

Agriculture in India at a glance

**A Project Report for the course
CS595: Data Visualization,
IIT Guwahati**

**Authored by: Mohit Ram Sharma
Roll number: 224161018**



FISHERIES

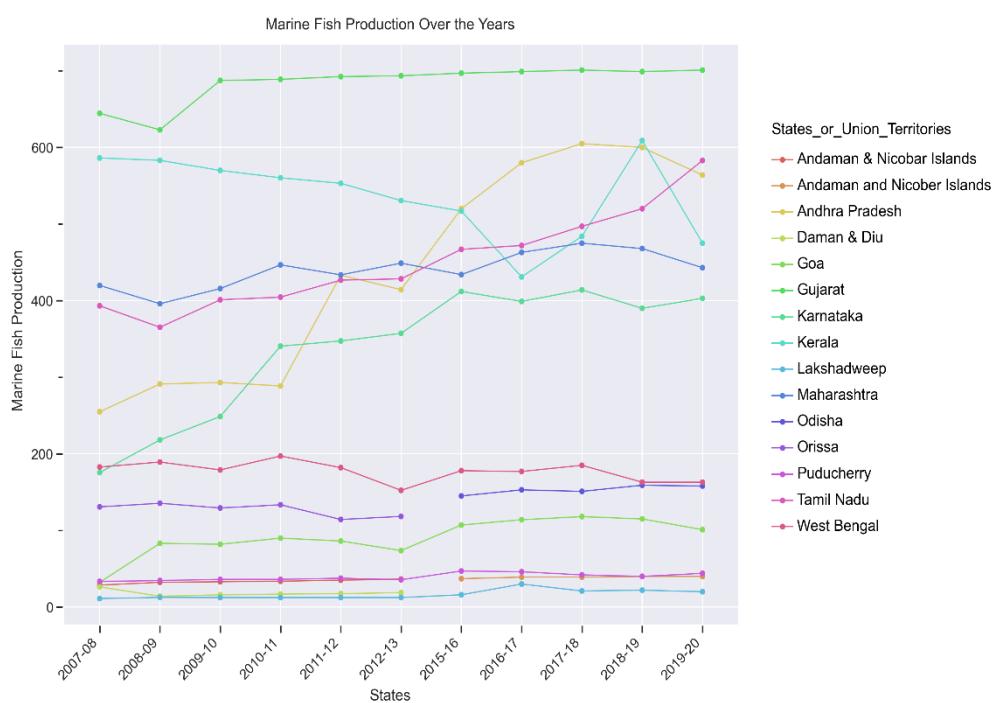
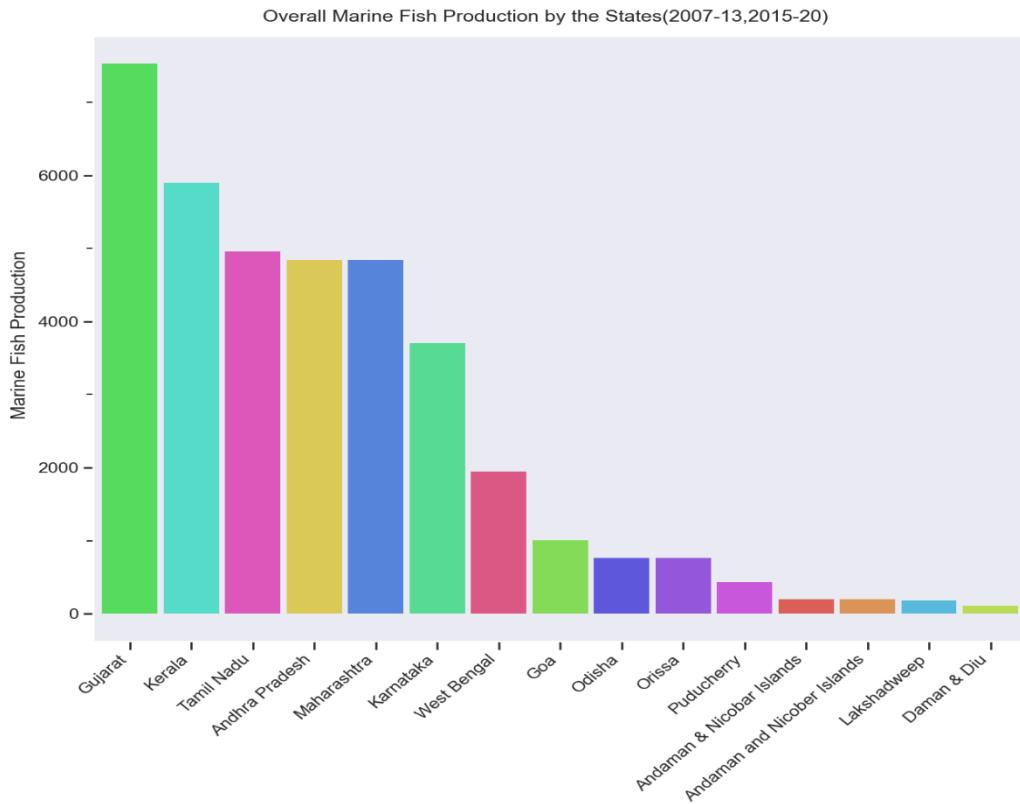
MARINE FISH PRODUCTION

Marine Fishery is the Practice of growing fish in seawater or saltwater.

Gujarat, Kerala, and Tamil Nadu have produced the highest number of marine fish in the years (2007-2020)

The yellow line on the right indicates that Andhra Pradesh's annual growth is highest in terms of Marine Fish Production and has become third largest fish producer in the recent year.

Kerala despite being in the top in the initial years has slipped in recent years.



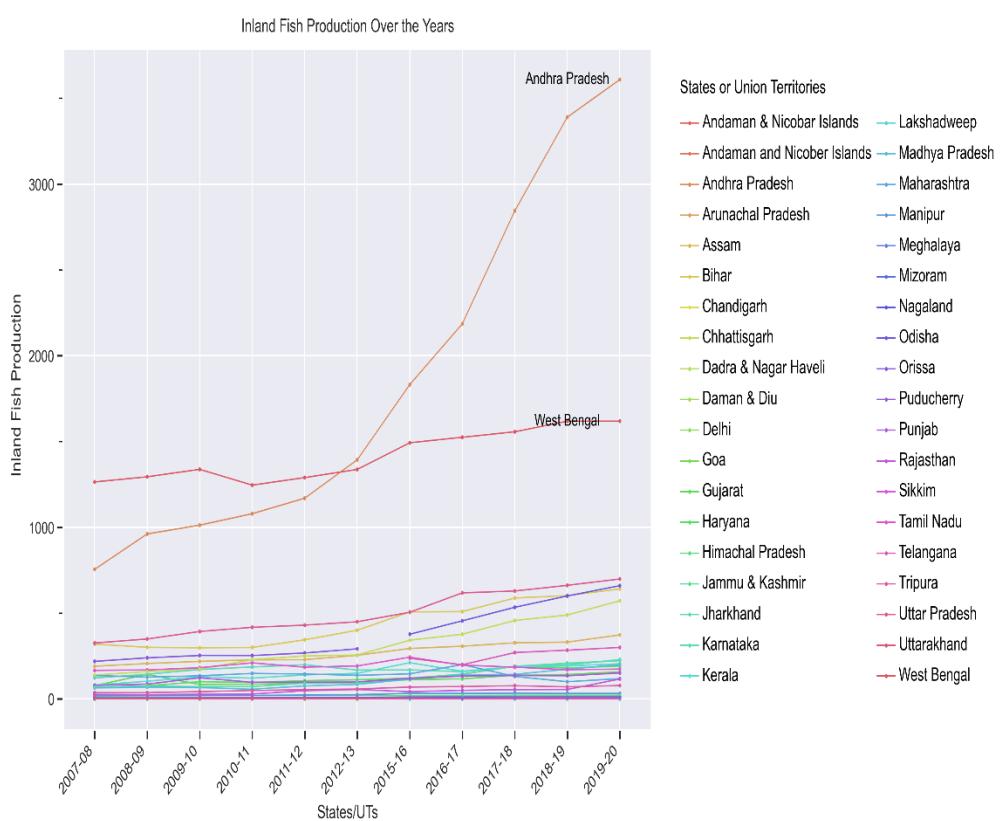
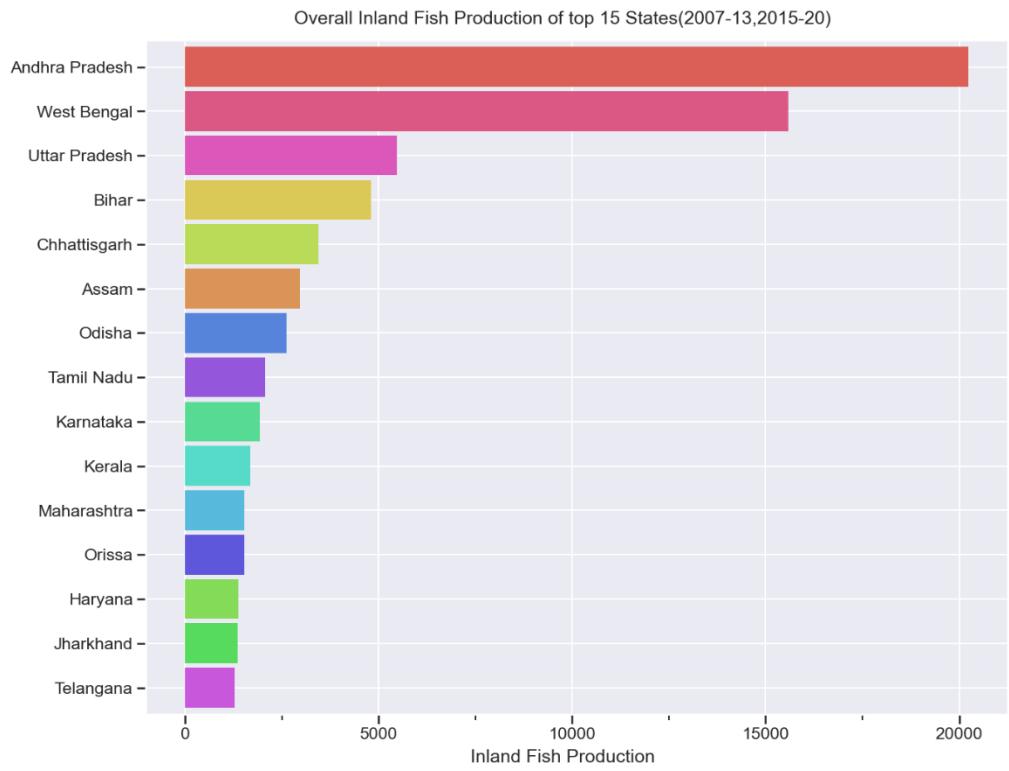
INLAND FISH PRODUCTION

Inland Fishery is practice of growing fish in freshwater sources such as canals, ponds, rivers, and reservoirs.

Andhra Pradesh is miles ahead of other states in Inland production. It's growth in recent years is remarkable.

The second position is taken by West Bengal.

Andhra Pradesh took the first spot in terms of Inland Fish production from West Bengal in 2012-13, after that there is no stopping for Andhra Pradesh.



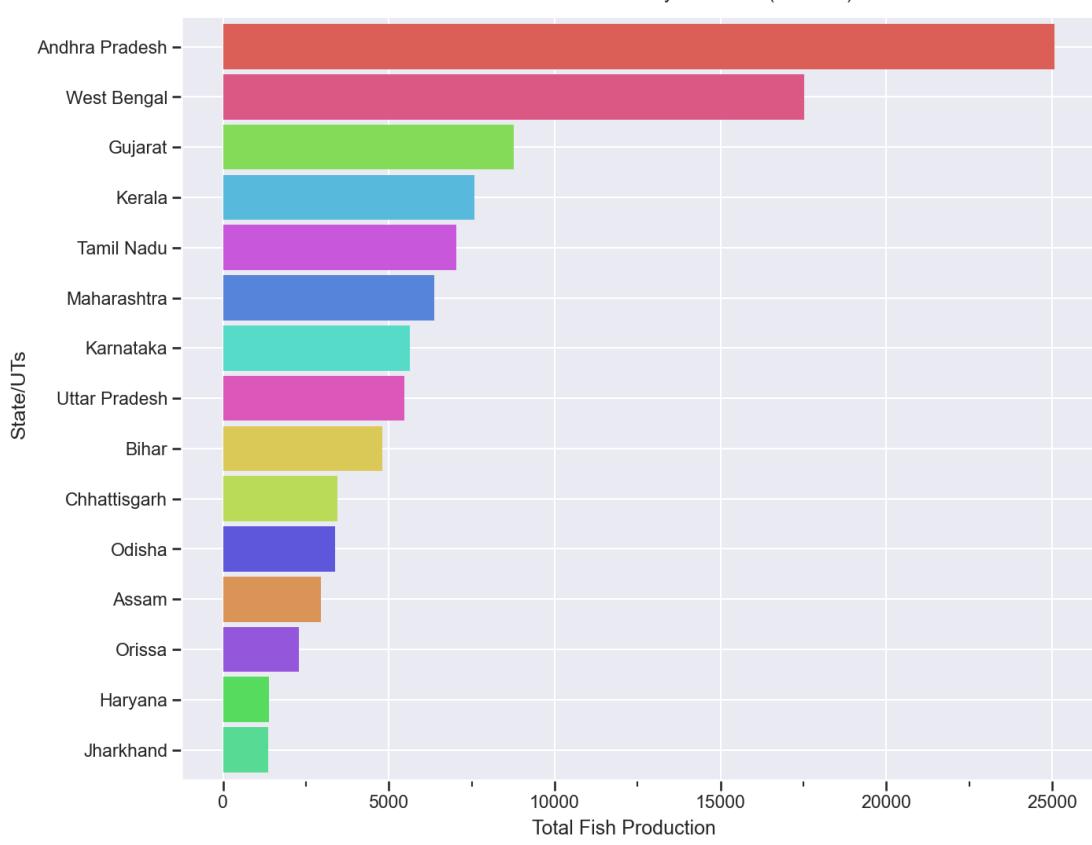
TOTAL FISH PRODUCTION

Total Fish Production refers to sum of Marine and Inland Fish Production.

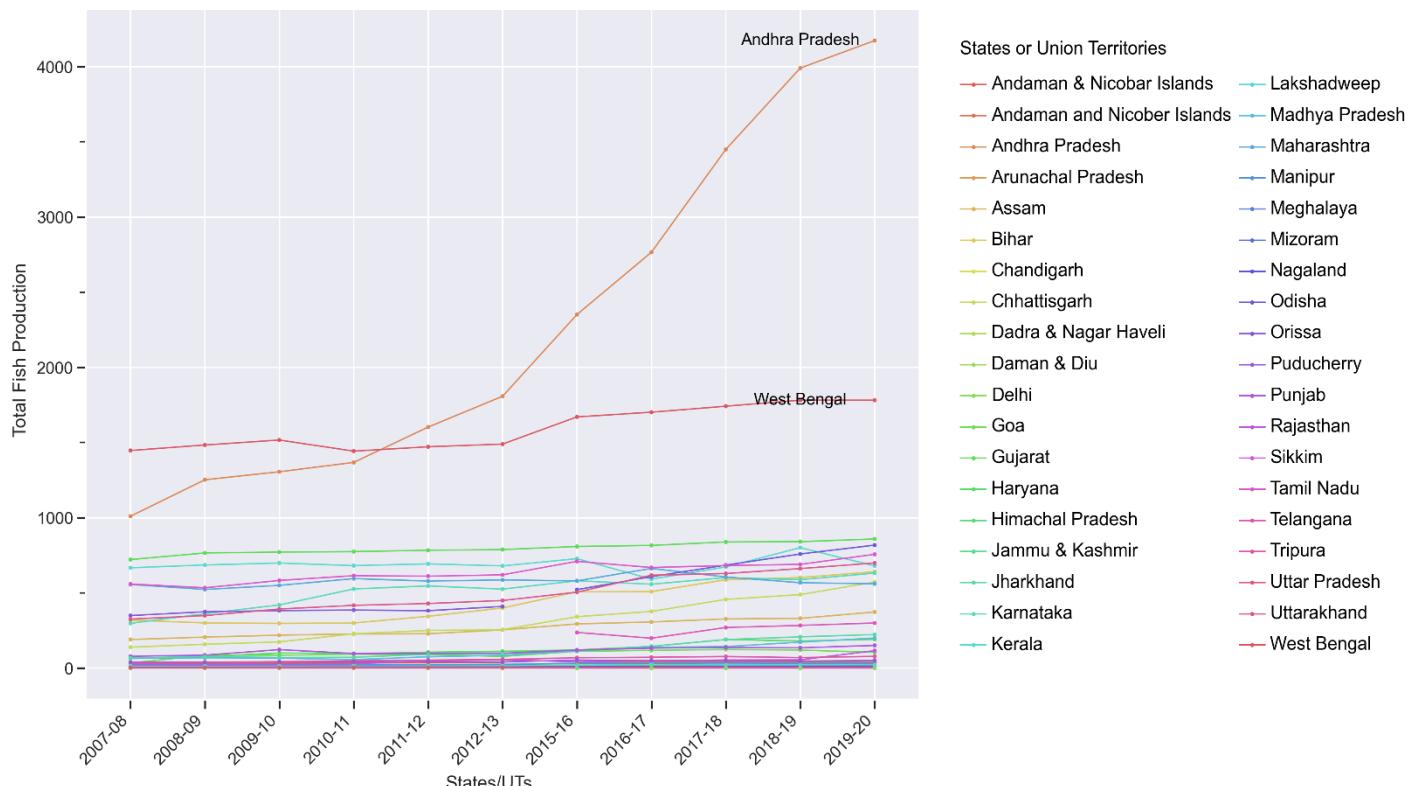
Andhra Pradesh, and West Bengal are the top two states in terms of total fish production. Andhra Pradesh increased its production by 4 times.

