

Lily Lane
 Professor John Alexis Guerra Gomez
 Database Design
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Problem:

Yellow: Nouns

Green: Verbs

The prominent **agricultural industry** in California's central valley provides a large percentage of the US's **food reserves**, making the effects of a **drought** significantly detrimental to **crops** and consequently, the GDP. Therefore, the sustainability, general health and yield of the crop is heavily dependent on the amount of **rainfall** received in each geological region. Variations in rainfall across different **geological regions** directly impact **crop health** and **yield**, posing significant challenges for **farmers** and **farm managers**. Furthermore, inadequate **irrigation** strategies can be detrimental, leading to bad **harvests** and **resource** wastage. Without access to comprehensive data on **rainfall distribution**, **soil moisture**, and **irrigation requirements**, farmers face difficulties in making informed decisions to **maximize crop productivity** while **minimizing** resource usage. However, general online solutions tend to not **take into account** the **soil** and **climate type** of the region.

Objective:

To address the challenges posed by inadequate rainfall in a drought or excess from flooding, **creating** an **integrated agricultural database system** helps **assess solutions**. This system will **utilize map visualization tools** to **provide** farmers with actionable **insights** for **optimizing** crop cultivation practices. By accurately **measuring** rainfall distribution and **soil moisture** levels across different geological regions, the database will enable farmers to **correlate environmental factors** with **crop health** and **yield projections**. Additionally, the system will **analyze** air **humidity** and other **external factors** to **provide comprehensive recommendations** for irrigation requirements **tailored** to specific crop types and land. A **Biological engineer** and **environmental specialist** will also **provide** their **expert advice** in addition to the algorithm calculation and give helpful application with the information provided. An extended use of the database can be used for **revitalizing** endangered plant species in environmental restoration programs.

Executive Summary:

My database measures **rainfall coverage** and soil moisture in order to assess the amount of irrigation needed for a specified plot of land.

Noun Groups (Aggregated):

Agriculture and Farming:

- Agricultural industry
- Crops
- Crop health
- Crop yield

- Harvests
- Farmers
- Farm managers
- Crop productivity
- Integrated agricultural database system

Environmental Factors:

- Drought
- Rainfall
- Rain Coverage
- Rainfall distribution
- Soil moisture
- Humidity
- Soil type
- Climate type
- Environmental factors
- Rainfall coverage
- External factors

Resources and Infrastructure:

- Food reserves
- Irrigation
- Resource
- Irrigation requirements

Data Analysis and Tools:

- Geological regions
- Solutions
- Map visualization tools
- Insights
- Yield projections
- Comprehensive recommendations
- Biological engineer
- Environmental specialist
- expert advice

Verb Groups (Aggregated):

Data Handling and Processing:

- Minimizing
- Take into account
- Provide
- Assess
- Utilize
- Measuring
- Correlate
- Analyze

- Tailored

Action and Improvement:

- Maximize
- Creating
- Optimizing
- Revitalizing

Narratives (Rules): (highlight that you are making an assumption if you are having one) (they don't need to be this complicated, they can just say, reduce methane emissions through identification)

Project Objectives:

- This integrated agricultural database takes into account water lack or excess from drought and flooding in crop cultivation.
- minimize the amount of resources needed for proper irrigation
- maximize the crop health, crop yield, and crop productivity.
- The integrated agricultural database combines data taken from the farms and the opinion of experts to provide the best irrigation solution that not only allows farmers to properly assess the crop health but also how to utilize their current resources efficiently.
- Measures the soil moisture, climate, humidity, and crop health
- Correlates environmental factors with yield projection and crop health
- analyze air humidity and other external factors to provide comprehensive recommendations
- Provides unique tailored irrigation solutions for the respective farmer or agricultural organization
- Revitalize dying crop such as restoration environmental programs for endangered plant species
- Creating solutions in a searchable agricultural database
- optimizing crop cultivation practices
- Biological engineer and environmental specialist will provide their expert advice

Challenge questions:

- What data collection methods would the farms like the database to utilize?
- Are there any additional feedback the farms would like?
- Are there any datapoints that the farmers know from experience that the database is missing?
- What resources does each farm have?
- How many data points would the farms want the database to include?