

Agriculture in India at a Glance



CS595: Data Visualization Project

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The Data

- Three CSV Files
 - `crop_production.csv`
 - Contains details of production of various crops by States and UTs of India in different seasons for the years 1997-2015.
 - `Fish_Production.csv`
 - Contains details of Marine and Inland Fish production by States and UTs of India for the years 2007-2013.
 - `Horticulture.csv`
 - Contains details of production of various vegetables by States and UTs of India for the years 2009-2015.

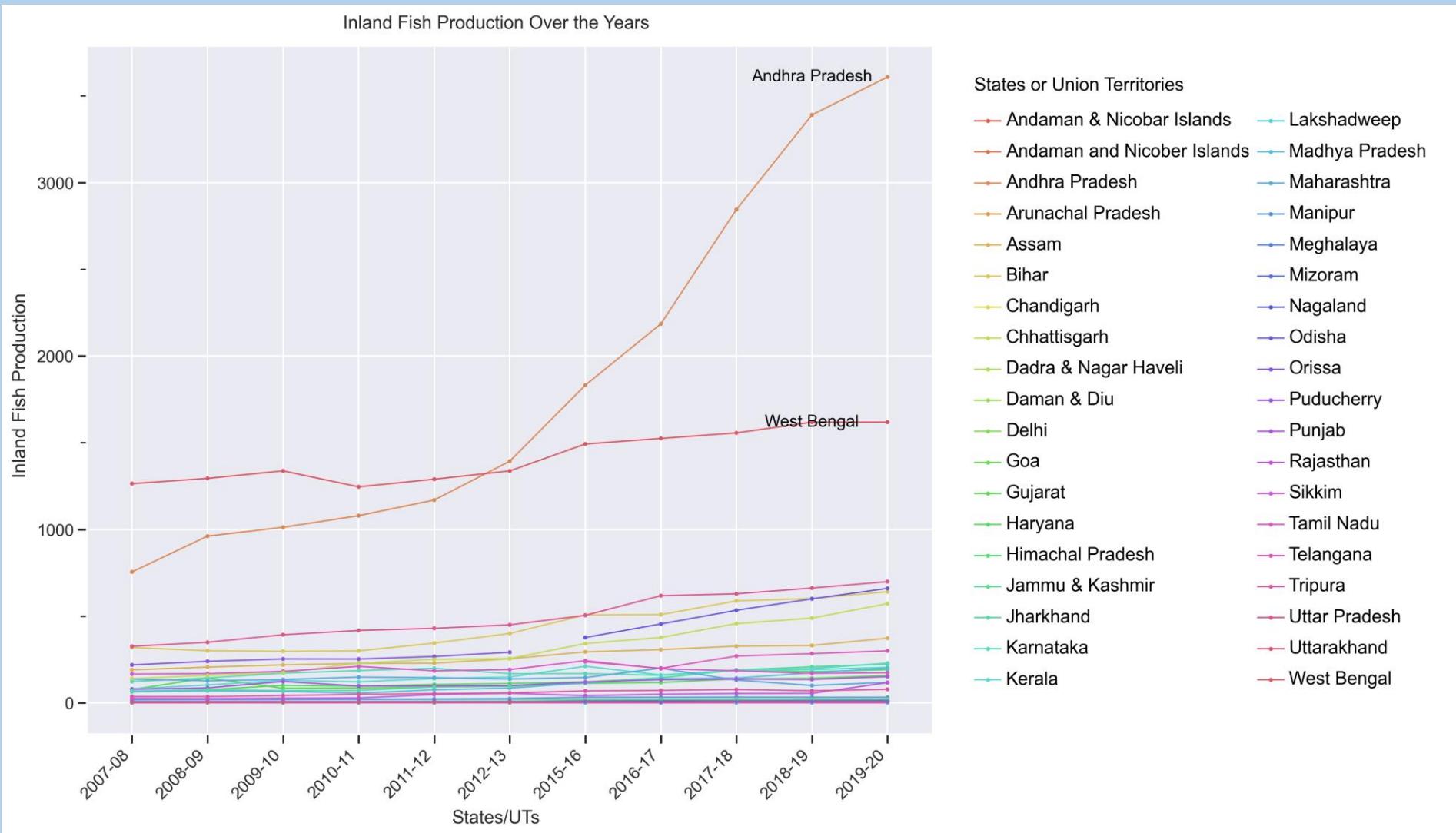
Fisheries

	States or Union Territories	Marine 2007-08	Inland 2007-08	Total - 2007-08	Marine 2008-09	Inland 2008-09	Total - 2008-09	Marine 2009-10	Inland - 2009-10	Total - 2009-10	Marine 2010-11	Inland - 2010-11	Total - 2010-11	Marine 2011-12	Inland - 2011-12	Total - 2011-12	Marine 2012-13
0	Andhra Pradesh	254.89	755.20	1010.09	291.16	961.62	1252.78	293.15	1012.71	1305.86	288.64	1079.57	1368.20	433.28	1169.89	1603.17	414.35
1	Arunachal Pradesh	Nan	2.83	2.83	Nan	2.88	2.88	Nan	2.65	2.65	Nan	3.15	3.15	Nan	3.30	3.30	Nan
2	Assam	Nan	190.32	190.32	Nan	206.15	206.15	Nan	218.82	218.82	Nan	227.24	227.24	Nan	228.62	228.62	Nan
3	Bihar	Nan	319.10	319.10	Nan	300.65	300.65	Nan	297.40	297.40	Nan	299.91	299.91	Nan	344.47	344.47	Nan
4	Goa	32.26	1.17	33.43	83.14	3.08	86.22	81.93	3.44	85.37	89.96	3.31	93.27	86.21	3.75	89.96	73.71

- The NaN values in the marine columns is because these States/UTs doesn't share boundaries with any ocean.
- We replace the NaN values to 0.
- Data Splitted into 3 tables
 - Marine Fish : Contains the states having marine fish production (2007-13)
 - Inland Fish : Contains Inland Fish Production details of all states (2007-13)
 - Total Fish: Contains Total Fish Production details of all states (2007-13)
- Added data for recent years (2015-2020)

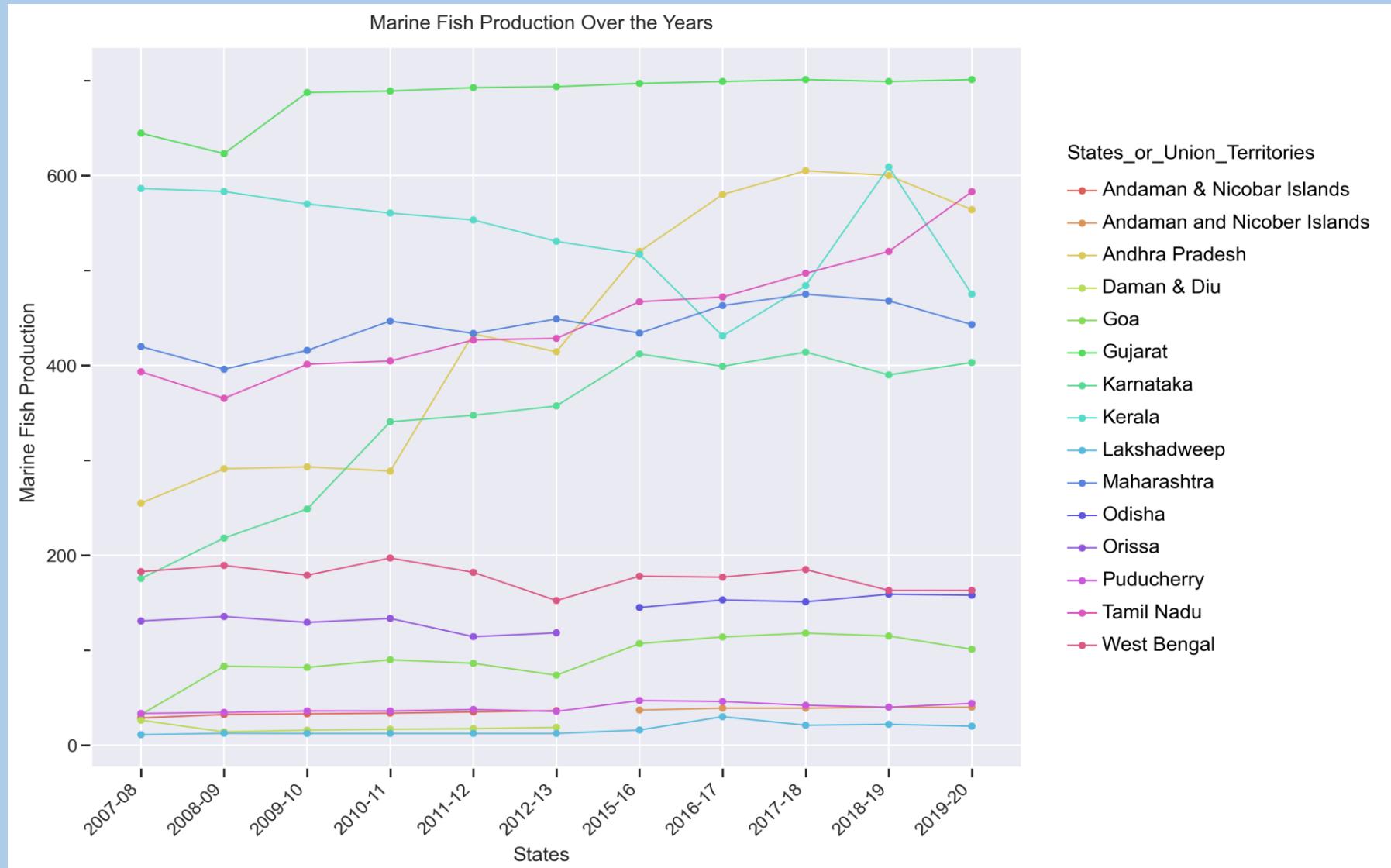
Inland Fish Production

- Practice of growing fish in freshwater sources such as canals, ponds, rivers, and reservoirs.
- Andhra Pradesh is the state with highest export.



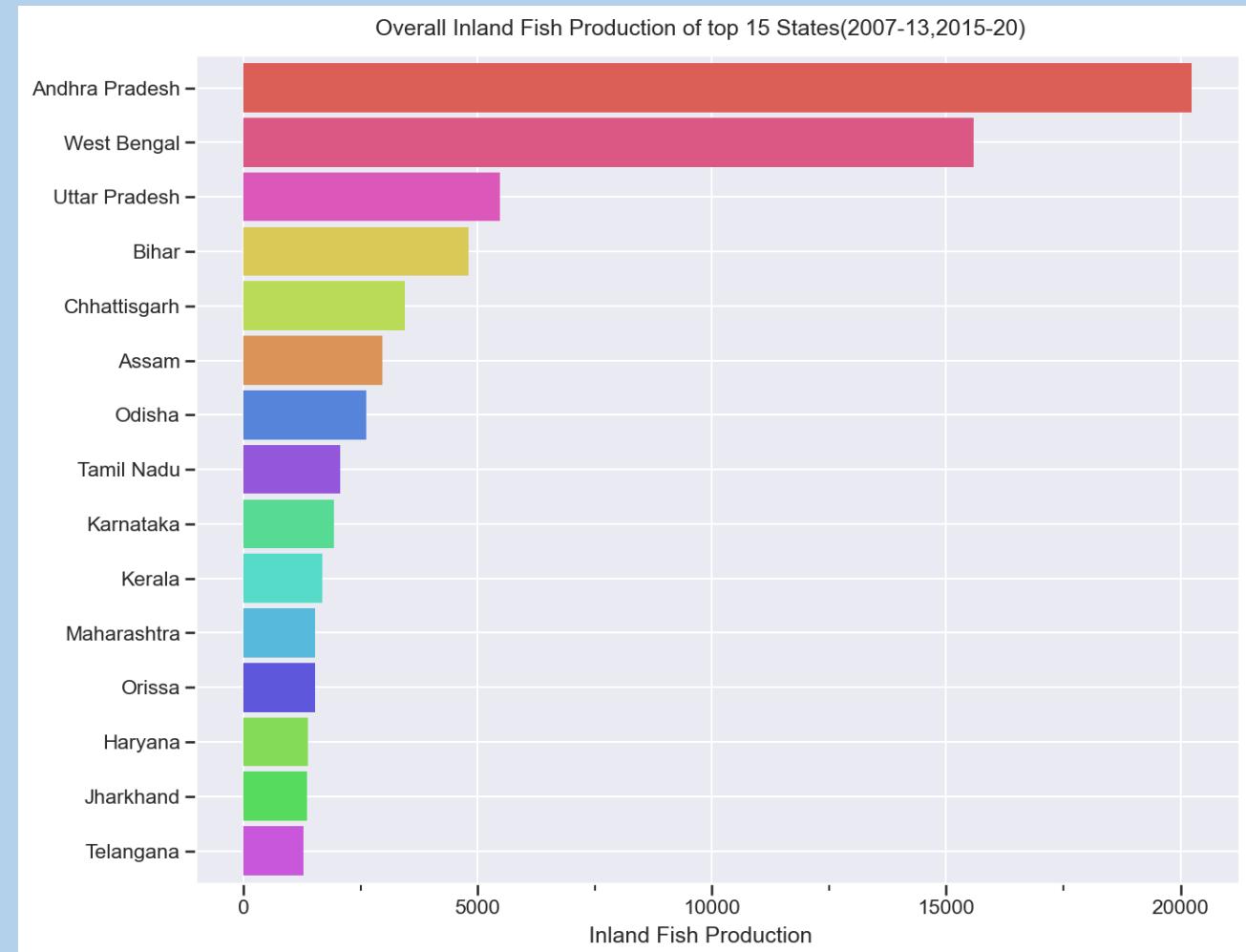
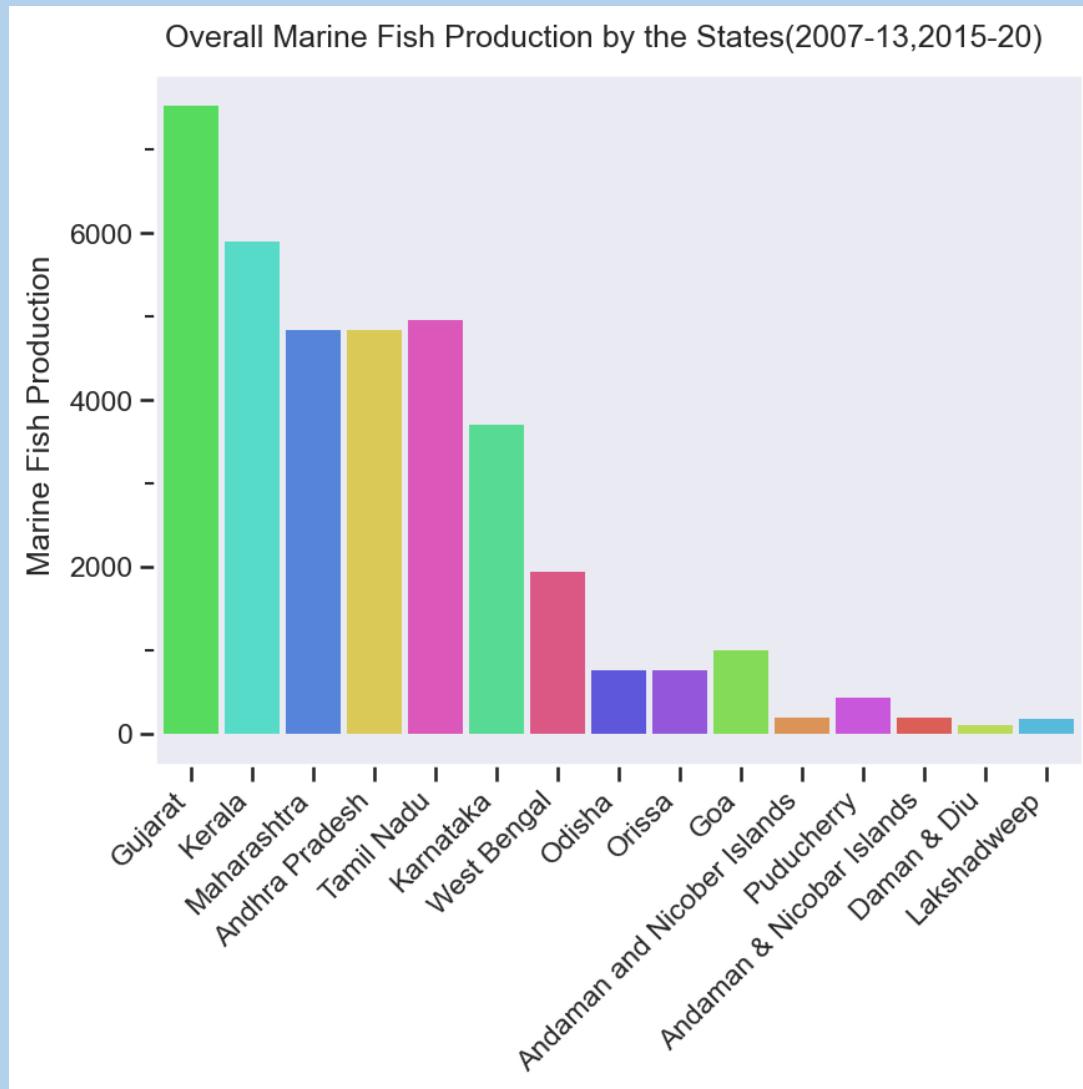
Marine Fish Production

