

GOVINDAMMAL ADITANAR COLLEGE FOR WOMEN

Tiruchendur

III – B.Sc.,Physics

TEAM MEMBERS:

V.Ananthi

D.Arockia Abinaya

V.Brindha

N.Durga Mahalakshmi

A. Swathika



Edit with WPS Office

INDIA'S AGRICULTURAL CROP PRODUCTION ANALYSIS



Edit with WPS Office

INTRODUCTION:

Overview:

Agriculture crop production, the backbone of our global food supply, is a multifaceted and essential endeavor that has sustained humanity for millennia. It encompasses the cultivation of crops ranging from staple grains like rice and wheat to nutrient-rich vegetables and cash crops such as cotton and coffee. This fundamental aspect of agriculture plays a pivotal role in feeding the world's population, supporting economies, and shaping the future of sustainable food systems. India is one of the largest producers of agriculture production in the world. It is the second largest producer in the wheat and rice. Wheat cultivation in India traditionally been dominated by the northern region of India. The northern states of Punjab and Haryana Plains in India have been prolific heat producers. While this cereal grass has been studied carefully in the past, recent years of painstaking research by India's finest scientific talent has paid off with the development of distinctly superior varieties of Durum Wheat.



Edit with WPS Office

PURPOSE:

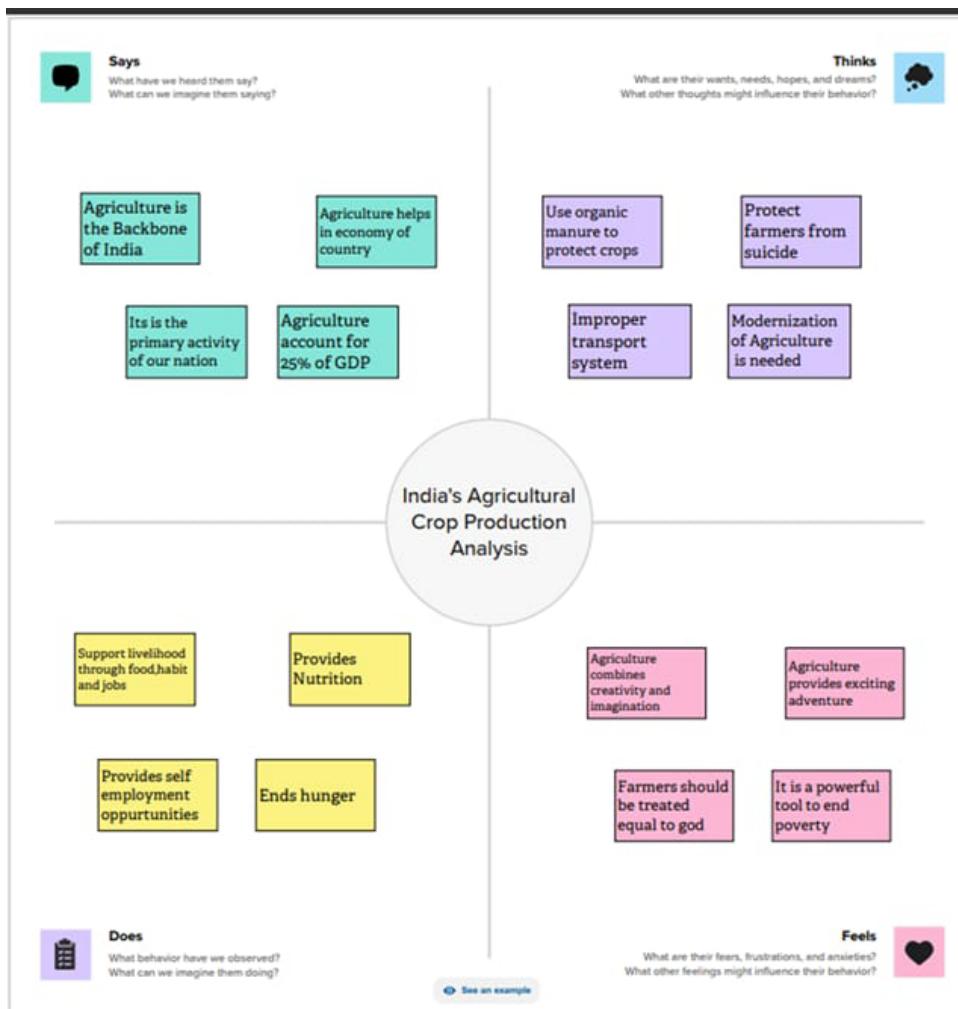
1. *Food Supply: The primary purpose is to produce food for human consumption. Crops like grains, vegetables, fruits, and legumes are grown to provide a stable food supply.*
2. *Livestock Feed: Crops such as corn and alfalfa are grown to feed livestock, which in turn provides meat, dairy, and other animal-based products.*
3. *Fiber Production: Crops like cotton and flax are cultivated to produce fibers for textiles and clothing.*
4. *Biofuel Production: Some crops like corn and sugarcane are used to produce biofuels, which can replace fossil fuels and reduce greenhouse gas emissions.*



