INDIAN AGRICULTURE CROP PRODUCTION ANALYSIS 1197 - 2021

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

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 agriculture cultivation. To extract the insights from the data and post the data in the form of visualizations. Dashboards and story we employed Tableau tool.

Through the visual representations, readers can gain valuable insights into the crop production, seasonal variations, regional distribution, and overall production trends. These visualization enable intuitive analysis, allo - wing stake holders to uncover patterns, identify areas of growth & concern, and make data driven decisions.

Project flow:

To accomplish this, we have to complete all the activities listed below,

- Define problem / problem understanding
  - → Specify the business problem
  - → Business requirements
  - → Literature Survey
  - → Social & Business Impact.
- Data collection & Extraction from Database
  - → Collect the dataset
  - → Storing Data in DB
  - → Perform SQL operations
  - → Connect DB with tableau
- Data preparation
  - → Prepare the Data for visualization.
- Data visualizations
  - → No of unique visualization.
- Dashboard
  - → Responsive and Design of Dashboard.
- Story
  - → No. of Scenes of story
- Performance Testing
  - → Amount of Data Rendered to DB

- Utilization of Data filters.
- No of calculation fields.
- No. of Visualizations / Graphs.

• Web Integration
  - Dashboard and story embed with UI with Flask

• Project Demonstration & Documentation
  - Record Explanation video for project end to end Solution
  - project Documentation Step by Step project development procedure.

MILESTONE 1: Define problem / problem understanding

Activity 1: Specify the business problem

Agriculture crop production Analysis (1197 - 2021)

Activity 2: Business requirements

The primary business requirements for this report are to visualize and analyze business Expenses, provide industry specific insights, identify cost drivers, highlight outliers, and offer interactive functionality. Stakeholders needs a visual representation of Expenses to compare and analyze spending patterns across different businesses and industries. The report should facilitate the primary factor contributing to Expenses. Additionally, it should flag any outliers or anomalies for further investigation. The report should provide a user friendly and intuitive Experiences that empowers.

Activity 3: Literature Survey

The literature survey section of the report provides a concise overview of India's agricultural sector, focusing on key aspects and insights from existing studies and publications. It examines the historical context of agricultural practices in India and highlights the role of government policies and initiatives in supporting the sector's growth and development.

The survey explores the diversity of crops cultivated across different regions, along with trends in production and the impact of climate variability. it also addresses the adoption of technology and innovation in agriculture, along with the challenges faced by farmers and potential research gaps.

Additionally, the section showcases best practices and success stories that have contributed to improved productivity and sustainblity in Indian agriculture. This literature review forms the basis for the subsequent analysis and visualation of agriculture data in the report.

Activity 4: Social or Business Impact

Social impact:

On the social front, agriculture serves as a vital source of livelihood for a large portion of the population, especially in rural areas. it plays a crucial role in ensuring food security

Security and alleviating poverty by providing employment opportunities and income generation. Moreover, agricultural activities contribute to the overall socio-economic development of rural communities, fostering social cohension and preserving cultural traditions.

Business impact:

From a business perspective, the agricultural sector plays a pivotal role in India's economy. It contributes to the country's GDP and serves as a source of raw materials for various industries, such as food processing, textile and pharmaceuticals. The growth and productivity of the agricultural sector have direct implications for the overall economic performances and stability of nation. Furthermore, advancements in agricultural practices and technology have the potential to enhance productivity, optimize resource utilization, and promote sustainable practices. This, in turn can lead to increased profitability and competitiveness for agriculture businesses.

MILESTONE 2: Data collection & extraction from Database

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, evaluate outcomes and generate insights from the data.

Activity 1.1: understand the data

Data consists of 345409 rows and 10 columns and 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.

MILESTONE 3 : Data preparation

Activity 1 : prepare the Data for visualization

preparing the data for visualization involves cleaning the data to remove irrelevant & missing the data, transforming the data into a format that can be easily visualized, Exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make

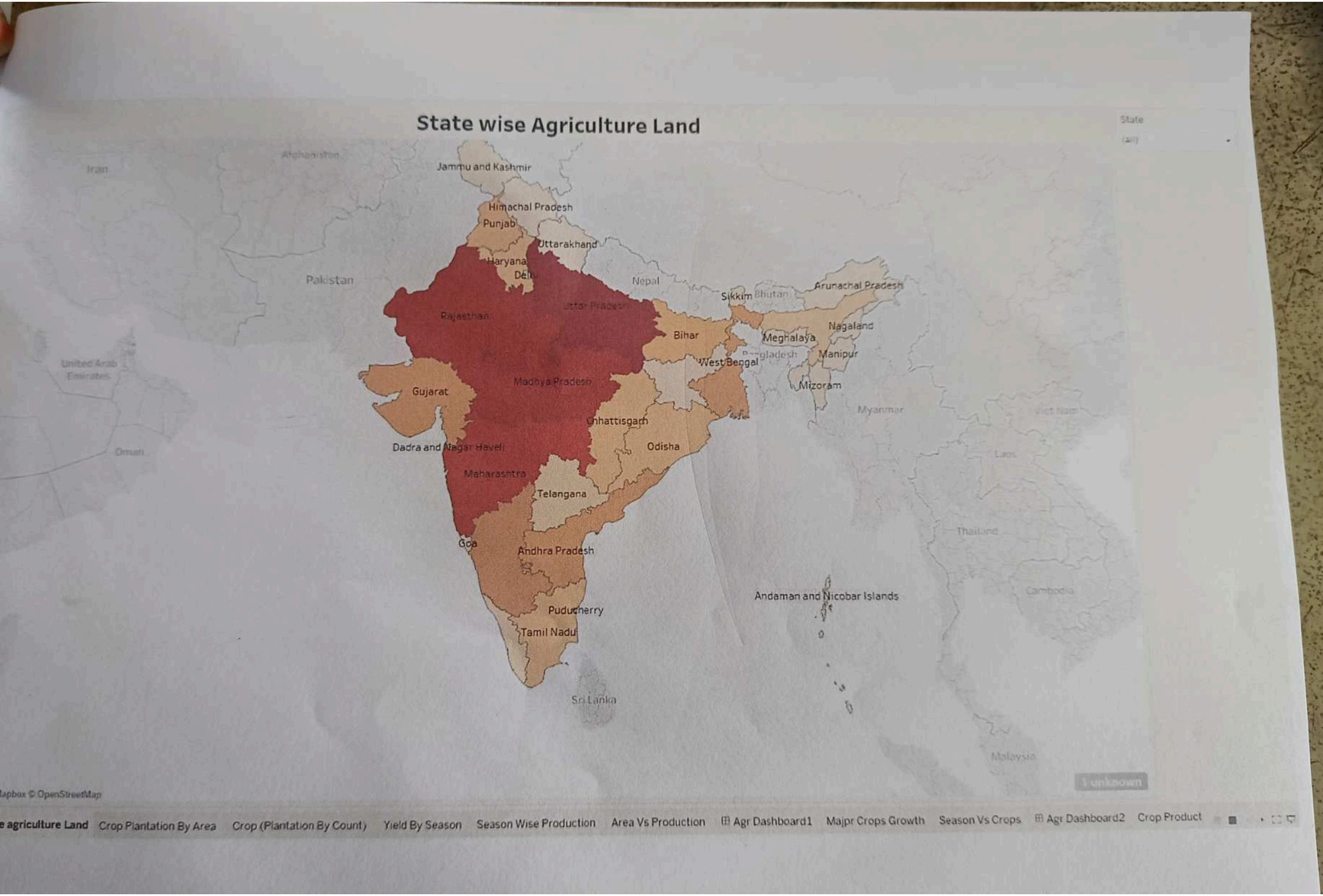
the data easily understandable and ready for creating visualizations to gain insights into the performance and efficiency.

