



**GOVERNMENT ARTS COLLEGE (AUTONOMOUS), COIMBATORE – 18.**

**DEPARTMENT OF PHYSICS**

**A PROJECT REPORT ON**

**INDIA'S AGRICULTURE CROP PRODUCTION ANALYSIS (1997-2021)**

**BASED ON THE COURSE**

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

**SUBMITTED BY**

<b>AJAY T</b>	<b>bru001221bph014</b>
<b>ARUN V</b>	<b>bru001221bph016</b>
<b>ARUNACHALAM E</b>	<b>bru001221bph017</b>
<b>DELHIBABU V</b>	<b>bru001221bph018</b>
<b>TITUS M</b>	<b>asbru001220bph028</b>

**TEAM ID – NM2023TMID24840**

**UNDER THE GUIDANCE OF**

**Dr.G.KANCHANA M.Sc., Ph.D.**

**ASSOCIATE PROFESSOR**

**DEPARTMENT OF PHYSICS**

**SUBMITTED TO**

**NAAN MUDHALVAN – SMART INTERNZ  
DATA ANALYTICS UPSKILL PROGRAMING**



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

**NAAN MUDHALVAN ID:**

<b>AJAY T</b>	<b>D8DD3B91074C72A9FBC4B20FEF06F2B7</b>
<b>ARUN V</b>	<b>EAE6707A55727E1AA41479BF7B9EA468</b>
<b>ARUNACHALAM E</b>	<b>FAC7E1A91BAA726AD7044DBC3A2C828D</b>
<b>DELHIBABU V</b>	<b>D1960754F1F4196822749FC67AD43328</b>

## ACKNOWLEDGEMENT

We express our sincere and profound gratitude to our Principal **Dr.R.Ulagi M.Sc., M.Phil., Ph.D.**, for her guidance and sustained encouragement for the successful completion of this project.

We feel immense pleasure in expressing our humble note of gratitude to our Associate Professor & Head of the Department **Dr.P.Elango M.Sc., M.Phil., Ph.D.**, (Department Of Physics) for his remarkable guidance.

We are thankful to our project guide **Dr.G.Kanchana M.Sc., Ph.D.**, and **Dr.P.Hemalatha M.Sc., M.Phil., MCA., Ph.D.**, for her valuable suggestions and guidance throughout the arise in the course of the project. Besides their positive approach they have offered incessant helps in all possible way from the beginning.

We are grateful for expressing our sincere gratitude to all the **SmartBridge – Smart Internz DA-Mentors** who were associated with the **Naan Mudhalvan Upskill Platform** and other faculty members of Tableau for providing valuable guidance in the part of completing the Data Analytics course.

We also extend our thanks to other faculty members, parents and friends for providing their moral support in successfully completing this project.

Thankyou!

## INDEX

<b>S.NO</b>	<b>CONTENTS (PROJECT FLOW)</b>
<b>1</b>	<b>INTRODUCTION</b> 1.1 Overview 1.2 Purpose
<b>2</b>	<b>PROBLEM DEFINITION &amp; DESIGN THINKING</b> 2.1 Empathy Map 2.2 Ideation & Brainstorming Map
<b>3</b>	<b>RESULT</b>
<b>4</b>	<b>ADVANTAGES &amp; DISADVANTAGES</b>
<b>5</b>	<b>APPLICATIONS</b>
<b>6</b>	<b>CONCLUSION</b>

<b>7</b>	<b>FUTURE SCOPE</b>
----------	---------------------

# INTRODUCTION

## 1.1 OVERVIEW

Agriculture is an important sector in India. It is indispensable for the sustenance and growth of the Indian economy. On an average, about 70% of the households and 10% of the urban population are dependent on agriculture as their source of livelihood. Today, India is a major supplier of several agricultural commodities like tea, coffee, rice, spices, oil meals, fresh fruits, fresh vegetables, meat and its preparations and marine products to the international market. India is a large producer of several agricultural products. In terms of quantity of production, India is the top producer in the world in milk, and second largest in wheat and rice.

Agricultural production is prone to several risks which affect both producers and consumers. In order to enhance investment and achieve a sustained increase in production, coherent and integrated long-term strategies and policies are required to reduce risk aversion and build flexibility among Indian rural producers. There is a need to provide remunerative prices for farmers in order to increase the incomes of farmers.

## 1.2 PURPOSE

The purpose of India's Agricultural ,Feed the nation's growing population. India is the second most populous country in the world, with a population of over 1.4 billion people. This population is expected to grow to over 1.6 billion by 2050. To feed this growing population, India needs to produce enough food to meet the increasing demand.

Provide employment and income for rural households. Agriculture is the largest source of employment in India, with over 50% of the workforce engaged in the sector. It also provides a significant source of income for rural households.

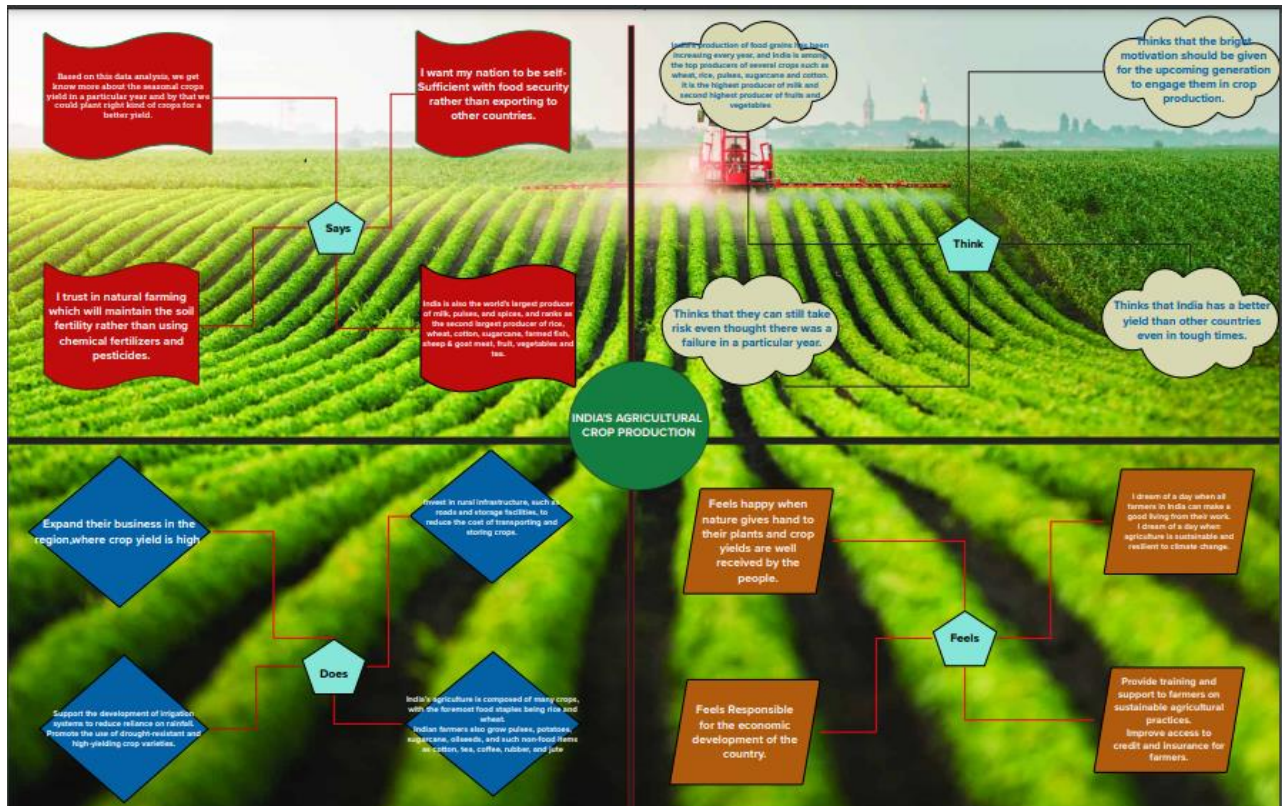
Ensure food security. Food security is the state of having reliable access to a sufficient quantity of affordable, nutritious food. India's agricultural crop production plays a vital role in ensuring food security for the country's population.