Edit with WPS Office

PROBLEM DEFINITION & DESIGN THINKING

EMPATHY MAP



Edit with WPS Office

BRAIN STROMING :

| Person 1 | Person 2 | Person 3 |
|---|--|---|
| River and national canal link to strength irrigation system | Farmers should have access to service like financing and insurance | Inadequate water |
| To protect crops biocides are employed | Organic manures for maintaining healthy soil | Field productivity zoning |
| | | Add fertilizers to provide nutrients to plant |
| | | Agricultural Education |
| Person 4 | Person 5 | |
| Use of modern irrigation methods | Using high yielding variety seeds | Decreased water |
| Farmers should know | | Proper marketing facilities |
| | | Increase usage of |



Edit with WPS Office

GROUP IDEAS

River and national canal link to strength irrigation system

Increased demand water

Commodity prices affect farming

Organic manures for maintaining healthy soil

The requirement for crop insurance is needed

Increase usage of organic manure

Use of modern irrigation methods

Suicide of farmers due to loss

Using high yielding variety seeds

Add fertilizers to provide nutrients to plant

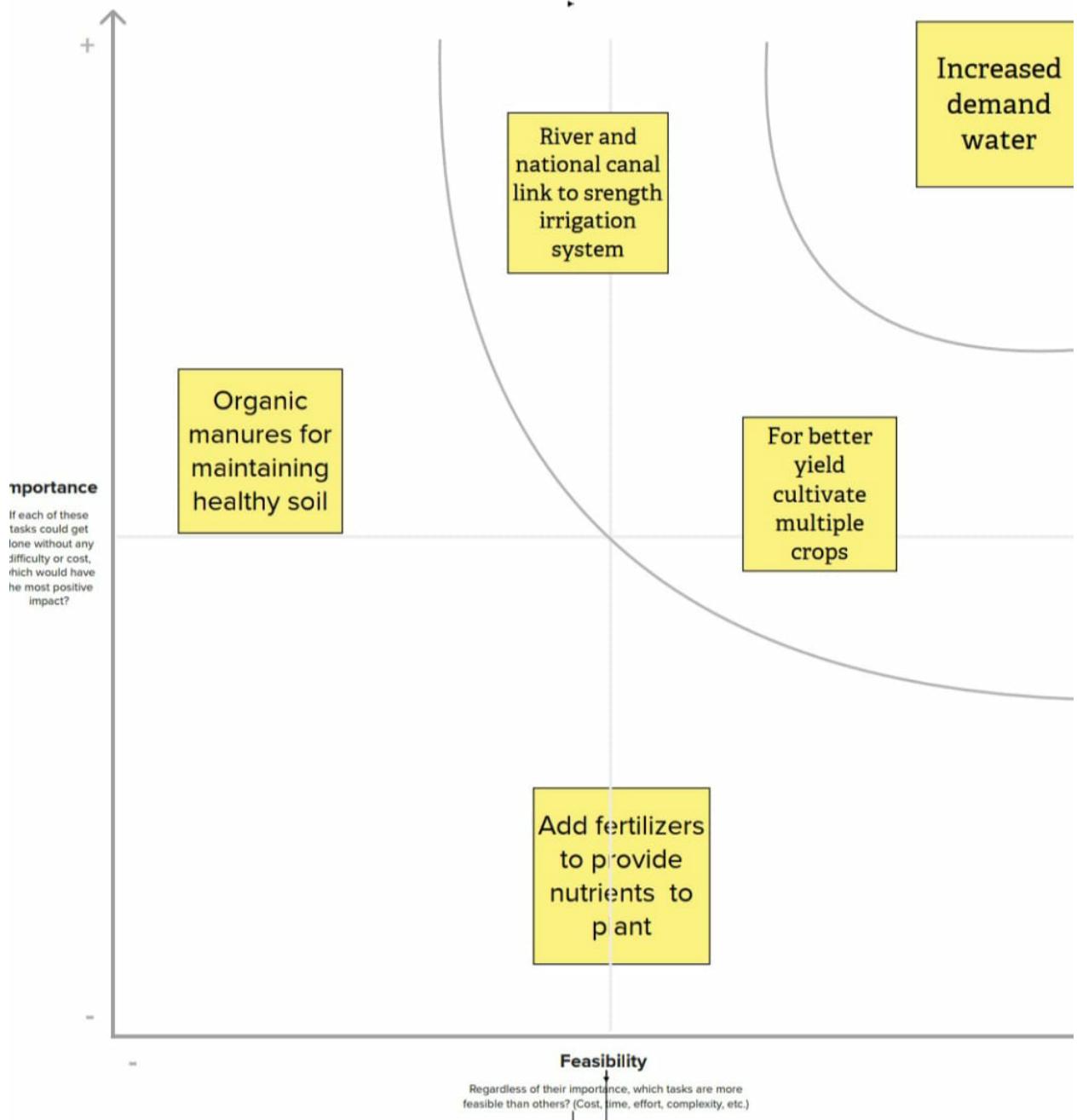
For better yield cultivate multiple crops

Soil fertility depletion

To protect crops biocides are employed

Resource depletion account for major change





Edit with WPS Office

LITERATURE SURVEY

Top 3 rice - production states of India

Around 36% of India's total rice production is from West Bengal, Uttar Pradesh, Punjab. West Bengal contributed 13.62% of total rice produced in India. Uttar Pradesh contributed 12.81% of the total rice produced in India. Punjab accounted for 9.96% of the total rice produced in India.

