India's Agriculture Crop Production Analysis (1997-2021)

Project submitted by:

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R. Gunasundhari

INTRODUCTION:

1.1 overview

Agriculture encompasses crops and livestock production, aquaculture, fisheries and forestry for food and non-food products. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that enabled people to live in cities.

India is the second largest producer of wheat and rice, the world's major food staples. India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmer fish, eggs, coconut, sugarcane and numerous vegetables.

The farming systems that majorly contribute to the agriculture sector in India are subsistence farming, organic farming, and commercial farming. Due to India's geographical location, certain parts experience different climates, thus affecting each region's agricultural productivity differently.

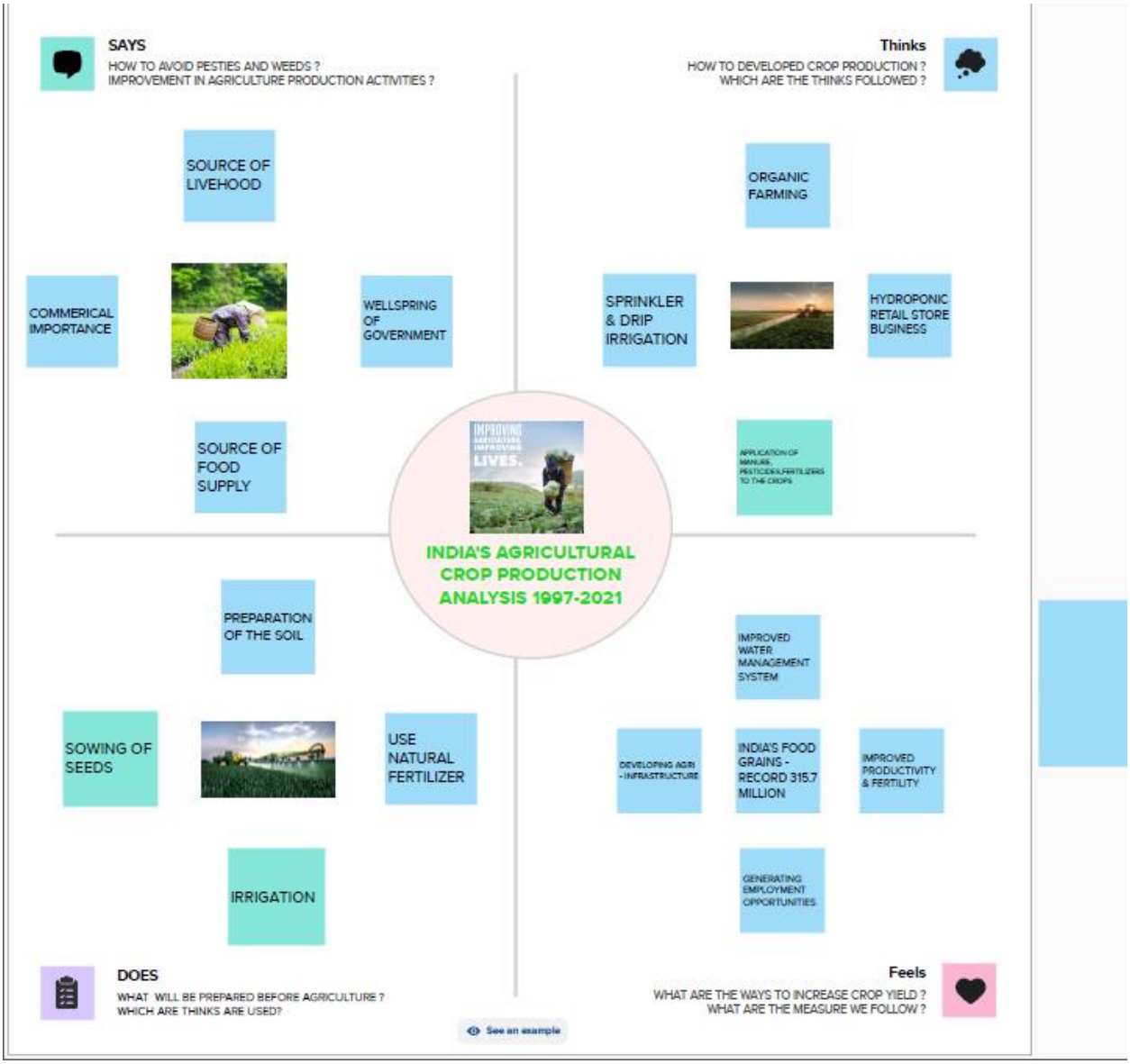
1.2 purpose

The agricultural states in the country are producing high-quality food grains and other food good as well. The Indian agriculture business is growing at a rapid rate and continues to contribute to a global trade.

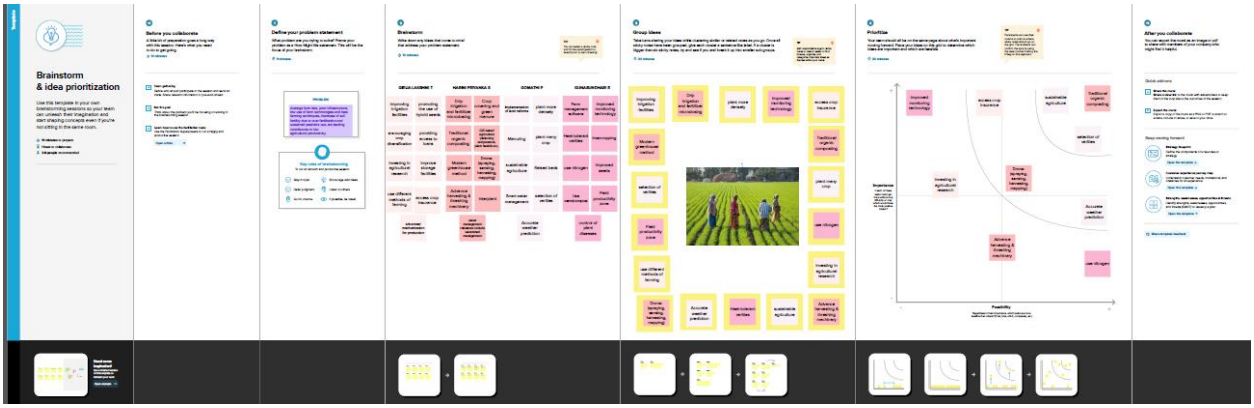
Agriculture plays a significant role in the Indian economy as the main source of food. Dairy, poultry, fisheries etc. come under animal husbandry, a sub-sector of agriculture.

Problem definition & design Thinking

EMPATHY MAP

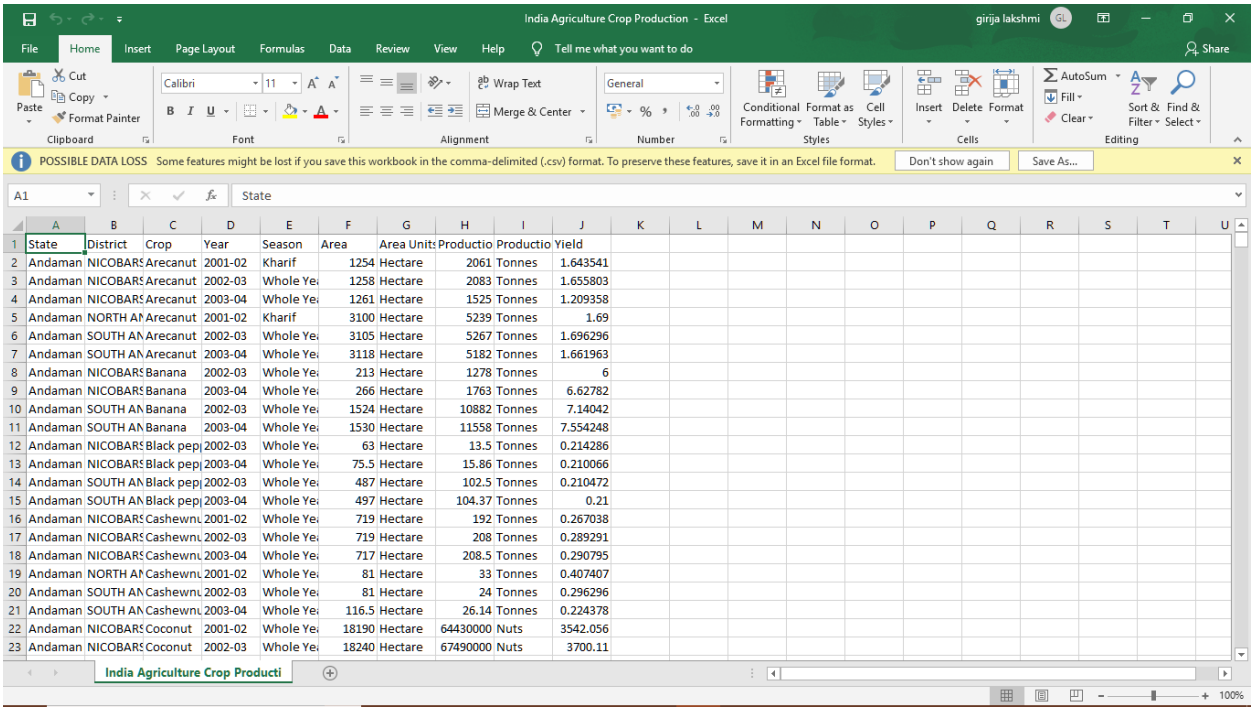


Ideation and brainstorming map



Result

Activity 1: Downloading the dataset



State	District	Crop	Year	Season	Area	Area Units	Productio	Productio	Yield
Andaman	NICOBARS	Arecanut	2001-02	Kharif	1254	Hectare	2061	Tonnes	1.643541
Andaman	NICOBARS	Arecanut	2002-03	Whole Yea	1258	Hectare	2083	Tonnes	1.655803
Andaman	NICOBARS	Arecanut	2003-04	Whole Yea	1261	Hectare	1525	Tonnes	1.209358
Andaman	NORTH AN	Arecanut	2001-02	Kharif	3100	Hectare	5239	Tonnes	1.69
Andaman	SOUTH AN	Arecanut	2002-03	Whole Yea	3105	Hectare	5267	Tonnes	1.696296
Andaman	SOUTH AN	Arecanut	2003-04	Whole Yea	3118	Hectare	5182	Tonnes	1.661963
Andaman	NICOBARS	Banana	2002-03	Whole Yea	213	Hectare	1278	Tonnes	6
Andaman	NICOBARS	Banana	2003-04	Whole Yea	266	Hectare	1763	Tonnes	6.62782
Andaman	SOUTH AN	Banana	2002-03	Whole Yea	1524	Hectare	10882	Tonnes	7.14042
Andaman	SOUTH AN	Banana	2003-04	Whole Yea	1530	Hectare	11558	Tonnes	7.554248
Andaman	NICOBARS	Black pep	2002-03	Whole Yea	63	Hectare	13.5	Tonnes	0.214286
Andaman	NICOBARS	Black pep	2003-04	Whole Yea	75.5	Hectare	15.86	Tonnes	0.210066
Andaman	SOUTH AN	Black pep	2002-03	Whole Yea	487	Hectare	102.5	Tonnes	0.210472
Andaman	SOUTH AN	Black pep	2003-04	Whole Yea	497	Hectare	104.37	Tonnes	0.21
Andaman	NICOBARS	Cashewnu	2001-02	Whole Yea	719	Hectare	192	Tonnes	0.267038
Andaman	NICOBARS	Cashewnu	2002-03	Whole Yea	719	Hectare	208	Tonnes	0.289291
Andaman	NICOBARS	Cashewnu	2003-04	Whole Yea	717	Hectare	208.5	Tonnes	0.290795
Andaman	NORTH AN	Cashewnu	2001-02	Whole Yea	81	Hectare	33	Tonnes	0.407407
Andaman	SOUTH AN	Cashewnu	2002-03	Whole Yea	81	Hectare	24	Tonnes	0.296296
Andaman	SOUTH AN	Cashewnu	2003-04	Whole Yea	116.5	Hectare	26.14	Tonnes	0.224378
Andaman	NICOBARS	Coconut	2001-02	Whole Yea	18190	Hectare	64430000	Nuts	3542.056
Andaman	NICOBARS	Coconut	2002-03	Whole Yea	18240	Hectare	67490000	Nuts	3700.11

Activity 1.1: Understand the data

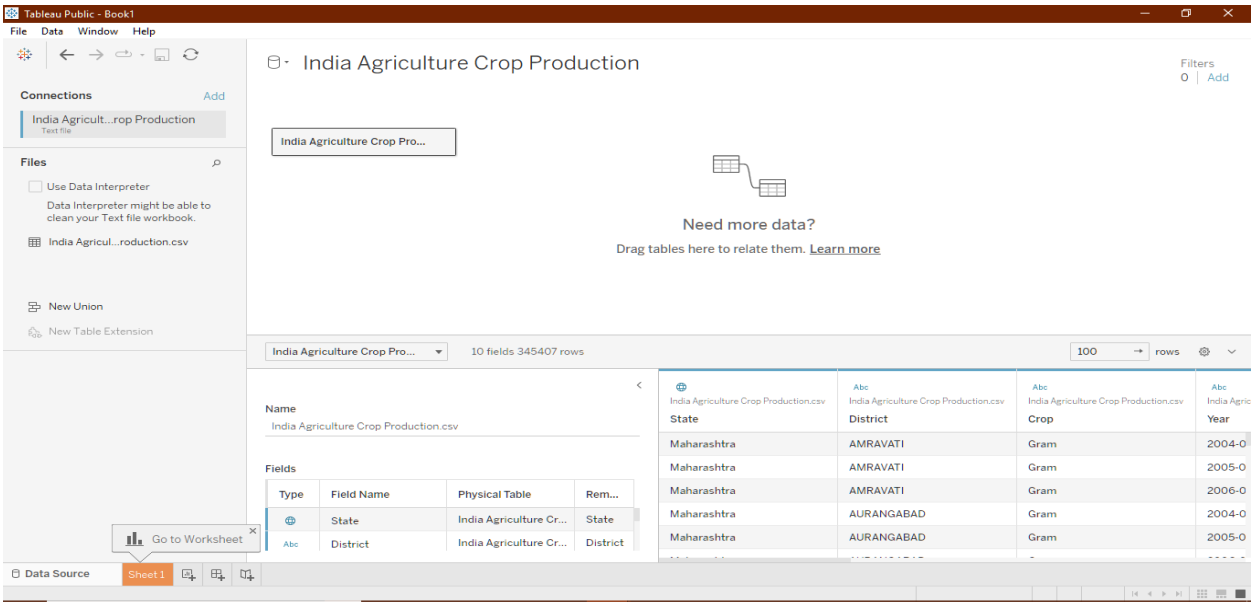
Data consists of 345409 rows and 10 columns that correspond to different values.

