PROBLEMS AND NEEDS OF FARMERS IN SANGLI DISTRICT AND REMOTE HUMIDITY SENSING SYSTEM FOR FARMERS

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Abstract

Agriculture plays important role in farmers survival of people in India. Climatic changes, environmental changes and population growth are the major problems of agriculture in India. The land and it availabilities is also major concern. The division of small pieces of land and its management wastes more energy and man power. Different types of needs of farmers are also are market information, online land records, rural development programmes, subsides, weather forecasting, news and data of farm management etc are major problems that are not meet in proper manner. These need must be mate at the highest level inorder to improve the agricultural productivity to feed the large growing population. Monitoring agricultural environment for various factors such as soil moisture, temperature and humidity factors are significant. To monitor the and record the humidity from the remote place a electrons system with sensor technology is used which will sent the results from the location

Key words: Problems of farmers, needs of farmer, humidity sensor, remote system

Historical Background of research area

The research area is covered is Sangli district of Maharashtra State which occupies the western and central part of the country and has a long coastline stretching nearly 720 kilometres along the Arabian Sea. The Sangli District is one of the district of Maharashtra state. It is situated between the latitudes 16º45' N and 17º33' N and longitudinal of 73º41'East and 75º41'East. The district is bounded by Satara district on the North western side. Southern is boarded by Belgam and Bijapur district of Karnataka State. At the Centre and East Kolhapur district and the Ratnagiri district lies on West of Sangli district. The total area of the district is 8610 Sq. km.

In the Sangli district, there are two main systems of hills. Viz. Sahyadri range and its offshoots, and the spur of Mahadev range. The Machhindragad – Kamal Bhairav hill range extend in North West–southeast direction. This range is offshoot of Mahadev range, which runs along the borders of Tasgaon and Khanapur tahsils. An offshoot of this range in the form of Aundh hills in Satara district separates the catchments of river Krishna and river Yerala. The main range continues further south-eastward and separates the Man River.

The region is a part of Deccan plateau. The topography of the Sangli district becomes uneven. The general slope of the land is from north to south and south-east. There is Mahadev range and its offshoots.

Drainage

Water resources emerge from nature's gift of rain, wells, rivers, lakes and streams. Irrigation water i.e. dams, canals are important and assured source for agriculture. Availability potable drinking water is also equally important today. In the Sangli district, the river Krishna, Yerala and Warana and its tributaries make the region fertile. River Krishna

flows the south- western border of the region and also makes the region fertile. The Yerala, the largest river of the left bank of the northern feeders of the Krishna rises in Solkanath hills in the extreme north of Khatav. It flows north to south in a valley flanked by the Vardhangad - Machhindragad range on the right or west and by the Mahimangad – Panhala range on the left or east.

Climate

Climatically, this region falls under the great monsoon and associated with the rainshadow region of the Sahyadri Mountain. The character of monsoon with four months of rainy season followed by eight months of relatively dry period of winter and summer.

A. Land holding capacity

Geo-graphical Area	Cultivable area	Forest area	Land under Non agricultural use	Permanent pastures	Cultivable Waste-land	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
861	595.6	45.1	46	17.7	14.6	12.9	38.8	38.5	51.8

Table 1   Land use pattern of the district (latest statistics) Area (000ha)
Source:- Agriculture Contingency Plan for District: SANGLI

As shown below this is the land holding capacity of Sangli district. That includes about total 861000 hecteres of land and cultivable land is about 600000 hactres. Rest of area is covered as shown in the piechart. Barron land is also large as comapred with tree crops. Ths land must be mproved owards the cultvable or other type of productive land.
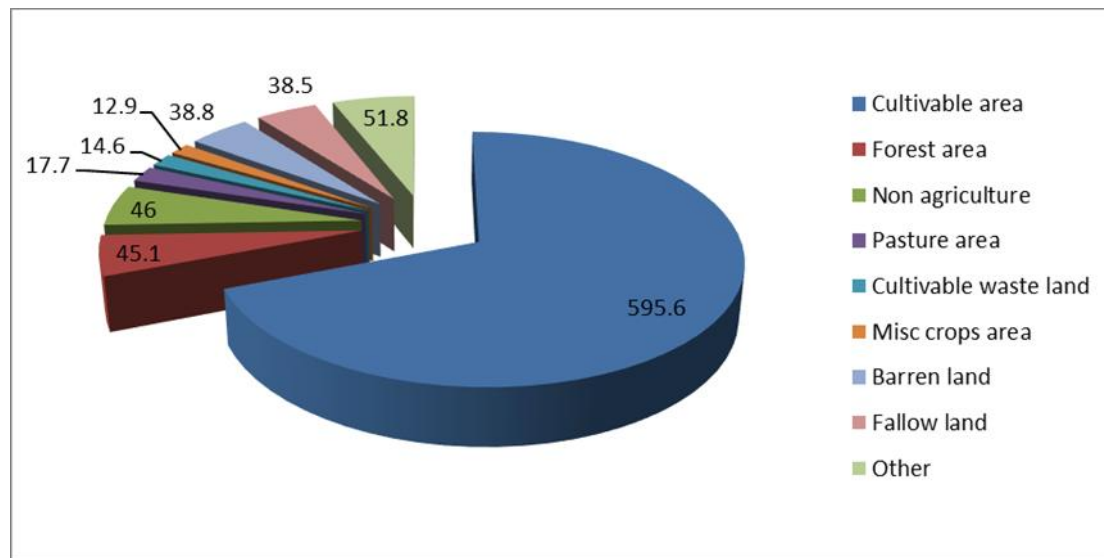

