

A Research on Crop Yield Estimation of Banana in Various Soil and Weather Around North Coimbatore Area using Data Mining Algorithm

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Abstract

India is mostly an agriculture based country, agricultures main aim is to develop India's economy and also the main backbone of our country. India holds second place in the farm production. Almost 43percent of geographical land had been occupied by the agriculture sector. But for the past several years the agriculture development is immobile. Eventhough agriculture has many benefits in improved farming techniques the production rate is not equitable. The main reason for this is there is no well formed models about farming and guidance for the farmers are not given properly. Banana tree acts as an major fruit crop of many tropical and subtropical regions of India.it is the earliest and regular fruit known to the humankind. It is one of the important fruits, and establish second largest fruit industry in India. Neglected to these problems, farming affects the yield of banana and absense of knowledge about the banana cultivation methodologies. And also to choose best season to cultivate the banana and selecting the best soil to cultivate the specific banana based on the weather condition and also when to harvest the banana for the supreme yield. If the farmer is familiar about the banana cultivation methodologies and harvesting it will be more helpful for the people in the real world and also helps in increase the banana productivity. Data mining is the process of abstraction or deriving of datas from large amount of data sets, this technology which is in use in inferring knowledge that can be put to use from a vast amount of data. Climate, soil and temperature are the meteorological data that is well-to-do by important knowledge.

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This paper presents a vast comparative study of various different techniques used for banana yield. The data mining algorithm that is used for the banana yield is K-Means.

Keywords: banana yield, Data mining, K-Means.

I. INTRODUCTION

Tamil Nadu holds 2nd position in producing of banana in India. But the production rate of banana is highly insufficient.. There are 20 types of bananas grown in tamilnadu. Now-a-days it is unfavourable and has very poor condition while comparing it with earlier year cultivation, because there is no well formed models about farming and guidance for the farmers are not given properly. And also to choose best season to cultivate the banana and selecting the best soil to cultivate the specific banana based on the weather condition and also when to harvest the banana for the supreme yield. Data mining is the method of deriving new data from huge data sets, this technology which is in use in inferring knowledge that can be put to use from a vast amount of data.

II. PROBLEM DEFINITION FOR CROP YIELD ESTIMATION

The problem defined here is analysis of agriculture data in crop yield estimation a critical review climate and soil. Climate and soil plays the important role in agriculture crop yield estimation. The banana plant grows in well drainingsoil.The soil ph around 6 - 7, 5.5 & 6.5.Banana plant is not tolerant to salty soil. Stops growing when temperature drops below 50 f.Nitrogen which is rich in fertilizer helps banana tree to grow faster.Thermometer is used to measure the climate. Tensiometer is used to measure the fertility of the soil. It is used to determine the matric water potential. The yield estimation of banana tree is calculated using the algorithm based on data mining. The specified data mining algorithm used is k means clustering. It is using k means clustering the data can be separated into different clusters containing points with similar characteristics.

AREA	MONTH	TYPES OF BANANA
Wetland	Febrary to April and April to May	Poovan, Rasthalli, Monthan, Karpooravalli,

		Nendran and Robusta
Garden lands	January to Februry and November to December	Robusta, Nendran,D.Caven dish
Padugai lands	January to Februry and August to September.	Robusta
Hill banana	April to May and June to August.	Namaran,Ladan, ManoranjithamSir umalai and Virupakshi
Tissue banana	Throughout the year (except when temperature is too low or too high).	Grand naine

Major problems in growing banana tree:

1. Weather
2. Soil
3. Insufficient Fertilizing
4. Pests

III. PRECAUTIONARY MEASURES FOR GROWING BANANA TREE

Banana which grows between 13°C – 38°C and 75-85%. Banana trees requiers a modest climate for producing fruit. When temperatures drops below 53 degrees banana stops growing. The growth stops completely in freezing weather. climate between 80 to 100 F reduces the growth. The growth of banana tree from sea level in a warm and humid climate is 1200 meters. In India for banana farming 20°C- 35°C is the most suitable temperature range. The growth rate gets delayed above 35°C and below 20°C. In cooler climates banana tree takes more time for maturity but at lower humidity and temperature growth is reduced.To get good banana soil presented along contents like porous and fertile is needed. The important factors are depth and drainage which are mainly required for the soil. The soil with 6-7.5 ph is used for banana cultivation. The quantity

of potash and phosphorus should be equal to the nitrogen. If soil temperature gets below 68 F banana tree growth gets affected. To get sunlight there should be 6 to 8 meter space needed for banana trees. The main nutrient which is used for banana is potassium which increases the production of fruits .The best way to get high nutrients is to add potassium to the soil.The weather is 58 For spring season. High potassium fertilizer should be applied on summer. Even though outside the tropic banana does not gets affected by many pests, Growing bananas may get affected by insects like giant whiteflies and ants.But it is easy to get them out by washing them with stable stream of water. Applying insecticidal oils and soap to the trees can be considered as the long term goal to avoid insects. Otherwise by the pest population biologically giant whiteflies can be attacked with the help of green lacewings, parasitic wasps and lady beetles



IV. LITERATURE REVIEW& RESULTS

S.No	Title of the paper	Authors/year of publication	Highlights
1	An overview of product utilisation of banana.	Mohapatra1 and Mishra2 Food Processing Technology faculty Agricultural university India. dept of Process and Food Engineering. agricultural engineering and Post harvest college agricultural University India	The above paper states that banana acts as stationary and low cost food used mostly by the developing countries and how the parts of banana plant can be used in different industries.
2	Analysis of the Crop Yield Prediction and agriculture analysis survey based on the Data Mining methodologies	Dr Senthil and P.Arun professor dept of computer science, sankara college of commerce and science M.Phil and Research Scholar at sankara college Of Commerce And Science	Presented about yield estimation which is mainly focused on agriculture and discussed about algorithms
3	Cultivation of banana according to the current trends of tamilnadu and analysis of banana yield	Dr.Rajendran. Assist professor works at economics agricultural university of Tamil Nadu dept of social sciences agricultural College and Institute of Research Tutticorn	In this paper objectives methodologies and variety of banana plants and its types have been discussed

		District.	
4	Clustering Analysis for appropriate crop prediction using hierarchical, fuzzy C-Means, kmeans and model based techniques	Dr madhavi and vidyasree and viswanadha , on the Advance engineering and research development international journal	Discussed about various datasets and clusters present in data mining, and applying various data mining algorithms similar to that of k-means , fuzzy means.etc,
5	The agricultural sectors effective tool for estimation of yield using data mining methodology	Raoraneand Kulkarnidept of computer science, from thrivekanand College, kolhapur INDIA. Head of the department from. Institute of Research Centre and business education.	This paper displays the effective yestimation methods of yield using data mining, analysis of regression cutting of various cropexperiements.

V. CONCLUSION

The crop yield estimation in data mining is the real time problem faced by the farmers. The yield estimation of banana tree is calculated using the data mining algorithm. The specified mining of data algorithm used here is k means clustering. The problem defined here is climate and fertility of the soil. By knowing the suitable climate and fertility of soil banana tree can be grown in all season with the help of data set which can be calculated using data mining algorithm. In future the area can be increased from small scale to large scale.

VI. FUTURE SCOPE

In future the data mining algorithm will be written for this paper. Using the data mining algorithm the data set for the growth of banana plants can be calculated. More modules for this paper will be added and finally it will be implemented in a website.

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