Column Description of the Dataset:

FIELDS	DESCRIPTION

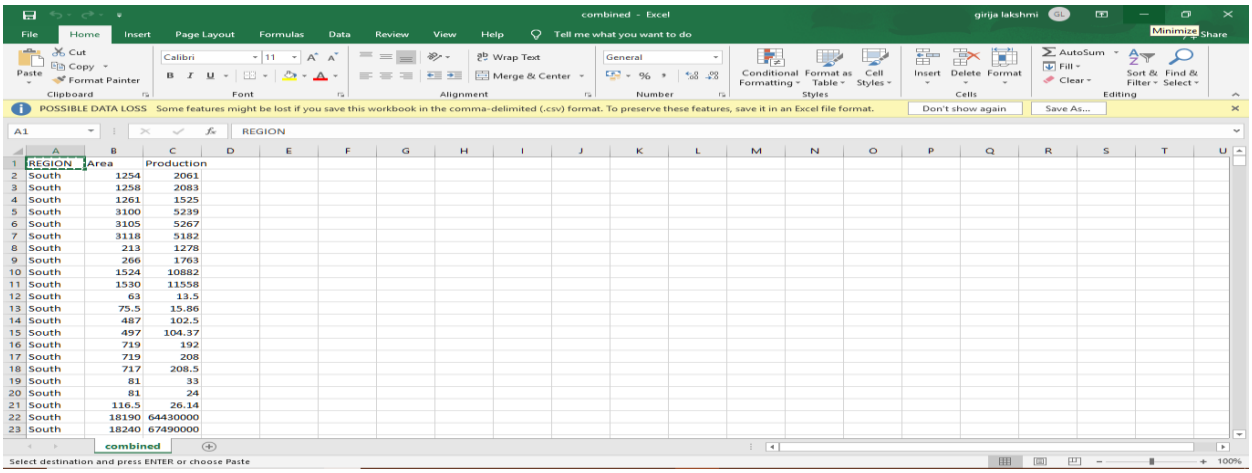
State	The name of the Indian states.
District	The name of the districts of Indian states.
Crop	Name of different crops grown in India
Year	Date
Season	India has 5 seasons for crop cultivation: kharif, rabi, autumn, winter and summer
Area	Area for crop cultivation in acres
Production	Production of crops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

Activity 3: Connect Dataset with Tableau



Data Preparation:

Activity 1: Prepare the Data for Visualization



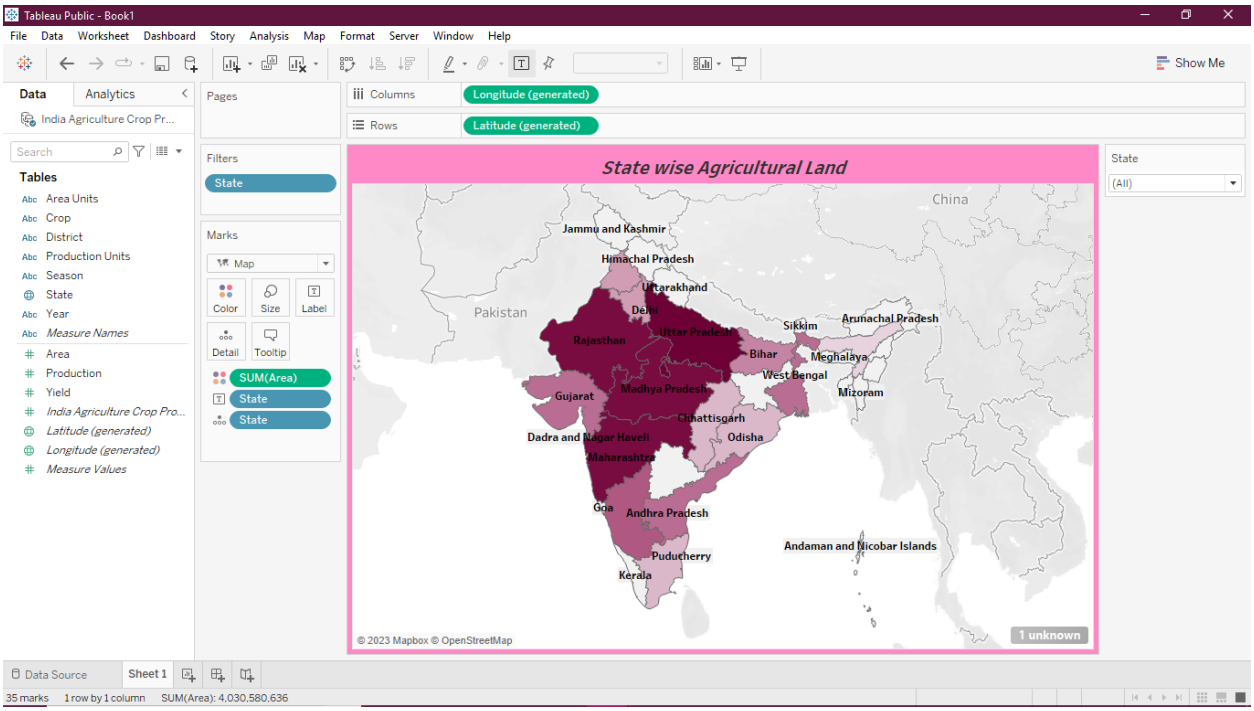
REGION	Area	Production
South	1254	2061
South	1258	2083
South	1261	1525
South	3100	5239
South	3105	5267
South	3118	5182
South	213	1278
South	266	1763
South	1524	10882
South	1530	11558
South	63	13.5
South	75.5	15.86
South	487	102.5
South	497	104.37
South	719	192
South	719	208
South	717	208.5
South	81	33
South	81	24
South	116.5	26.14
South	18190	64430000
South	18240	67490000

Data Visualization:

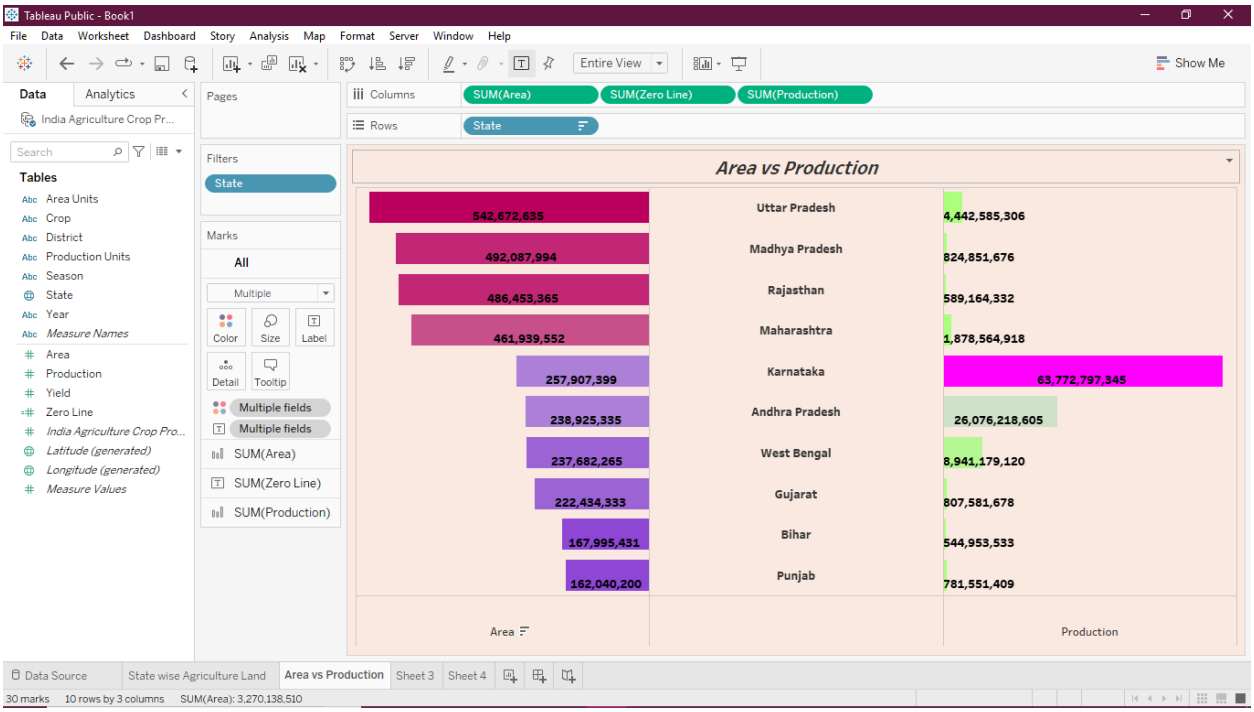
Activity 1: No of Unique Visualizations

The number of unique visualizations that can be created with a given dataset.

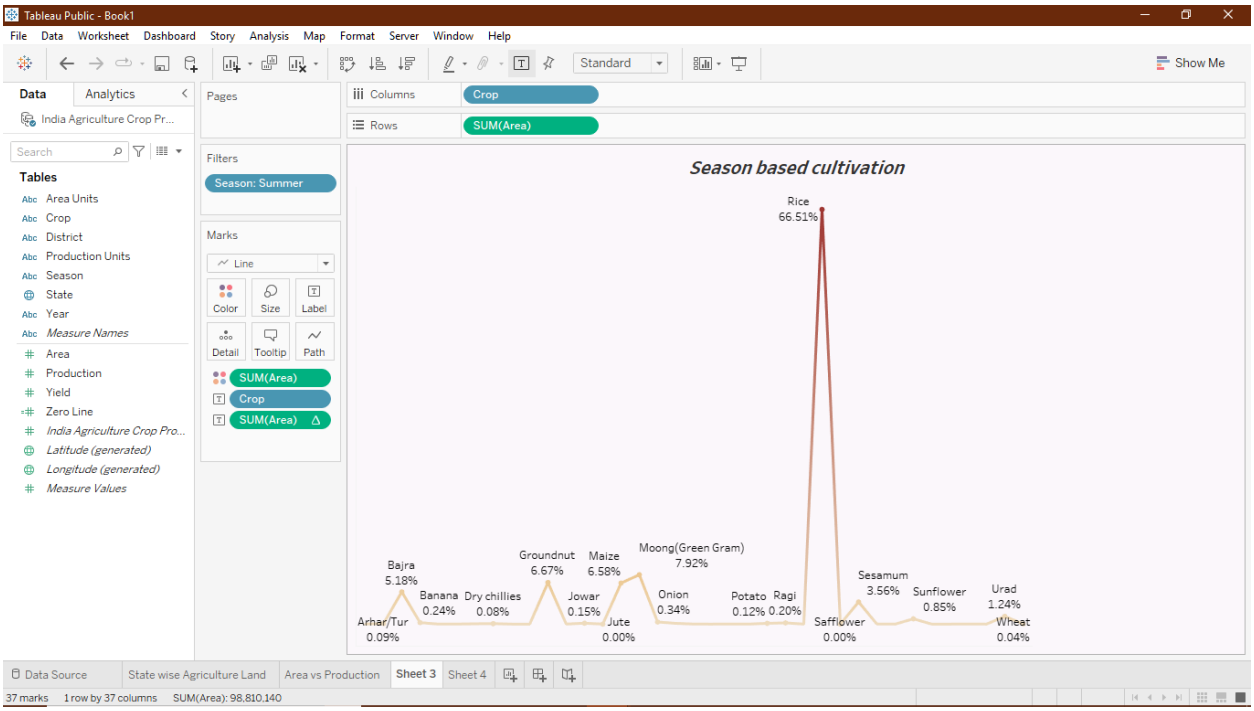
Activity 1.1: State wise Agricultural Land