MILESTONE 4: Data visualization

Data visualization is the process of creating graphical representations of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interrupt. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends and outliers in the data.

Activity 1.1: No. of unique visualizations

The number of unique visualizations that can be created with a given dataset. Some common types of visualitions that can be used analyze the performance and efficiency of banks include bar charts, line charts, heat maps, scatter plots, pie charts, maps etc.


State wise Agriculture Land
State
(All)
Jammu and Kashmir
Himachal Pradesh
Punjab
Uttarakhand
Haryana
Delhi
Rajasthan
Uttar Pradesh
Bihar
Sikkim
Arunachal Pradesh
Nagaland
Meghalaya
Manipur
West Bengal
Mizoram
Madhya Pradesh
Gujarat
Chhattisgarh
Odisha
Dadra and Nagar Haveli
Maharashtra
Telangana
Goa
Andhra Pradesh
Puducherry
Tamil Nadu
Andaman and Nicobar Islands
Sri Lanka
Pakistan
Nepal
Bhutan
Myanmar
Thailand
Cambodia
Malaysia
Oman
United Arab Emirates
Iran
Afghanistan
Unknown
Mapbox © OpenStreetMap
e agriculture Land
Crop Plantation By Area
Crop (Plantation By Count)
Yield By Season
Season Wise Production
Area Vs Production
Agr Dashboard1
Majpr Crops Growth
Season Vs Crops
Agr Dashboard2
Crop Product

Activity 1.1 : State wise Agriculture Land

The visualization titled is "State wise agriculture land", and it appears to be a screenshot of an interactive map. it depicts the distribution of agriculture land in various Indian states. while the legend, (the small box that explains the symbol of used in the map) is missing, it appears that red states have the most agriculture land, while blue state have the least agriculture land. Here are some of the states with the most agriculture land according to the visualization:

Rajasthan
madhya pradesh
Gujarat
uttar pradesh
maharashtra
Andhrapradesh

Here are some of the states with the least agricultural & according to the visualization:

Himachal pradesh
Jammu and Kashmir
Arunachal pradesh
meghalaya
mizoram
nagaland

Crop Plantation By Area

Activity 1.2: Crop plantation By Area

The visualization titled is "Crop plantation By Area", and it depicts the crop plantation by area in the united states the data is represented by circles of different sizes.

→ The largest circle coloured red, represents Sugarcane at 2.94%.

→ The second largest circle coloured teal, represents rice at 28.44%.

→ The third largest circle, coloured dark green represents wheat at 18.98%.

Here's list of all the crops included in the visualization:

Sugarcane (2.94%)

Rice (28.44%)

wheat (18.98%)

Corn (maize) (5.16%)

Cottonseed (6.63%)

Soybeans (5.84%)

Jowar (5.10%)

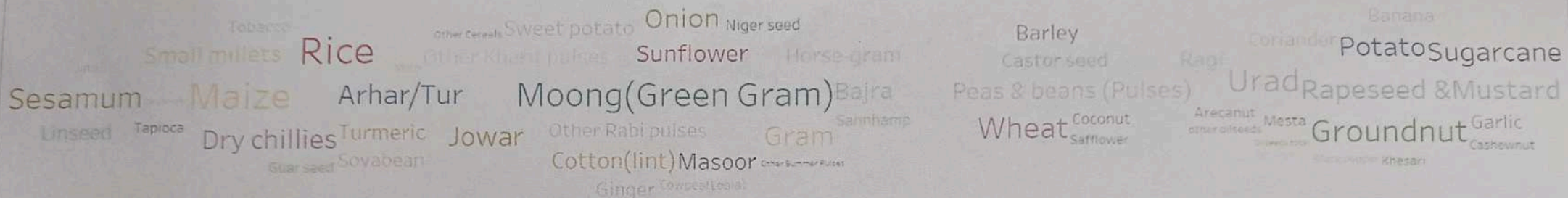
Arhar/Tur (2.37%)

Bajra (5.69%)

Gram (5.06%)

groundnut (3.79%)

Crop (Plantation By Count)



Activity 1.3: Crop (plantation By count)

The visualisation titled is "Crop(plantation By count)".

It is not a sophisticated data visualization tool used for data analytics, but a simple list.