Thanks to its Marine Fishery, Gujarat is at the third place.

Overall Total Fish Production by the States(2007-13)

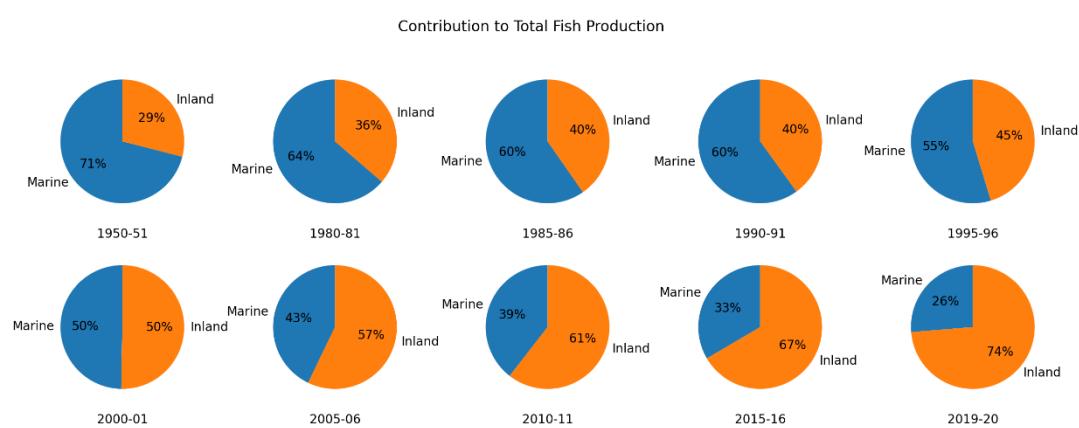
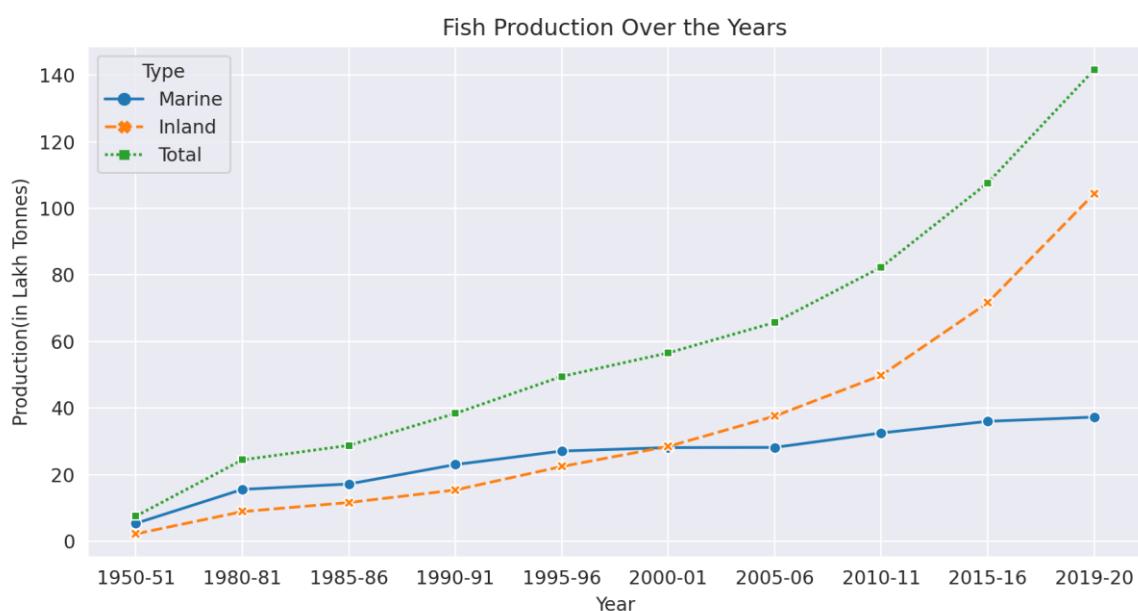


Total Fish Production Over the Years



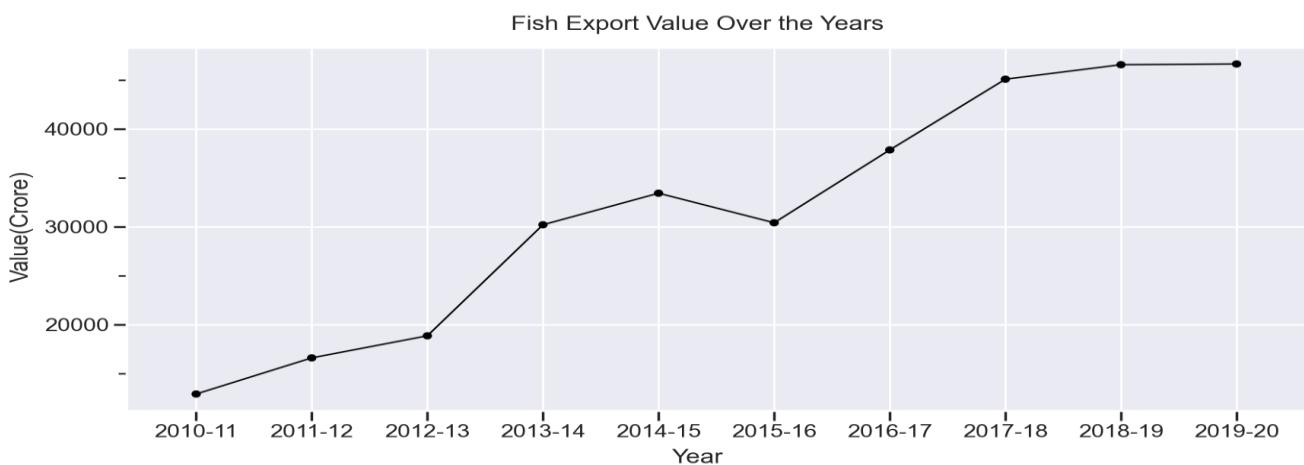
Trend shift from Marine to Inland over the years.

After Independence, majority of our fish production was coming from Marine sources, but in the 21st century, Inland production overtook the marine production which can be seen in the line chart below. The gradual decrease in contribution of marine fish production to total production can be seen in the pie chart below.

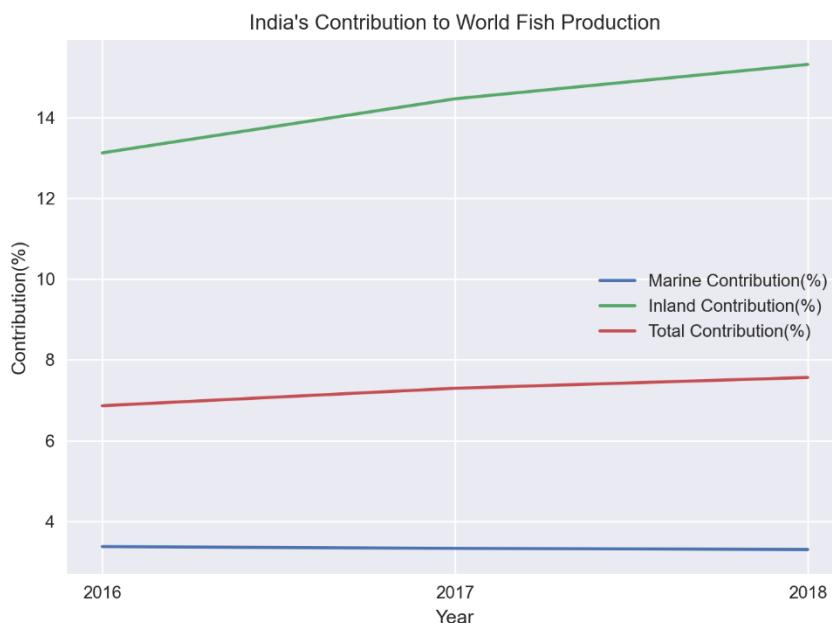
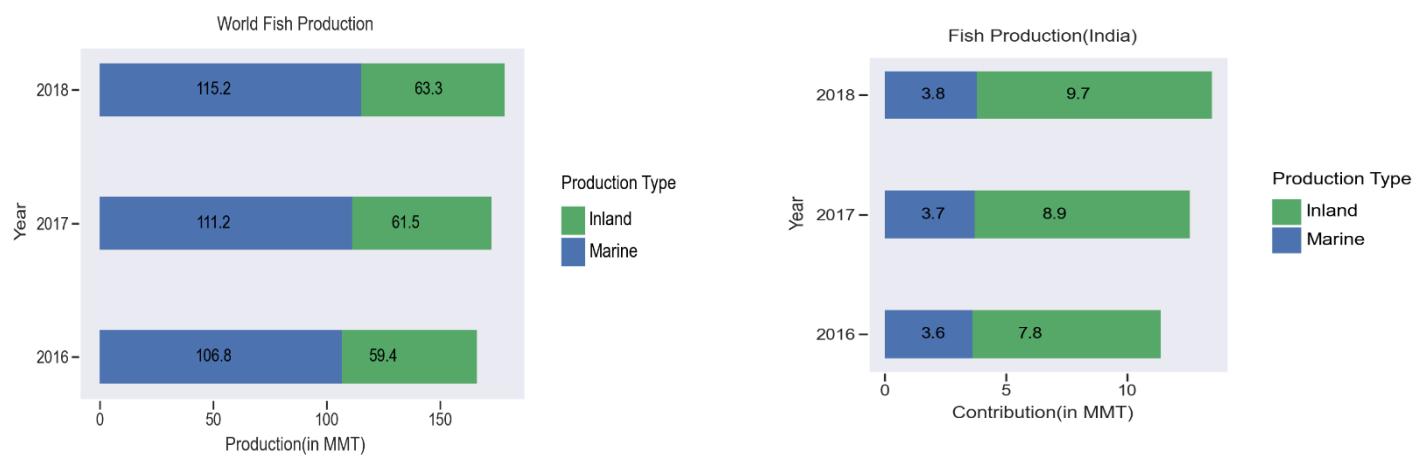


The line chart below shows that fish export of India in both quantity and value are on the rise. The value has doubled in the period (2010-2020), whereas quantity grew 1.75 times in that period. This is a good sign as export of goods and items determines a country's economy.

Andhra Pradesh is the state with highest export.



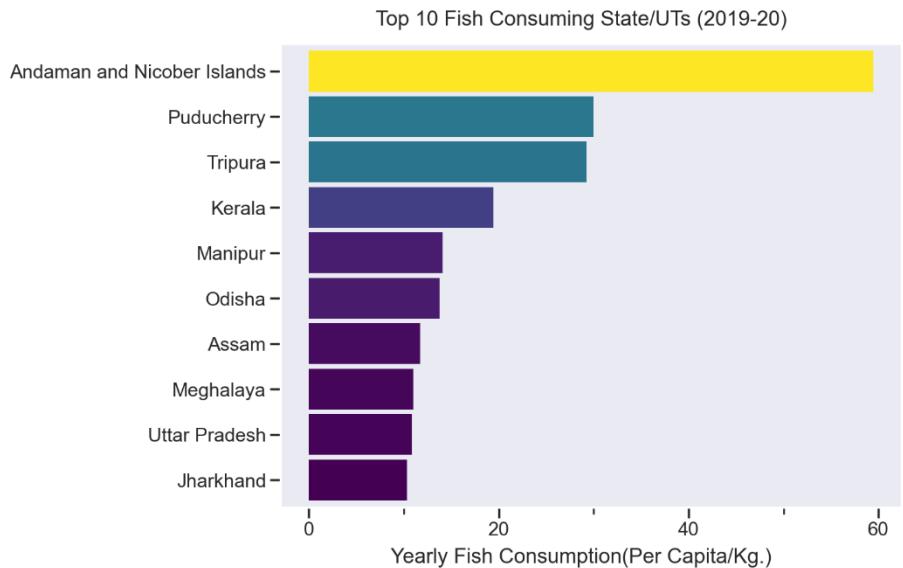
We saw that in India, Inland Contribution is more than the Marine, but worldwide Marine contribution is more than Inland. India's Inland production has increased almost 1 MMT each year.



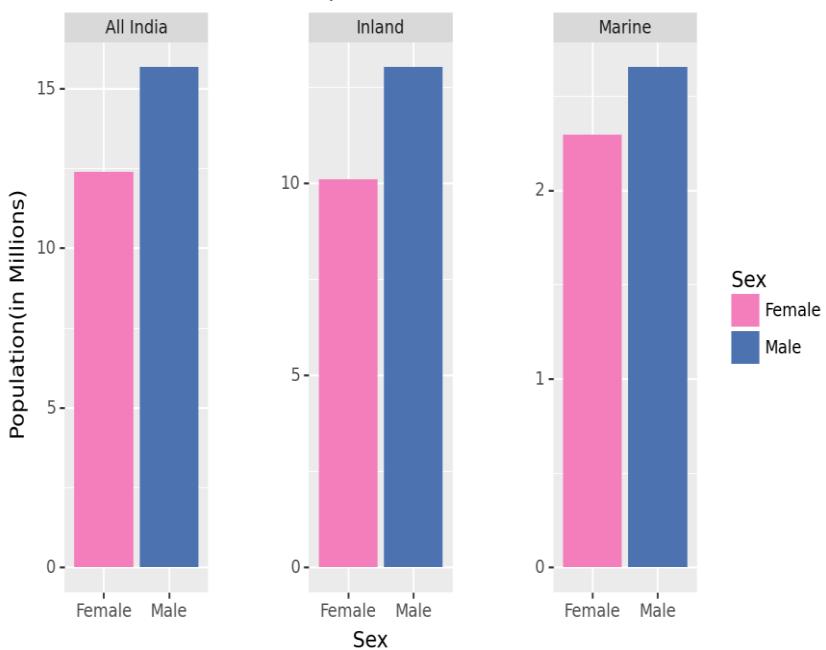
- **India is the second largest fish producing country after China. China produces six times more than India.**
- **India's Inland Contribution is around 15 % which is more than India's contribution in Total(Marine + Inland) Fish Production.**

FISH CONSUMPTION

Based on the data at hand, the states on the left are top states in fish consumption.
Surprisingly, the states which produces more fish are not the states which consume more.