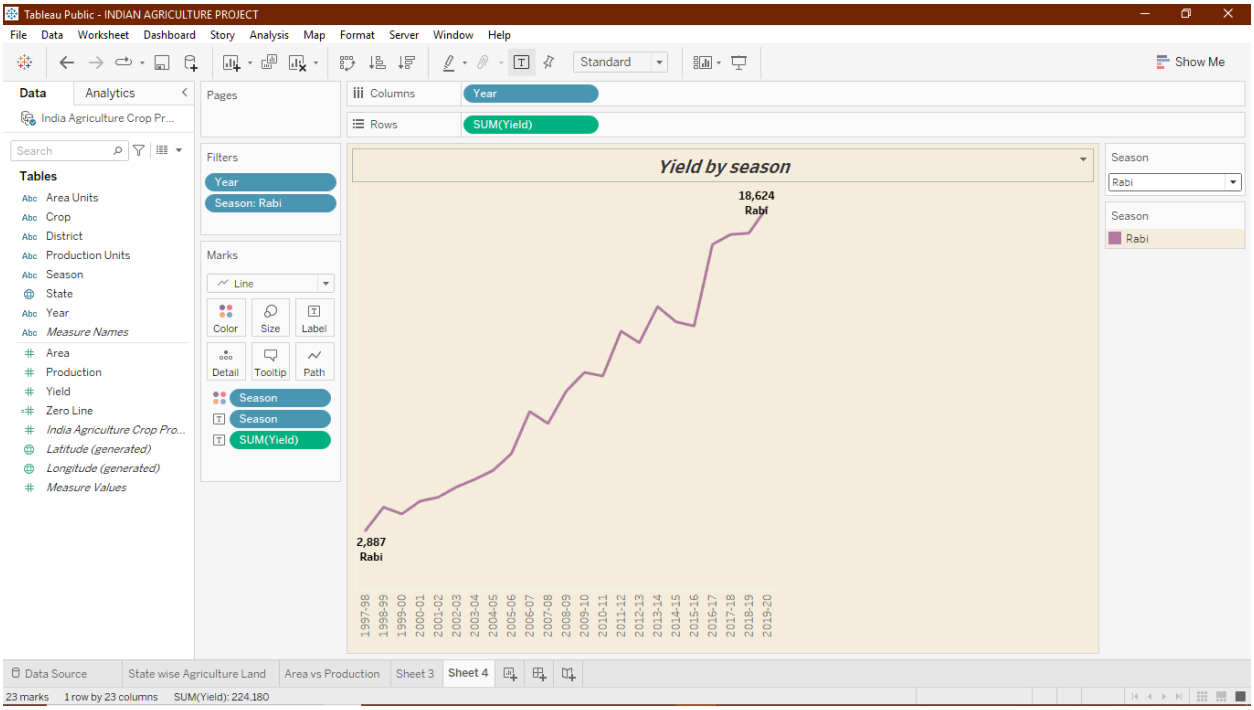
Activity 1.2: Area vs Production



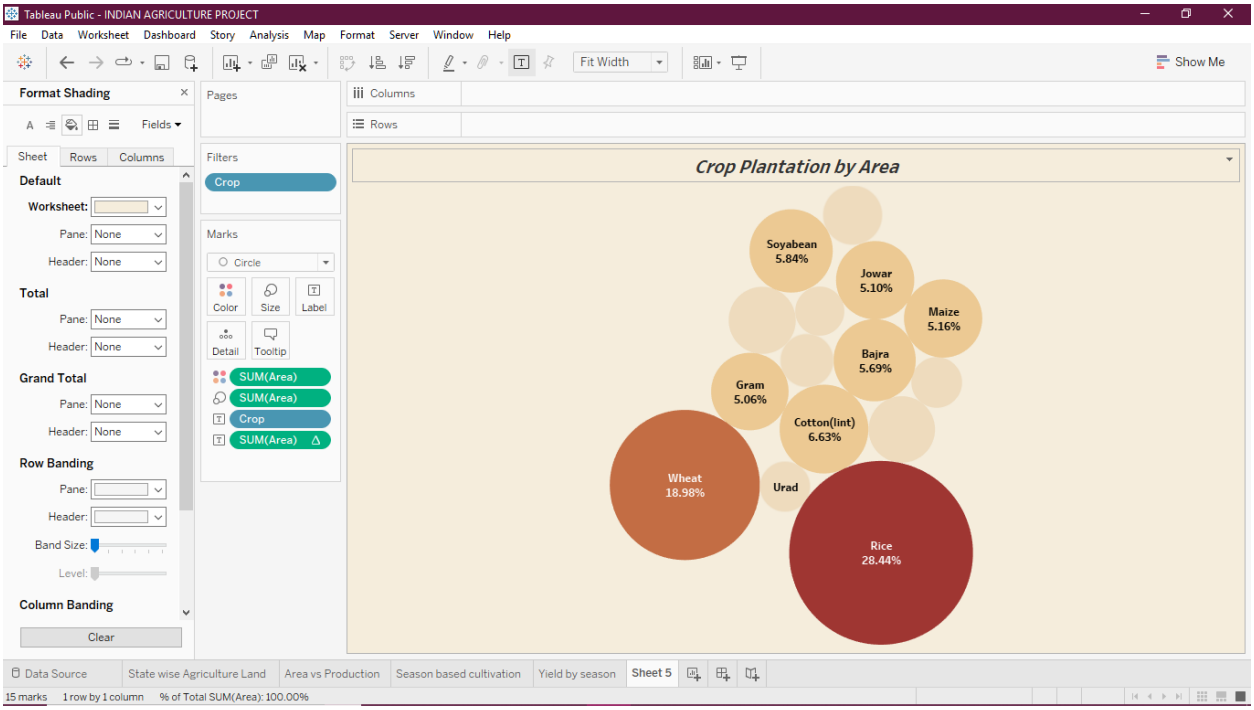
Activity 1.3: Season based cultivation



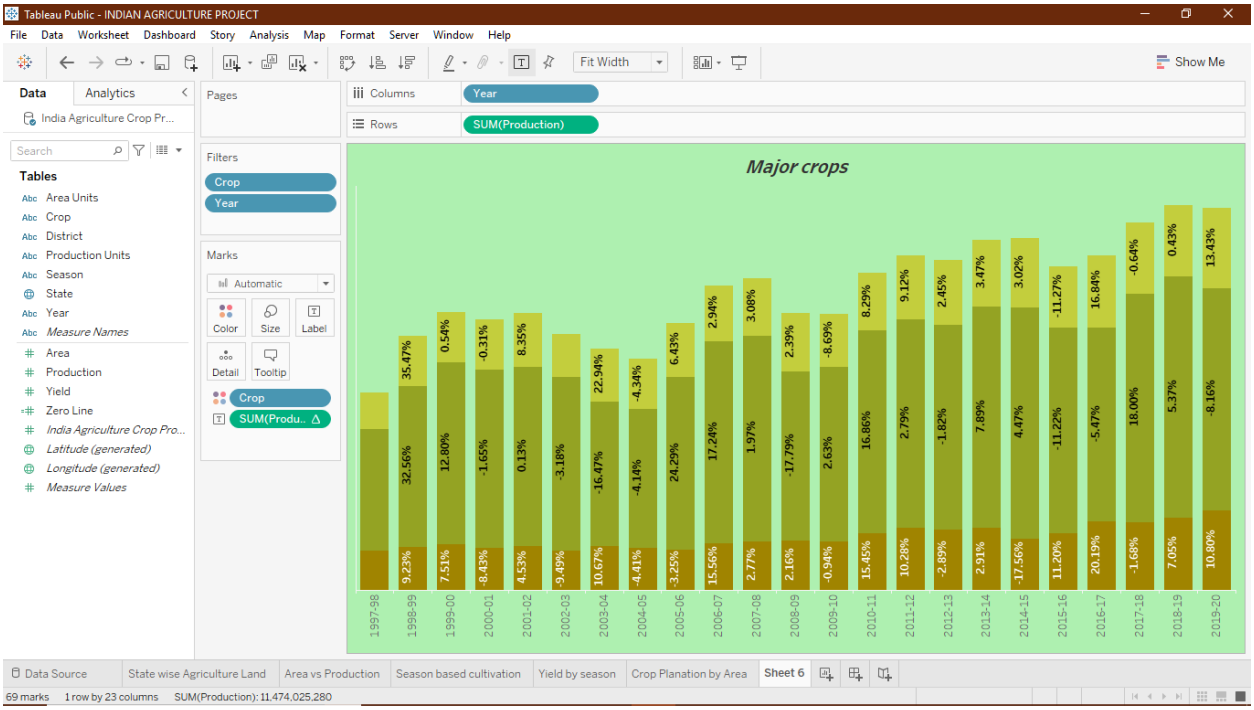
Activity 1.4: Yield by season



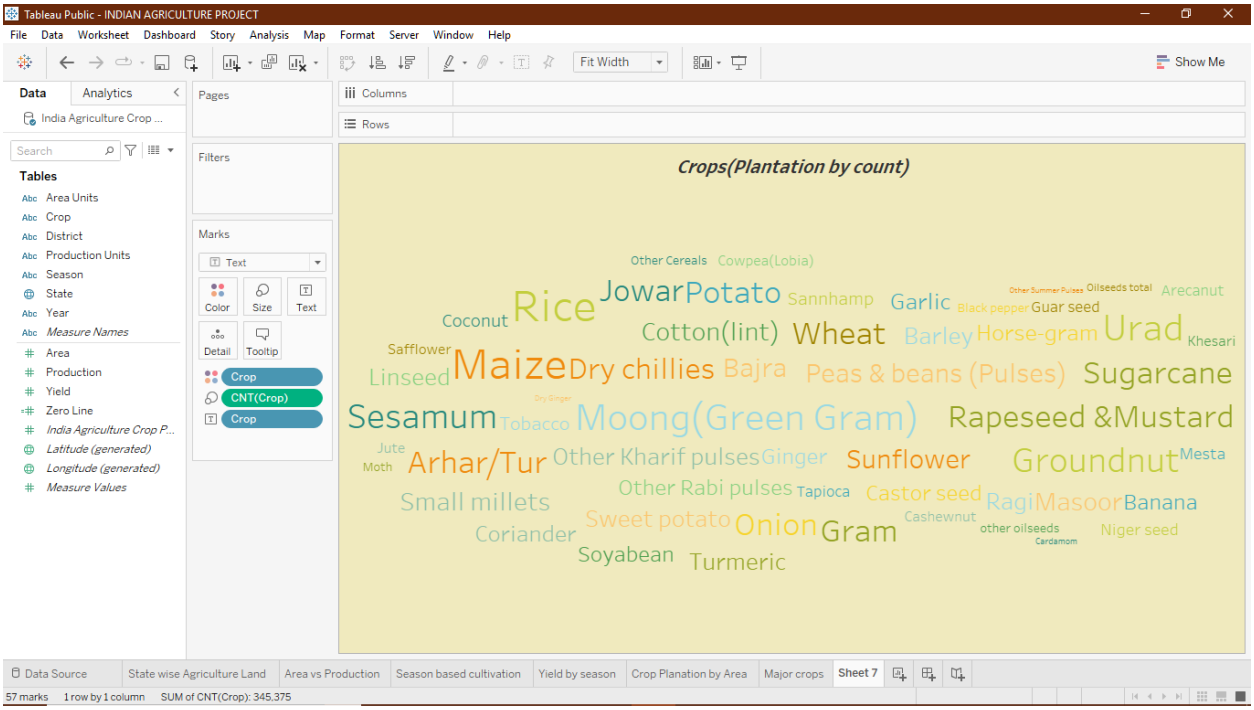
Activity 1.5: Crop plantation by area



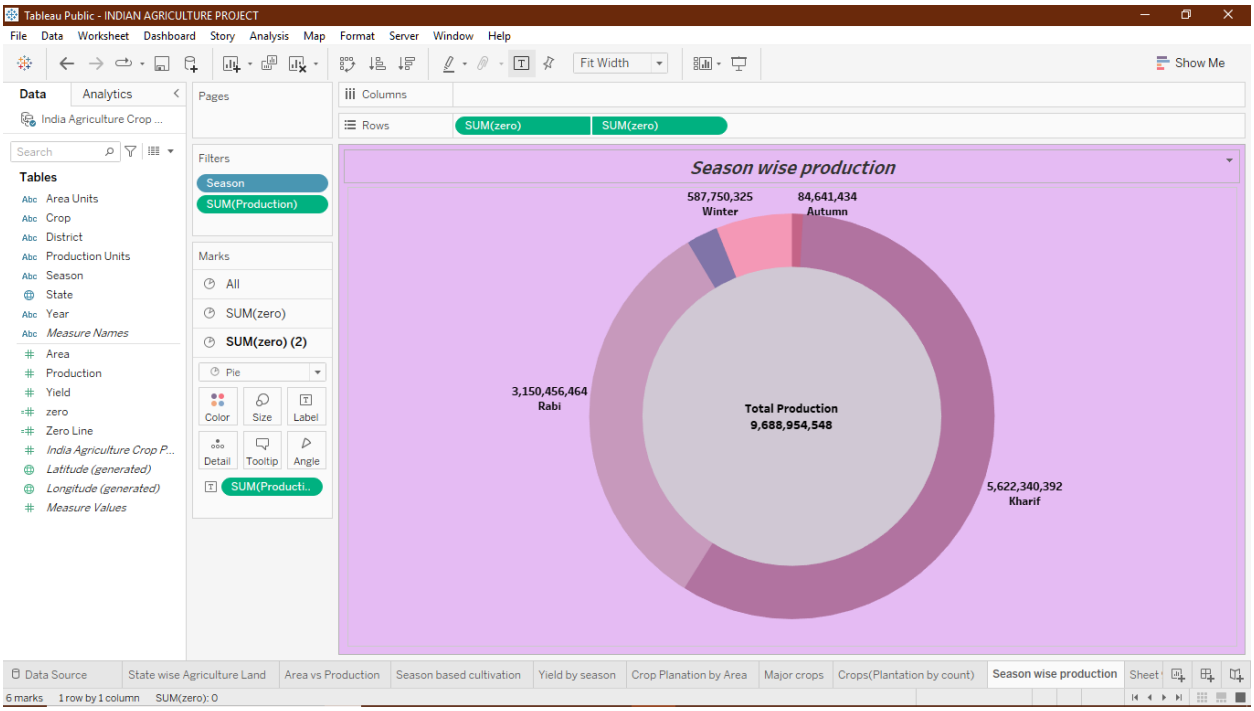
Activity 1.6: Major crops growth year on year.