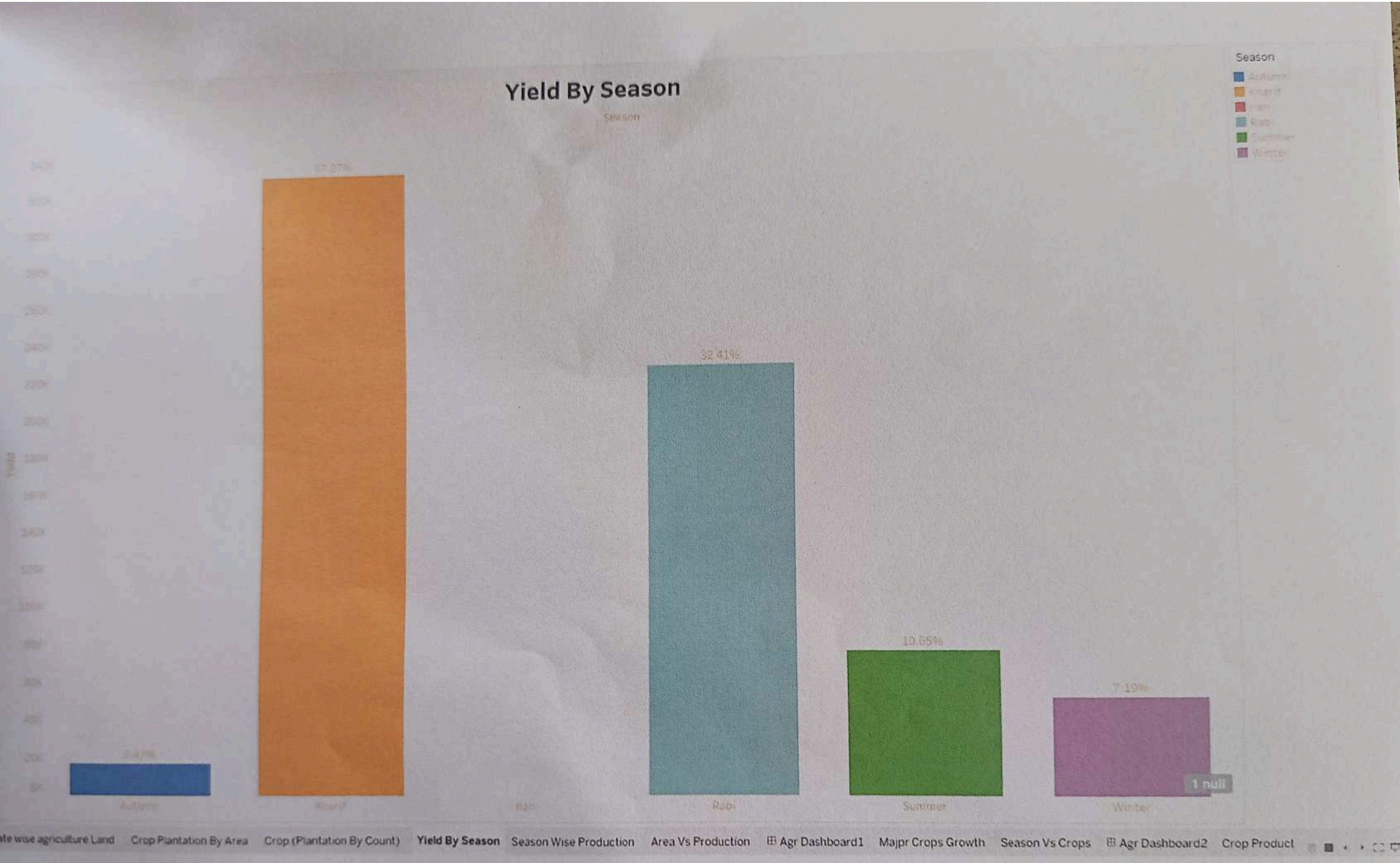
However, the list does provide information that could be used for data analytics. For instance an analyst could look at the list to see which crops are most commonly grown in India. They could then use this information to study the factors that affect the production of these crops, such as climate, soil conditions, and government policies.

Here's a breakdown of the information in the list:

Crop - This column lists the names of the crops grown in India.

- There is no column for the quantity grown.
- The list appears to be sorted alphabetically by crop name.

It may be helpful for someone who is unfamiliar with India agriculture to get a general sense of the range of crops that are grown here.


Yield By Season
Season
Season
Autumn
Kharif
Rabi
Summer
Winter
47.27%
32.41%
10.65%
7.19%
1 null
Autumn
Kharif
Rabi
Summer
Winter

Activity 1.4: Yield By Season

The visualization titled is "Yield By Season". It appears to show the yield of a crop over four seasons.

Here's a breakdown of the information in the graph:

x-axis: The x-axis is labelled "Season", but it doesn't show the names of the specific seasons. They are four bars coloured in blue, green, orange & purple.

y-axis: The y-axis is labelled "Yield", but it doesn't show a unit of measurement. The values range from 20 to 7204.

Bars: The four bars represents the yield each season. The yield for each season is;