Fig. 1 Land use pattern of Sangli district area x (000 ha)

B. Distribution of Agriculture Labourer

A person who works on another person's land for wages in money or kind or share is regarded as an agricultural labourer. She or he has no risk in the cultivation, but merely works

on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which She/he works. According to census of India records the Sangli district have 694 villages and urban area where 2,35,916 agriculture labourer area working. The map 1 shows the distribution of agricultuer labourer. The standard deviation of distibution of labourer is 663.35 shows there is great variatioin of labourer population. The concentration of labourer is along the Krishna river and river Yerala.
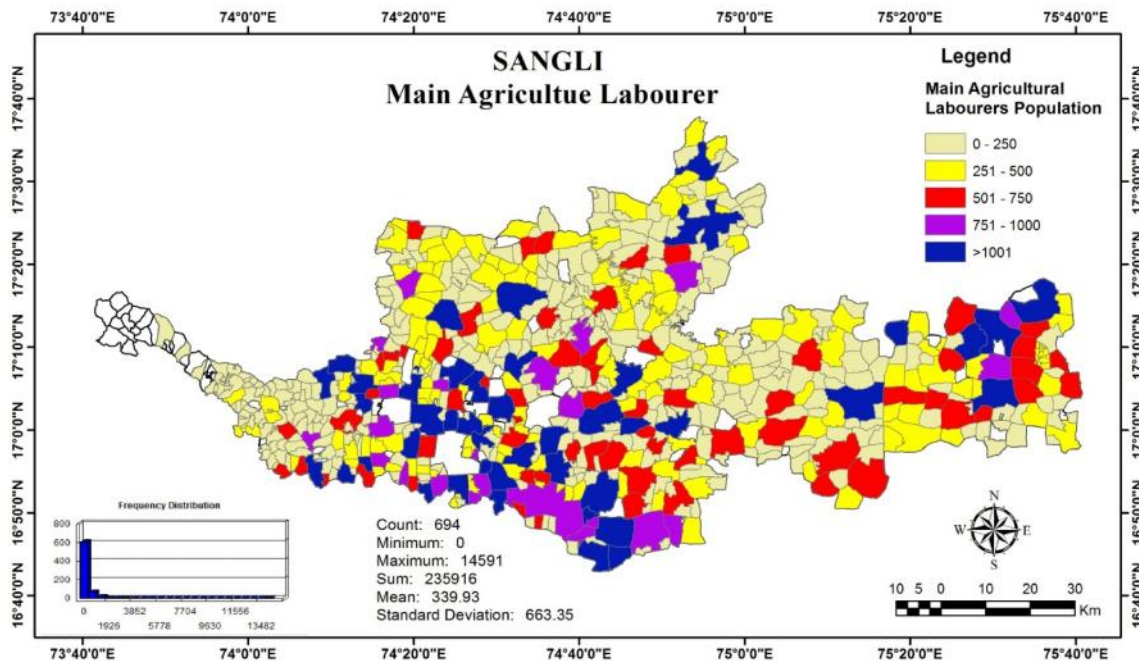
Map. 1 Agriculture labourer of Sangli district

Problems faced by farmers:

Environmental change

In Sangli district agriculture is totally depends on natural resources. Now days the environmental cycle get disturbed because of global warming. Changes made in differently i.e. temperature arises, air pressure, rainfall also disturbed, cyclone etc. Some of the part of Sangli district from Krishna river basin and elsewhere suffers from physiographic and climatic variations. Agriculture in the region suffers various problems. Like land degradation, salty and alkaline soil. Water insulation in central part of the region. The region to the east of the river Krishna lies in chronic drought prone zone. The eastern tahasil namely Kadegaon, Khanapur, Tasgaon, Jath and KavtheMhankal are declared as drought prone area.

