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DEPARTMENT OF PHYSICS

PROJECT TITLE:

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

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1. INTRODUCTION:

1.1 Overview

The history of agriculture in India dates back to the Neolithic Agriculture employed more than 50% of the Indian workforce and contributed 20.2% to the country's GDP.period. India ranks second worldwide in farm outputs. As per the Indian economic survey 2020 -21.

- In 2016, agriculture and allied sectors like animal husbandry, forestry and fisheries accounted for 17.5% of the GDP (gross domestic product) with about 41.49% of the workforce in 2020 .
- India ranks first in the world with highest net cropped area followed by the US and China.The economic contribution of agriculture to India's GDP is steadily declining with the country's broad-based economic growth.
- Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India.

1.2 PURPOSE

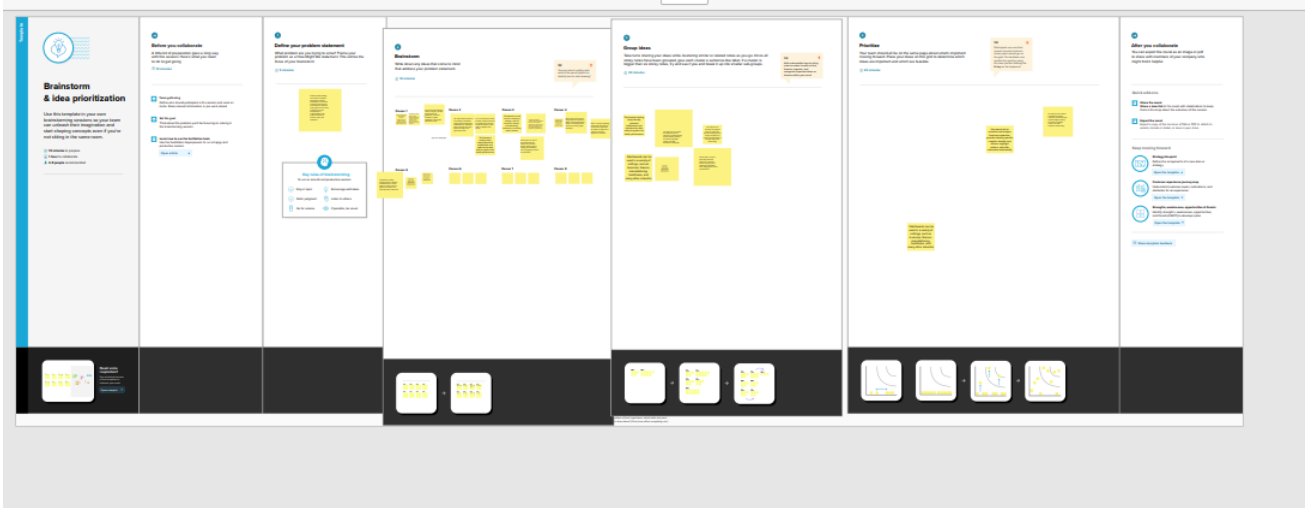
- India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. India is ranked under the world's five largest producers of over 80% of agricultural produce items, including many cash crops such as coffee and cotton, in 2010.[13] India is one of the world's five largest producers of livestock and poultry meat, with one of the fastest growth rates, as of 2011.

- One report from 2008 claimed that India's population is growing faster than its ability to produce rice and wheat. While other recent studies claim that India can easily feed its growing population, plus produce wheat and rice for global exports, if it can reduce food staple

spoilage/wastage, improve its infrastructure and raise its farm productivity like those achieved by other developing countries such as Brazil and China.