- Practice of growing fish in seawater or saltwater



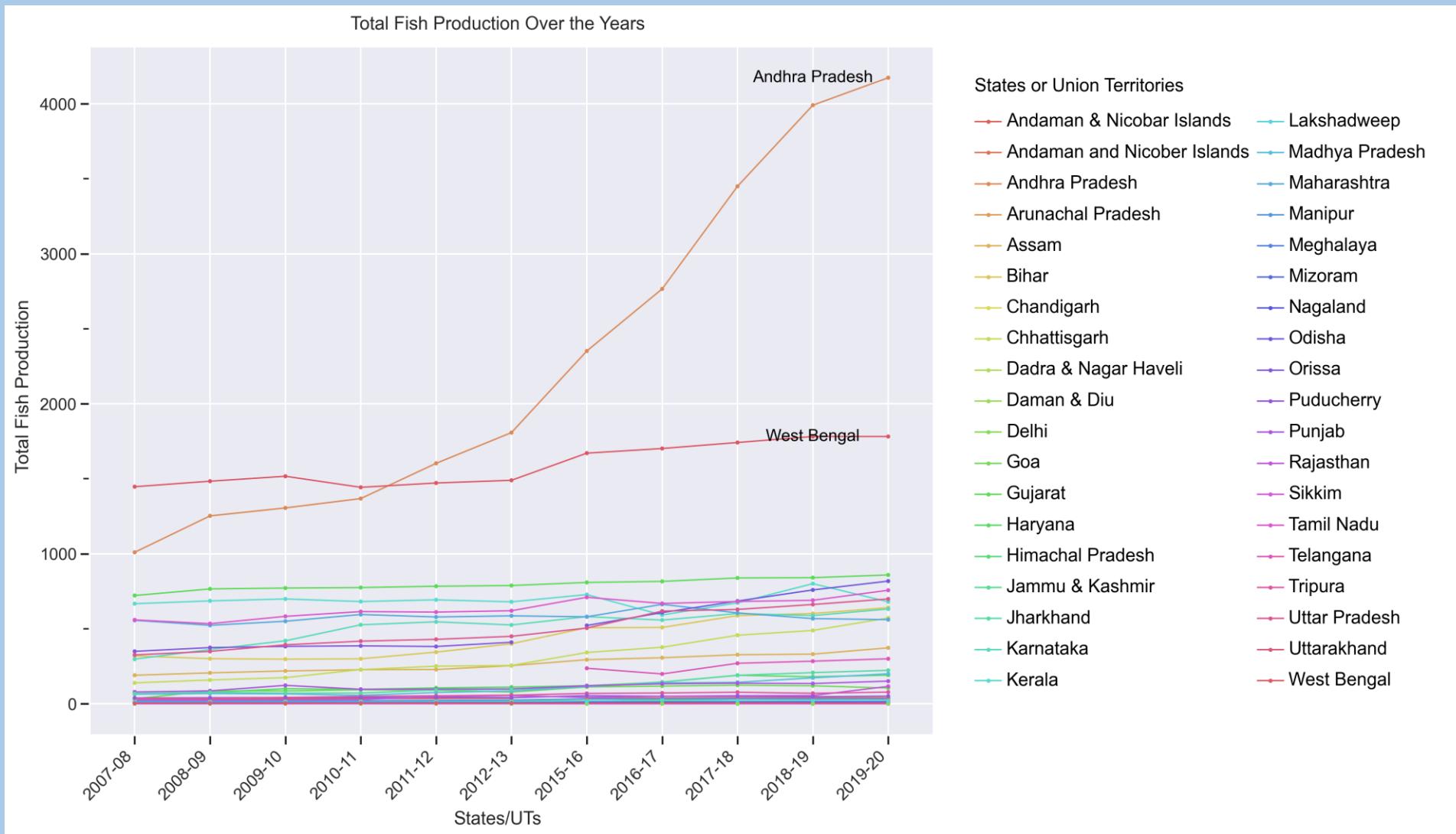
- Gujarat Dominating
- Andhra and Karnataka rising
- Kerala dipping
- Yearly Growth wise Andhra Pradesh on top.

Total Marine and Inland Fish Production

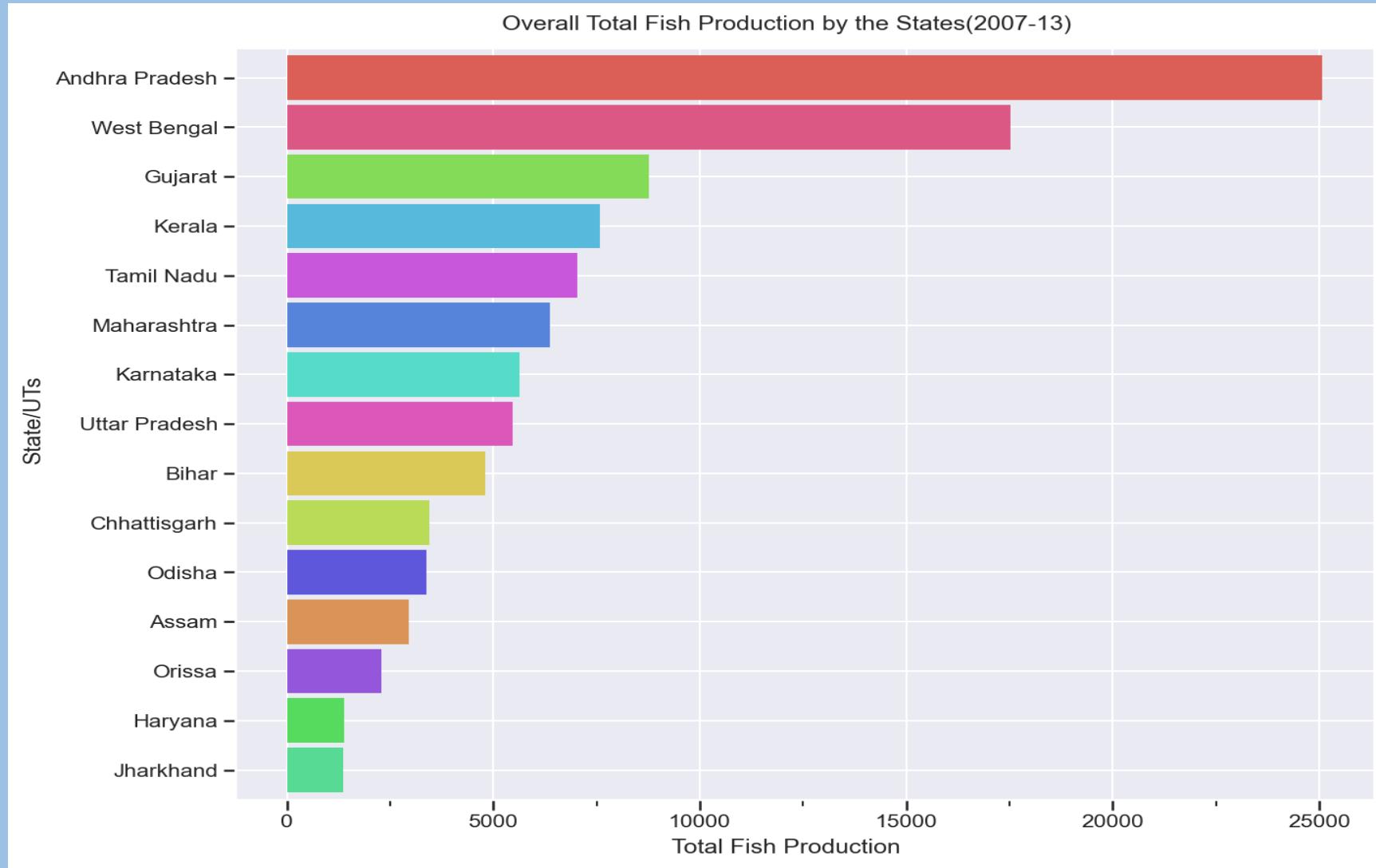


Total Fish Production

- Sky is the limit for Andhra Pradesh..

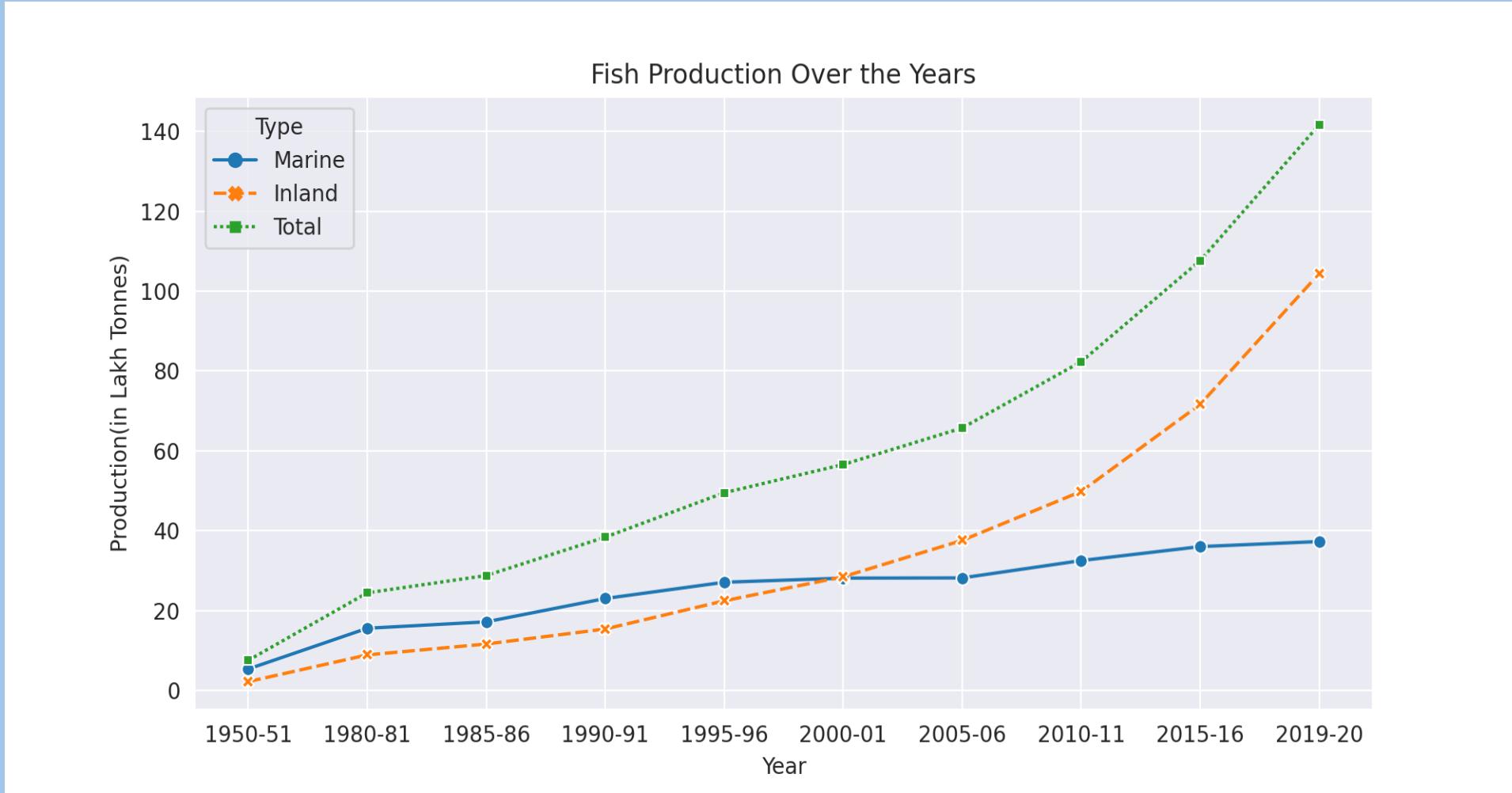


Total Fish Production

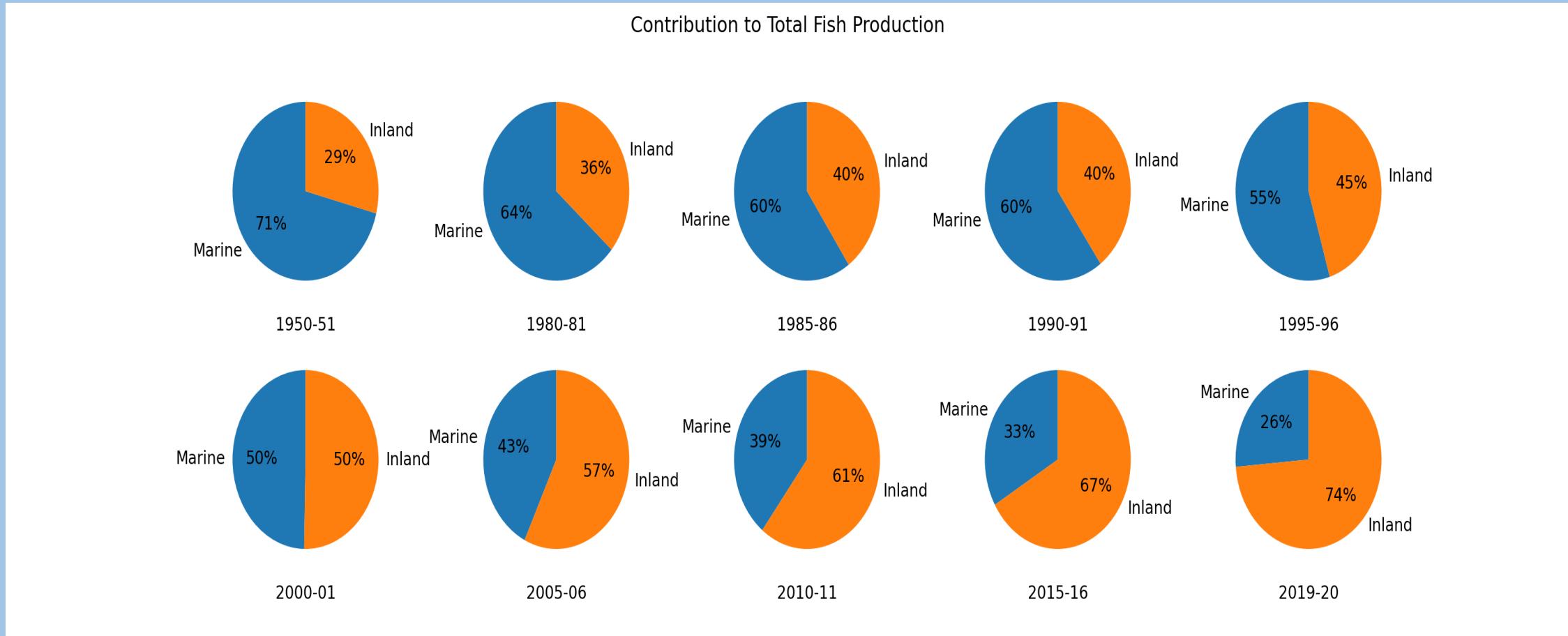


Marine, Inland, and Total over the years

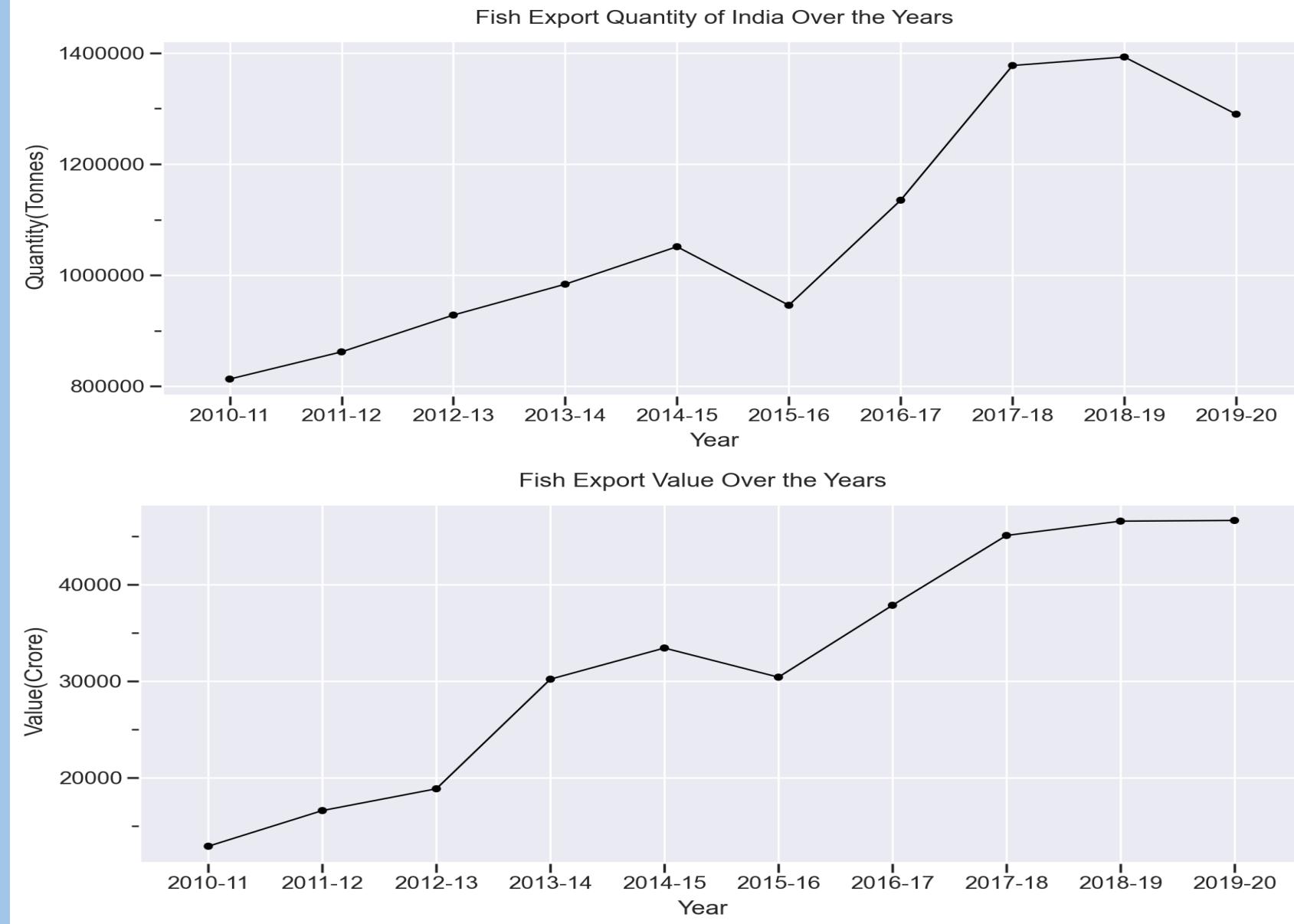
- Trend shift from Marine to Inland over the years.



