GOVERNMENT ATRS AND SCIENCE COLLEGE , KANGEYAM

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

Course Name : Data Analytics with Tableau

Academic Year : 2023-2024

A project report entitled as

"India's Agricultural Crop production Analysis (1997 – 2021)"

Work done by

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Under the guidance of

Dr. P.M.SUDHA

Guest Lecturer

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INDIA'S AGRICULTURAL CROP PRODUCTION ANALYSIS(1997-2021)

1.INTRODUCTION

1.1 OVERVIEW

Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It has to support almost 17 per cent of world population from 2.3 per cent of world geographical area and 4.2 per cent of world's water resources. The economic reforms, initiated in the country during the early 1990s, have put the economy on a higher growth trajectory. Annual growth rate in GDP has accelerated from below 6 percent during the initial years of reforms to more than 8 percent in recent years. This happened mainly due to rapid growth in non-agriculture sector. The workforce engaged in agriculture between 1980-81 and 2006-07 witnessed a very small decline; from 60.5 percent to 52 percent. The present cropping intensity of 137 per cent has registered an increase of only 26 per cent since 1950-51. The net sown area is 142 . The net irrigated area was 58.87 a in 2004-05. Presently, the total net irrigated area covers 45.5 per cent of the net sown area, the remaining 54.5 per cent is rainfed. The degradation of land and surface as well as ground water resources results in fast deterioration of soil health. Losses due to biotic (insect-pests, diseases, weeds) and abiotic (drought, salinity, heat, cold, etc.) stresses account for about one-fourth of the value of agricultural produce. The storage, transportation, processing, value addition and marketing of farm produce need to be improved to enhance household food, nutrition and livelihood security.

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 has been dominated by the northern region of India. The northern states of Punjab and Haryana Plains in India have been prolific wheat producers. While this cereal grass has been studied carefully in the past, recent years of painstaking research by India's finest scientific talent have paid off with the development of distinctly superior varieties of Durum Wheat. Intensive cultivation as a result of introduction of high yielding varieties in the mid 1960's required higher energy inputs and better management practices. Land preparation, harvesting, threshing and irrigation are the operations, which utilize most of the energy used in agriculture. The share of animate power in agriculture decreased from 92 per cent in 1950-51 to 20 per cent in 2000-01. For desired cropping intensity with timeliness in field operations, animate energy sources alone were no longer adequate. Farmers opted for mechanical power sources to supplement animate power. Average size of farm holdings gradually reduced from 2.58 ha to 1.57 ha (Table 1). Small and marginal farmers have limited resources especially in rain-fed regions where only animate power is used resulting in low productivity. Though agricultural production is high, the per hectare productivity is much lower than world average. There is an urgent need to increase productivity.

1.2 Purpose

Agriculture is the practice of cultivating natural resources to sustain human life and provide economic gain. It combines the creativity, imagination, and skill involved in planting crops and raising animals with modern production methods and new technologies.

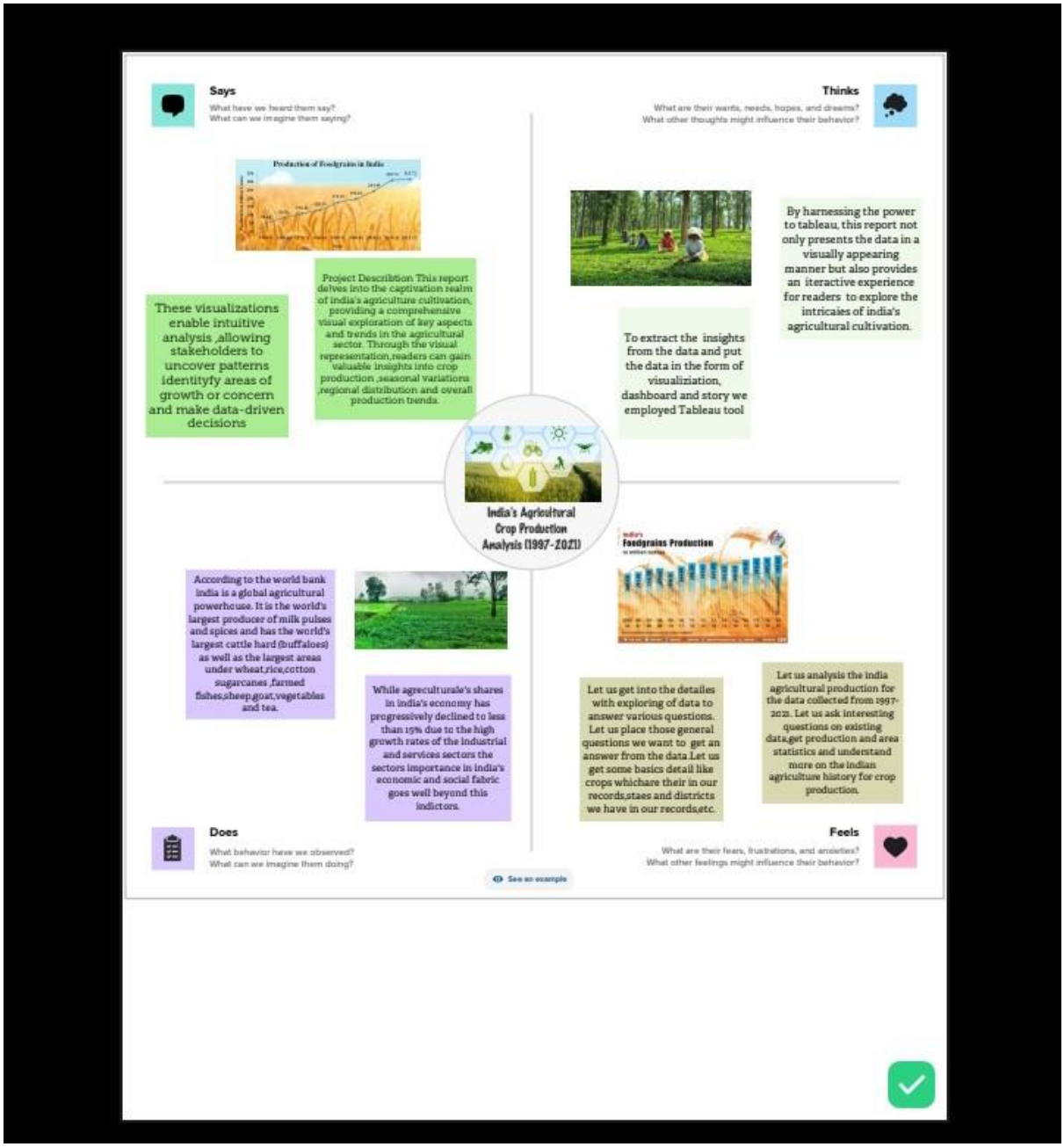
Agriculture is also a business that provides the global economy with commodities: basic goods used in commerce, such as grain, livestock, dairy, fiber, and raw materials for fuel. For example, fiber is a top crop in U.S. agricultural production, according to The Balance Small Business, and a necessary commodity for the clothing sector**.**

For thousands of years, agriculture has played an important role in everyday life. Before agriculture, hunting and gathering enabled humans to survive. It wasn't until the transition to the planned sowing and harvesting of crops that humans began to thrive. Humans developed tools and practices to improve agricultural output with more efficient means of sustaining themselves. From there, innovations that created industries led to the modern era.