Activity 1.7: Crops



Activity 1.8: Season wise production

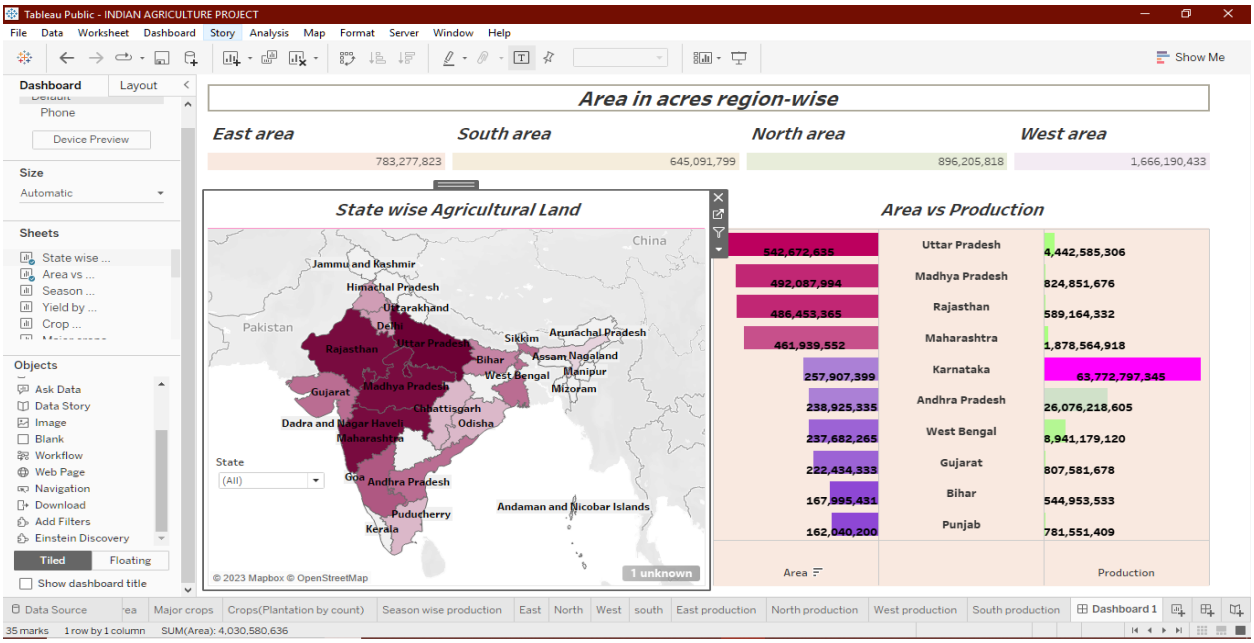


Dashboard:

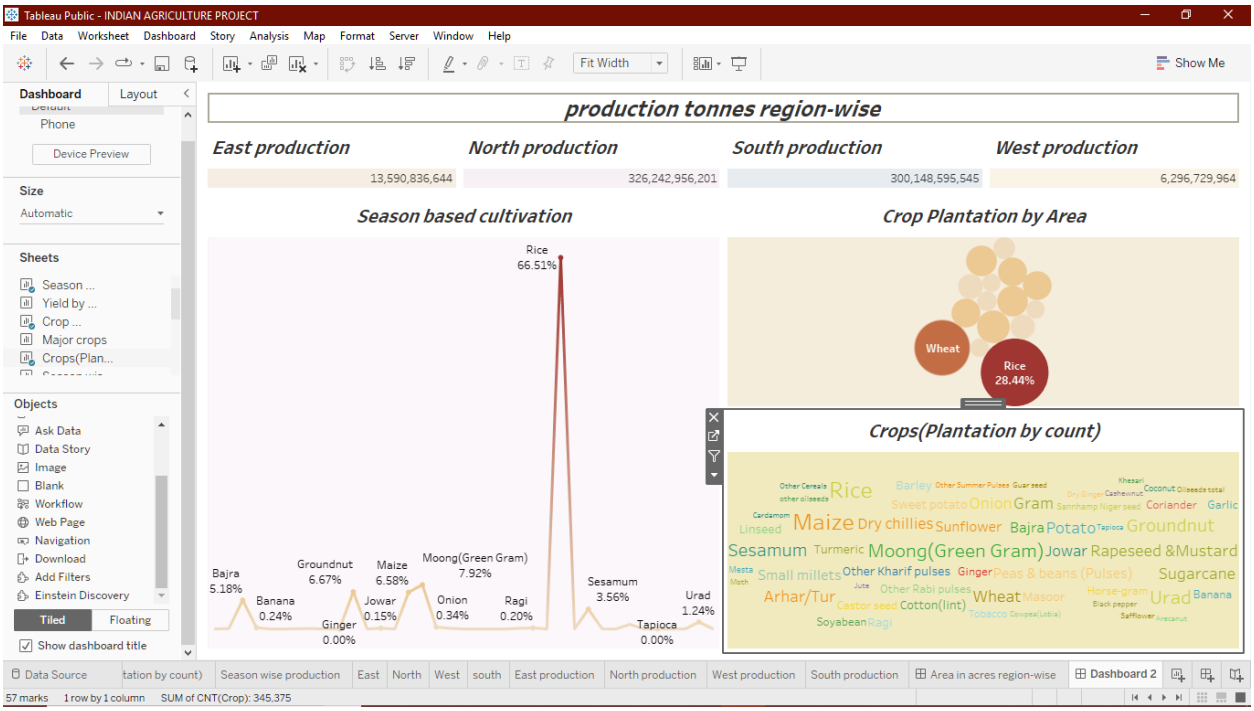
Activity 1: Responsive and Design of dashboard

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

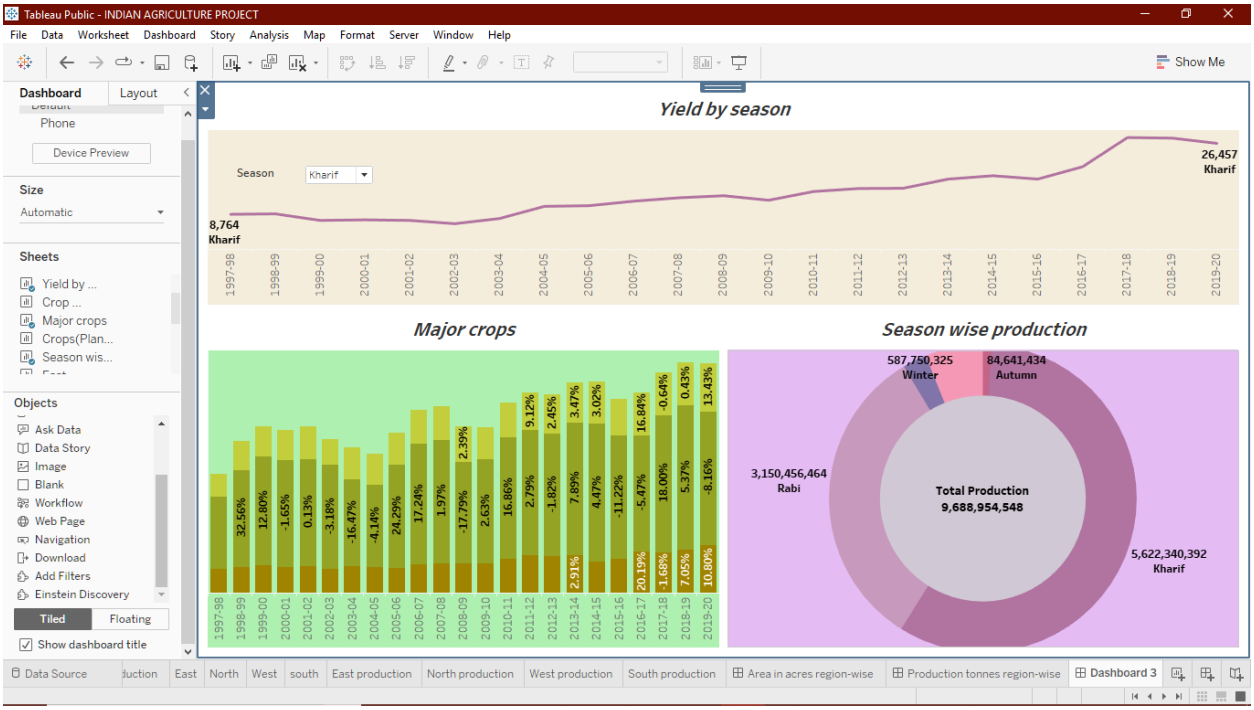
Activity 1.1: Dashboard 1



Activity 1.2: Dashboard 2



Activity 1.3: Dashboard 3

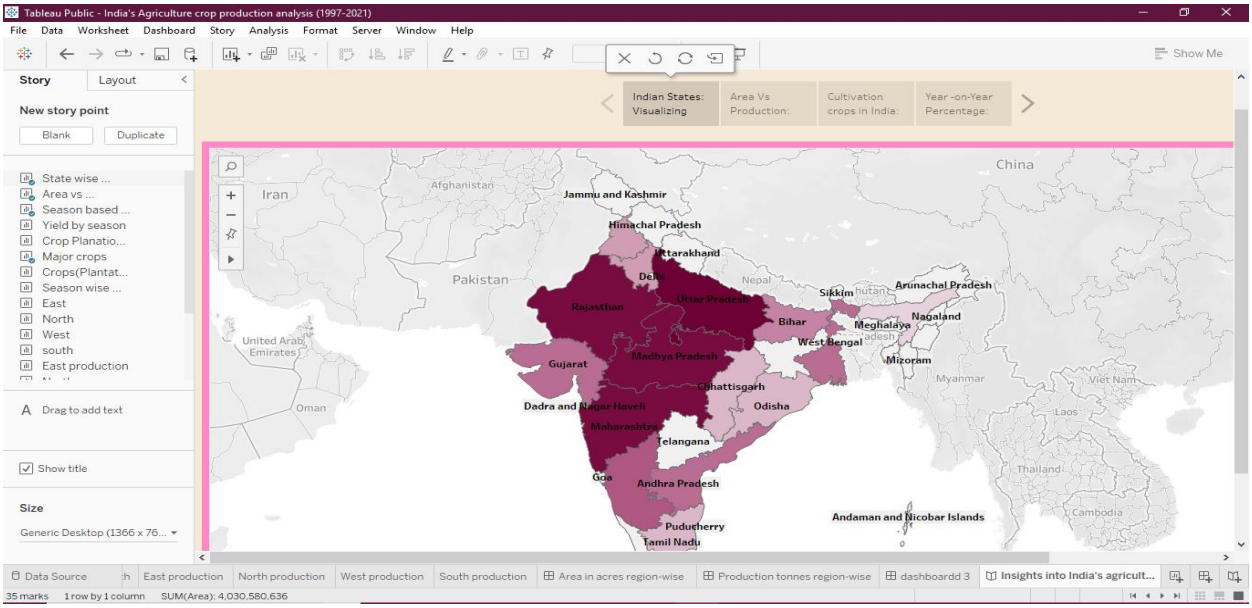


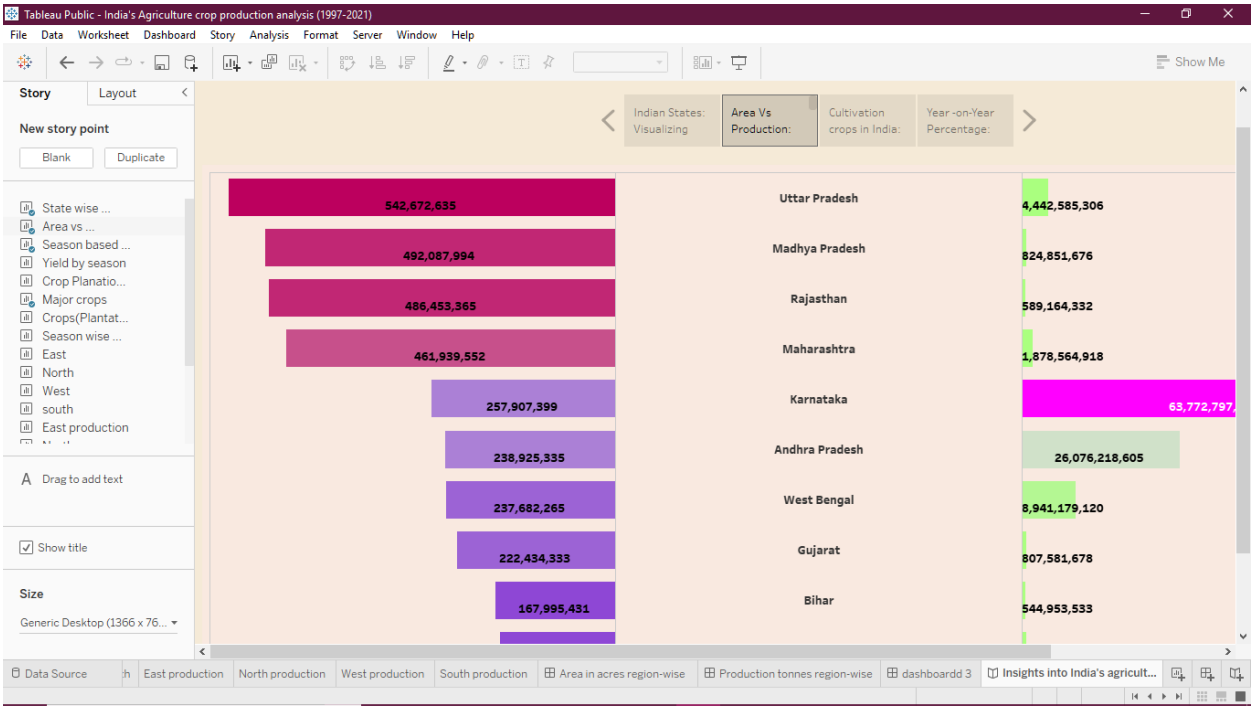
Story:

Activity 1: Number of scenes in a story

A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.