Contribution of Marine and Inland in Total Production



Fish Export

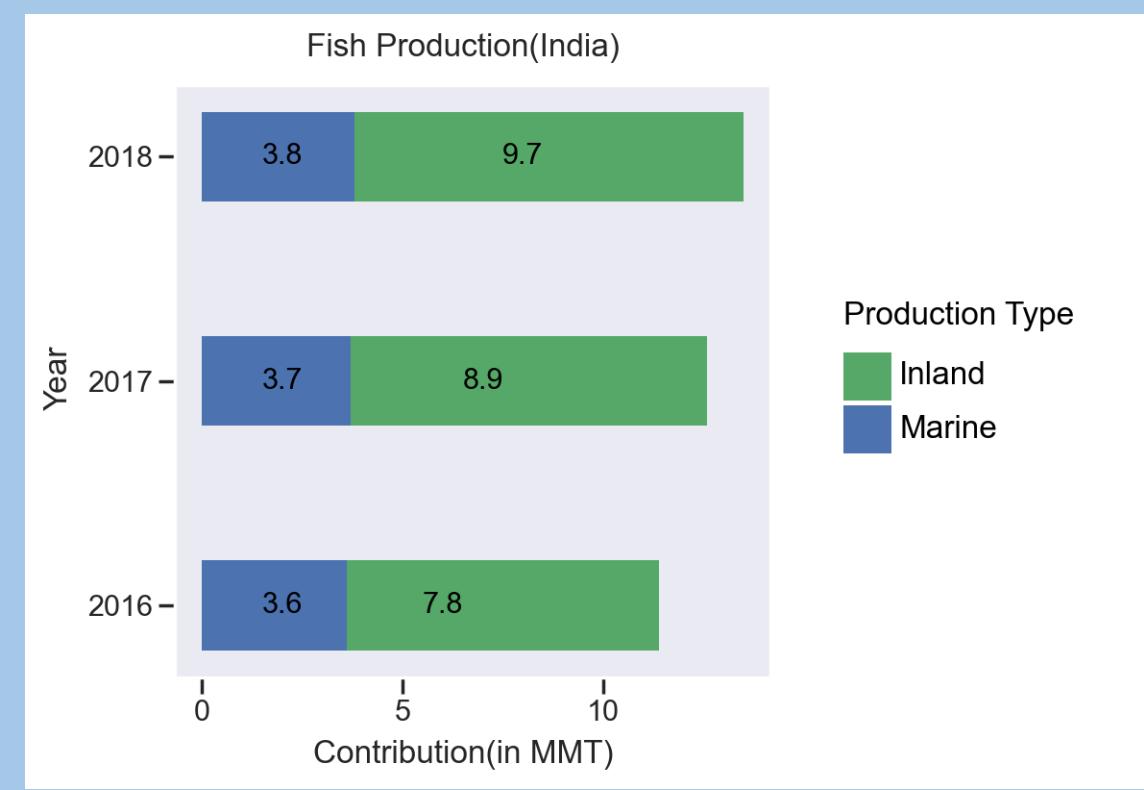
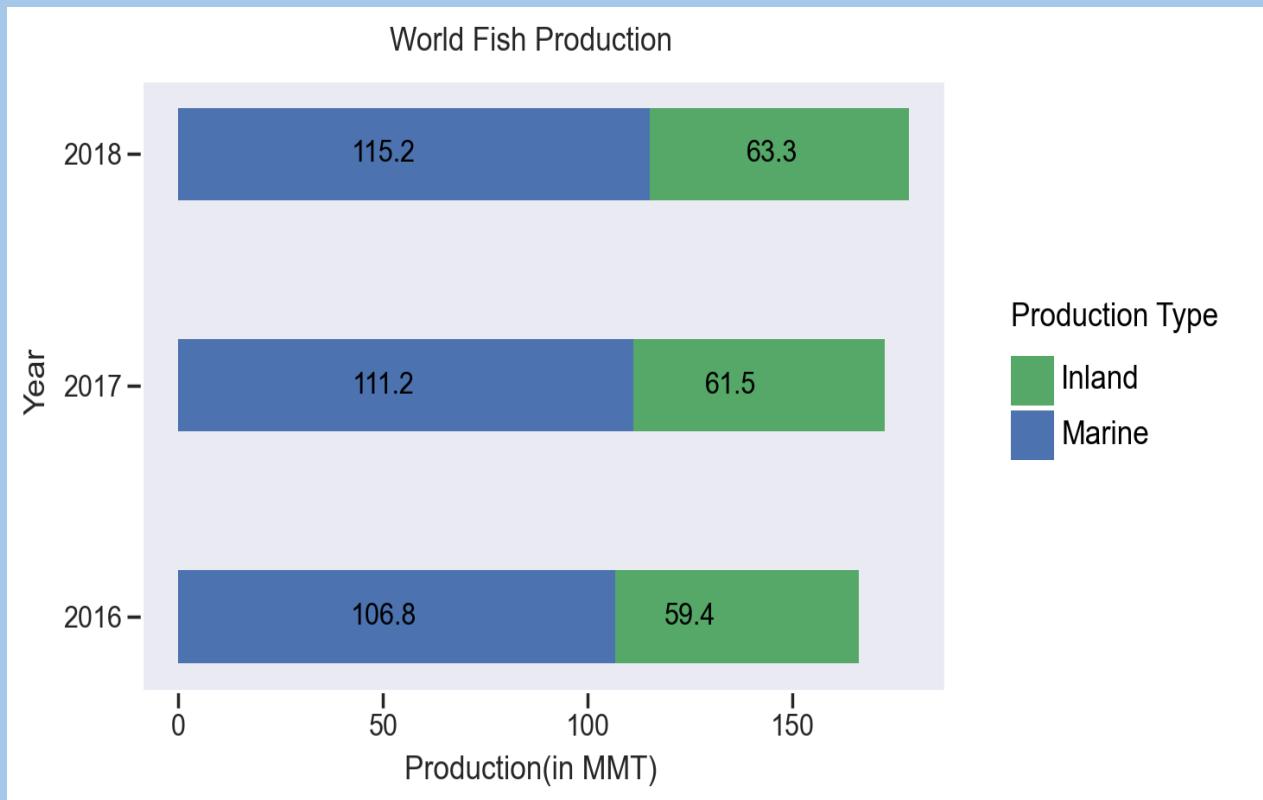


India is a major exporter of fish with the fish export business bringing in over 476 billion INR in 2020.

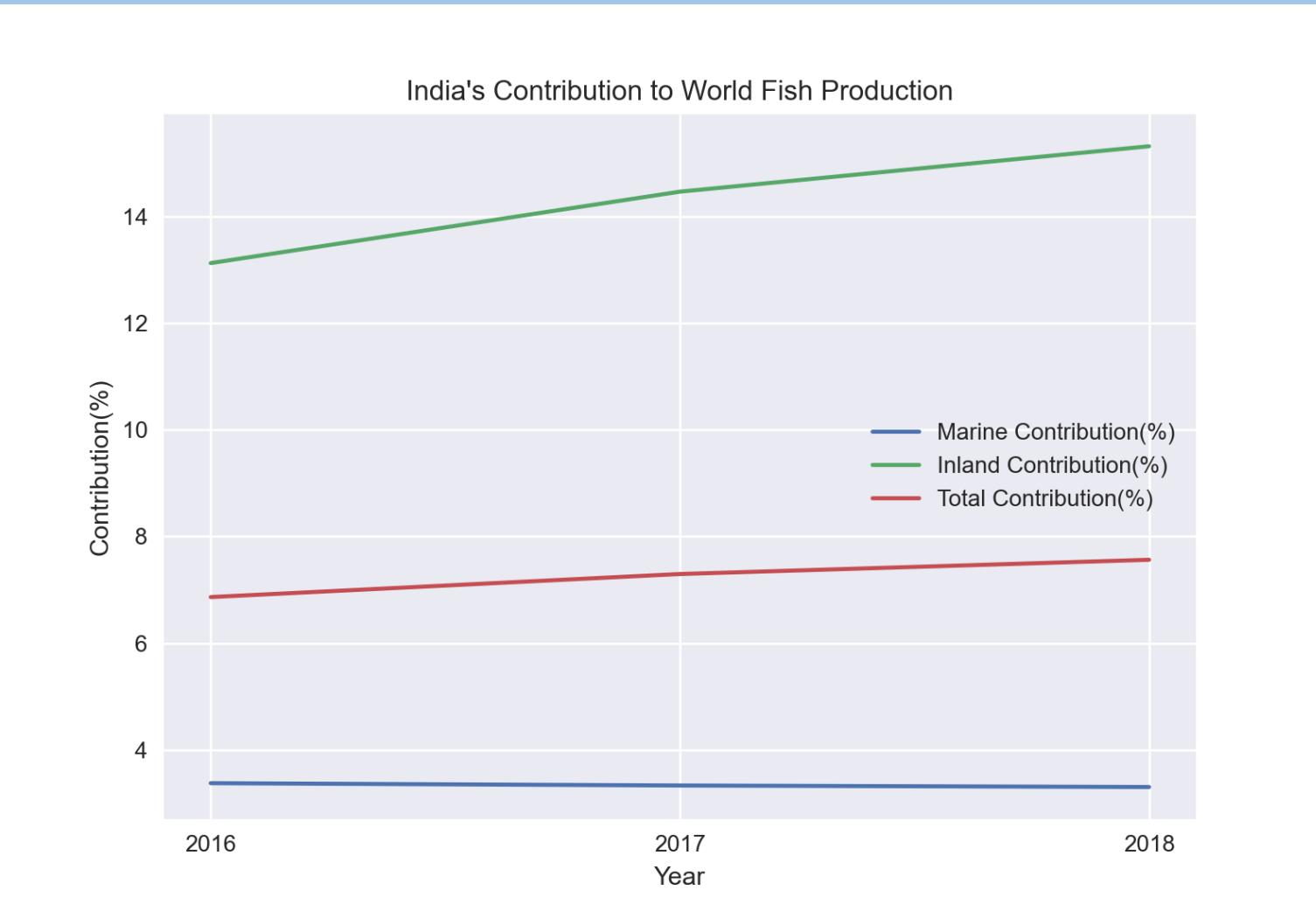
Fish Production contributes 1% in GDP.

World Fish Production

- India is the second largest fish producing country after China. China produces six times more than India.
- Marine Fish Production dominates at global level.



India's contribution in World Fish Production

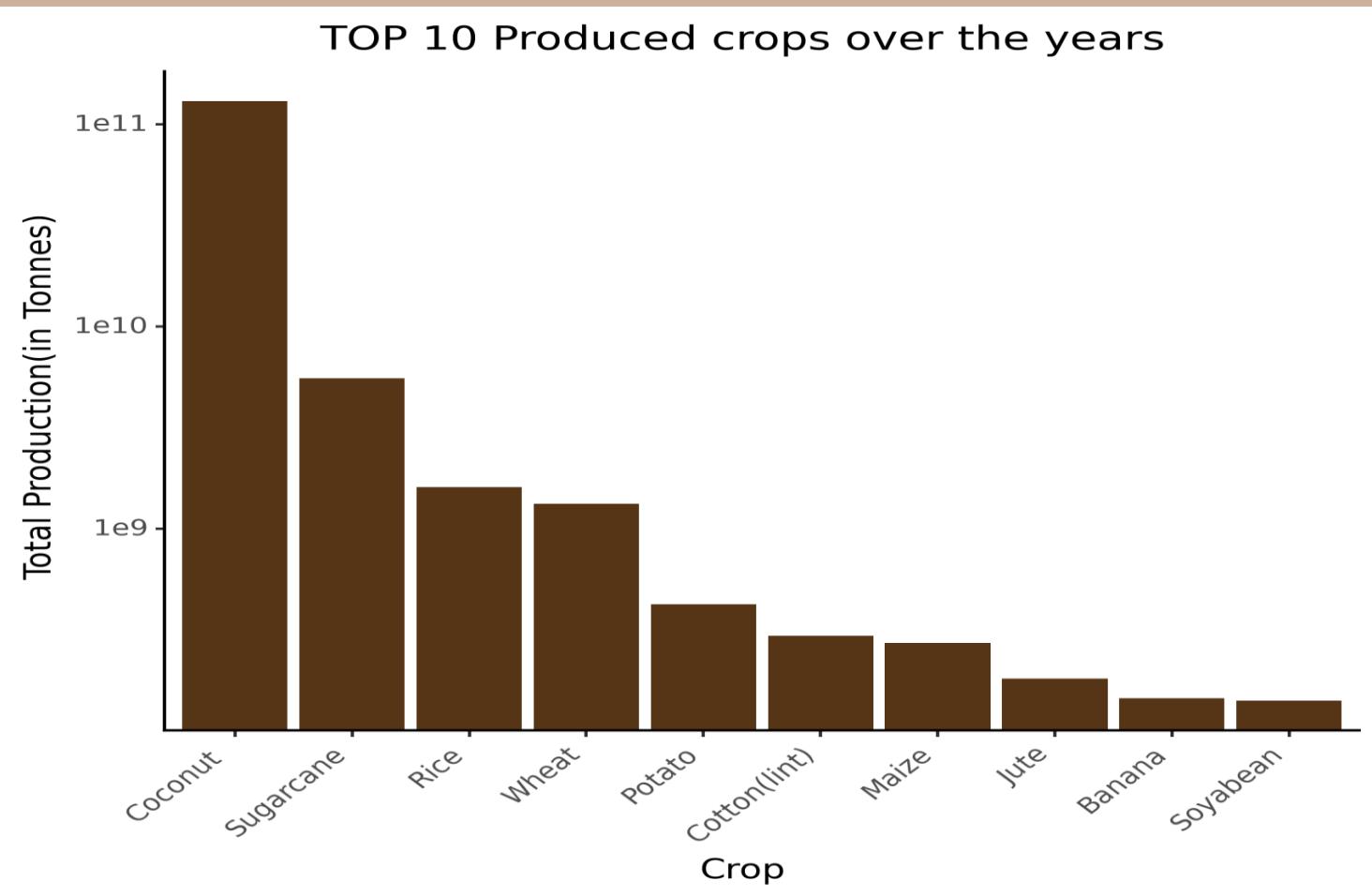


Crops

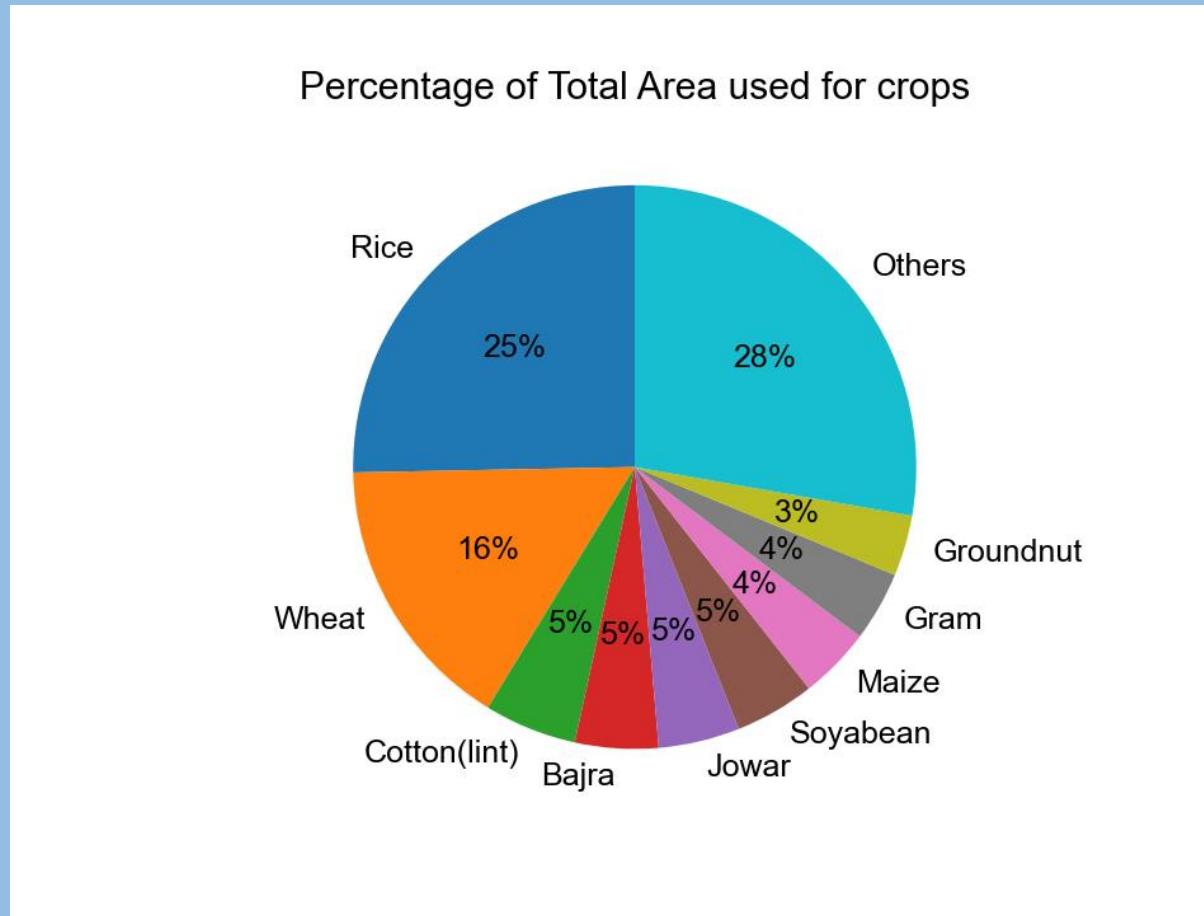
	State_Name	District_Name	Crop_Year	Season	Crop	Area	Production
0	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Arecanut	1254.0	2000.0
1	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Other Kharif pulses	2.0	1.0
2	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Rice	102.0	321.0
3	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Banana	176.0	641.0
4	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Cashewnut	720.0	165.0

- Added a column “**Productivity**” which is defined as Production/Area.
- Filled missing values with zero.
- There is lot of irregularity in data, which is hard to detect until we break the data into parts.
- Season Info**
 - Kharif: In India, the season is popularly considered to start in June and end in October.
 - Rabi : The season where crops are sown in mid-November and harvested in April/May is called Rabi Season.