As well as lack of water due to occurrence of drought in eastern part of the region. Now we discuss about how the climatic changes affects on agricultural production as well as how it will affect on all over the market.

Climatic changes

Due to global warming seasons and their patterns will suffer drastic changes in climate. i.e. impacts on rain, winter as well as summer. Changes in pattern will directly affect on crop cultivation methods. Considering these patterns we have to change the crop cultivation methods for that farmers need to adopt innovative techniques in the agriculture.
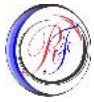
In India due to global warming it is observed that sea level arises, activity of cyclone increased, atmospheric temperature and increasing level of irregular precipitation pattern.

Climatic changes are directly affect's on growth of crops. i.e. growth of crops i.e. there is possibility of immature growth of crops which can result in less seasonal growths and lower yield potential. As temperature increases it will automatically increase the demand of water supply as well as that climatic changes are responsible for soil damage i.e. moisture of soil, that might possibility of salted soil etc.

The next reason is changes in rainfall pattern due to global warming. The rainfall pattern has variations and that is directly affects on average productivity. The main reason behind the changes in local rainfall pattern is global warming. Due to the atmospheric changes inter seasonal changes are done and that will causes to changes in rainfall pattern.

Population growth

We all know about the population in India. According to the statistics published by united nation India got 2ed rank in population. As population increases day by day demand of food automatically increases. Increase in level of population is directly affected on requirement of food and energy. In India every day lots of people die because efficiency of malnutrition and hunger-related diseases. In that large numbers of people are under 5 year's children. If population growth stops growing then distribution of food production could catch and go down to a sustainable level.

Lack quality of food

As discussed above population rate increases the shortage of food grains arises. This is the reason that will cause the shortage of quality product. However we require large amount of quality product but considering the population it's like a less production and high demand.

Needs of farmers:

The farmer has to face different kinds of problems it may be environmental issue or may be another kind of issue i.e. lower production due to diseases on crops or loss of food grains due to diseases, low quality production. Its direct impact productivity of food grains indirectly affects on Indian economy.

To avoid this farmer require some environmental updates like weather reports that will help to pre-plan about cropping and all. Basically farmer needs weather reports time to time.

Farmers Needs

Now we discuss about the needs of farmers in their day to day life related to agriculture. According to geographical location of Sangli district there are various kinds of problems farmers have to face like changes in weather etc. depending on these problems the following needs were collected these are-

Market Information

Farmer from Sangli district requires market information which includes daily market rate updates about agricultural commodities in markets. This is a need which has high priority because market information gives guidelines to cultivate to get benefits from products produced from farm. That kind of information gives demands of market and this type of
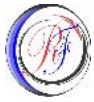
information will enable them to put on the market at markets where their products would command the best deal.

Online access of land record

There are some situations where someone needs to submit a copy of property related documents such as to get benefits through subsidies from government it requires to submit a copy of property documents i.e. land record means the area of land and land holder details.

Question – Answer Service

These types of services may help to resolve kind of issues farmers suffers while their day to day working so that these question answers will help to find the solution on the problems.

Information about rural development program:

In India agriculture is a backbone of Indian economy. Most of the people from rural area is totally dependent on agriculture so that state government and central government gives various schemes for rural development but most of the times farmers are not aware of that schemes and rural development programs so farmers are unable to get benefits from those schemes i.e. subsidies, crop insurance and all provided by state government as well as central government to get all the detailed information of schemes, subsidies and development programs sponsored by government farmer required a platform through that they make aware of these programs.

Information about subsidies

In India there is need to change or modify insurance policy, subsidy, support and incentive programs to influence farm level production. Considering Sangli district as a research area we found that Sangli district is an area in that people may have to deal with some victims due to environmental variations like due to heavy raining the people from one part of Sangli district has to face flood situation. And another part of Sangli district is dry one. The people from those have to face famine. In such situation government will provide some kind of financial help to the farmers that is known as subsidies.

