Crop Recommendation System
Data Analysis

Feature Analysis:

- **Nitrogen (N):**
  - Nitrogen is crucial for plants as it ***builds proteins***, ***fuels photosynthesis***, and ***aids root development***. Nitrogen content in soil can vary widely depending on factors like soil type, previous crops, and fertilization practices.
  - ***Range in the data:***
    - **0** to **140 kg/ha** are **standard**.

- **Phosphorous (P):**
  - Phosphorus is essential for root development and flowering in plants. It's usually present in lower amounts in soil compared to nitrogen.
  - ***Range in the data:***
    - **5** to **80 kg/ha** are **standard**.

- **Potassium (K):**
  - Potassium, including disease resistance and water uptake, is ***crucial*** for ***overall plant health***. It's also typically present in lower amounts in soil compared to nitrogen.
  - ***Range in the data:***
    - **5** to **205 kg/ha** are **standard**.

- **Temperature (°C):**
  - ***Importance:*** Temperature plays a vital role in plant growth and development. Different crops have varying temperature requirements for optimal growth. High or low temperatures can stress plants and reduce yields.
  - ***Range in the data:***
    - The data shows a range of minimum and maximum temperatures across different crops. This likely reflects the diverse temperature needs of various crops.
    - For example, grapes have a lower minimum temperature tolerance compared to chickpeas.

- **Humidity (%):**
  - ***Importance:*** Humidity affects plant growth through transpiration (water loss through leaves). High humidity can reduce transpiration rates, while low humidity can lead to increased water loss and stress.
  - ***Range in the data:***
    - The data shows a range of minimum and maximum humidity levels for different crops. This reflects the varying humidity preferences of crops.
    - For instance, banana thrives in higher humidity compared to cotton.

- **pH:**
  - ***Importance:*** Soil pH affects nutrient availability for plants. Most crops prefer a slightly acidic to slightly alkaline soil pH range (around 6.0 to 7.5).
  - ***Range in the data:***
    - The data shows a range of minimum and maximum pH levels for different crops. This reflects the varying pH tolerance of crops.
    - For example, pomegranate thrives in slightly acidic soil, while cotton prefers slightly alkaline soil.

- **Rainfall (mm):**
  - ***Importance:*** Rainfall is a crucial source of water for plants. However, excessive rainfall can lead to waterlogging and hinder root development.
  - ***Range in the data:***
    - The data shows a range of minimum and maximum rainfall levels for different crops. This reflects the varying water requirements of crops.
    - For example, rice needs more water than cotton.