L.R.G. GOVERNMENT ARTS COLLEGE FOR WOMEN, TIRUPUR.
DEPARTMENT OF MATHEMATICS

Course Name: Data Analytics with Tableau

Academic Year: 2023-2024

A project report entitled as

"India's Agricultural Crop Production (1997-2021)"

Work done by

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Team ID: NM2023TMID01965

Under the guidance of

Mr. S. ANANDHAKUMAR

Guest Lecturer

Department of Mathematics

L.R.G. Government Arts College for Women

India's Agriculture Crop Production (1997-2021)

1.INTRODUCTION

1.1.Overview

India is considered as one of the fastest growing economies in the world. Agriculture is the mother of any economy, whether it is rich or poor. Its gross irrigated crop area of 82.6 million hectares (215.6 million acres) is the largest in the world. India is among the top three global producers of many crops , including wheat, rice, pulses, cotton, peanuts, fruits and vegetables. Agriculture, with its allied sectors, is the largest source of livelihoods in India. 70 percent of its rural households still depend primarily on agriculture for their livelihood, with 82 percent of farmers being small and marginal.

Agriculture is a key to development in the areas of human civilization. Smart farming provides farmers with real-time data and insights into their farming practices. This data can be used to make informed decisions about inputs, planting schedules, and other factors that can impact crop yields.

1.2. Purpose

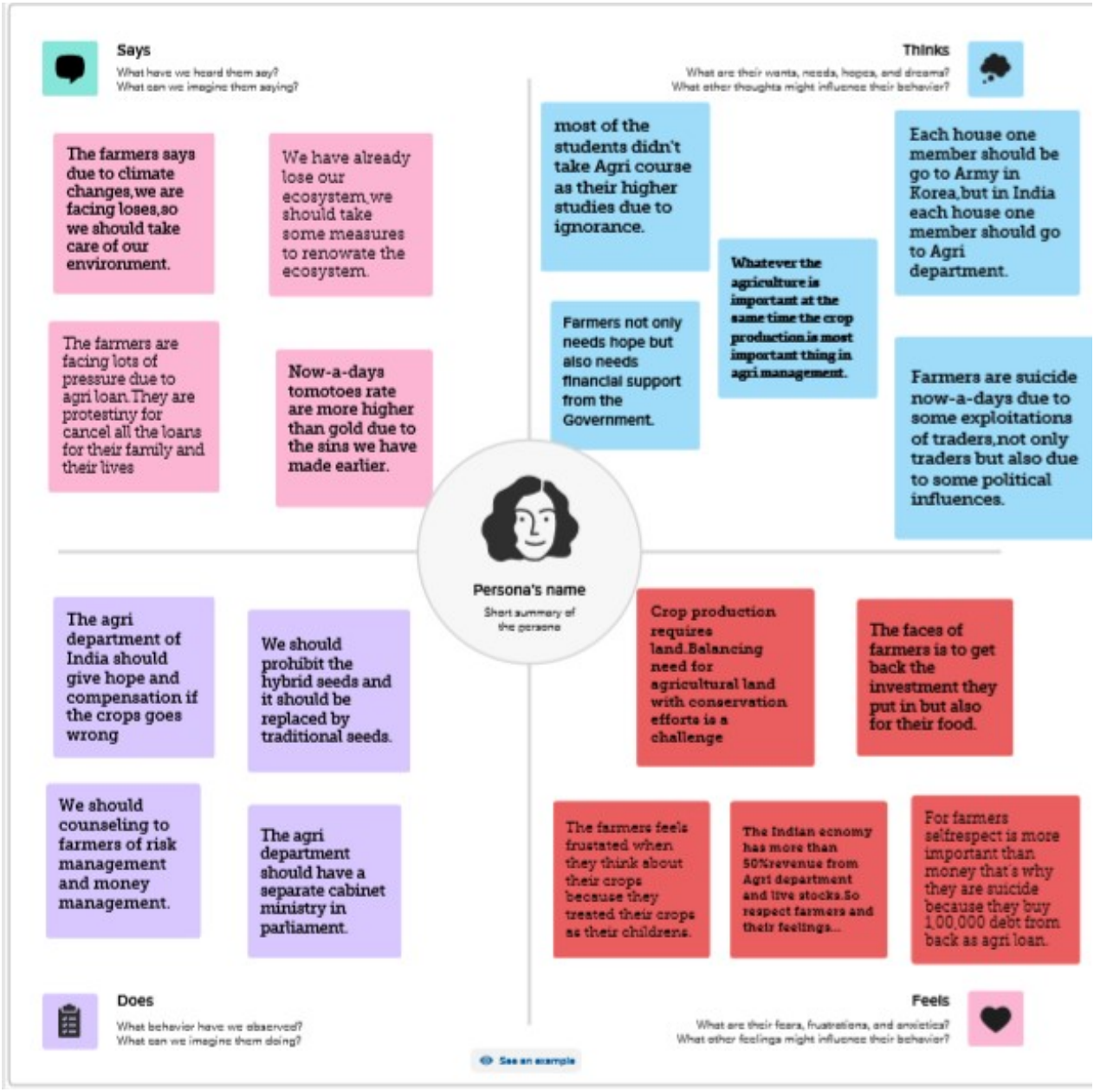
Agriculture is the backbone of our country's economy. It is the main traditional occupation of our country. Agriculture impacts society in many ways, including: supporting livelihoods through food, habitat, and jobs. The main purpose of agriculture is not only to cultivate crops. But also provide employment for a large proportion of the population, and it is the backbone of our economic system.

It provides employment opportunity to the rural agriculture as well as non-agriculture labourers. It is the source of food and fodder. It also plays an important role in international business in import and export activities. Agriculture is the practice of cultivating natural resources to sustain human life and provide economic gain.