## **PROBLEM DEFINITION & DESIGN THINKING**

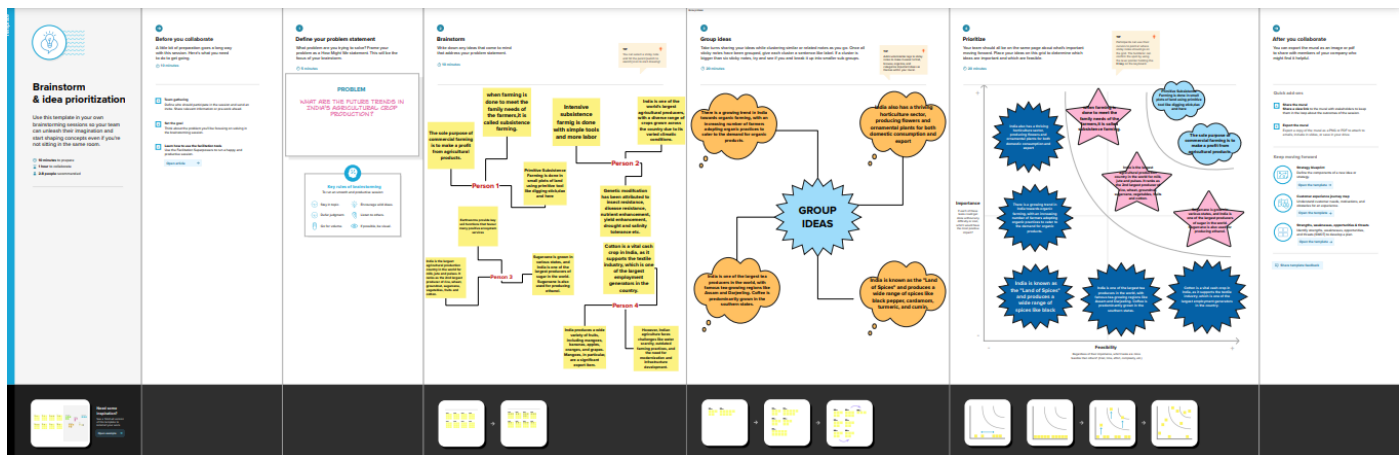
### **EMPATHY MAP & BRAINSTORMING MAP**

In order to fulfil the milestone Empathy map and Brainstorming map was created by group discussions. Those maps are uploaded in github and the links to access those files are hyperlinked here - [Brainstorming](#), [Empathy Map](#)