Season 1 (blue) : 74

Season 2 (green) : 2004

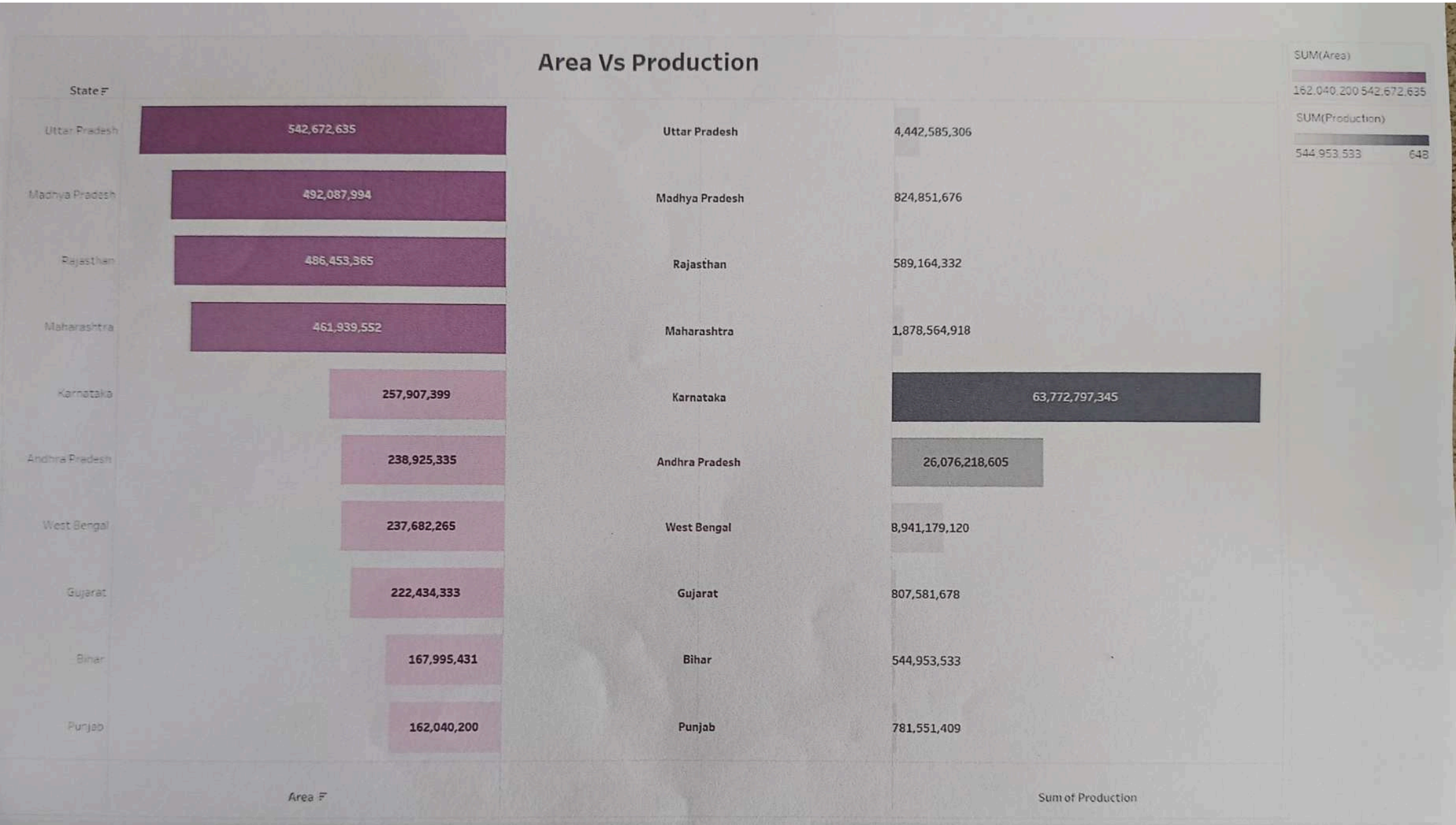
Season 3 (orange) : 300

Season 4 (purple) : 300

Data analysis:

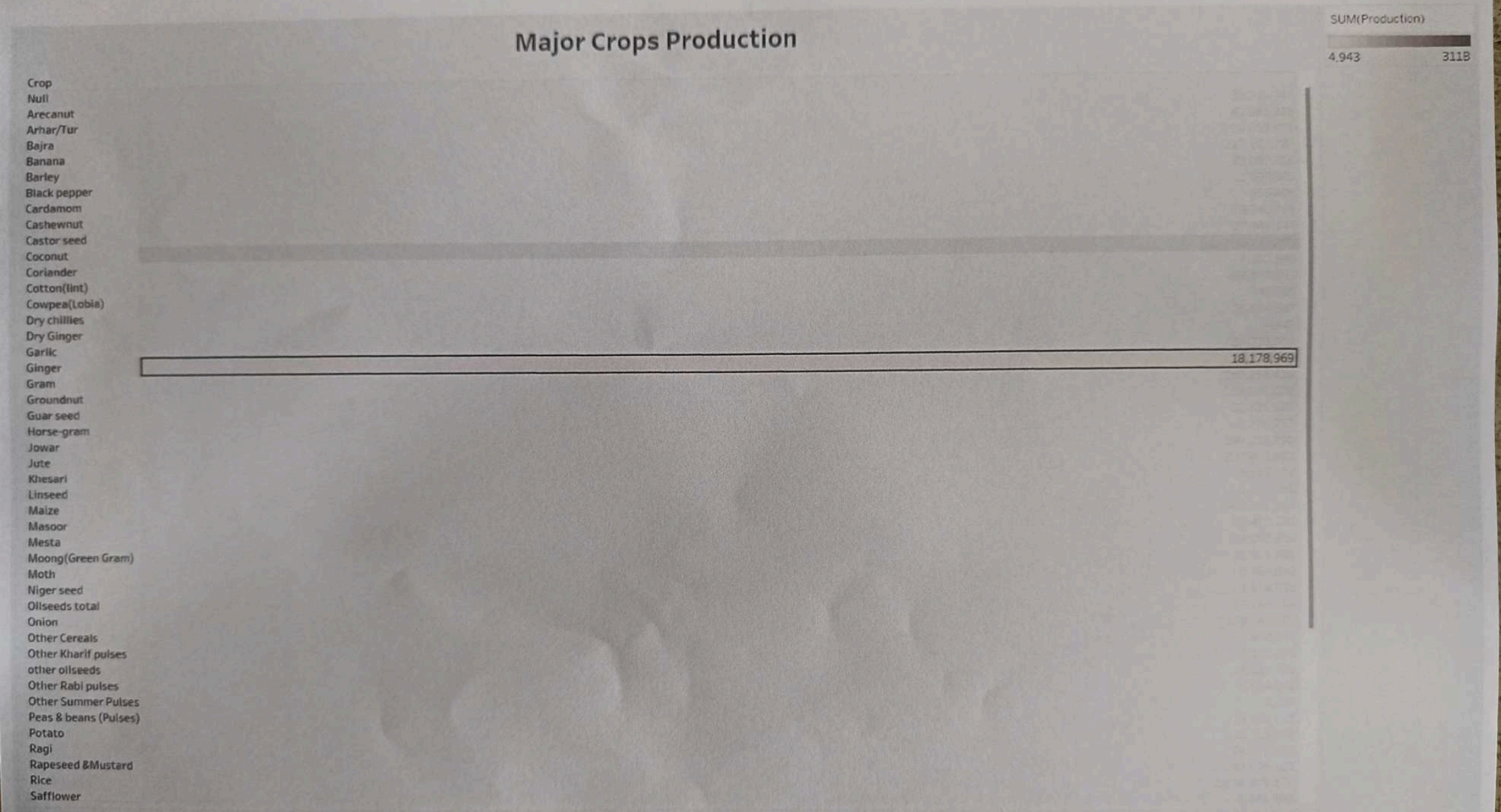
Without knowing the names of the seasons, & the units on the y-axis, it's difficult to draw specific conclusions from this graph. However, we can see that the yield is highest in season 2 (green) and roughly the same in season 3 (orange) and 4 (purple). Season 1 (blue) has the lowest yield.

Area Vs Production

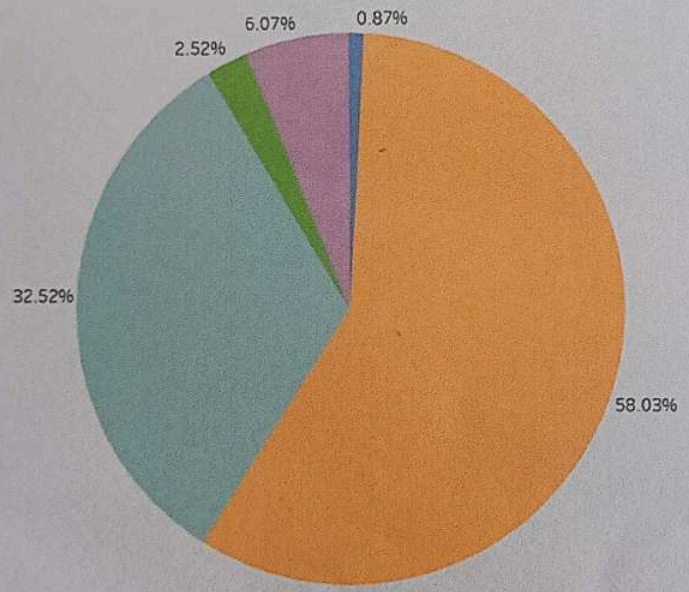


State wise agriculture Land | Crop Plantation By Area | Crop (Plantation By Count) | Yield By Season | Season Wise Production | **Area Vs Production** | Agr Dashboard1 | Majpr Crops Growth | Season Vs Crops | Agr Dashboard2 | Crop Product