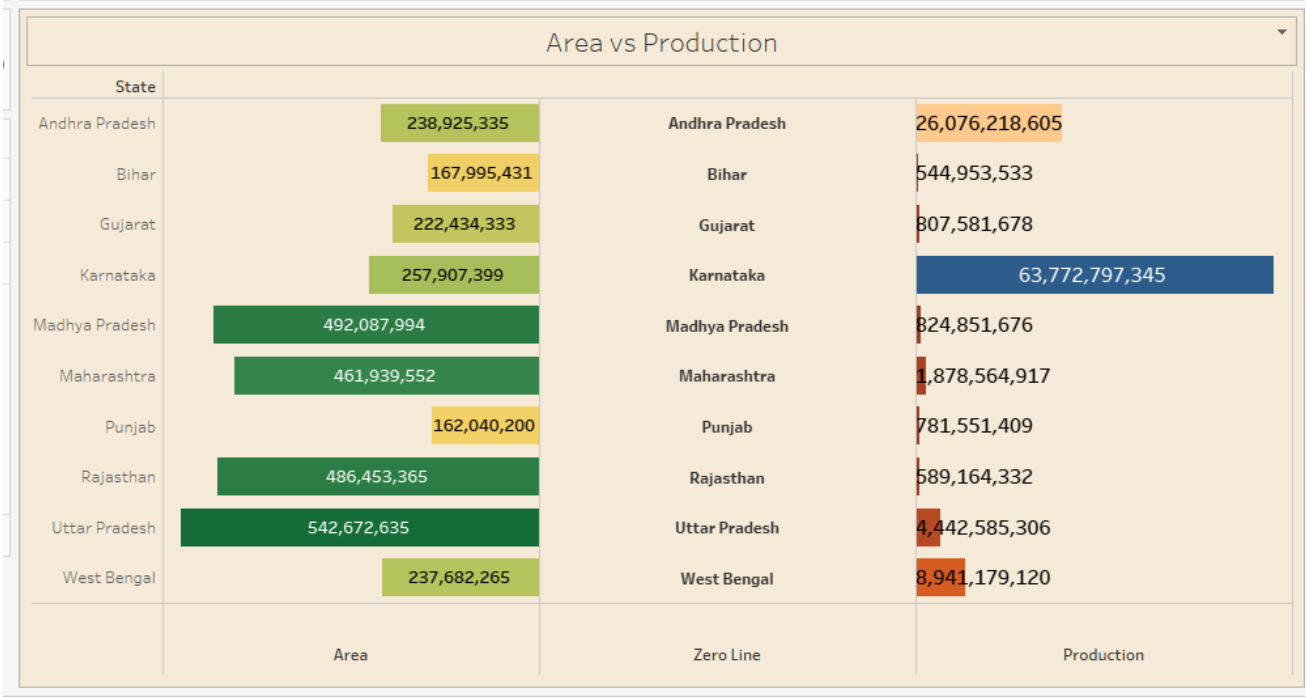
2. PROBLEM DEFINITION AND DESIGN THINKING