Activity 1.1: Story 1





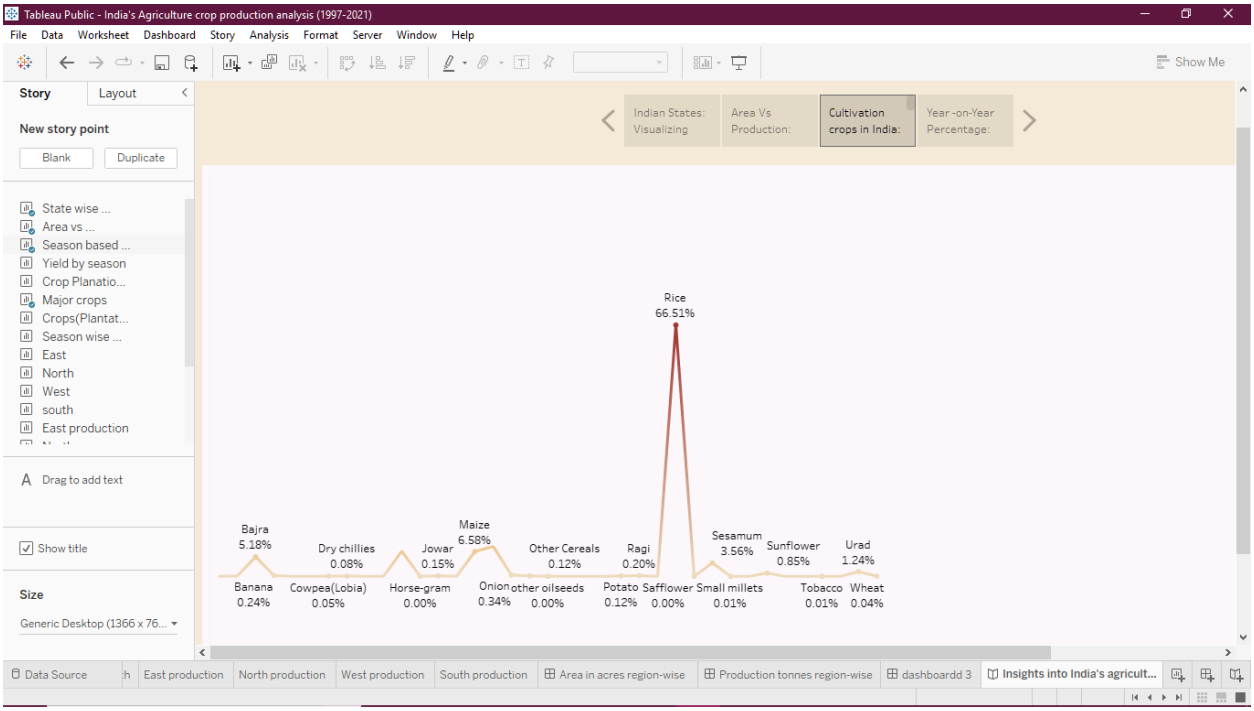


Tableau Public - India's Agriculture crop production analysis (1997-2021)
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story
Layout
New story point
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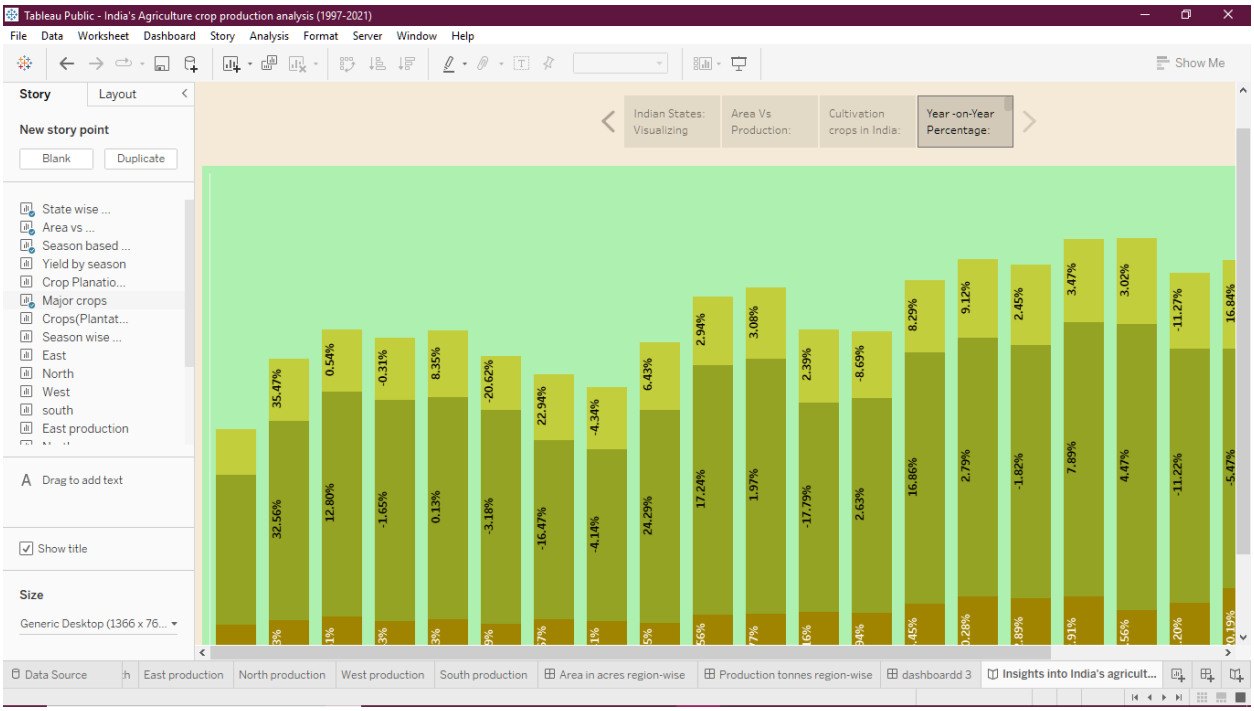
Duplicate
State wise ...
Area vs ...
Season based ...
Yield by season
Crop Planatio...
Major crops
Crops(Plantat...
Season wise ...
East
North
West
south
East production
Drag to add text
Show title
Size
Generic Desktop (1366 x 76...
Indian States: Visualizing
Area Vs Production:
Cultivation crops in India:
Year -on-Year Percentage:
Rice 66.51%
Bajra 5.18%
Dry chillies 0.08%
Jowar 0.15%
Maize 6.58%
Other Cereals 0.12%
Ragi 0.20%
Sesamum 3.56%
Sunflower 0.85%
Urad 1.24%
Banana 0.24%
Cowpea(Lobia) 0.05%
Horse-gram 0.00%
Onion 0.34%
other oilseeds 0.00%
Potato 0.12%
Safflower 0.00%
Small millets 0.01%
Tobacco 0.01%
Wheat 0.04%
Data Source
East production
North production
West production
South production
Area in acres region-wise
Production tonnes region-wise
dashboardd 3
Insights into India's agricult...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Indian States: Visualizing
Area Vs Production:
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East production
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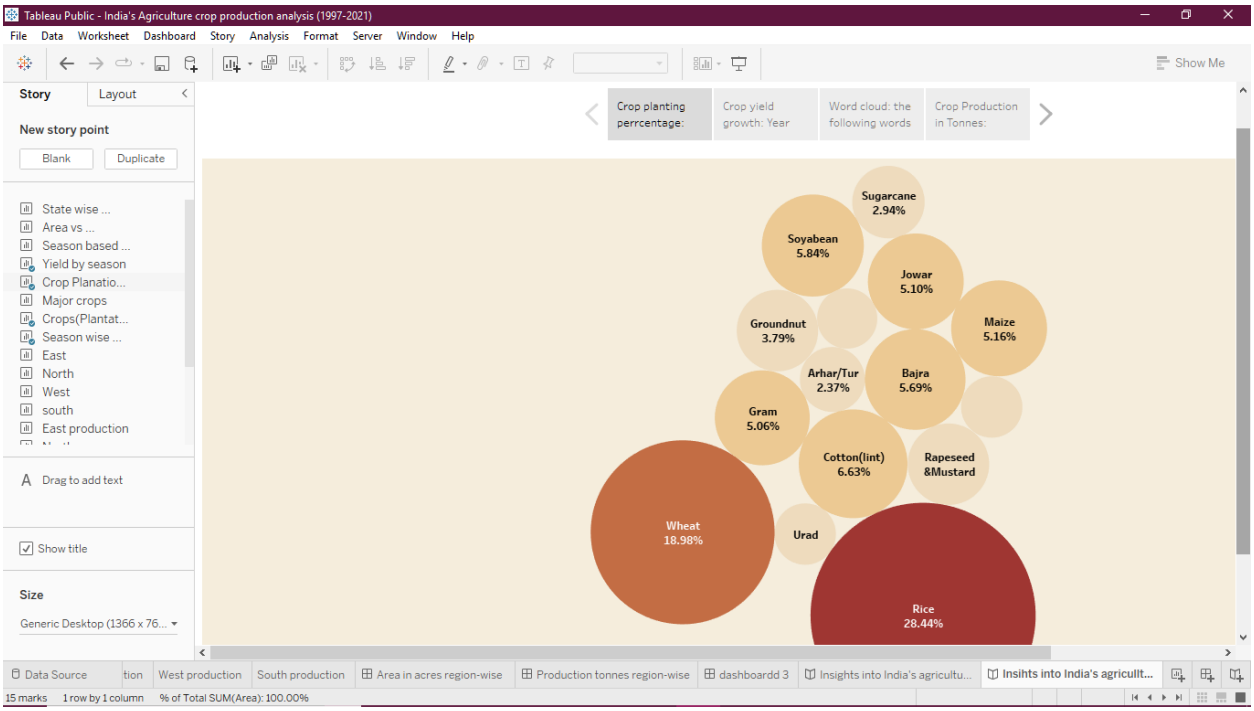
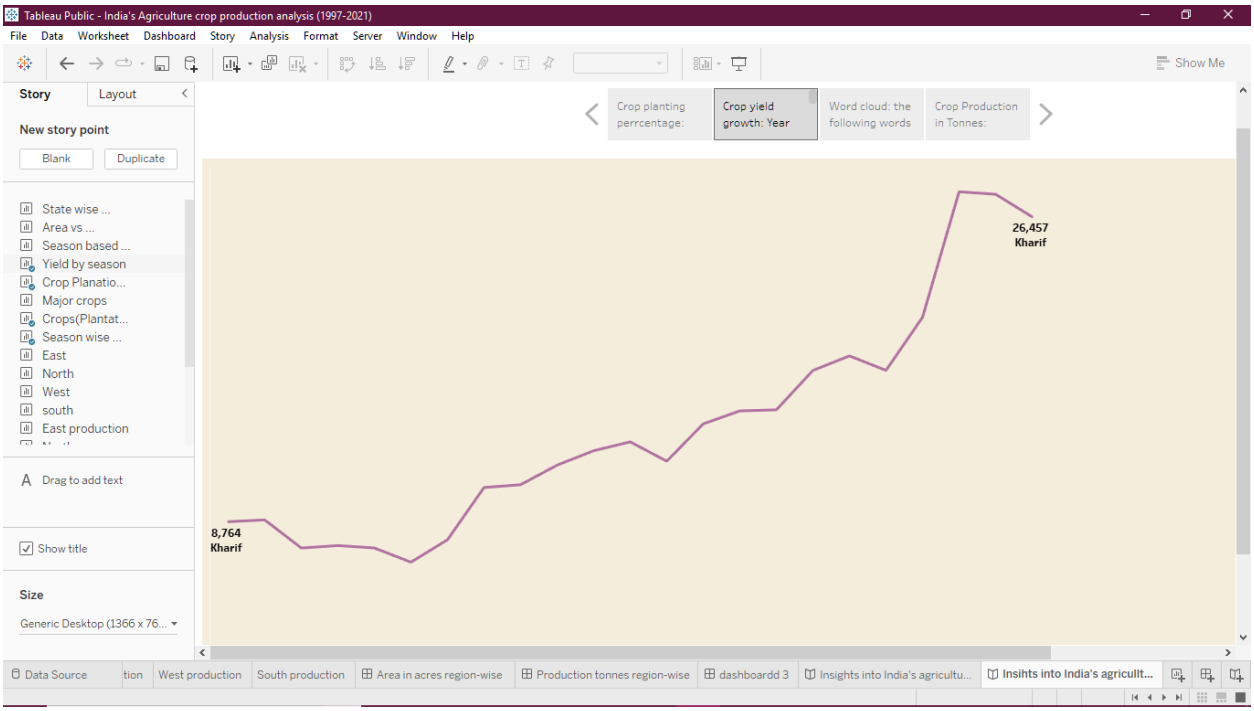
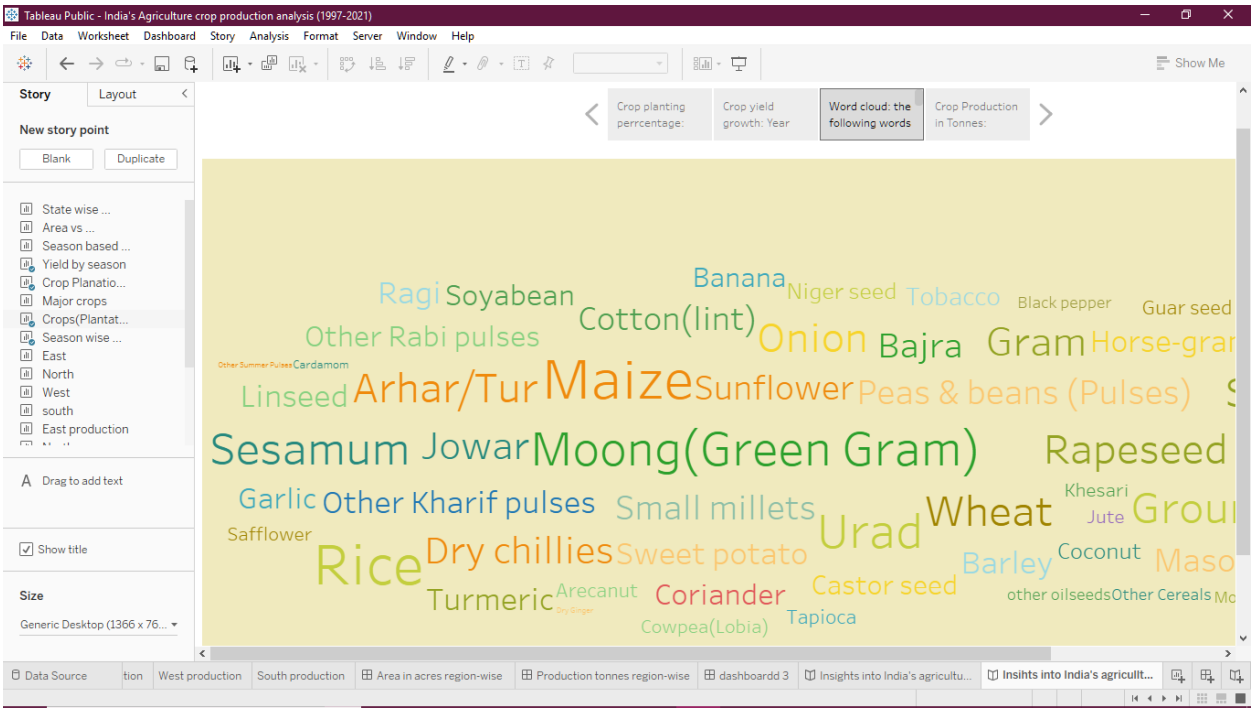
South production
Area in acres region-wise
Production tonnes region-wise
dashboardd 3
Insights into India's agricult...