### **2.1 EMPATHY MAP**



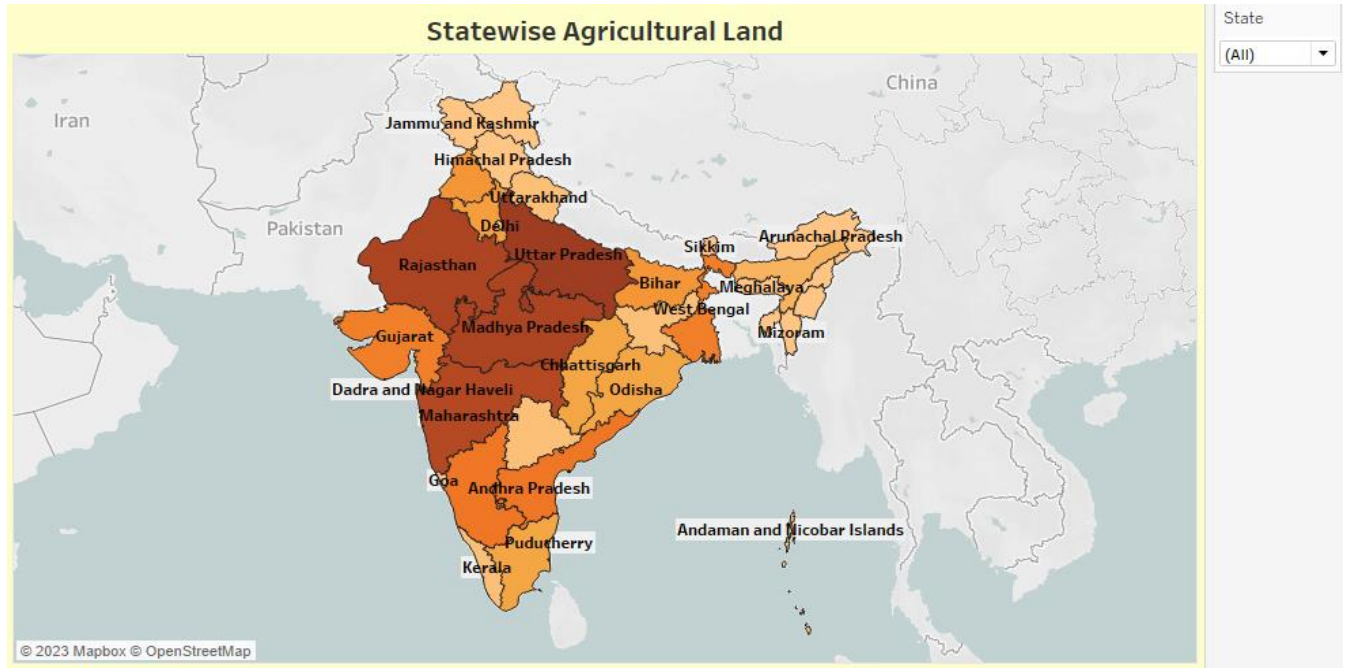
## 2.2 BRAINSTORMING MAP



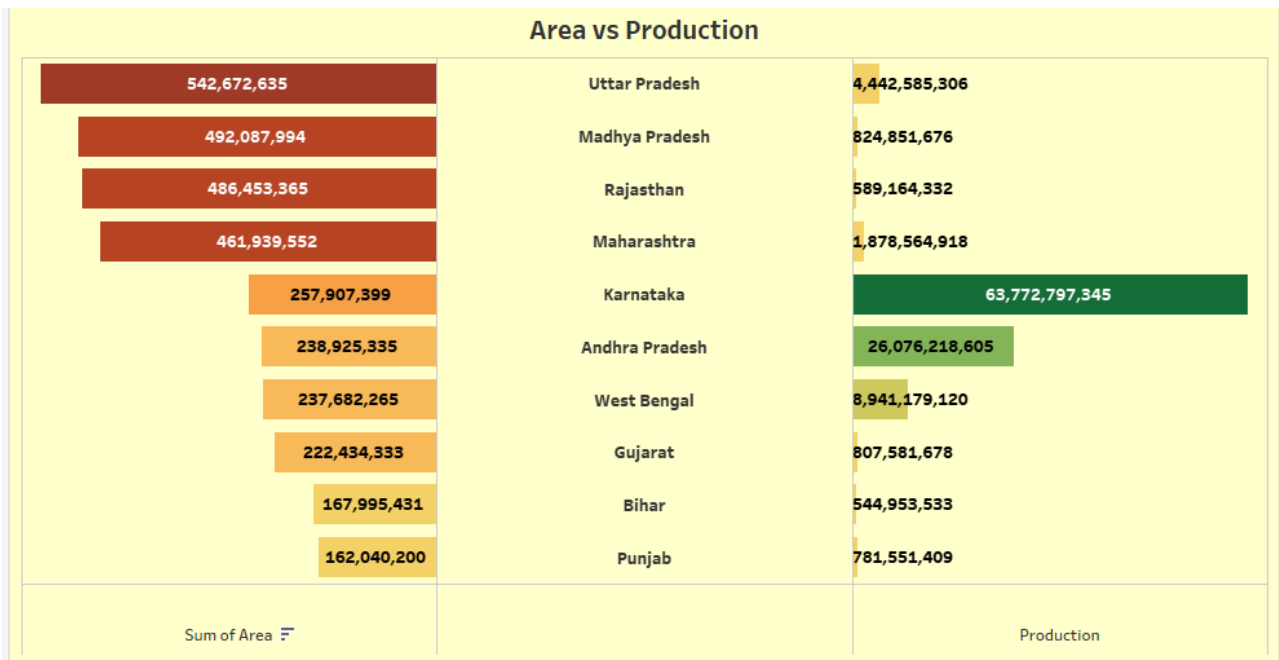
## RESULT

## VISULIZATIONS OF SHEETS

# 1. State wise Agricultural Land

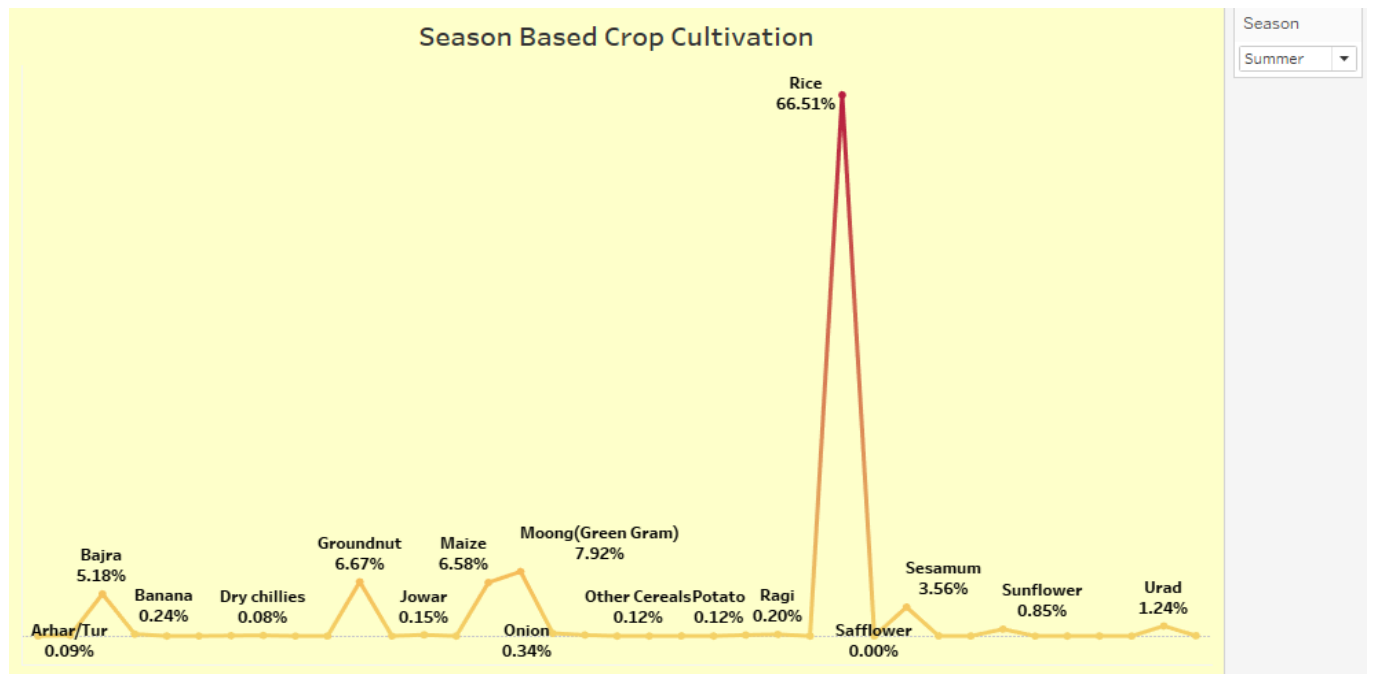


## 2.Area vs Production

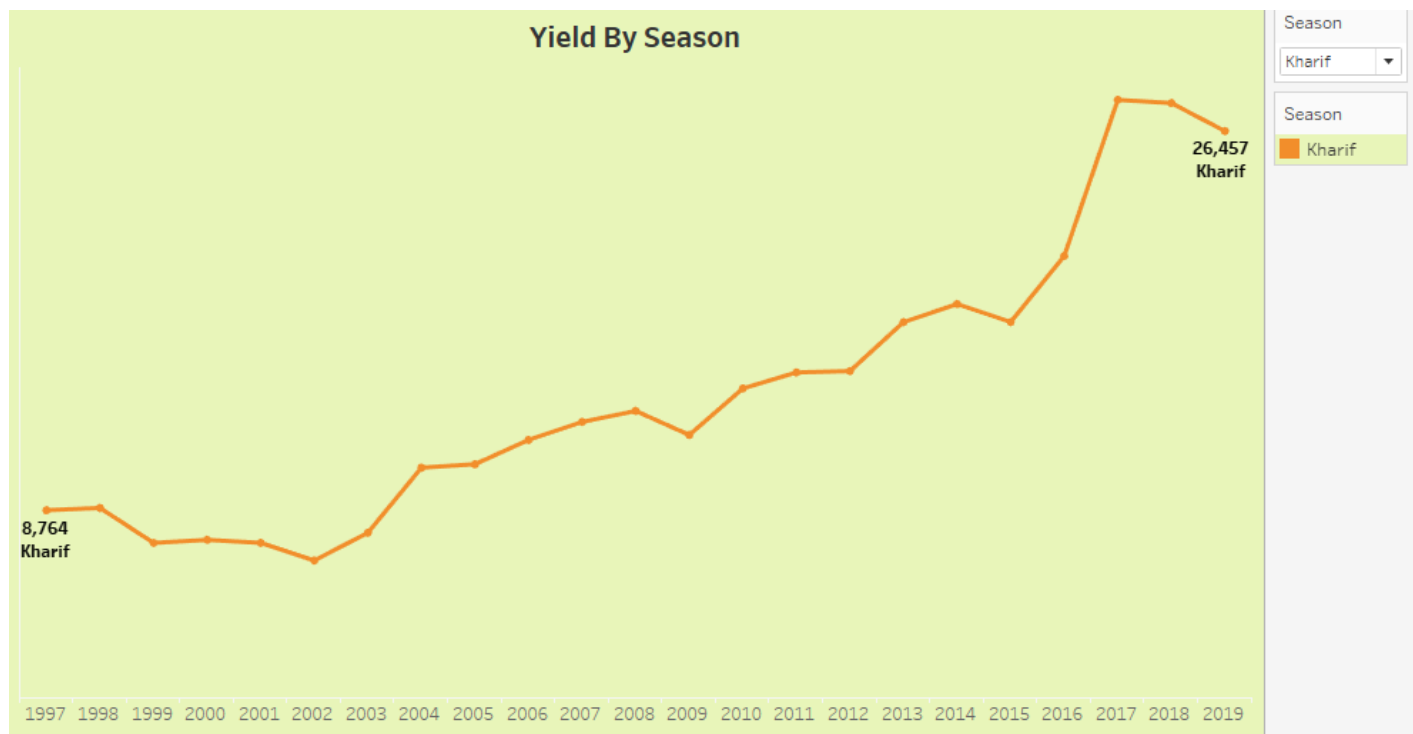