2.2 IDEATION AND BRAINSTORMING MAP

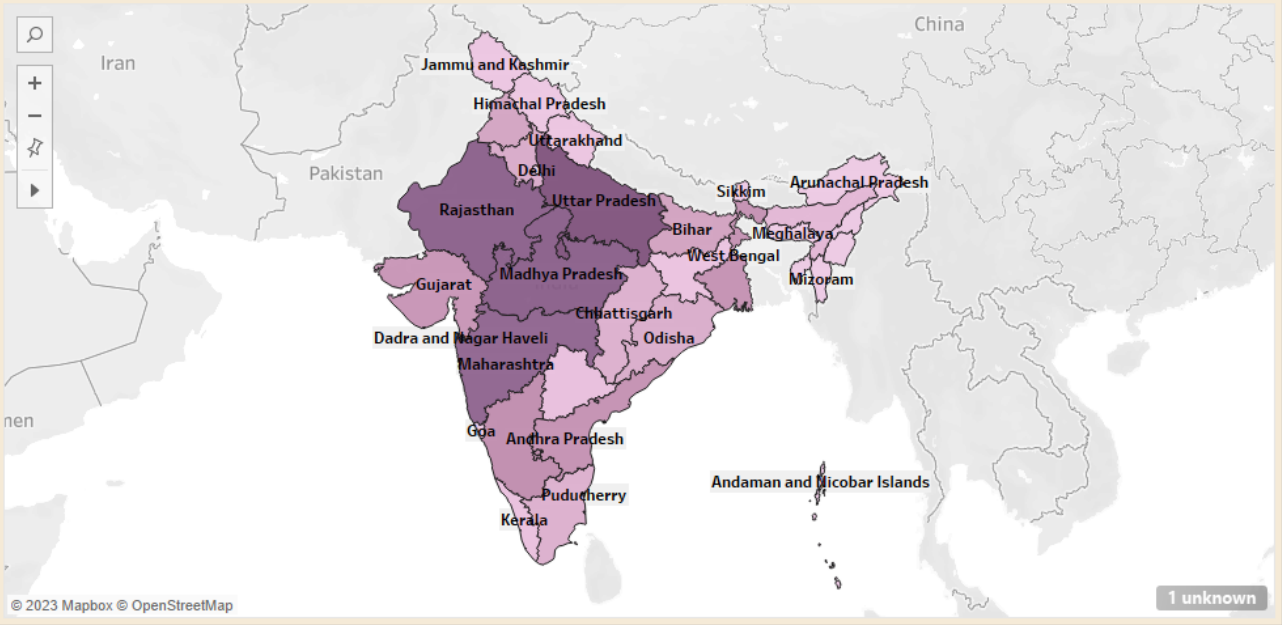


3. RESULT

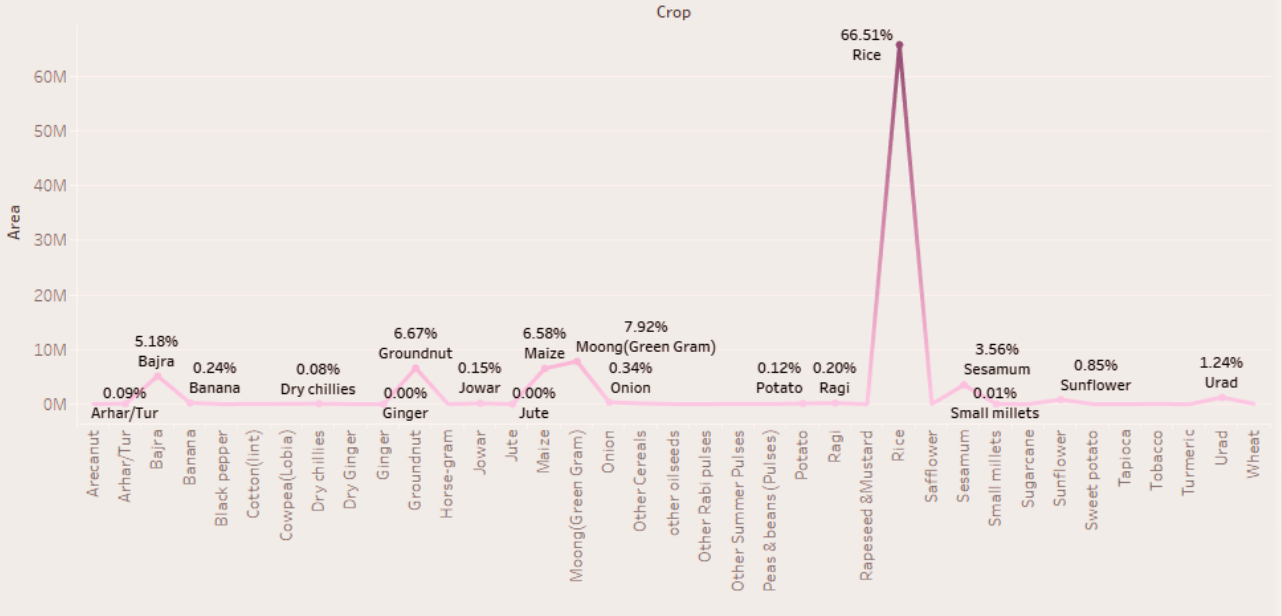
DASHBOARD AND STORIES

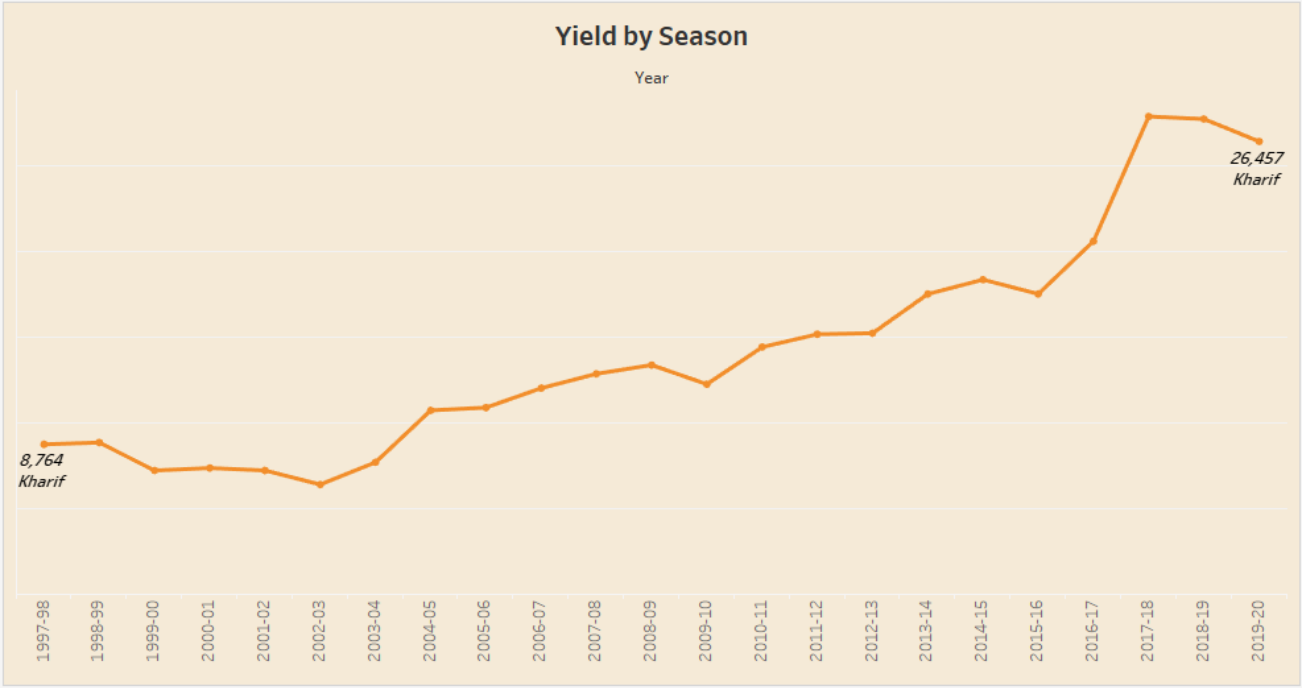


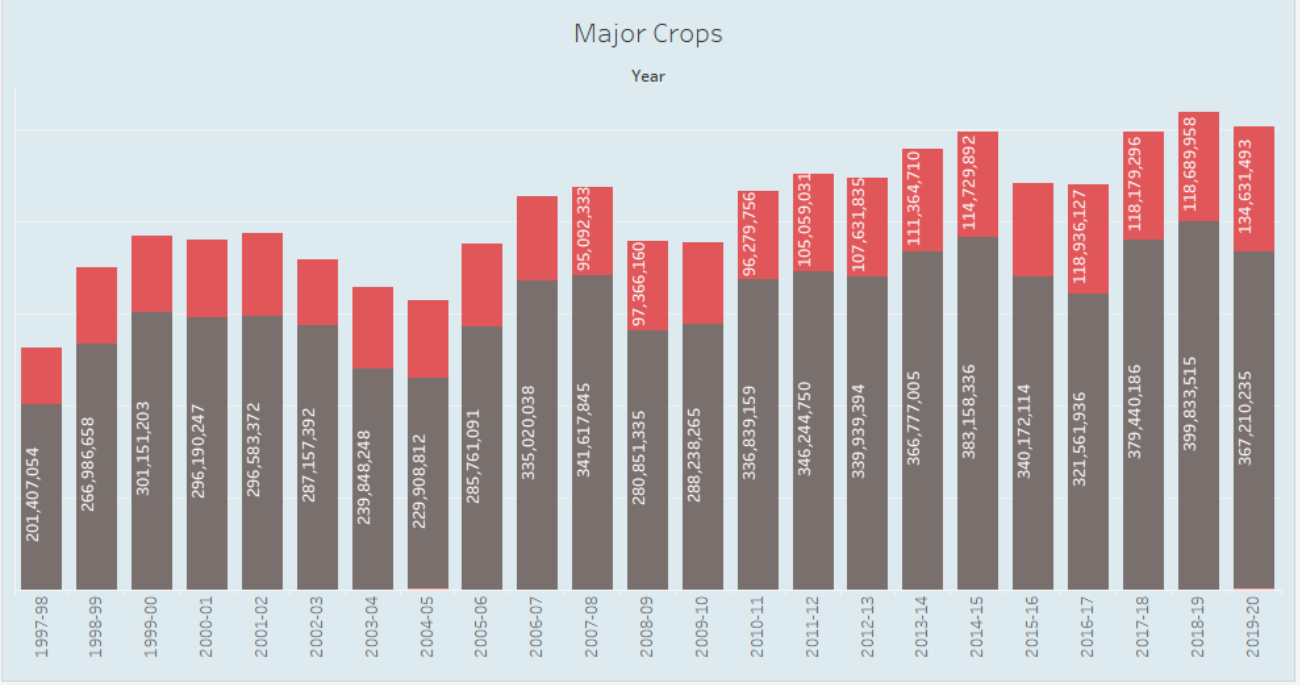
Statewise Agricultural Land



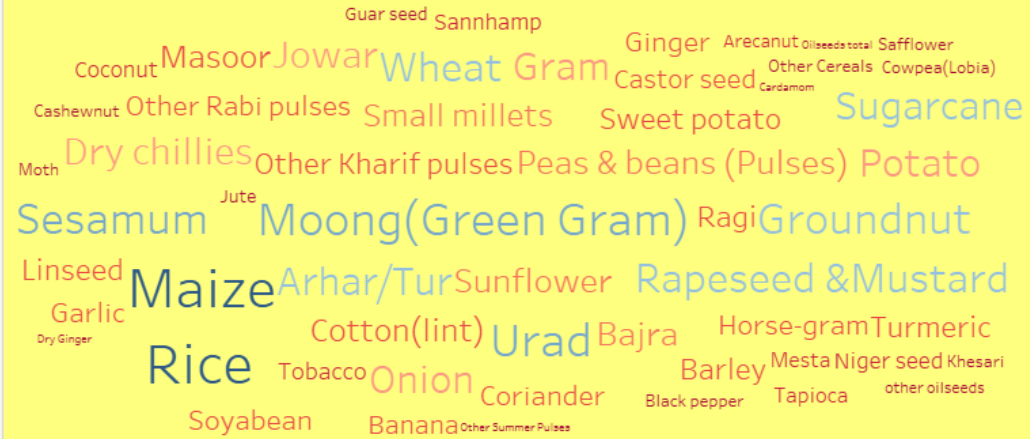
Season Based Cultivation Area