Activity 1.2: Story 2



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File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story Layout
New story point
Blank Duplicate
State wise ...
Area vs ...
Season based ...
Yield by season
Crop Planatio...
Major crops
Crops(Plantat...
Season wise ...
East
North
West
south
East production
Drag to add text
Show title
Size
Generic Desktop (1366 x 76...
Crop planting perrcentage:
Crop yield growth: Year
Word cloud: the following words
Crop Production in Tonnes:
Ragi
Soyabean
Banana
Niger seed
Tobacco
Black pepper
Guar seed
Cotton(lint)
Other Rabi pulses
Onion
Bajra
Gram
Horse-grar
Other Summer Pulses
Cardamom
Linseed
Arhar/Tur
Maize
Sunflower
Peas & beans (Pulses)
Sesamum
Jowar
Moong(Green Gram)
Rapeseed
Garlic
Other Kharif pulses
Small millets
Khesari
Jute
Urad
Wheat
Safflower
Rice
Dry chillies
Sweet potato
Barley
Coconut
Turmeric
Arecanut
Dry Ginger
Coriander
Castor seed
other oilseeds
Other Cereals
Cowpea(Lobia)
Tapioca
Data Source
West production
South production
Area in acres region-wise
Production tonnes region-wise
dashboardd 3
Insights into India's agricultu...
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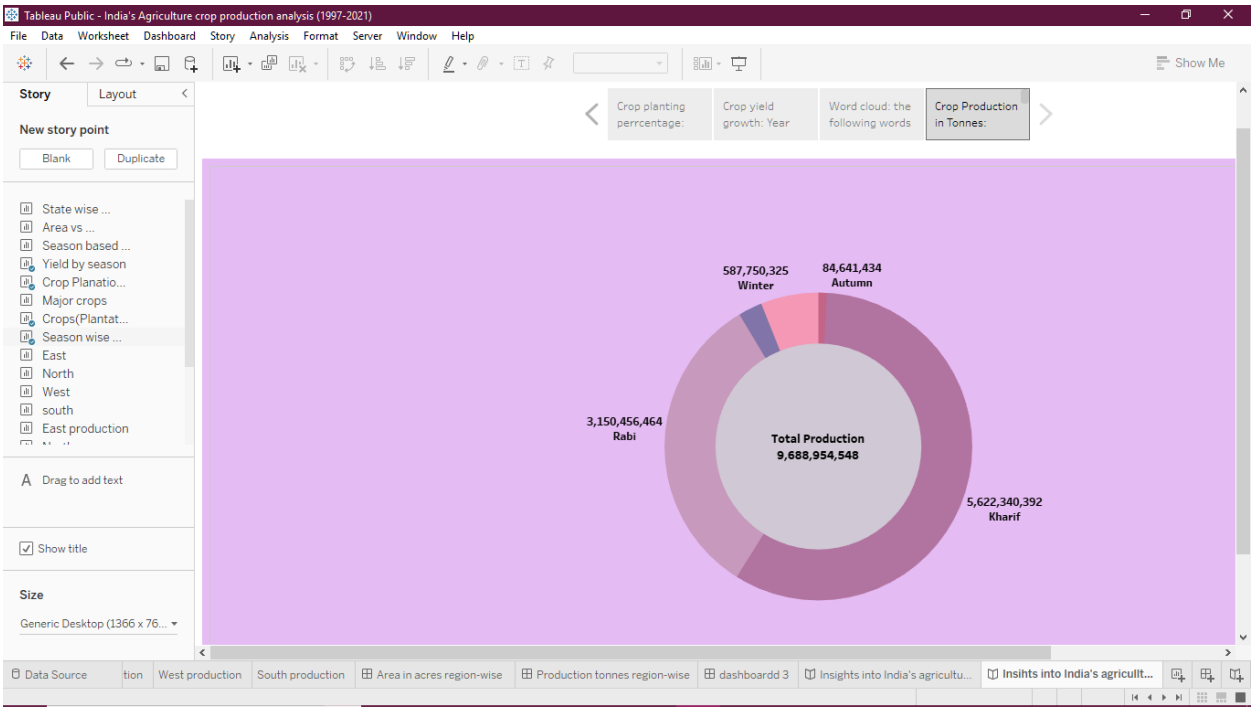
Tableau Public - India's Agriculture crop production analysis (1997-2021)
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story Layout
New story point
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State wise ...
Area vs ...
Season based ...
Yield by season
Crop Planatio...
Major crops
Crops(Plantat...
Season wise ...
East
North
West
south
East production
Drag to add text
Show title
Size
Generic Desktop (1366 x 76...
Crop planting perrcentage:
Crop yield growth: Year
Word cloud: the following words
Crop Production in Tonnes:
587,750,325
Winter
84,641,434
Autumn
3,150,456,464
Rabi
Total Production
9,688,954,548
5,622,340,392
Kharif
Data Source
West production
South production
Area in acres region-wise
Production tonnes region-wise
dashboardd 3
Insights into India's agricultu...
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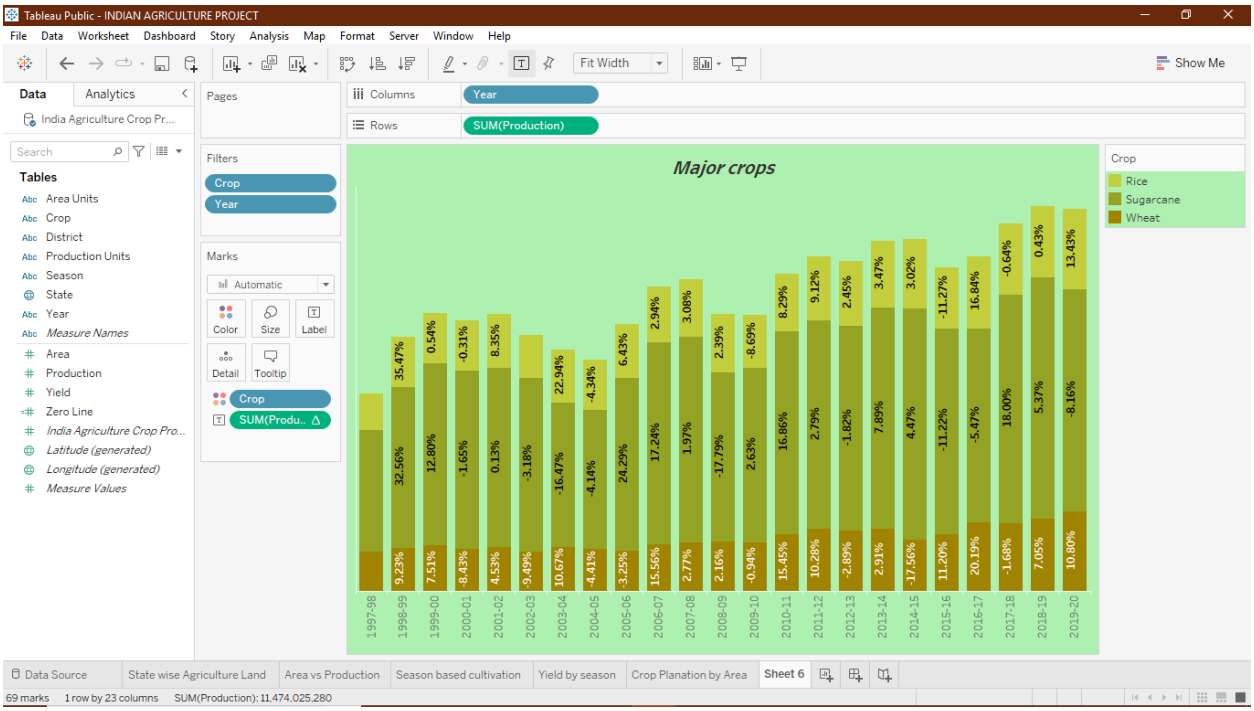
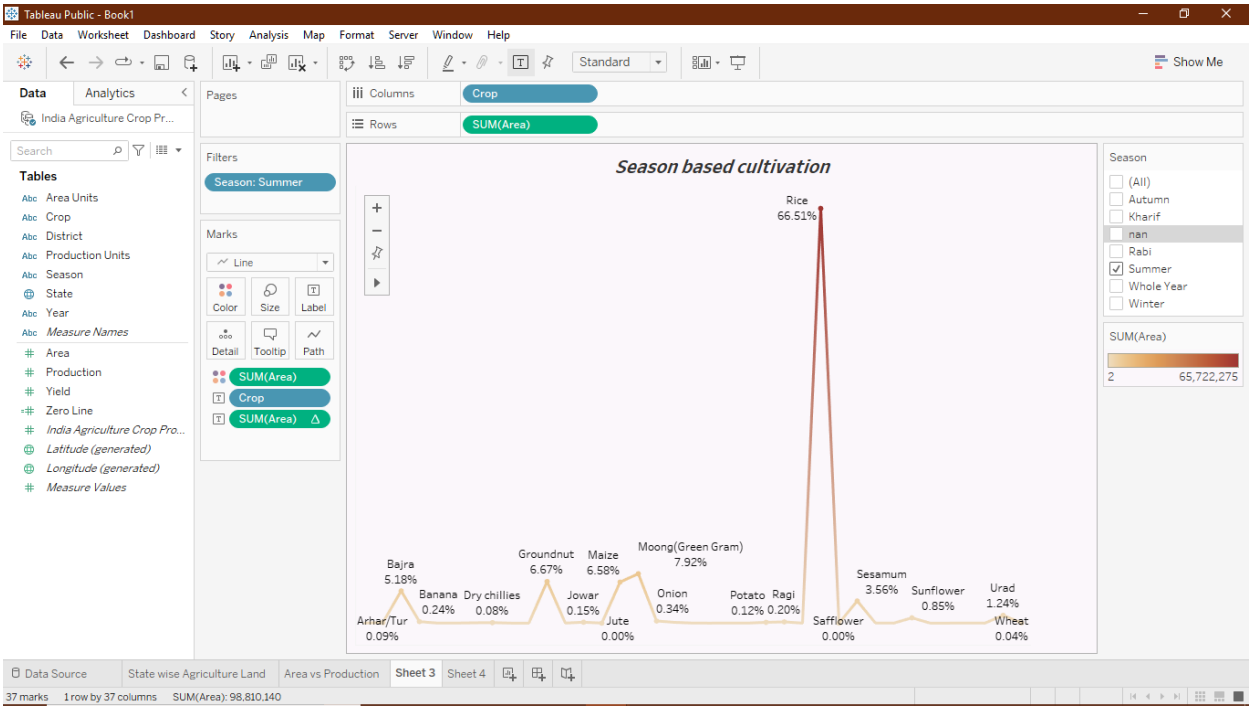
Performance Testing:

Activity 1: Utilization of Filters





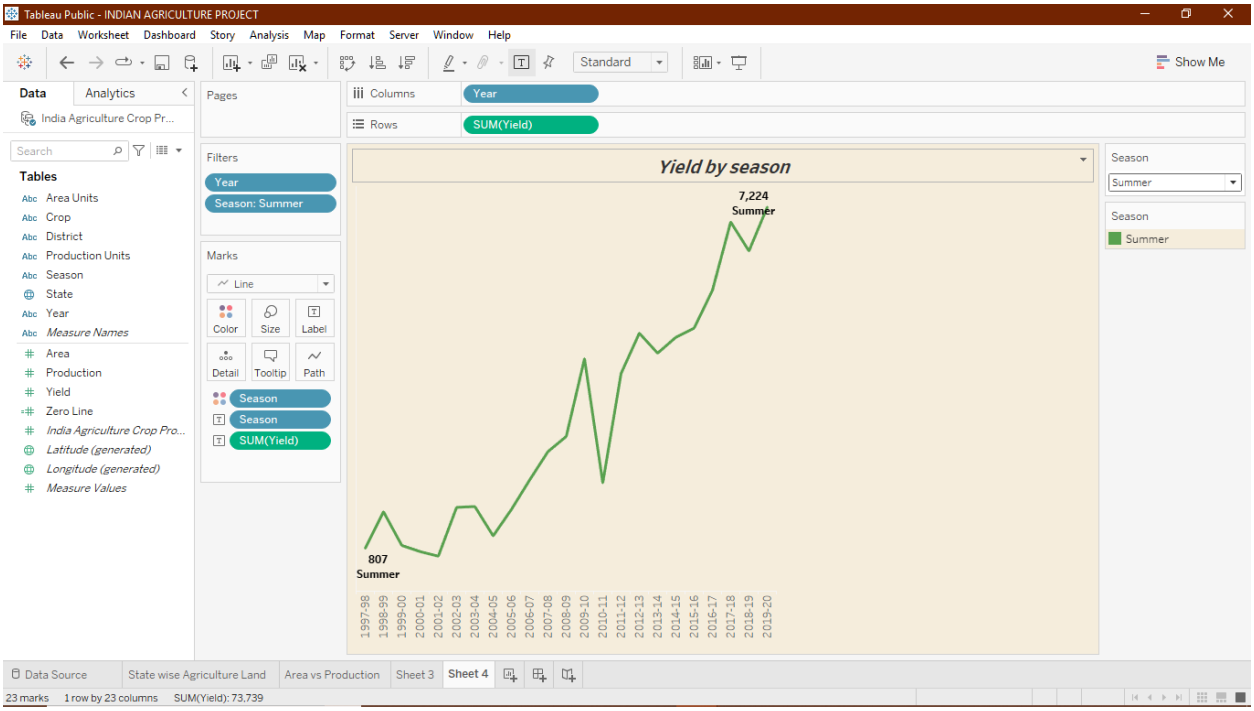


Tableau Public - INDIAN AGRICULTURE PROJECT
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Standard
Show Me
Data
Analytics
India Agriculture Crop Pr...
Search
Tables
Area Units
Crop
District
Production Units
Season
State
Year
Measure Names
Area
Production
Yield
Zero Line
India Agriculture Crop Pro...
Latitude (generated)
Longitude (generated)
Measure Values
Pages
Filters
Year
Season: Summer
Marks
Line
Color
Size
Label
Detail
Tooltip
Path
Season
Season
SUM(Yield)
Columns
Year
Rows
SUM(Yield)
Yield by season
7,224
Summer
807
Summer
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
Season
Summer
Season
Summer
Data Source
State wise Agriculture Land
Area vs Production
Sheet 3
Sheet 4
23 marks
1 row by 23 columns
SUM(Yield): 73,739