## 3. Season Based cultivation

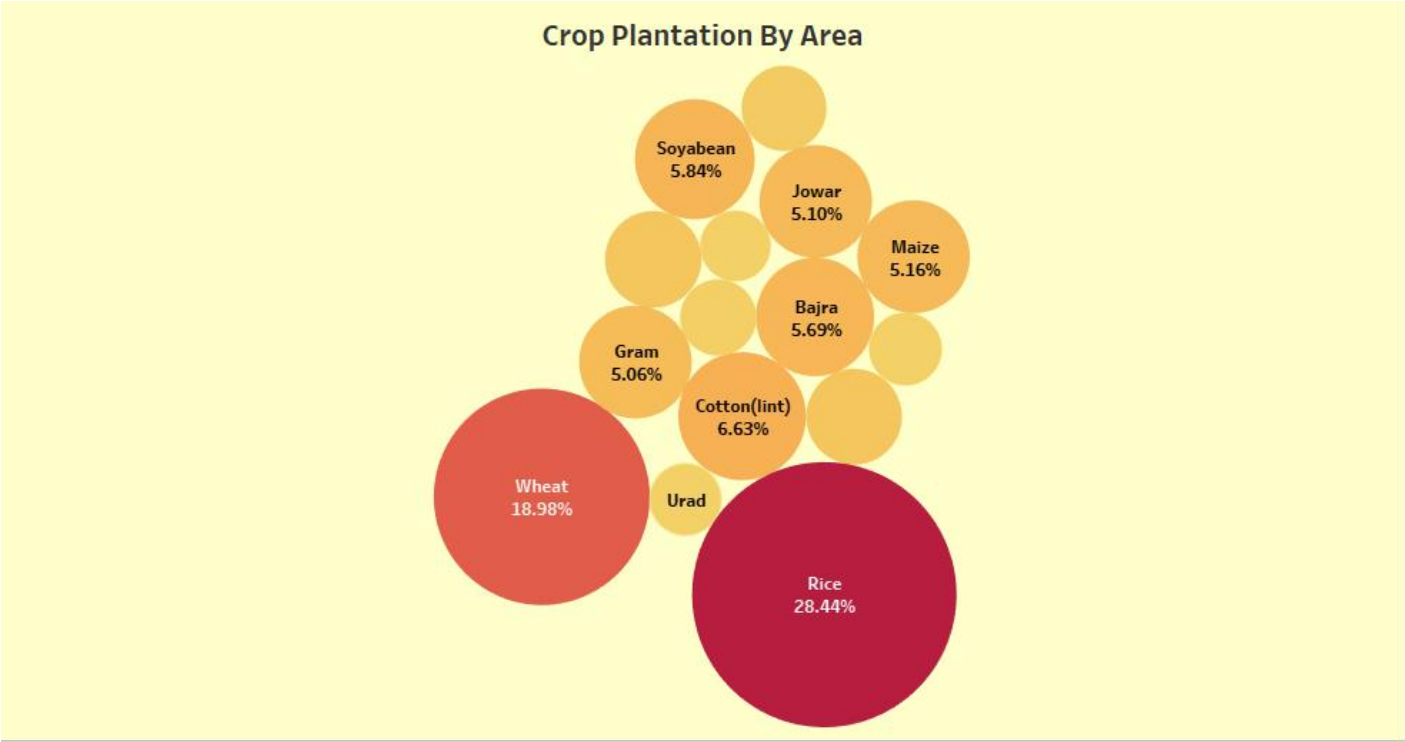




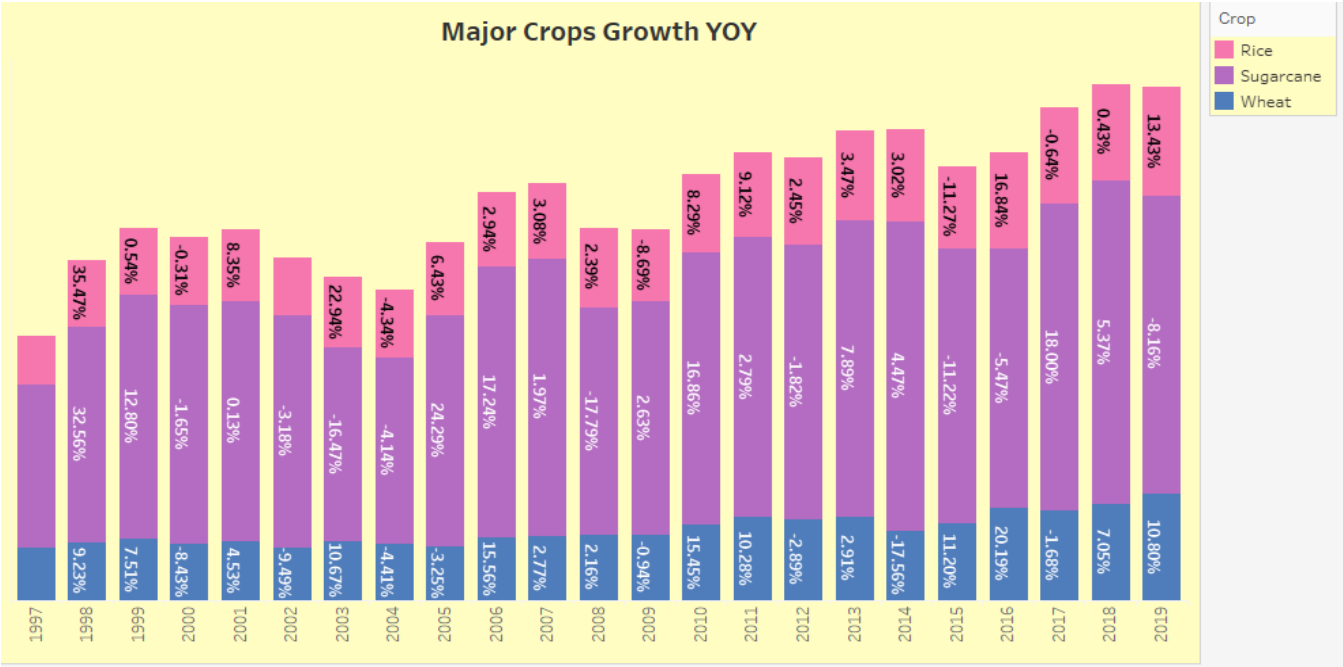
#### 4. Yield by season



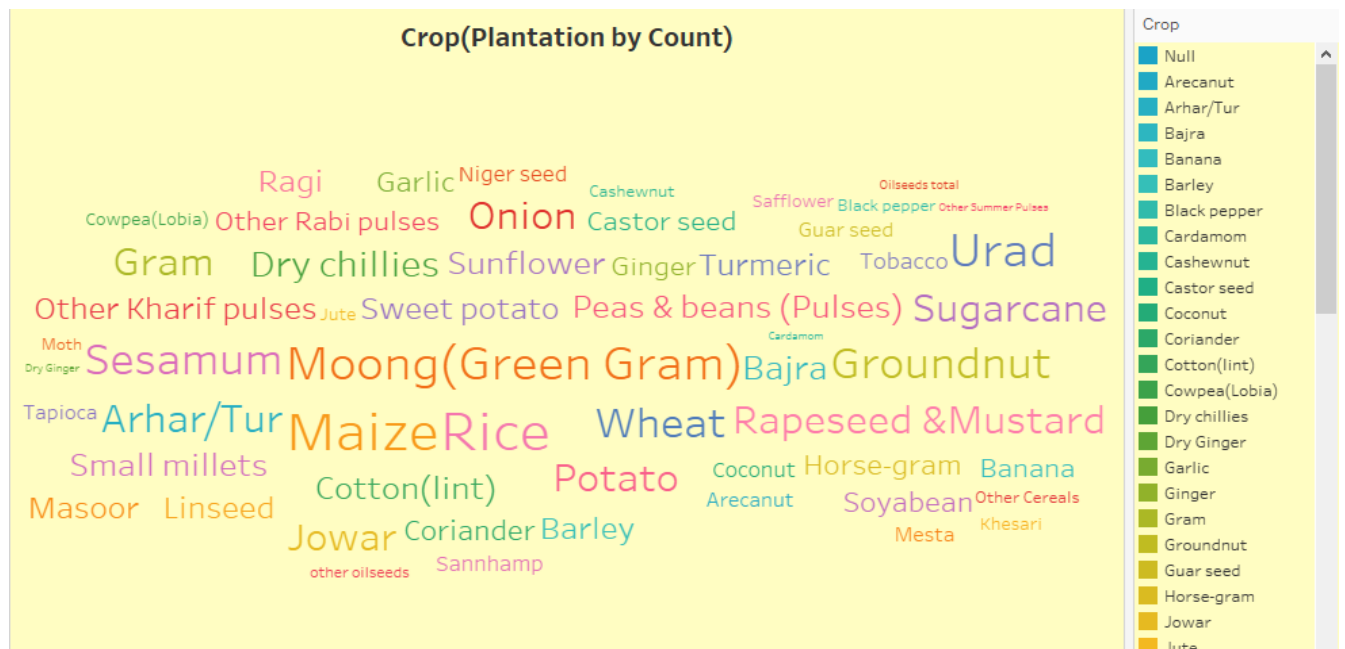
#### 5. Crop plantation by area



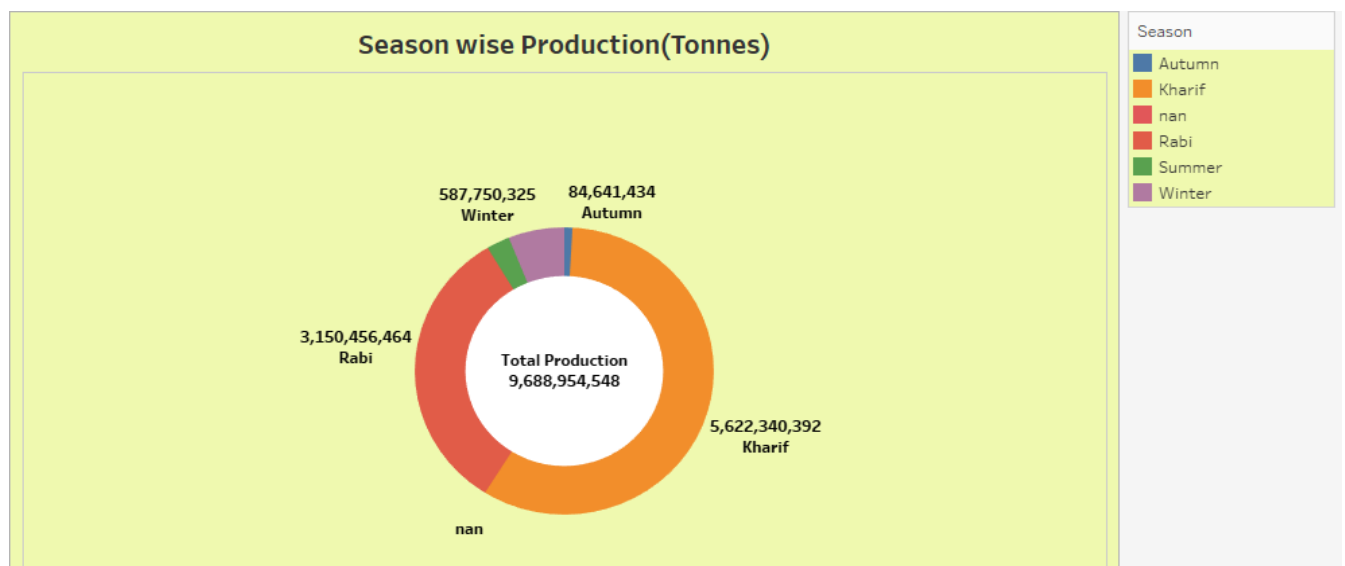
6. Major crops growth Yoy



