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EVALUATION OF SOIL FOR AGRICULTURAL PURPOSE IN VEPPANTHATTAI BLOCK

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Abstract:

Now a days population is growing dramatically so the farming community has been forced to cultivate more and more with restricted area. At the mean time they have been pushed to produce more and higher quality food using eco friendly practices. The aim of this project to determine the suitable soil for agricultural purpose in Veppanthattai block, Perambalur district. For this purpose we have taken 29 places near to Veppanthattai and also conduct test to determine the characteristic of soil like pH, EC, N, P, and K. Soil suitability analysis is a prerequisite for sustainable agricultural production. It involves evaluation of the criteria ranging from soil, terrain to socio-economic market and infra-structure. Many of these factors are vaguely defined and characterized by their inherent vagueness. Many parameters like pH, fertility etc. which very continuously over the space and it is not possible to model as it is. This suitability is a function of crop requirements and soil characteristic matching the land characteristics with the crop requirement gives the suitability so suitability is a measure of how well the qualities of a land unit match the requirements of particular form of land use. Besides the soil characteristic socio-economic infra-structure characteristics are the other driving forces that can influence the crop selection.

Key Words: Agriculture, Soil Quality, Crop Yield & NPK Value

Introduction:

Soil is the mixture of minerals, organic matter, gases, liquids, and the countless organisms that together support life on earth. Soil is a body known as the exosphere and which performs four important functions. It is a medium for plant growth. It is a means of water storage, supply and purification. It is a habitat of organisms. Soil is considered to be the skin of the earth and interface with its lithosphere, hydrosphere, atmosphere, and biosphere. Soil consists of a solid phase (minerals and organic matter) as well as a porous phase that holds gases and water. Accordingly soils are often treated as a three state systems of solids, liquids and gases. Soil is the end product the influence of the climate, organisms and its parent material interacting over time. Soil continually undergoes development by way of numerous physical, chemical and biological processes, which include weathering with associated erosion. As the planet warms soils will be added carbon dioxide to the atmosphere due to its increased biological activity at higher temperatures. Thus soil carbon losses likely have a large positive feedback response to global warming.

The concept of sustainable agricultural or farming in involves to producing quality products in an environmentally begin. Socially acceptable and economically efficient agricultural production. in order to these principles of SA one has to grow the crops where they suit best and for which first and the foremost requirement is to carry out soil suitability analysis has to be carried out in such a way that local needs and conditions are reflected well in the final decisions.

As stated above, land suitability is the ability of a given type of soil to support a defined use. The process of soil suitability classification is the evaluation and grouping of specific areas of soil in terms of their suitability for a defined use. The main objective of the soil evaluation is the prediction of the inherent capacity of a land unit to support a specific soil use for a long period of time without deterioration, In order to minimize the socio- economic and environmental costs. Soil suitability analysis is an interdisciplinary approach by including the information from different domains like soil science, crop science, meteorology, social science, economics and management. Being interdisciplinary, soil suitability analysis deals with information, which is measured in different scales like ordinal, nominal, ratio scale etc. Soil testing is often performed by commercial labs that offer a variety of tests, targeting groups of compounds and minerals. The advantages associated with local lab is that they are familiar with the chemistry of soil in the area where the sample was taken. This enable technicians to recommend the test that are most likely to reveal useful information. Laboratory tests often check for plant nutrients in three categories. Major nutrients: nitrogen (N), phosphorus (P) and potassium (K). Secondary nutrients: sulfur, calcium, magnesium.

Minor nutrients: iron, manganese, copper, zinc, boron, molybdenum, chlorine. We conducted the test for three major nutrients, and for soil acidity or pH level. These are often sold at farming cooperatives,

university labs, private labs, and some hardware and gardening stores. Electrical meters that measure pH, water content, and sometimes nutrient content of the soil are also available at many hardware stores laboratory tests are more accurate. An understanding of soil crucial to the development of an understanding of watershed character. A soil covers virtually the entire land scope and is intimately connected with both the surface and ground water that flows through a watershed. Soil suitability analysis involves incorporation of expert knowledge at various levels of different soil testing. Soil suitability analysis is needed for various purposes in the context of present day agricultural. In a perennial crop, we often lay strong emphasis on the selection of suitable soil type, in the light of crop nutritional and physiological requirements. Certain set of soil properties are used an indicator for success of crops.