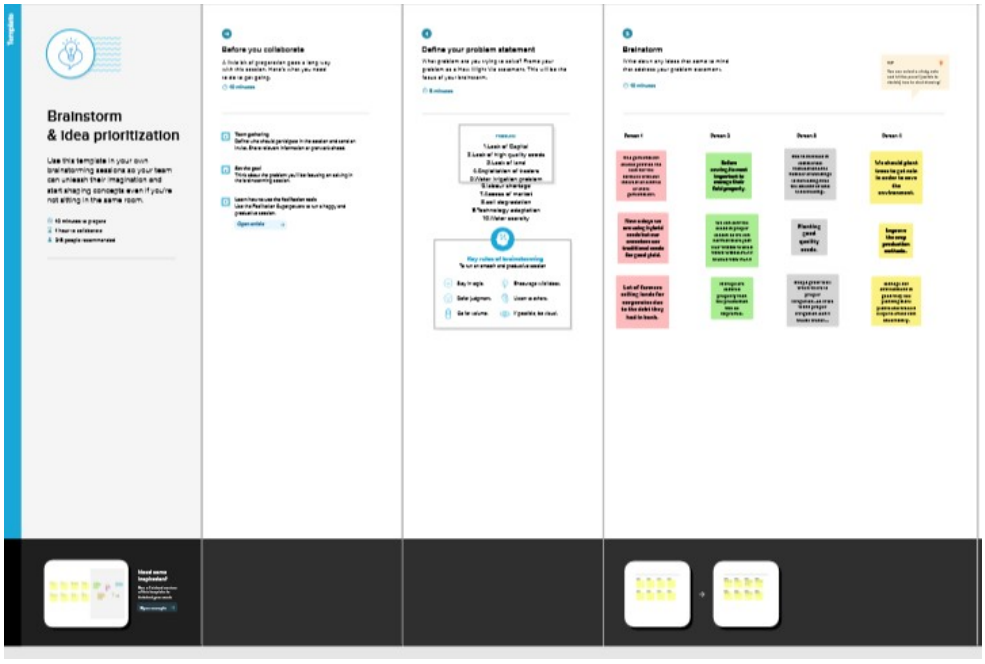
Crop production is a common agricultural practice followed by worldwide farmers to grow and produce crops to use to food and fibre.

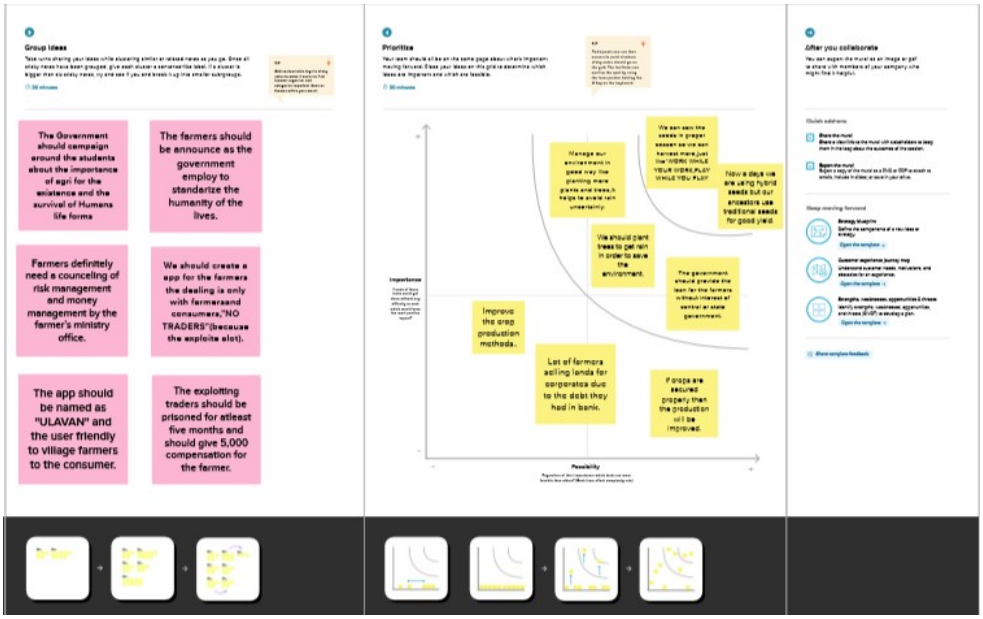
2. PROBLEM DEFINITION AND DESIGN THINKING