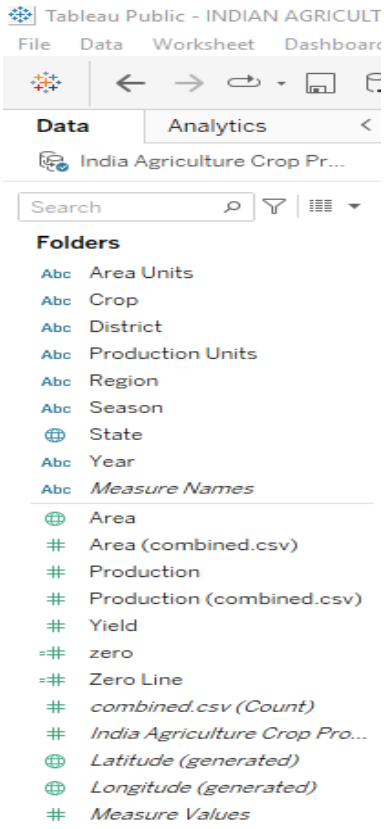
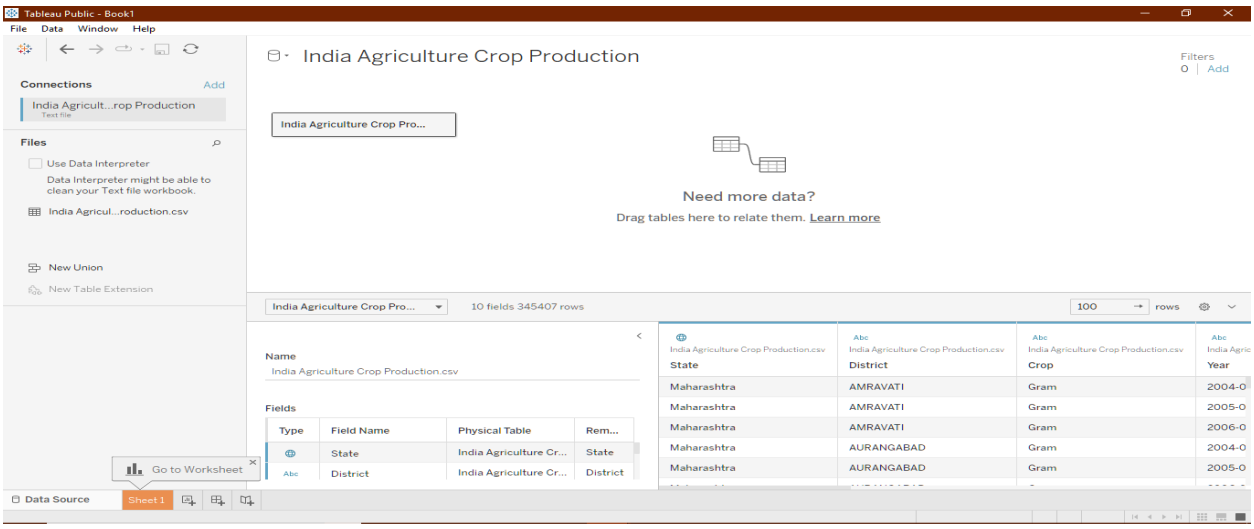


Tableau Public - INDIAN AGRICULT
File Data Worksheet Dashboarc
Data
Analytics
India Agriculture Crop Pr...
Search
Folders
Area Units
Crop
District
Production Units
Region
Season
State
Year
Measure Names
Area
Area (combined.csv)
Production
Production (combined.csv)
Yield
zero
Zero Line
combined.csv (Count)
India Agriculture Crop Pro...
Latitude (generated)
Longitude (generated)
Measure Values

Publishing:

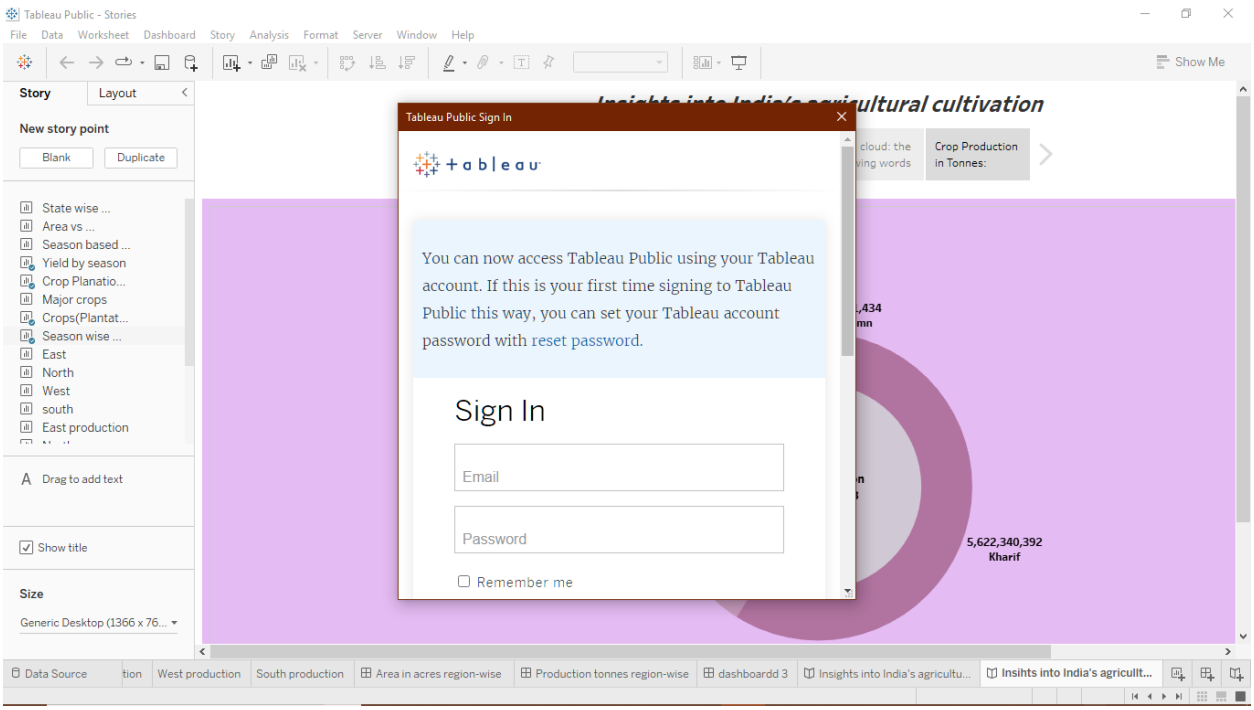
Publishing dashboard and reports to tableau public

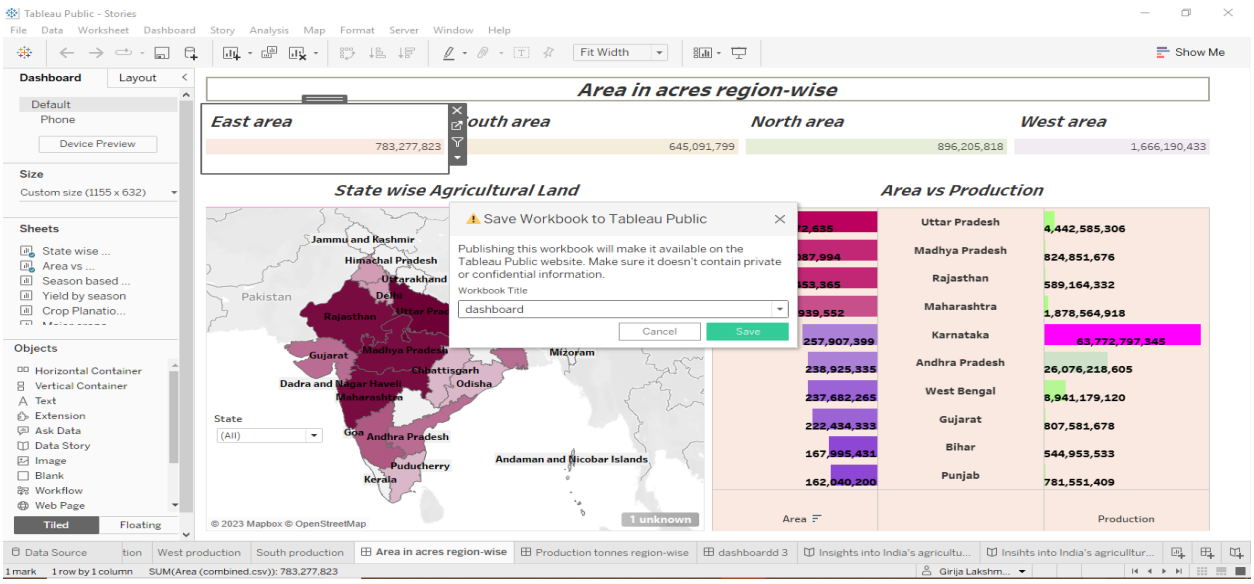
Step 1 Go to data Source and Select Extract so that hyper extension files are created and save it at your desktop.



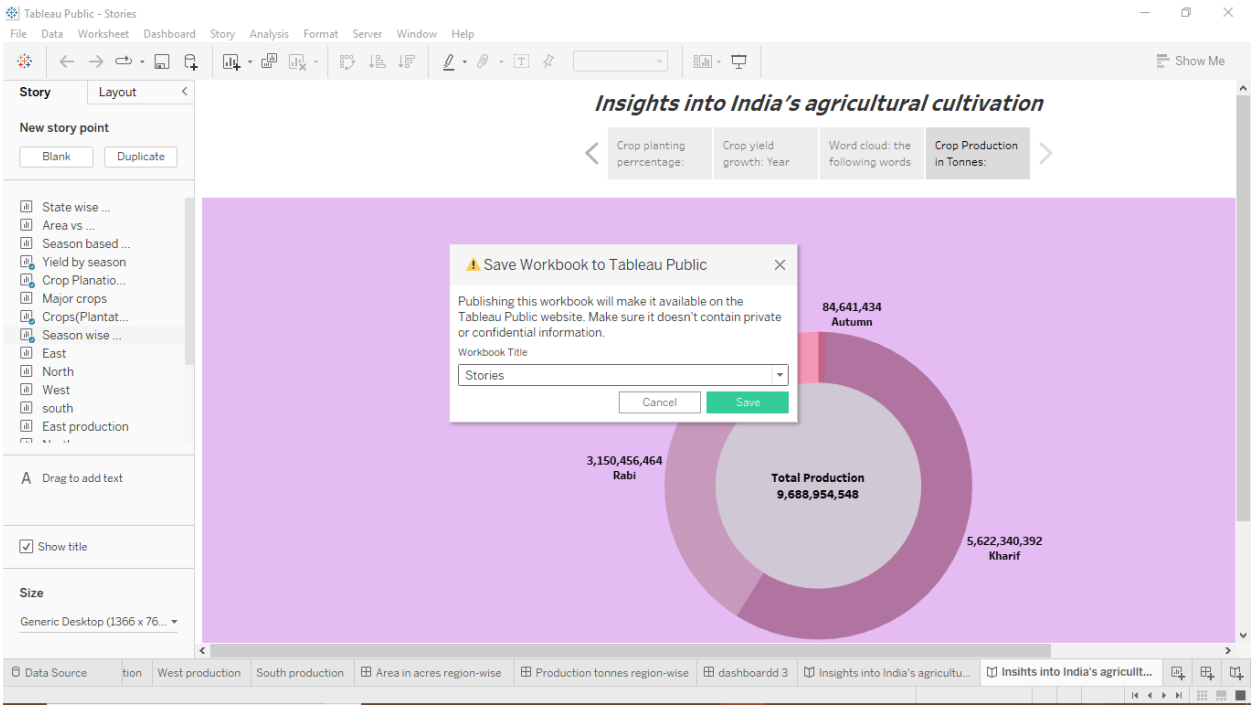
Step 2: Go to Dashboard/story, click on share button on the top ribbon

Give the server address of your tableau public account and click on connect.