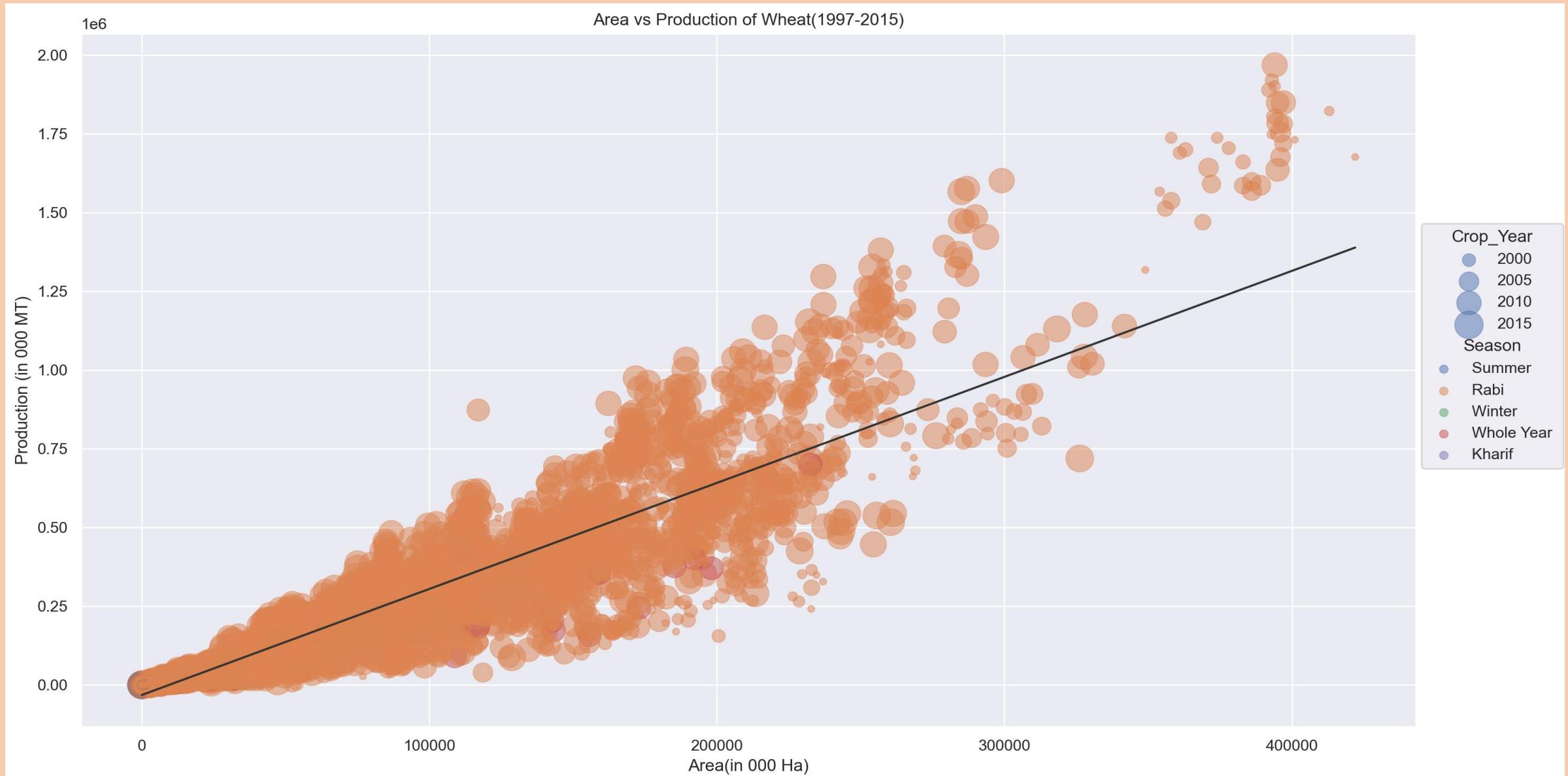
Top 10 Produced crops (1997-2015)



Land Used by the Crops

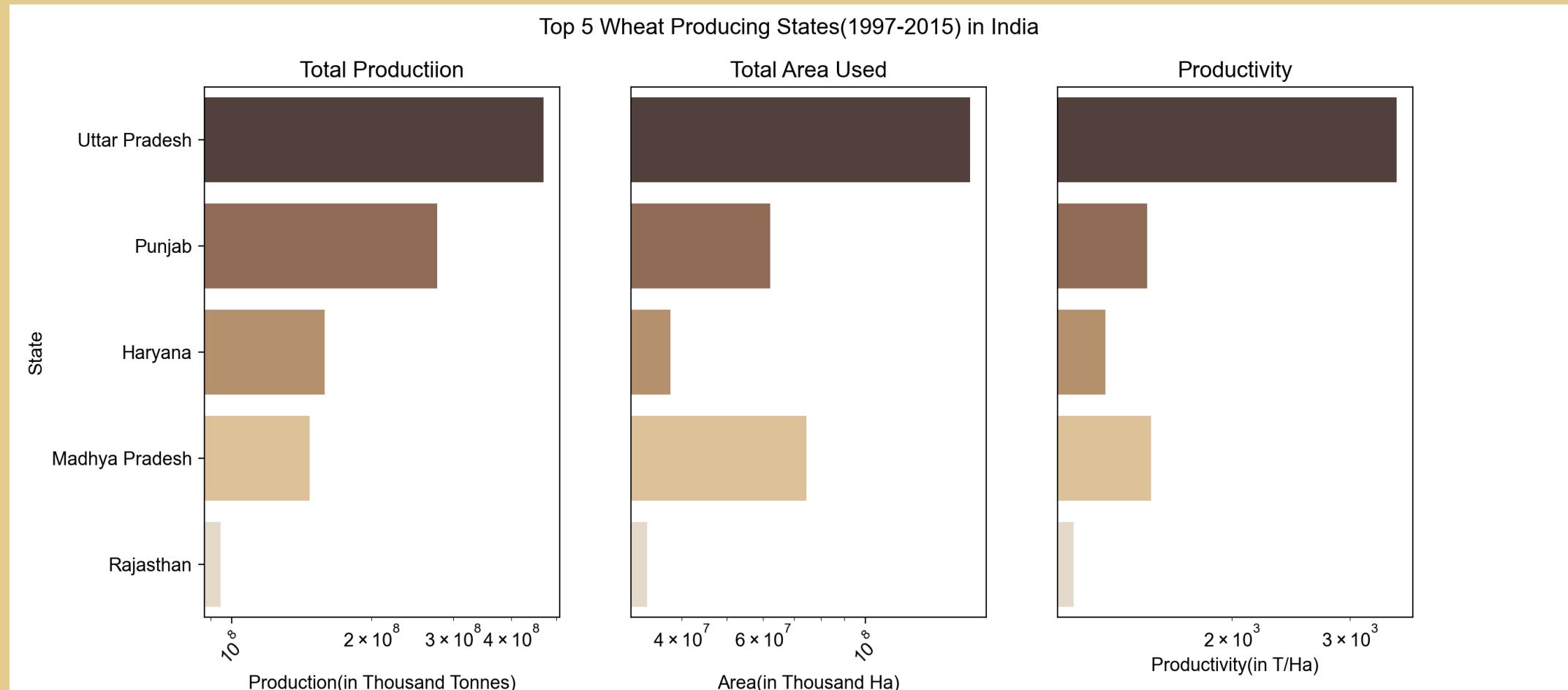


Wheat Production



Top 5 Wheat Producing States

- Wheat can tolerate severe cold and snow and resume growth with the setting in of warm weather in spring.



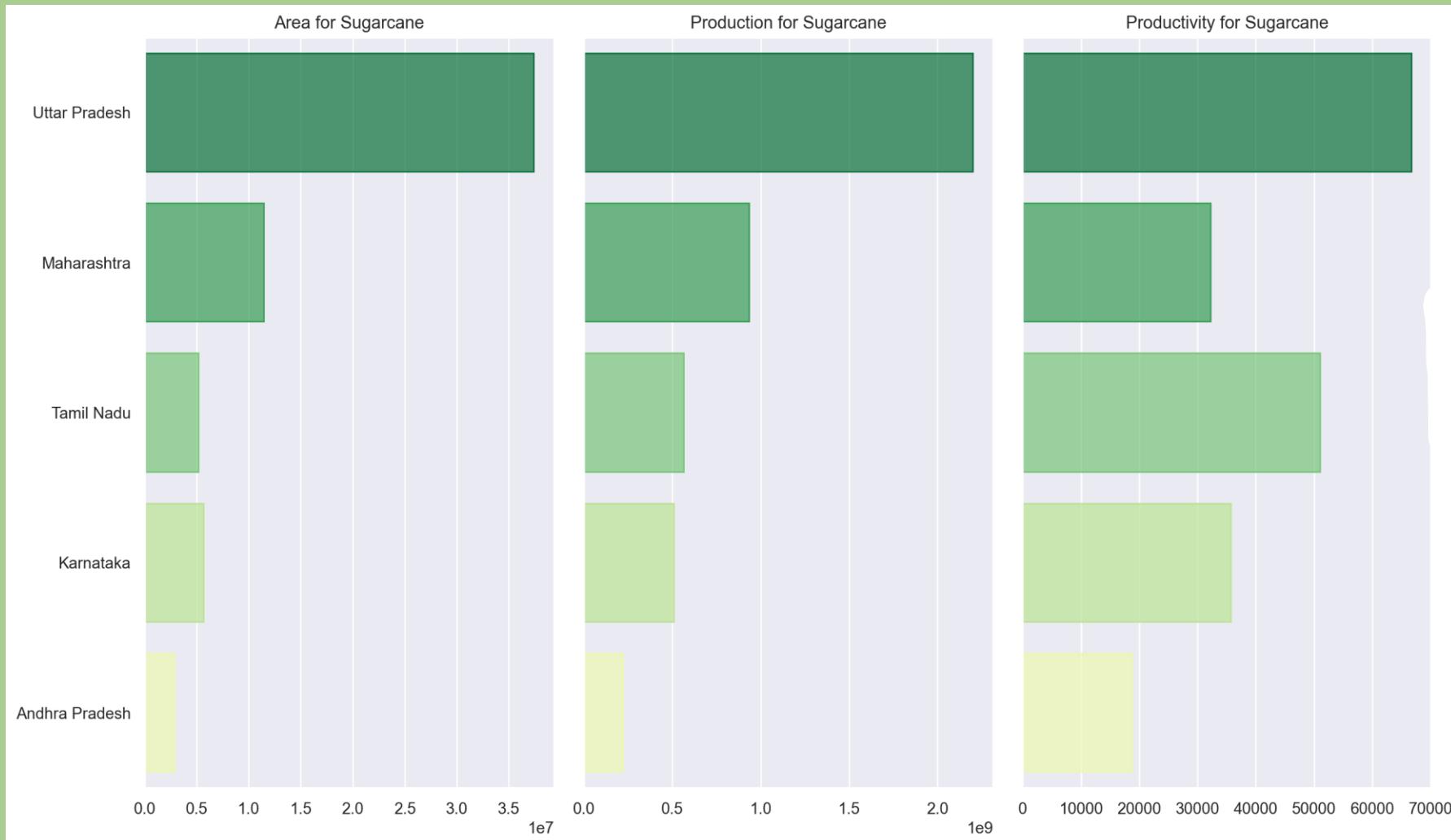
Sugarcane Production



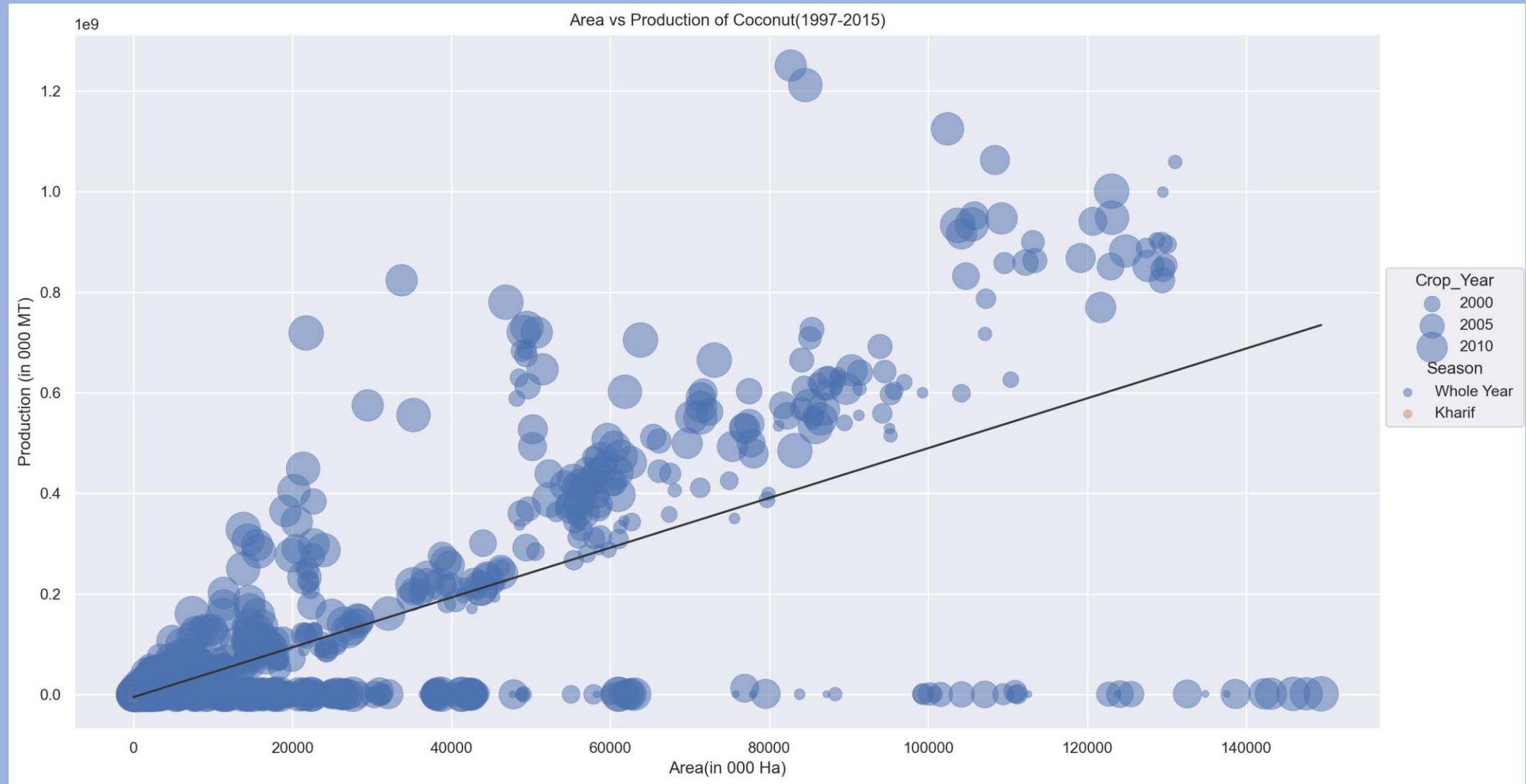
Sugarcane Production (Ctd.)



Top Sugarcane Producing States

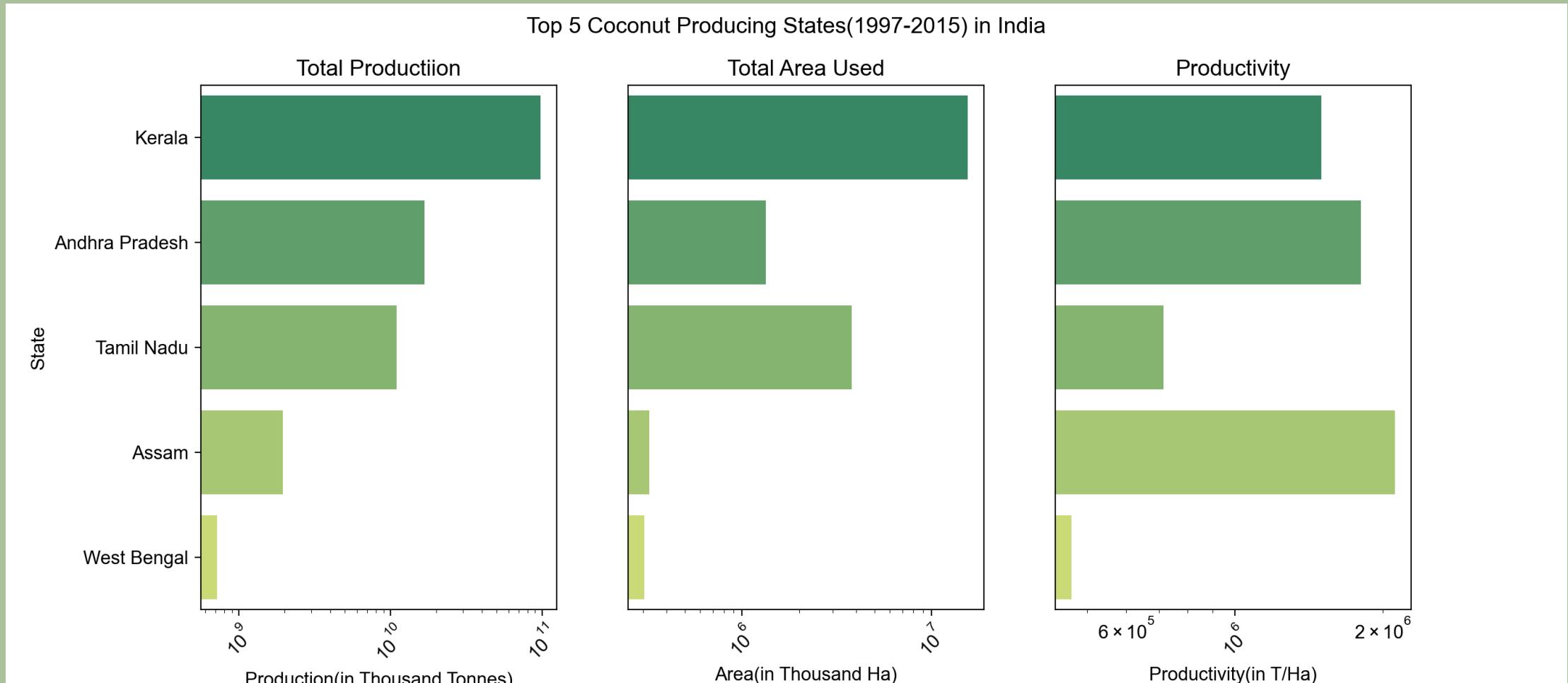


Coconut Production



Top Coconut Producing States

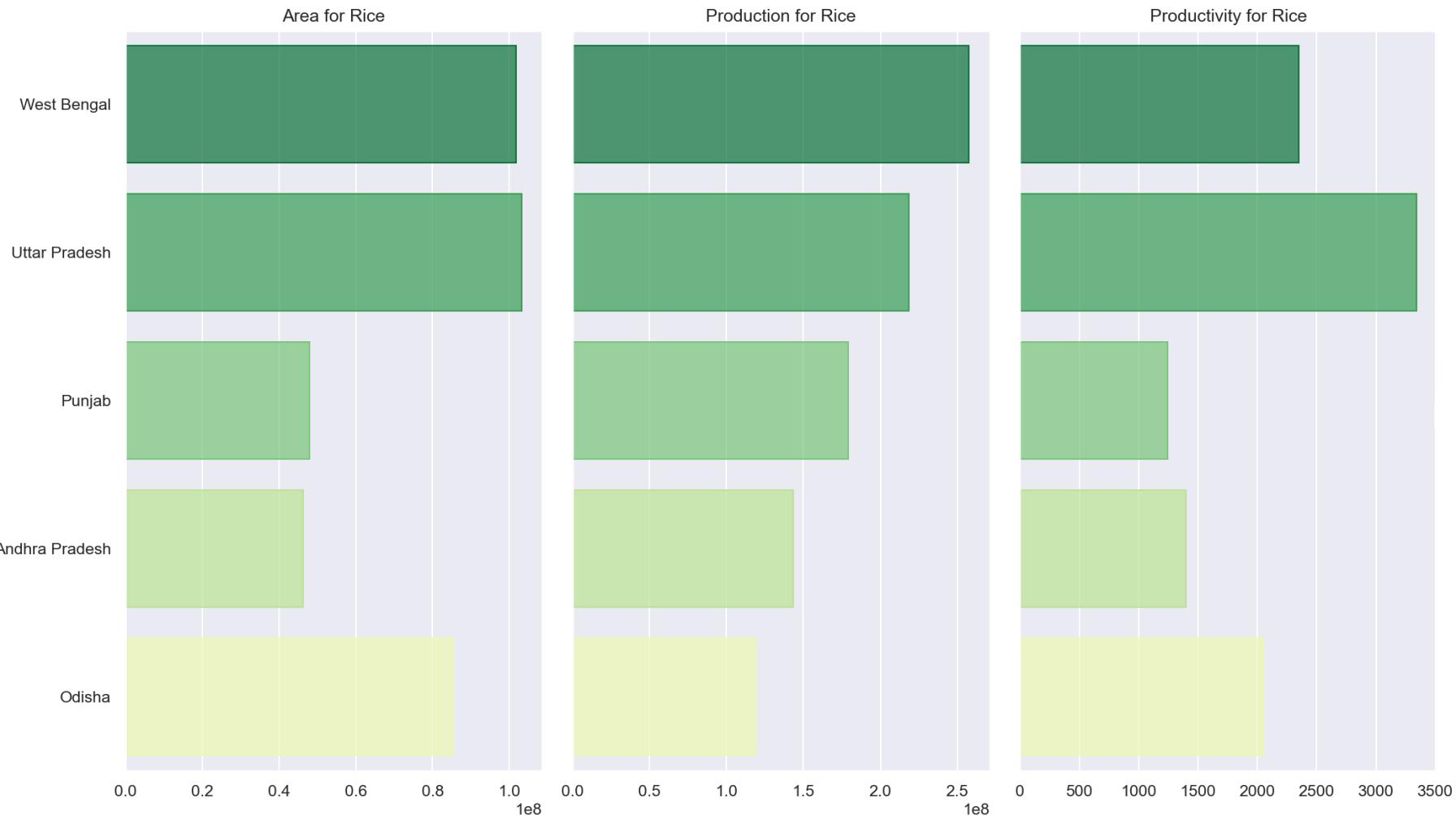
- Coconut is a tropical plant.