2.1. Empathy Map



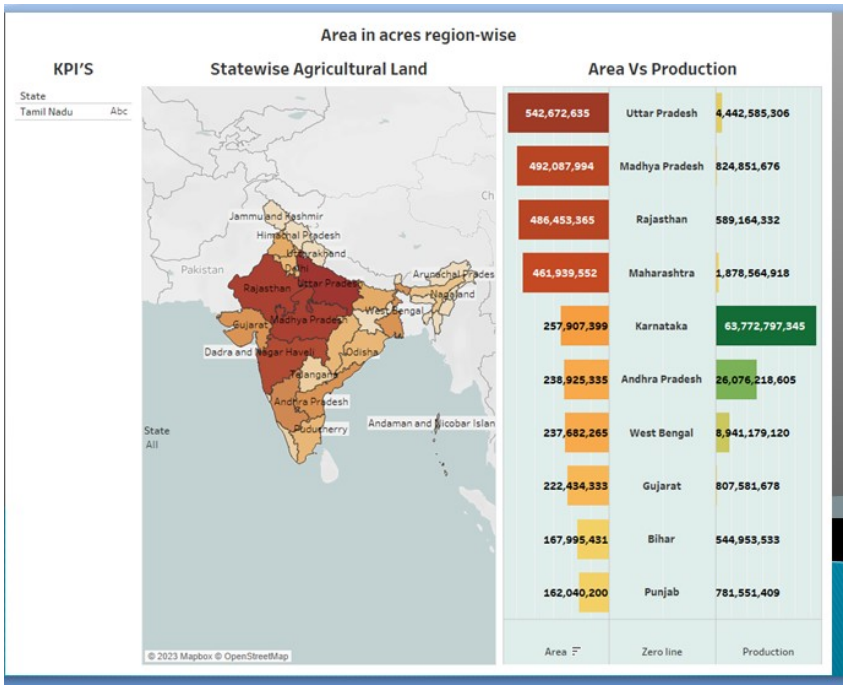
2.2 Brainstorming Mapping



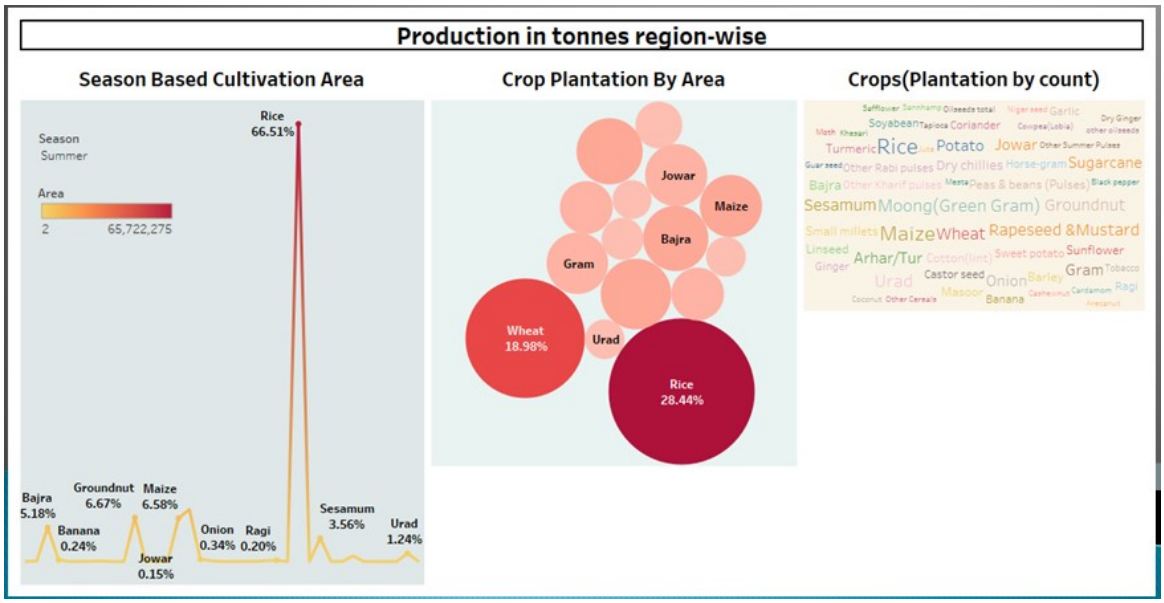


3.RESULT

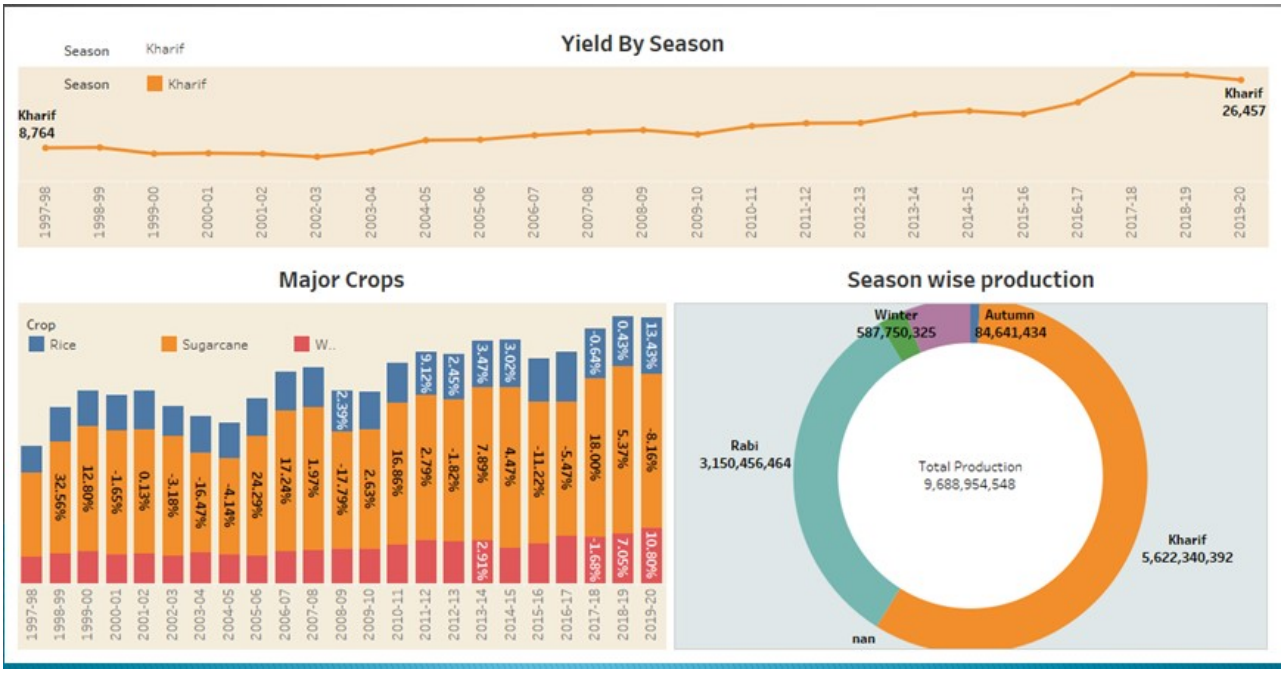
Dashboard 1



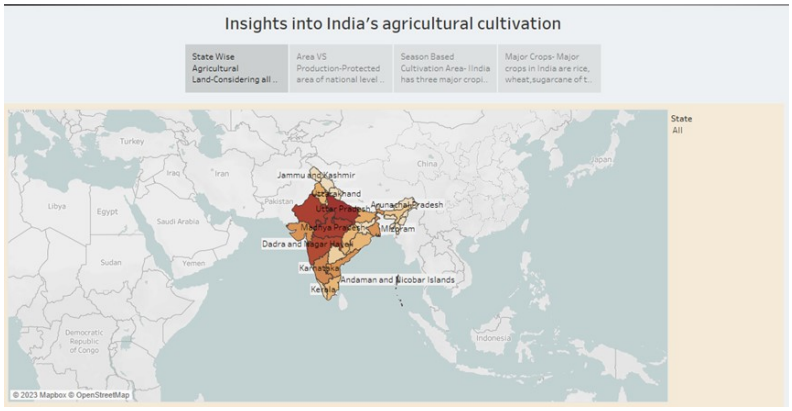
Dashboard 2

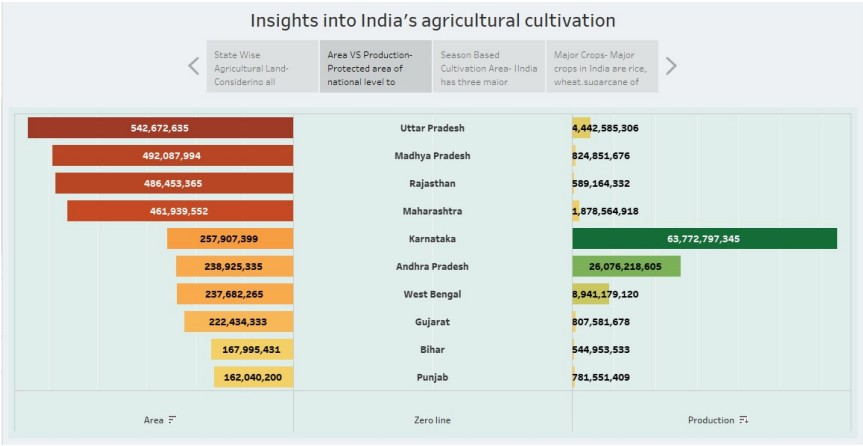


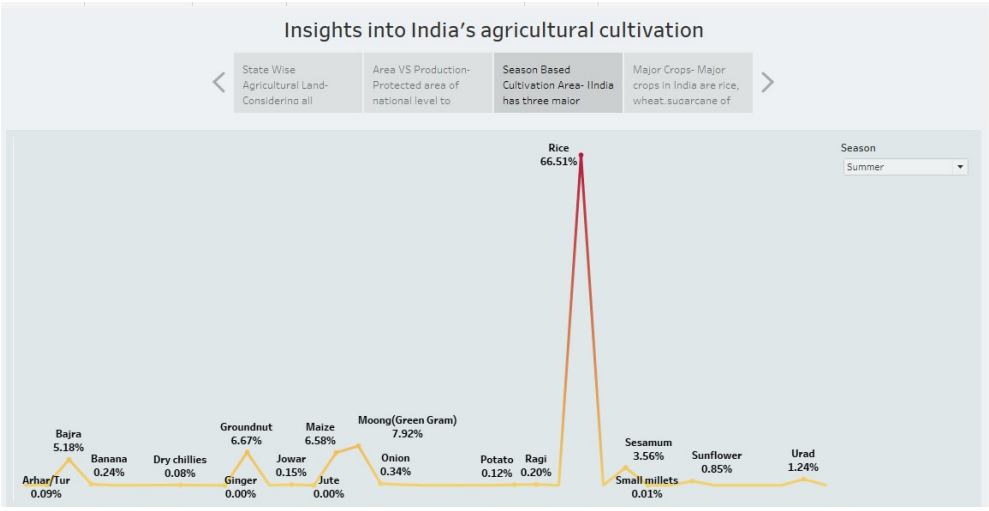
Dashboard 3


Yield By Season
Season
Kharif
Kharif
8,764
Kharif
26,457
Major Crops
Crop
Rice
Sugarcane
Season wise production
Winter
587,750,325
Autumn
84,641,434
Rabi
3,150,456,464
Total Production
9,688,954,548
Kharif
5,622,340,392
nan

Story 1


Insights into India's agricultural cultivation
State Wise Agricultural Land-Considering all ..
Area VS Production-Protected area of national level ..
Season Based Cultivation Area- IIndia has three major cropi..
Major Crops- Major crops in India are rice, wheat,sugarcane of t..
State
All
Jammu and Kashmir
Arunachal Pradesh
Mizoram
Andaman and Nicobar Islands
Kerala
Karnataka
Dadra and Nagar Haveli
Turkey
Iraq
Iran
China
Japan
Libya
Egypt
Saudi Arabia
Sudan
Yemen
Indonesia
Democratic Republic of Congo
© 2023 Mapbox © OpenStreetMap


