

PROJECT REPORT

ON

**“INDIA’S AGRICULTURE CROP PRODUCTION
ANALYSIS (1997-2021)”**

BASED ON THE COURSE

**FUNDAMENTALS OF DATA ANALYTICS WITH
TABLEAU - SMARTBRIDGE**

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UNDER THE GUIDANCE OF

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SUBMITTED TO

NAAN MUDHALVAN – SMART INTERNZ

DATA ANALYTICS UPSKILL PROGRAMMING



FUNDAMENTALS OF DATA ANALYTICS WITH

TABLEAU - SMARTBRIDGE

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1.INTRODUCTION

1.1 OVERVIEW

This report delves into the captivating realm of India's agricultural cultivation, providing a comprehensive visual exploration of key aspects and trends in the agricultural sector. Through the visual representations, readers can gain valuable insights into crop production, seasonal variations, regional distribution, and overall production trends. These visualizations enable intuitive analysis, allowing stakeholders to uncover patterns, identify areas of growth or concern, and make data-driven decisions.

1.2 PURPOSE

By harnessing the power of Tableau, this report not only presents the data in a visually appealing manner but also provides an interactive experience for readers to explore the intricacies of India's agricultural cultivation. To Extract the Insights from the data and put the data in the form of visualizations, Dashboards and Story we employed Tableau tool.

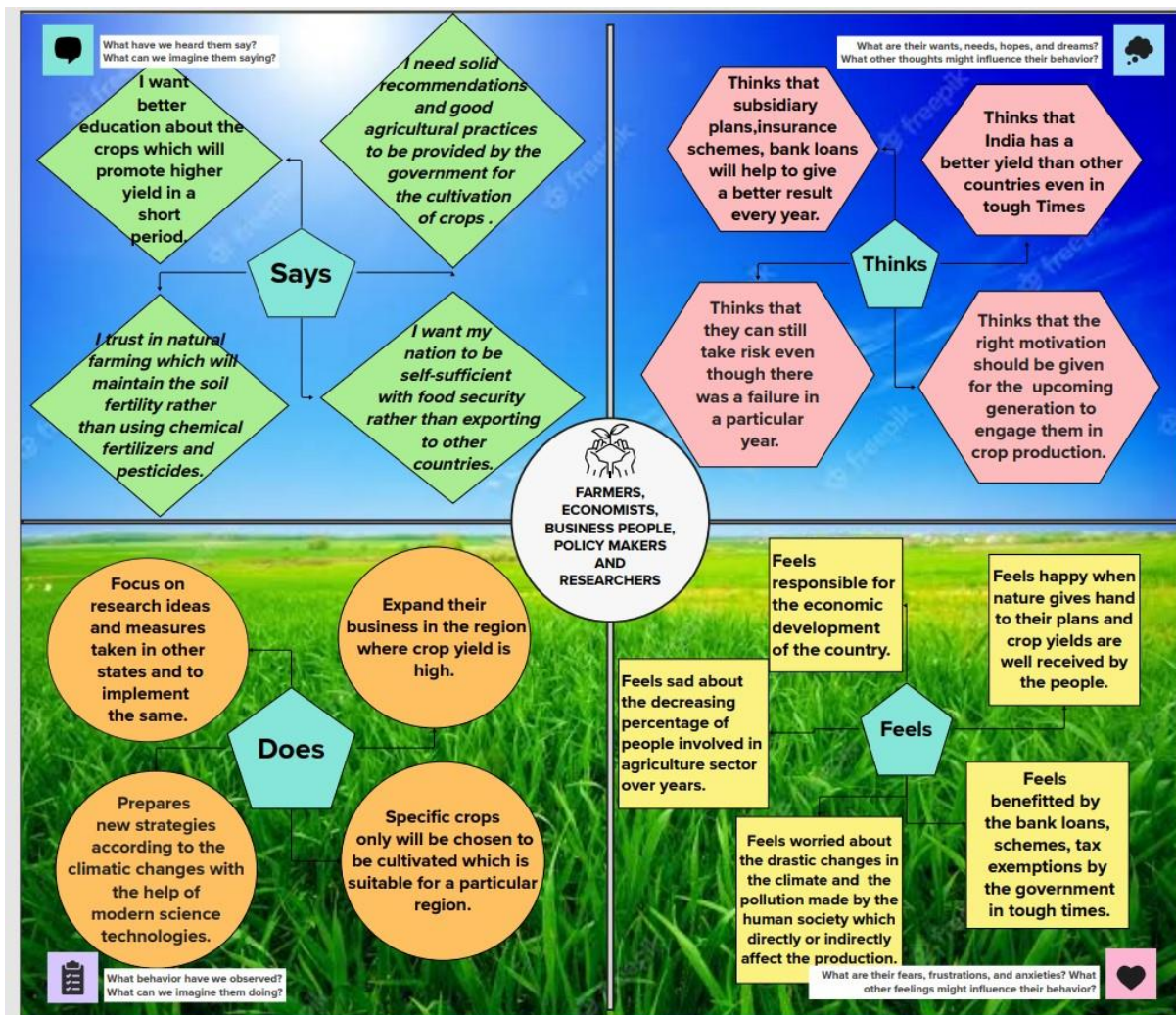
2. PROBLEM DEFINITION AND DESIGNS THINKING