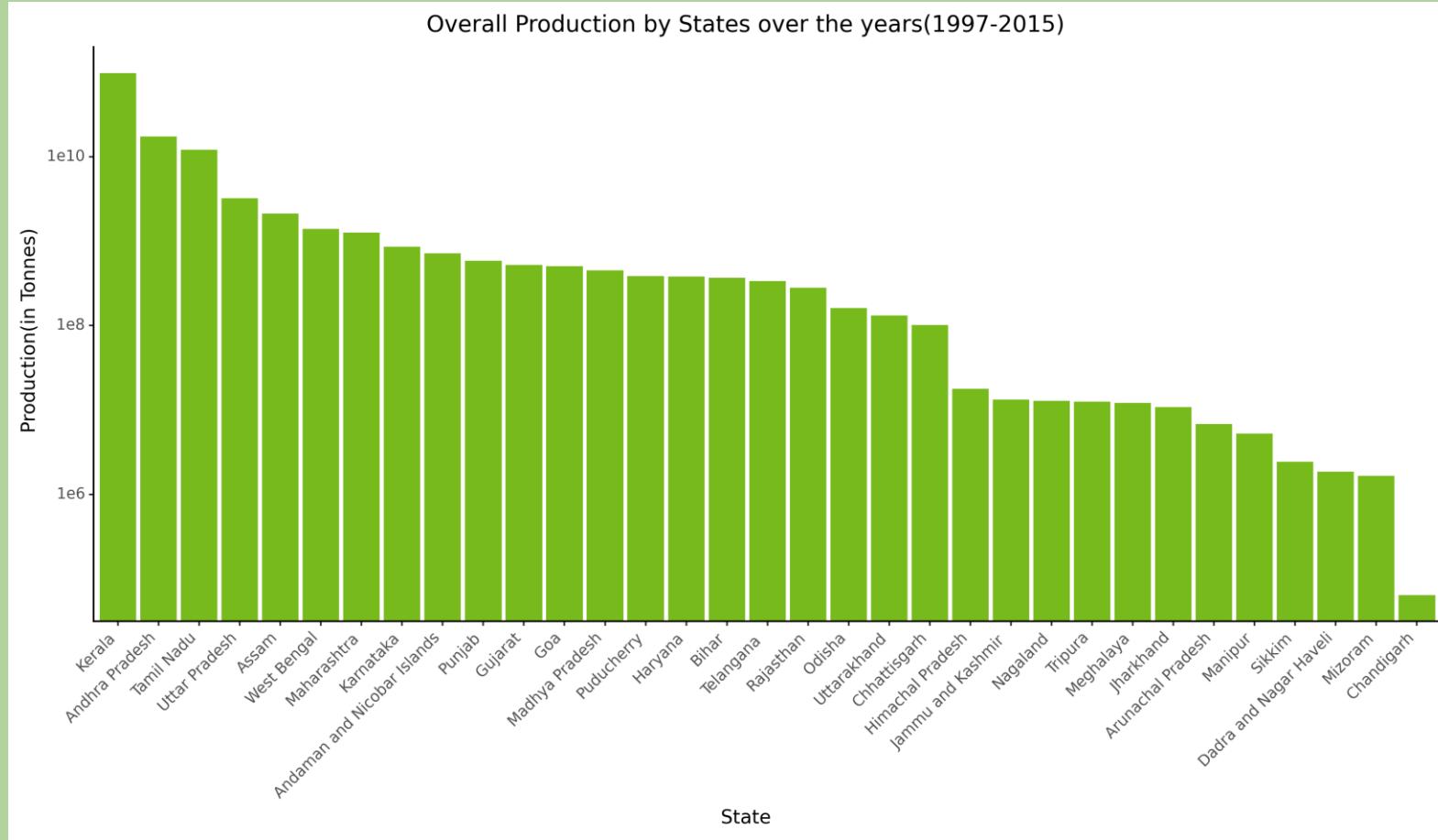
Rice Production



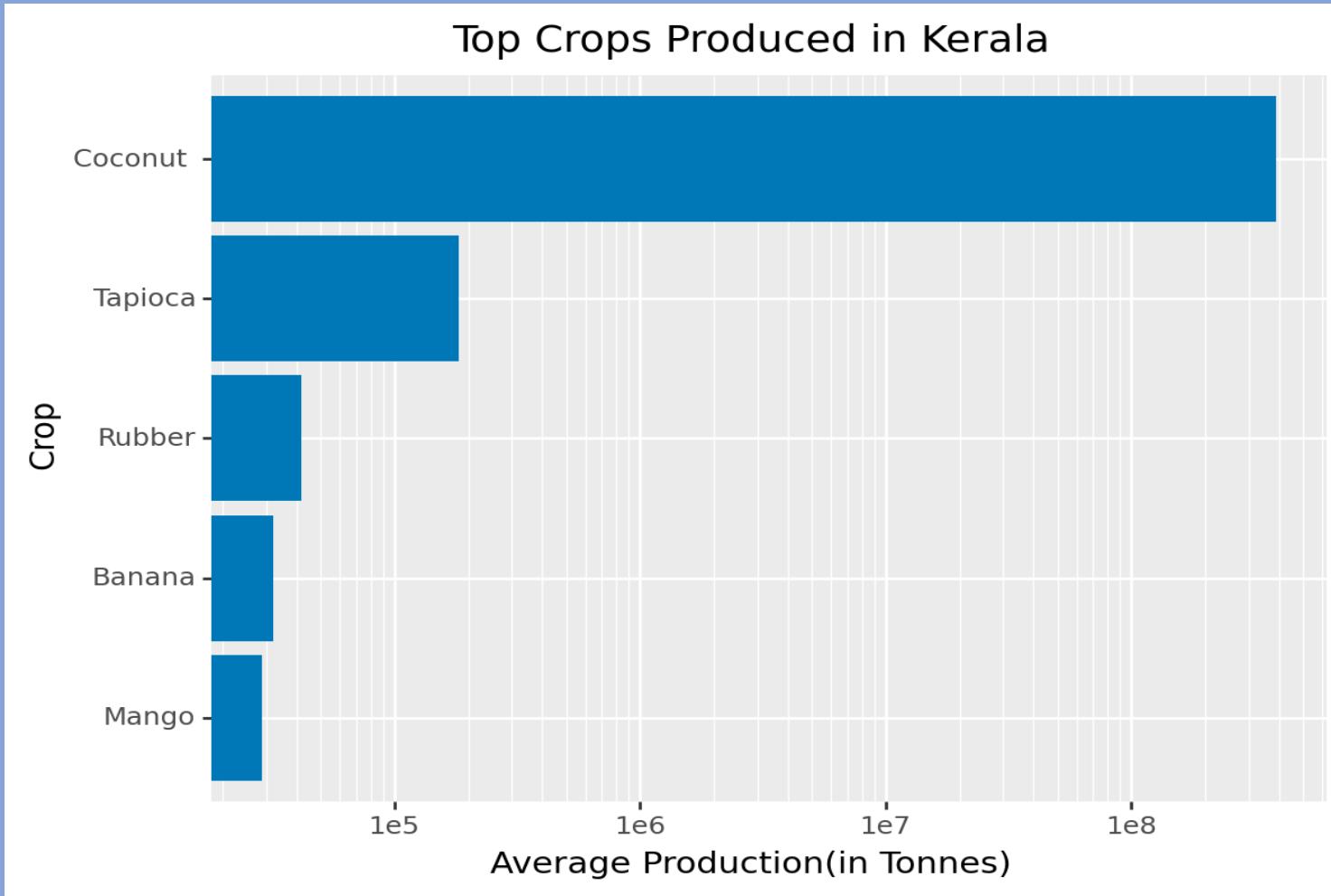
Top 5 Rice Producing States



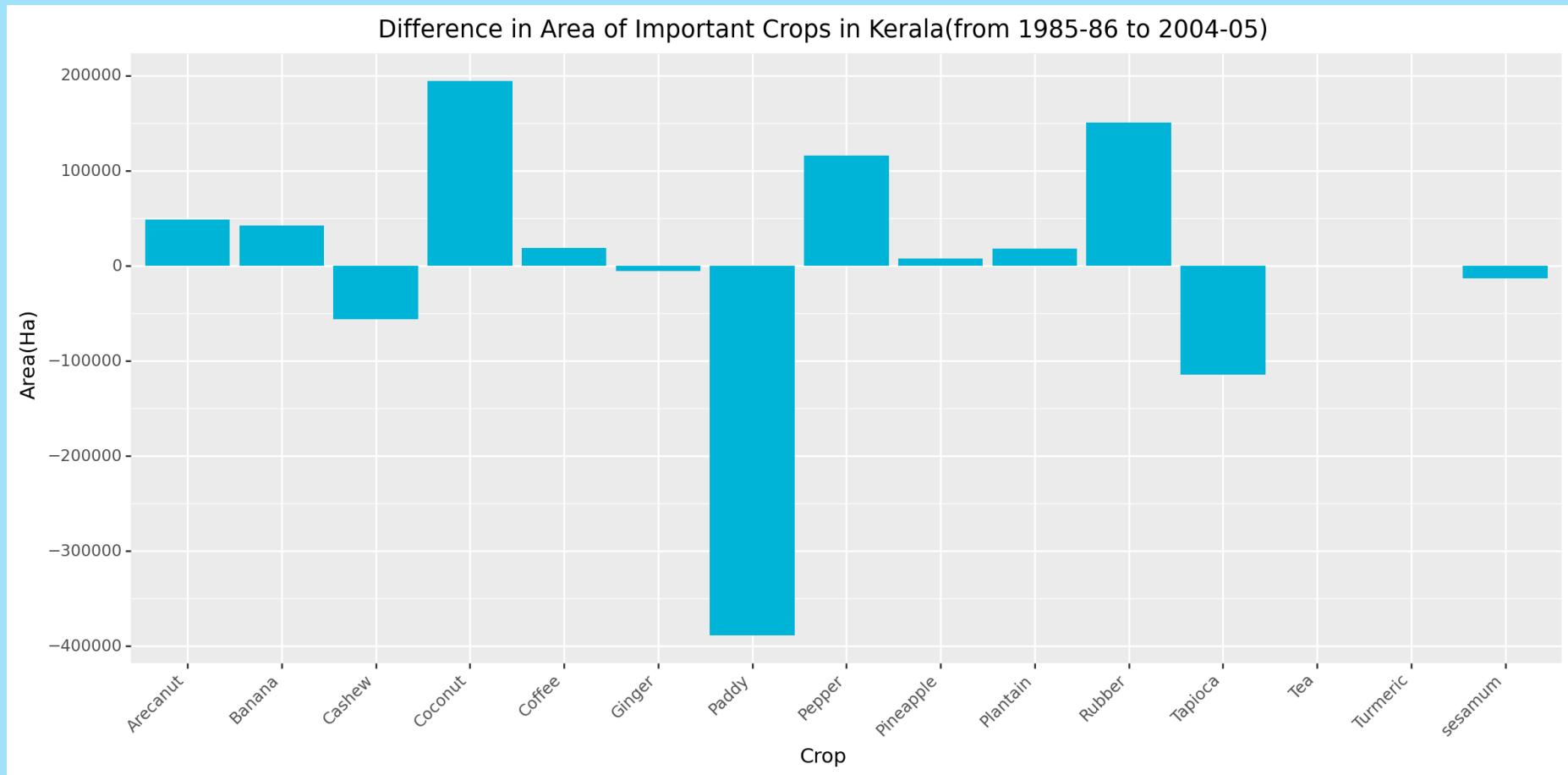
Total Production over the years



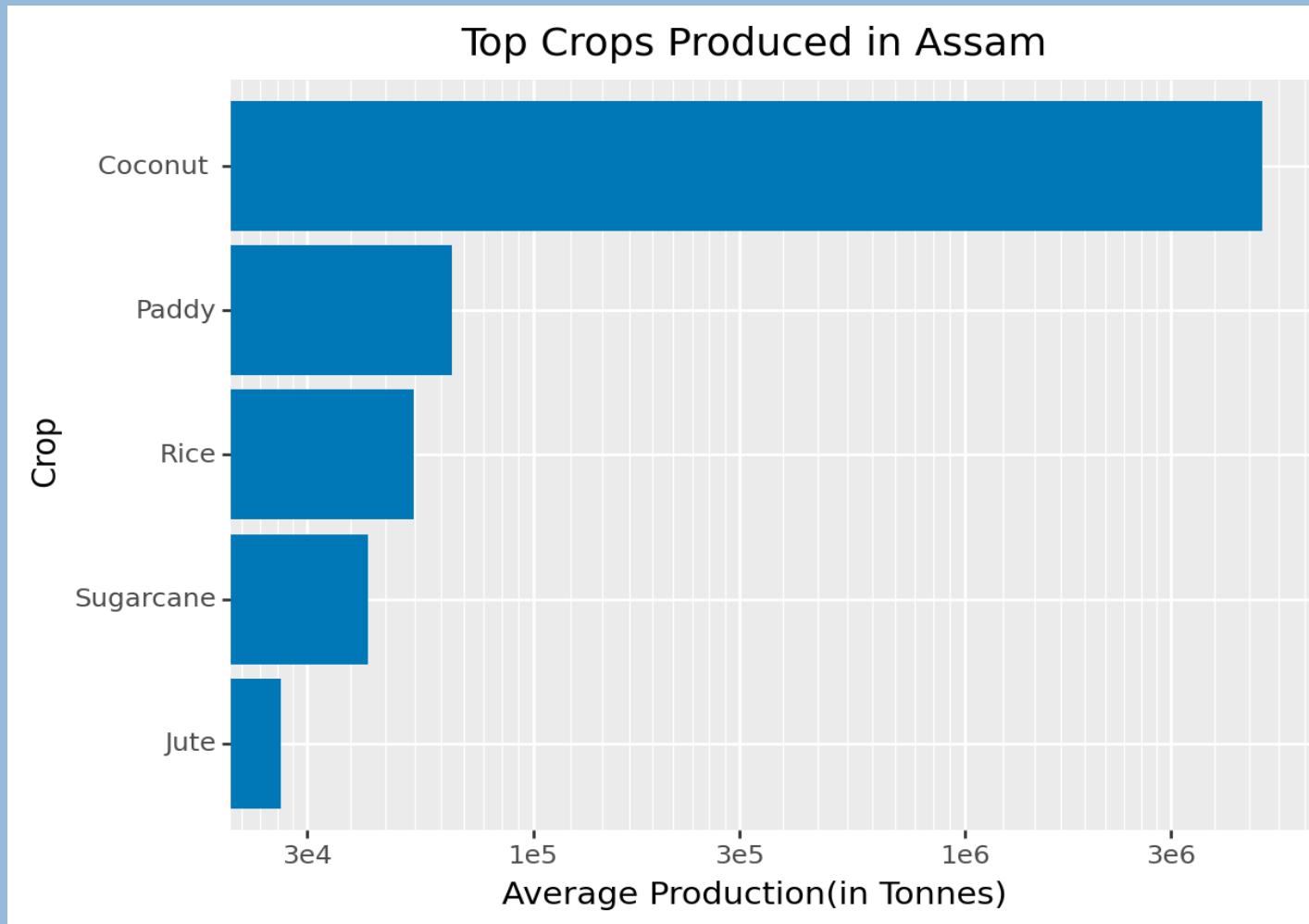
Crops in Kerala



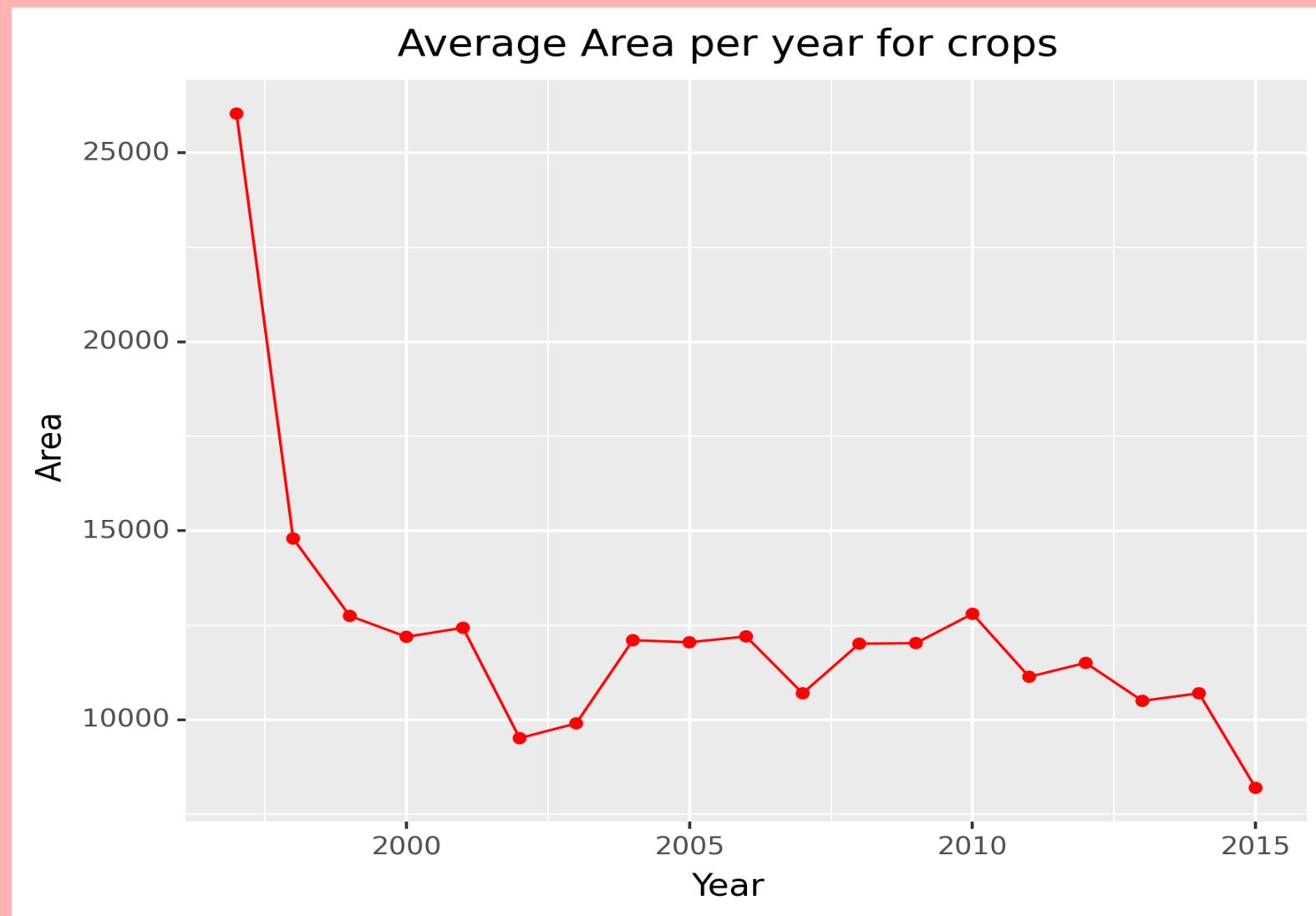
Kerala (Continued)



Assam



Average Area Used For Crop Production



Horticulture

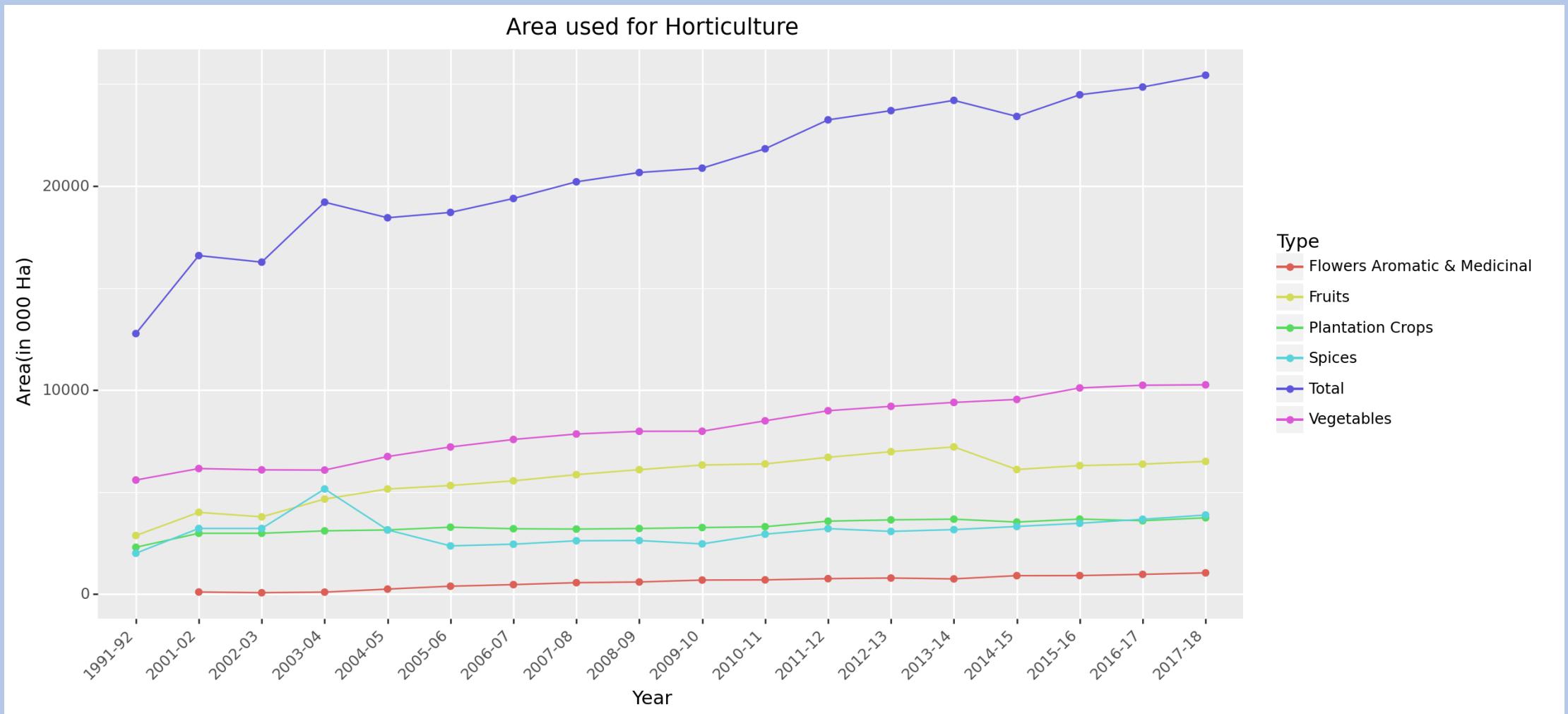
- **Horticulture**, the branch of plant agriculture dealing with garden crops, generally fruits, vegetables, and ornamental plants.

	Category	State/ UT Name	Brinjal-Area-2009-10	Brinjal-Production-2009-10	Brinjal-Area-2010-11	Brinjal-Production-2010-11	Brinjal-Area-2011-12	Brinjal-Production-2011-12	Brinjal-Area-2012-13	Brinjal-Production-2012-13	...	Total-Area-2010-11	Total-Production-2010-11	Total-Area-2011-12