7.Crops



## 8. Season wise production



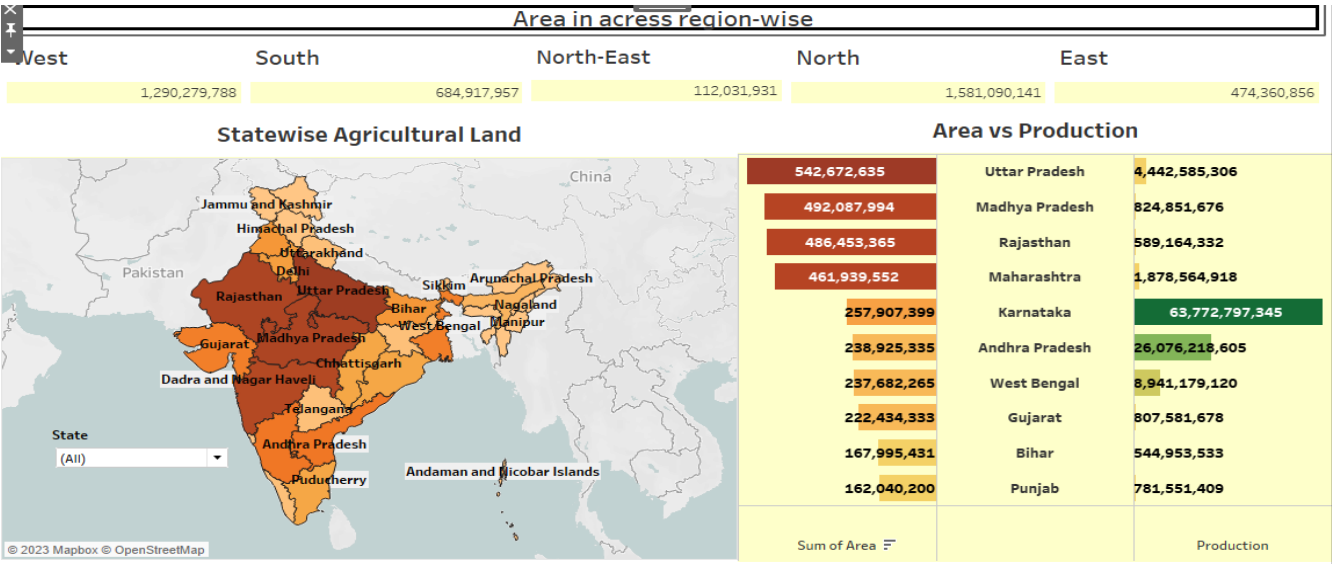
## 9. KPI'S

East

474,360,856

DASHBOARDS

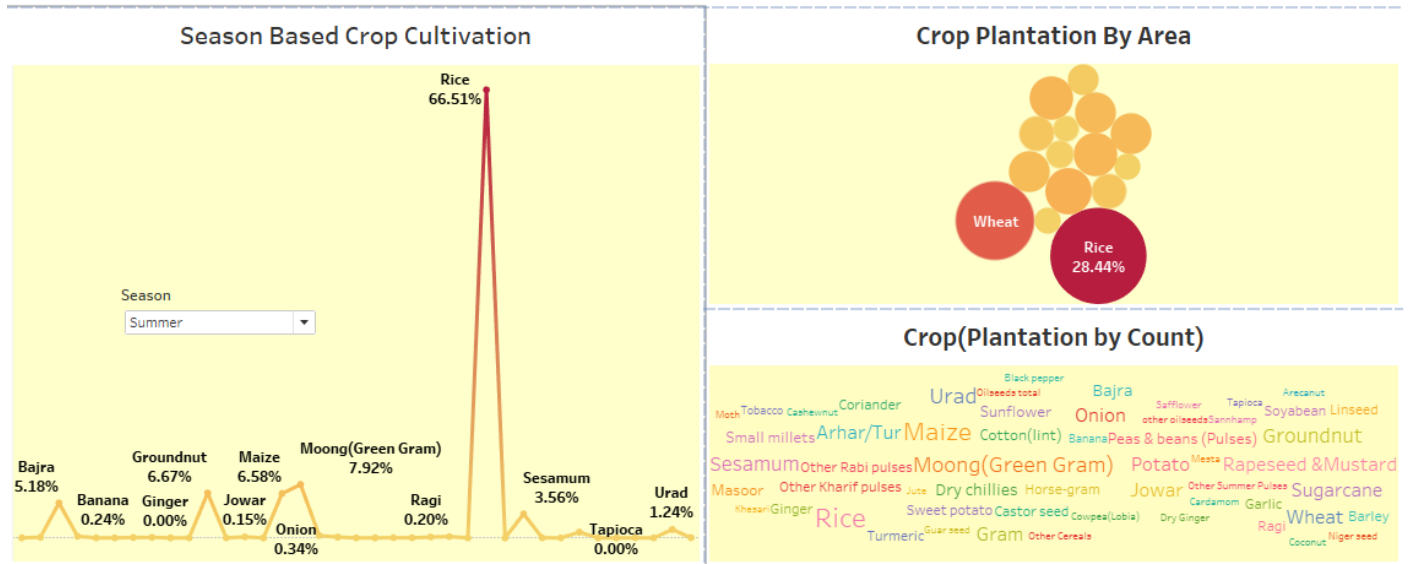
DASHBOARD 1



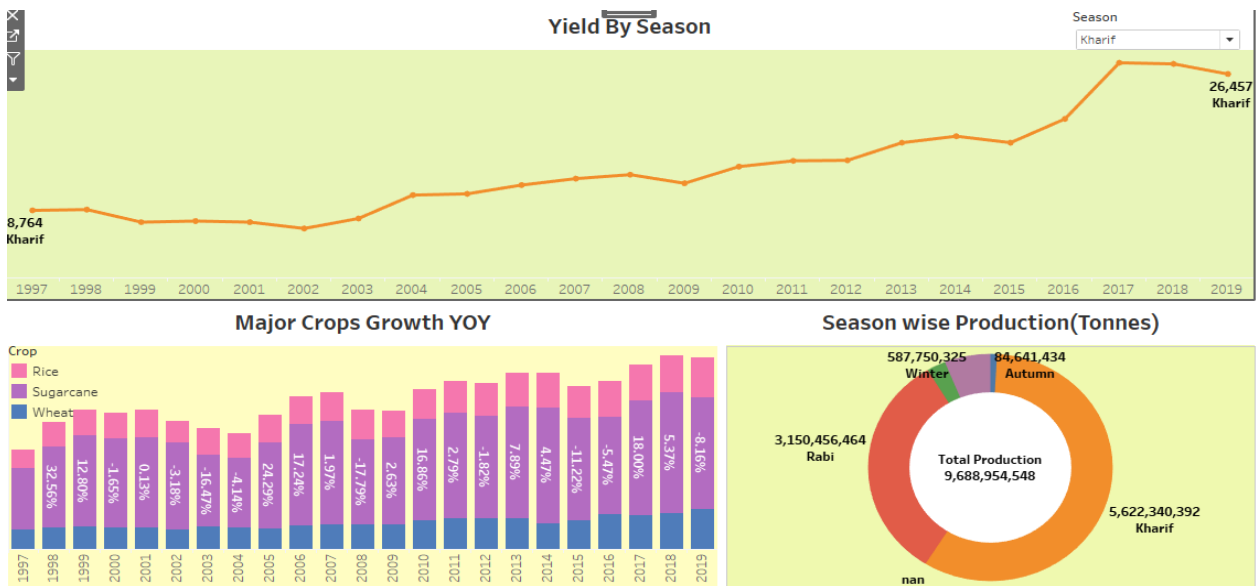
DASHBOARD 2

## Product in tonnes region-wise

West	South	North-East	North	East