PROBLEM DEFINITION:-

Analysing India's Agricultural Crop Production over a 25 year period (1995-2021) will help the users to assess the long term trends and patterns in crop production. Based on

the analysis, recommendations can be provided for the policymakers and the stakeholders to improve agricultural practices, allocate resources effectively and to enhance food security. Such an analysis would pave way to develop more predictive models to forecast crop production trends in the future. This project also aims to help policymaker and stakeholders to address challenges and opportunities in India's agricultural sector during the specific period.

2.1 EMPATHY MAP



2.2 IDEATION AND BRAINSTORMING MAP

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 1. Welcome to page
- 2. Team to collaborate
- 3. 20 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

- 1. Welcome
- 2. Welcome

Define your problem statement

What problem are you trying to solve? Frame your problem in a few high-level statements. This will be the focus of your brainstorm.

- 1. Welcome
- 2. Welcome

Brainstorm

Write down any ideas that come to mind that address your problem statement.

- 1. Welcome
- 2. Welcome

Group ideas

Take turns sharing your ideas with the group and/or select others as you go. Once all sticky notes have been placed, give each cluster a sentence like "I'd like a cluster a bigger than this sticky note, try and see if you can break it up into smaller sub-groups."

- 1. Welcome
- 2. Welcome

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on the grid to determine which ideas are important and which are feasible.

- 1. Welcome
- 2. Welcome

After you collaborate

You can expect the most value from a job to share with members of your company who might find it helpful.

- 1. Welcome
- 2. Welcome

PROBLEM

Analyze India's agricultural crop production over a 20-year period (1990-2010) to help the team to explore the key trends and patterns in crop production.

Based on the analysis, recommendations can be provided for policymakers and stakeholders to enhance agricultural productivity and sustainability in India.

Key rules of brainstorming:

- 1. Welcome
- 2. Welcome

PERSON 1

Genetic modification has been attributed to insect resistance, disease resistance, nutrient enhancement, yield enhancement, drought and salinity tolerance etc.

Most of the GMO crops grown today were developed to help farmers prevent crop and food loss and control weeds.

PERSON 2

The use of climate solutions in crop production is increasing the food and water security, and also improving the environment and the health of the people.

Advances should be made in developing crops that mature faster and tolerate drought, salt, drought, heat, and other environmental stresses that would otherwise allow plants.

PERSON 3

Study regional variations in crop production by analyzing data at the state and district levels. Identify regions that have shown consistent growth and those facing challenges in crop production.

Analyze the production trends for major crops (e.g., rice, wheat, pulses, oilseeds) individually. Investigate the impact of factors such as weather patterns, irrigation, and technological advancements on crop yields.

PERSON 4

Provide evidence-based recommendations for policymakers, farmers, and stakeholders to enhance agricultural productivity, sustainability, and food security in India.

Develop predictive models to forecast crop production trends for the next 5-10 years based on historical data, climate projections, and technological advancements.