Fisherman Population(2019-2020)



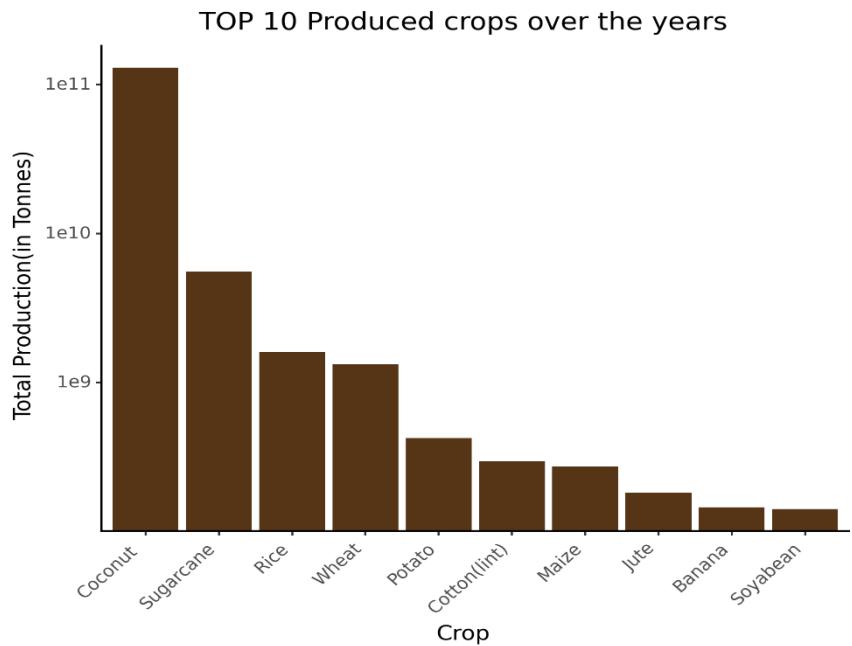
FISHERMEN POPULATION

The chart on the right shows that females are also present in good amount in the fishermen population. Nearly 44% fishermen are female.

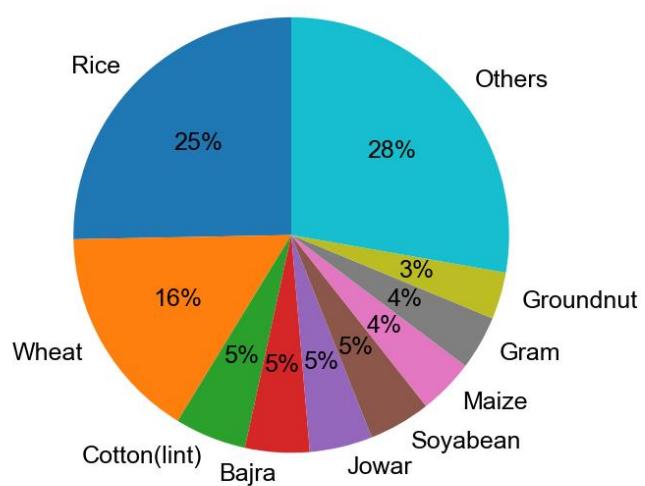
CROPS

TOP PRODUCED CROPS

Based on the given data, The top produced crops are on the right. The bar heights indicates sum of the production for those crops over the years (1997-2015)



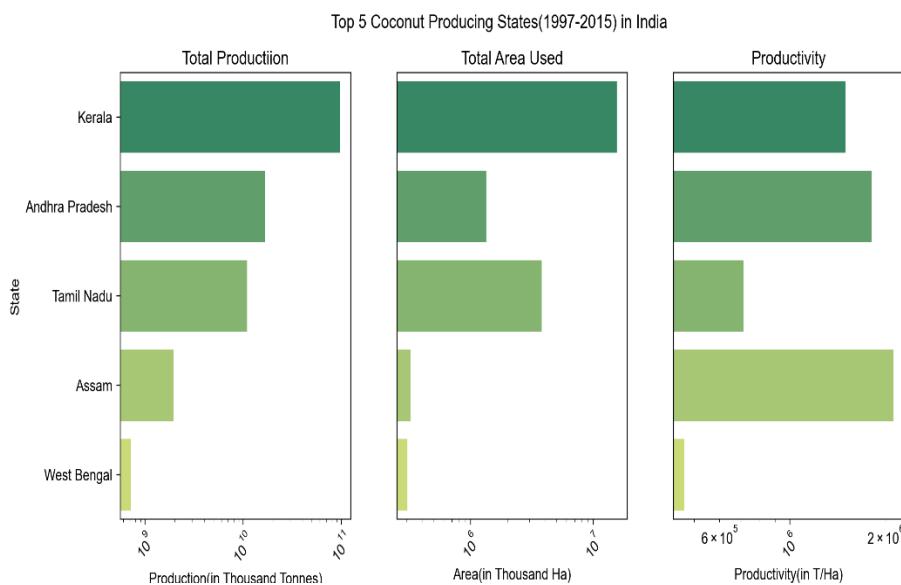
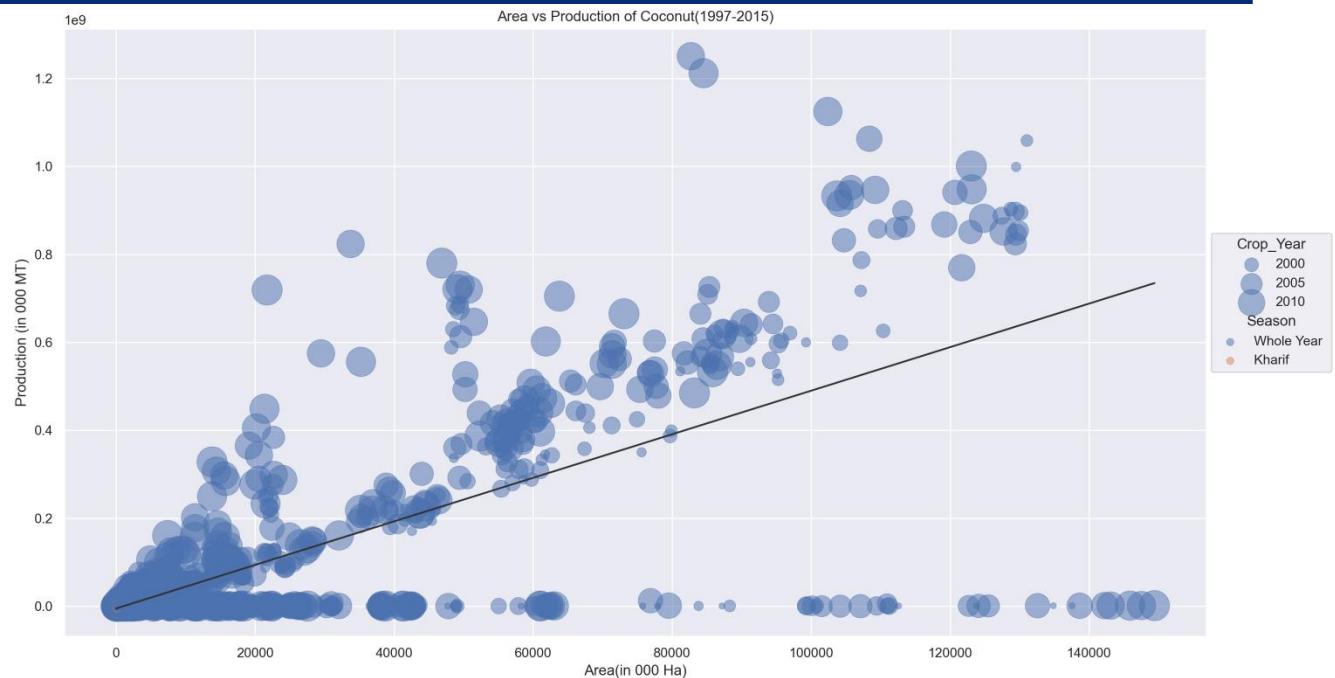
Percentage of Total Area used for crops



AREA TAKEN BY CROPS

Rice and Wheat Occupy nearly 40% of the total land used for crop production.

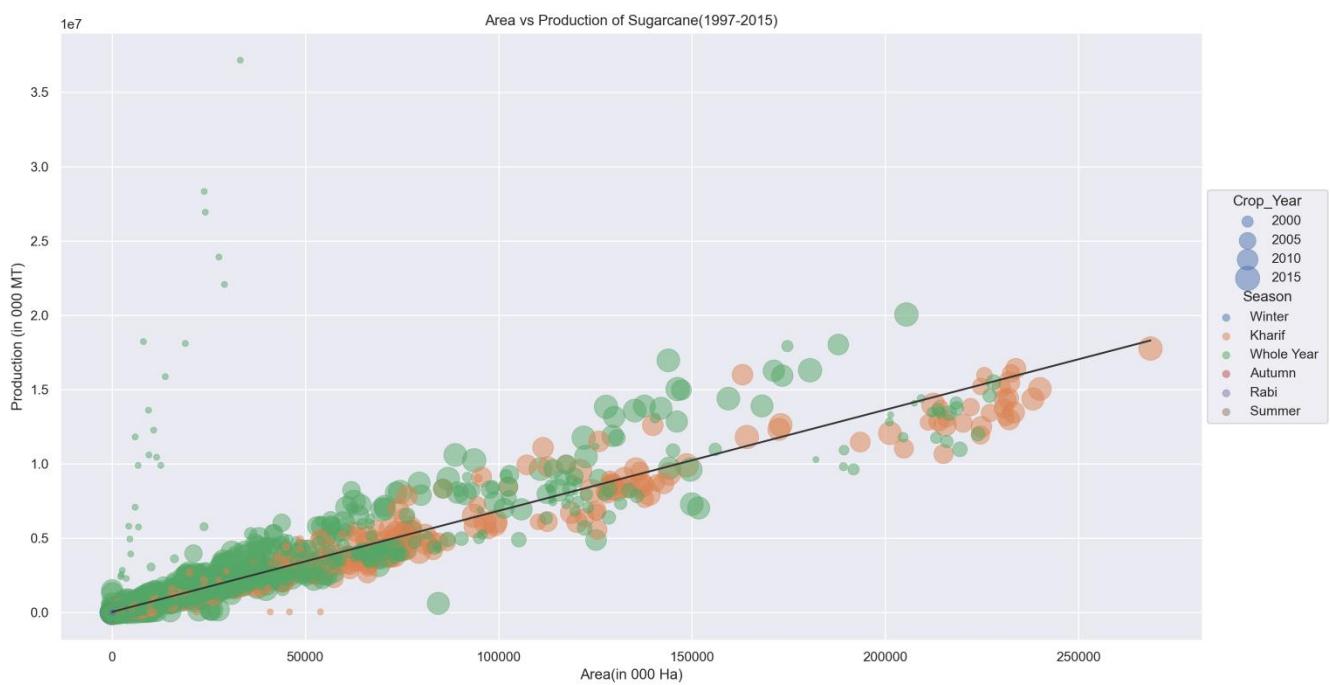
THE FOLLOWING PLOT INDICATES COCONUT IS PRODUCED WHOLE YEAR IN INDIA. BIGGER BUBBLES IN THE Y-AXIS ABOVE 0.6 INDICATES THAT WE ARE CONSISTENTLY PRODUCING MORE COCONUTS IN THE RECENT YEARS.



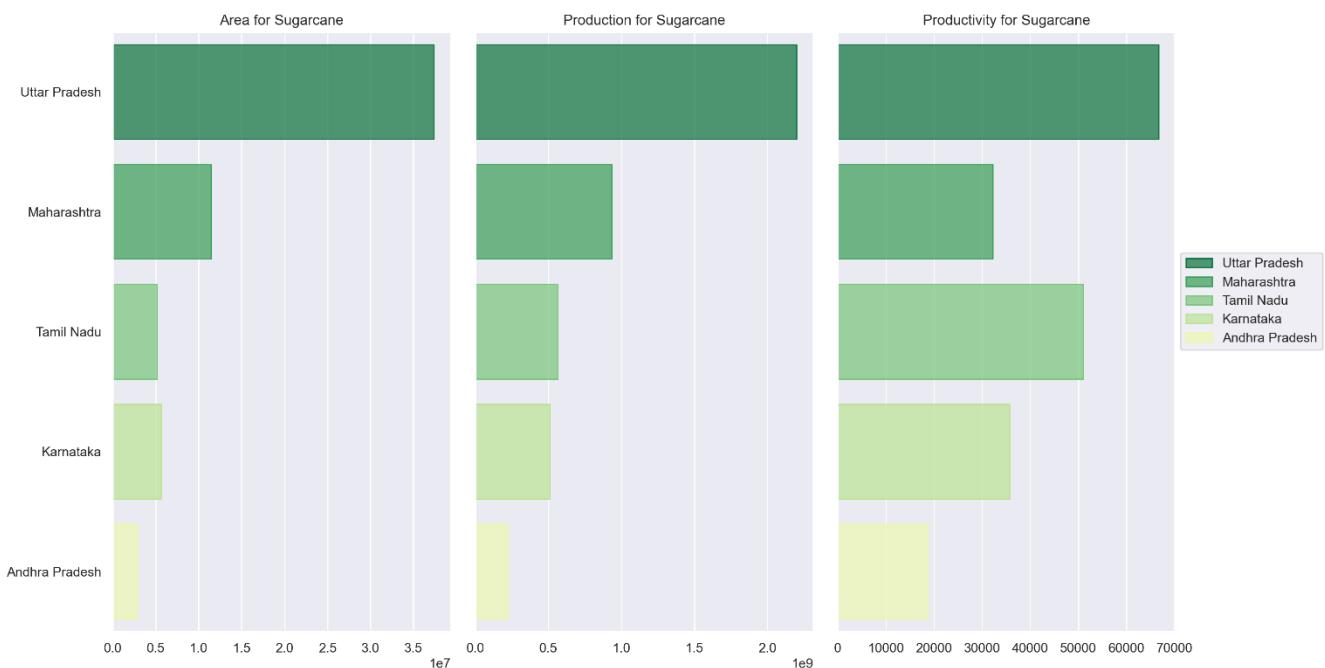
[SIDEBAR TITLE]

Though Kerala is on the top in terms of Coconut production, Assam tops in terms of coconut productivity.

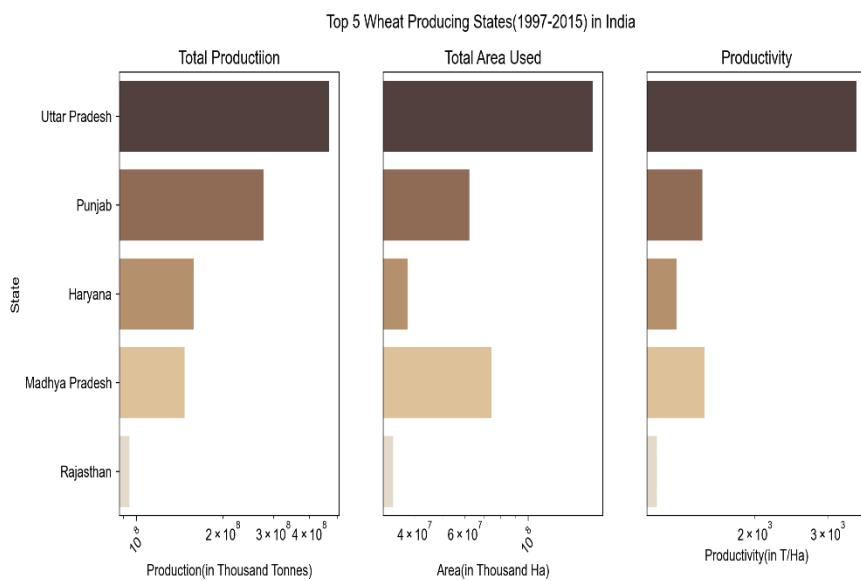
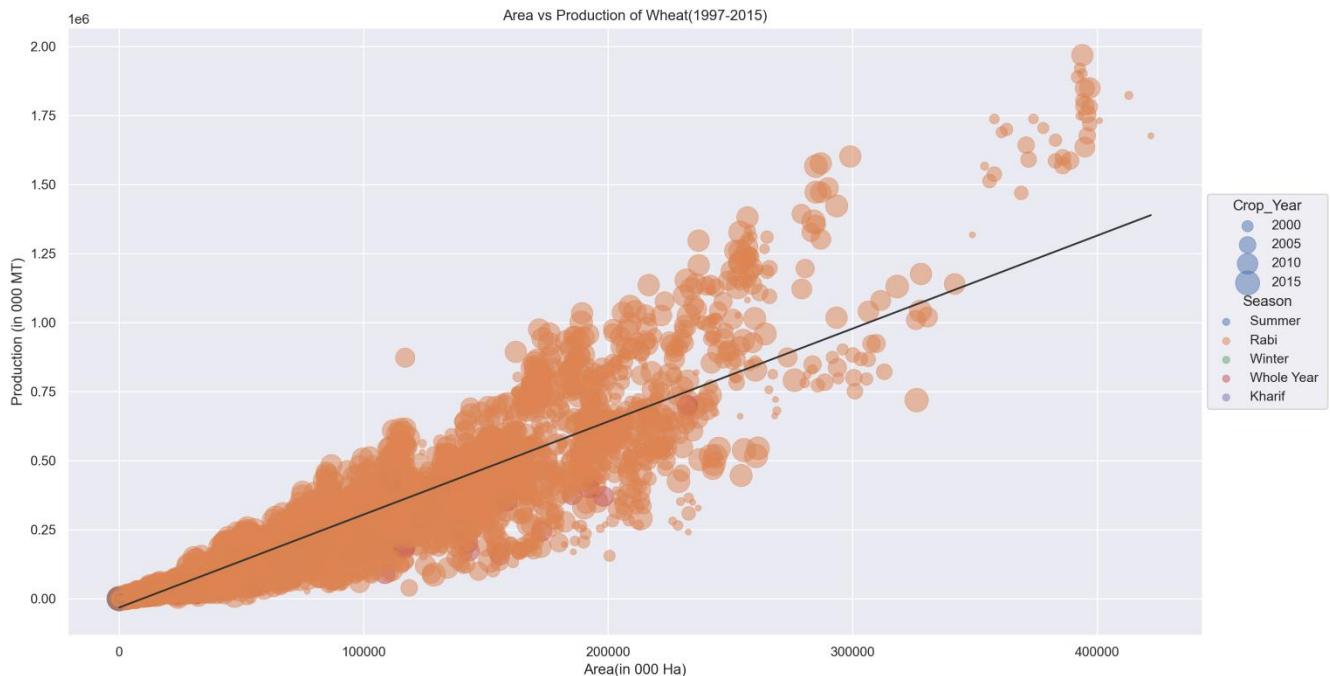
AREA VS PRODUCTION FOLLOWS A NICE TREND IN SUGARCANE. ONLY TWO COLORS INDICATE THAT SUGARCANE IS PRODUCED IN KHARIF SEASON AND ALSO THROUGHOUT THE YEAR. THERE IS A SERIES OF SMALL BUBBLES WHICH ARE GOING HIGH AT THE LEFT AND ARE COMING FROM THE STATE TAMIL NADU. PRODUCING THAT MUCH AMOUNT OF CROP IN SUCH AREA IS NOT POSSIBLE. THIS IS A ERROR IN DATA.