Top 3 Wheat production states of India

Around 64% of India's total wheat production is from Uttar Pradesh, Madhya Pradesh and Punjab. Uttar Pradesh contributed 32.42% of the total wheat production in India. Madhya Pradesh contributed 16.08% of the total wheat production in India. Punjab produced 15.65% of the total wheat in India.

Top 3 total Food Grains producing states of India

Around 39% of India's total food grain production is from Uttar Pradesh, Madhya Pradesh and Punjab. Uttar Pradesh contributed 18.89% of the total food grain production in India. Madhya Pradesh contributed 10.36% of the total food grain production in India. Punjab contributed 9.65% of the total food grain production in India.

Top 3 total Food Grains producing states of India

Around 39% of India's total food grain production is from Uttar Pradesh, Madhya Pradesh and Punjab. Uttar Pradesh contributed 18.89% of the total food grain production in India. Madhya Pradesh contributed 10.36% of the total food grain production in India. Punjab contributed 9.65% of the total food grain production in India.



Downloading the dataset:

The screenshot shows a web browser window with the following content:

Activity 1: Downloading the dataset

Please follow link to download:

<https://www.kaggle.com/datasets/pyatakov/india-agriculture-crop-production>

Activity 1.1: Understand the data

Data consists of 345409 rows and 10 columns that correspond to different values.