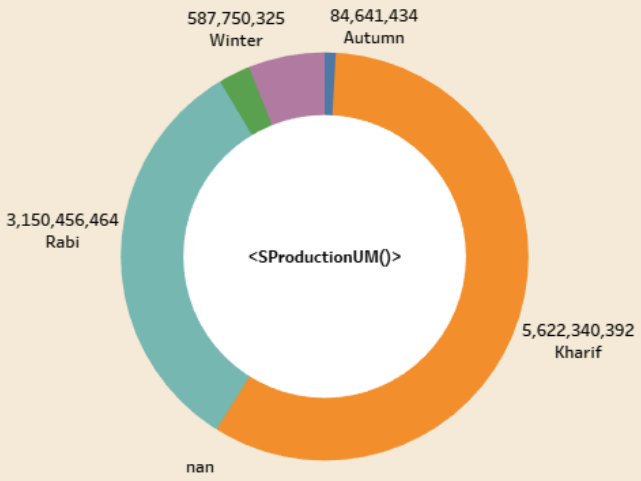

Yield by Season
Year
8,764
Kharif
26,457
Kharif
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20


Major Crops
Year
201,407,054
266,986,658
301,151,203
296,190,247
296,583,372
287,157,392
239,848,248
229,908,812
285,761,091
335,020,038
341,617,845
280,851,335
288,238,265
336,839,159
346,244,750