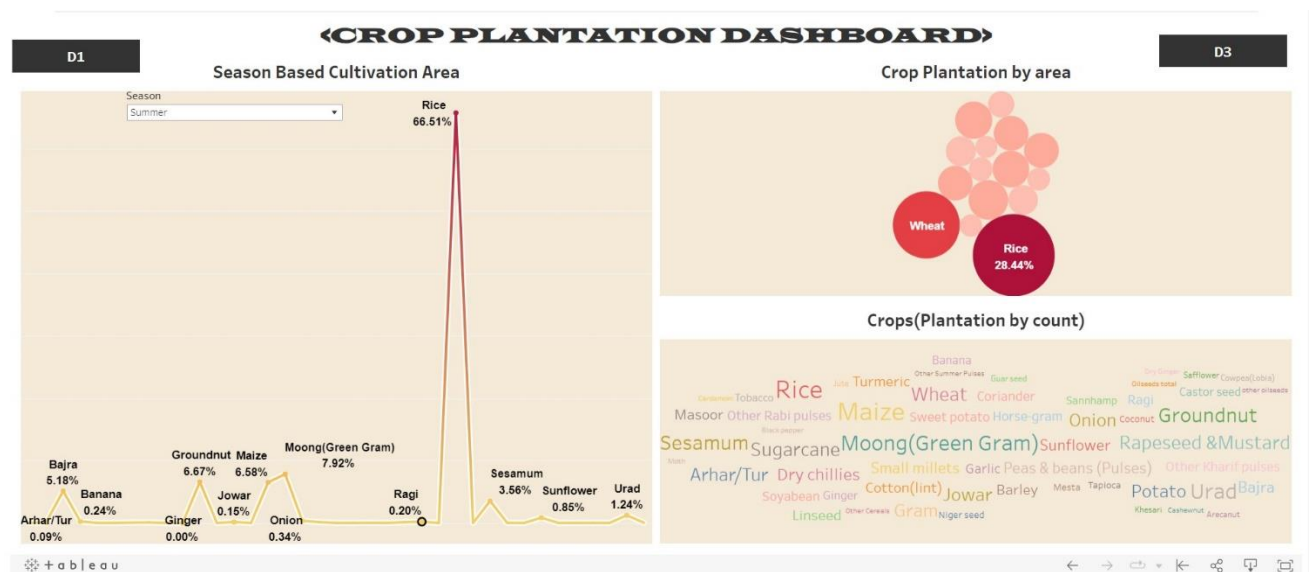
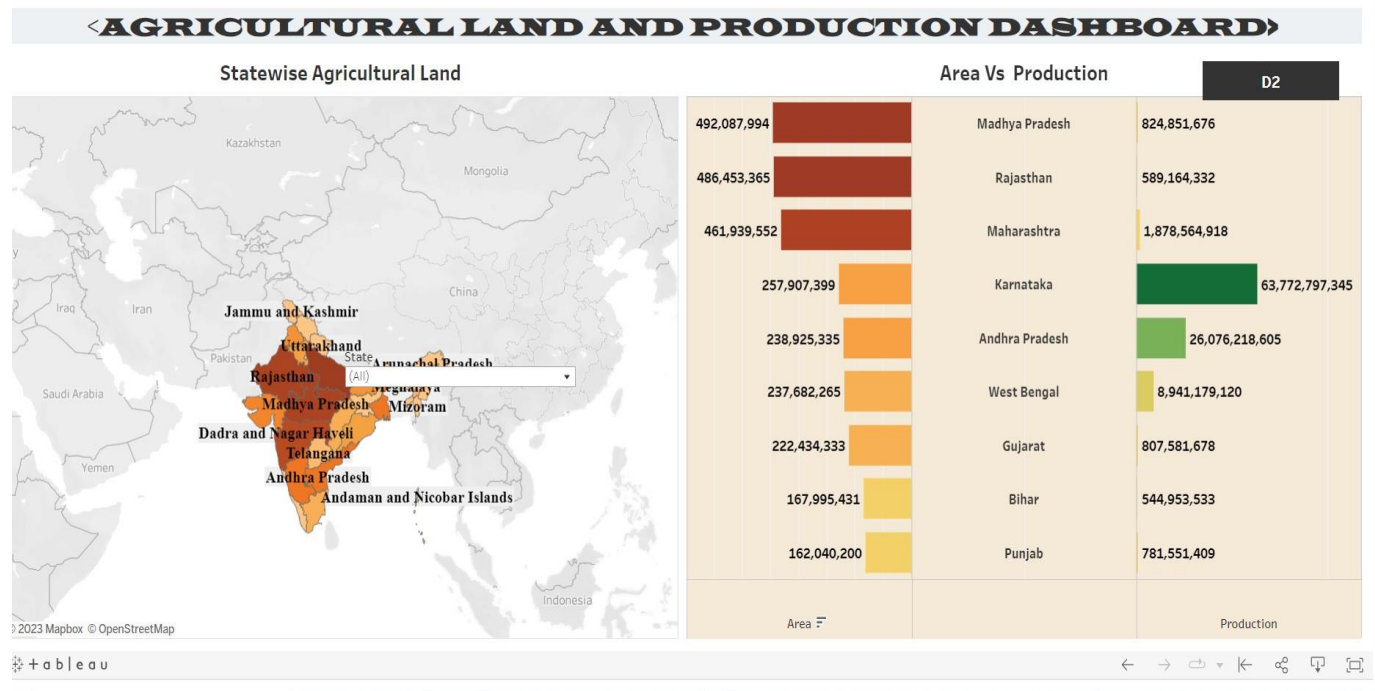
Earthworms provide key soil functions that favour many positive ecosystem services.