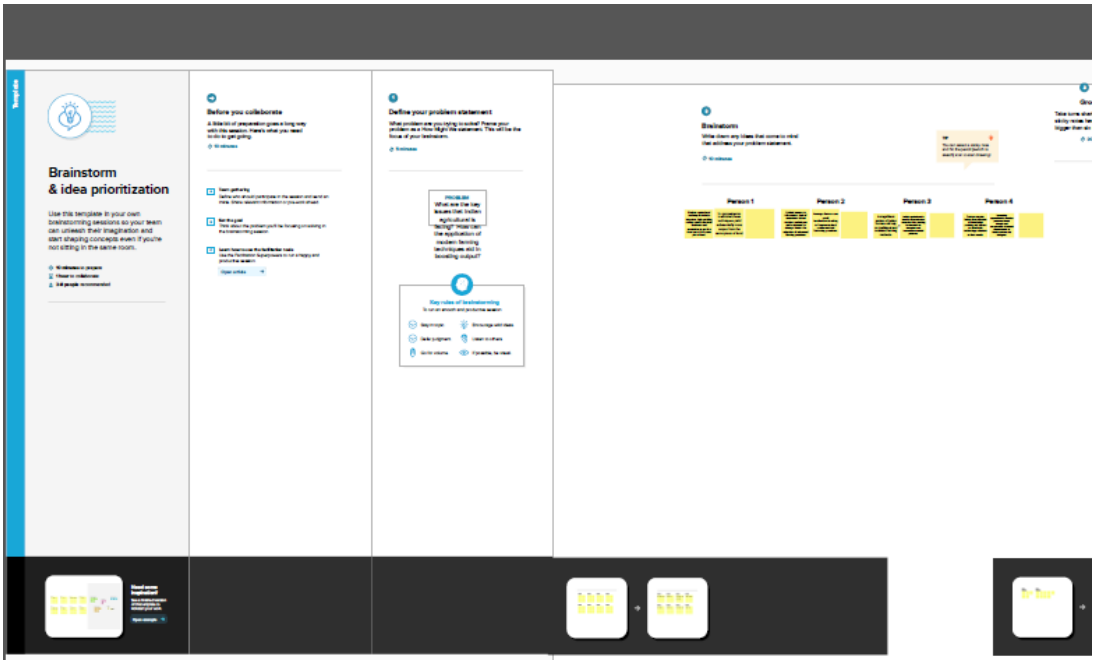
Today, the importance of agriculture in everyday life can't be minimized. Without the agriculture sector, activities such as getting dressed.

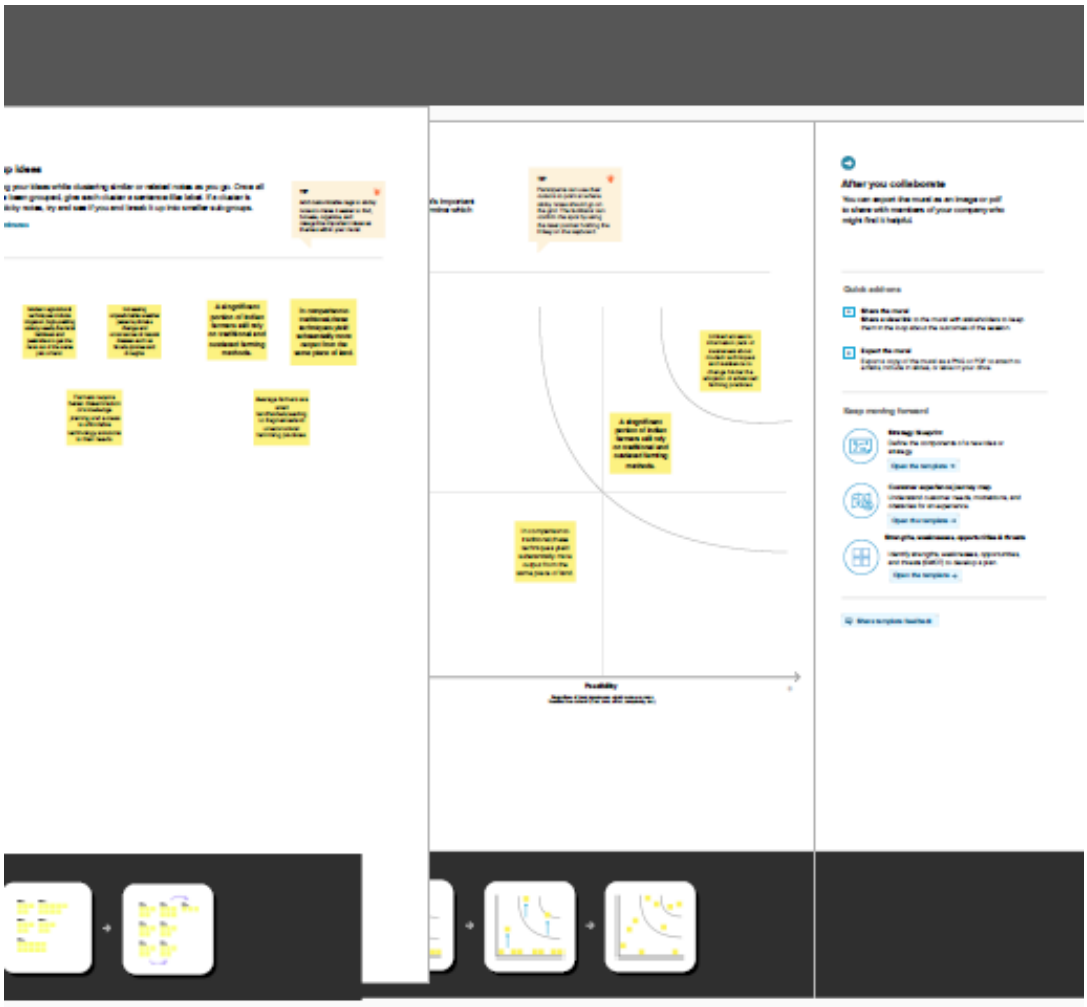
2.PROBLEM DEFINITION AND DESIGN THINKING