Uttar Pradesh is the state with highest sugarcane production and productivity.
 Except for Uttar Pradesh other top sugarcane producing states are from the southern part of India

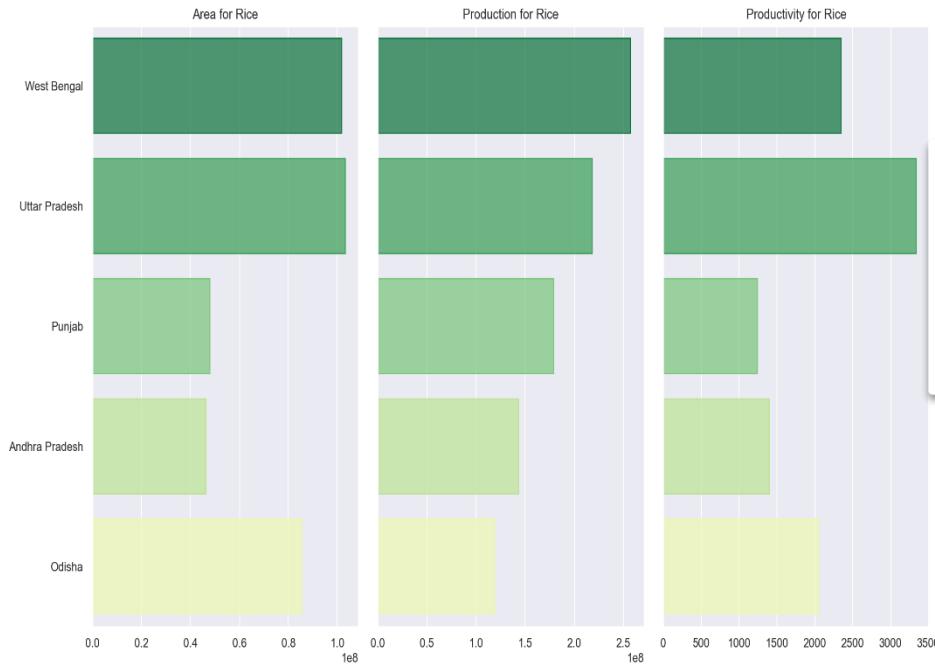


All the orange bubbles indicate that wheat is a Rabi crop. Bubbles are mixed which indicates that wheat has been produced consistently well in our country.



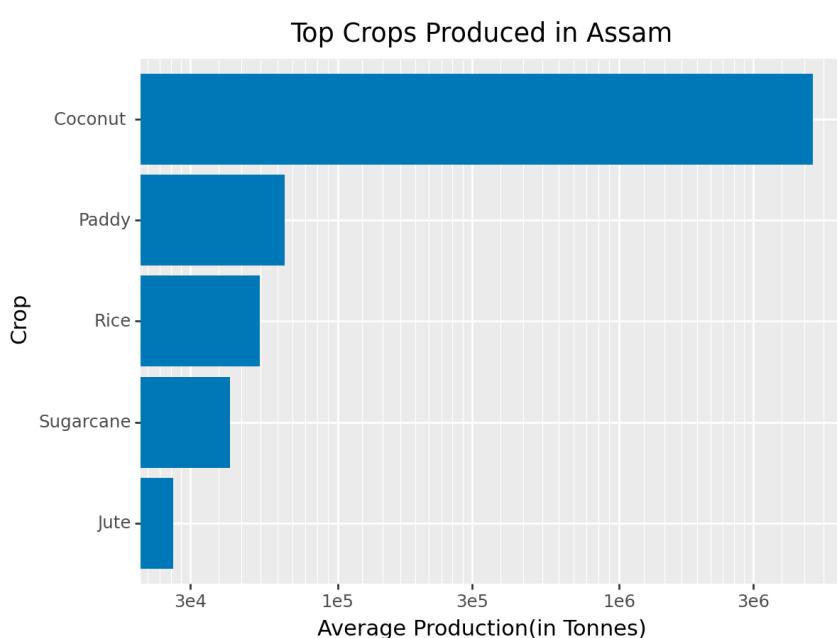
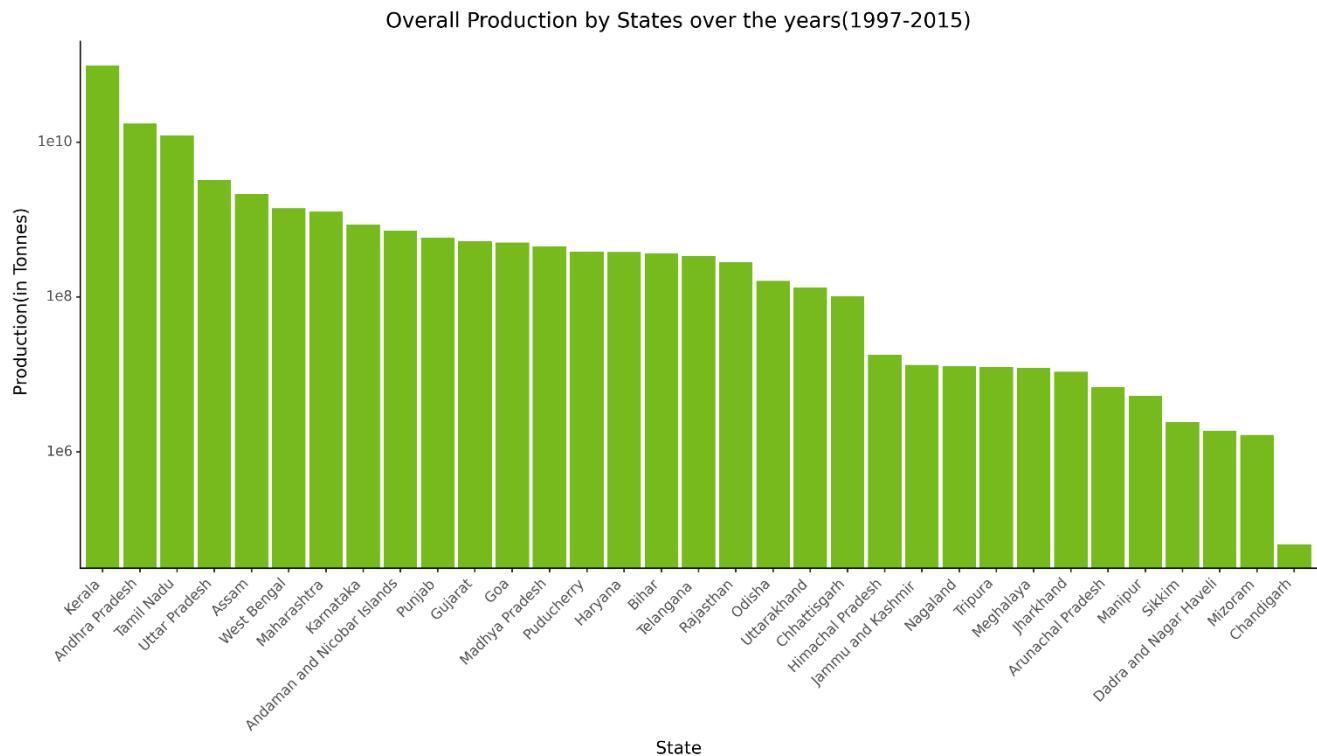
Uttar Pradesh tops in wheat production. It's neighbor's Haryana, MP, and Rajasthan are in the top list

Presence of all the colors shows how rice is a very adaptable crop and it is produced throughout the year. It is produced in large amount in kharif and winter season



West Bengal tops in production of rice, with UP being the top productive state.

According to data, south Indian states have produced more (production combined for all crops over the years). Nort-east states except for Assam are very poor in crop production.

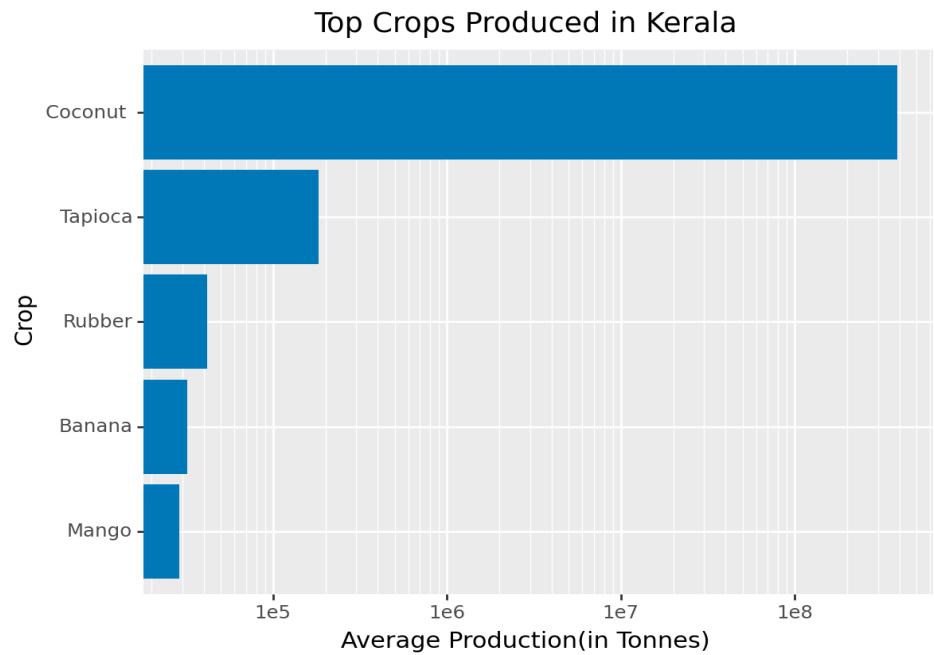


ASSAM

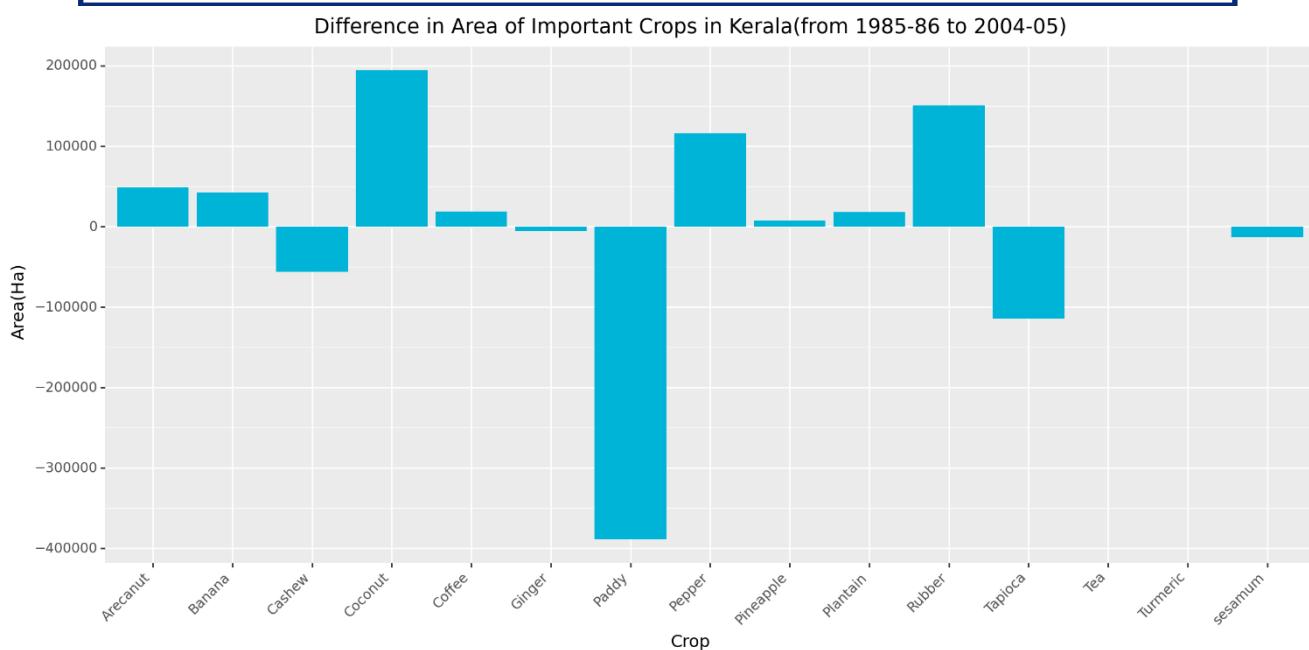
Data indicates,
Coconuts followed by
rice, sugarcane and
jute are major crops
produced in Assam.

KERALA

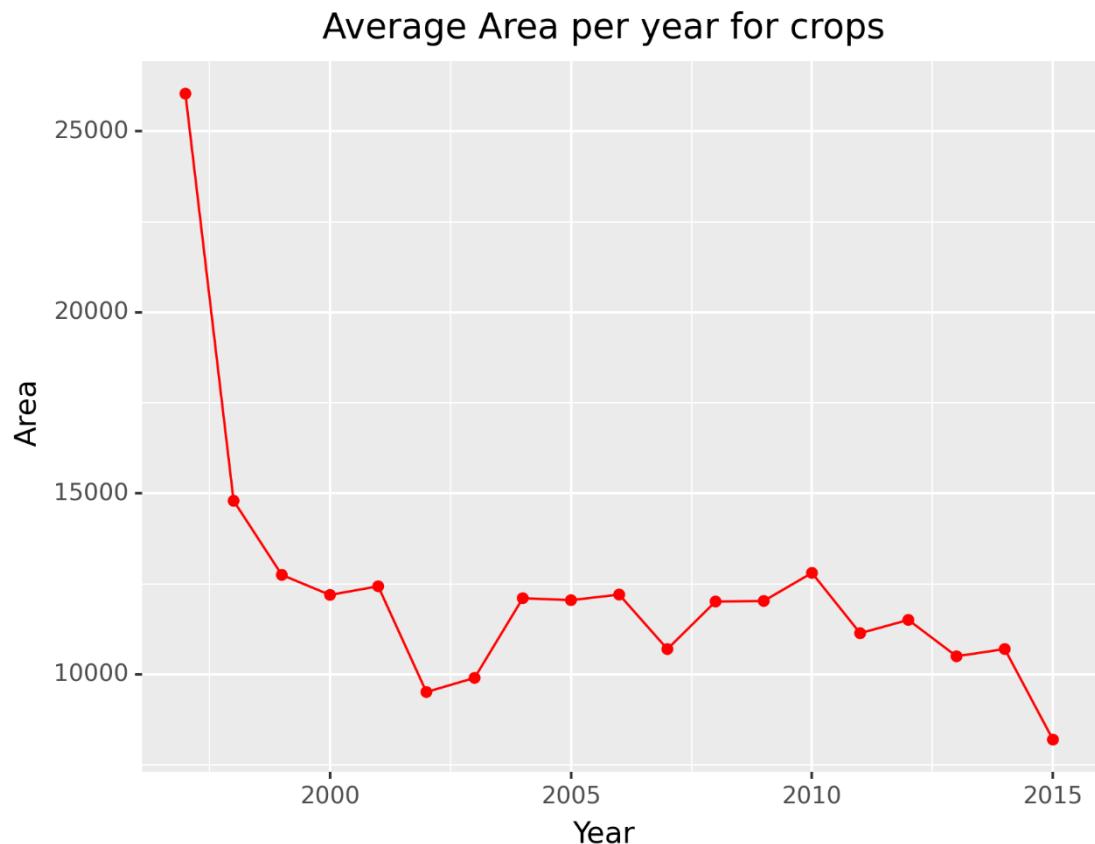
Coconut production in Kerala beats production of all other crops in a large margin.