Major Crops Production



Season wise Production



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Season
- Autumn
- Kharif
- nan
- Rabi
- Summer
- Winter

MILESTONE 5 : Dashboard

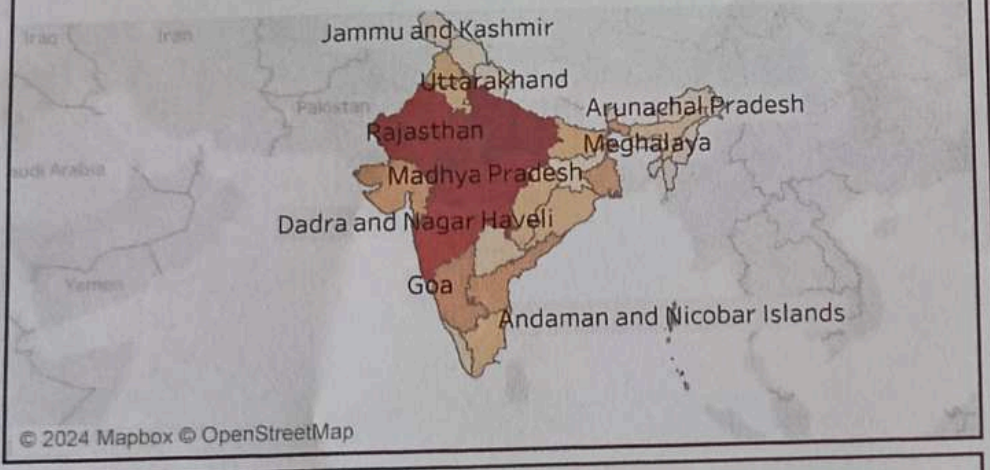
A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy to read format. Dashboards are often used to provide real-time monitoring and analysis of the data and typically designed for a specific purpose & use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, health care, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs and tables.

Activity 1 : Responsive and Design of dashboard

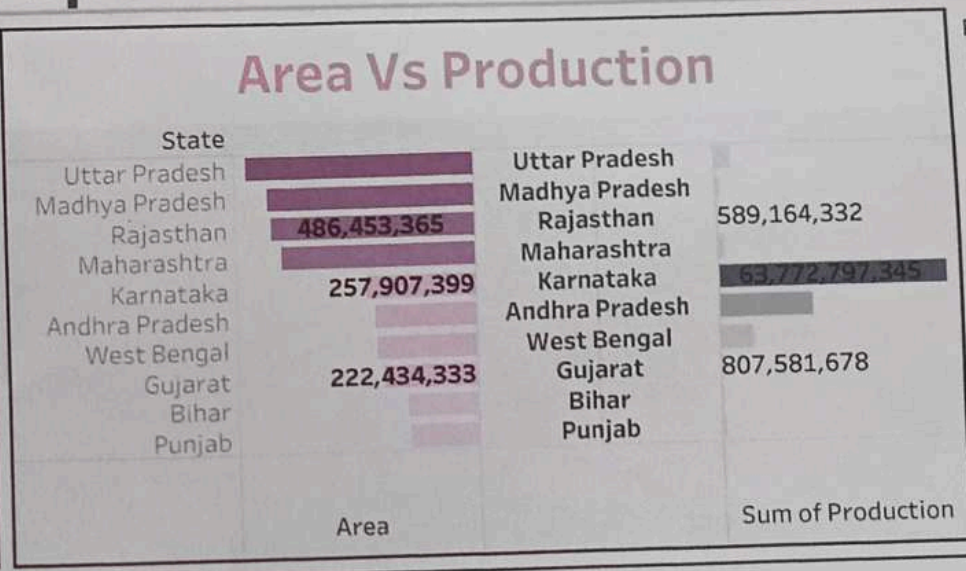
once you have created views on different sheets in tableau, you can pull them into a dashboard.

Indian Agriculture Crop Production Dashbord -1

State wise Agriculture Land



Area Vs Production



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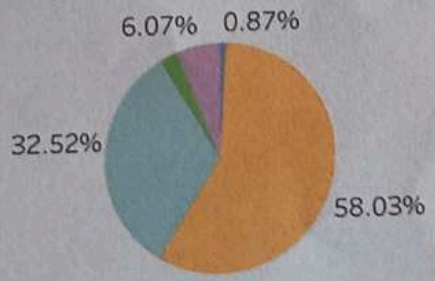
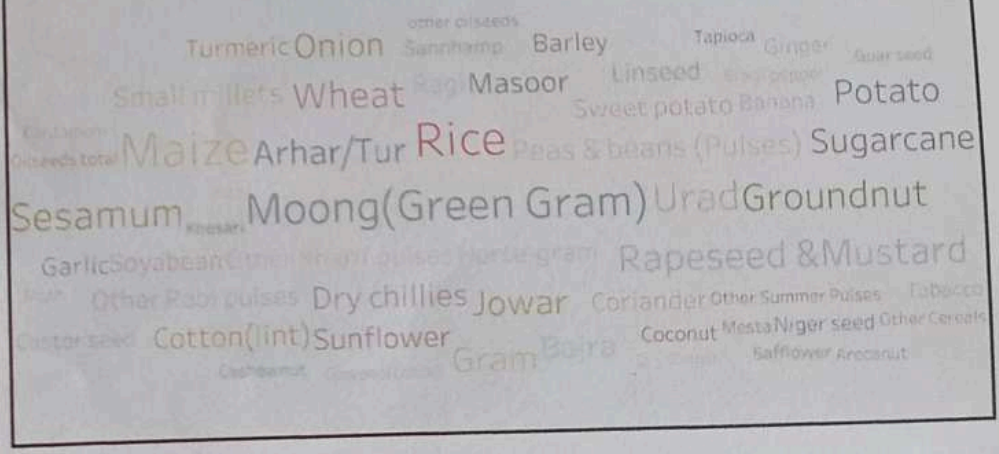
Season
- Autumn
- Kharif
- nan
- Rabi
- Summer
- Winter

