PERIYAR UNIVERSITY

101-ARIGNAR ANNA GOVERNMENT ARTS COLLEGE, ATTUR

DEPARTMENT OF MATHEMATICS

III-BSc Mathematics (2023-2024)

INCHARGE: Mr. K. CHINNAIYA, M.Sc., M.Ed., M.Phil.,

Team ID: NM2023TMID22696	
Student Name	**Student Nm Id**
JELINA J	CF3D7330DFCB9FFA980470A4152866D3
ARIVIJAYAN V	6001CF3876B6FE79C314531D8CE6FAF9
LAKSHMI R	55DFD7A656C7EB7BA9A4D87466222521
SWETHA R	196609E9BBB0BD48695446CE199FE5CF

PROJECT TITLE	**Indian Agricultural Crop Production Analysis 1997-2021**

1) Introduction:

- This report delves into the captivating realm of India's agricultural cultivation, providing a comprehensive visual exploration of key aspects and trends in the agricultural sector.

- Through the visual representations, readers can gain valuable insights into

    - crop production
    - seasonal variations
    - regional distribution
    - overall production trends.

- These visualizations enable intuitive analysis

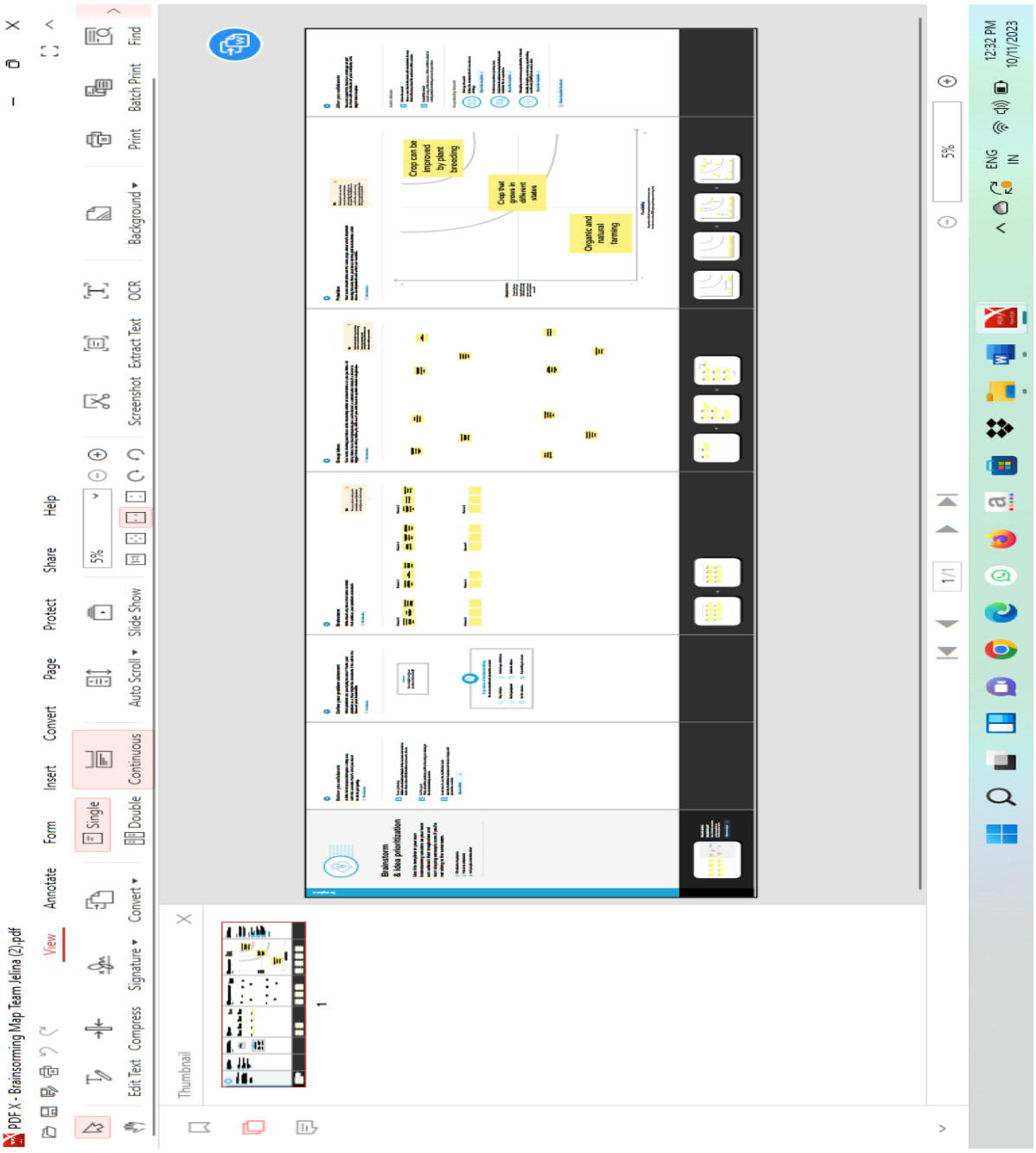
    - Allowing stakeholders to uncover patterns
    - Identify areas of growth or concern
    - Make data-driven decision

- 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 agricultural cultivation.

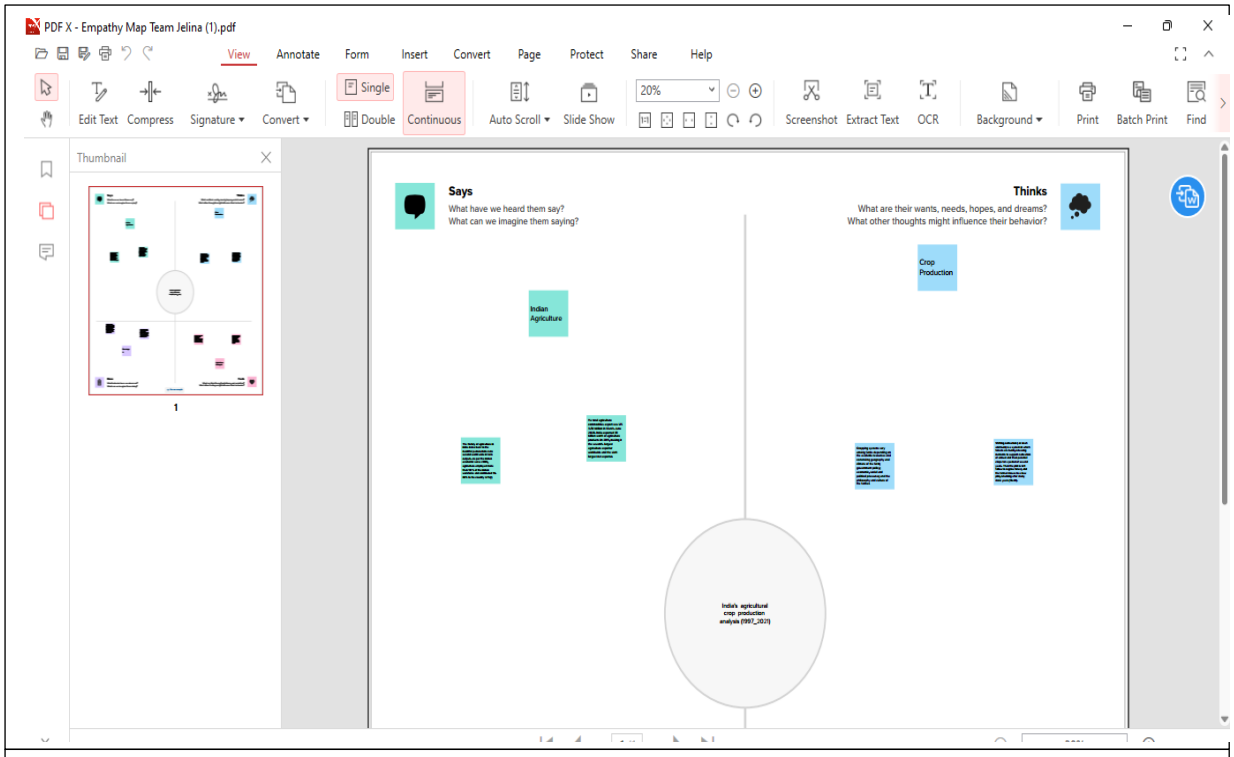
- To Extract the Insights from the data and put the data in the form of visualizations, Dashboards and Story we employed Tableau tool.