Insights into India's agricultural cultivation
State Wise Agricultural Land-Considering all
Area VS Production-Protected area of national level to
Season Based Cultivation Area- IIndia has three major
Major Crops- Major crops in India are rice, wheat,sugarcane of
542,672,635
Uttar Pradesh
4,442,585,306
492,087,994
Madhya Pradesh
824,851,676
486,453,365
Rajasthan
589,164,332
461,939,552
Maharashtra
1,878,564,918
257,907,399
Karnataka
63,772,797,345
238,925,335
Andhra Pradesh
26,076,218,605
237,682,265
West Bengal
8,941,179,120
222,434,333
Gujarat
807,581,678
167,995,431
Bihar
544,953,533
162,040,200
Punjab
781,551,409
Area
Zero line
Production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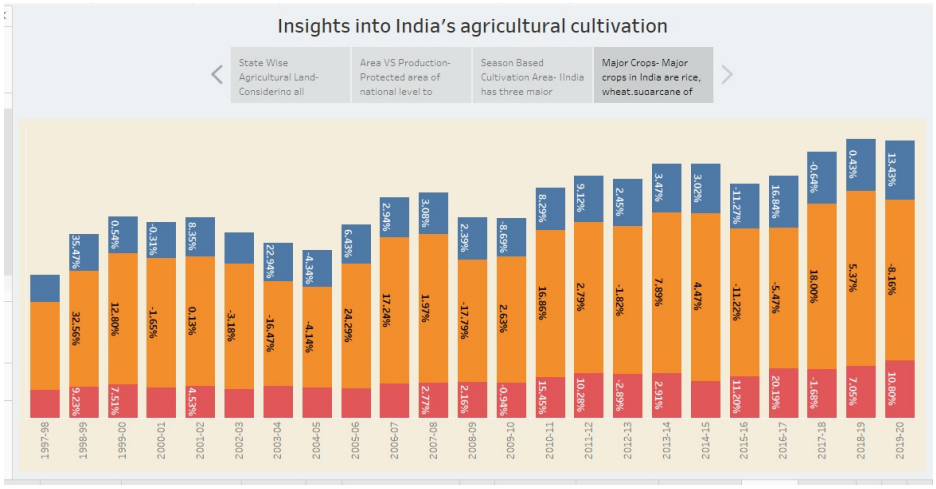
State Wise Agricultural Land-Considering all
Area VS Production-Protected area of national level to
Season Based Cultivation Area- IIndia has three major
Major Crops- Major crops in India are rice, wheat,sugarcane of
Season
Summer
Rice
66.51%
Bajra
5.18%
Banana
0.24%
Dry chillies
0.08%
Groundnut
6.67%
Jowar
0.15%
Maize
6.58%
Moong(Green Gram)
7.92%
Onion
0.34%
Potato
0.12%
Ragi
0.20%
Sesamum
3.56%
Sunflower
0.85%
Urad
1.24%
Arhar/Tur
0.09%
Ginger
0.00%
Jute
0.00%
Small millets
0.01%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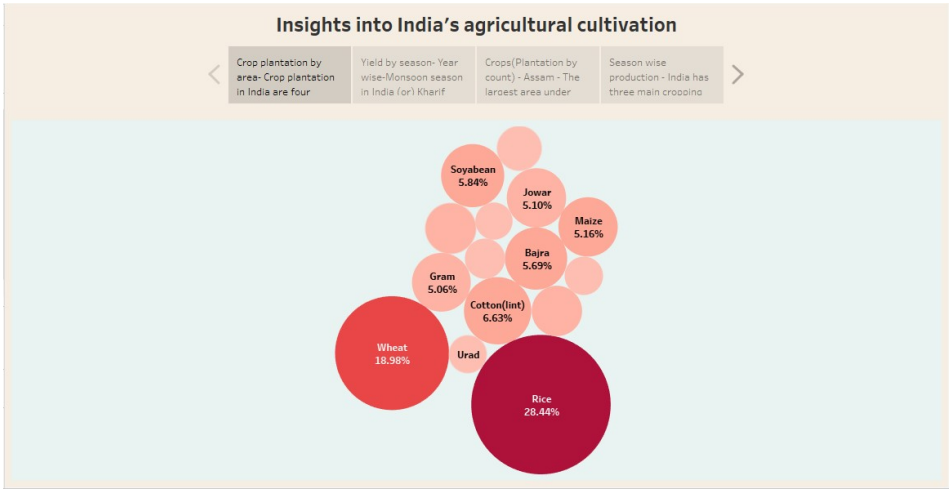
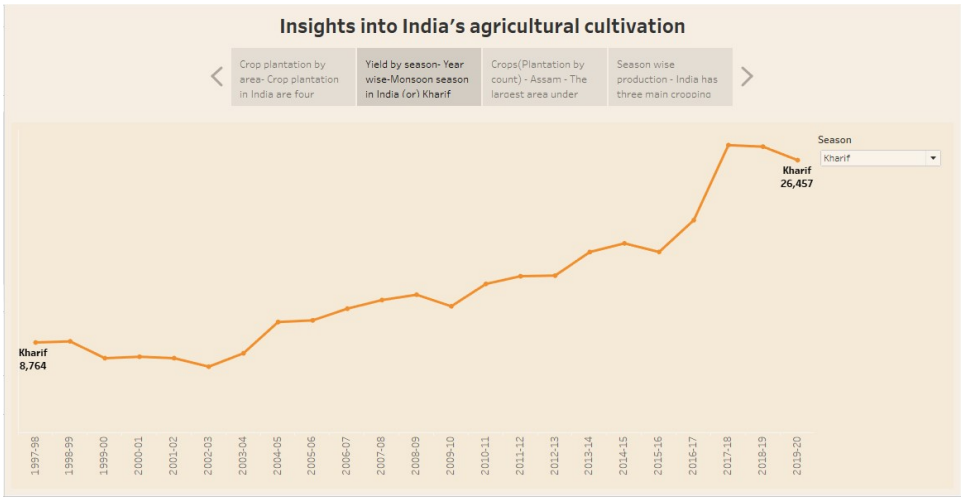
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20

Story 2


Insights into India's agricultural cultivation
Crop plantation by area- Crop plantation in India are four
Yield by season- Year wise-Monsoon season in India (or) Kharif
Crops(Plantation by count) - Assam - The largest area under
Season wise production - India has three main cropping
Soyabean 5.84%
Jowar 5.10%
Maize 5.16%
Bajra 5.69%
Gram 5.06%
Cotton(lint) 6.63%
Wheat 18.98%
Urad
Rice 28.44%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Season wise production - India has three main cropping
Season
Kharif
Kharif
26,457
Kharif
8,764
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20