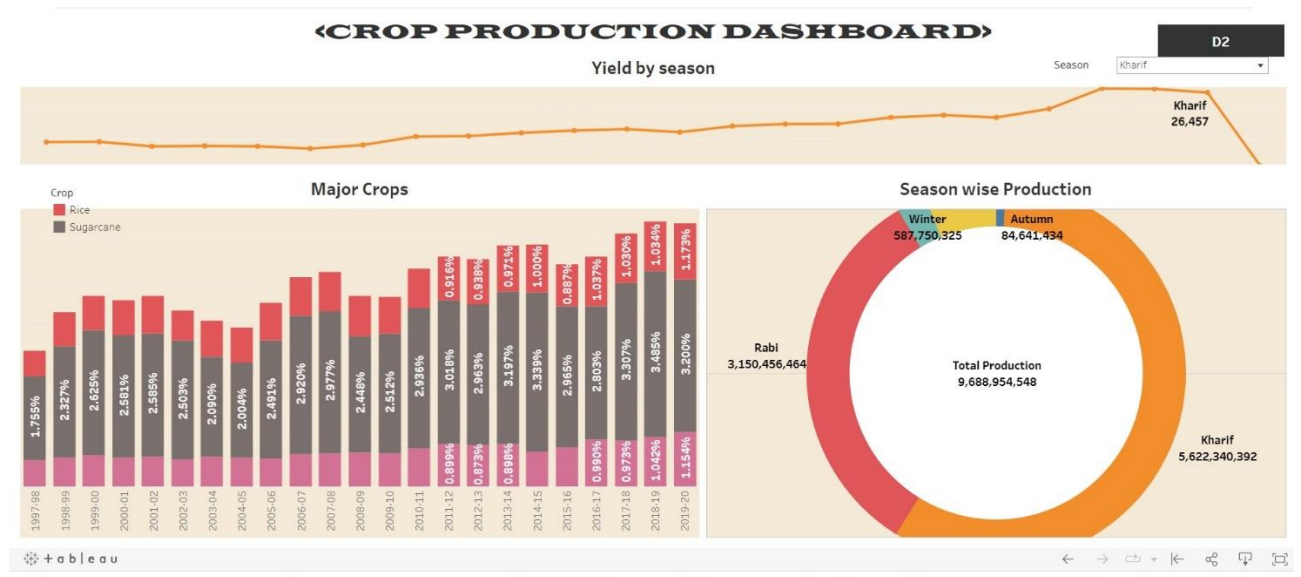
Most of the GMO crops grown today were developed to help farmers prevent crop and food loss and control weeds.

The role of Artificial pollination in increasing the fruit size and seed numbers is significant. It can also generate a large variety of hybrid plants.

