to its full size and ensures it will provide environmental, economic, and social benefits throughout its lifetime.

Sustainable land management requires reliable information on the spatial distribution of soil properties affecting both landscape process and services. In conventional soil survey soil properties are recorded at representative sites and assigned to entire mapping unit, which are delineated using both physiographic and geopedological approaches. Although soil surveyors are very well aware of the spatial variability of soil properties, conventionally prepared soil maps do not reflect it as soil units are limited by boundaries and for accurate estimation of soil properties these continuous variability should be considered. The traditional method of soil analysis and interpretation are laborious, time consuming, hence becoming expensive. Geostatistical techniques (kriging) are widely recognized as an important spatial interpolation technique in land resource inventories.

II. MATERIALS AND METHODS

The Aim of planting tree is to restore native forests around village to protect water supplies. Planting of trees and their care is holy act. One tree is equated to 10 children. Planting trees reduces carbon dioxide, a principal greenhouse gas that contribute to global warming. Planting tree increases oxygen level in environment, the most essential gas on globe. When you plant a tree, you are doing more than just planting a tree. You are creating habitat for other species. Starting a food source for humans and animals. Providing carbon sinks to extract the major greenhouse gas from atmosphere. Stabilizing soil to prevent erosion. Creating natural water filters. The greenery around us provided by trees makes us live a healthy and pleasant life. Planting trees is vital to maintain a balance in the ecosystem. All the living beings are dependent on trees in some way or other. The strength structure and endurance of trees make them beneficial for the environment in numerous ways. In this increasing concrete jungle of cities, planting more and more trees in surroundings has become a vital need. This is because trees not only support life, but also remove various kinds of impurities from the atmosphere. Trees serve a natural habitat, which provides support to wide variety of flora and fauna. They provide a sense of privacy and security to wildlife seeking shelter in the woods, apart from providing them with food and nutrients.

Trees remove excess amount of carbon dioxide and air pollutants in the atmosphere, including sulphur dioxide, ozone and nitrogen oxide. In return, they give us oxygen required for living life. Planting trees is very important to improve the quality of air and reduce its pollution.

The visual quality of landscape is improved by planting trees, which in turn improves the quality of life. Planting trees help to reduce ozone levels in urban cities. Even the biodiversity gets enriched in turn. Trees control the climate by moderating the effects of Sun, wind and rain. While they moderate summer temperature by providing shade, in winters, they act as windbreaks for homes. Trees reduce soil erosion, because they bind the soil through their roots, which would otherwise have been washed away in rainstorms and flood. Trees also help in improving the fertility of soil. Rich soil transfers nutrients to food, which contributes to human health. The greenery of trees adds colour to the landscape and enhances the beauty of environment. Trees are great absorbers of noise.

III. METHODOLOGY

Image Acquisition: First, we taken the soil image from the GIS module. After the image, has been obtained, various methods of processing can be applied to the image to perform the many different vision tasks required today.

Image Processing: Second step is to improve the database of images that suppress undesired distortion. Enhance image feature is important for further processing and analysis task. It includes colour space conversion, image enhancement for contrast improvement, image resizing, filtering to remove noise

Feature Extraction: Feature extraction plays important role for identification of object. After pre- processing, the area of interest is Image feature which includes colour, texture. Image transformation option is used for RGB analysis using PCA. Equation values and measured soil pH values are correlated. Determination of soil pH was based

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on digital image processing technique, in which digital photographs of the soil samples were used for the analysis of soil pH. Texture means how the colour is distributed in the image, roughness, hardness of the image. The colour values (RBG) of the soil will compare with the colour values of the samples that already store in database and find the minimum error to determine the pH value of the current sample.

Classification: A classification technique deals with classifying each pattern in one of the distinct classes. There are so many classification techniques such as k-nearest neighbour classifier, probabilistic neural network, genetic algorithm, support vector machine (SVM), principle component analysis (PCA), artificial neural network, fuzzy logic etc. Selecting a classification method is always a difficult task because quality of result can vary for different input data. So, for our application we can select the classifier used to classify pH value of soil.