Weather forecasting

It's a basic need of farmer while working in farm. Getting weather details in time will help farmers to plan the water supply time or according to weather condition which type of pesticides they need to use etc. As farmers uses old methods to get weather reports like newspapers, radio's etc. Sometimes farmers cannot access weather report in time and accurate. These traditional methods are not such accurate and farmer has to wait for news paper or to know the weather forecast broadcasting from radio it might take some time and due to the lack of information regarding weather farmer has to suffer some losses. To avoid this kind of victim's farmers need to know the weather reports in time.

Most up-to-date packages of practices

Farmers need the information about the crop which is having high demand in market. Which helps farmer to cultivate those crops which has more demand and it will help to supply those products which are having high demand.

Post- harvest technology

Some time some kind of fruits and vegetables needs to place in proper place such as freezing and all. Most of the time farmer required post harvest technology. Due to improper

maintenance of fruits and vegetables there might be financial losses done is frequently high. And to prevent those fruits and vegetables farmers requires cold storage and such kind of technology. Role of post- harvest technology is very important because it will help to avoid losses.

Agriculture related News or Programs

In today's era there is lots of broadcasting television channels they might be regional. Those programs will help farmer to know the different methods of cultivation which really helps in their day to day life.

So farmer needs to aware of new techniques and so that they need such kind of news to adopt those techniques, methods in their farming.

Data related farm management

Farm management is a process of group of activities related task done by farmer using some resources and situations. These resources and situations are handled by farmer. To know these farm management data is the need of farmers.

Information about farm business

Considering the concentration of the people towards the farming they need proper guideline so that they get profitable income from agriculture and to get more benefits from farm. Farmer requires some business related information so that they got profit.

Information about diseases and pests and early warning of diseases

Due to environmental variation crops might suffers from different diseases. Sometimes these diseases are harmful and farmer has to treat those diseases at proper time so that it prevents the crops from damage. Which pesticides have to affects on which disease. Farmer needs all these basic information about diseases and way to treat particular disease. Farmer also wants alerts or early warnings of diseases.

Information about marketing of agriculture related products

In today's era farmers does not get the actual profit from agricultural product. Due to supply chain management scheme, in that wholesaler usually buy products from farmer adding his interest over there and moves towards retailer. Retailer again adds his own interest on that product and gives that product to the customer. In this case the people in the chain got more benefit except farmer actually his efforts are obviously more than the people in that chain. To avoid this farmer has to know all the basics regarding marketing of his own product.

If farmer knows all the marketing related things it is beneficial to them to earn profit. So farmers another need is to get information regarding marketing of agricultural products.

Information about soil testing and sampling

Soil is the main thing in farming. Before cultivates anything in farm it is better to know about the soil type, which crop gives better production in which type of soil. All the production of any crops depends on the quality of soil. So farmers need to know the soil testing and sampling reports to plan for cultivation of crops.

Remote location Humidity Sensor System

Amount of moisture present in the air is called humidity. This can change the various processes in the human as well as industrial processes. So humidity measurement and sensing is important task. Processes. The humidity is monitored from the remote places. The system

gives the remote transmission and reception of the data which is the need of the farmer. For this the simple alumina substrate and two electrode system is employed with amplifier.

Construction of humidity sensor

Lower electrode ... nsing film
Upper electrode
Alumina substrate
Base substrate

Fig. 2 C... umidity sensor
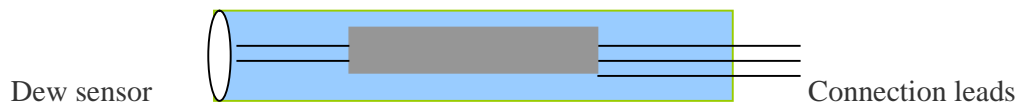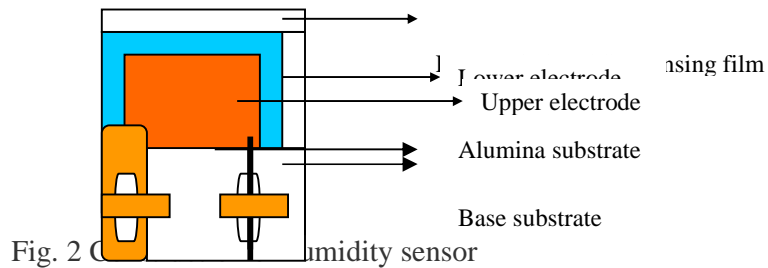

Dew sensor   Connection leads

Fig.3 Sensor position

Two electrodes are generally formed by gold or other materials. The polymer layer is deposited on the electrode. This has ability sense the humidity. Polymer layer forms the dielectric layer forming the capacitance. The air under investigation is passed inside and the hygroscopic layer till vapour contents are sensed.