2.1 Empathy Map



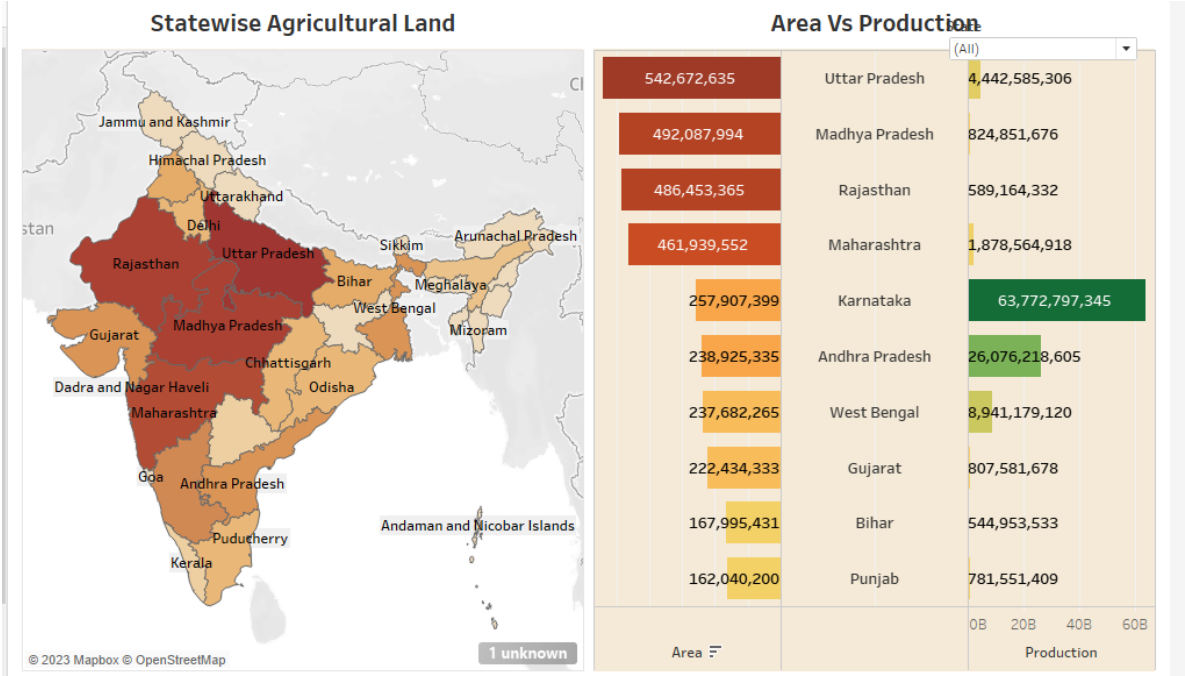
2.2 Ideation & Brainstorming Mapping



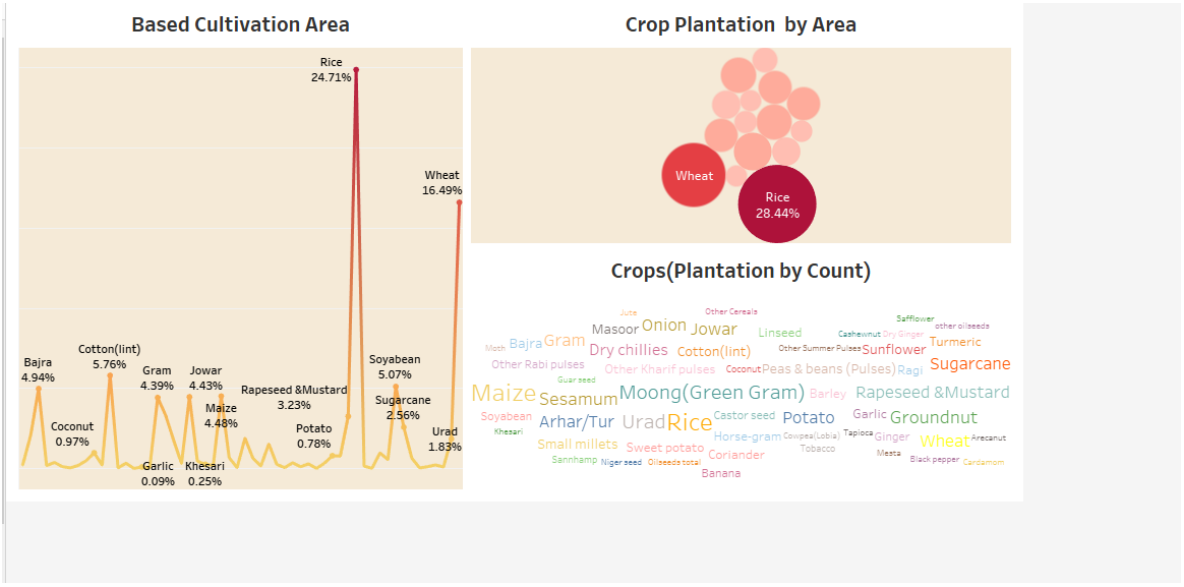


3.RESULT

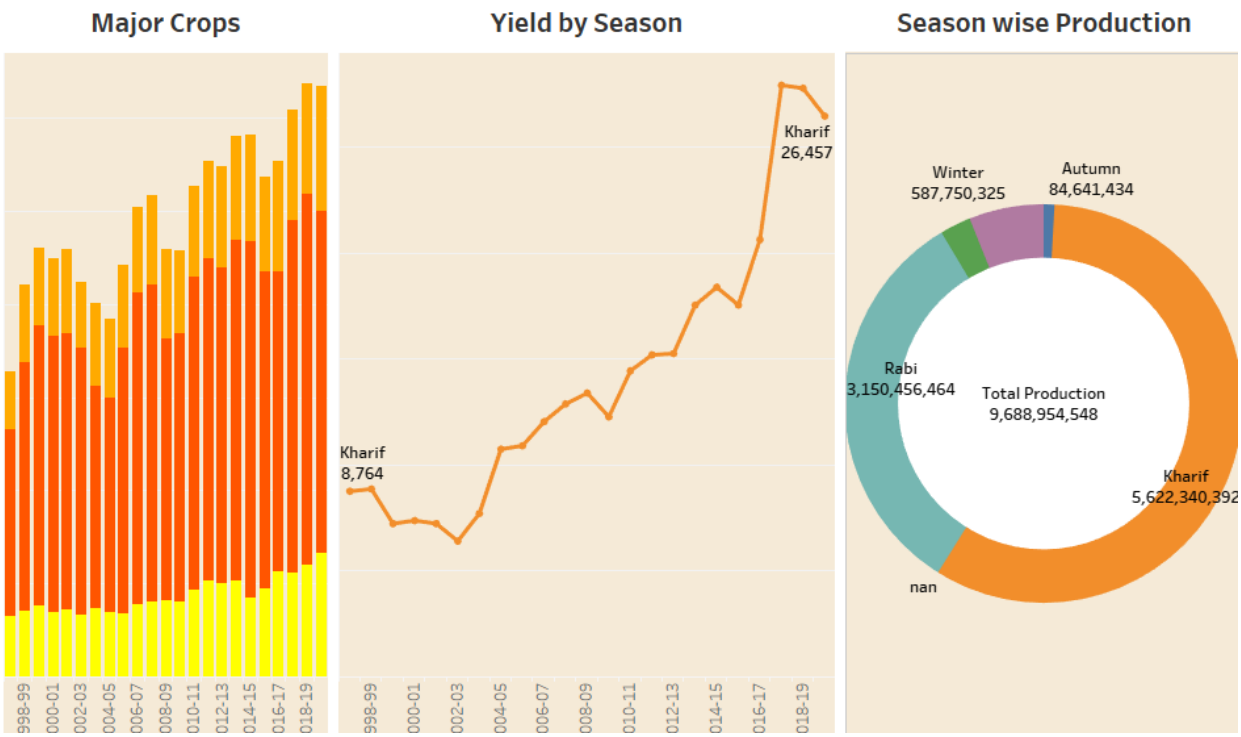
Dashboard 1



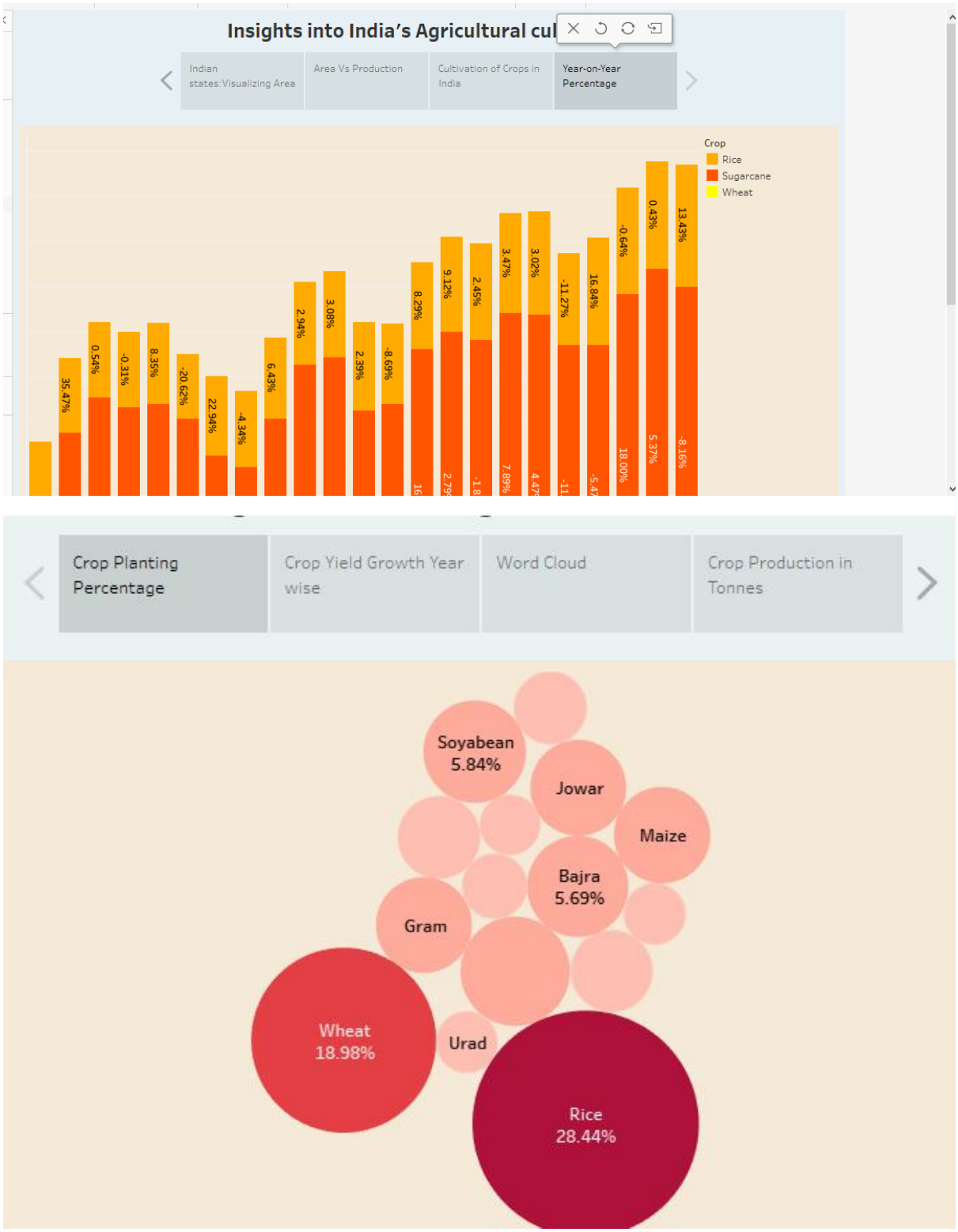
Dashboard 2

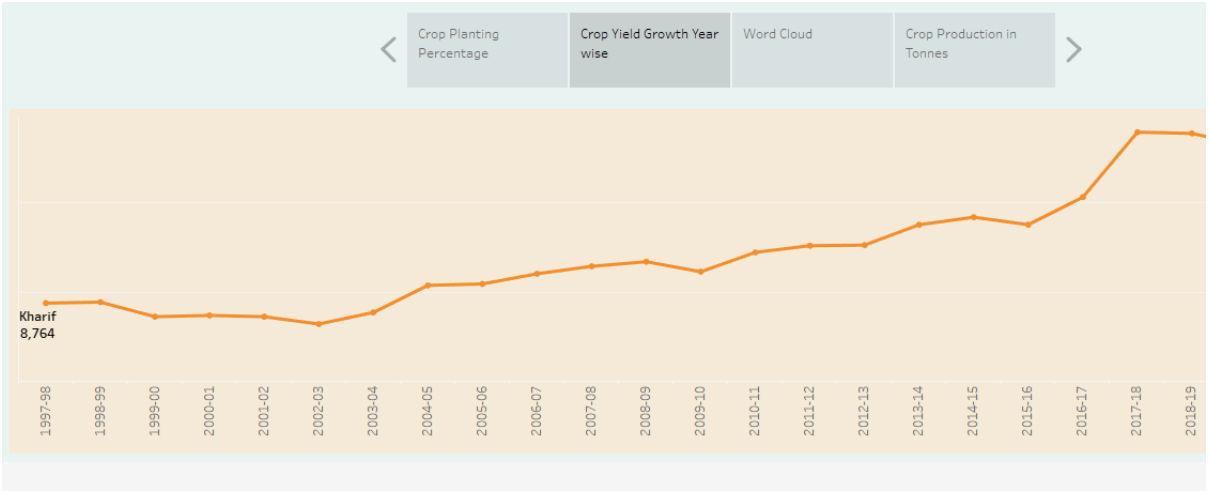


Dashboard 3


Major Crops
Yield by Season
Season wise Production
Kharif
26,457
Kharif
8,764
998-99
000-01
002-03
004-05
006-07
008-09
010-11
012-13
014-15
016-17
018-19
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


Insights into India's Agricultural cul
Indian states:Visualizing Area
Area Vs Production
Cultivation of Crops in India
Year-on-Year Percentage
Crop
Rice
Sugarcane
Wheat
35.47%
0.54%
-0.31%
8.35%
-20.62%
22.94%
-4.34%
6.43%
2.94%
3.08%
2.39%
-8.69%
8.29%
9.12%
2.45%
3.47%
3.02%
-11.27%
16.84%
-0.64%
0.43%
13.43%
18.00%
5.37%
-8.16%
Crop Planting Percentage
Crop Yield Growth Year wise
Word Cloud
