**Weather Monitoring and Drought Assessment for Farmers**

-*Grp No- 55*

**Project Statement:** A comprehensive **data integration system** that combines the diverse agricultural data related to specific crops (such as soil, manure, etc.) with actual weather and climate information of a particular geographical area. Through this, we aim to **help farmers** make **informed decisions** regarding their farming practices. Our problem statement is, ‘Farmers need a way to **monitor weather and drought conditions** in their locality because these factors significantly impact their agricultural operations, crop yields, and overall livelihood.’

**Use cases:**

Farmers can give queries like

* The system can recommend the **best-suited crops for the particular region** the farmer is in.
* The system can alert the farmers of **potential disaster threats(drought/floods)** so they can take timely action.
* The system can tell the farmer about the weather forecast for the region.
* The system can inform farmers about the **government schemes and subsidies** introduced in that region.

**Requirements:** The project requires developing a comprehensive data integration system that combines **diverse agricultural data** with real-time weather and climate information. By doing so, the project aims to empower farmers with the insights they need to make **well-informed decisions** about their farming practices. This system will contribute to increased crop yields, better resource management, reduced risks, and overall **improved agricultural** sustainability.

**Importance:**

1. Farmers can decide when to plant, water, and harvest crops based on accurate weather and drought information. As a result, **crop yields increase**, and resource utilisation is optimized.
2. **Droughts** have the potential to **ruin agricultural** output. Farmers can adopt proactive measures to lessen the effects of drought on their crops with timely monitoring, such as altering planting schedules and implementing water-saving practices.
3. Farmers can more effectively **manage their water resources** by monitoring the weather and signs of drought. They can modify irrigation techniques according to predicted **precipitation and soil moisture** content.
4. Farmers can stabilise their income and lower the risks associated with financial instability by **avoiding crop losses** from unfavorable weather conditions.
5. Farmers can practice **sustainable agriculture** by coordinating their operations with weather patterns when they have access to accurate weather data, which lessens the need for **excessive pesticide and fertilizer** use and encourages farming methods that are good for the environment.
6. Farmers require instruments to make adjustments as **climatic patterns change**. Insights into long-term trends via weather and drought monitoring enable farmers to modify their plans in response to shifting circumstances.
7. Agriculture is a **critical component of food production** and food security. This project assists in preserving a steady and secure food supply for nearby communities and beyond, helping **farmers** make the best crop choices.

**Stakeholders:** The main stakeholders of our project are

* Indian Farmers
* Agriculture Enthusiasts in India
* Agricultural Cooperatives and Associations in India

**Task and Purpose of Stakeholders:**

The task and purpose of the Stakeholders of our project are:

1. Accessing Real-Time Weather Data:

**Task:** Farmers can use real-time weather data to analyze weather patterns and receive drought alerts for their locality through historical and current data.

**Purpose:** This would help farmers plan their crops and farming activities, reduce the risk of weather-related losses, and manage water resources more efficiently during drought.

1. Efficient Water Resource and Risk Management:

**Task:** With weather data, farmers can ensure a water reserve and optimize irrigation schedules based on the water required for a crop. Farmers can also assess the risks associated with weather variability.

**Purpose:** This would help farmers make an informed decision on their water needs, conserve water resources, and prevent over-irrigation of soil.

1. Optimizing Planting and Harvesting Timing:

**Task:** By accessing weather data and historical trends, farmers can determine the most optimal planting and harvesting timings

**Purpose:** This would help farmers plant and harvest crops at optimal times and favorable weather conditions, leading to maximum crop yield and good income.

1. Managing Pest and Disease Risks:

**Task:** By accessing weather data, more specifically temperature and humidity conditions, farmers can predict the pest or disease outbreaks in their farms

**Purpose:** This would help farmers take timely actions to prevent pest and disease outbreaks and potential risks, minimizing the impact on crop health.

**Data Acquisition:**

<https://indiadataportal.com/datasets-page>

<https://data.gov.in/resource/district-wise-distribution-dugwells-its-type-2nd-census-minor-irrigation-schemes>

**Menu For Farmers**

1. Login and Sign Up ( Still )

* Name, Phone Number, Location and Land Area and Password

1. Main Menu

* Rainfall, Drought Probability, Weather Forecast - Related to Area (3 Query)
* Crop Recommendation (Month - Default(All seasons) , Location - Relocate(Optional))
* Heavy Rainfall Expected - Warning(Flood Management) - Average of Rainfall Data from Rainfall - Weather Data
* Soil Mositure Recommendation (Month, Location ) - Soil Moisture (low, medium, high)
* Crop Produce Stats(Month, Location, Crop) - Output Production
* Managing Pest and Disease - (Warning - which animal or disease can be there in their farm)