Season wise Production

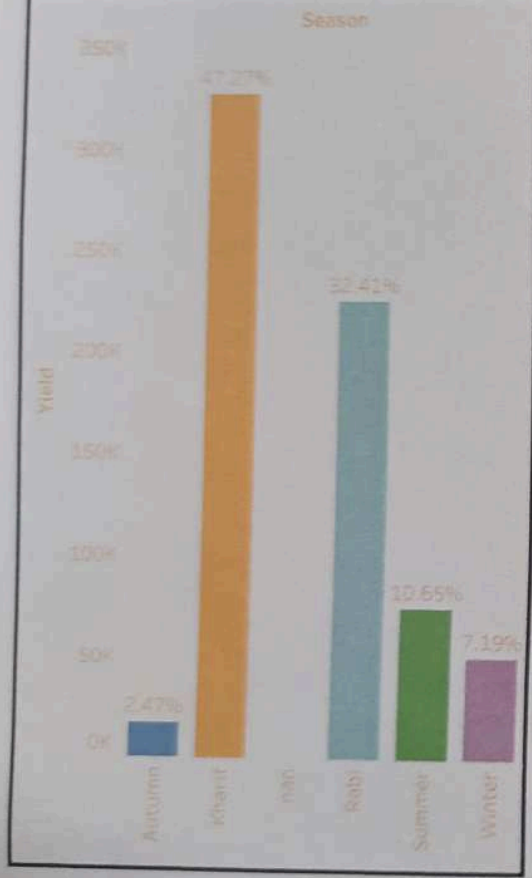


Crop (Plantation By Count)



Indian Agriculture Crop Production Dashboard-2

Yield By Season



Major Crops Production

Crop	
Null	
Arecanut	39,299,347
Arhar/Tur	61,261,333
Bajra	200,665,871
Banana	227,197,787
Barley	35,069,316
Black pepper	2,097,305
Cardamom	255,498
Cashewnut	3,740,786
Castor seed	27,949,344
Coconut	310,804,772,578
Coriander	7,355,899
Cotton(lint)	483,907,993
Cowpea(Lobia)	745,565
Dry chillies	26,534,387
Dry Ginger	4,943
Garlic	22,733,459
Ginger	18,178,969
Gram	160,256,414
Groundnut	163,832,022
Guar seed	31,321,927
Horse-gram	5,276,757
Jowar	149,255,890
Jute	230,423,820
Khesari	7,115,453
Linseed	3,298,063
Maize	443,991,183
Masoor	20,412,721
Mesta	14,052,266

Season Vs Crops

	Season						
Crop	Autumn	Kharif	nan	Rabi	Summer	Whole Ye..	Winter
Null							
Arecanut	Arecanut	Arecanut		Arecanut	Arecanut	Arecanut	
Arhar/Tur	Arhar/Tur	Arhar/Tur		Arhar/Tur	Arhar/Tur	Arhar/Tur	Arhar/Tur
Bajra		Bajra		Bajra	Bajra	Bajra	
Banana	Banana	Banana		Banana	Banana	Banana	Banana
Barley		Barley		Barley		Barley	
Black pepper	Black pep..	Black pep..		Black pep..	Black pep..	Black pep..	
Cardamom		Cardamom				Cardamom	
Cashewnut		Cashewn..		Cashewn..		Cashewn..	
Castor seed		Castor se..		Castor se..		Castor se..	
Coconut		Coconut				Coconut	
Coriander		Coriander		Coriander		Coriander	Coriander
Cotton(lint)	Cotton(li..	Cotton(li..		Cotton(li..	Cotton(li..	Cotton(li..	Cotton(li..
Cowpea(Lobia)		Cowpea(..		Cowpea(..	Cowpea(..	Cowpea(..	
Dry chillies	Dry chilli..	Dry chilli..		Dry chilli..	Dry chilli..	Dry chilli..	Dry chilli..
Dry Ginger				Dry Ginger	Dry Ginger		
Garlic		Garlic		Garlic		Garlic	
Ginger	Ginger	Ginger		Ginger	Ginger	Ginger	Ginger
Gram		Gram		Gram		Gram	Gram
Groundnut	Groundnut	Groundnut		Groundnut	Groundnut	Groundnut	Groundnut
Guar seed		Guar seed		Guar seed		Guar seed	
Horse-gram		Horse-gr..		Horse-gr..	Horse-gr..	Horse-gr..	Horse-gr..
Jowar	Jowar	Jowar		Jowar	Jowar	Jowar	
Jute	Jute	Jute		Jute	Jute	Jute	
Khesari		Khesari		Khesari		Khesari	
Linseed		Linseed		Linseed		Linseed	
Maize	Maize	Maize		Maize	Maize	Maize	Maize
Masoor		Masoor		Masoor		Masoor	
Mesta							

Activity 1.1 : Dashboard !

The visualization is a dashboard that appears to visualize data on Indian agriculture crop production. It contains several charts and seems to be divided into different sections.

Here's a breakdown of the sections I can see:

Statewise agriculture land :

This section appears to show a map of India. Each state is coloured differently. It likely represents some data related to agriculture land, but its difficult to say exactly what without a legend.

They are also text labels for some states, but some labels are cut off in the image.

Area Vs production :

This section appears to be a table. The table columns include " State ", Autumn season ", " Rabi " season ", " Summer season ", and "Area A ". There are also values listed for some states but they are cutoff in the image.

Season wise production :

This section appears to be a pie chart. The pie chart slices are labelled " Turmeric Onion Barley ", " wheat ", " masoor ", " Jute ", " potato ", " maize ", " Arhar/Tur ", " Rice "

"Gram", "other", and "Sugarcane". The size of the pie slice likely represents the proportion of the total production each crop occupies.

Crop (plantation By Count)

This section appears to be a bar chart. The x-axis label is cut off in the image but it appears to represent different crops. The y-axis label is "%". The height of each bar likely represents the percentage of plantation dedicated to each crop.

Limitation of the visualition for Data analysis:

While this Dashboard contains data that could be useful for data analysis of Indian agriculture, its difficult to perform a comprehensive analysis because of the following limitations:

→ missing tables:

There are missing tables for the x and y-axis in some charts and the legend for the map is missing.

→ cut off text:

Some text labels are cut off in the image, making it difficult to interpret the data.