Crop Production in Tonnes
Soyabean 5.84%
Jowar
Maize
Bajra 5.69%
Gram
Wheat 18.98%
Urad
Rice 28.44%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Crop Yield Growth Year wise
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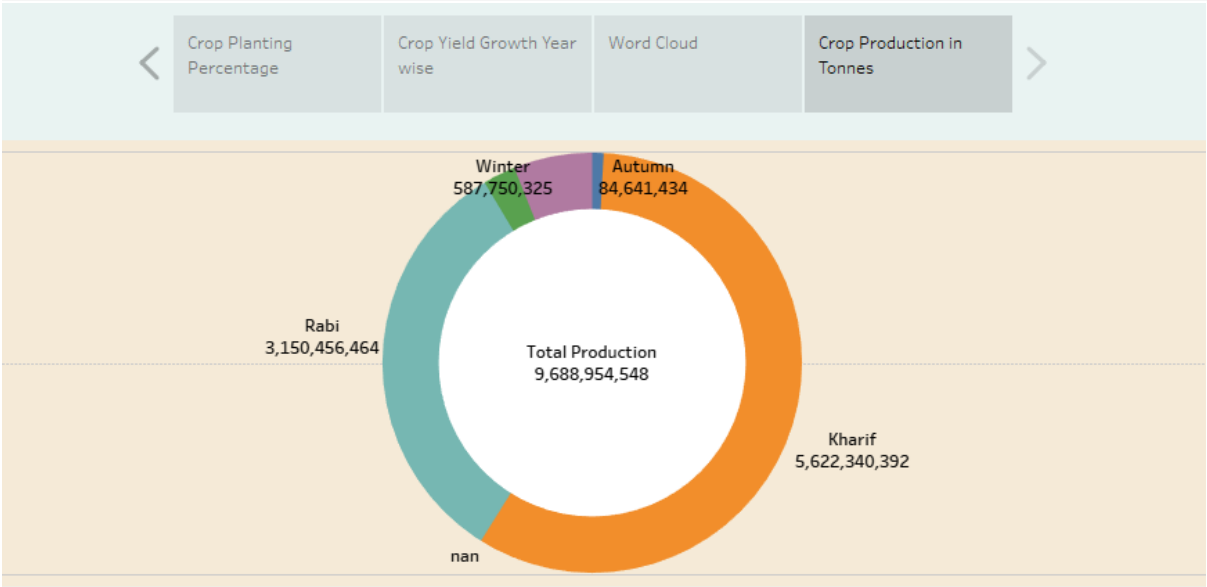
Crop Production in Tonnes
Kharif
8,764
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19


Crop Planting Percentage
Crop Yield Growth Year wise
Word Cloud
Crop Production in Tonnes
Coconut
Soyabean
Black pepper
Niger seed
Tobacco
Cotton(lint)
Masoor
Bajra
Cashewnut
Other Rabi pulses
Barley
Other Summer Pulses
Other Cereals
Linseed
Jute
Arhar/Tur
Sugarcane
Sweet potato
Jowar
Ginger
Castor seed
Horse-gram
Sesamum
Other Kharif pulses
Dry Ginger
Moong(Green Gram)
Peas & beans (Pulses)
Rapese
Cardamom
Small millets
Dry chillies
Rice
Onion
Urad
Potato
Tapioca
Ragi
Moth
Gro
Garlic
Turmeric
other oilseeds
Guar seed
Oilseeds total
Gram
Sunflower
Banana
Mesta