339,939,394
366,777,005
383,158,336
340,172,114
321,561,936
379,440,186
399,833,515
367,210,235
95,092,333
97,366,160
96,279,756
105,059,031
107,631,835
111,364,710
114,729,892
118,936,127
118,179,296
118,689,958
134,631,493
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

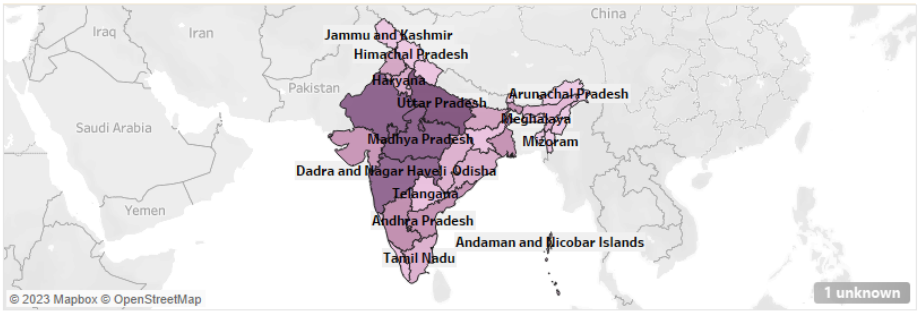
Crops (Plantation by count)