Column Description of the Dataset:

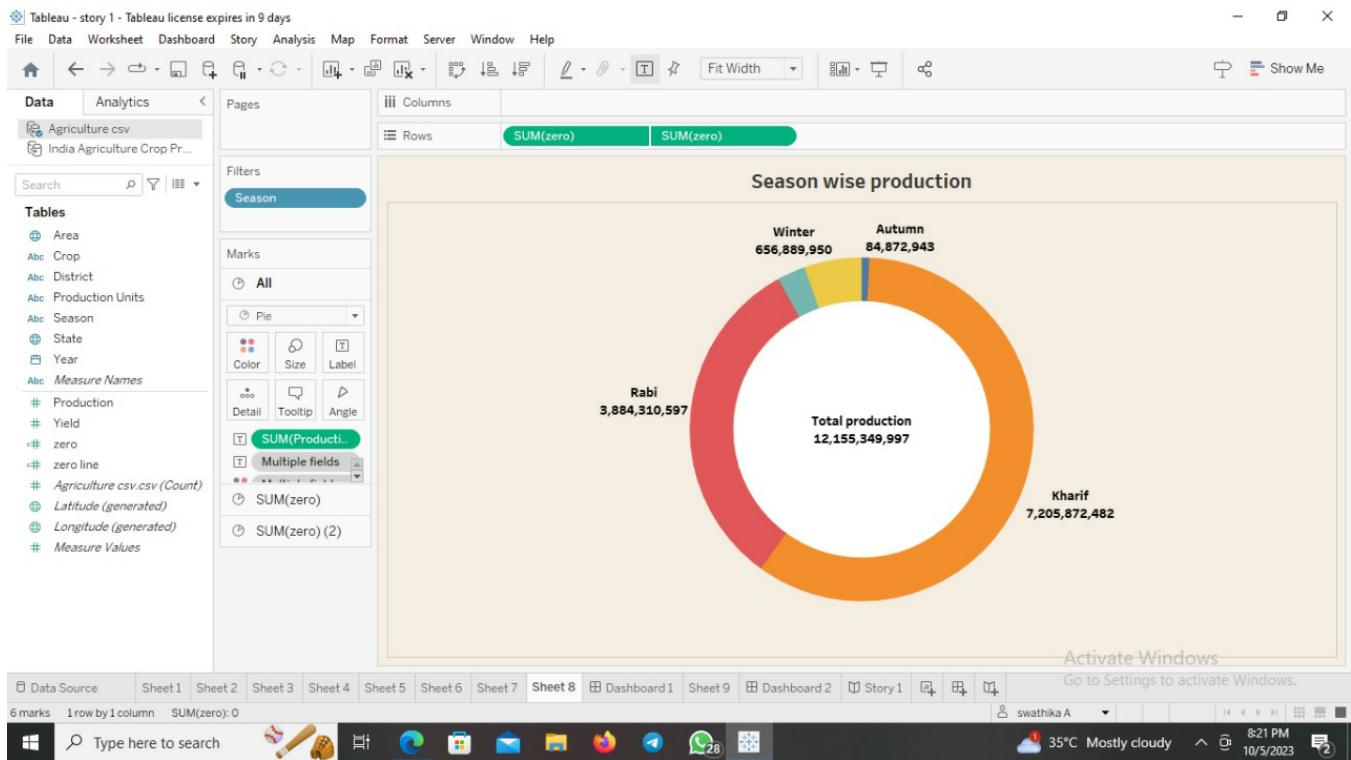
- State : The name of the Indian states.
- District : The name of the districts of Indian states.
- Crop : Name of different crops grown in India
- Year : Date
- Season : India has 5 seasons for crop cultivation: kharif, rabi, autumn, winter and summer.
- Area: Area for crop cultivation in acres
- Production : Production of crops in tonnes
- Yield : Yield by the crops under cultivation