Crop Planting Percentage
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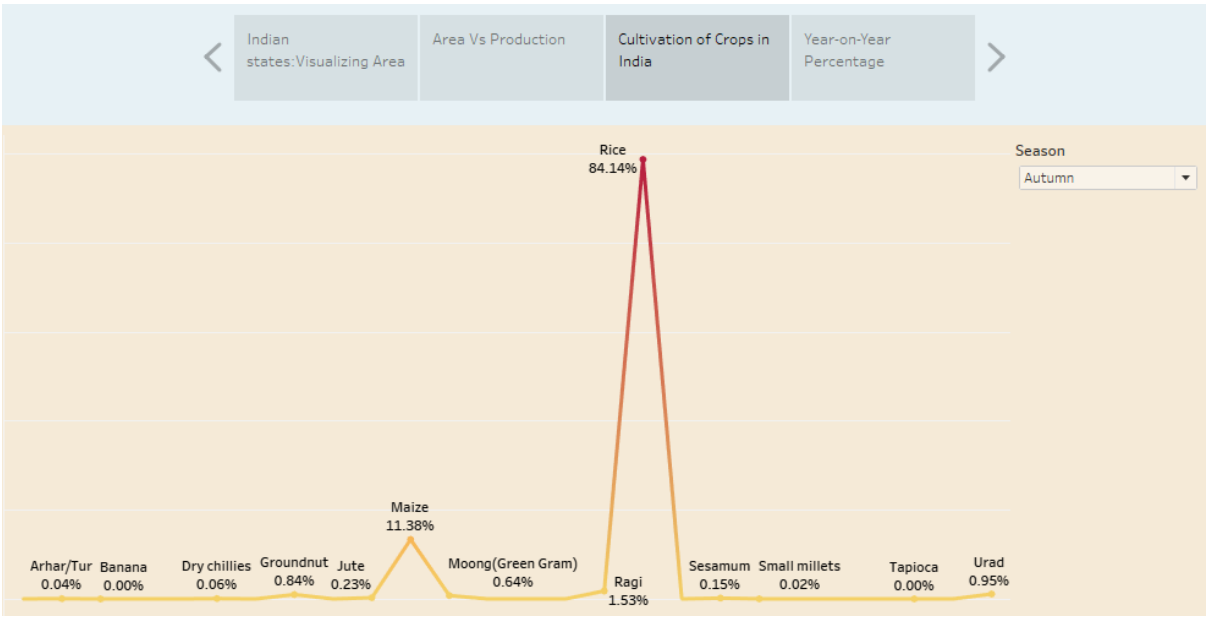
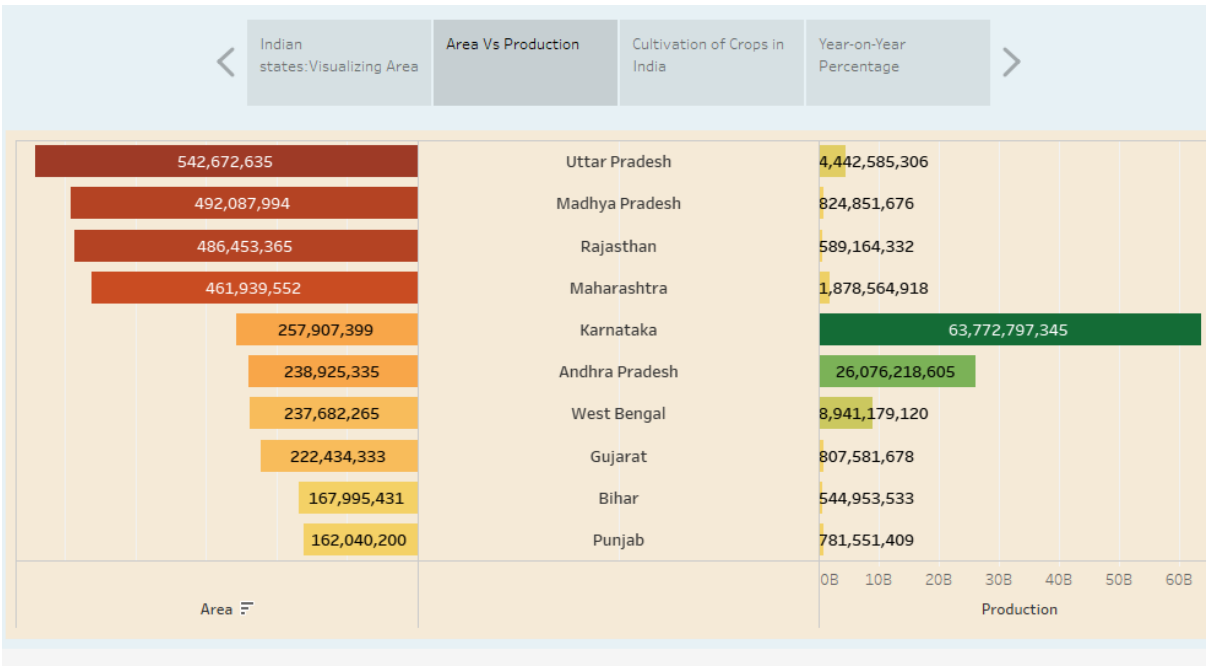
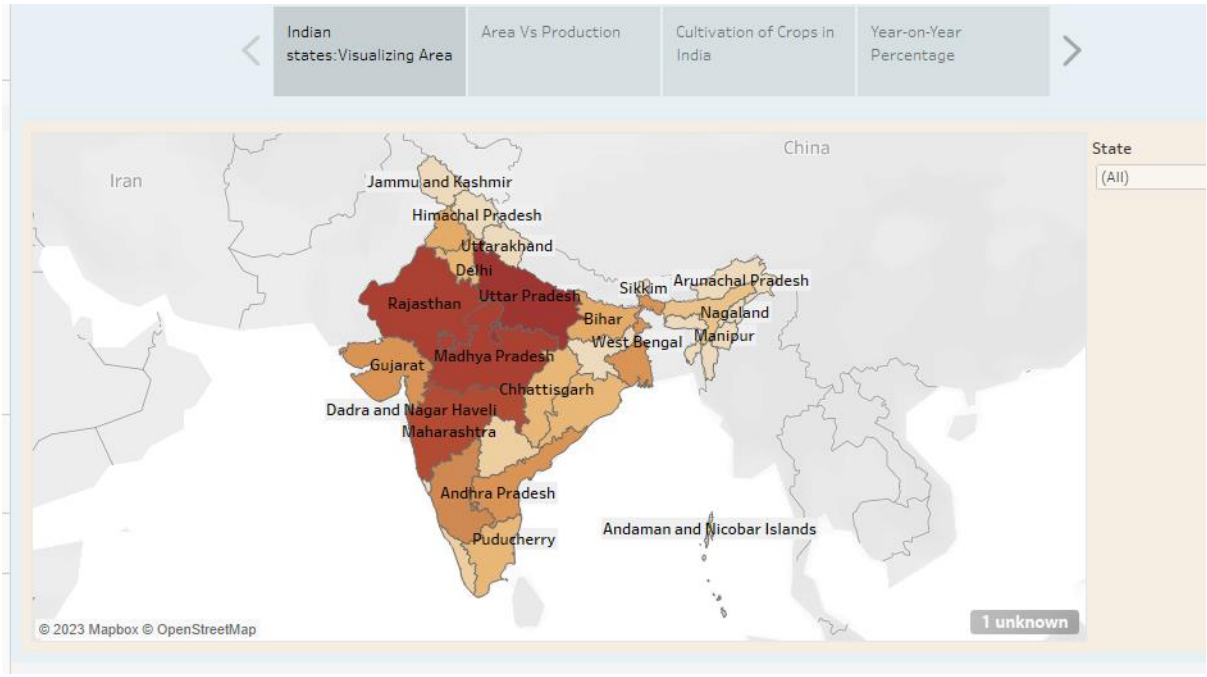
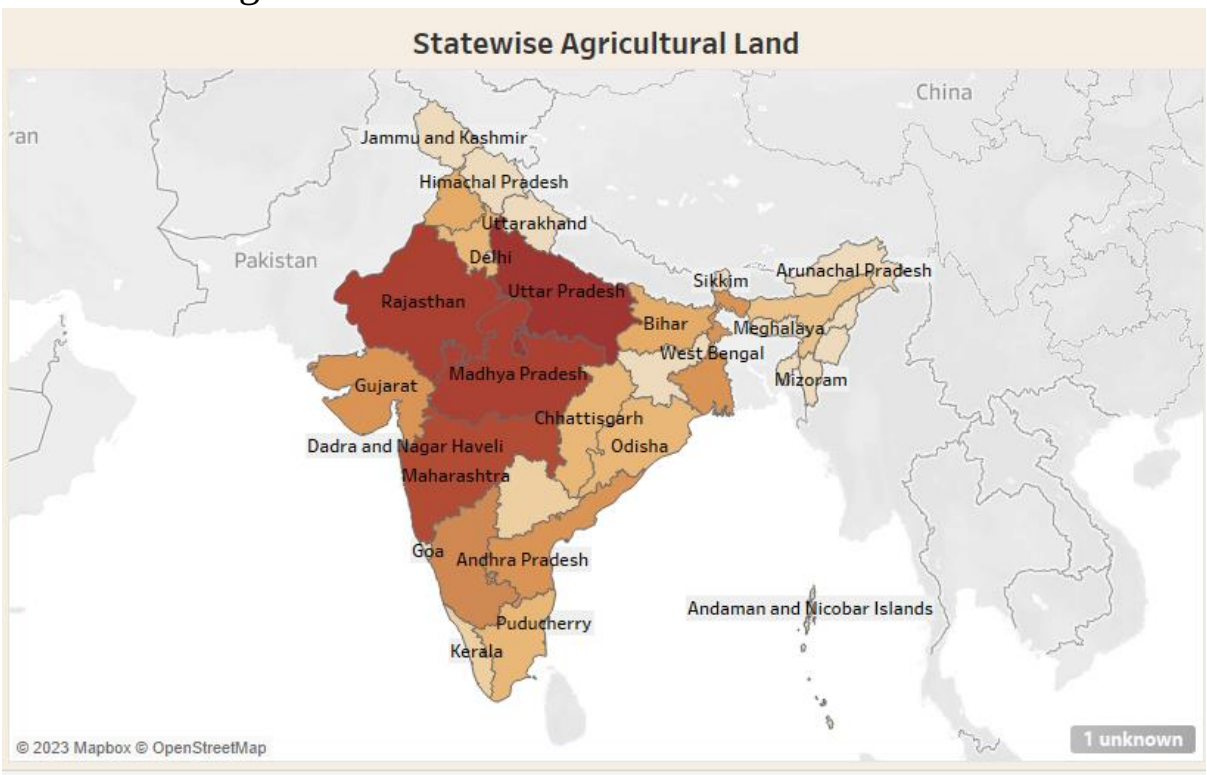