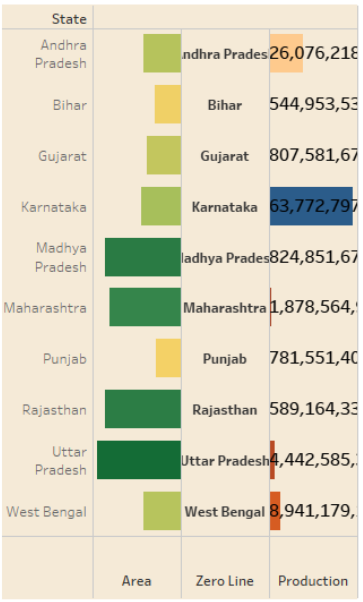
Season wise production



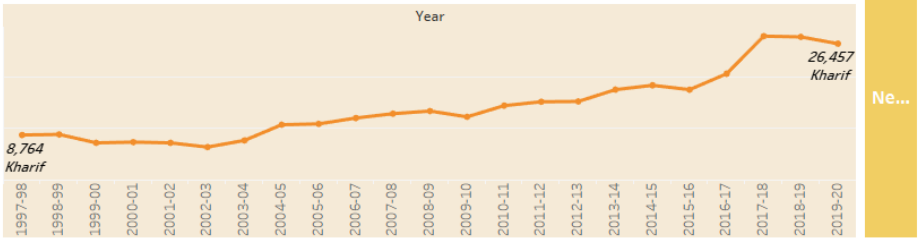
Statewise Agricultural Land



Area vs Production



Yield by Season



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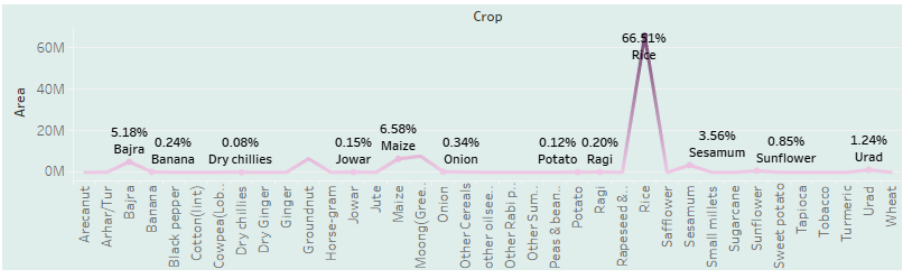
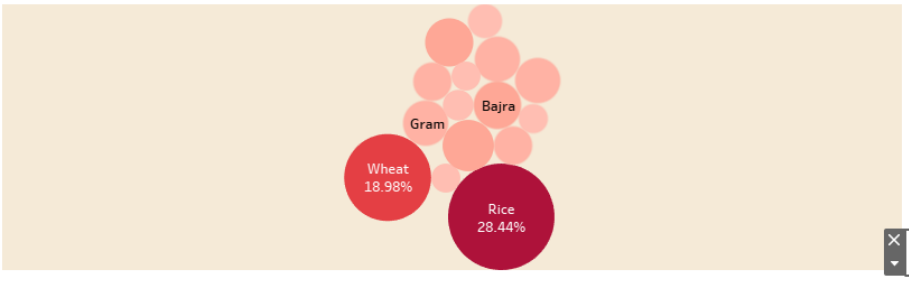
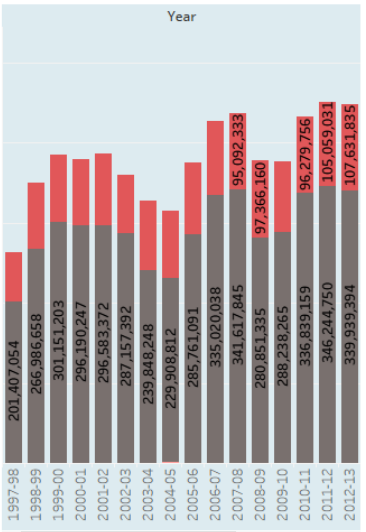
Season Based Cultivation Area



Crop Plantation by Area

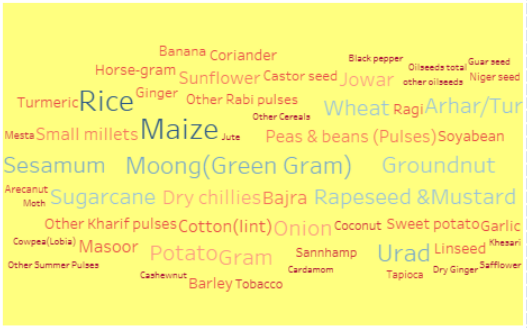


Major Crops



Next

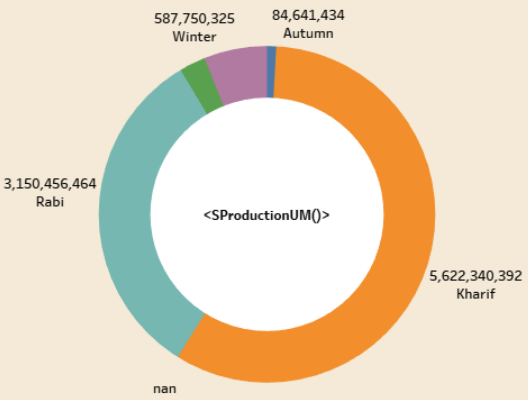
Crops (Plantation by count)