5,916,303,392	310,910,000,000	3,725,344,122	7,403,076,034	12,869,221,565

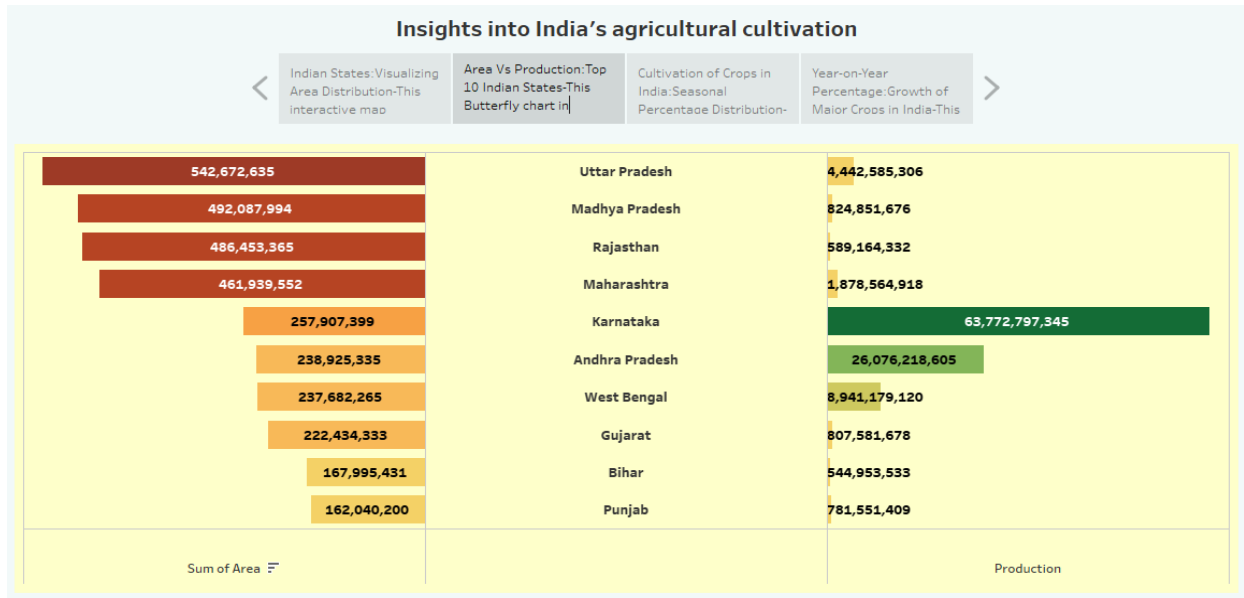


## DASHBOARD 3

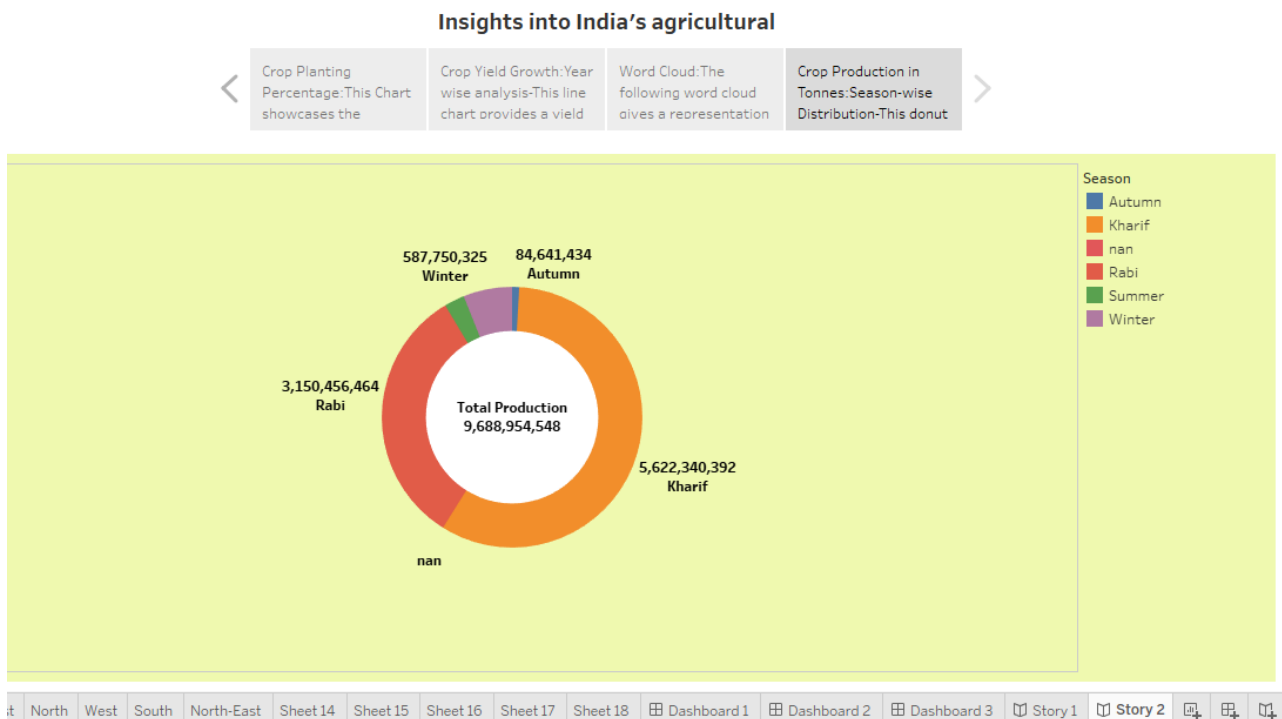


## STORY

# STORY 1



# STORY 2



In the created story line we have a total of 4 scenes showcasing the details of created worksheets.

