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Intelligent Crops Wastage Assessment and Real-Time Early Detection of Floods Using Geo Spatial Information

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Abstract: The agriculture sector faces strong impacts due to the effects of climate changes and leaving its impression on India's food economy and are likely to threaten both the welfare of Nation's and world's population and also the economic development of global society. Our country is surrounded with lands and water, hence major part of our economy depends on agriculture. Among several crops most farmers choose banana crops to cultivate on their lands, for the reason of cost of effective on cultivation than other types. This is also the reason, why the farmers face drastic losses, when excessive rainfall and extremely high temperature can reduce banana productivity while the production is also small when rainfalls are very low poor humidity. Here, we are going to investigate the losses faced over banana crops using the data obtained within 2012-2018 from Geographical map and remote sensing images, then we are going to develop the trained mode by using historical data obtained and going to provide a good prediction on the risk degree of banana crop cultivation.

Keywords: - Global society, Geographical, Cultivation, Historical data.

I.INTRODUCTION

Being negative affected by the special natural geographical environment, extreme weather and social economic activities working together, the frequent occurrences of flood, mudflow and landslide, which are the outstanding problems to be solved in flood control and disaster alleviation in agriculture causes not only major personnel and property losses. So, it is an important and urgent work to accelerate the flood prevention which is significant to economic and social development. Flood geological disasters in agriculture field often occur in the crops wastage of banana and all other crops parts of the storm Center, Such as Digital Elevation Model, Geospatial Information Region, and Hainan Province, Fujian province and so on.

Rain falls were obtained and then a generalized regression neural network model for risk assessment of mountain flood geological disaster in Agriculture field in crops wastage was established with the above quantized data as the input factors and the risk degree of the flood geological disaster as the output factor. The trained model by using historical data has an excellent self-learning function and provides a good prediction on the risk degree of the flood geological disaster in this field of Agriculture cultivation process.

Researches in the world studied the flood geological disasters. For maximizing the value and effect of the large amounts of real-time hydrological data of flood disasters monitoring system, exploring the nonlinear multi-field coupled disaster-pregnant mechanism, the study integrates rainfall, NDVI, terrain slope, looseness of rock and soil and categories of ridges and valleys and introduces this data to the ANN model to build a Flood Geological Disaster Warning system with subtropical.

1.1 Geo Spatial Information:

Geo Spatial Information (GIS) is data represented to a place, a set of geographic co-ordinates. This can often be gathered, manipulated and displayed in real time. A geographic Information System (GIS) is a computer system capable of capturing, storing, analyzing, and displaying geo graphically reference information.

It is important and urgent work accelerates the flood prevention which is significant to economic and social environment. Flood geological disaster in crops parts of the storm center. Technologies like GIS, GPS and remote sensing are widely used in agriculture all over the world. India though catching up gradually and the technologies being used in some areas like the Indian State of Punjab, the country needs to fully optimize application of new and contemporary information, go spatial and communication technologies (ICTs) for rural and agricultural development. Geo spatial technology cannot be successful if the correct data is not collected and analysed effectively.

1.2 Digital Elevation Model:

A Digital Elevation Model (DEM) is a specialised database that represents the relief of a surface between points of known elevation. By interpolating known elevation data from source ground surveys and photogrammetric data capture a, regular digital elevation model grid can be created. GIS software can use digital elevation models for 3D surface visualization, generating contours, and performing view shed visibility analysis format. The method called Remote Sensing is widely used to generate the digital elevation model.Digital Elevation models, like other maps, are models that deviate from reality. Depending on the process, methods and procedures to generate the DEMs, the topographic parameters derived from a DEM contain uncertainties.

II SYSTEM IMPLEMENTATION

2.1 Identifying Flood Affected Lands From Geo Spatial Data:

Gather information of study area field investigations, including river distribution, meteorology and hydrology conditions. Storm and flood characteristics land forms, geological structure, stratigraphy lithology, soil types and erosion. Gather data from 27 automatic rainfall stations and 8 hydrological stations, and set of 5 prior rainfall monitoring station.