Indian states:Visualizing Area
Area Vs Production
Cultivation of Crops in India
Year-on-Year Percentage
Season
Autumn
Rice 84.14%
Maize 11.38%
Arhar/Tur 0.04%
Banana 0.00%
Dry chillies 0.06%
Groundnut 0.84%
Jute 0.23%
Moong(Green Gram) 0.64%
Ragi 1.53%
Sesamum 0.15%
Small millets 0.02%
Tapioca 0.00%
Urad 0.95%


Indian states:Visualizing Area
Area Vs Production
Cultivation of Crops in India
Year-on-Year Percentage
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
0B 10B 20B 30B 40B 50B 60B
Production

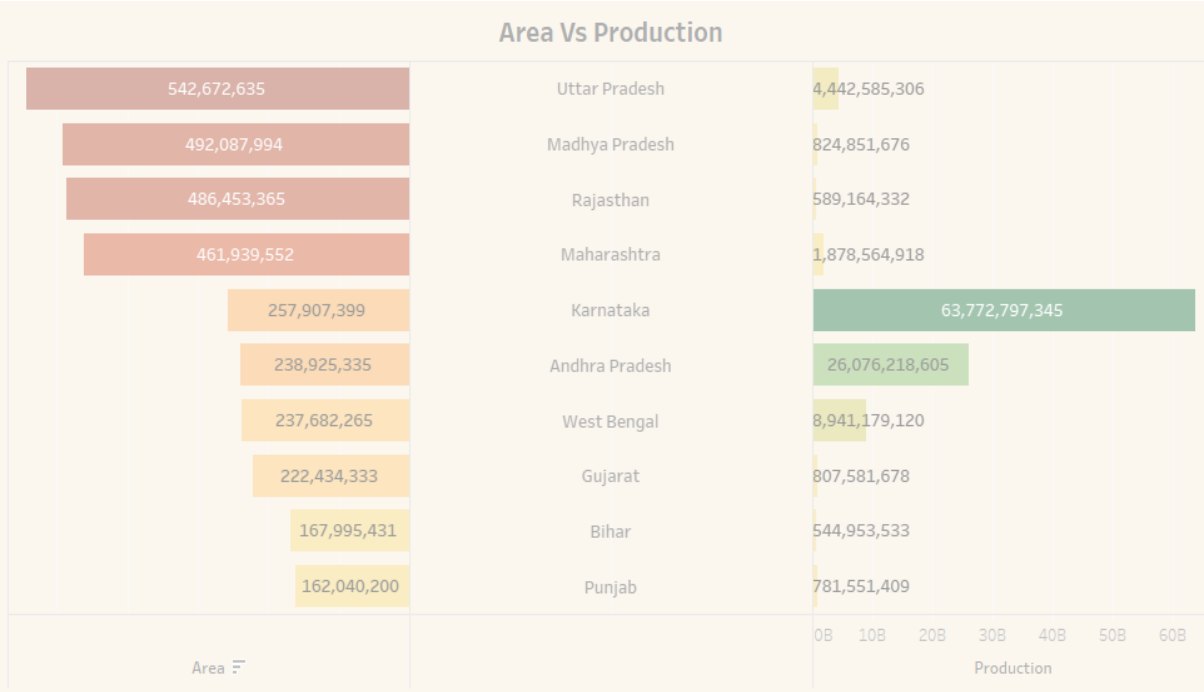


VISUALIZATION

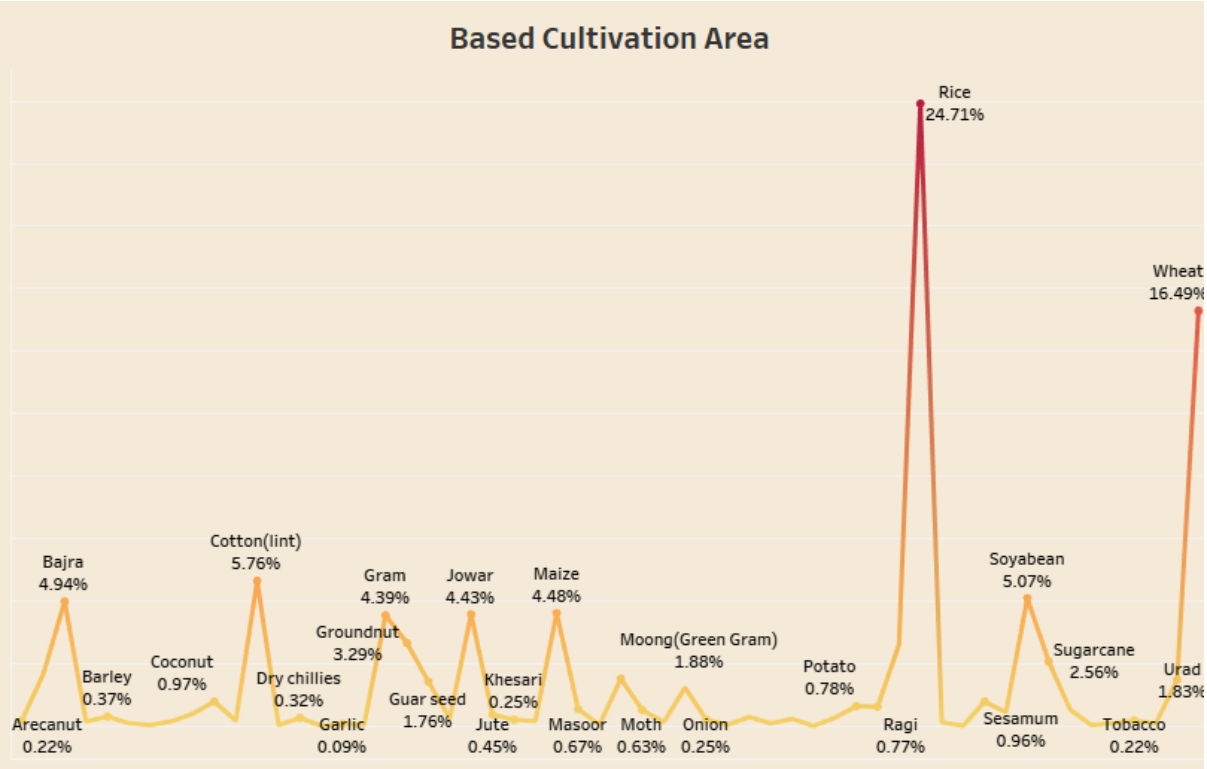
1.Statewise Agricultural Land



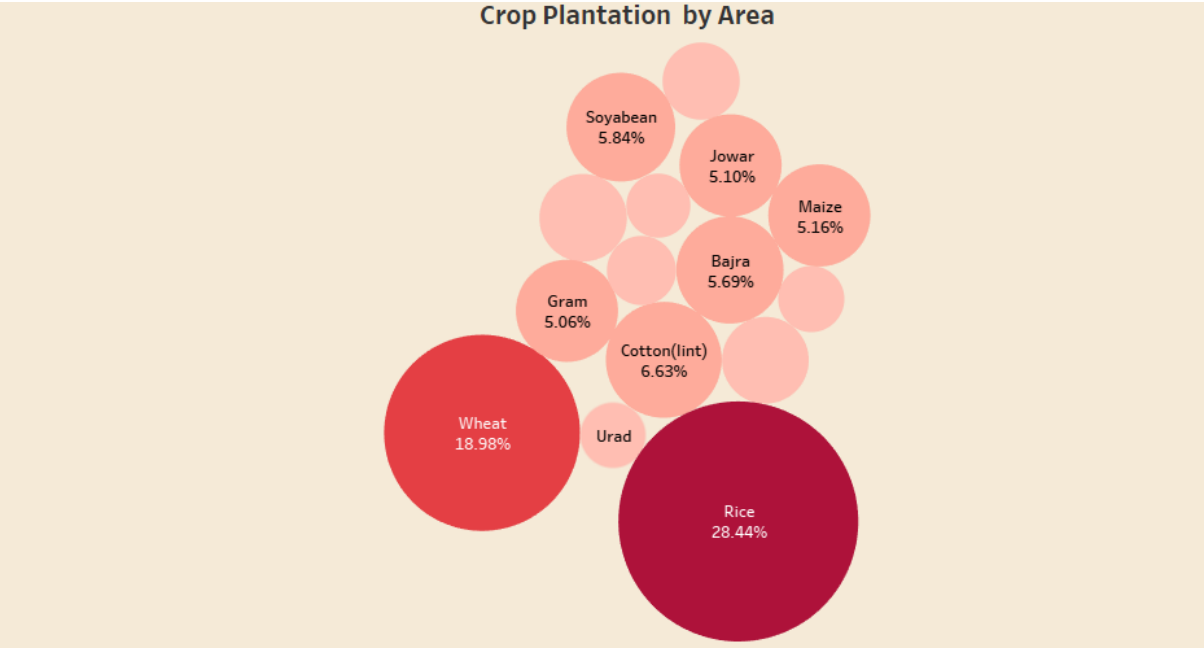
2.Area Vs Production



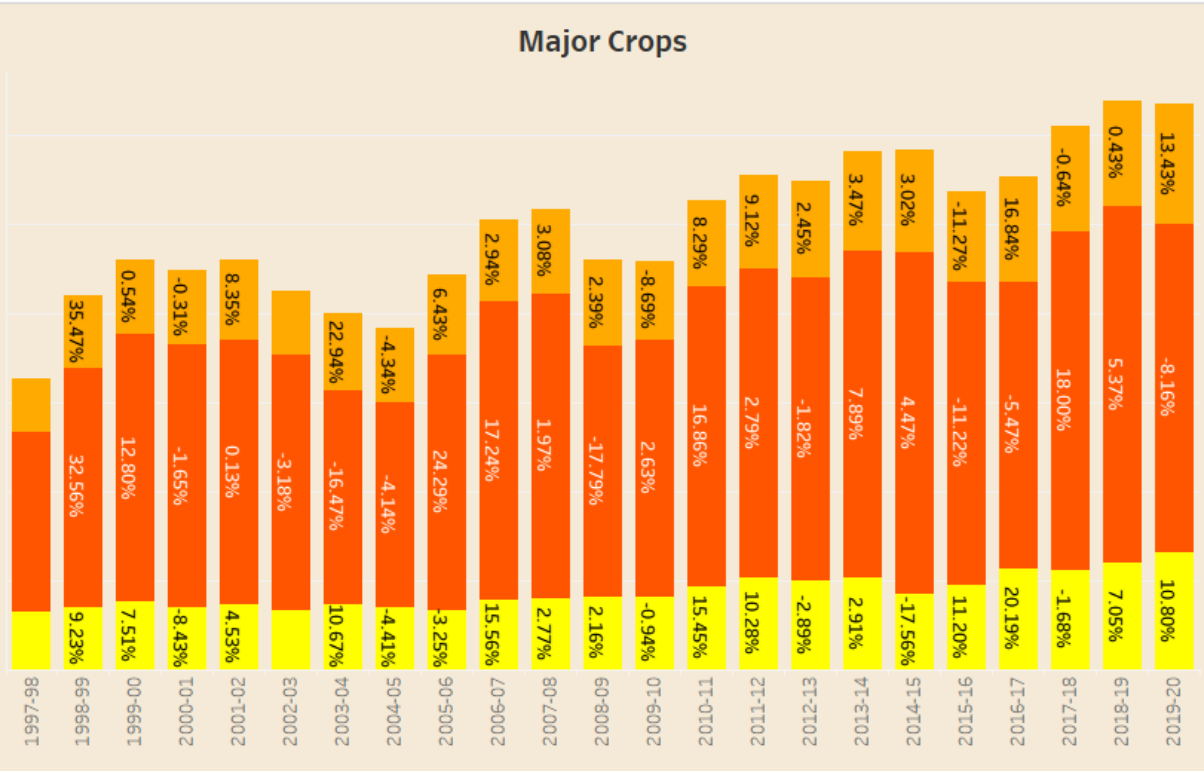
3.Based Cultivation Area



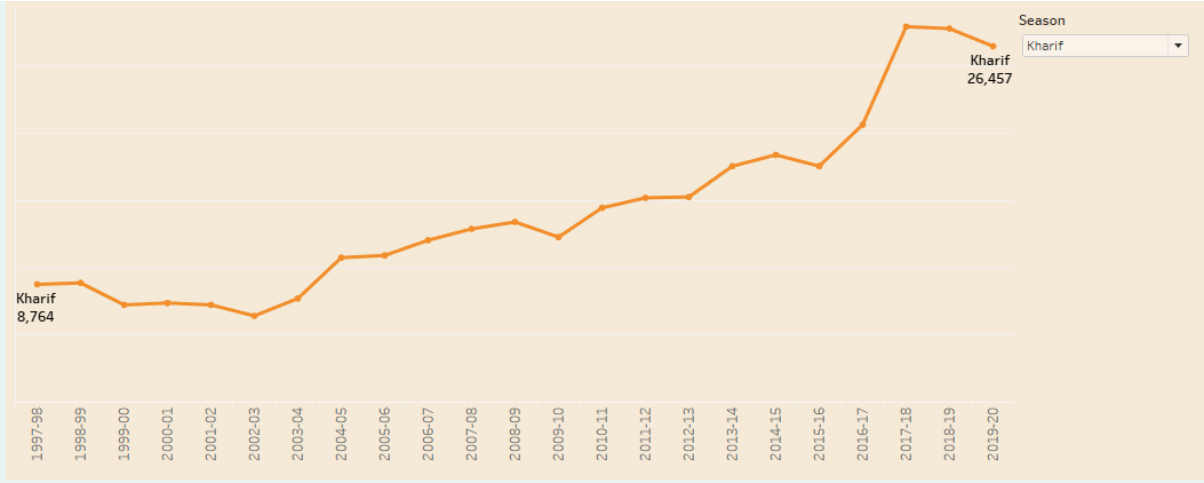
4.Crop plantation by Area



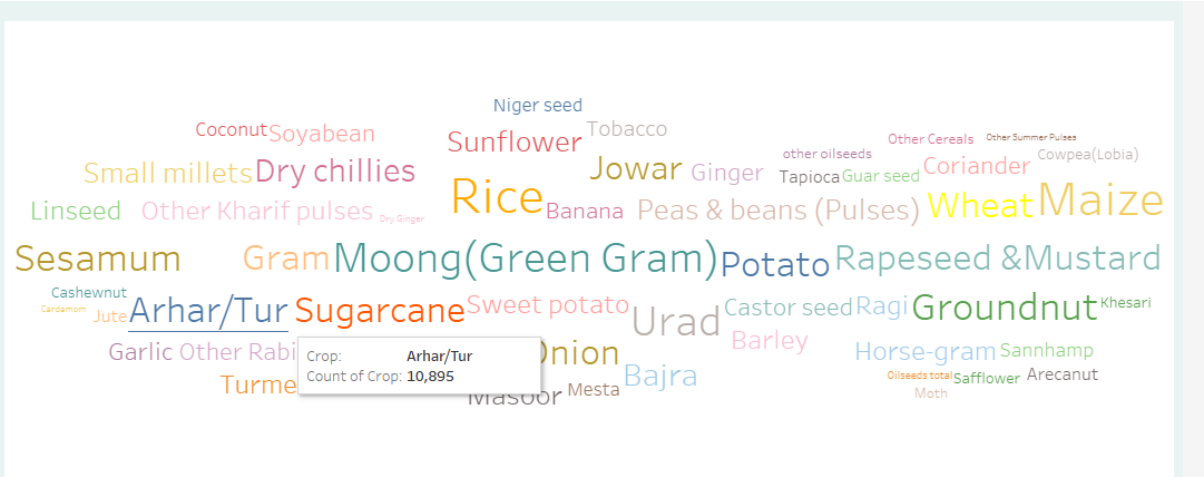
5.Major Crops



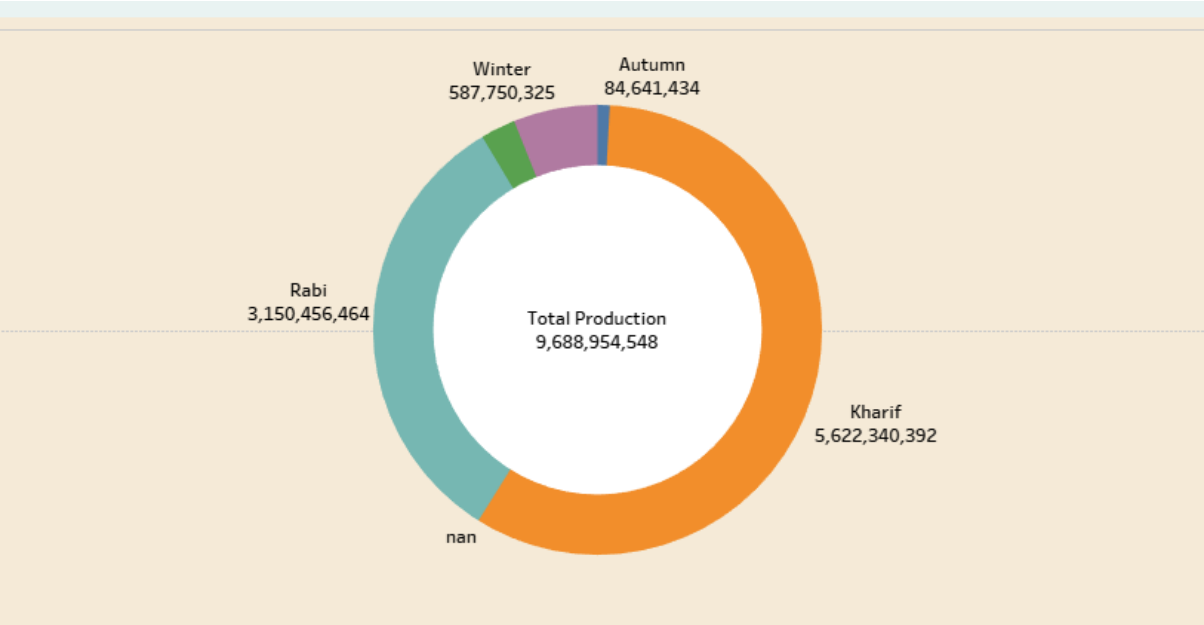
6.Yield by Season



7.Crops



8.Season wise Production



4.ADVANTAGES AND DISADVANTAGES

Advantages:

- They have land if they use right practices they can earn money that government servents can't think of.
- They get subsidies on almost everything, sometimes up to 90%.
- Income tax doesn't exists for them so no one cares about their income.
- Government policies are bending towards farmers.

4.2 Disadvantage:

- Deforestation. Intensive farming causes soil degradation and leads to the expansion of new lands. ...