The following plot shows difference in area of important crops in Kerala from 1985 to 2005. Difference is high for coconut followed by Rubber which is also in top produced list of crops in Kerala above. Despite the second highest produced crop, area for tapioca production has decreased.



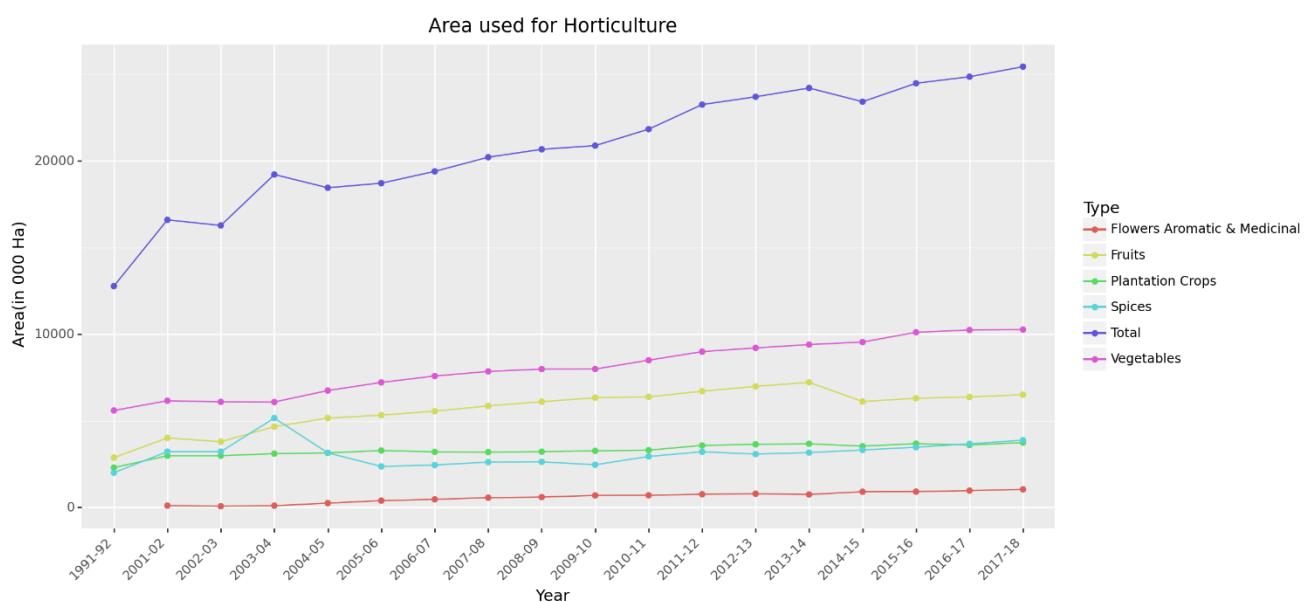
Average area per year for crops has decreased a lot from 1997, which can be a sign of worry. But this has not stopped us from producing more and more crops every year. Technological advancements, and awareness have helped farmers to produce more in less land.



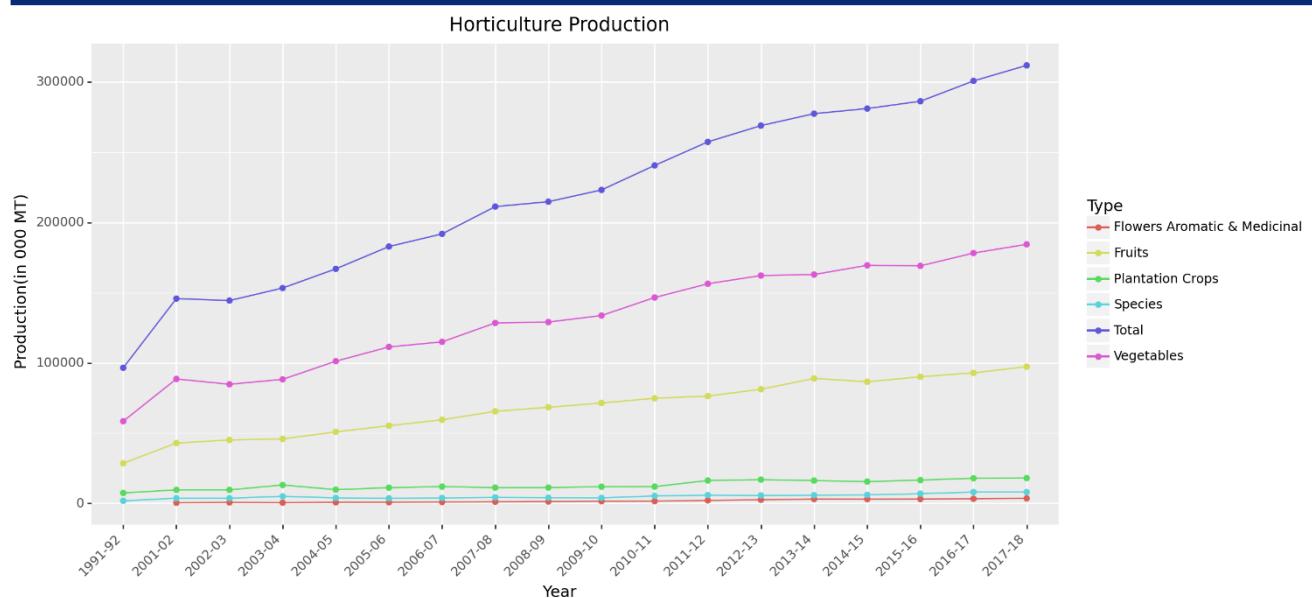
HORTICULTURE

Horticulture, the branch of plant agriculture dealing with garden crops, generally fruits, vegetables, and ornamental plants.

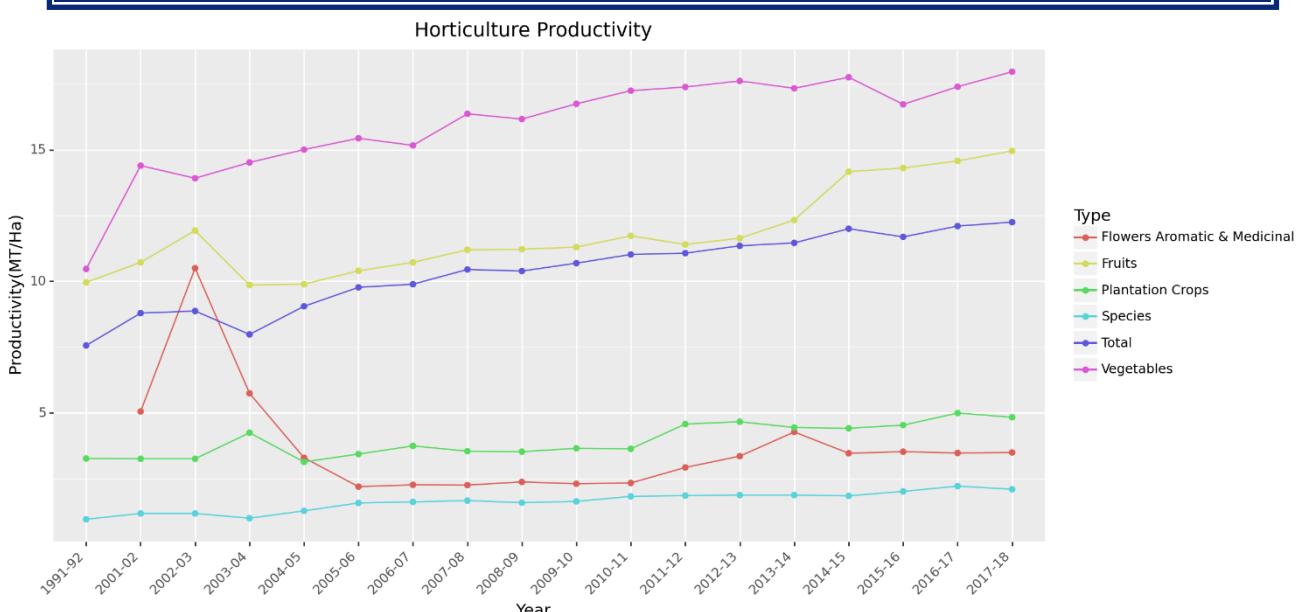
We saw that land for crop production has decreased, but land for Horticulture is on the rise. People may have shifted from traditional crop production to Horticulture, as vegetables and fruits are produced in very less time as compare to rice and wheat, etc. So, in less time you can produce more. This also gives them the advantage to produce different vegetables according to season.



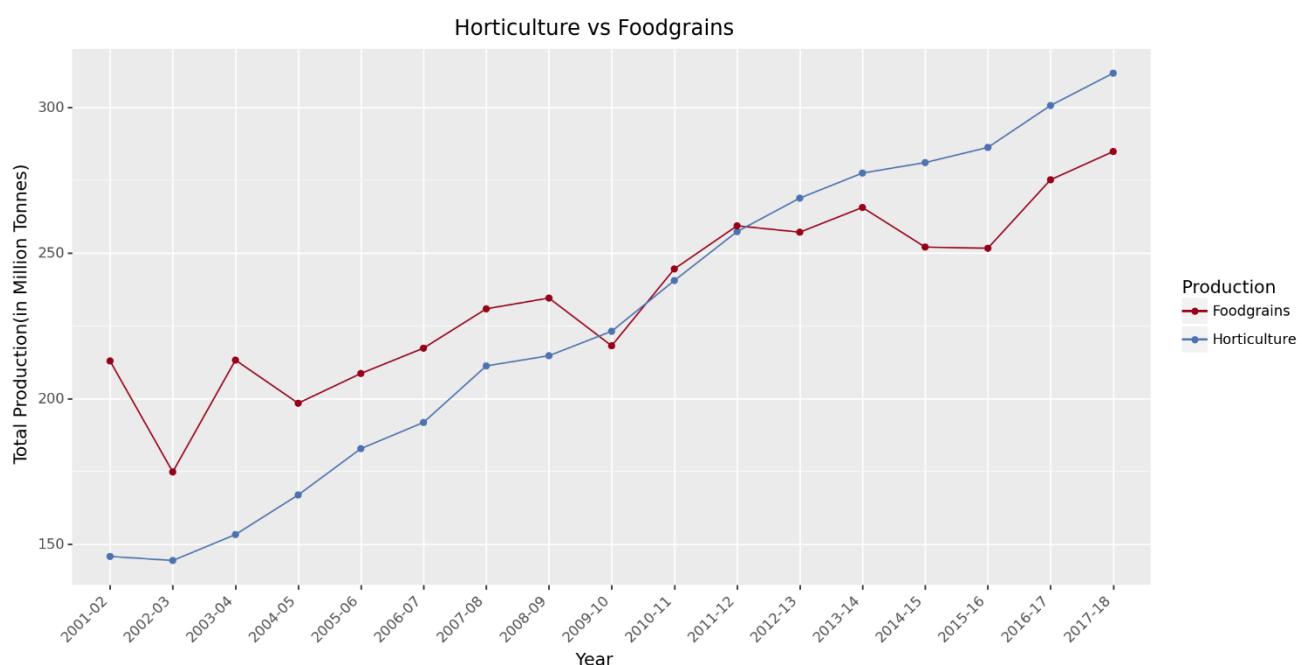
Horticultural production is on the rise from 1991. Total Horticulture production has not dipped in any year in the plot.



Productivity in Fruits and vegetables have always been higher than the total horticultural productivity.



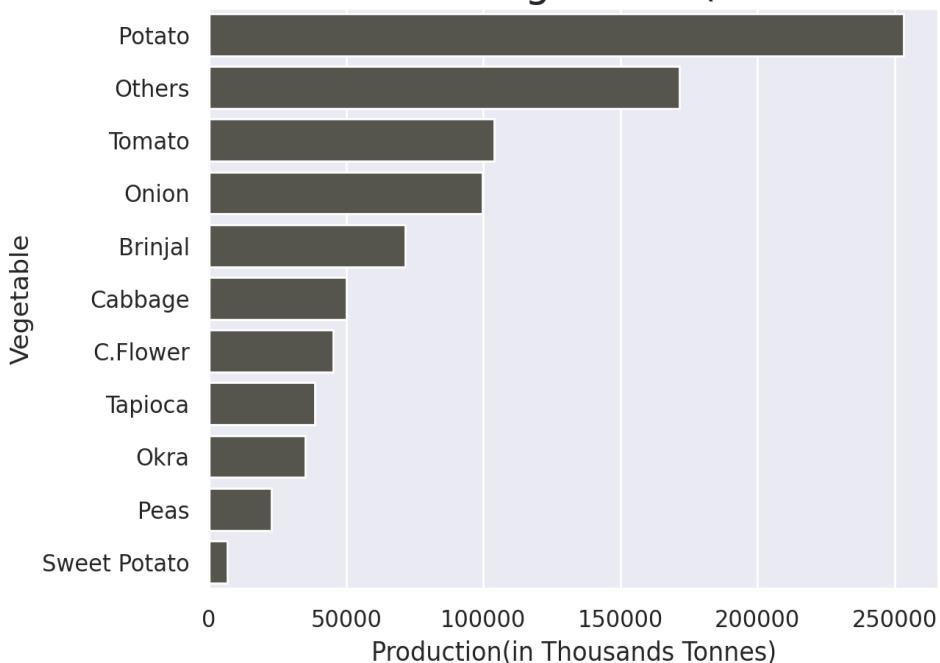
We saw the loss in land for tradition crop production and increase in land for horticulture, this may be the potential reason due to which horticultural production surpassed traditional foodgrains production around 2010.