3. RESULT

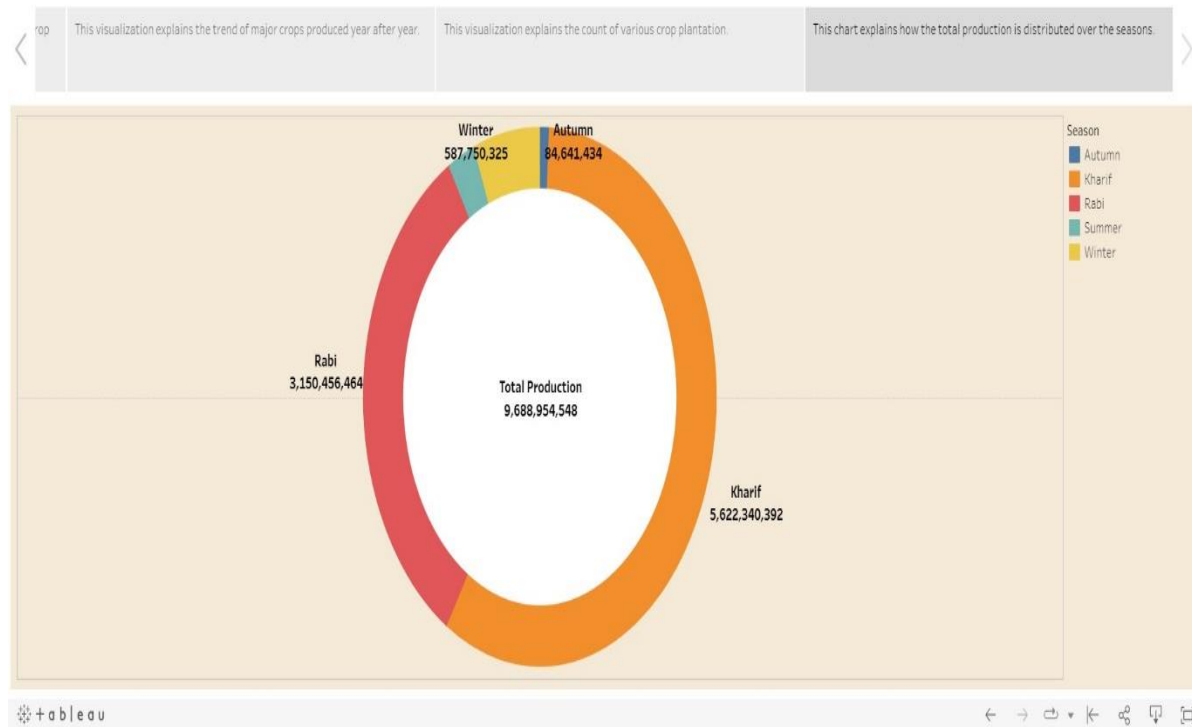
RESULTS OF DASHBOARD VISUALIZATION



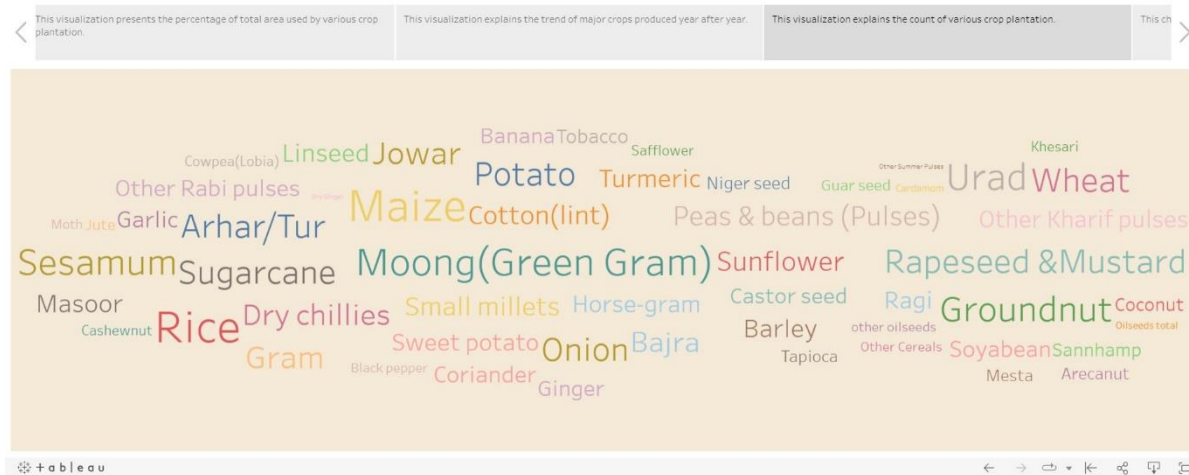


RESULTS OF STORY VISUALIZATION:-

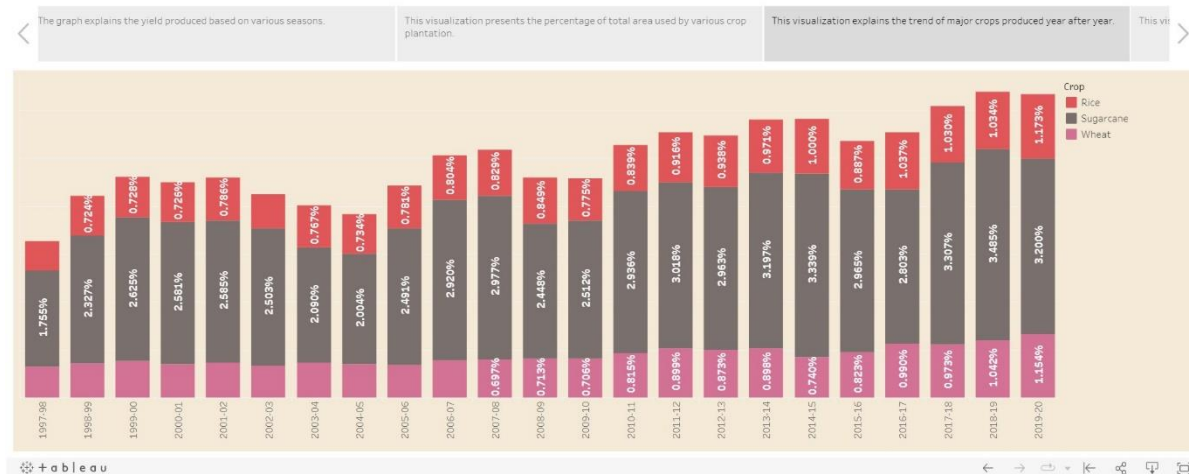
Story1



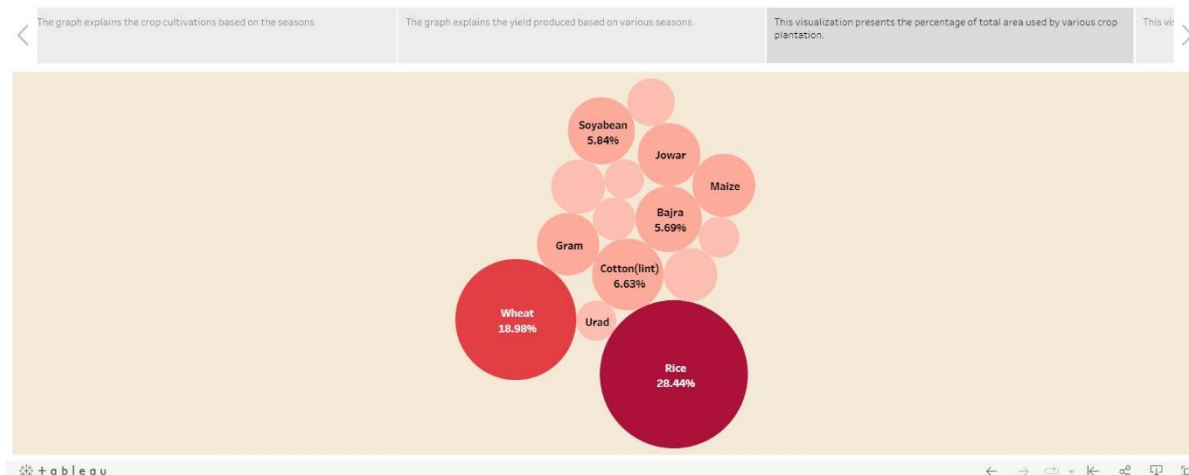
Story 1



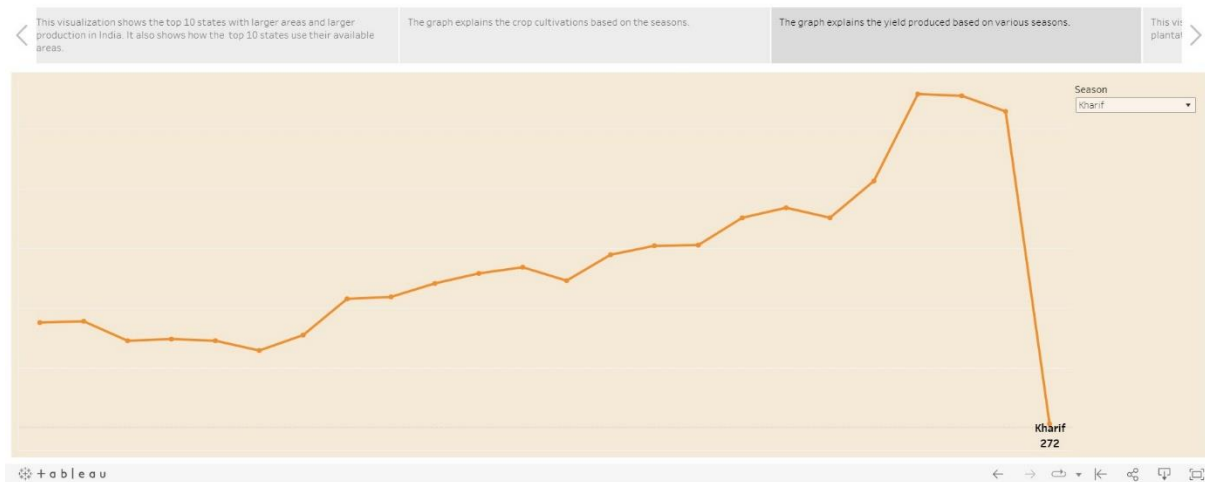
Story 1



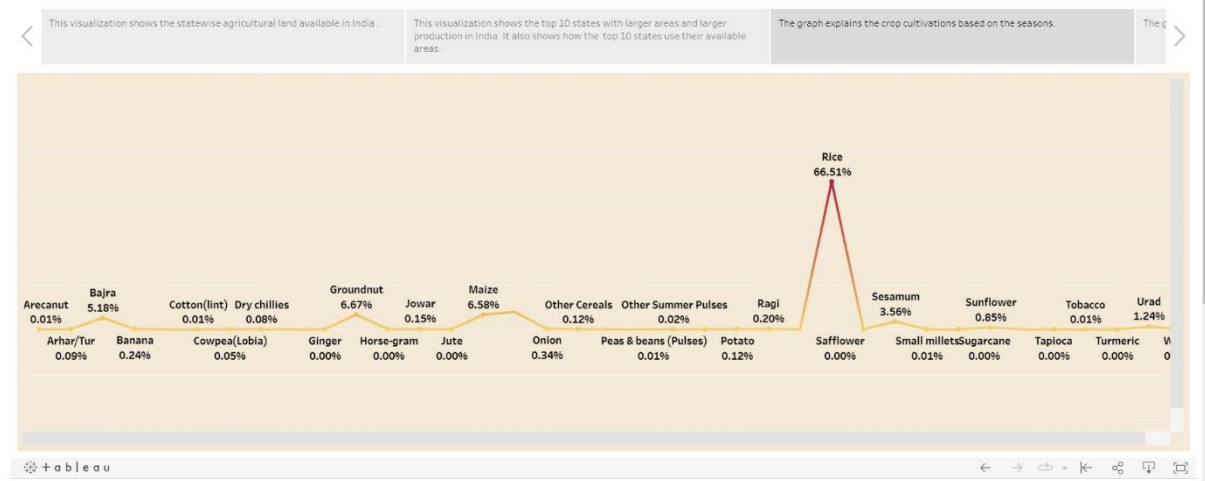
Story 1



Story 1



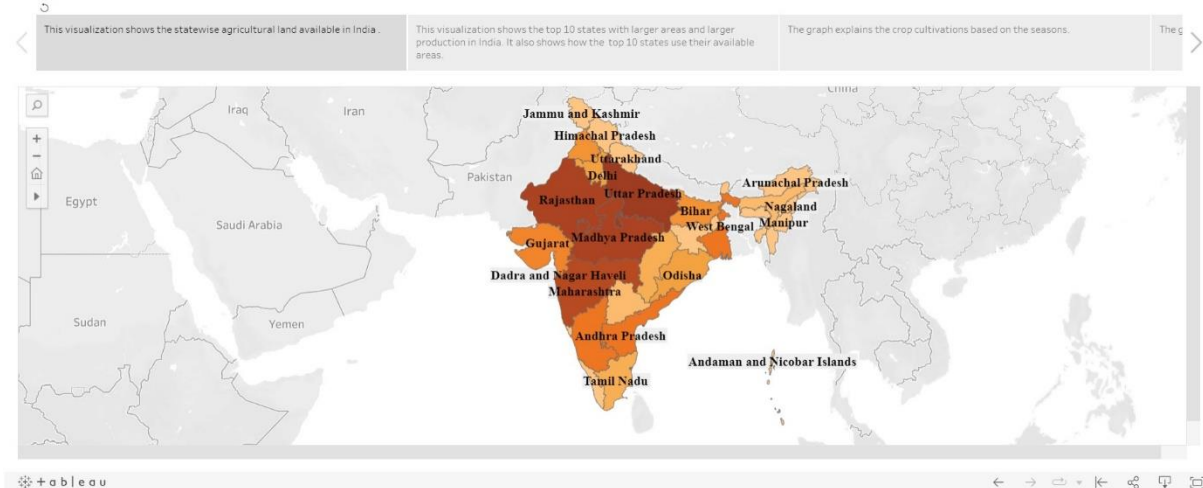
Story 1



Story 1



Story 1



4. ADVANTAGES AND DISADVANTAGES

4.1 ADVANTAGES

- **Food Security:** Understanding agricultural production helps ensure a stable food supply, addressing the needs of India's large population.
- **Economic Impact:** Agricultural analysis contributes to the economy, as agriculture is a significant sector providing employment and raw materials for various industries.
- **Policy Formulation:** Data analysis aids policymakers in formulating effective agricultural policies, ensuring sustainable growth and development in the sector.
- **Resource Allocation:** Identifying trends in production helps optimize resource allocation, ensuring efficient use of land, water, and other agricultural inputs.