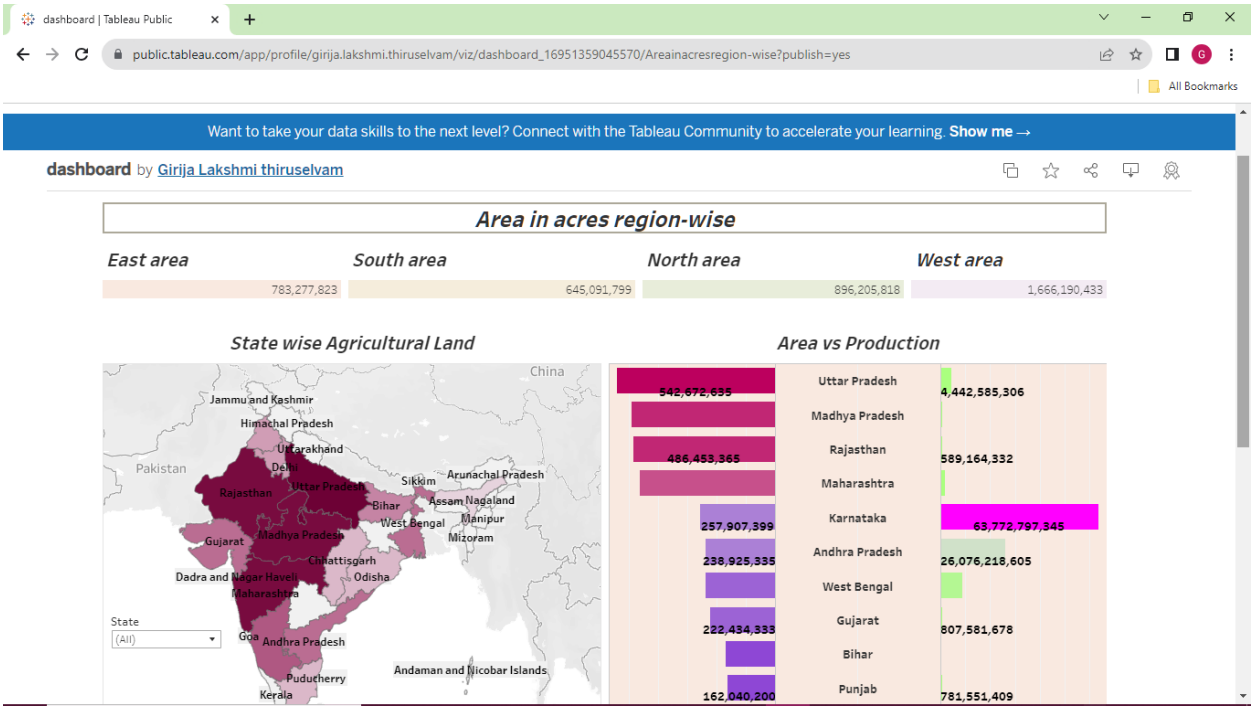


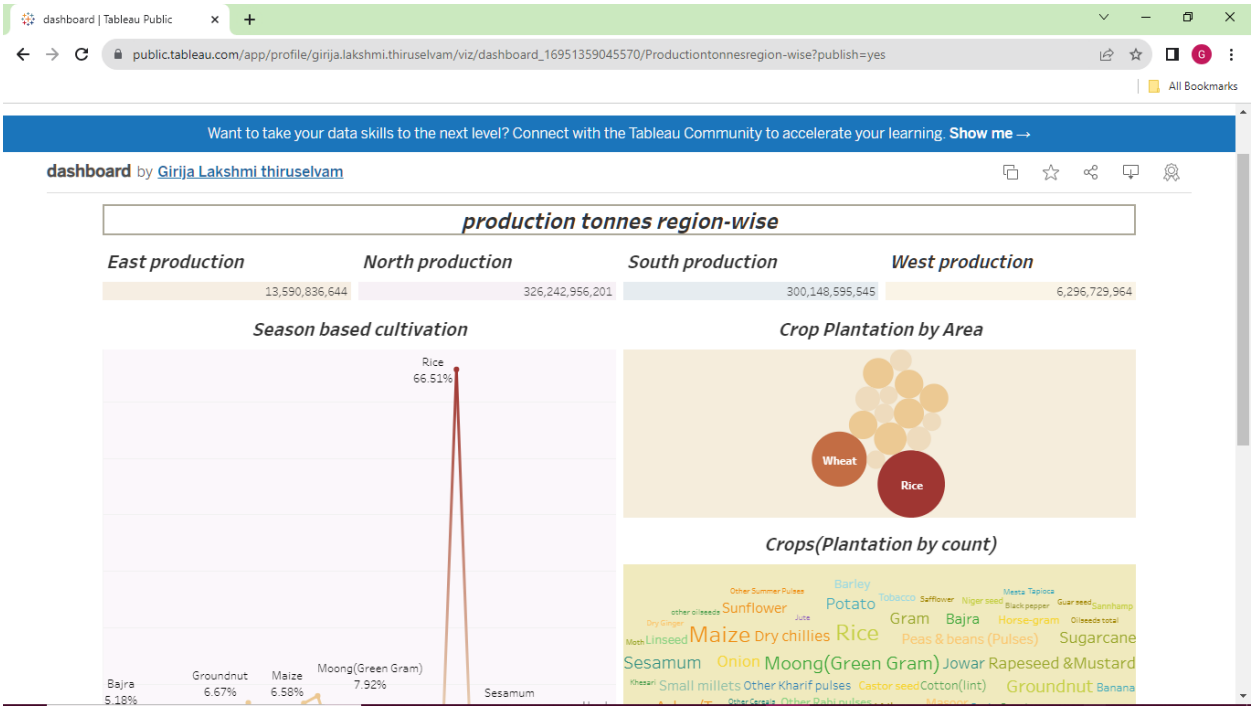


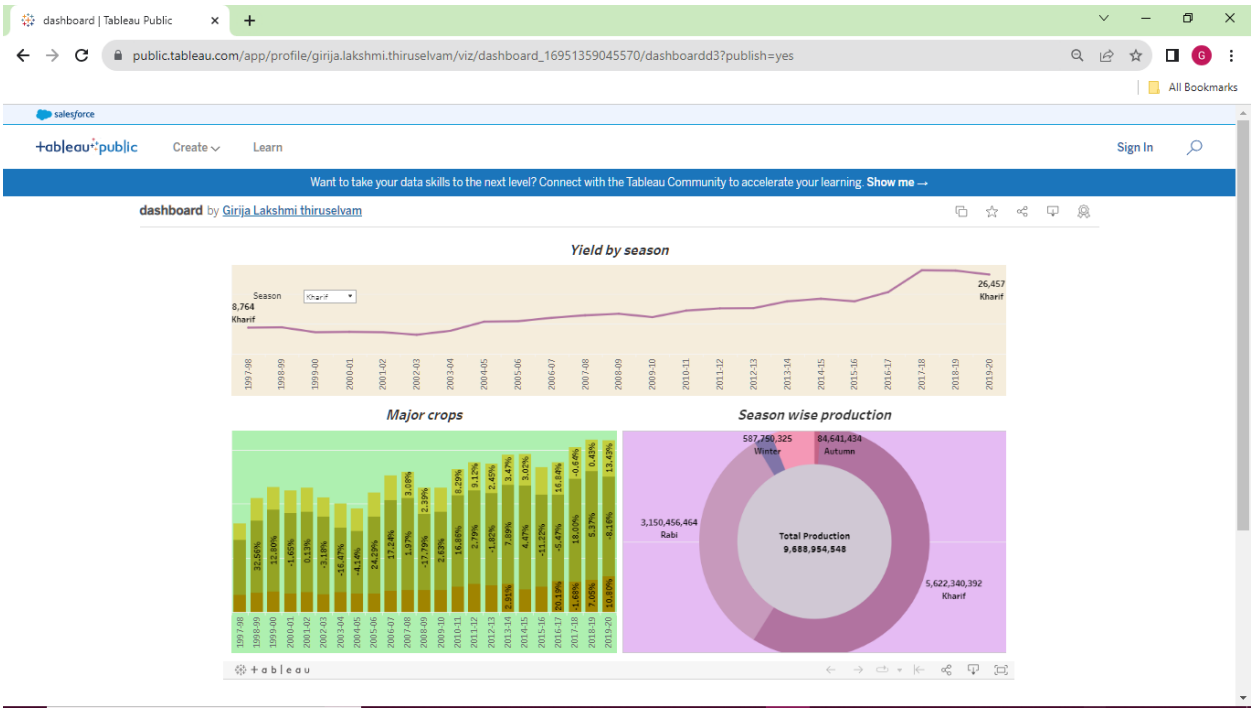
Publishing story and reports to tableau public



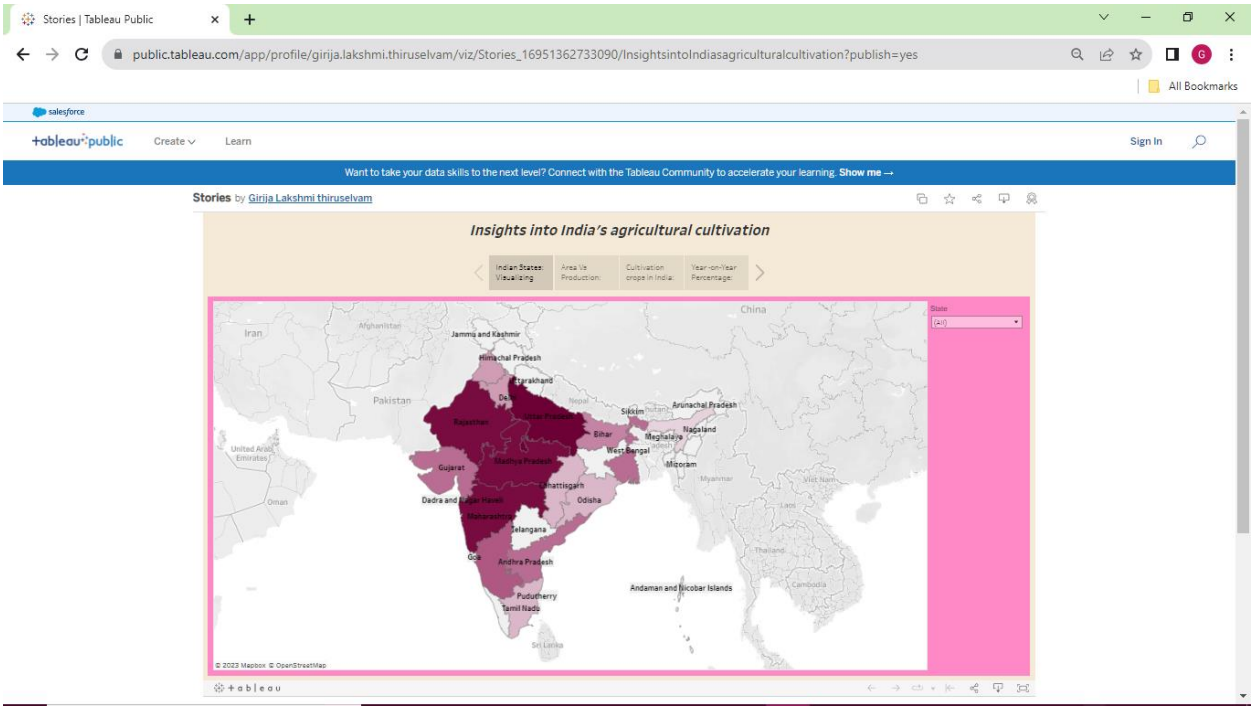
Activity 1: Publishing dashboard and reports to tableau public

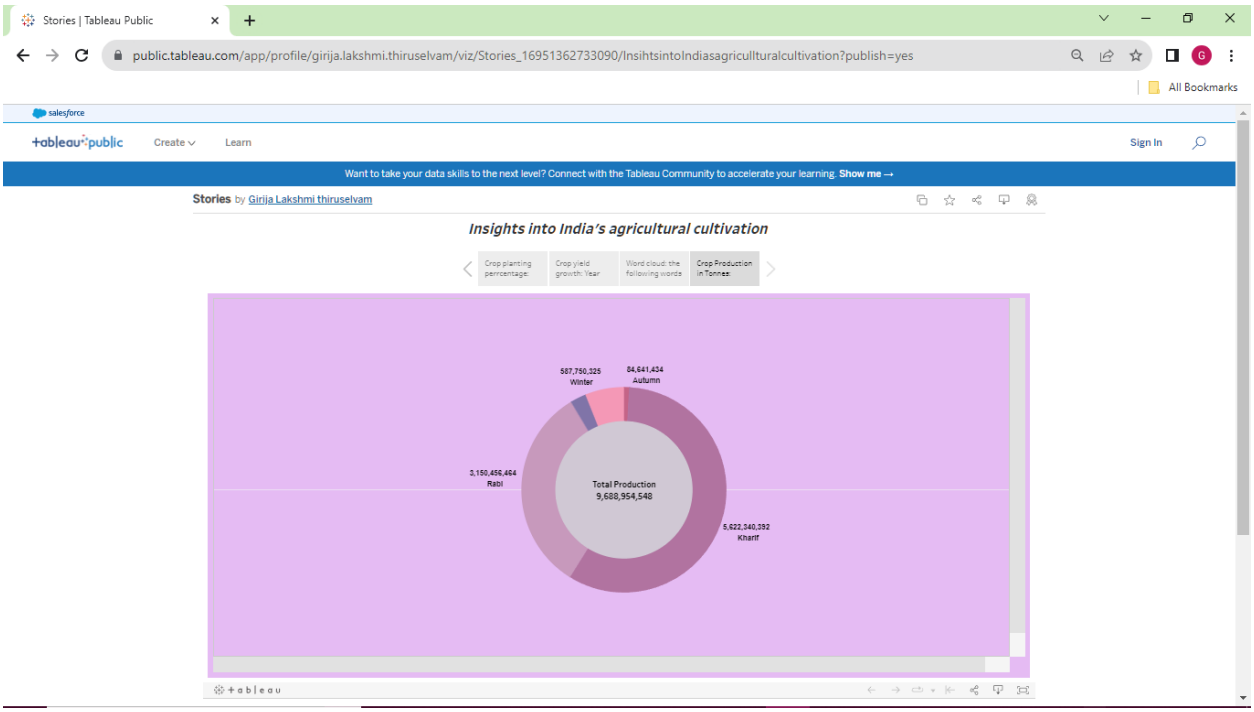






Activity 2: Publishing story and reports to tableau public





Demonstration video link:

https://photos.app.goo.gl/1SV9yq8q95FyZN4m8

ADVANTAGES & DISADVANTAGES

Advantages:

- Increased Efficiency modern farming methods are more efficient than traditional methods, with advanced machinery and equipment, allowing farmers to produce larger quantities of crops in less time and with less labor.
- Improved Crop Quality the use of advanced techniques such as precision farming and genetic engineering has led to the development of higher quality crops that are more resistant to pests and disease.
- Reduced Environmental Impact agriculture techniques are designed to be more sustainable, with a focus on reducing waste, conserving resources, and minimizing the use of harmful chemicals.

- Increased Food Production agriculture has enabled farmers to produce larger quantities of food, helping to address food shortages and hunger in many parts of the world.
- Economic Benefits modern agriculture has had a positive impact on the economy, by creating jobs and generating revenue for farmers, agribusinesses, and related industries.

DISADVANTAGES

- Soil Degradation the intensive use of modern farming practices, such as heavy use of chemical fertilizers and pesticides, can lead to soil degradation over time, reducing soil fertility and leading to erosion.
- Biodiversity Loss modern agriculture can have a negative impact on biodiversity, with the use of monoculture and genetically modified crops leading to a loss of natural diversity in plant and animal species.
- Water Pollution the excessive use of chemical fertilizers and pesticides in modern agriculture can lead to runoff and contamination of nearby water sources, potentially harming aquatic ecosystems and human health.
- Health Risks the use of chemicals in modern agriculture can pose health risks to farmers and farm workers who are exposed to these chemicals on a regular basis.
- Food Safety Concerns the use of genetically modified crops and hormones in modern agriculture has raised concerns about the safety of the food supply, with some studies suggesting potential long-term health effect.

CONCLUSION

In this project, we analysis crop production India states year on year. We improve our crop production, we use organic fertilizers and improve soil managements, irrigation system. We use the hybrid seeds to crop. We investing in agricultural technology. Government provides to farmer to new policy schemes.

Application

- It provides employment opportunity to the rural agricultural as well as non-agricultural labors
- It is source of food and fodder
- It is play an important role in international business import and export activities
- Dependent upon the monsoon

FUTURE SCOPE

- Future agriculture will use sophisticated technologies such as robots, temperature and moisture sensors, aerial images, and GPS technology.
- These advanced devices and precision agriculture and robotic systems will allow farms to be more profitable, efficient, safe, and environmentally friendly.