VEGETABLE PRODUCTION

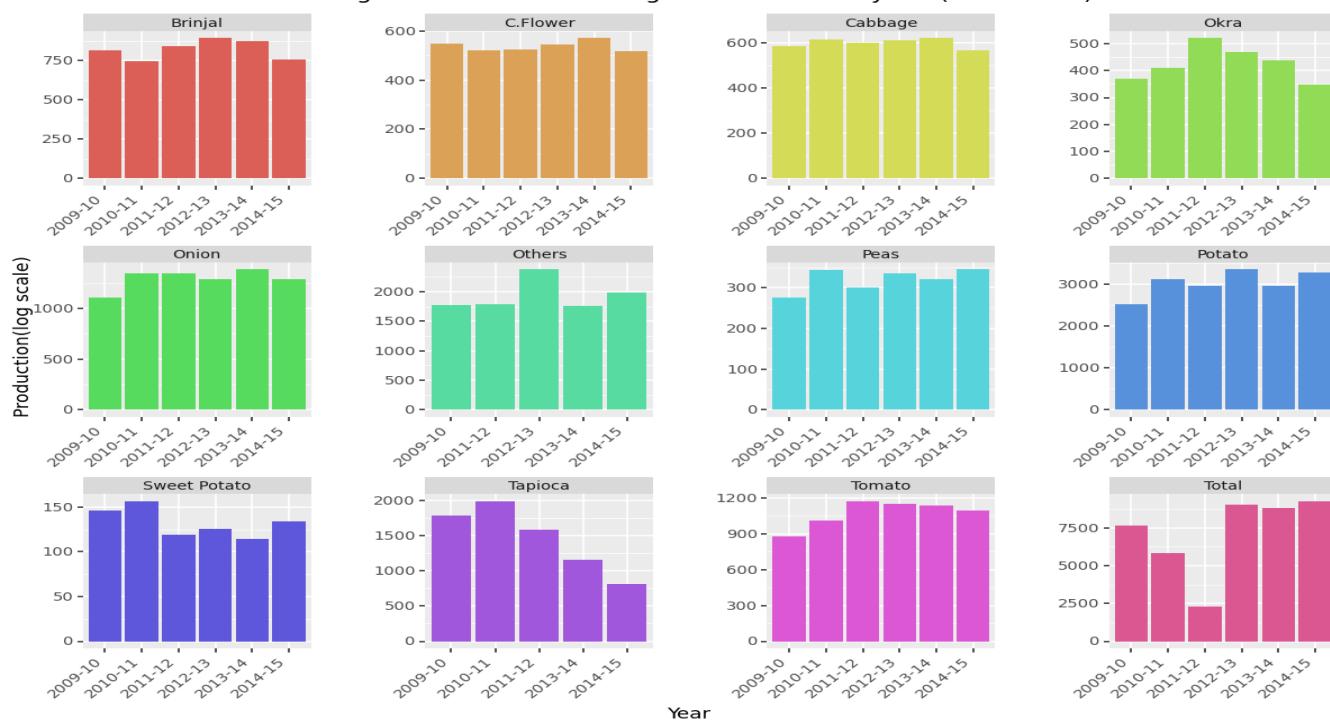
Potato, tomato, and onion are the big three in terms of production. We will explore them in details.

Production of Vegetables(2009-2015)

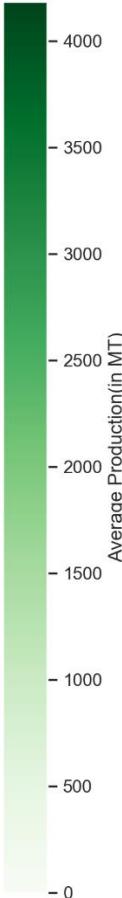
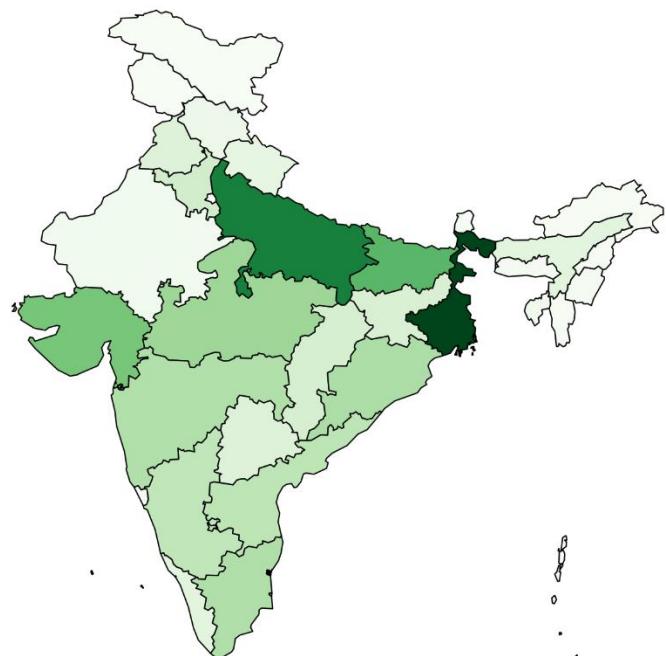


The following plot shows average production of the vegetables over the years. Brinjal, Tapioca, and okra have seen negative growth in recent years.

Average Production of the Vegetables over the years(2007-2015)



Horticulture Production of States

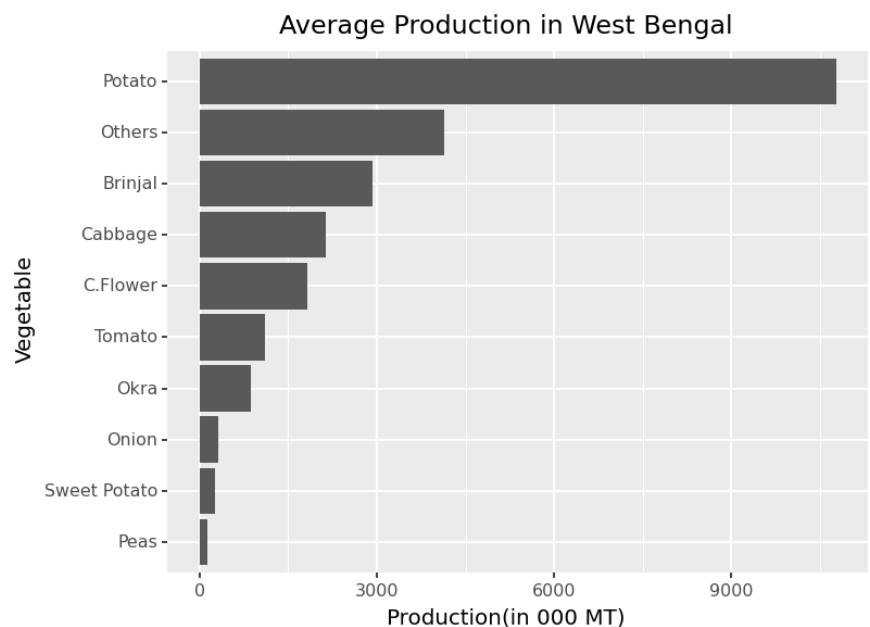


TOP STATES IN TERMS OF VEGETABLE PRODUCTION

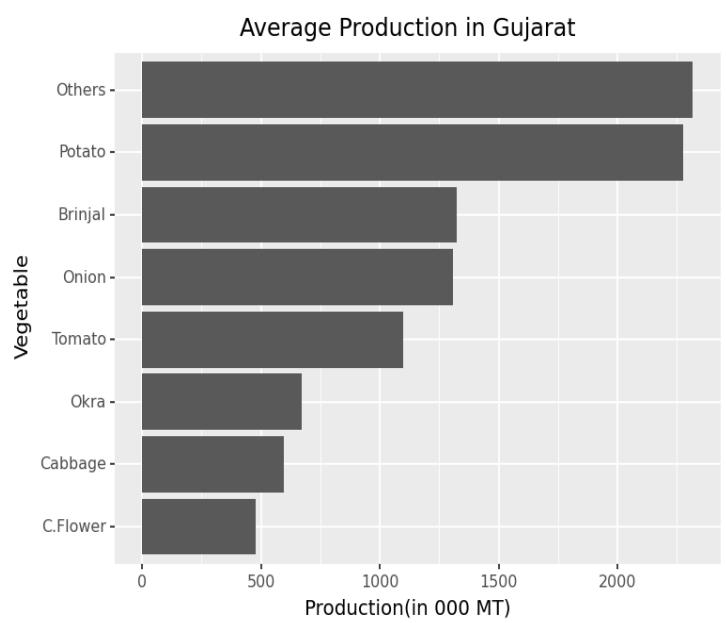
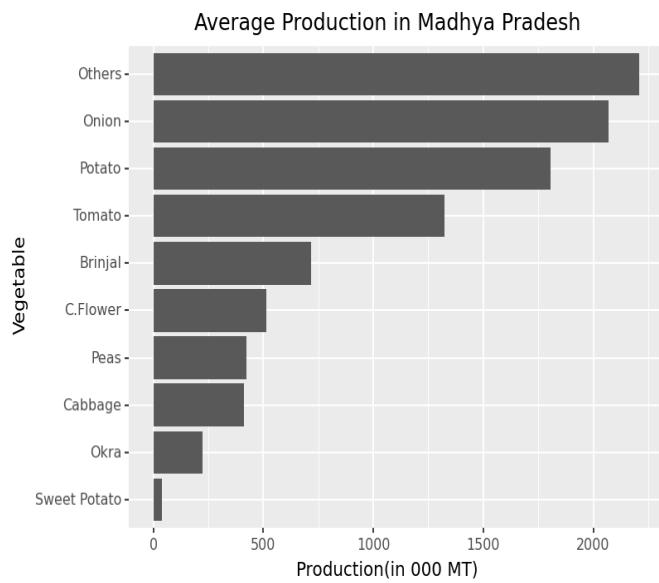
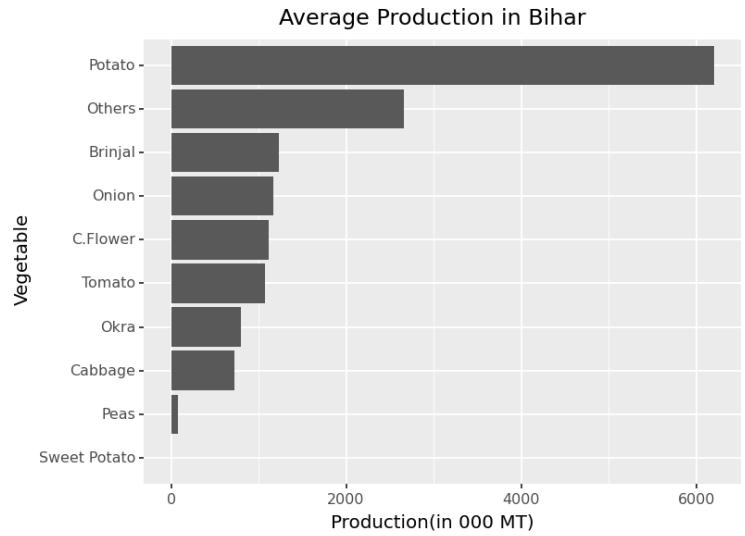
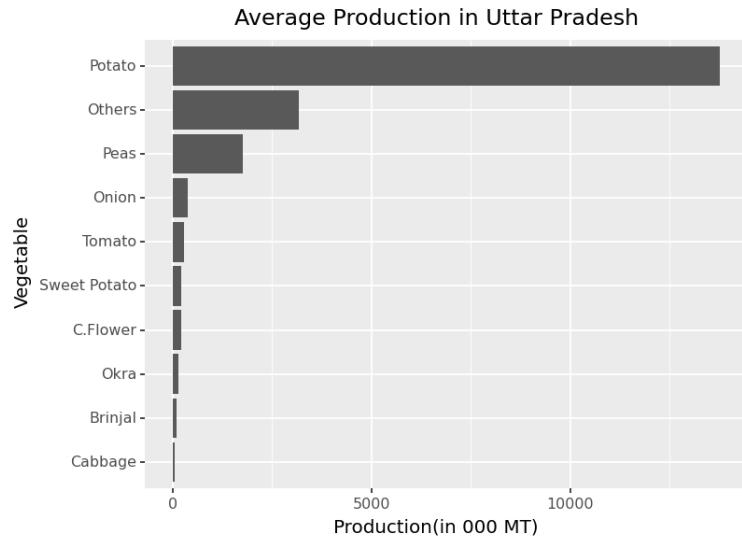
West Bengal, UP, and Bihar the top 3 vegetable producing states in India.
North-east, Rajasthan, and Extreme north Indian states are not good in vegetable production as majority of land there are mountains.

WEST BENGAL

Potato in West Bengal is produced in a large quantity.

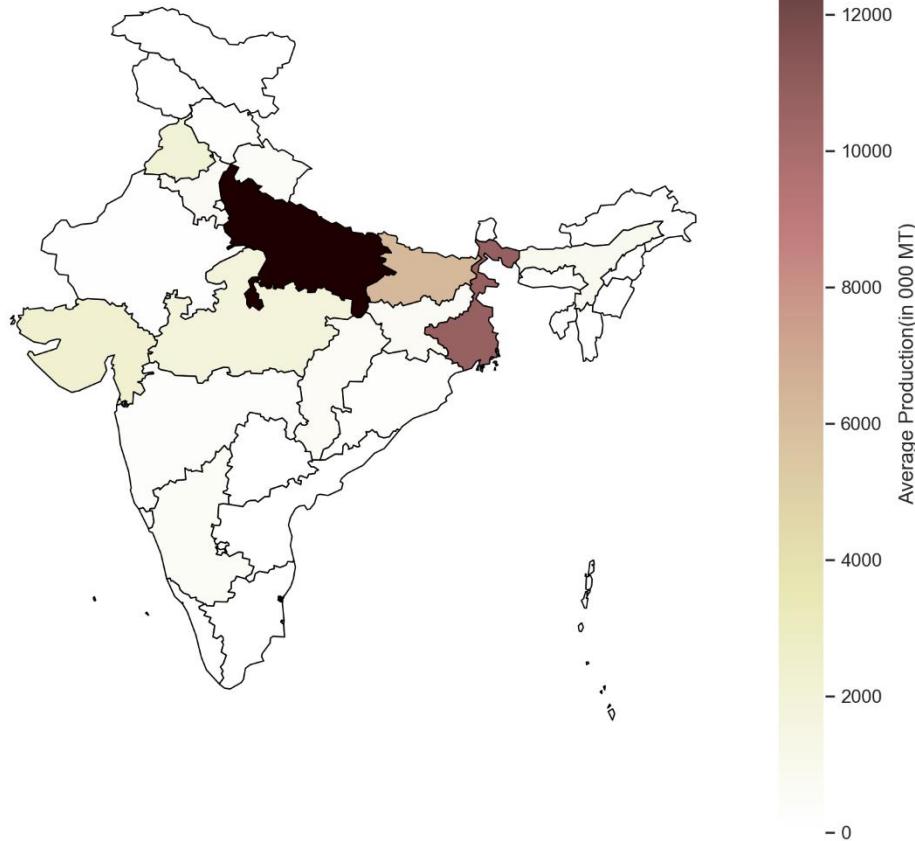


You can see the top produced vegetables in other top states.



POTATO PRODUCTION

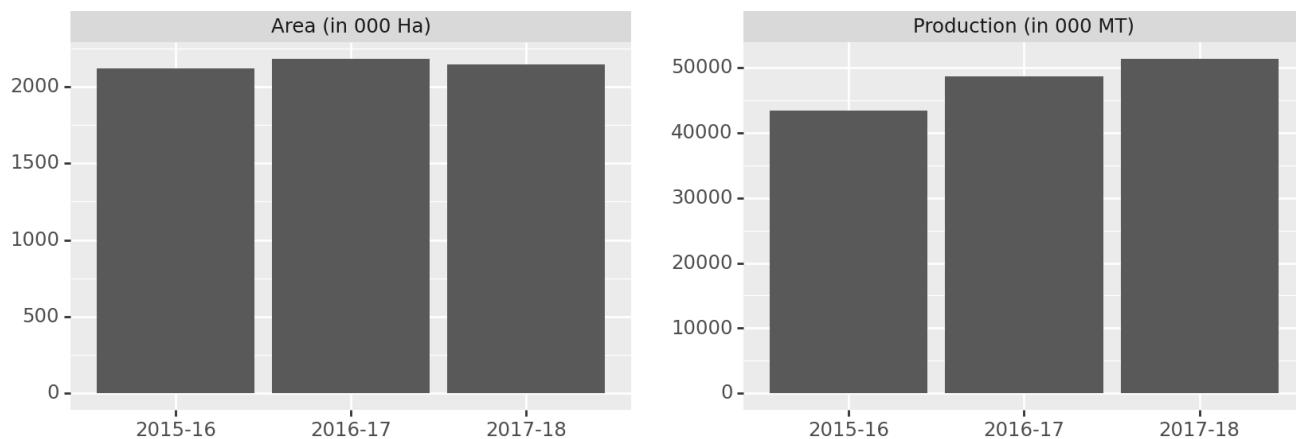
Major Potato Producing States



Major potato producing states are UP, West Bengal, Bihar, MP, Gujarat, and Haryana.