- **Global Competitiveness:** Analysis can highlight areas of improvement, making Indian agriculture more competitive in the global market and fostering international trade.

4.2 DISADVANTAGES

- **Climate Change Impact:** Rapid changes in climate patterns can disrupt traditional agricultural practices, making it challenging to predict and analyze production trends accurately.
- **Market Volatility:** Fluctuations in market conditions, influenced by factors like global demand and geopolitical events, can make it difficult to plan based solely on historical production data.
- **Dependency on Monsoons:** India's agriculture is heavily reliant on monsoons, and unpredictable weather patterns can lead to uncertainties in production, affecting the reliability of analysis.

5. APPLICATIONS

Crop production analysis in India has multifaceted applications ranging from on-the-ground farming decisions to policy formulation at the national level, contributing to the overall development and sustainability of the agriculture sector.

- **Research and Development:** Analysis of crop production data provides valuable insights for research and development efforts, helping to improve crop varieties, pest resistance, and overall agricultural productivity.
- **Food Security:** Understanding crop production helps in ensuring food security by identifying potential shortfalls or surpluses and taking proactive measures to address them.

- **Financial Planning:** Farmers can make informed financial decisions based on crop production analysis, optimizing their investments and securing a more stable income.
- **Government Subsidy Allocation:** Governments can use production analysis to allocate subsidies effectively, targeting support to areas and crops that need it the most for sustainable agricultural development.

6. CONCLUSION

The Tableau visualization spanning 1997 to 2021 of India's agriculture crop production is a powerful tool for unraveling the complexities of the sector. It serves as a comprehensive resource for evidence-based decision-making, fostering sustainable practices, and steering the agricultural landscape towards resilience and growth.

It allows for targeted analysis, helping to understand the factors influencing the production of specific crops, reveal seasonal patterns in crop production, plays a crucial role in tailoring policies to address the unique challenges faced by different parts of the country.

Visualizing the timeline alongside key policy changes allows for an examination of their impact on agricultural production. This insight is invaluable for policymakers assessing the effectiveness of various interventions.

7. FUTURE SCOPE

Predictive Analytics for Precision Agriculture:

Utilizing machine learning algorithms within Tableau, future scopes could involve predictive analytics for precision agriculture. By training models on historical data from 1997 to 2021, the visualization can offer insights into potential future trends.

Dynamic Dashboard for Real-time Monitoring:

The future of agriculture crop production analysis lies in real-time monitoring and decision-making. Enhancing the Tableau visualization into a dynamic dashboard allows stakeholders to monitor ongoing trends, incorporating the latest data seamlessly. Integrating IoT (Internet of Things) devices and sensors can provide real-time updates on weather conditions, soil moisture, and other critical variables

THANK YOU