0	State	Andhra Pradesh	24.3	485.0	NaN	NaN	76.3	1524.9	80.8	1615.3	...	0.0	0.0	661.0
1	State	Arunachal Pradesh	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	0.0	0.0	6.3
2	State	Assam	15.9	253.0	NaN	NaN	16.5	260.1	16.8	267.9	...	0.0	0.0	266.0
3	State	Bihar	55.3	1198.6	NaN	NaN	56.1	1271.5	56.2	1291.5	...	0.0	0.0	857.0
4	State	Chhattisgarh	25.2	374.5	26.7	439.5	28.5	502.9	31.2	545.7	...	190.0	2717.1	351.6

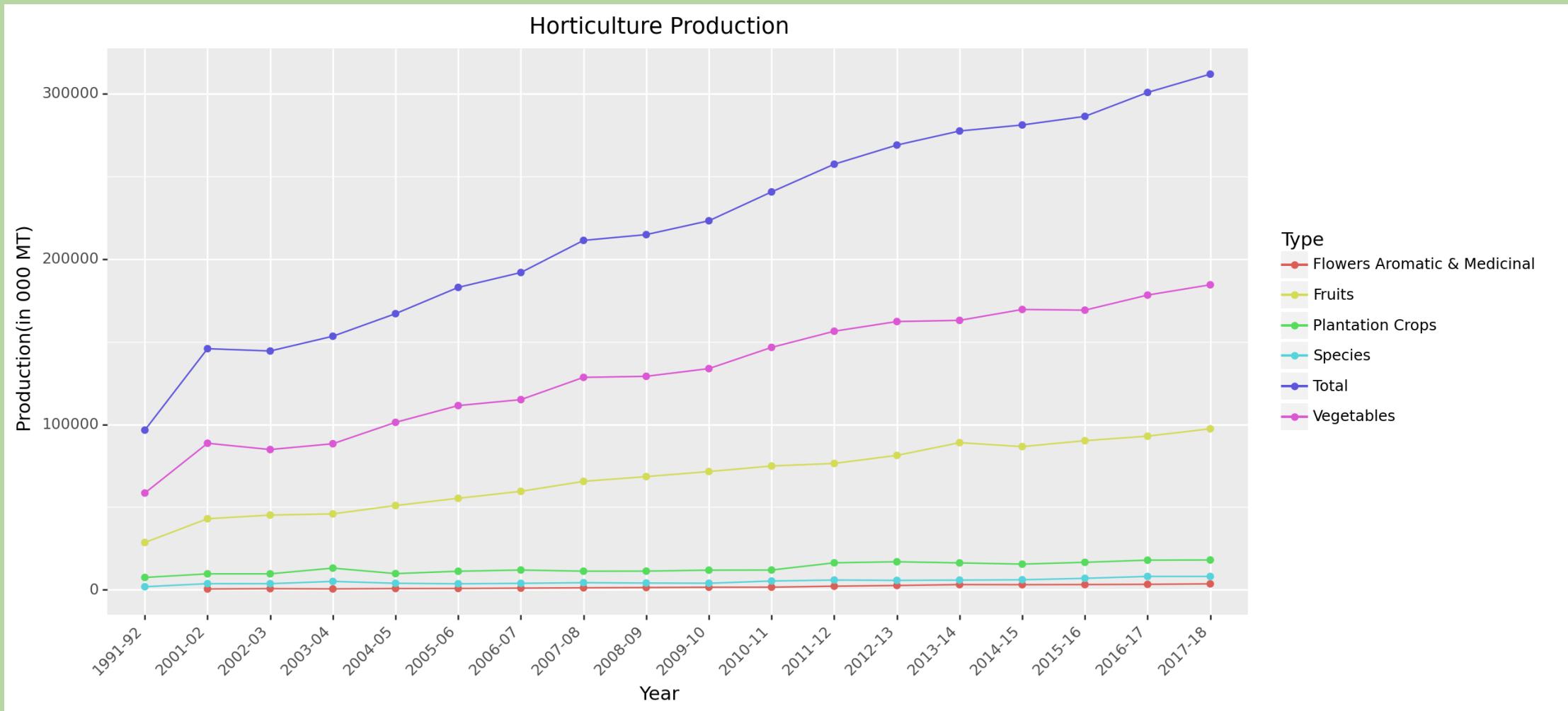
- Vegetables in the data: Brinjal, Cabbage, Cauliflower, Okra, Peas, Tomato, Onion, Potato, Sweet Potato, Tapioca , Others, Total
- Data was converted to long format for easy implementation.
- Dropped the rows containing Missing Values.

Area Used For Horticulture

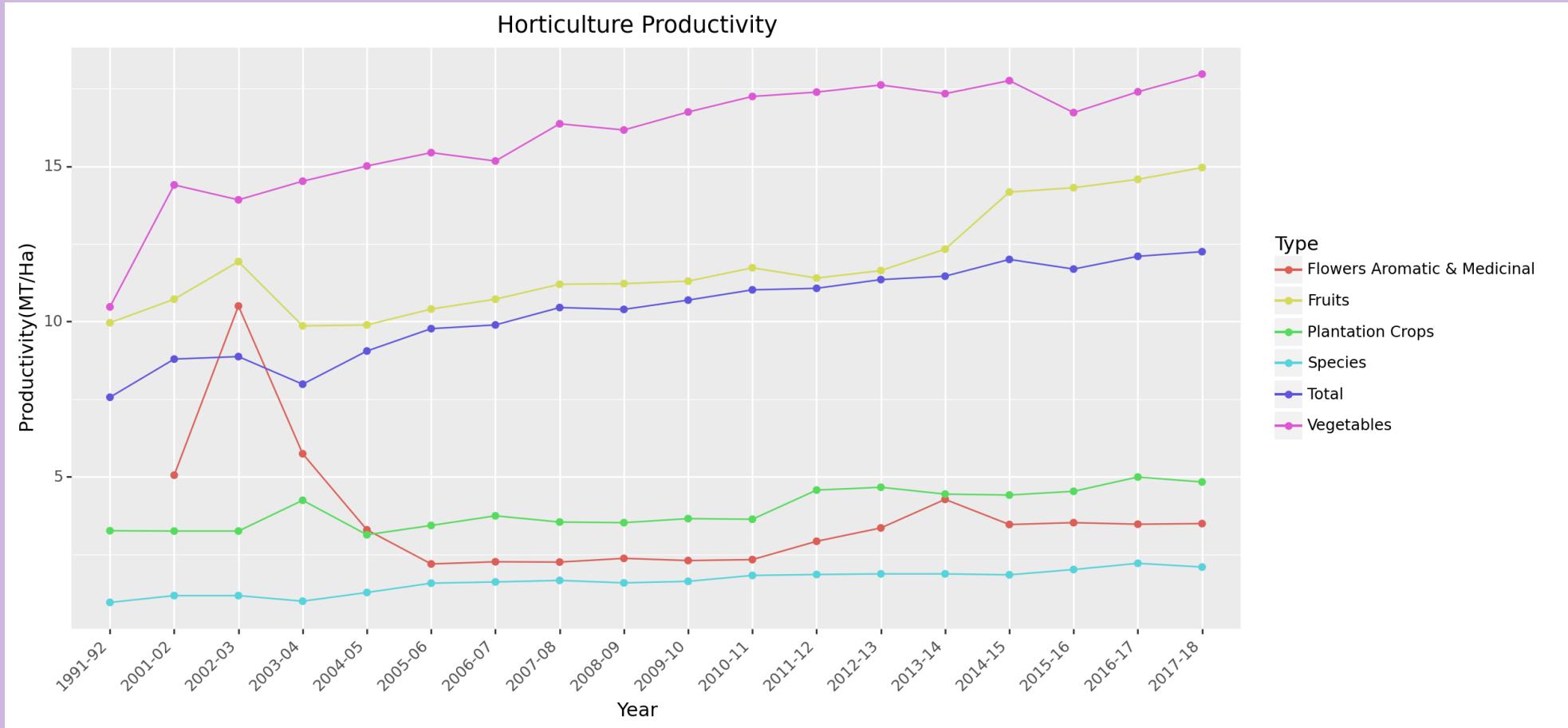
- 10% of the land in India is used for horticulture, which accounts for 33% of the agricultural value