Edit with WPS Office

DATA VISUALIZATION

Season wise production:

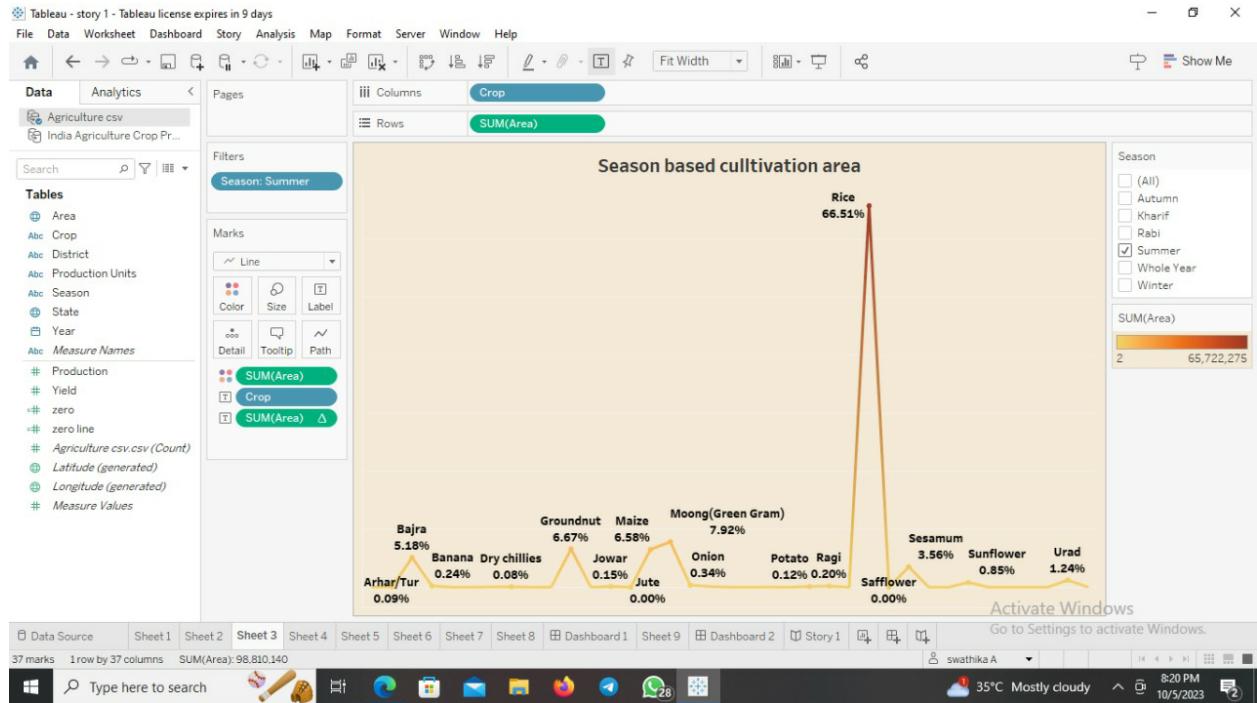


- ❖ Kharif season has higher production while Autumn season has lower production.



Edit with WPS Office

Season based cultivation area:

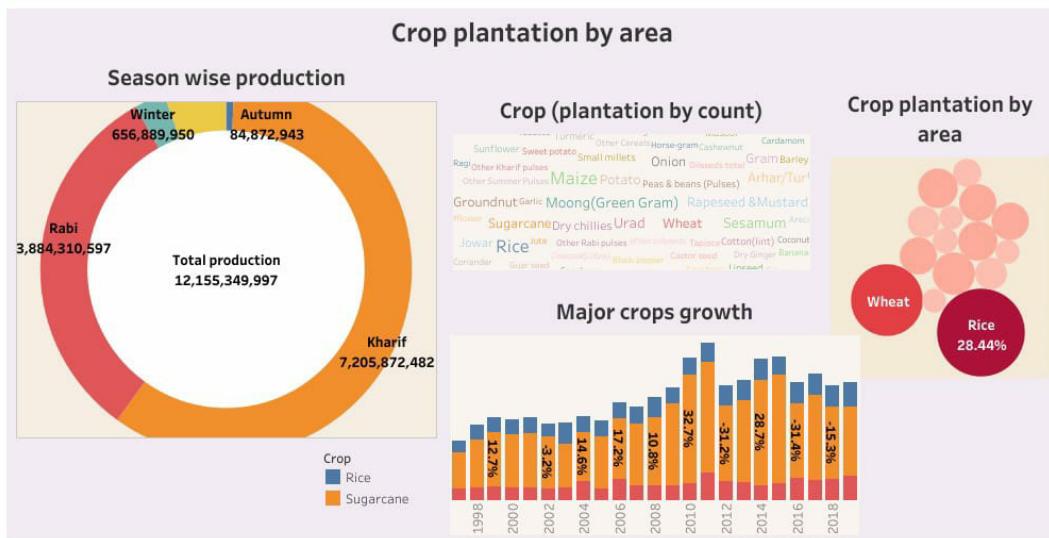


- ❖ Doing summer season the production of Rice is higher while the production of Jute is lower.