MILESTONE 6 : STORY

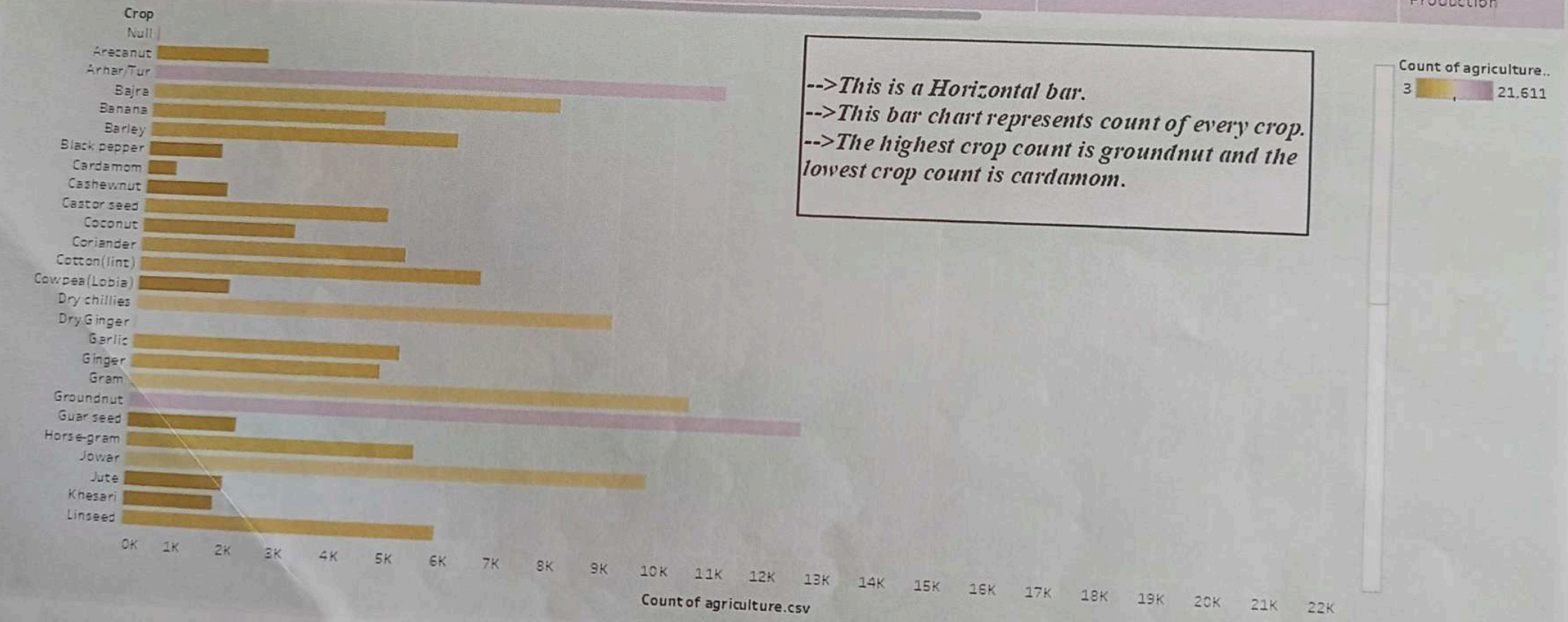
A data story is the way of presenting data and analysis in a narrative format, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports presentations, interactive visuations and videos.

Activity 1 : Number of scenes in a story

The number of scenes in a storyboard for a data visualization analysis of the performances of banks will depend on the complexicity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

Count of every crop. | District Wise Yeild | Crop Plantation By Area | Crop Production | Season Wise Production

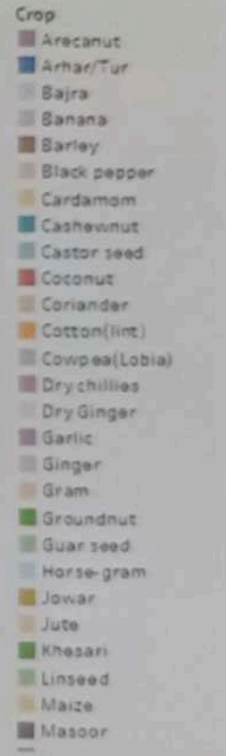


-->This is a Horizontal bar.
-->This bar chart represents count of every crop.
-->The highest crop count is groundnut and the lowest crop count is cardamom.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

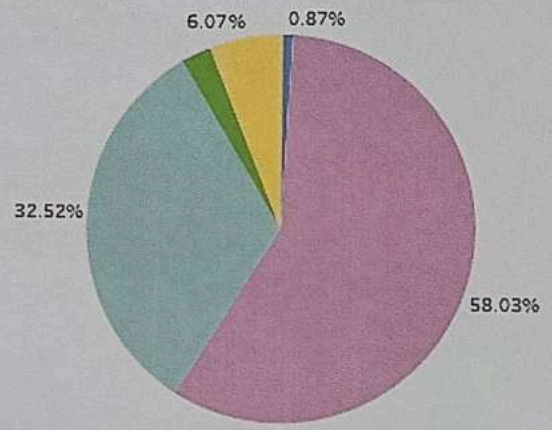
Crop Plantation By Area | Crop Production | Season Wise Production | Area Based Crops | Yield By Season

–>This is a box and whisker plot.
–>This box and whisker plot represents Area based Crops.
–>This box and whisker plot has high area of Rice.



INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

Crop Plantation By Area | Crop Production | Season Wise Production | Area Based Crops | Yield By Season