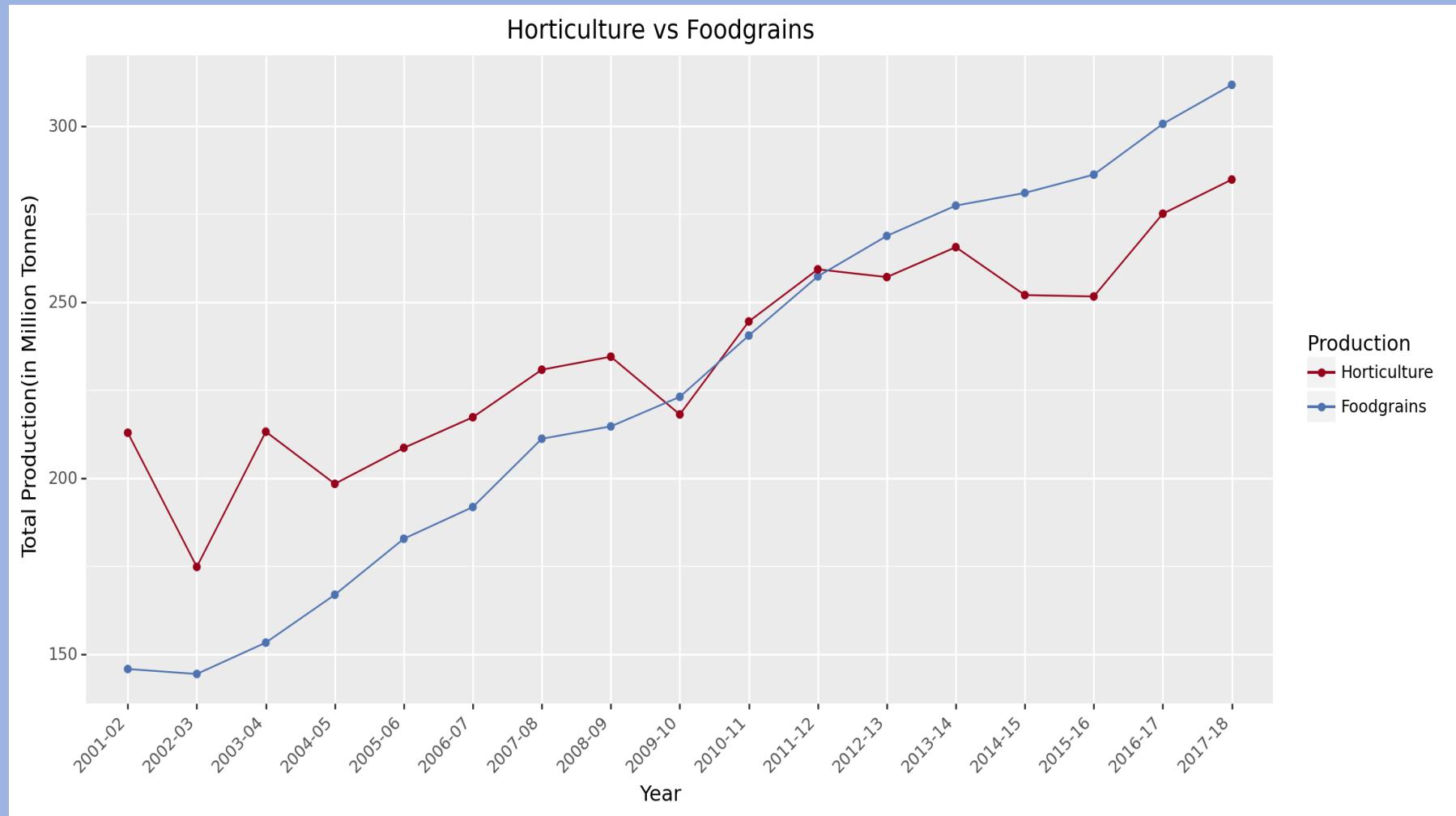
Horticulture Production



Horticulture Productivity

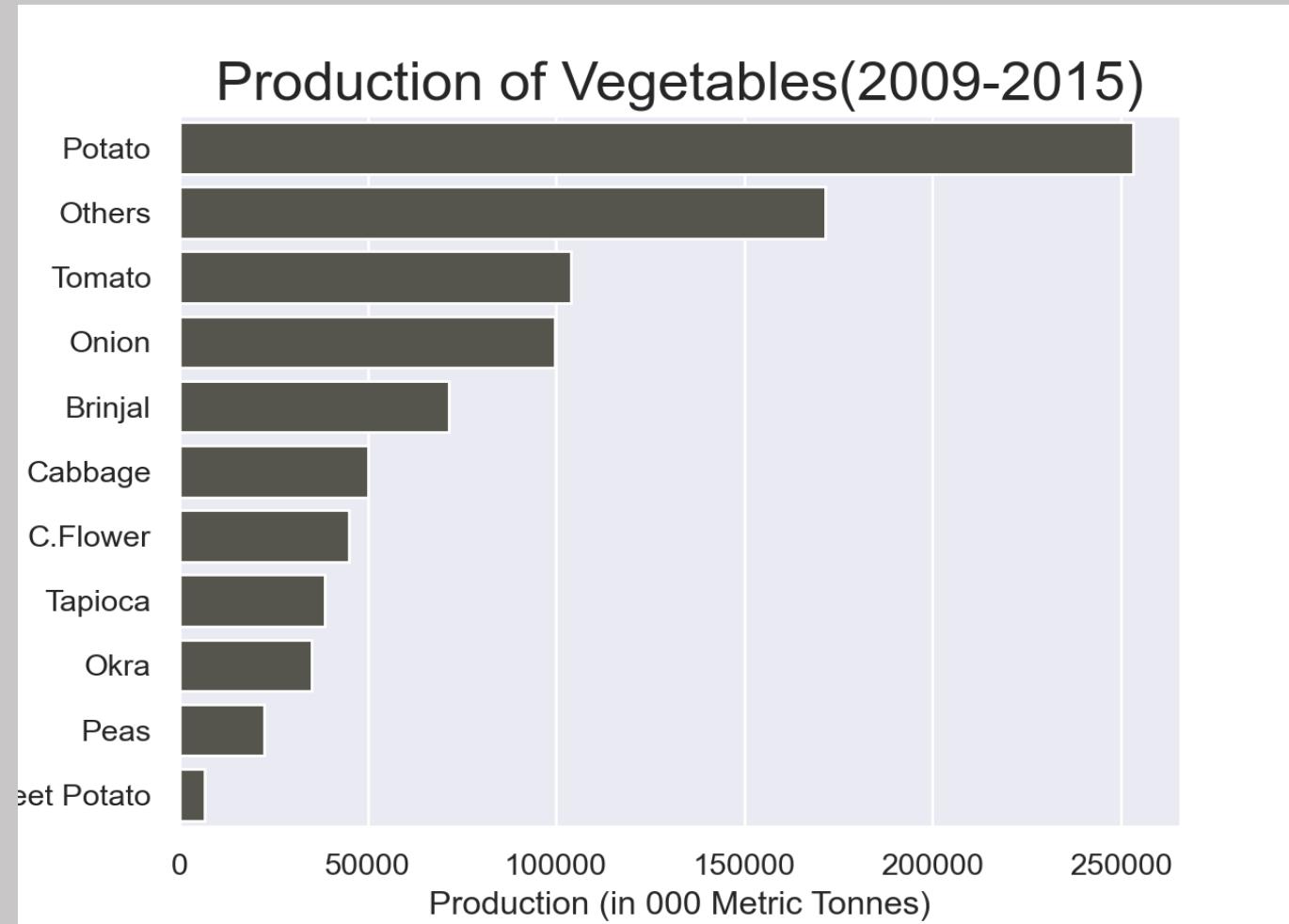


Horticulture vs Foodgrains



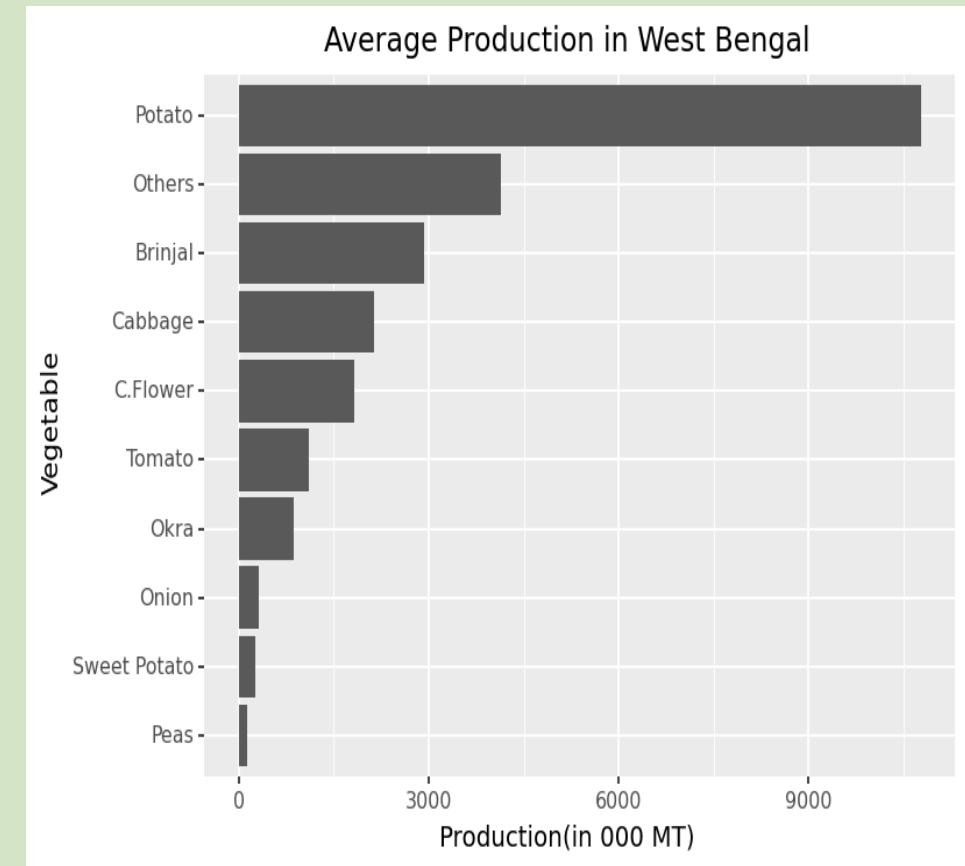
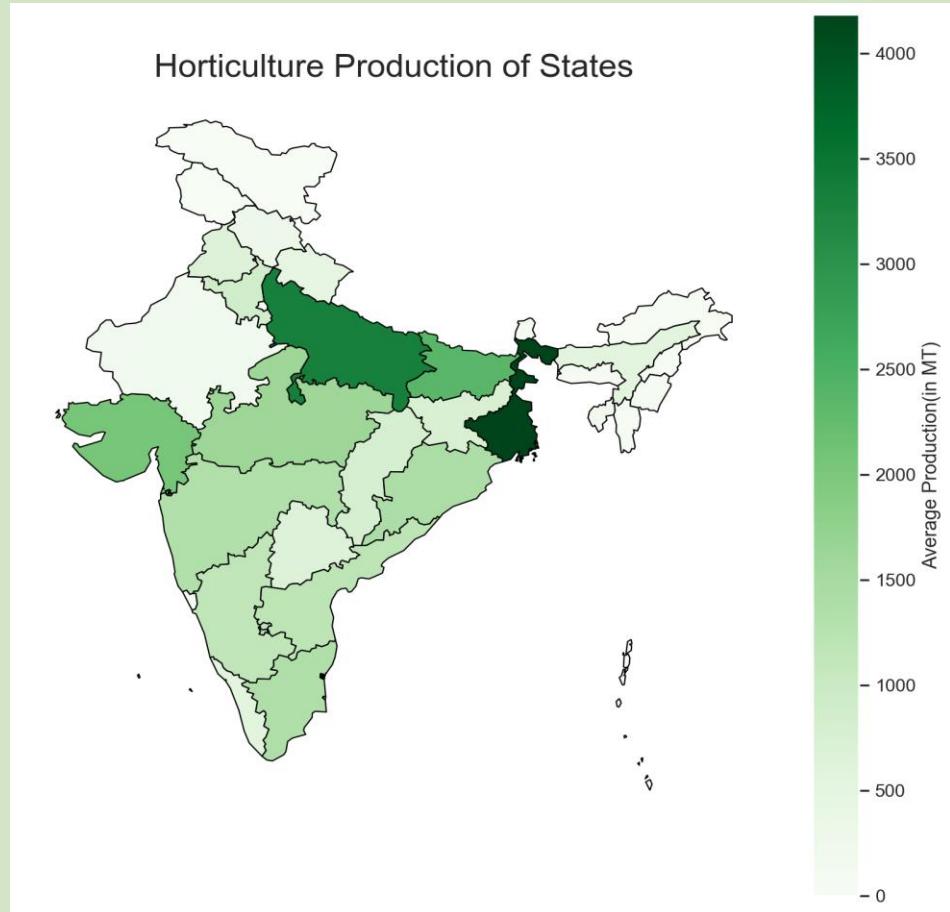
- Horticulture sector has become one of the major drivers of growth as it is **more remunerative than the agricultural sector (food grains mainly)**.
- **Water utilization is very low, minimizing the risk of crop failure** and it can be done on smaller farms.
- **Multiple crops are planted simultaneously** to get **more yield** and to **use the maximum of the fertilizers**.

Production of Vegetables

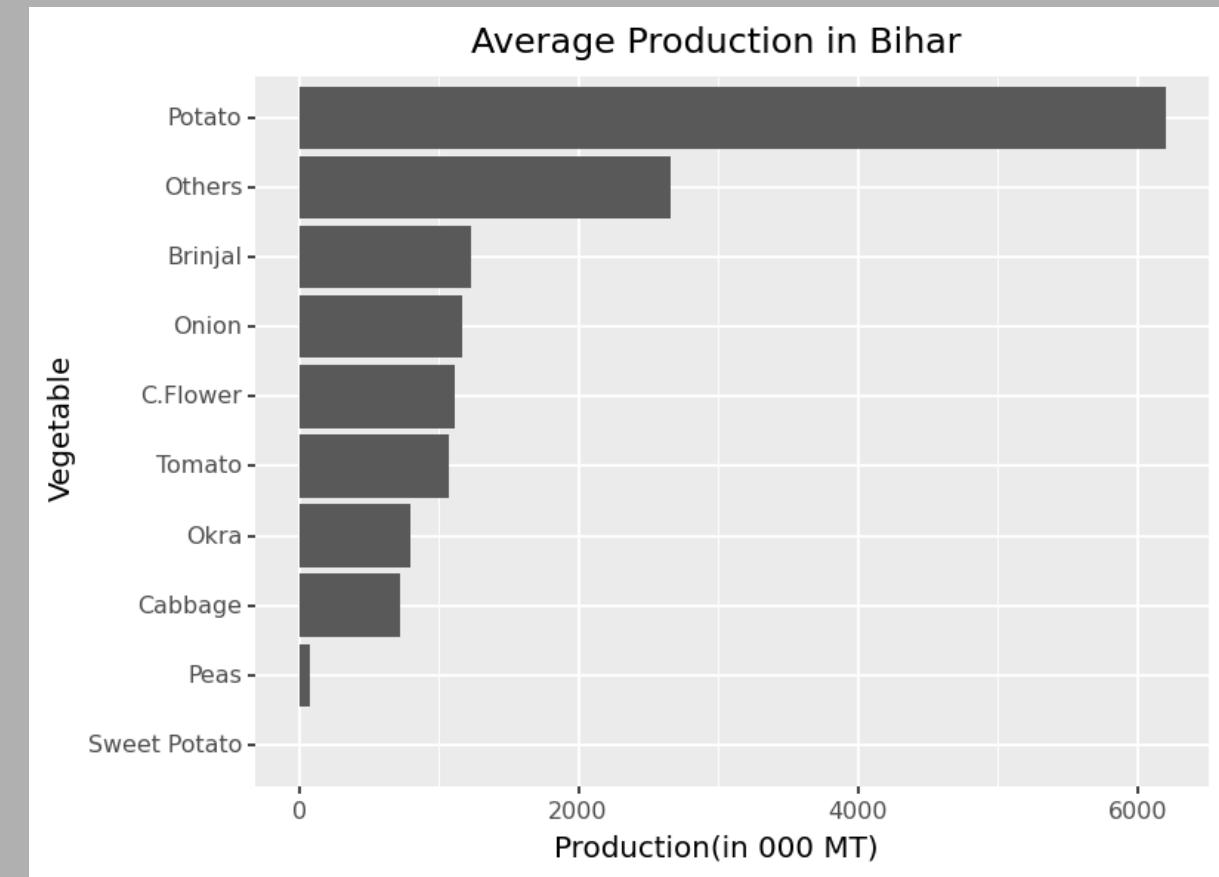
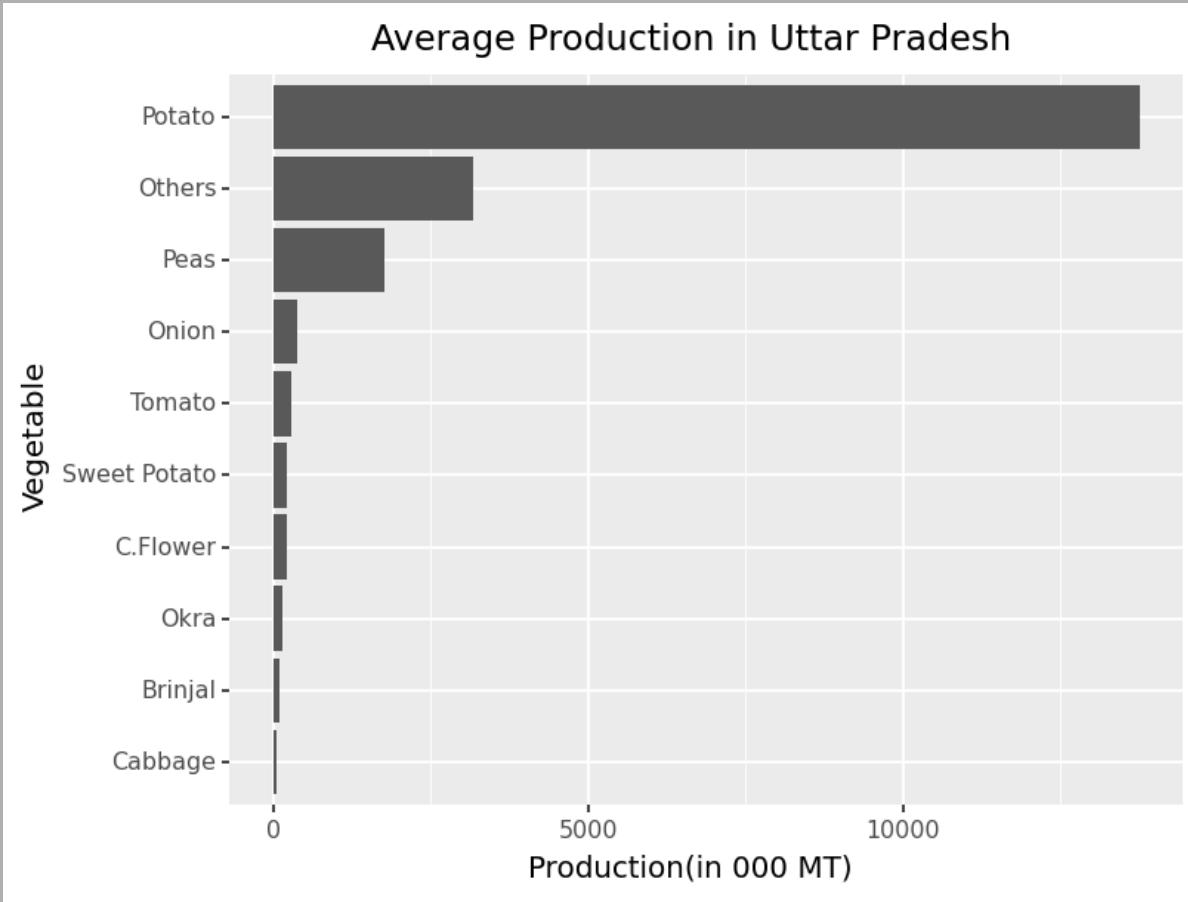


- TOP produced vegetables in India are TOP :Tomato, Onion, Potato
- India, second largest producer of the fruits and vegetables after China.
- Diverse topography and climate, ensures availability of fruits and vegetables in every season.