Study Area:

Veppanthattai taluk is a taluk of Perambalur district of the Indian state of Tamilnadu. The headquarters of the taluk is the town of Veppanthattai. We are collecting 29 soil samples from 29 Villages like, Agarm, Brahmadesam, Kariyanur, Neikuppai, Pasumbalur, Periyavadakari, Thondamanthurai, Erayur, Malayalayapatti, Noothapur, Peraiyur, Pillankulam, Thevaiyur, Thoandapadi, Vaikandapuram, Veppanthattai, Anukkur, Pandagapadi, Pimbalur, Thiruvalanthurai, Udumbium, Thaluthalai, V.Kalathur, Vengalam, Annamangalam, KaiKalathur, Mettupalayam, Periyamapalayam, Venbavur. In this 29 villages according to the soil type and quality, the land is best for the cultivation of various crops such as vegetables and fruit trees. There are many plants that are well adapted to growing in particular types of soil. Sugarcane is grown as a major commercial crop. The public sector factory Perambalur sugar mills at Eraiyur are functioning in the district with a crushing capacity of 3000 Tons per day. The predominate soil in the district red sanding with scattered pockets of black soil. The soil in the district is best suited for raising dry crops. The district has high means of temperature and low degree of humidity.

Result and Discussion:

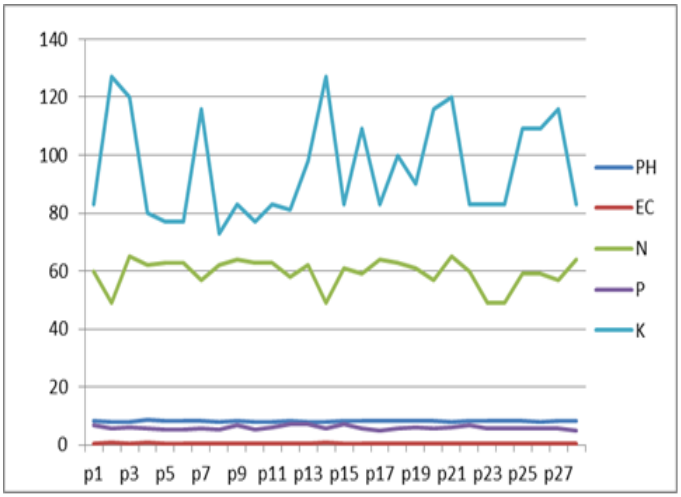

Figure 1: Comparison of Soil Parameter

Village	PH	EC	Available Status Kg/Acre		
			N	P	K
Agaram	8.1	0.1 - 0.5	60	6.7	83
Brahmadesam	7.9	0.3 - 0.7	49	5.8	127
Kariyanur	7.8	0.1 - 0.4	65	6	120
Neikuppai	8.5	0.2 - 0.7	62	5.8	80
Pasumpalur	8.1	0.1 - 0.5	63	5.2	77
Periyavadakarai	8.1	0.1 - 0.5	63	5.2	77
Erayur	8.1	0.1 - 0.5	57	5.7	116
Malayapatti	8	0.2 - 0.6	62	5.3	73
Noothapur	8.1	0.2 - 0.6	64	6.6	83
Peraiyur	8	0.3 - 0.6	63	5.2	77
Pillankulam	8	0.1 - 0.6	63	5.9	83
Thevaiyur	8.2	0.1 - 0.5	58	7.2	81
Thondapadi	8	0.1 - 0.5	62	7.1	98
Valikandapuram	7.9	0.3 - 0.7	49	5.8	127
Veppanthattai	8.1	0.2 - 0.5	61	7.1	83
Anukkur	8.1	0.2 - 0.5	59	5.7	109
Pandagapadi	8.2	0.2 - 0.5	64	5	83

Pimbalur	8.1	0.1 - 0.5	63	5.7	100
Thiruvalanthurai	8.2	0.1 - 0.5	61	5.9	90
Udumpium	8.1	0.1 - 0.5	57	5.7	116
Thaluthalai	7.8	0.1 - 0.4	65	6	120
V.Kalathur	8.1	0.1 - 0.5	60	6.7	83
Vengalam	8.1	0.1 - 0.5	49	5.8	83
Annamangalam	8.1	0.1 - 0.5	49	5.8	83
Kai.Kalathur	8.1	0.2 - 0.5	59	5.7	109
Mettupalayam	7.8	0.2 - 0.5	59	5.7	109
Periyammapalam	8.1	0.1 - 0.5	57	5.7	116