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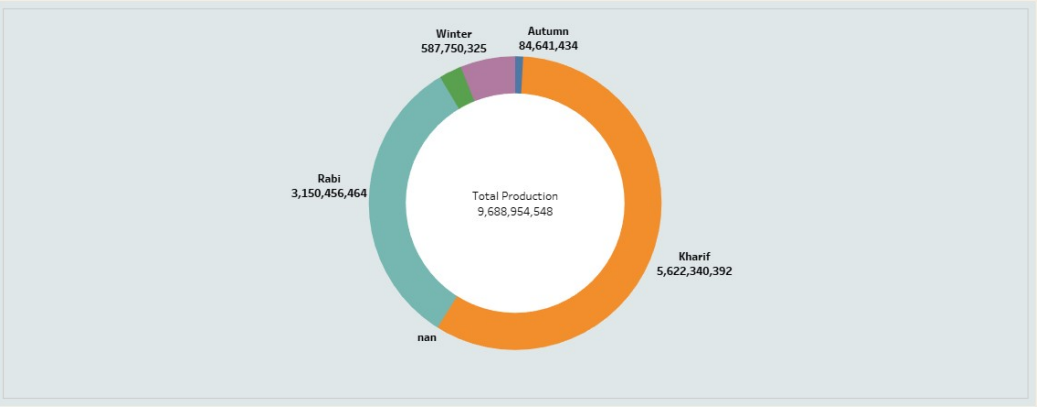
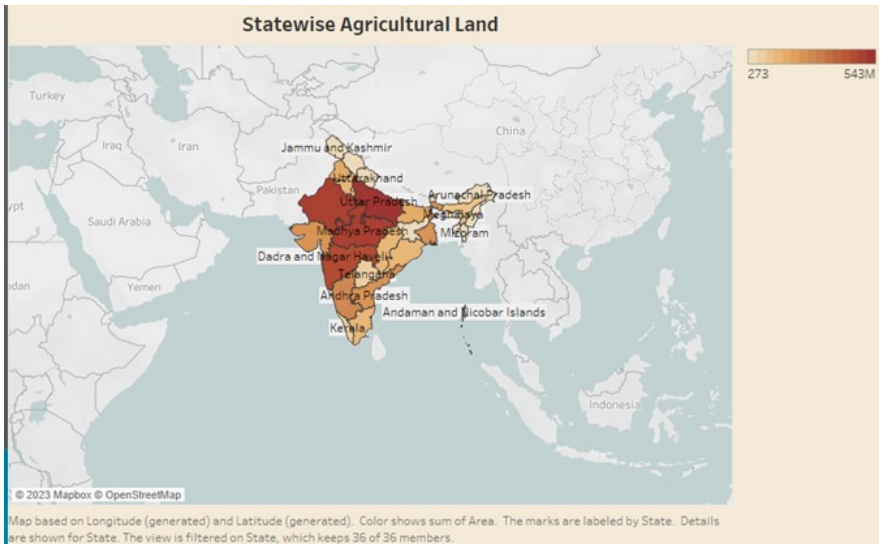
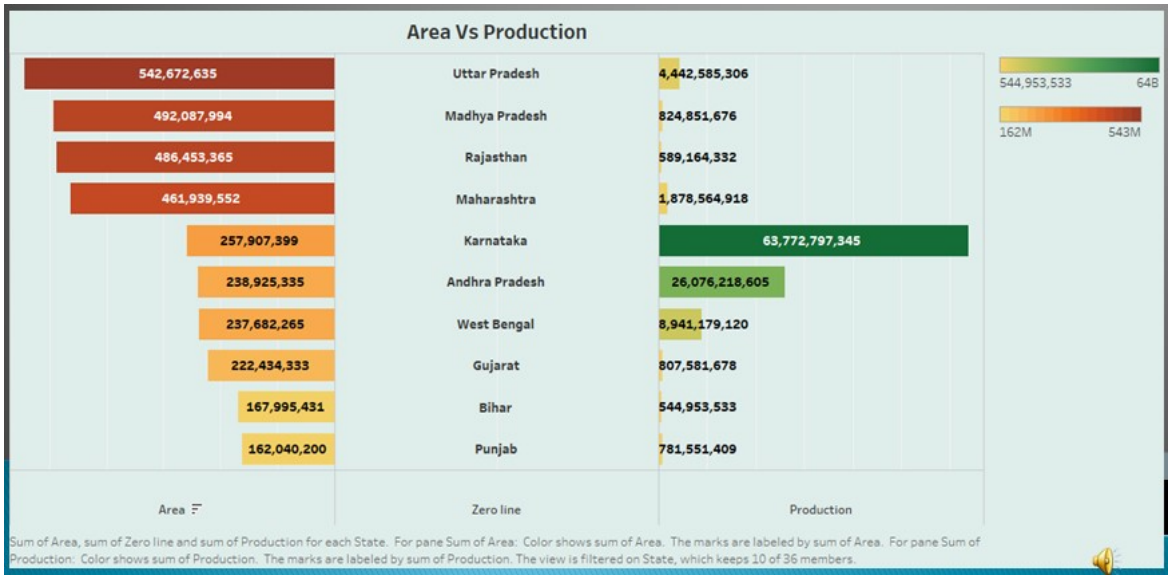