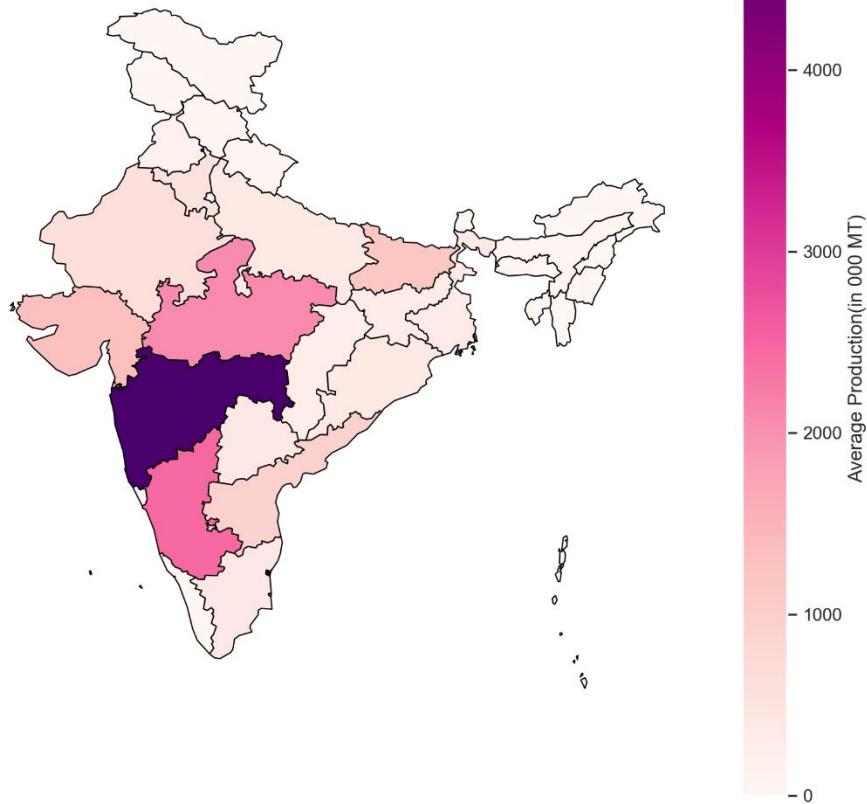
From 2015-2018, the land used for production was almost constant, but production increased by 25%.

Annual Production and Area used for Potato Production



ONION PRODUCTION

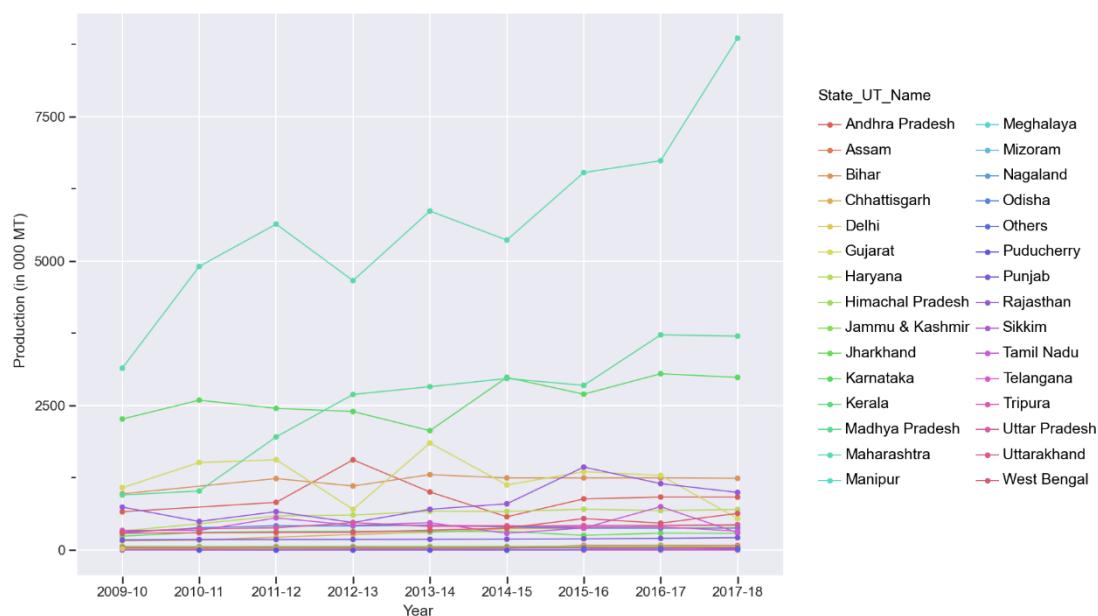
Major Onion Producing States



Maharashtra is the major onion producing state, followed by Karnataka, and Kerala.

The onion production in Maharashtra has tripled from 2009 to 2017.

Onion Production Trend

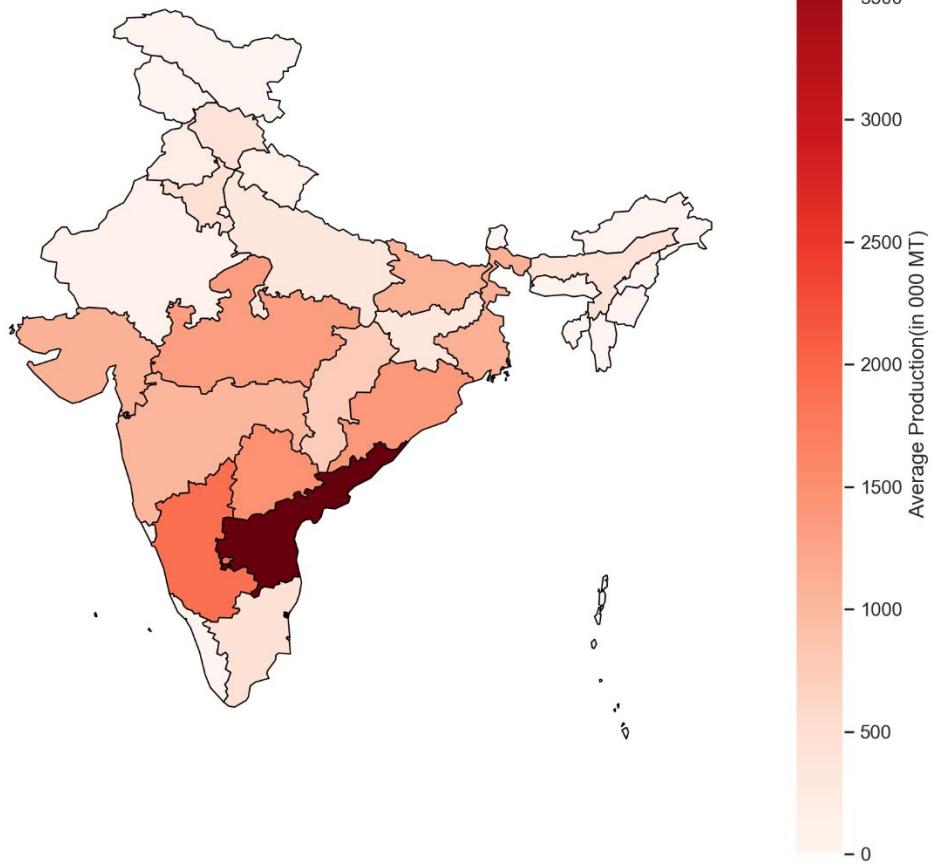


TOMATO PRODUCTION

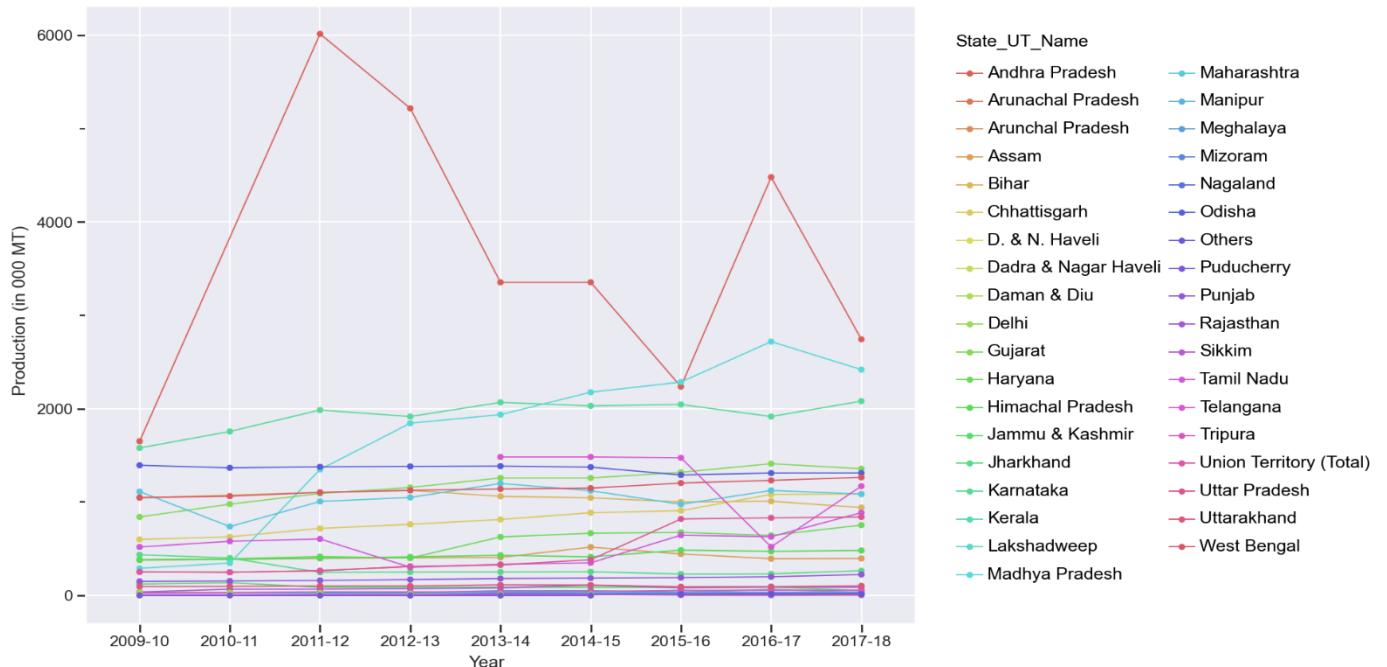
Andhra Pradesh is the top tomato producing state, followed by Karnataka, and Madhya Pradesh.

The plot below shows how annual tomato production of AP was hampered in the years (2014-16) when Telangana was born.

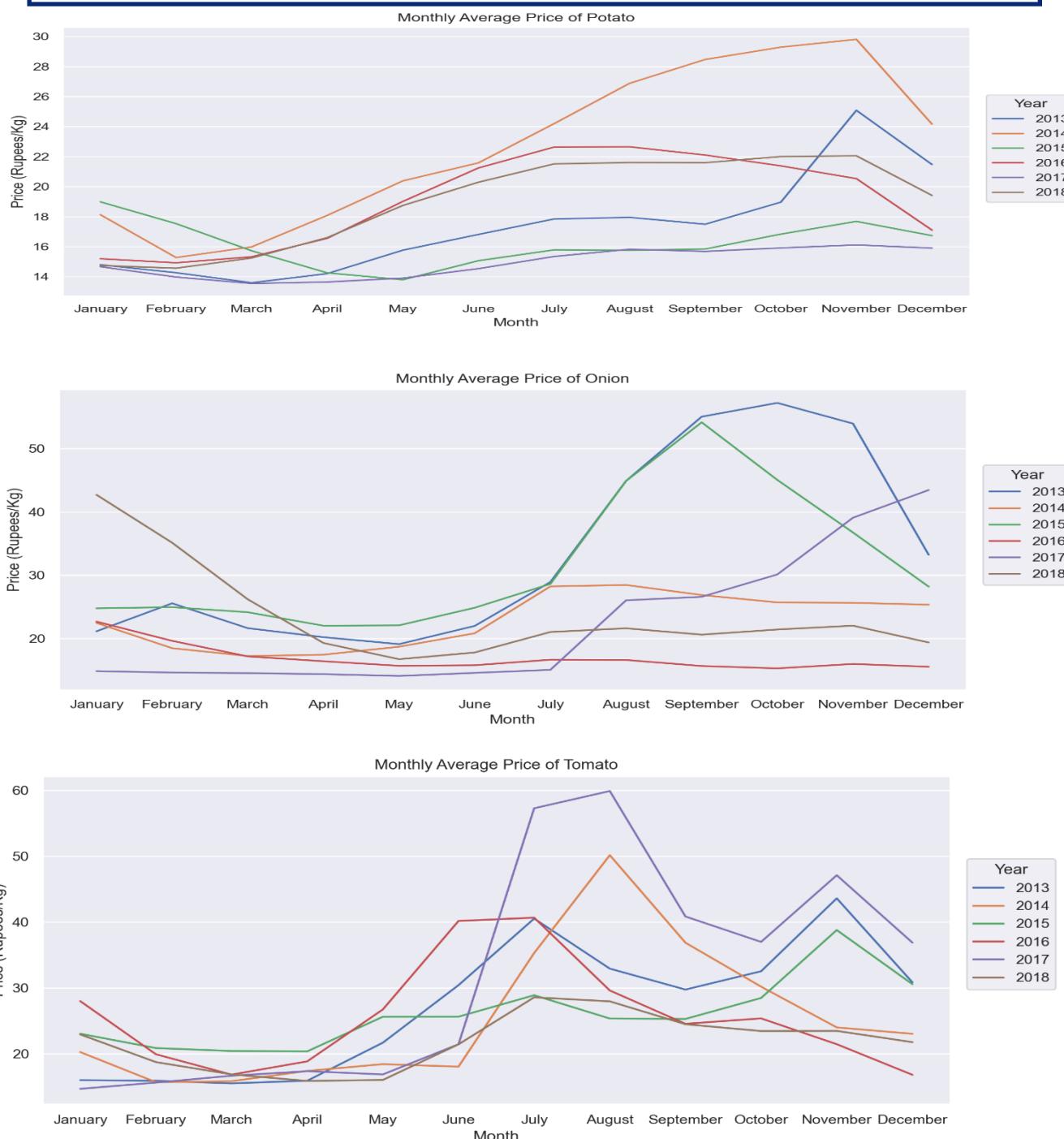
Major Tomato Producing States



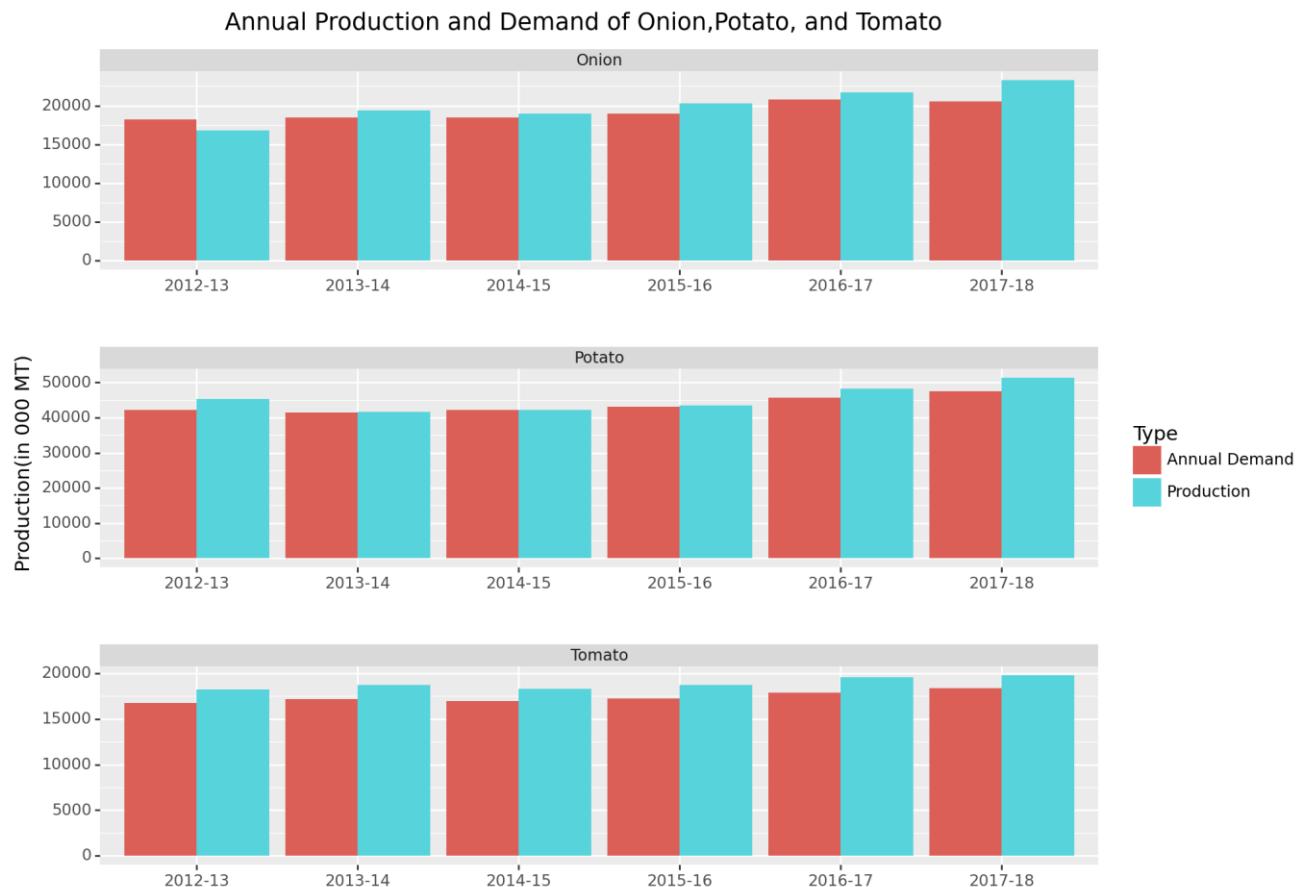
Tomato Production Trend



The following plots show how monthly average price for onion, potato and tomato shoots up in June/July and then settles down in Jan/Feb. A key reason may that in rainy season, transportation becomes difficult and hence the price increases.