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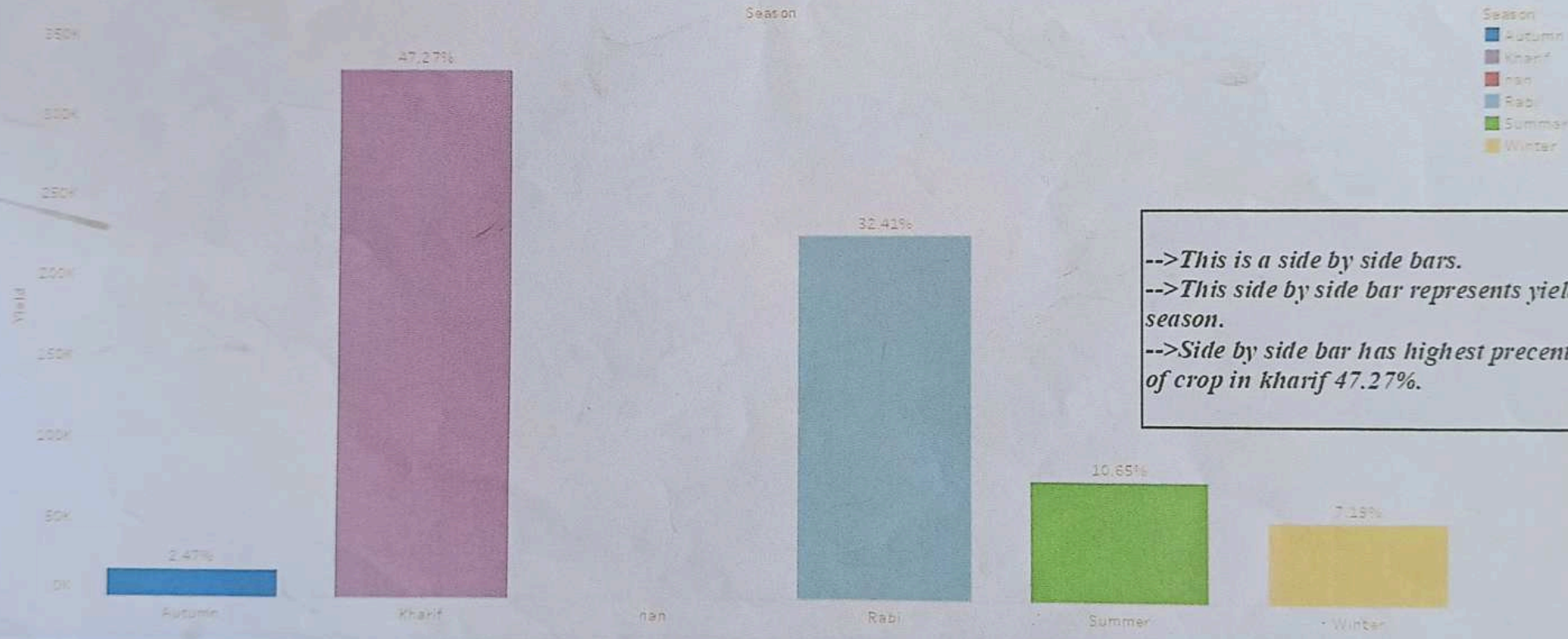
Season
- Autumn
- Kharif
- nan
- Rabi
- Summer
- Winter

-->This is a pie chart.
-->This pie chart represents the Season Wise Production.
-->From the above seasons kharif season has highest production.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

Crop Plantation By Area | Crop Production | Season Wise Production | Area Based Crops | Yield By Season



-->This is a side by side bars.
-->This side by side bar represents yield by season.
-->Side by side bar has highest precentage of crop in kharif 47.27%.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

District Wise Yeild | Crop Plantation By Area | Crop Production | Season Wise Production | Area Based Crops

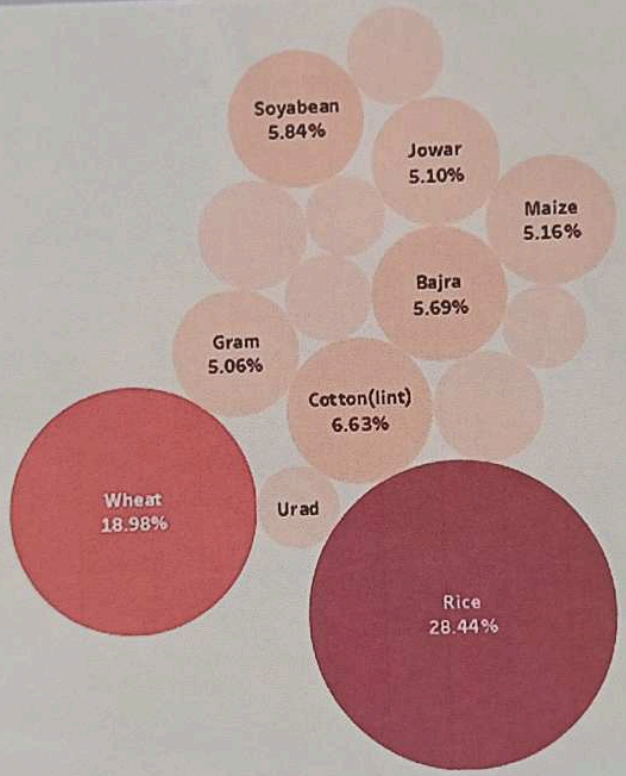
Area
614 996M

Rice
Wheat
Cotton(lint)
Jowar
Gram
Groundnut
Soyabean
Rapeseed &Mustard
Sugarcane
Arhar/Tur
Moong(Green Gram)
Bajra
Urad
Masoor
Moth
Maize
Guar seed
Jute
Ragi

–>This is a tree maps.
–>This tree maps represents the crop production.
–>This map has high rate of Rice production.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

Count of every crop | District Wise Yeild | Crop Plantation By Area | Crop Production | Season Wise Production



-->This is a bubble chart.
-->This bubble chart represents the crop plantation by area.
-->This bubble chart has highest Rice percentage 28.44% and the lowest is Guar seed 2.03%.

INDIA AGRICULTURE CROP PRODUCTION ANALYSIS(1197-2021)

Count of every crop. | District Wise Yeild | Crop Plantation By Area | Crop Production | Season Wise Production

District	
24 PARAGANAS NO..	362,221
24 PARAGANAS SOU..	307,435
ADILABAD	3,873
AGRA	3,353
ANJAW	526
ANUGUL	2,082
ANUPPUR	1,352
BADGAM	507
BAGALKOT	143,144
BAGALKOTE	8,501
BALRAMPUR	3,865
BEGUSARAI	3,036
BELAGAVI	8,515
BELGAUM	139,857
BISHNUPUR	2,053
CACHAR	57,325
CHANDRAPUR	730
CHANGLANG	916
CHARAIDEO	5,273
CHARKI DADRI	449
CHATRA	903
CHENGALPATTU	3,999
CHENNAI	43
CHHATARPUR	1,877
CHHINDWARA	3,693
CHHOTAUDEPUR	930
CHIKBALLAPUR	98,882
CHIKKABALLAPURA	8,511

Yield
0 362,221

-->This is a text table.
-->This table represents the a district wise yeild.
-->This table text shows all the yeilds in district wise.And the highest yeild rate is in 24 paraganas north.

MILESTONE 7: Performance Testing

1) Statewise agriculture land
2) Count of each crop
3) District wise yield
4) Crop plantation by Area
5) Crop production
6) Season wise production
7) Area Based Crop
8) yield By Season

MILESTONE 8: Web integration

publishing helps us to track and monitor key performance metrics and to communicate results and progress. help a publisher stay informed, make better decisions, and communicate their performance to others.

Explanation video link:

https://drive.google.com/file/d/1bSXn8h228MPL29KjEd-EAUuIDJ12uq/CV/view?usp=drivesdk