Block diagram of sensing arrangement
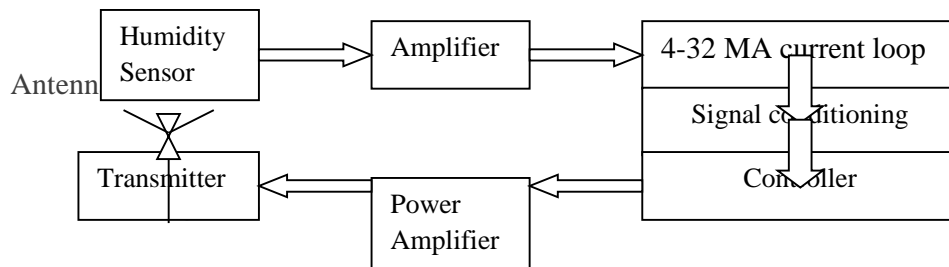
Lock diagram of transmission of data from remote places

The sensing arrangement of the sensor system is as shown in the fig 4 It contains the humidity sensor, amplifier, current loop, signal conditioning circuits, controller or control section, power amplifier and the transmitter. The humidity sensor is kept in the field which is placed inside the soil which will measure the humidity in the soil. The output generated from such humidity sensors through probes are connected to the amplifier circuit as the signal generated is very small and to get it suitable strength. It must be amplified before giving to the signal conditioning circuit. 4-32 mA current loop is used to increase the current strength. The signal conditioning circuit will convert the one form of signal into the required format of the processor. The controller will read the data and stores if necessary and the controller will send the same data with the help of some converter or modulators. In the modulator the data is modified and it is transmitted with the help of the transmitter circuit
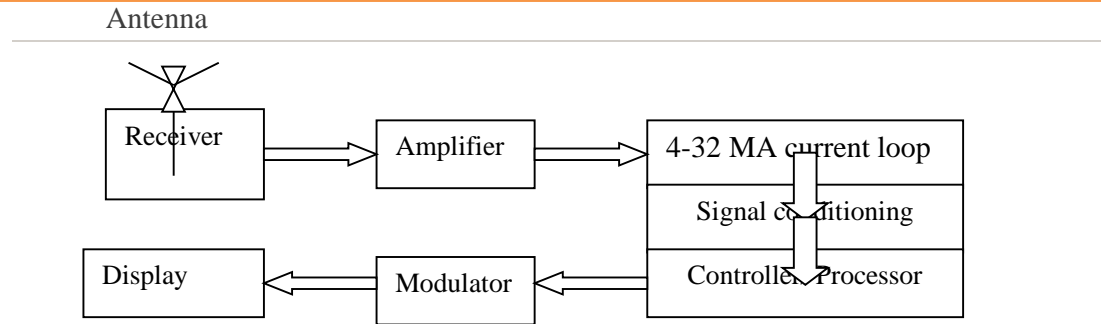
Antenna

Fig. 5 Block diagram of receiver system

On the receiver side the signal is received through the small antenna and after demodulation and amplifying it will be passed through the signal conditioning circuits. Then the same signal is processed in the processor and modified data is display. In this way the receiver and the sensing of the soil moisture or humidity is checked at the remote end. This is possible by using the above arrangement.

The Humidity sensors were placed at various places in the remote area and the humidity was recorded. At the same time manual reading of the humidity was also taken using the same sensor. There was not much change in the reading, so the system used is quite convenient. It continuously gives the data only need to maintain the circuit and its parts regularly. The system cost becomes very high. It require knowledge of the hardware and the regular maintenance. So the electronic knowledge is essential and the farmers are lacking this type of knowledge. To sense the various parameter and get continuously data it requires number of receiver and transmitter circuits and the total cost is very high as well as maintenance cost is also not tolerable. Therefore the cloud computing and its used in the agriculture play important role. It is a also called the virtual sensing and providing the information to the farmers as and when required. The cost is not much and at the same cost the data from all the agencies is easily available. Now a day's mobile can be operated for getting the required data and the mobile unit also plays important role in communicating the world together. Instantly one can get the knowledge delivery. The internet is also handled using the mobile application. The use such advanced devices put the limitations in the hardware.

Conclusion:

Different environmental, climatic change, population growth and food quality problems are identified. Different needs are also elaborated and represented in the concern area. So to solve the problem one of the remote monitoring of humidity sensor data is carried out. The system s designed in the receiver and transmitter. The required hardware is designed and used for getting the data from the remote place.

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