**SYPNOSIS**

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**Crop-Production-Data-Analysis-and-Visualization**

Introduction

The objective of this project is to analyze crop production data to identify patterns and trends across different regions and seasons. The analysis is performed using Python for data manipulation and visualization, and Power BI for creating interactive dashboards.

# Data Cleaning

The data cleaning steps include:

- Loading the data from a CSV file.

- Converting columns to appropriate data types.

- Handling missing values by removing rows with null or zero production.

- Standardizing categorical values (e.g., season names).

# Data Analysis

The analysis covers various aspects of crop production, including:

- Summary statistics and data exploration.

- Grouping data by different categories such as crop, state, and year.

- Pivot tables for summarizing production across different dimensions.

# Visualizations :

# Python Visualizations :

- Bar charts for yearly crop production by state.

- Pie charts for state-wise production distribution.

- Heatmaps for season-wise production over the years.

# Power BI Dashboard :

- Total production by year and top 5 states.

- Detailed Analysis : Yearly production by state and crop, pie charts, and maps.

- Seasonal Analysis : Heatmaps and season trend comparisons.

- Crop-Specific Analysis: Detailed breakdowns and trends.

# Excel Dashboard & Forecast Model :

- Dashboard: Total production by year and top 5 states ,top 5 crop produced interactive slicer of year, states & season ,etc.

- Data Summary: zero production crop ,top 5 states by area & production ,top 3 states of top 5 most produced crops in india, etc.

- Forecast Model: using Regression Analysis derive the season wise top 5 crops forcasting models.

**Technologies: Python [pandas, matplotlib, NumPy , SeaBorn], Excel, Power BI**

# Software Requirements:

* OS: Windows
* Code Editor: Jupiter note book

Hardware Requirements: min 4GB RAM (recommended 8GB), min Intel i5 (recommended i7+), SSD recommended (256GB for faster management)

Visualizations

The following report was successfully created in Microsoft Power BI.

DB 1 : (<https://github.com/Yashikagup/data-analytics-Project/blob/main/db%201.png> )

DB 2 : (<https://github.com/Yashikagup/data-analytics-Project/blob/main/db%202.png> )

Contributing

Contributions are welcome! Open an issue or submit a pull request for improvements or new features.