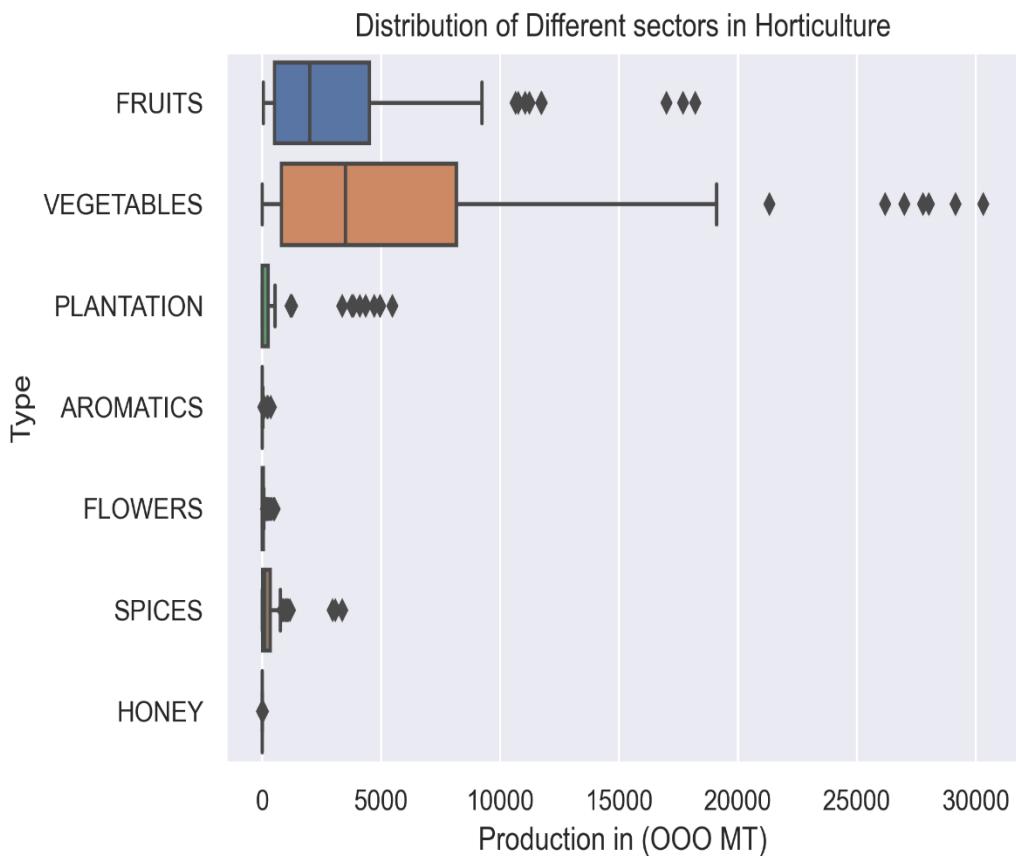
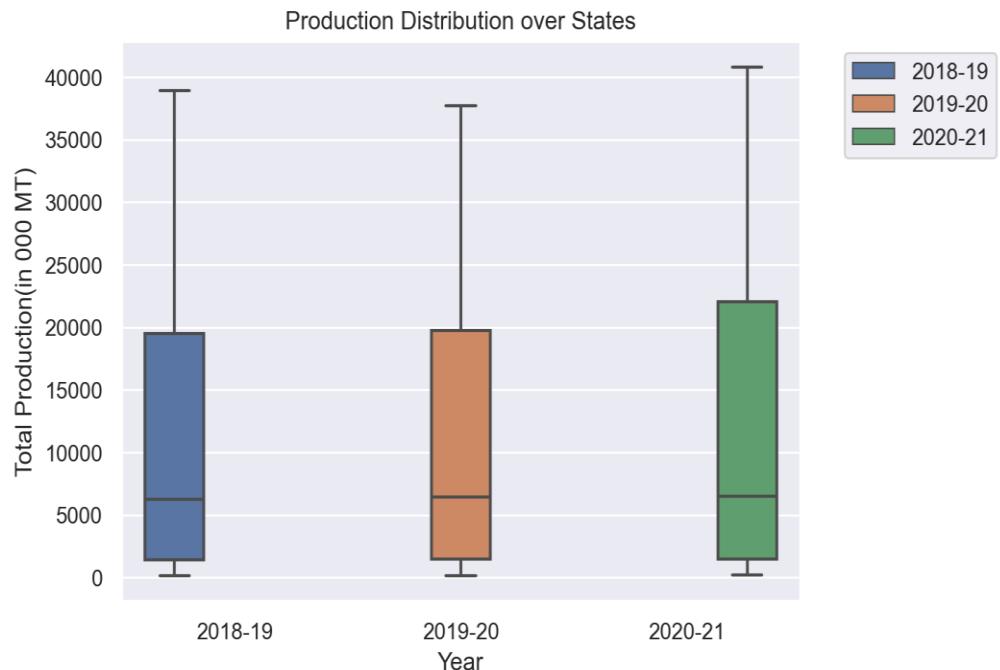


Demand and Production plot suggests that how we have been ahead of demand every year for tomato, onion and potato except for 2012-13 for onion, this happened because onion production fall by 5% in that year([source](#)).



PRODUCTION DISTRIBUTION

The distribution is left skewed, showing majority of our states produce less than other states left. The figure also shows that there was no impact of COVID-19 on crop production, as crop production increased in 2020-21.

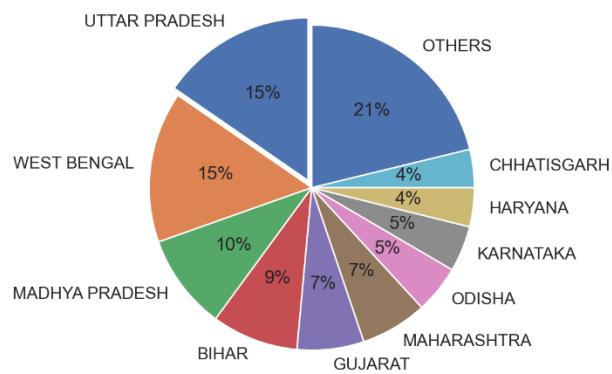


CONTRIBUTION IN HORTICULTURE

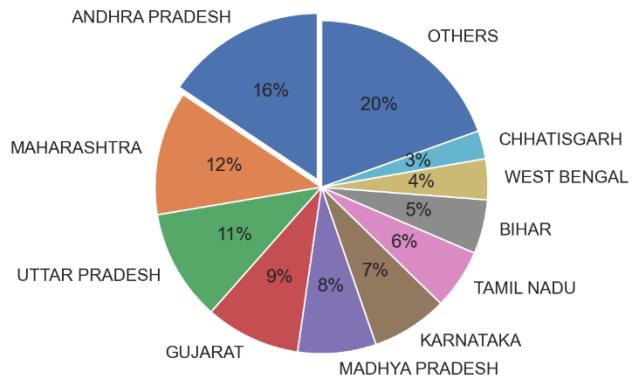
Fruits and Vegetable
sdistribution has a long tail, indicating very few states produce in excess amount.
We will see the outlier states(states with highest production) for each category in the next page.

Contribution/Top States in different types of Horticulture Production. The plots are self explanatory.

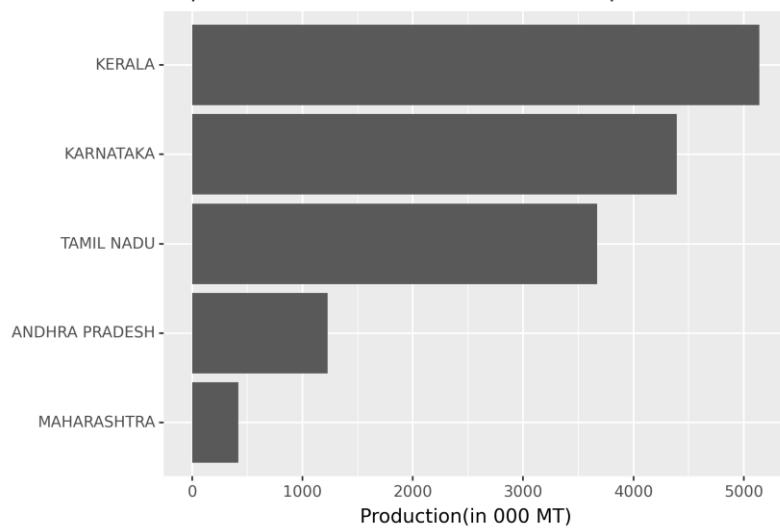
Contribution in Vegetable Production(2017-18)



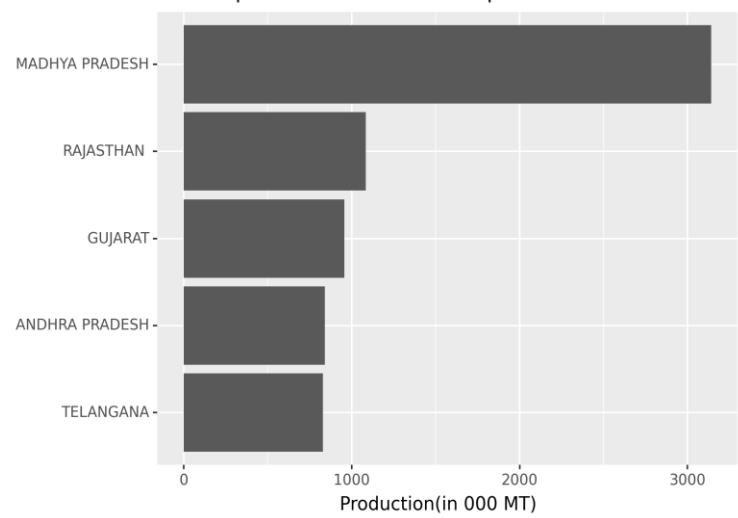
Contribution in Fruit Production(2017-18)



Top 5 States in terms of Plantation Crops Production

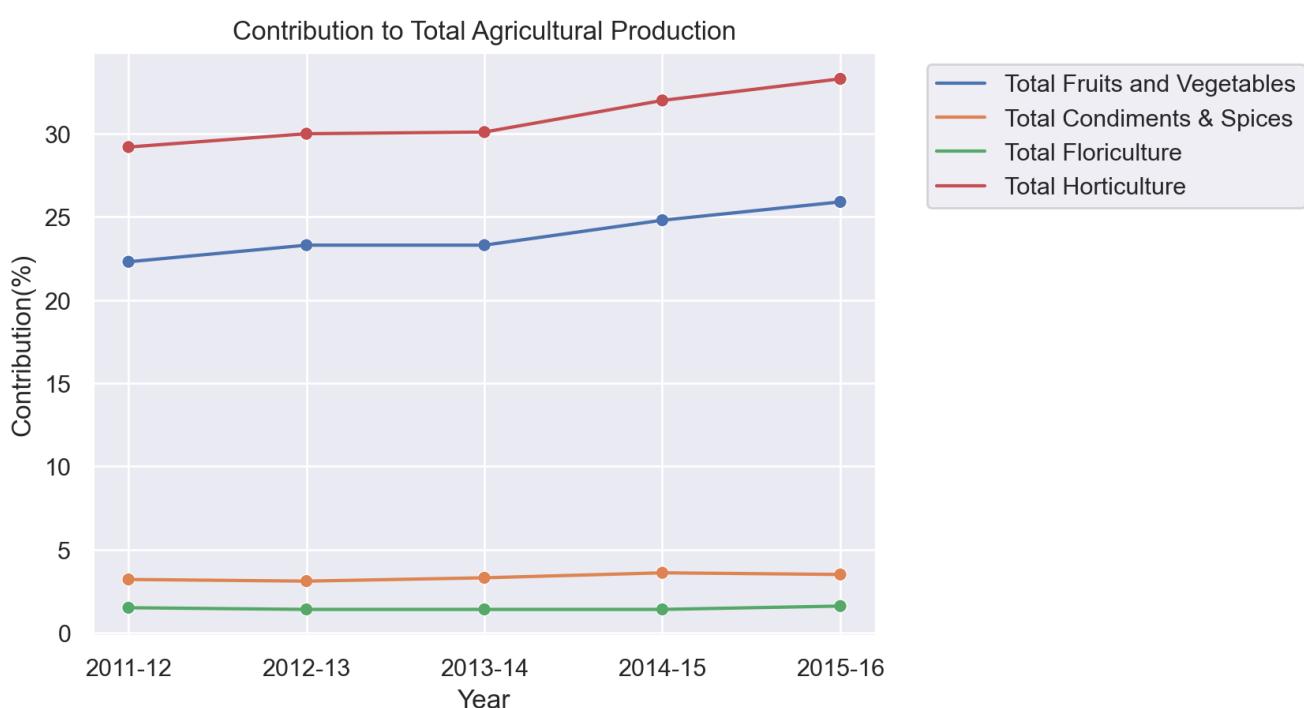
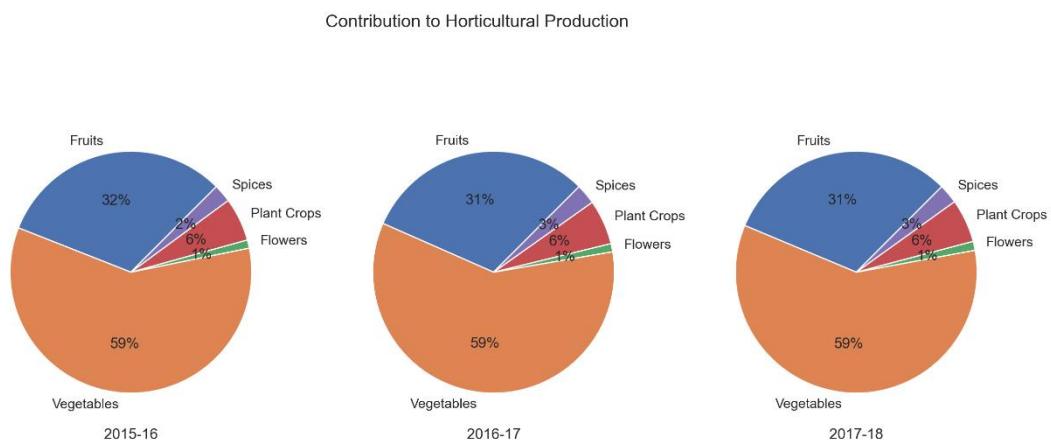


Top 5 States in terms of Spices Production



Percentage-wise contribution in horticulture of different sectors have been constant in 2015, 2016 and 2017. Fruits and Vegetables have 90% Contribution. Floriculture having the least 1% contribution.

The last plot shows how horticulture accounts for more than 30% contribution in total agriculture production. Fruits and vegetables combinedly accounted for 55% contribution in Agriculture production in 2015-16.



External Data Sources:

- [https://dof.gov.in/sites/default/files/2021-08/Handbook on Fishery 2020.pdf](https://dof.gov.in/sites/default/files/2021-08/Handbook_on_Fishery_2020.pdf)
- <https://agricoop.nic.in/Documents/agristatglance2018.pdf>
- http://www.old.ecostat.kerala.gov.in/images/pdf/publications/Agriculture/data/old/area_crops_8586_0405.pdf

Data from the above PDFs, have been extracted, processed and added to CSV format files.