- Pest and weed resistance to chemicals. ...
- Soil degradation. ...
- Impact on natural habitats. ...
- Water pollution. ...

5.APPLICATIONS

- Crop Management. ...
- Irrigation Management. ...
- Livestock Management. ...
- Market Information. ...
- Farm Accounting. ...
- Increases Efficiency. ...
- Maximizes Productivity. ...
- Improves Sustainability.

8.CONCLUSION

India's agricultural sector is still very important to the Indian economy, although its share of the economy has decreased over the past 50 years.

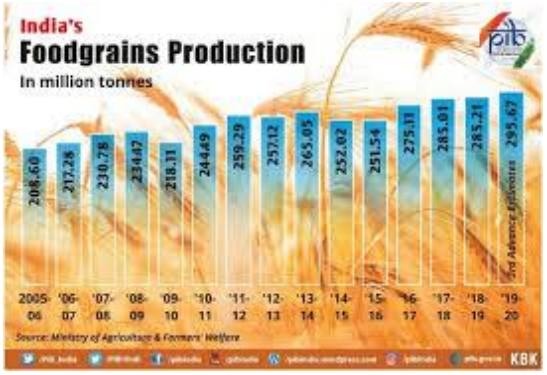
Agriculture has given so much to society. But it has its own pros and cons that we can't overlook. Furthermore, the government is doing his every bit to help in the growth and development of agriculture; still, it needs to do something for the negative impacts of agriculture.

7.FUTURE SCOPE

Agriculture plays a significant role in India’s growing economy. With around 54.6% of the total workforce involved in agriculture and allied sector activities, the sector contributes to 17.8% of the country’s gross value added (GVA). During 2021-22, the country recorded US$ 50.2 billion in total agriculture exports with a 20% increase from US$ 41.3 billion in 2020-21. It is projected that the Indian agriculture sector will grow by 3.5% in FY23.

With the use of conventional farming methods, there’s comparatively less improvement in efficiency and agricultural yields which resulted in lower productivity. Due to this concern, the government initiated the fourth wave of revolution in the agricultural sector to introduce technological advancement in these activities to improve yields and promote the involvement of the population in this sector.

Agriculture 4.0 is a considerably advanced version of precision farming methods. It has the potential to transform the existing methods of farming. Precision farming focuses on a comprehensive approach towards maintaining the field and soil well-being with a focus on improving the quality and quantity of yield with minimum environmental harm. The idea of revolution in agriculture involves the use of the Internet of Things (IoT), big data, artificial intelligence, and robotics to accelerate and improve the efficiency of activities throughout the entire production chain. It has the potential to transform the conventional farming industry.



8.APPENDIX

GitHub:

https://github.com/aa979295/Indian-Agriculture/blob/main/README.md

Dashboard1:

link:https://public.tableau.com/views/Book_16976188083010/Dashboard1?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Dashboard 2:

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Dashboard 3:

link:https://public.tableau.com/views/Book_16976188083010/Dashboard3?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Story 1:

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Story 2:

link:https://public.tableau.com/views/Book_16976188083010/Story2?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link