VISUALIZATION

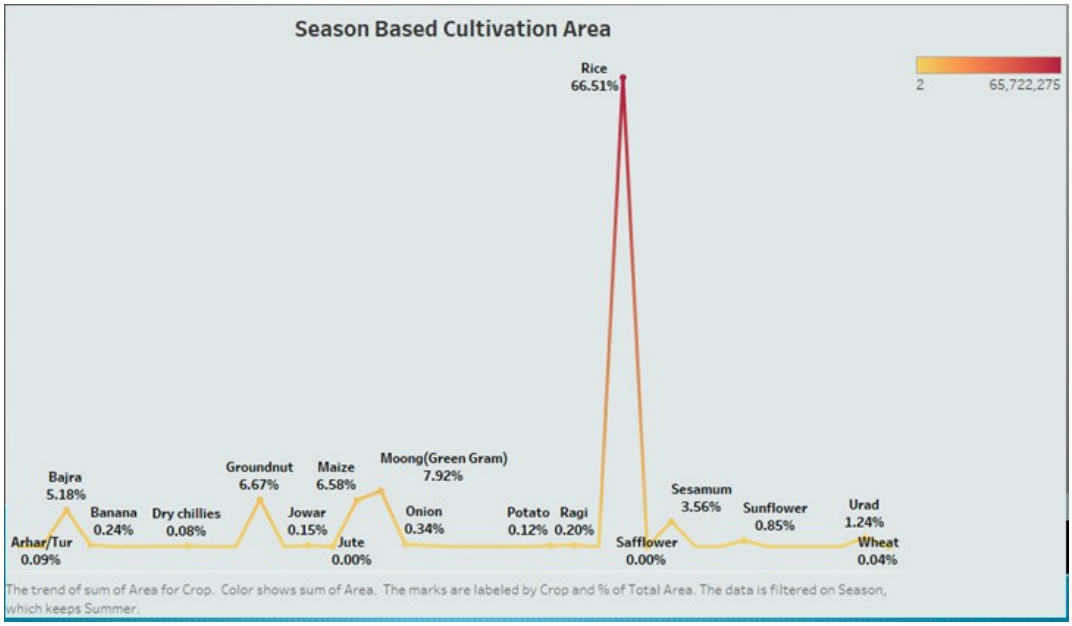
1. Statewise Agricultural Land



2. Area vs Production

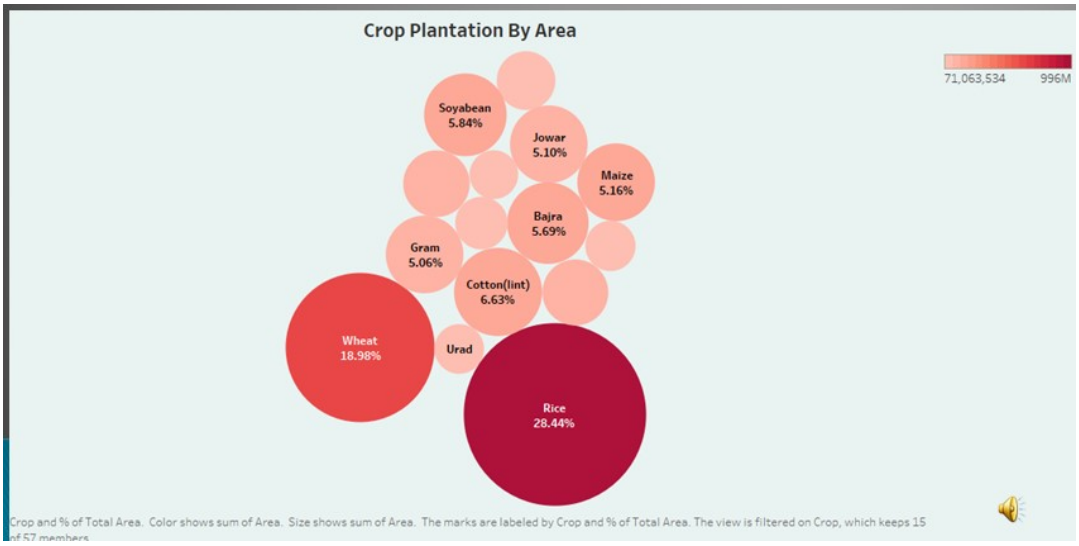


3. Season Based cultivation Area

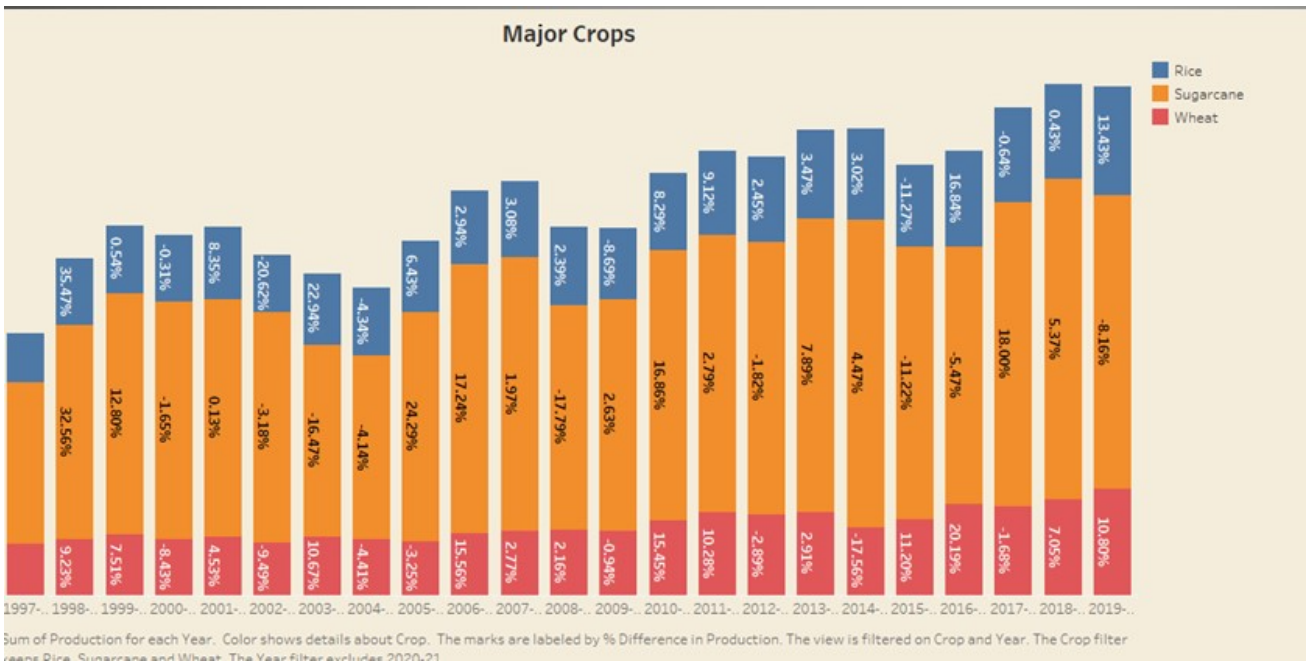


4. Yield By Season

5. Crop Plantation By Area

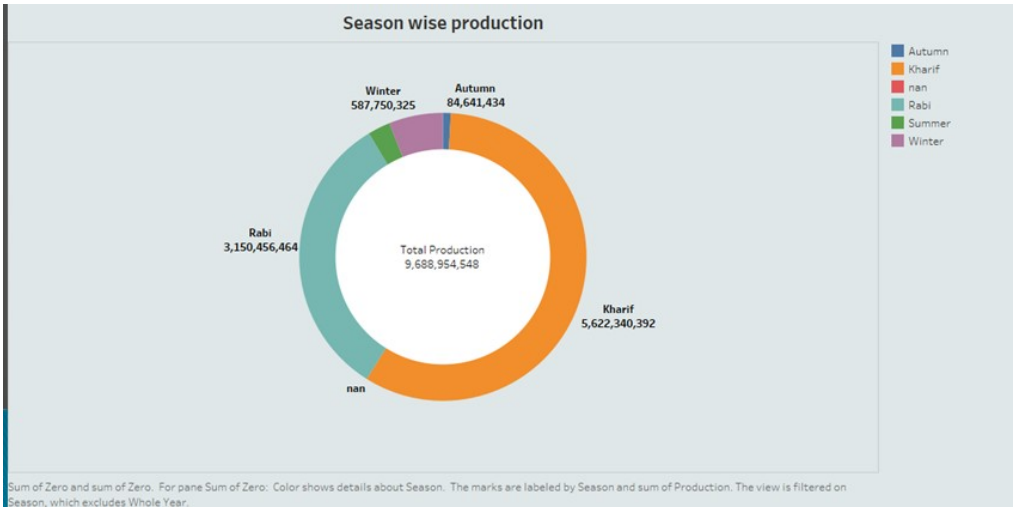


6. Major Crops



7. Crop Plantation By Area

8. Season Wise Production



4. ADVANTANGES & DISADVANTAGES

4.1 Advantages:

- Increases Soil Fertility
- Reduces Soil Erosion
- Reduces Pollution
- Higher yields and consequently more food.
- It helps in controlling insects, pests and soil borne diseases

4.2 Disadvantages

- Destruction of natural rain forest for crop production.
- Difficult for new entrants.
- Environment degradation.
- Erosion of soil by heavy rain, floods, insufficient vegetation cover etc.

5. APPLICATIONS

1. Genetically Modified Crops: The widespread adoption of GMOs, like Bt cotton and Roundup Ready soybeans, improved pest resistance and herbicide tolerance, leading to increased yield.

2. Precision Agriculture: Technologies such as GPS, drones, and sensors allowed farmers to optimize planting, irrigation, and fertilization, reducing waste and increasing crop efficiency.

3. Biotechnology: The development of new crop varieties through biotechnology, like drought-tolerant and disease-resistant crops.

6. CONCLUSION

In conclusion, India's Agricultural Crop Production from 1997 to 2021 has been characterized by significant changes and growth. The period witnessed increased grain production during the Green Revolution era, followed by diversification into various crops. Adoption of modern agricultural technologies, government initiatives, and market liberalization played crucial roles in boosting productivity.