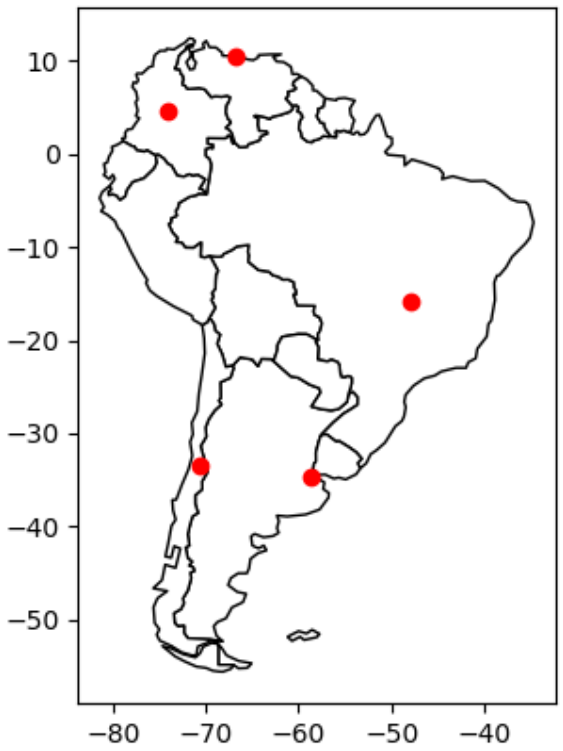


Fig 2.1 Flood Affected Lands

2.2 Extracting soil Moisture Route:

The soil in the risky areas of mountain flood geo logical disaster is weak permeability. For, example, the soil of water corrosion stability, developed from purple and shale, red sand stone and shale easily softens and disintegrates, when it meets water and causes flood disaster. We make the classifications of soil and crops by field observations and using distribution map of soil looseness. To decide the value of soil looseness referring to the soil classification. There are no special solid in surface land and the looseness co efficient of the soil moisture.

2.3 Crops Health Analysis and Clustering:

Traditional methods of crops scouting such as manually walking hundreds of acres or having map into them flown by manned aircraft thousands of feet in the air either terriby inefficient, expensive or don't provide real time information. Using satellite imagery and combining the red and infrared banfs from this imagery. We can create a product called the Normalized Difference Vegetation Index (NDVI). NDVI management zones in agriculture help make the highly detailed and large NDVI map into a more manageable data set by grouping similar regions within a field.

2.4 Visualizing Crop Loss:

Crop loss caused by pests including rodents and birds and by disease and weeds are defined. The assessment of crop yield losses is needed for the improvement of production system that contributes to the incomes of rural families and food security worldwide.

2.5 Advantages:

1. They are considered waste products in many agricultural systems, So the additional money and/or energy that can be gained by farmers can provide a considerable boost to over all farm budgets.

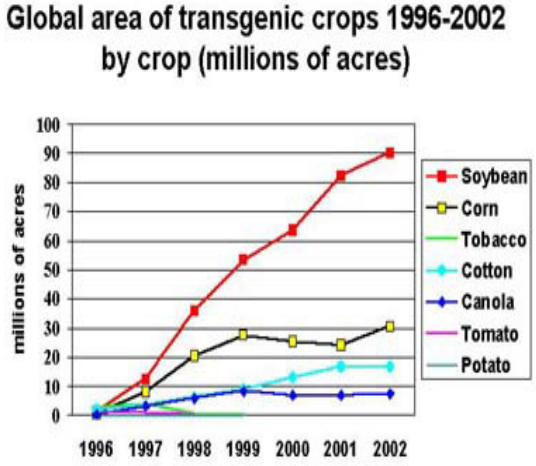
2. Being negative affected by the special natural geographic environment, extreme weather and social economic activities working together. The frequent occurrences of flood, mudflow and landslide.

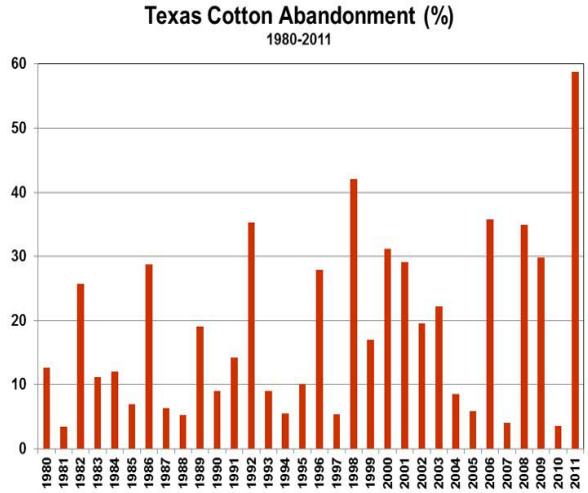
3. As feed stock for bio fuels, as they leave much more ground cover after harvest for the prevention of soil loss.

2.6 Disadvantages:

1. Have only focused on flood prediction warning system.

2. For, each banana and all other crops type is not guaranteed and one can end up incurring a loss of harvest.





III. CONCLUSIONS

The study takes as research objects of flood geological disaster. After the field survey, data collecting and processing as well as the disaster model. The risk degree of flood geological disaster under different rainfalls can be predicted by the DEM model. The plant field, soil type and crop fields can be coupled for risk assessment on banana and all other crops types in flood geological disaster. Popularizing these technique is good for developing the forecast in crops wastage that provides the forecast and warning of risk, the transfer route and security zone.

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