delhi finished by [Delhi Babu](#)

▼ < Count | Season wise Production | East | North | West | South | North-East | Sheet 14 | Sheet 15 | Sheet 16 | Sheet 17 | Sheet 18 | Dashboard 1 | Dashboard 2 | Dashboard 3 | Story 1 | Story 2 | >

### Product in tonnes region-wise

West	South	North-East	North	East
5,916,303,392	310,910,000,000	3,725,344,122	7,403,076,034	12,869,221,555

### Season Based Crop Cultivation

Season: Summer

Crop	Percentage
Bajra	5.18%
Banana	0.24%
Ginger	0.00%
Jowar	0.15%
Onion	0.34%
Ragi	0.20%
Rice	66.51%
Sesamum	3.56%
Tobacco	0.01%
Urad	1.24%

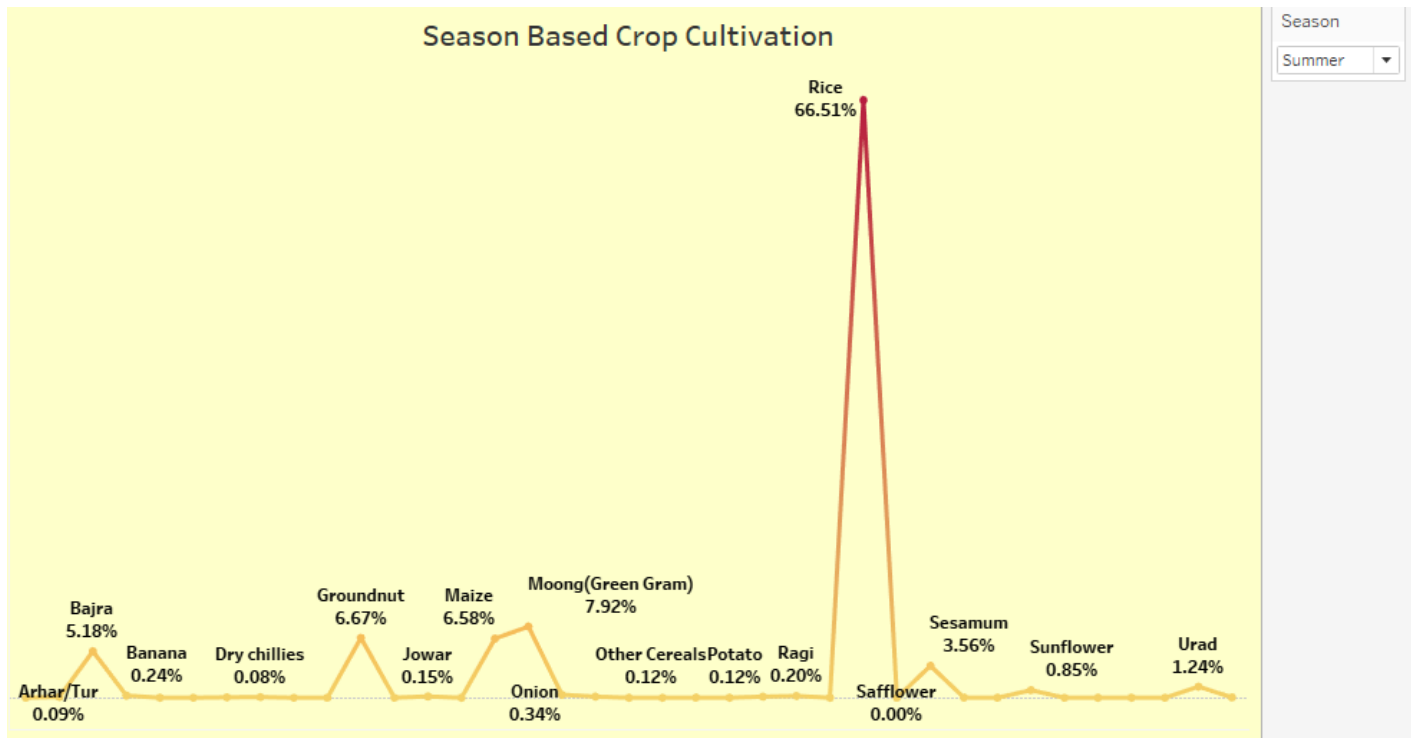
### Crop Plantation By Area

### Crop (Plantation by Count)

tableau

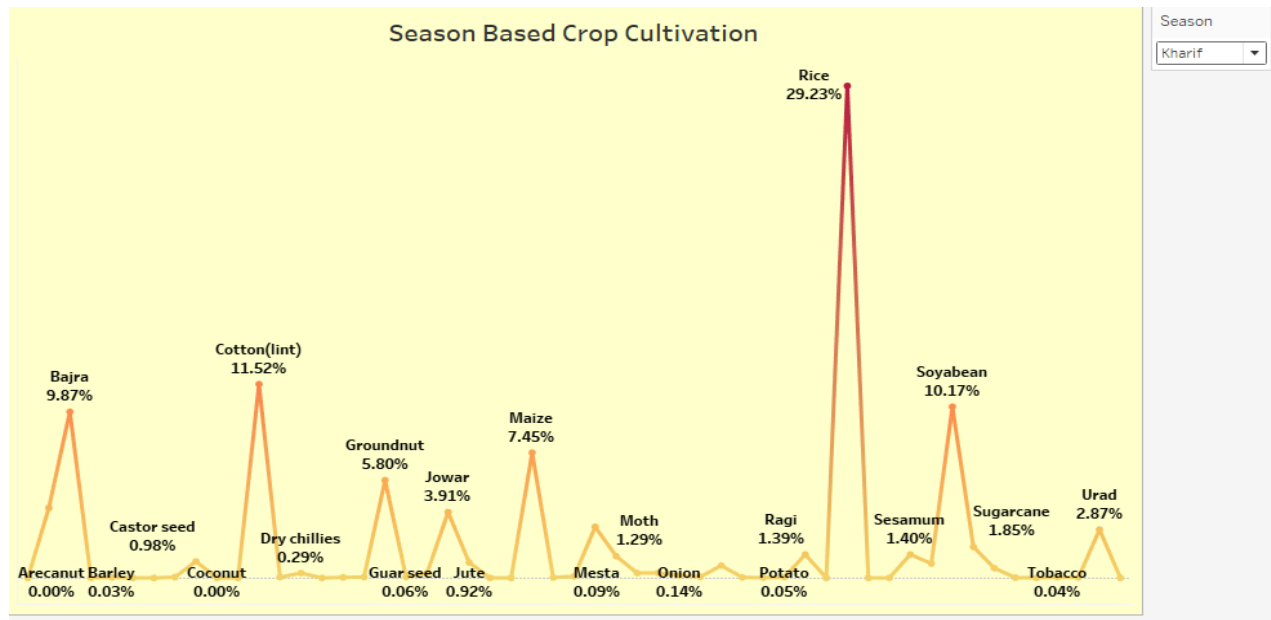
In every worksheet we can apply general or action filters based on input data provided to create visualisations. Based on these action filters the visualisations can be changed in certain aspects of categorisations (i.e., country, city, source etc.).

For an example, the below dashboard represents data without any filters.



Now if we apply an action filter season based on crop cultivation , we can get data in accordance with the type of filter applied. The below dashboard represents data when filter is applied.