Adoption of modern agriculture technologies, government initiatives, and market liberalization played crucial roles in boosting productivity. However, agriculture in India also faced persistent challenges such as water scarcity, soil degradation, and climate change impacts. Crop production trends were marked by fluctuations due to factors like monsoon variations and market dynamics. Overall the agriculture sector in India evolved significantly during this period, with both successes and challenges shaping its trajectory.

7. FUTURE SCOPE

Looking ahead, there are several promising trends and future scope in agricultural crop production based on advancements and challenges observed from 1997 to 2021:

1. Digital Agriculture: Continued integration of technology, including AI, loT, and blockchain, will enable more precise and data-driven farming, optimizing resource use and crop yields.

2. Vertical Farming and Controlled Environment Agriculture: Urban agriculture and indoor farming systems will play a larger role in crop production, allowing for year-round cultivation in controlled environments.

3. Agriculture Automation: Robotics and autonomous machinery will become more prevalent for tasks like planting, harvesting, and weeding, reducing labor costs and increasing efficiency.

4. Biological Nitrogen Fixation: Research into harnessing nitrogen-fixing bacteria may lead to reduced dependence on synthetic fertilizers.

8.APPENDIX

1.Github:
https://github.com/bru072122a0077/NM2023TMID01965

2.Dashboard1:
https://public.tableau.com/app/profile/janani.e4481/viz/dashboard1_16971778917770/Dashboard1

3.Dashboard2:
https://public.tableau.com/app/profile/janani.e4481/viz/dashboard2_16971780415430/Dashboard2

4.Dashboard3:
https://public.tableau.com/app/profile/janani.e4481/viz/Book1_16970026984290/Dashboard3

5.Story1:
https://public.tableau.com/app/profile/janani.e4481/viz/story1_16971786527100/Story1

6.story2:
https://public.tableau.com/app/profile/janani.e4481/viz/story2_16971788646140/Story2

7.video demonstration link:
https://drive.google.com/file/d/1z0FLr70N6aOuWC4z4GxIe562jveC3ODk/view?usp=drivesdk

THANK YOU