Streaming Data Analytics
Individual Project
Dataset used: Agriculture

Description of the dataset

The dataset focuses on factors impacting agricultural yield, including:

- Farm Area: Each farm's land size enables yield analysis per area unit.
- Irrigation Type: Methods like drip, sprinkler, and flood, supporting water use and yield efficiency comparisons.
- Crop Type: Variety of crops, allowing yield analysis by crop suitability.
- Season: Seasonal data helps identify optimal planting and yield trends.
- Water Usage: Water amount per irrigation type, aiding in water efficiency analysis.
- Fertilizer and Pesticide Usage: Input levels for each crop, allowing input-output efficiency assessment.
- Yield: Primary yield metric, reflecting output based on the above factors.

Objectives

- Determine how farm area size impacts crop yield, helping farmers and stakeholders optimize land use for maximum productivity.
- Compare yield efficiency across different irrigation types to understand the most effective methods for various crops.
- Identify high-yielding crop types to guide crop selection based on productivity potential.
- Analyze seasonal yield patterns to optimize crop cycles and suggest optimal planting and harvesting times.
- Examine water usage patterns for each irrigation type to identify the most water-efficient methods for crop needs.
- Assess the relationship between input levels (fertilizers and pesticides) and yield to optimize input usage for cost-effectiveness and environmental sustainability.

Insights

- Larger farm areas yield more, but yield per unit area varies, suggesting room for optimization on smaller plots.
- Drip irrigation shows a higher yield per water unit, making it ideal for water-scarce regions.

- Certain crops consistently yield higher, indicating their suitability for the region's conditions.
- Yields peak in certain seasons, highlighting optimal times for planting high-demand crops.
- Drip irrigation uses less water per yield unit, making it more efficient than other methods.
- Moderate fertilizer and pesticide levels yield the highest output, with diminishing returns at higher input levels.