East

326,242,956,201

Season wise production



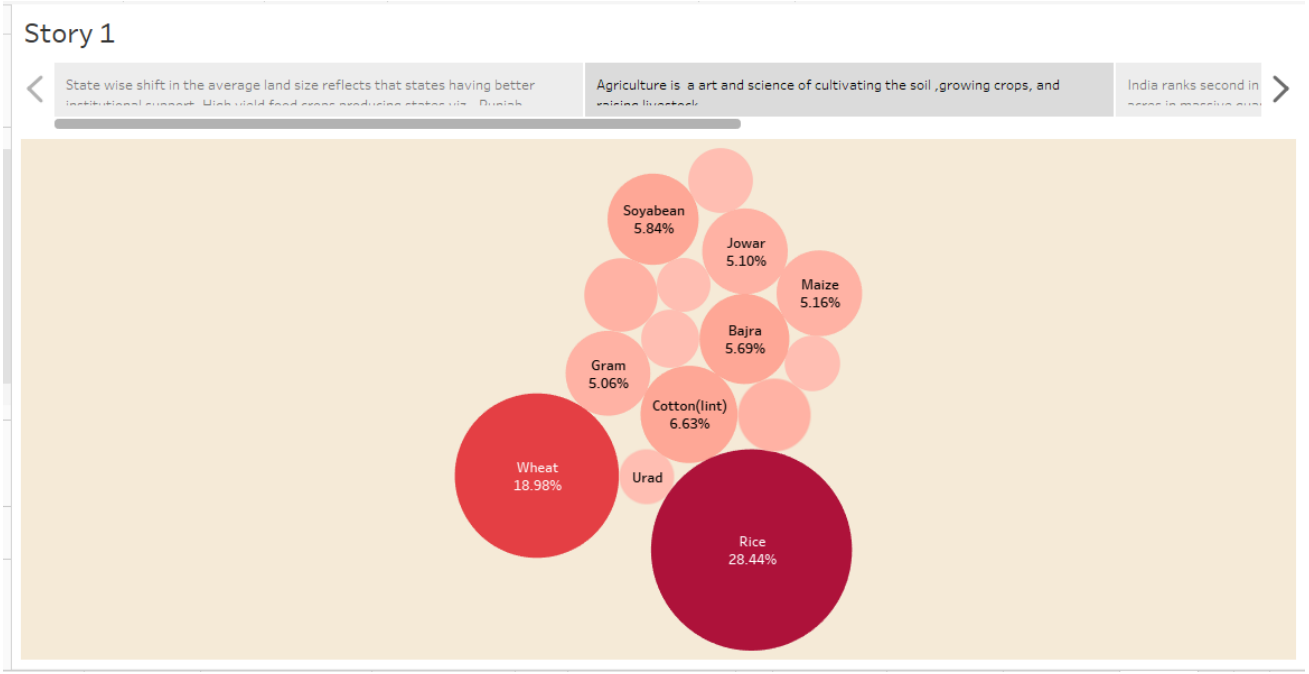
Story 1

...ing crops, and

India ranks second in the world when it comes to arable land. With 394.6 million ...

India ranks in the statewise where it comes to agriculture land. agriculture ...

State	Area	Zero Line	Production
Andhra Pradesh	238,925,335	Andhra Pradesh	26,076,218,605
Bihar	167,995,431	Bihar	544,953,533
Gujarat	222,434,333	Gujarat	807,581,678
Karnataka	257,907,399	Karnataka	63,772,797,345
Madhya Pradesh	492,087,994	Madhya Pradesh	824,851,676
Maharashtra	461,939,552	Maharashtra	1,878,564,917
Punjab	162,040,200	Punjab	781,551,409
Rajasthan	486,453,365	Rajasthan	589,164,332
Uttar Pradesh	542,672,635	Uttar Pradesh	4,442,585,306
West Bengal	237,682,265	West Bengal	8,941,179,120



4. ADVANTAGES AND DISADVANTAGES

ADVANTAGES OF INDIA'S AGRICULTURE

Agriculture and Raw materials

★ Good quality products require good quality ingredients. Increasingly, crop raw materials are grown with a specific final product in mind: particular fruit and vegetable varieties are directed to the fresh produce market, whereas others are suitable for canning or freezing.