Now we can see that, our dashboard's visualisations have been changed when we apply a filter in the kharif the graph is change that season based crop cultivation.

This is one of the example for Utilisation of filters.

## NUMBER OF VISUALIZATIONS/ GRAPHS

1. State Wise Agricultural Land
2. Area vs Production
3. Season based cultivation by area
4. Yield by season
5. Crop plantation by area
6. Major crops growth Yoy
7. Crops Plantation By count
8. Season wise production

## PUBLISHING

delhi finished by [Delhi Babu](#)

< (Count) Season wise Production East North West South North-East Sheet 14 Sheet 15 Sheet 16 Sheet 17 Sheet 18 Dashboard 1 Dashboard 2 Dashboard 3 Story 1 Story 2 >

### Product in tonnes region-wise

West	South	North-East	North	East
5,916,303,392	310,910,000,000	3,725,344,122	7,403,076,034	12,869,221,565

#### Season Based Crop Cultivation

Season: Summer

Crop	Percentage
Rice	66.51%
Sesamum	3.56%
Urad	1.24%
Tobacco	0.01%
Ragi	0.20%
Onion	0.34%
Jowar	0.15%
Ginger	0.00%
Banana	0.24%
Bajra	5.18%

#### Crop Plantation By Area

#### Crop(Plantation by Count)

tableau

1. [Github Repository](#)
2. [Brainstorm Map](#)
3. [Empathy Map](#)
4. [Dashboard](#)
5. [Tabelau Public Server-India's Agriculture Crop Production](#)
6. [Story](#)
7. [Visualisation of sheets](#)

## ADVANTAGES

**1.Favorable climate:** India has a diverse climate, ranging from tropical to temperate, which allows for the cultivation of a wide variety of crops.

**2.Fertile soil:** India has a large area of fertile land, which is suitable for agriculture.

**3.Abundant water resources:** India has a number of rivers and lakes, as well as groundwater resources, which can be used for irrigation.

**4.Large workforce:** India has a large and young workforce, which can be employed in agriculture.

**5.Government support:** The Indian government provides a number of subsidies and incentives to farmers, which helps to support agricultural production.

**6.Food security:** India's agricultural production is sufficient to meet the food needs of its population. In fact, India is a net exporter of agricultural products.

**7.Employment and income:** Agriculture is the largest source of employment and income for rural households in India.

**8.Economic growth:** Agriculture contributes over 18% to India's GDP.

**9.Foreign exchange earnings:** India is a major exporter of agricultural products, such as rice, wheat, cotton, and spices. These exports generate foreign exchange, which can be used to finance imports of other essential goods and services.

**10.Environmental sustainability:** India's agricultural sector is promoting sustainable farming practices, such as crop rotation, soil conservation, and integrated pest management. This is helping to protect the environment and conserve natural resources.

## **DISADVANTAGES**

**1.Small and fragmented land holdings:** The average land holding size in India is very small, at around 1.1 hectares. This makes it difficult for farmers to adopt modern farming practices and achieve economies of scale.

**2.Lack of irrigation facilities:** Only about 50% of India's cultivated land is irrigated. This makes agriculture vulnerable to droughts and other weather fluctuations.

**3.Over-reliance on chemical fertilizers and pesticides:** Indian farmers overuse chemical fertilizers and pesticides, which can lead to soil degradation and water pollution.

**4.Lack of access to credit and markets:** Many Indian farmers have difficulty accessing credit and markets. This makes it difficult for them to invest in new technologies and get a fair price for their produce.

**5.Climate change:** Climate change is also posing a significant challenge to India's agricultural sector. More frequent and severe droughts, floods, and other extreme weather events are making it difficult for farmers to grow crops.

**6.Labor shortage:** India is facing a shortage of agricultural labor, as many young people are migrating to urban areas in search of better employment opportunities.

**7.Rising input costs:** The cost of agricultural inputs, such as seeds, fertilizers, and pesticides, is rising. This is making it difficult for farmers to make a profit.

**8.Post-harvest losses:** India experiences significant post-harvest losses of agricultural produce due to inadequate storage and transportation facilities.

## APPLICATIONS

India's agricultural crop production has a wide range of applications, including:

**1.Food:** Agricultural crops are the primary source of food for India's population. The main food crops cultivated in India include rice, wheat, maize, pulses, and oilseeds.

**2.Feed:** Agricultural crops are also used to feed livestock, such as cattle, buffaloes, sheep, and goats. The main feed crops cultivated in India include maize, sorghum, and fodder crops.

**3.Industrial raw materials:** Agricultural crops are used as raw materials for a variety of industries, such as food processing, textiles, and biofuels. For example, sugarcane is used to produce sugar, molasses, and ethanol; cotton is used to produce textiles; and oilseeds are used to produce vegetable oils and biodiesel.

**4.Exports:** India is a major exporter of agricultural products, such as rice, wheat, cotton, spices, and tea. These exports generate foreign exchange, which can be used to finance imports of other essential goods and services.

**5.Soil and water conservation:** Agricultural crops can help to conserve soil and water resources by preventing soil erosion and reducing the amount of water that evaporates from the soil surface.

**6.Biodiversity conservation:** Agricultural crops can provide habitat for a variety of plant and animal species. This helps to promote biodiversity and maintain the ecological balance.

**6.Cultural heritage:** Agriculture is an integral part of Indian culture and heritage. Many traditional Indian festivals and celebrations are related to agriculture.

Overall, India's agricultural crop production has a wide range of applications, ranging from providing food and feed to supplying raw materials for industries and

exports. It also plays an important role in soil and water conservation, biodiversity conservation, and cultural heritage.

## **CONCLUSION**

Agriculture is an integral part of smart growth. The ability to feed one's own population is critical to the independence of any state. Ontario is blessed with resources that have facilitated the development of a worldclass agricultural industry that provides safe, nutritious, and reliable food. The ability to feed the local population from local sources should not be underestimated.

Perhaps because of its long-term presence in the study area, agriculture tends to be taken for granted. Many people expect that it will continue in perpetuity and that as it is pushed out of one area by urban expansion, it will relocate in another area that is less subject to growth pressure. This assumption is false.

Agriculture is a diverse industry with very specific locational connections. Certain crops can only be grown in specific locations where the combination of a variety of factors including soil, moisture, temperature, and topography is right. When such areas are lost to agriculture, the ability to produce the crops that require that particular combination of factors is also lost. The public needs to understand that agricultural land is a nonrenewable resource requiring appropriate management techniques.

## **FUTURE SCOPE**

The future scope of India's agriculture crop production is very bright. India has a number of advantages for agricultural crop production, such as a favorable climate, fertile soil, abundant water resources, and a large workforce. The Indian government is also providing a number of subsidies and incentives to farmers to support agricultural production.

In the future, India's agricultural crop production is expected to grow significantly. This will be driven by a number of factors, including:

**1.Population growth:** India's population is expected to grow to over 1.6 billion by 2050. This will lead to increased demand for food.

**2.Rising incomes:** India's middle class is growing rapidly. This is leading to increased demand for high-value food products, such as fruits, vegetables, and meat.

**3.Increased urbanization:** India's urbanization rate is increasing rapidly. This is leading to increased demand for processed food products.

To meet the growing demand for food, India needs to increase its agricultural productivity. This can be achieved by adopting modern farming practices, such as precision agriculture, vertical farming, and hydroponics. India also needs to invest in research and development to develop new crop varieties and farming practices that are more resilient to climate change.

In addition to increasing productivity, India also needs to focus on improving the post-harvest management of agricultural produce. This will help to reduce food losses and improve the quality of food products. India also needs to develop

better marketing and distribution channels for agricultural produce to ensure that farmers get a fair price for their produce.

Overall, the future scope of India's agriculture crop production is very bright. India has a number of advantages for agricultural crop production and the government is providing a number of subsidies and incentives to farmers to support agricultural production. However, India needs to focus on increasing productivity, improving

post-harvest management, and developing better marketing and distribution channels to meet the growing demand for food and improve the incomes of farmers.