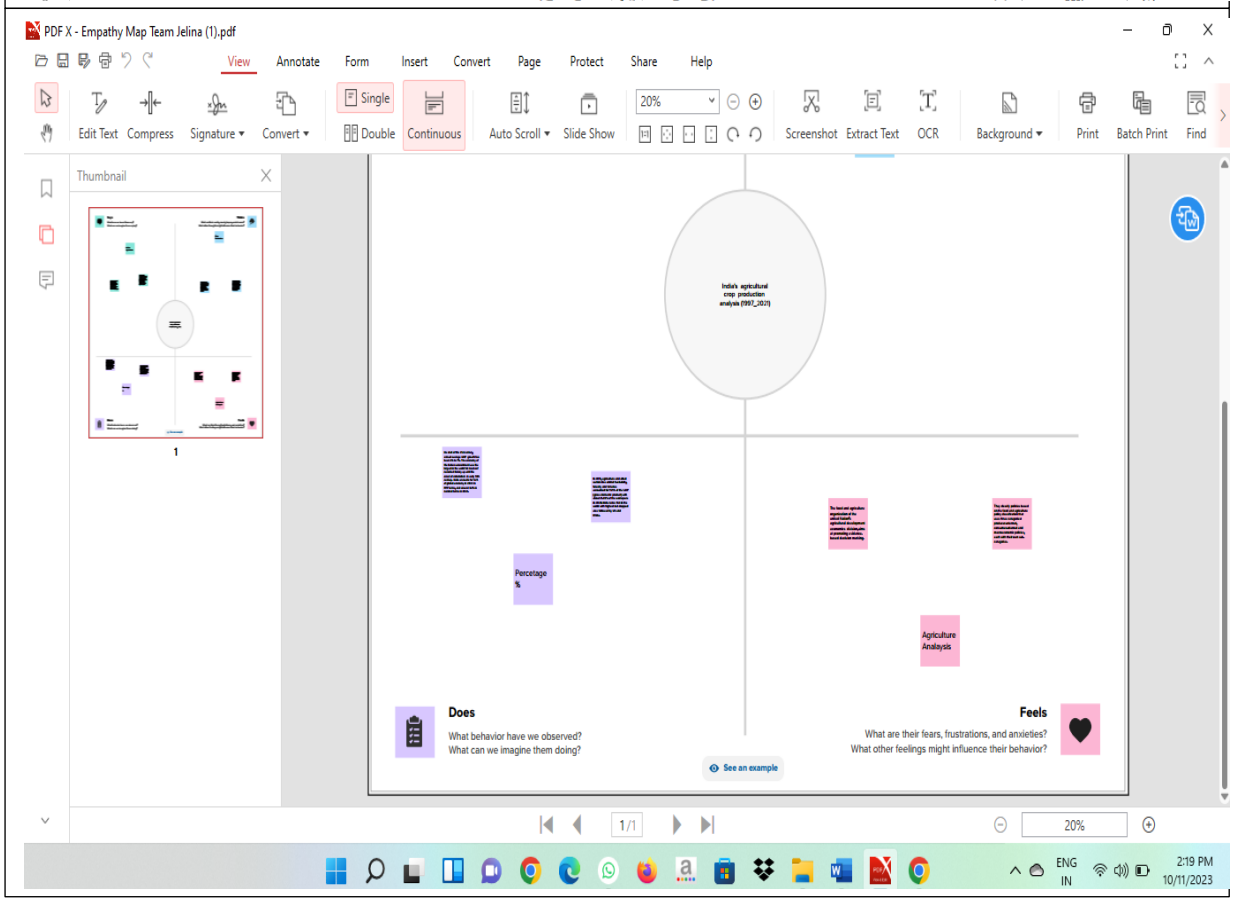
2) Problem Definition and Design Thinking:

2.1) Brainstorming:



2.2) Empathy Map:

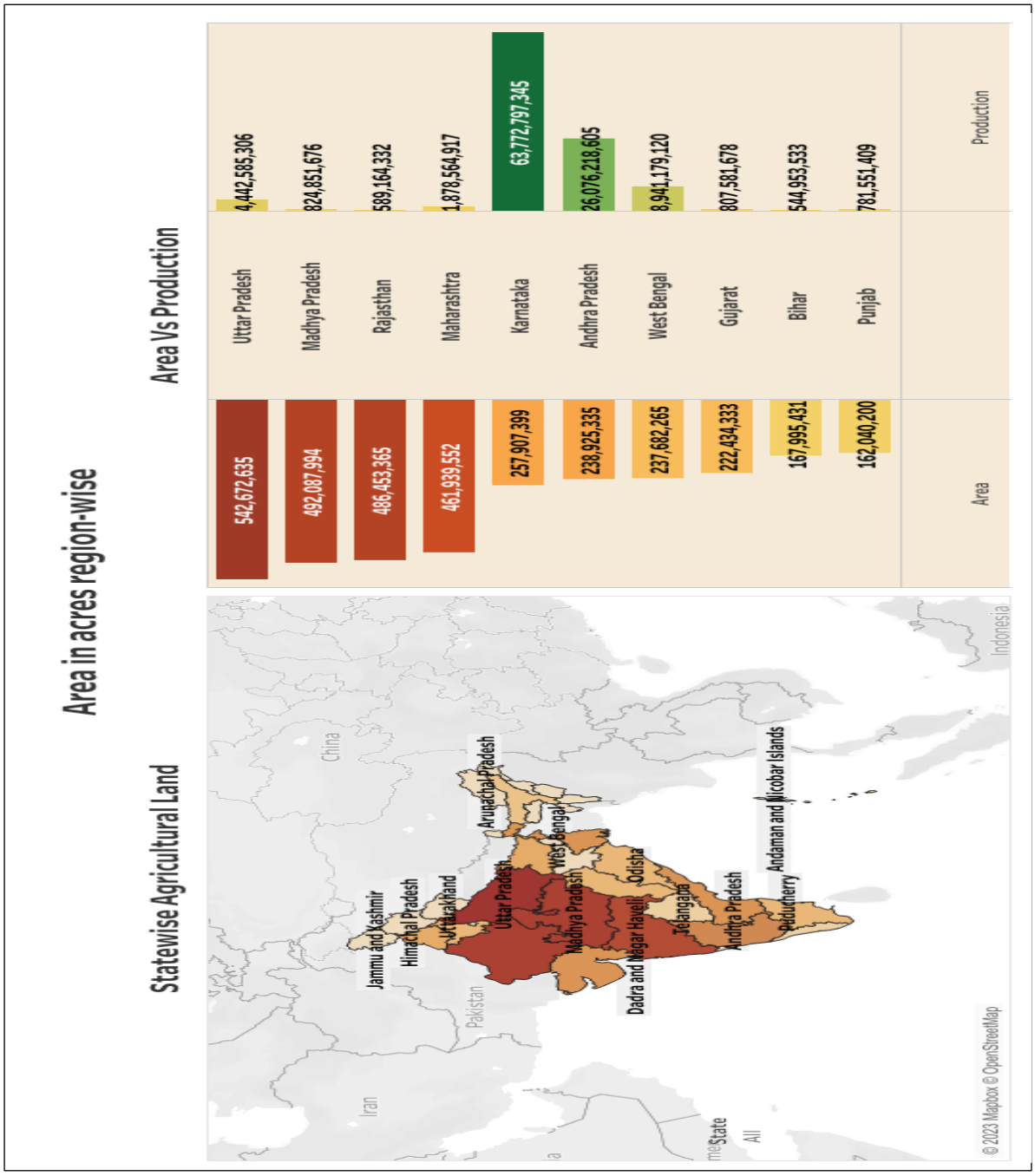




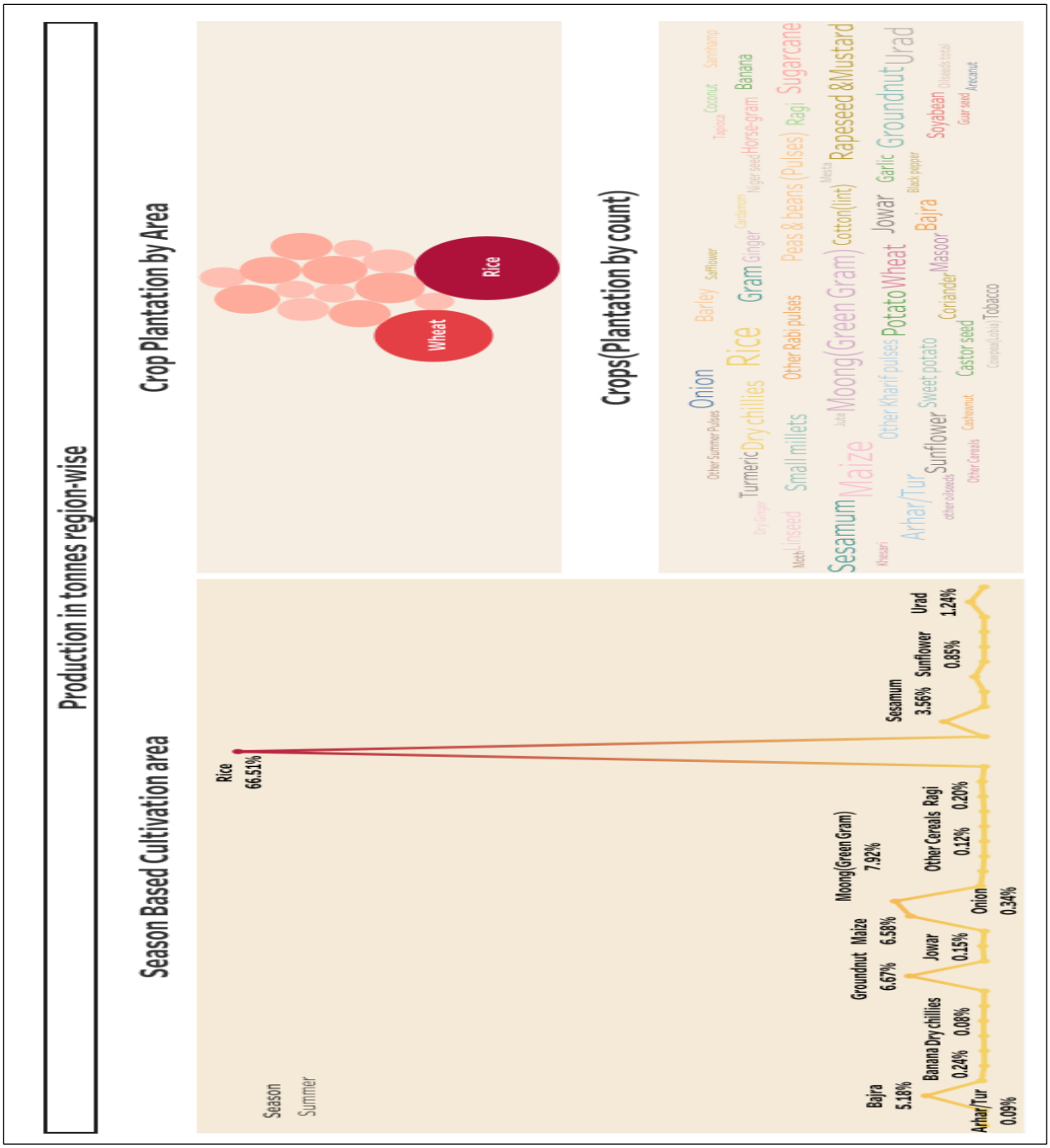
3) Result:

3.1) Dashboard:

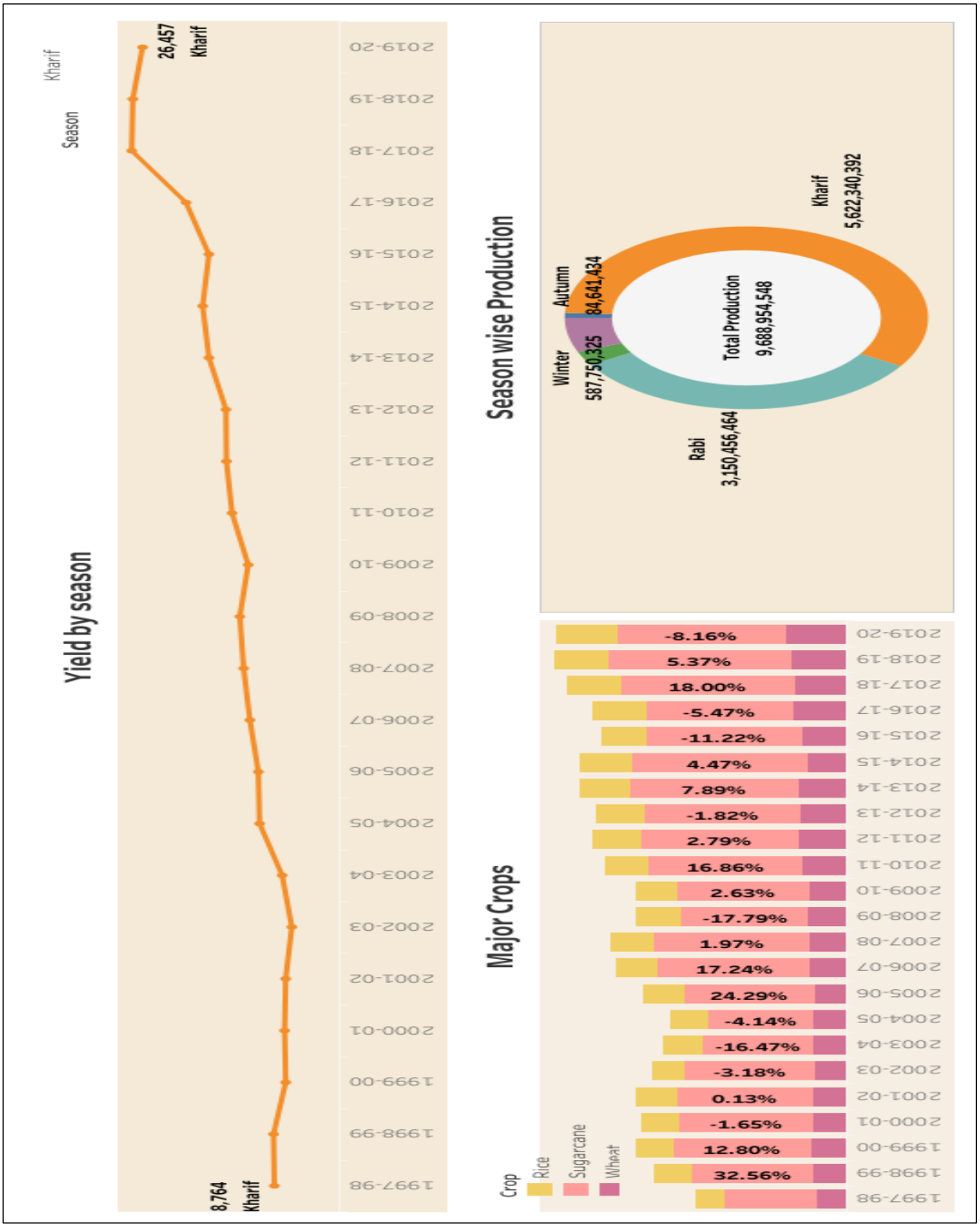
3.1.1) Dashboard 1:



3.1.2) Dashboard 2:

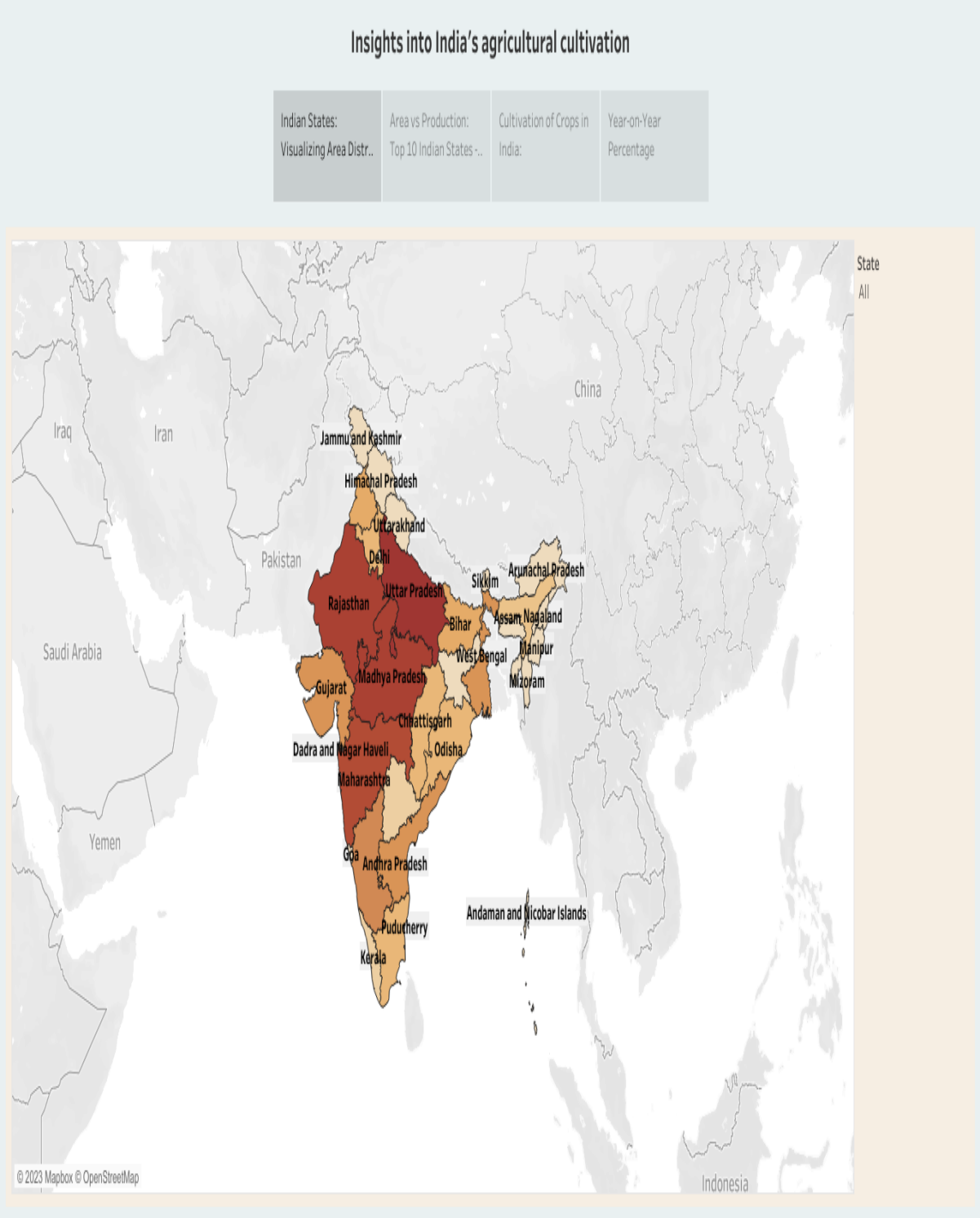


3.1.3) Dashboard 3:

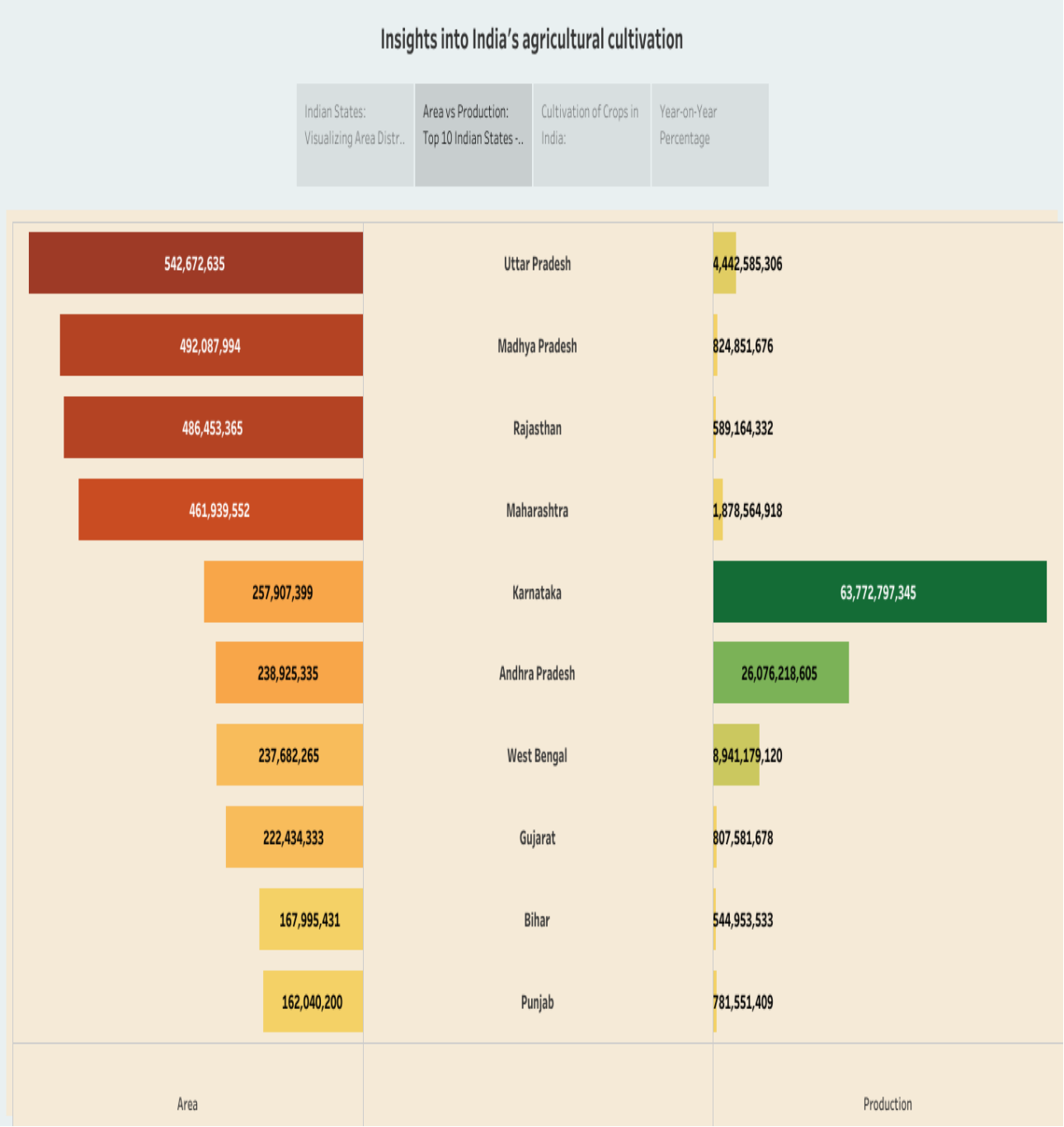


3.2) Story:

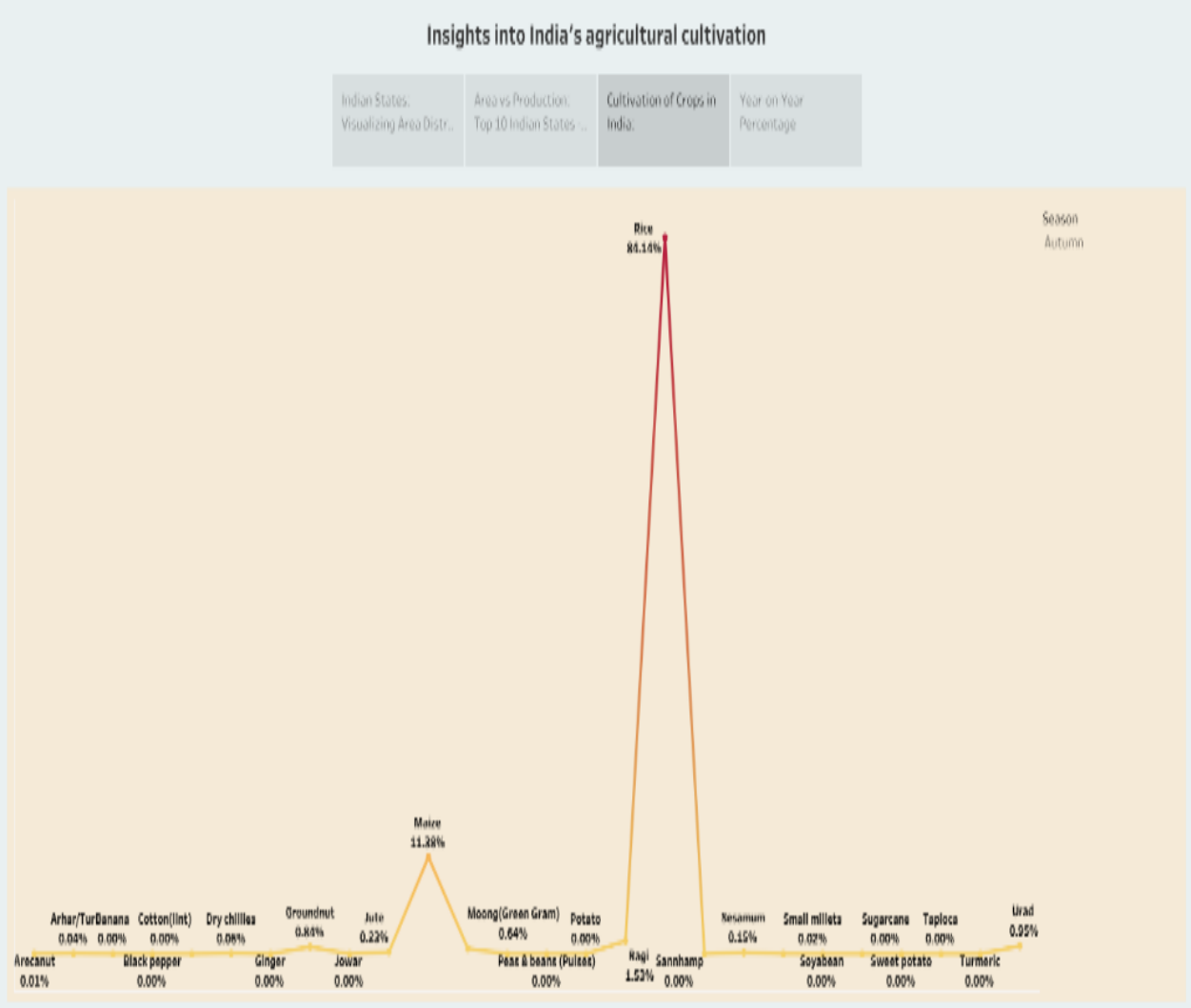
3.2.1) Story:



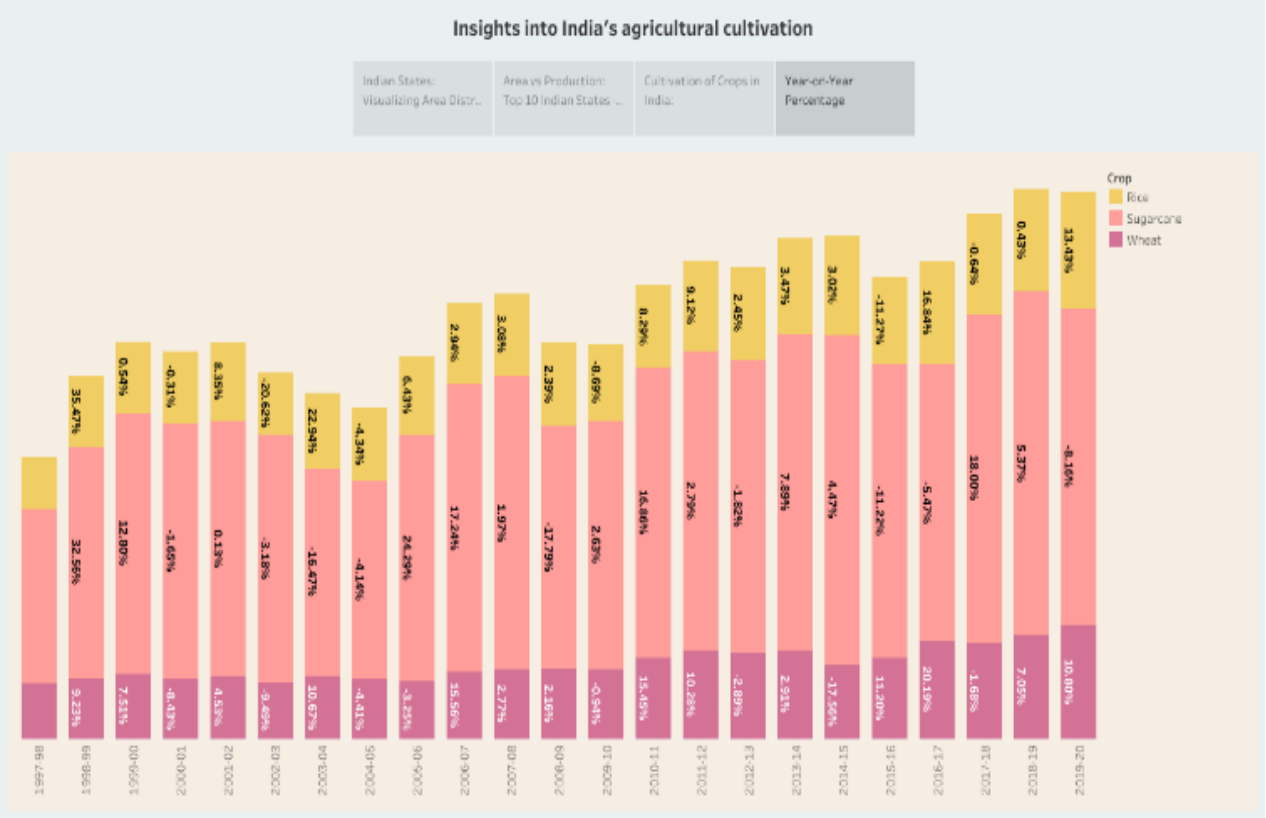
3.2.1.1) Story:


Insights into India's agricultural cultivation
Indian States: Visualizing Area Distr..
Area vs Production: Top 10 Indian States -..
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
Production

3.2.1.2) Story:

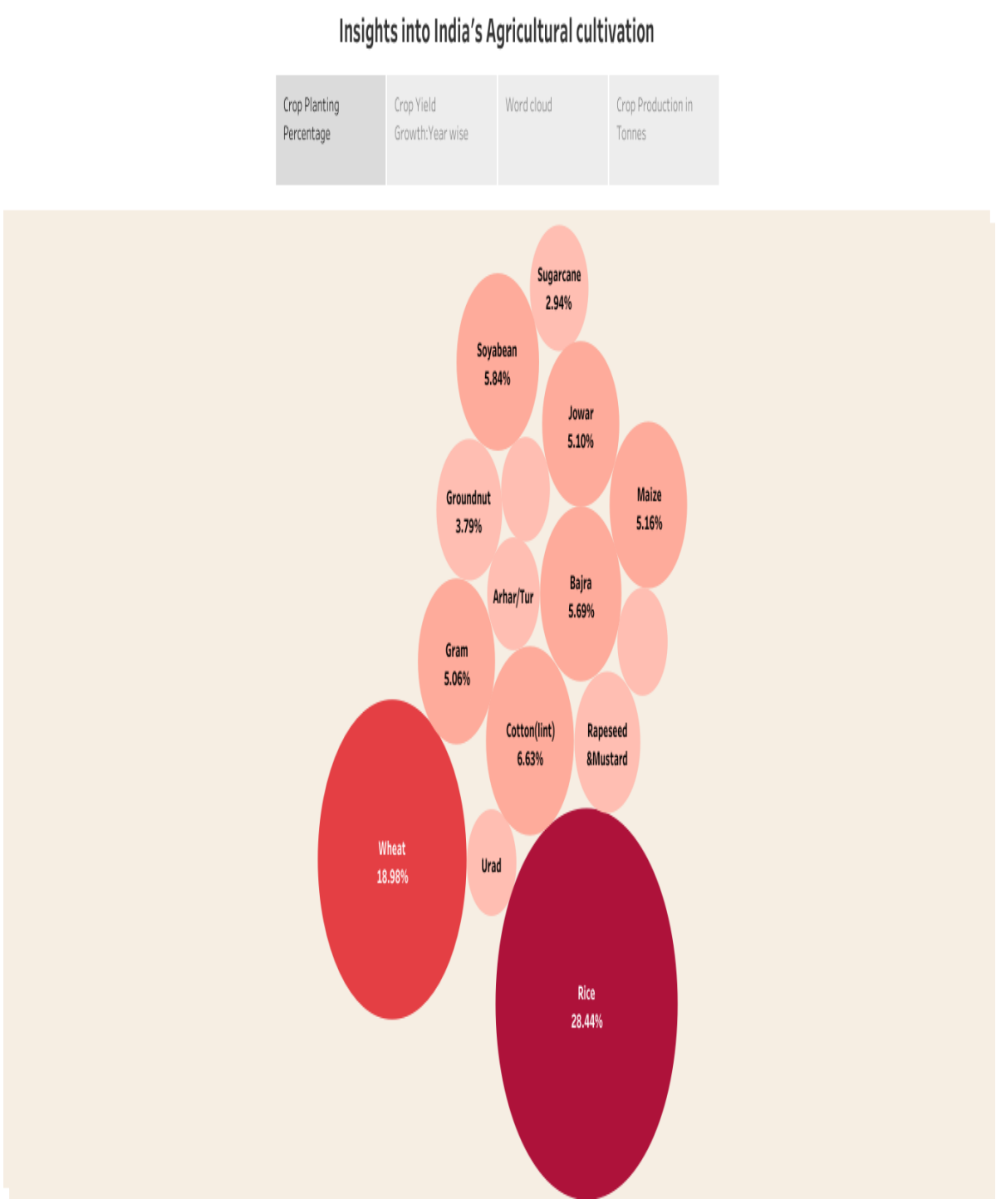

Insights into India's agricultural cultivation
Indian States. Visualizing Area Distr..
Area vs Production. Top 10 Indian States ...
Cultivation of Crops in India.
Year on Year Percentage
Season
Autumn
Rice 84.14%
Maize 11.38%
Arecanut 0.01%
Arhar/TurDanana 0.04%
Banana 0.00%
Cotton(lint) 0.00%
Black pepper 0.00%
Dry chillies 0.08%
Ginger 0.00%
Groundnut 0.84%
Jowar 0.00%
Jute 0.22%
Moong(Green Gram) 0.64%
Pean & beans (Pulses) 0.00%
Potato 0.00%
Ragi 1.53%
Sannhamp 0.00%
Sesamum 0.15%
Soyabean 0.00%
Small millets 0.02%
Sugarcane 0.00%
Sweet potato 0.00%
Tapioca 0.00%
Turmeric 0.00%
Urad 0.25%

3.2.1.3) Story:

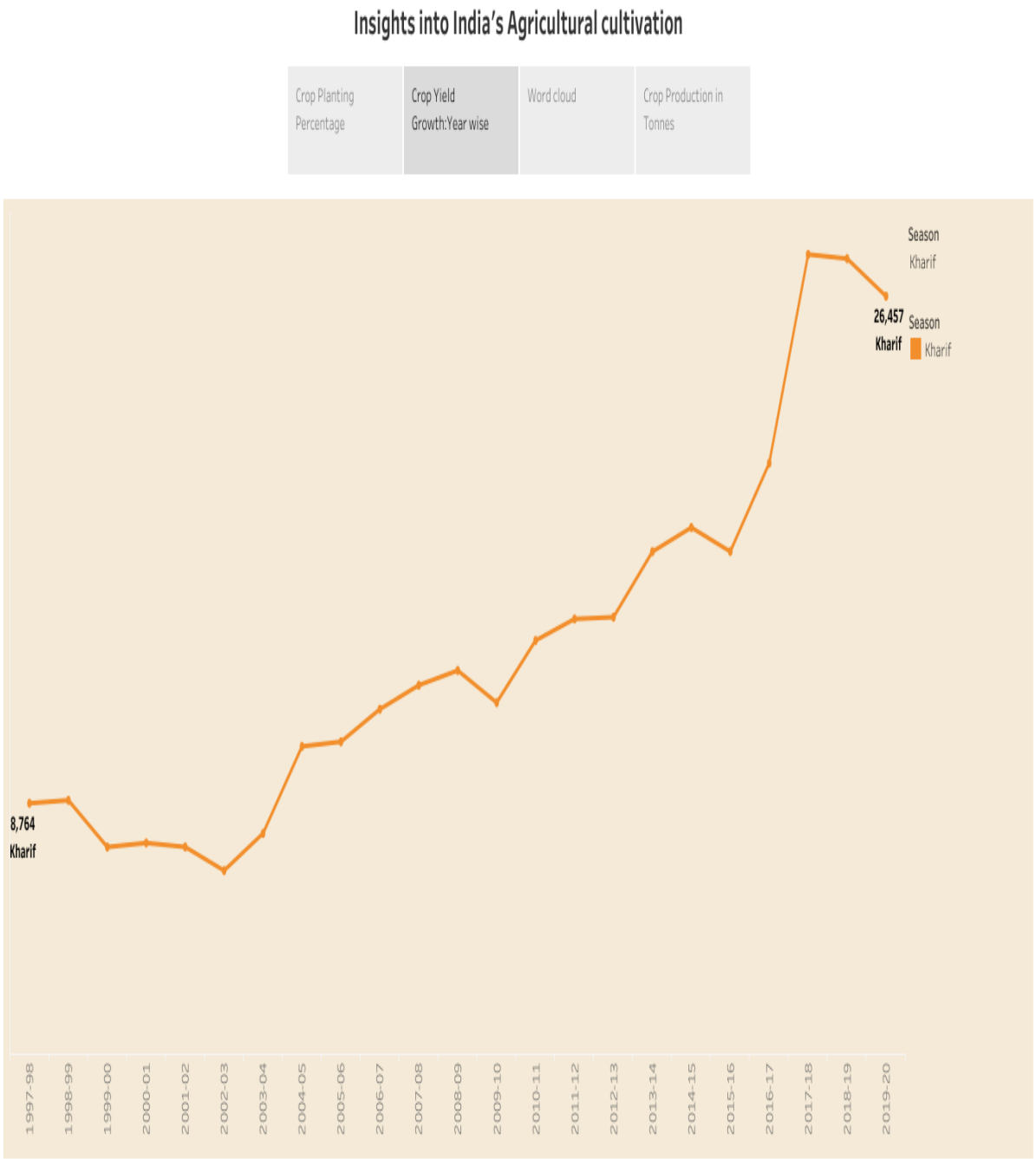

Insights into India's agricultural cultivation
Indian States: Visualizing Area Distr..
Area vs Production: Top 10 Indian States ...
Cultivation of Crops in India:
Year-on-Year Percentage
Crop
Rice
Sugarcane
Wheat
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20

3.2.2) Story:

3.2.2.1) Story:



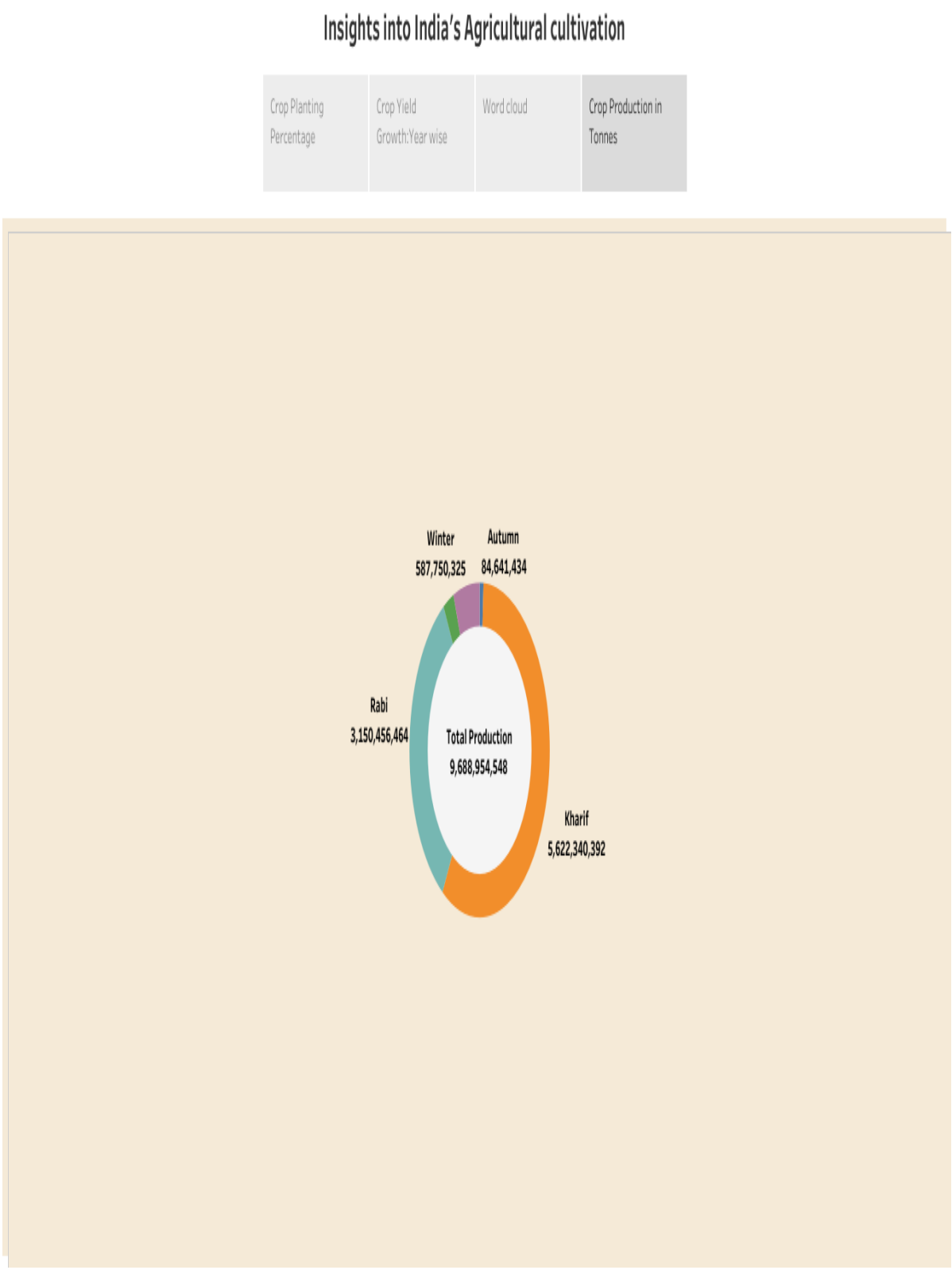
3.2.2.2) Story:


Insights into India's Agricultural cultivation
Crop Planting Percentage
Crop Yield Growth:Year wise
Word cloud
Crop Production in Tonnes
Season
Kharif
26,457
Kharif
Season
Kharif
8,764
Kharif
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

3.2.2.3) Story:


Insights into India's Agricultural cultivation
Crop Planting Percentage
Crop Yield Growth:Year wise
Word cloud
Crop Production in Tonnes
Tobacco
Coriander
Bajra
Other Cereals
Mesta
Cowpea(Lobia)
Soyabean
Black pepper
Guar seed
Cotton(lint)
Small millets
Dry Ginger
Gram
Barley
Horse-gram
Potato
Cashewnut
Linseed
Arhar/Tur
Maize
Wheat
Peas & beans (Pulses)
Jute
Moth
Sugarcane
Sesamum
Onion
Moong(Green Gram)
Rapeseed &Mustard
Ragi
Other Kharif pulses
Other Rabi pulses
Sunflower
Groundnut
Garlic
Oilseeds total
Cardamom
Other Summer Pulses
Rice
Dry chillies
Sweet potato
Urad
Castor seed
Khesari
Masoor
Sannhamp
Turmeric
Ginger
Jowar
Niger seed
Coconut
other oilseeds
Tapioca
Banana
Safflower
Arecanut

3.2.2.2) Story:


Insights into India's Agricultural cultivation
Crop Planting Percentage
Crop Yield Growth:Year wise
Word cloud
Crop Production in Tonnes
Winter
587,750,325
Autumn
84,641,434
Rabi
3,150,456,464
Total Production
9,688,954,548
Kharif
5,622,340,392

4) Advantages and Disadvantages of Agriculture:

4.1) Advantages:

- Contribute to improving the sharing of agricultural information resources, thereby increasing agricultural productivity and promoting the healthy and stable development of the agricultural industry.
- It is helpful to strengthen the communication between different agricultural regions, promote agricultural production to industrialization, and the development of production standardization, and enhance the competitiveness of the agricultural economy.
- It is helpful to promote the development of agricultural economy in multiple directions and transform the traditional agricultural economic management mode.
- It is helpful for farmers to quickly and comprehensively understand the dynamic information of the agricultural market, thereby adjusting the agricultural structure, producing agricultural products with large market demand, obtaining higher economic benefits, and promoting rural economic development, and realizing agricultural product marketing information management in agriculture.
- The application in the economy plays an important role in promoting the development of agriculture in our country.
- **Agricultural** use means lands, buildings, or structures, excluding any portion thereof used as a dwelling unit, used, designed, or intended for use for the purpose of a bona fide farming operation, including, but not limited to, animal husbandry, dairying, livestock, fallow, field crops, removal of sod, forestry, fruit farming, horticulture, market gardening, pasturage, poultry keeping, equestrian facilities, and any other activities customarily carried on in the field of agriculture; but does not include a commercial use or a medical marijuana operation.

4.2) Disadvantages:

- Lack of professional and technical personnel Because the application of information technology to design agriculture is relatively late and the application time is relatively short.
- There is a shortage of professional information technology talents in agricultural economic management.
- In addition, the construction of information networks for some rural public utilities is not perfect, causing farmers to be unable to obtain corresponding information in a timely manner and hindering the development of rural economic management.
- Lack of a perfect platform Most local government departments do not have a high level of understanding of agricultural modernization.
- Under the background of the information age, the development of agricultural economy needs to rely on strong support from government departments.
- Only when the government correctly analyses the conditions of the agricultural economic market can it guide the rapid agricultural economy Stable development.
- Farmers' informatization awareness is weak Some relatively backward areas are not deep enough in agricultural management concepts, agricultural economic development and information management to effectively guide local farmers in construction.
- This problem has seriously hindered the process of agricultural economic construction and information management.
- To sum up, in order to keep up with the development trend of agriculture in the information age, in terms of information resources, it is necessary to guide the government to build an agricultural

6) Applications of Agriculture:

It means applications relating to

(i) cultivating, characterizing or modifying soil;

(ii) producing, growing, improving, protecting, treating or modifying crops or forest products;

(iii) raising, harvesting, improving, protecting, treating or modifying livestock, poultry, fish or shellfish; and

(iv) the preparation, marketing or treatment of products resulting from the activities described in (i)-(iii) above.

