Impacts of Weather Variables on Corn Yield in Iowa

Abstract

The goal of this project is to develop a web map using R or Tableau to visualize crop yields in Iowa over time and identify factors that impact production such as weather patterns. The project will use data analysis techniques to explore the correlation between crop yields and factors such as average precipitation, solar radiation, and average temperature. By creating a web map that displays crop yields across different counties in Iowa over time, the project aims to identify trends and patterns that could help farmers optimize their crop management practices.

Overview:

The project aims to conduct a comprehensive analysis of crop yields in Iowa, with a particular focus on factors that impact production such as soil quality and weather patterns. To achieve this, the project will use data analysis techniques to explore the correlation between crop yields and factors such as weather patterns. The project will also develop a web map using R or Tableau that visualizes crop yields across different counties in Iowa over time. The web map will enable farmers to see trends and patterns in crop yields, which could help them optimize their crop management practices.

In addition to analyzing crop yield data, the project will monitor weather patterns in the region to identify correlations between weather events and crop yields.

In summary, the project aims to use data analysis techniques and remote sensing technologies to create a comprehensive analysis of crop yields in Iowa. By developing a web map that visualizes crop yields across different counties in Iowa over time, the project aims to help farmers optimize their crop management practices. The project will also use a weather monitoring to identify trends and patterns that could improve crop yields and reduce the risk of pest and disease outbreaks.

Technology:

The project proposes to use web mapping technology such as R or Tableau to visualize crop yields across different regions over time. Also, to generate 3 maps that show 2018 corn yield of Iowa counties along with average precipitation, average solar radiation, and average temperature through the growing season. R will be used to do 3-way ANOVA analysis and create box plots.

Data:

Yield data, and weather data will be downloaded from https://github.com/saeedkhaki92/CNN-RNN-Yield-Prediction.

Inspiration:

https://www.nass.usda.gov/Charts_and_Maps/Crops_County/index.php#cr

Potential Challenges:

Data collection and cleaning: Gathering and cleaning data from different sources can be a time-consuming and challenging task. Ensuring data accuracy and consistency will be important to obtain meaningful insights from the analysis.

Developing a web map using R or Tableau requires technical skills in programming, data visualization, and geospatial analysis.

Timeline:

I am planning to finish up this project by the end of April 2023.

I will first start to collect and clean data on crop yields, soil quality, and weather patterns in Iowa. Then I will analyze the data to identify trends and correlations in crop production, soil quality, and weather pattern. Then I will use R or Tableau to create a web map that visualizes crop yields across different counties in Iowa over time. After that I will conduct a soil analysis to identify trends and correlations in soil quality across Iowa's fields, and monitor weather patterns in the region to identify correlations between weather events and crop yields. If I have time I also plan to use remote sensing technologies (such as satellites) to monitor plant growth and health and create a vegetation map. Finally, I will write a report summarizing the analysis and findings of the project, and repare a presentation to showcase the project and its results.