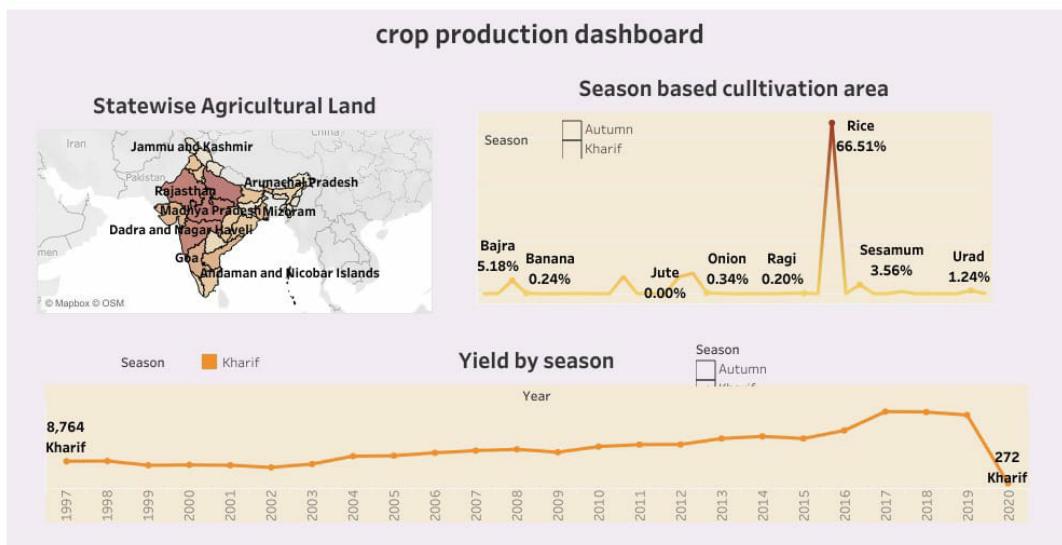


Edit with WPS Office

DASHBOARD: 1



DASHBOARD: 2

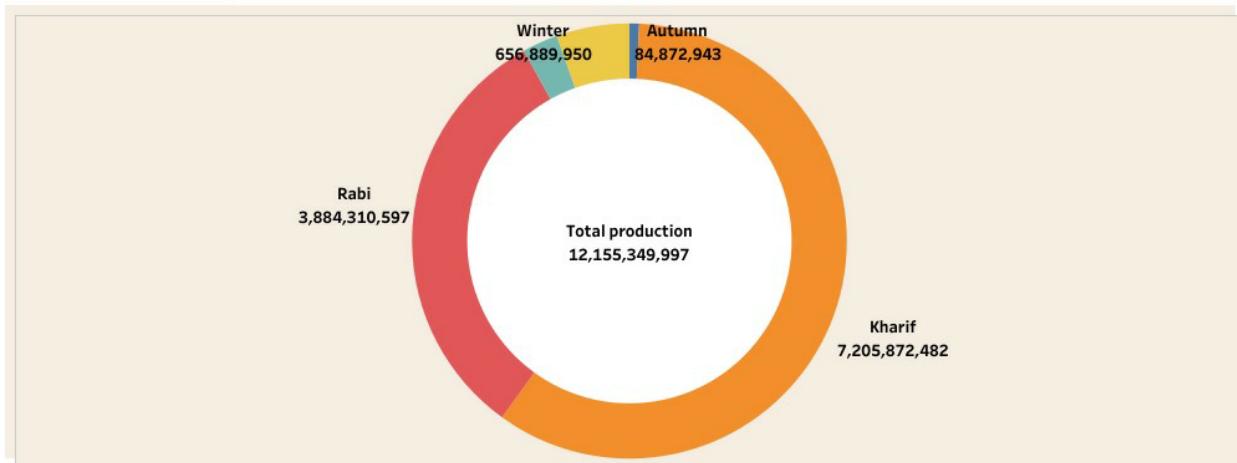


Edit with WPS Office

STORY:

Story 1

| | | | | | | |
|------------------------|---|---------------------------------------|--|--|---|---|
| This bar chart is sh.. | This line chart shows crop production by av.. | This line chart shows yield by season | This bubble chart shows crop plantatio.. | This bar chart shows major crop growth | This text chart shows crop plantation by co.. | This pie chart shows season wise producti.. |
|------------------------|---|---------------------------------------|--|--|---|---|



Edit with WPS Office

ADVANTAGES AND DISADVANTAGES

Advantage:

- 1. Increased Yield:** Modern agricultural practices, including the use of genetically modified crops and advanced machinery, have led to higher crop yields.
- 2. Precision Farming:** Technologies like GPS and drones enable farmers to apply resources more precisely, reducing waste and increasing efficiency.
- 3. Pest and Disease Management:** Advances in biotechnology have led to the development of resistant crop varieties and more effective pest and disease control methods.

Disadvantage:

- 1. Environmental Degradation:** Intensive farming practices can lead to soil erosion, depletion of natural resources, and contamination from fertilizers and pesticides, harming the environment.
- 2. Water Scarcity:** Agriculture is a major consumer of water, and in some regions, excessive water use can lead to water scarcity and conflicts over resources.
- 3. Monoculture:** Planting the same crop repeatedly can deplete the soil of specific nutrients and make crops more susceptible to pests and diseases.

APPLICATION:

- 1. *Market Price Analysis Tools*:** Apps and websites provide real-time market prices for crops, helping farmers make decisions about when and where to sell their produce.
- 2. *Weather Forecasting*:** Access to accurate weather forecasts helps farmers plan planting and harvesting schedules, reducing the risk of weather-related crop damage.



Edit with WPS Office

CONCLUSION:

Agriculture crop production is a vital component of our global food supply chain, providing sustenance and raw materials for various industries. While it offers numerous advantages, such as increased yield, technological advancements, and economic growth, it also presents significant challenges and disadvantages, including environmental degradation, health concerns, and market volatility.

FUTURE SCOPE:

1. ***Precision Agriculture***: The adoption of precision farming technologies will continue to grow. This includes the use of sensors, drones, GPS, and data analytics to optimize resource use, reduce waste, and increase yields.
2. ***Climate-Resilient Crops***: Breeding and genetic engineering will focus on developing crop varieties that are more resilient to climate change, able to withstand extreme weather events, and require fewer resources like water and fertilizers.
3. ***Vertical Farming***: Urban and vertical farming systems will become more prevalent, allowing year-round production in controlled environments. This can reduce land use, water consumption, and transportation costs.



Edit with WPS Office