★ The way that they are produced is also important - segregation of organically and conventionally grown raw materials has been a major issue for several years, and this has highlighted the need for good traceability systems.

FRUITS AND VEGETABLES

★ Fruit and vegetables are a good source of vitamins and minerals, including folate, vitamin C and potassium . They're an excellent source of dietary fibre, which can help maintain a healthy gut and prevent constipation and other digestion problems.

COTTON FOR CLOTHING

★ Cotton is the basic resource for thousands of consumer and industrial products manufactured throughout the world, and the contribution made by cotton to the food and fibre industry continues to grow in importance. Cotton grown without the use of any synthetically compounded chemicals (i.e. pesticides, growth regulators, defoliants, etc.) and fertilisers is considered as 'organic' cotton. But it cannot be claimed as organic.

★ Organic production can be defined in many ways but organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony. Organically raised cotton is gradually winning over new ground both on the farm and in the marketplace. No toxins or synthetic fertilisers are used.

★ Organic cotton is produced without the use of harsh chemical bleaches or dyes, and is allergy free. Natural fertilisers, a compost and soil amendment are used, and advances in natural pest control, such as ladybugs which destroy harmful insects, have helped make raising organic cotton a viable enterprises.

PHARMACEUTICAL PRODUCTS

- Pharmaceutical crops is an ambiguous term used by biologists and chemists for categories of plants.
  This review focuses on the definition and scope of pharmaceutical crops. We define pharmaceutical crops as those cultivated species that are used for extraction or preparation of therapeutic substances such as active pharmaceutical ingredients (APIs), excipients used in pharmaceutical formulations, vaccines and antibodies, as well as other therapeutic proteins.

- ❖ Based on the type of pharmaceutical product, these crops can be classified into three distinct yet sometimes overlapping

categories: crops for the production of small therapeutic molecules (STMs), large therapeutic molecules (LTMs), or standardised therapeutic extracts (STEs).

- ❖ This review briefly discusses the relationships of pharmaceutical crops with traditional food crops, medicinal plants, medicinal crops, and invasive species.

DISADVANTAGES

WATER SCARCITY

- ➢ Excessive freshwater consumption can be responsible for a scarcity in the circulation rate, which occurs when the freshwater demand exceeds its availability.
- ➢ Hence, water consumption needs to be optimised in all human activities, given the increasing freshwater scarcity due to climate changes and to the annual net increase in the human population of 81,000,000.
- ➢ Freshwater plays many important roles in daily life for example, agriculture is responsible for nearly 70% of that withdrawal volume, and it is therefore, the most water-intensive

SOIL DEGRADATION & LAND EROSION

- Soil degradation is the physical, chemical and biological decline in soil quality . It can be the loss of organic matter, decline in soil fertility, and structural condition, erosion, adverse changes in salinity, acidity or alkalinity, and the effects of toxic chemicals, pollutants or excessive flooding.

CLIMATIC CHANGE & NATURAL DISASTER

- Climate change has both direct and indirect impacts on agricultural productivity - through changing rainfall patterns, drought, flooding and the geographical redistribution of pests and diseases.

- These effects, in turn, influence the intensity and, in some cases, the frequency of extreme environmental events, such as forest fires, hurricanes, heat waves, floods, droughts, and storms .

APPLICATIONS

- 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.
- 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.

CONCLUSION

Although India has attained self-sufficiency in food staples, the productivity of its farms is below that of Brazil, the United States, France and other nations. Indian wheat farms, for example, produce about a third of the wheat per hectare per year compared to farms in France. Rice productivity in India was less than half that of China. Other staples productivity in India is similarly low. Indian total factor productivity growth remains below 2% per annum; in contrast, China's total factor productivity growth is about 6% per annum, even though China also has smallholding farmers. Several studies suggest India could eradicate its hunger and malnutrition and be a major source of food for the world by achieving productivity comparable with other countries.

FUTURE SCOPE

- India is an agrarian economy where people can augment their income by adopting hi tech farming methods. In fact, they should adopt industrial farming because India experiences all three seasons of summer, Winter & Rainy.

- Agriculture sectIts diverse climate sustains production of food grains, fruits, & vegetables that is crucial for food security
- This offers tremendous scope for agriculture because we need skilled agriculturists who can develop an infrastructure for sustainable growth.

- Agriculture sector has an enormous scope in India as of the future reference because the agriculture sector is the largest sector with 49% of the country's population works in agriculture sector by occupation .