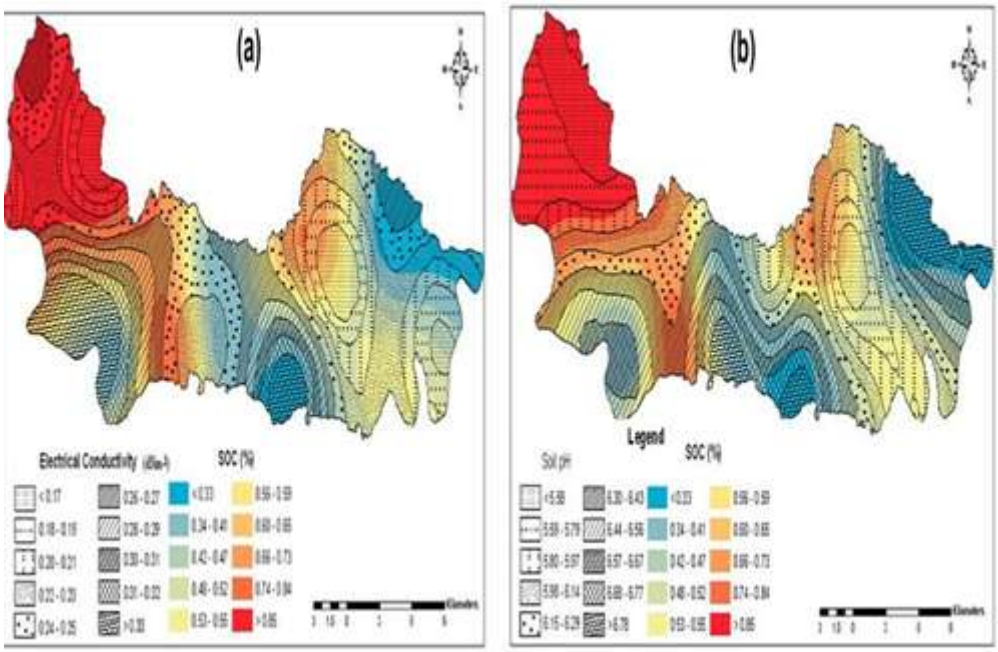
Matching: Matching of different types of soil images is the primary issue used in soil constituents. A PCA based classification system has been presented to classify the different types of soil images. PCA is a feature-based classification technique that is characteristically used for image recognition. PCA is based on principal features of an image and these features discreetly represent an image. Classifier system has also been designed to exhibit this enhancement. In testing phase, a new soil image is classified by comparing using the PCA algorithm. The system presented in this work exemplifies the concept of Eigenvectors. These eigenvectors are a small group of characteristics extracted by the designed classifier system using PCA. Eigen values are compared of both the images here matching is done of soil images and the pH value is extracted.

IV. RESULT AND DISCUSSION

Working System

Whenever any user enters our portal he has two options 1.Login: If the user is already logged in previously, then he has to simply log in by typing his username and password 2.Register: If the user has visited our website for the first time then he has to give all his log in details n register on our portal. After all the verification the user successfully enters into our website. While the log in process the user's home location is tracked with the help of GPS and stored into the database. The GIS module then finds out the appropriate area or land in which the user can go for the idea of plantation. This module lists out n number of location and arranges it on the basis of the ranking factors. These factors are decided by various number of algorithms. Then the user selects the area which is nearby and starts planning for the plantation process. The user here can also create a group where other user has also chosen the same area for planning trees or else he can join the group that someone else have created. After the planting activity is done user can collect the rewards through the portal and also share the experience with others.

Spatial Properties for Soil Properties



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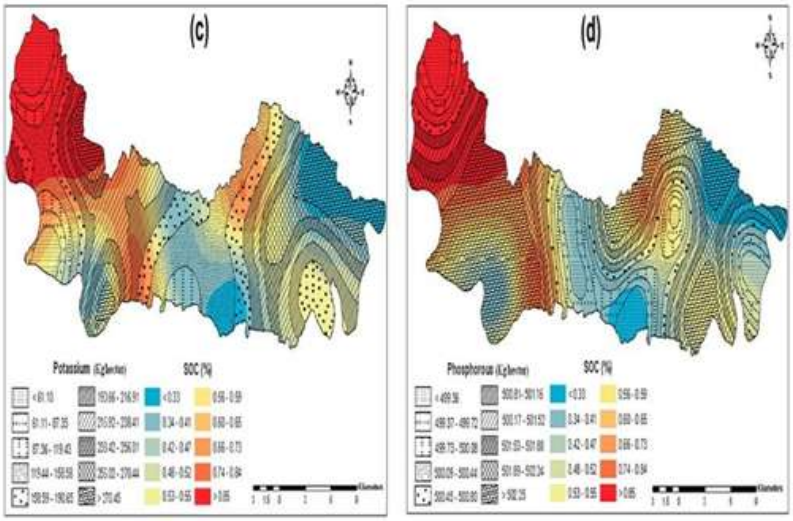

V. CONCLUSION

Understanding the spatial distribution and accurate mapping of soil properties at large scale are essential for precision farming, environmental monitoring, and modelling. This study showed that geostatistical models were fitted for six soil properties, namely phosphorus (P), potassium (K), pH, electrical conductivity (EC), and organic carbon (OC). Cross-validation of variogram models through OK showed that spatial prediction of soil properties is better than assuming the mean of the observed values at any unmeasured location. Finally, six prediction maps were developed using best fit semi variogram models with OK. Our results suggest that the ordinary kriging interpolation can directly. Also, by referring this journal one can easily find the solution about the GIS module and soil properties.

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REFERENCES

[1]. Peterson, M. P. (2008). International Perspectives on Maps and the Internet: An Introduction, In M. P. Peterson (Ed.), International Perspectives on Maps and the Internet (pp. 3-10), Springer.

[2]. Gurubasava1, Mahantesh S.D2 Assistant Professor, Department of MCA1, Assistant Professor, Department of CSE2 Jain University, Bangaluru-5600691, Jain College of Eng., Belagavi- 5900142 shreeguru91@gmail.coml1, mantupv@gmail.com.

[3]. Bhawna j chilke, Neha B Koawale, Divya M Chandran, "Determination of soil pH by using digital image processing technique- A review", Jan 2017.

[4]. Spatial analysis of soil properties using GIS based geostatistics models Pravat Kumar Shit, Ramakrishna Maiti, Gouri SANKAR Bhunia.

[5]. Analysis of Agricultural soil pH using Digital Image Processing.