Table 1: Test Result for Veppanthattai Block

Village	**PH**	**EC**	**Available Status Kg/Acre**		
			N	**P**	**K**
Agaram	8.1	0.1 - 0.5	60	6.7	83
Brahmadesam	7.9	0.3 - 0.7	49	5.8	127
Kariyanur	7.8	0.1 - 0.4	65	6	120
Neikuppai	8.5	0.2 - 0.7	62	5.8	80
Pasumpalur	8.1	0.1 - 0.5	63	5.2	77
Periyavadakarai	8.1	0.1 - 0.5	63	5.2	77
Erayur	8.1	0.1 - 0.5	57	5.7	116
Malayapatti	8	0.2 - 0.6	62	5.3	73
Noothapur	8.1	0.2 - 0.6	64	6.6	83
Peraiyur	8	0.3 - 0.6	63	5.2	77
Pillankulam	8	0.1 - 0.6	63	5.9	83
Thevaiyur	8.2	0.1 - 0.5	58	7.2	81
Thondapadi	8	0.1 - 0.5	62	7.1	98
Valikandapuram	7.9	0.3 - 0.7	49	5.8	127
Veppanthattai	8.1	0.2 - 0.5	61	7.1	83
Anukkur	8.1	0.2 - 0.5	59	5.7	109
Pandagapadi	8.2	0.2 - 0.5	64	5	83
Pimbalur	8.1	0.1 - 0.5	63	5.7	100
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Annamangalam	8.1	0.1 - 0.5	49	5.8	83
Kai.Kalathur	8.1	0.2 - 0.5	59	5.7	109
Mettupalayam	7.8	0.2 - 0.5	59	5.7	109
Periyammapalam	8.1	0.1 - 0.5	57	5.7	116

Table 2: Tabulation for Potentials and Limitations

Potentials	**Limitations**
Agaram, Pasumpalur, Periyavadakarai, V. Kalathur	
Very deep	Clay loam to clay in surface
clay loam to clay	Moderately slow permeability
Very gentle sloping	Moderately well drained
High water holding and Cation exchange capacity	Mild to moderately alkaline Reaction
High organic matter	Strongly calcareous
Free from salinity	Severe sheet to gully erosion
Erayur, Thevaiyur, Venbavur, Pimbalur, Pandagapadi	
Deep soil	Moderately deep
Fine loamy textured soil	Low organic matter
Very gentle sloping	Mildly alkaline
Moderately rapid permeability	Slightly calcareousness
Moderately well drained	Moderate sheet erosion

Medium water holding Capacity	
Medium cation exchange Capacity	
Neutral reaction	
Brahmadesam, Valikandapuram, Annamagalam, Vengalam	
Coarse loamy textured	Shallow to moderately deep
Rapid permeability	Coarse loamy on sub-surface
Well drained	Low water holding and cation Exchange capacities
Neutral reaction	Low organic matter
Free from salinity	Mildly alkaline reaction
Non-calcareousness	Moderate to severe sheet Erosion
Thondapadi, Mettupalayam	
Very deep	Moderately slow permeability
Fine textured	Well drained
Very gentle slope	Low organic matter
High water holding and cation Exchange capacities	Mild to moderately alkaline
Free from salinity	Calcareousness
Thiruvalanthurai, Kaikalathur	
Very deep	Low cation exchange capacity
Fine loamy	Slightly acidic reaction
Very gentle sloping	Moderate sheet erosion
Moderate permeability	
High water holding capacity	
Medium cation exchange Capacity	
Neutral reaction	
Free from salinity	
Non-calcareousness	
Veppanthattai, Periyamapalayam, Malayapatti	
Class 2 erosion and runoff	Land that have moderate Limitation Substained use under agriculture
Udumpium, Thaluthalai, Kariyanur, Peraiyur, Pillankulam	
Loamy textured soil	Moderately deep soil
Moderately well drained	Moderate slow permeability
Medium cation exchange Capacity	Low organic matter
High water holding capacity	Moderately alkaline soil
Neutral reaction	Calcareousness

Conclusion:

The Evalution of soil suitability for agricultural purpose has been done. 29 places of Veppanthattai taluk has been taken for this analysis, and the soil sample collected from those places were subjected to many testing for determining the soil parameters like pH, EC, N, P, K to evaluate whether the soil is suitable for crop cultivation .We have tabulate the test result for those places and those values are in desired range of cultivation. Commonly the pH value of water should be within 7.5 to 8.5, we get most of the result above 7.5 which indicate the nature of soil in slightly alkaline .Genaral the most important minerals for crop growth are N, P, K from this research, the study area what we have taken for this analysis has enough N, P, K values for growth of plants. For example the nitrogen value should be the range of 47 to 112. All the 29 placess have sufficient nitrogen contaminant for cultivating crops. Similarly P and K values are also lies within the standard value, P the range should be 4.4 to 8.4, for K the range should be 60 to 112. So this soil also suitable for vegetable cultivation. Finally we conclude from the above research the soil around the Veppantattai taluk in most suitable for crops like fruits and vegetables.

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