- Agricultural Applications shall include applications involving the improvement or modification of soil, crops, livestock, poultry, fish or shellfish and their resulting products as they relate to human health, as well as foods from plants and animals designed or modified to enhance their health attributes, in each case for nutraceutical applications but not therapeutic applications in humans.
- Agricultural Applications shall also include agricultural applications relating to bacteria, fungi, and viruses, as well as pest organisms with respect to, and only to the extent of, such bacteria, fungi, viruses or pest organisms' interaction with soil, plants, livestock, poultry, fish or shellfish.
- For avoidance of doubt, it is acknowledged and understood that Agricultural Applications includes genes and gene-based or genetic technologies useful for achieving the above-described activities, in particular:
    - Gene-based diagnostics of agricultural pests;
    - Gene-based analysis of metabolism of pesticides in plants and pest organisms;
    - Gene-based analysis of metabolism and physiological state of plants; livestock, poultry, fish, shellfish, or their pests;
    - Genetic modification of pest organism for functional analysis of pest-related properties;
    - Genetic modification of pest, bacteria, fungi, or viruses for functional analysis and optimization as protectants or growth stimulators of plants, livestock, poultry, fish or shellfish;
    - Functional genetic analysis of the genomes of plants, livestock, poultry, fish, or shellfish or their pest for applications in agriculture;
    - Genetic modification of plants, livestock, poultry, fish, or shellfish or their pests with the goal of enhancing properties relevant to production and end-use (i.e.; input and output traits);
    - Gene-based diagnostics for determining seed and crop composition and quality; and
    - Gene-based markers for facilitation of the breeding of plants, livestock, poultry, fish, or shellfish or their pests for applications in agriculture.

5) Conclusion:

- In the process of studying the advantages and disadvantages of agricultural economic management informatization.
- This paper uses the agricultural data collection system as the test platform.
- The agricultural economic management informatization as the experimental group.
- The traditional agricultural economic management as the control group.
- The simple scale is used to evaluate the data processing ability of the two groups.
- In the comparative analysis, the experimental group can effectively improve agricultural data collection capabilities and village information management capabilities, enabling effective integration of various data and information sharing.
- Optimizing traditional agricultural economic management methods is the general trend.
- Overcoming the shortcomings of agricultural economic management information can not only effectively increase farmers' economic income, but also greatly promote the development of the national economy.

6) Embed Code:

6.1) Dashboard 1 Embed Code:

```
<div class='tableauPlaceholder' id='viz1696925938759' style='position: relative'><noscript><a href='#'><img alt='Area in acres region-wise ' src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Areainacresregion-wise&#47;1_rss.png' style='border: none' /></a></noscript><object class='tableauViz'  style='display:none;'><param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version' value='3' /> <param name='site_root' value='' /><param name='name' value='Dashboard3_16968415827850&#47;Areainacresregion-wise' /><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Areainacresregion-wise&#47;1.png' /> <param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param name='display_count' value='yes' /><param name='language' value='en-US' /><param name='filter' value='publish=yes' /></object></div>                <script type='text/javascript'>                    var divElement = document.getElementById('viz1696925938759');                    var vizElement = divElement.getElementsByTagName('object')[0];                    if ( divElement.offsetWidth > 800 ) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px'; } else if ( divElement.offsetWidth > 500 ) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px'; } else { vizElement.style.width='100%';vizElement.style.height='777px';}                    var scriptElement = document.createElement('script');                    scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js'; vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
```

6.2) Dashboard 2 Embed Code:

```
<div class='tableauPlaceholder' id='viz1696926008932' style='position: relative'><noscript><a href='#'><img alt='Production in tonnes region-wise ' src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Productionintonnesregion-wise&#47;1_rss.png' style='border: none' /></a></noscript><object class='tableauViz'  style='display:none;'><param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version' value='3' /> <param name='site_root' value='' /><param name='name' value='Dashboard3_16968415827850&#47;Productionintonnesregion-wise' /><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Productionintonnesregion-wise&#47;1.png' /> <param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param name='display_count' value='yes' /><param name='language' value='en-US' /><param name='filter' value='publish=yes' /></object></div>                <script type='text/javascript'>                    var divElement = document.getElementById('viz1696926008932');                    var vizElement = divElement.getElementsByTagName('object')[0];                    if ( divElement.offsetWidth > 800 ) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else if ( divElement.offsetWidth > 500 ) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else { vizElement.style.width='100%';vizElement.style.height='1027px';}                    var scriptElement = document.createElement('script');                    scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js'; vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
```

6.3) Dashboard 3 Embed Code:

```
<div class='tableauPlaceholder' id='viz1696926066558' style='position:
relative'><noscript><a href='#'><img alt='Dashboard 3 '
src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboar
d3_16968415827850&#47;Dashboard3&#47;1_rss.png' style='border: none'
/></a></noscript><object class='tableauViz'  style='display:none;'><param name='host_url'
value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version'
value='3' /> <param name='site_root' value='' /><param name='name'
value='Dashboard3_16968415827850&#47;Dashboard3' /><param name='tabs' value='no'
/><param name='toolbar' value='yes' /><param name='static_image'
value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashbo
ard3_16968415827850&#47;Dashboard3&#47;1.png' /> <param name='animate_transition'
value='yes' /><param name='display_static_image' value='yes' /><param
name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param
name='display_count' value='yes' /><param name='language' value='en-US' /><param
name='filter' value='publish=yes' /></object></div>                <script type='text/javascript'>
var divElement = document.getElementById('viz1696926066558');                    var
vizElement = divElement.getElementsByTagName('object')[0];                    if (
divElement.offsetWidth > 800 ) {
vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px'
;} else if ( divElement.offsetWidth > 500 ) {
vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px'
;} else { vizElement.style.width='100%';vizElement.style.height='1027px';}                    var
scriptElement = document.createElement('script');                    scriptElement.src =
'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
```

6.4) Story 1 Embed Code:

```
<div class='tableauPlaceholder' id='viz1696926135050' style='position:
relative'><noscript><a href='#'><img alt='Insights into India&#39;s agricultural cultivation '
src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboar
d3_16968415827850&#47;Story1&#47;1_rss.png' style='border: none'
/></a></noscript><object class='tableauViz'  style='display:none;'><param name='host_url'
value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version'
value='3' /> <param name='site_root' value='' /><param name='name'
value='Dashboard3_16968415827850&#47;Story1' /><param name='tabs' value='no'
/><param name='toolbar' value='yes' /><param name='static_image'
value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashbo
ard3_16968415827850&#47;Story1&#47;1.png' /> <param name='animate_transition'
value='yes' /><param name='display_static_image' value='yes' /><param
name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param
name='display_count' value='yes' /><param name='language' value='en-US' /><param
name='filter' value='publish=yes' /></object></div>                <script type='text/javascript'>
var divElement = document.getElementById('viz1696926135050');                    var
vizElement = divElement.getElementsByTagName('object')[0];
vizElement.style.width='1366px';vizElement.style.height='795px';                    var
scriptElement = document.createElement('script');                    scriptElement.src =
'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
```

6.5) Story 2 Embed Code:


```
<div class='tableauPlaceholder' id='viz1696925186147' style='position: relative'><noscript><a href='#'><img alt='Insights into India&#39;s Agricultural cultivation ' src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Story2&#47;1_rss.png' style='border: none' /></a></noscript><object class='tableauViz'  style='display:none;'><param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version' value='3' /> <param name='site_root' value='' /><param name='name' value='Dashboard3_16968415827850&#47;Story2' /><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Da&#47;Dashboard3_16968415827850&#47;Story2&#47;1.png' /> <param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param name='display_count' value='yes' /><param name='language' value='en-US' /><param name='filter' value='publish=yes' /></object></div>                <script type='text/javascript'>                    var divElement = document.getElementById('viz1696925186147');                    var vizElement = divElement.getElementsByTagName('object')[0];                    vizElement.style.width='1366px';vizElement.style.height='795px';                    var scriptElement = document.createElement('script');                    scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';                    vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
```