Top States in terms of Horticulture Production

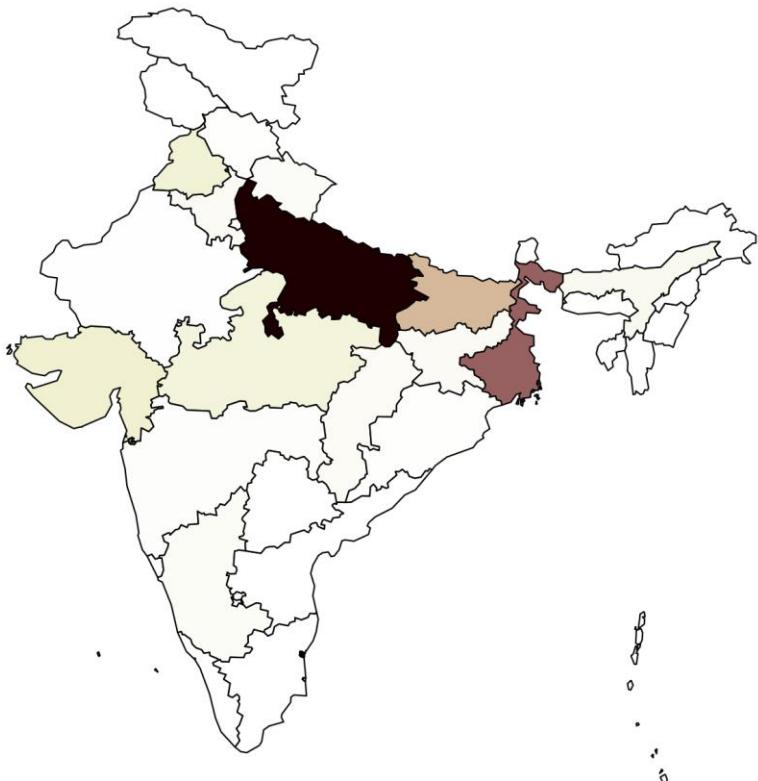


Top States in terms of Horticulture Production

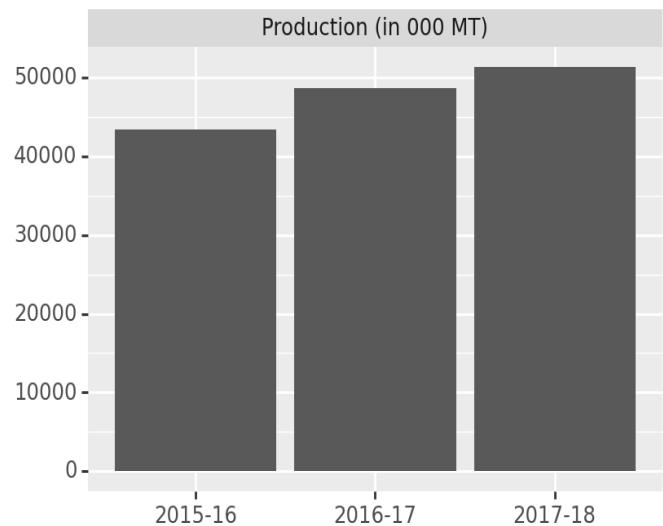
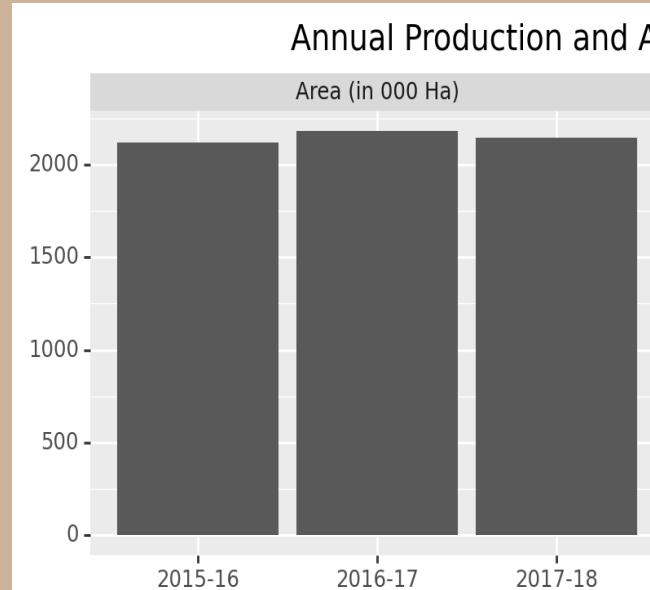


Potato

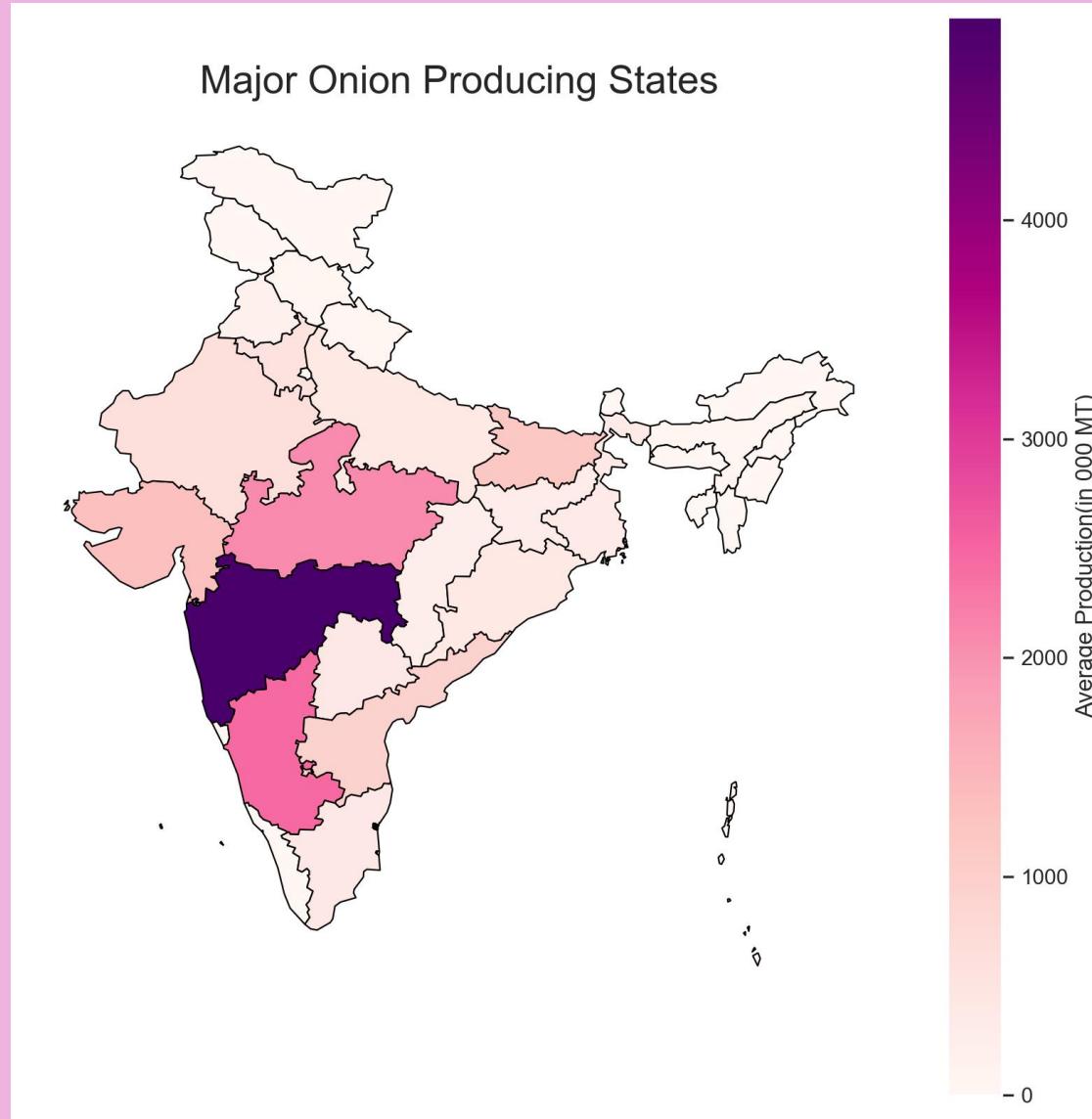
Major Potato Producing States



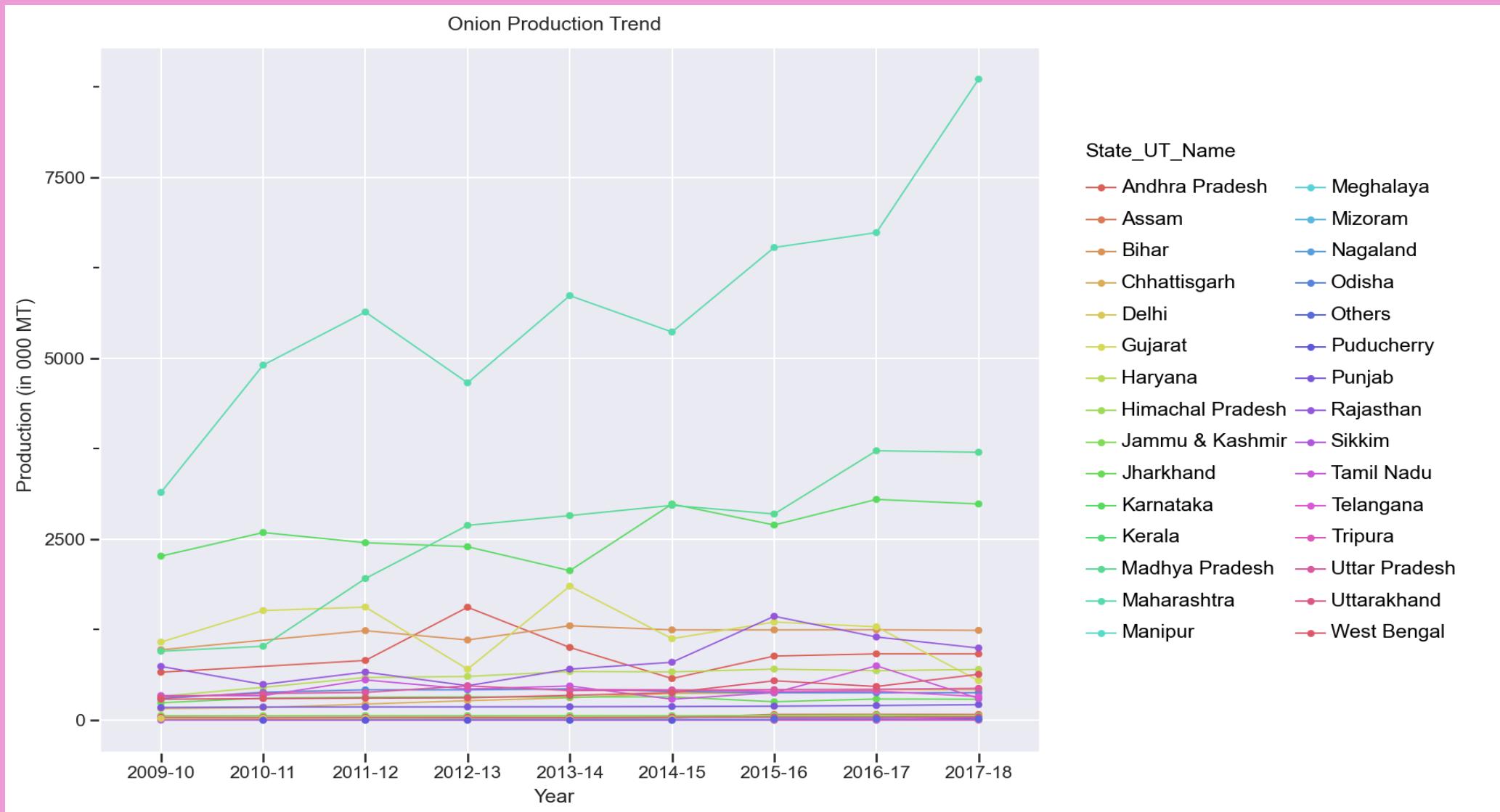
Annual Production and Area used for Potato Production



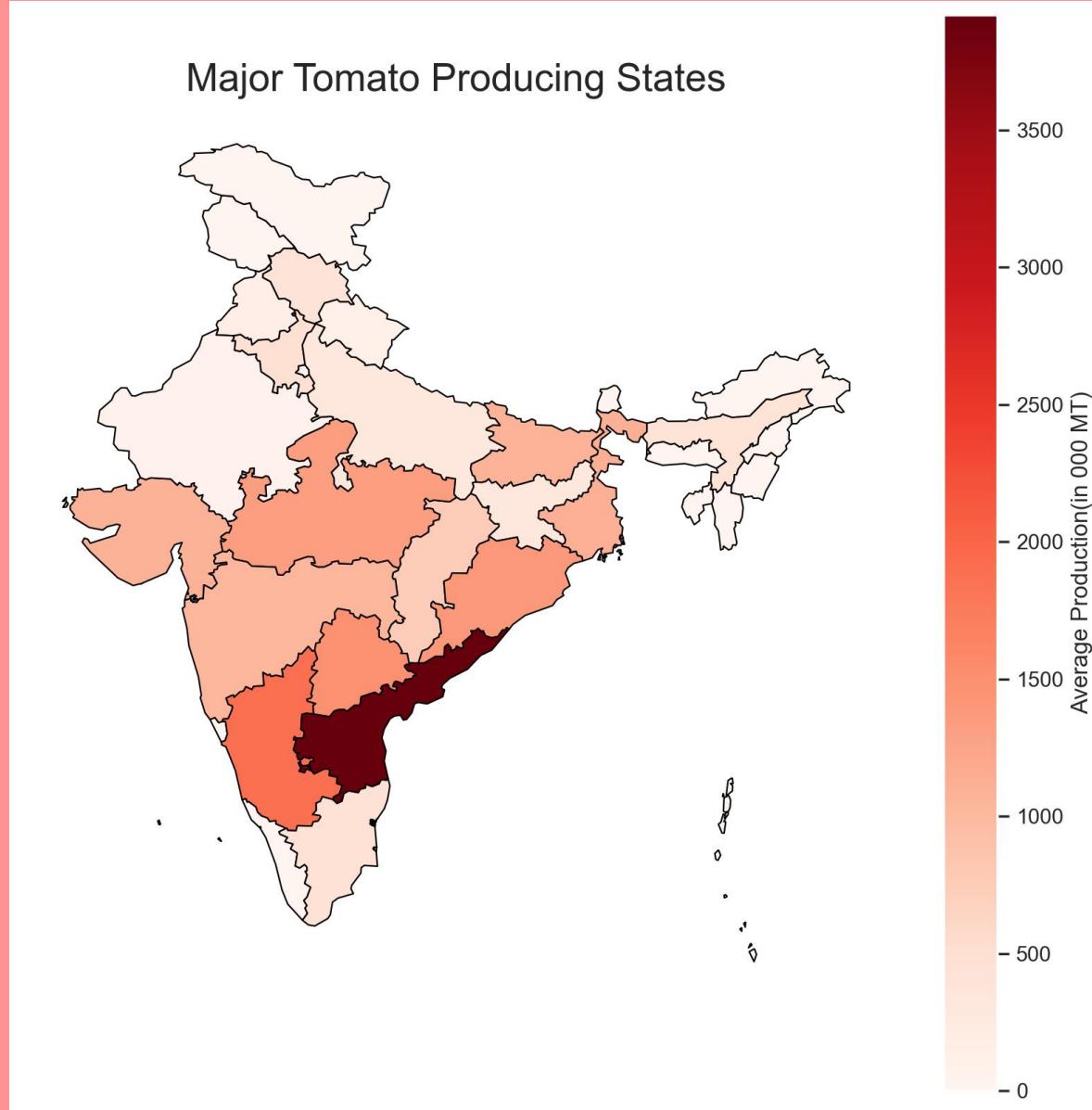
Onion



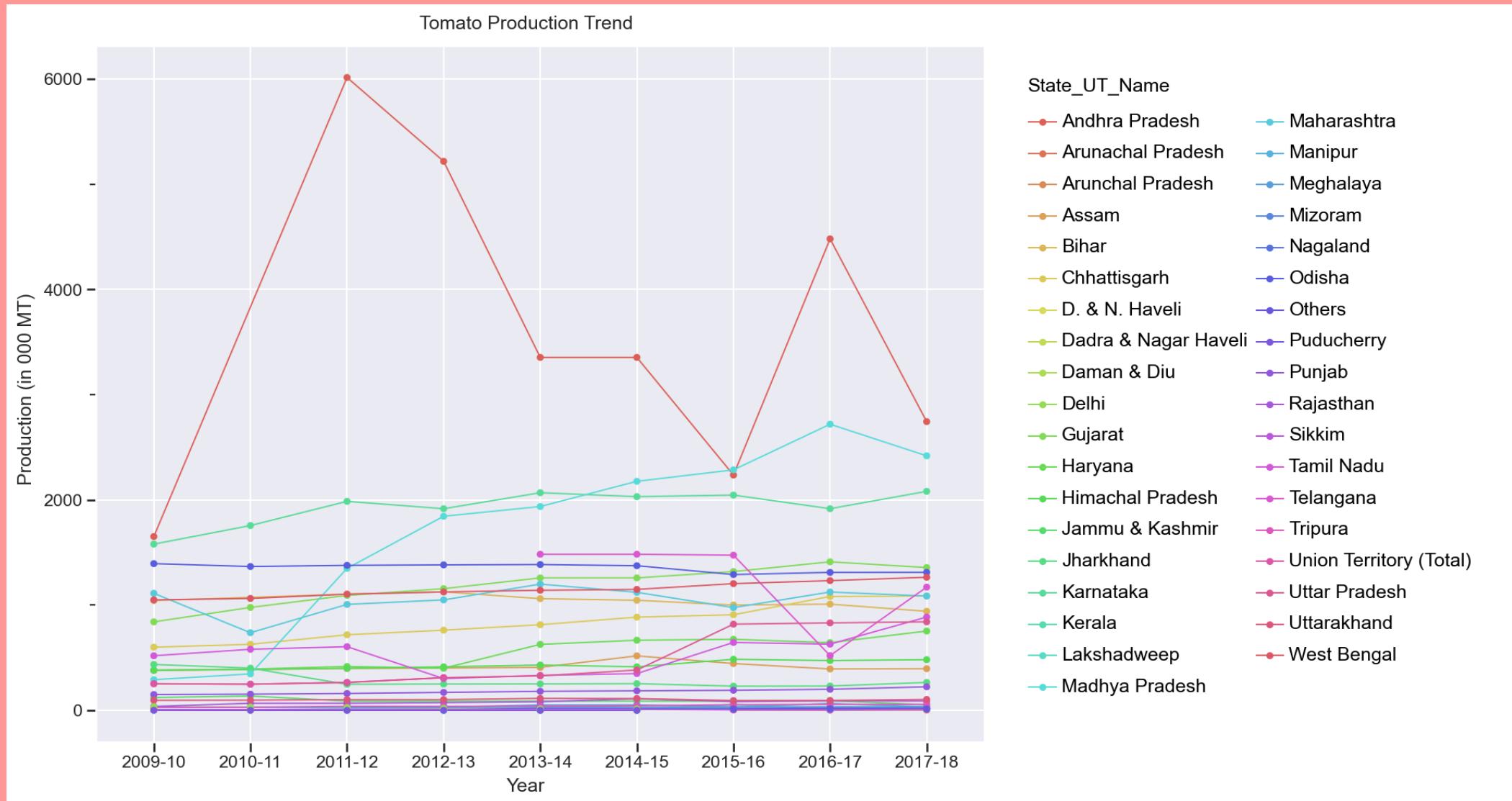
Onion Production Trend



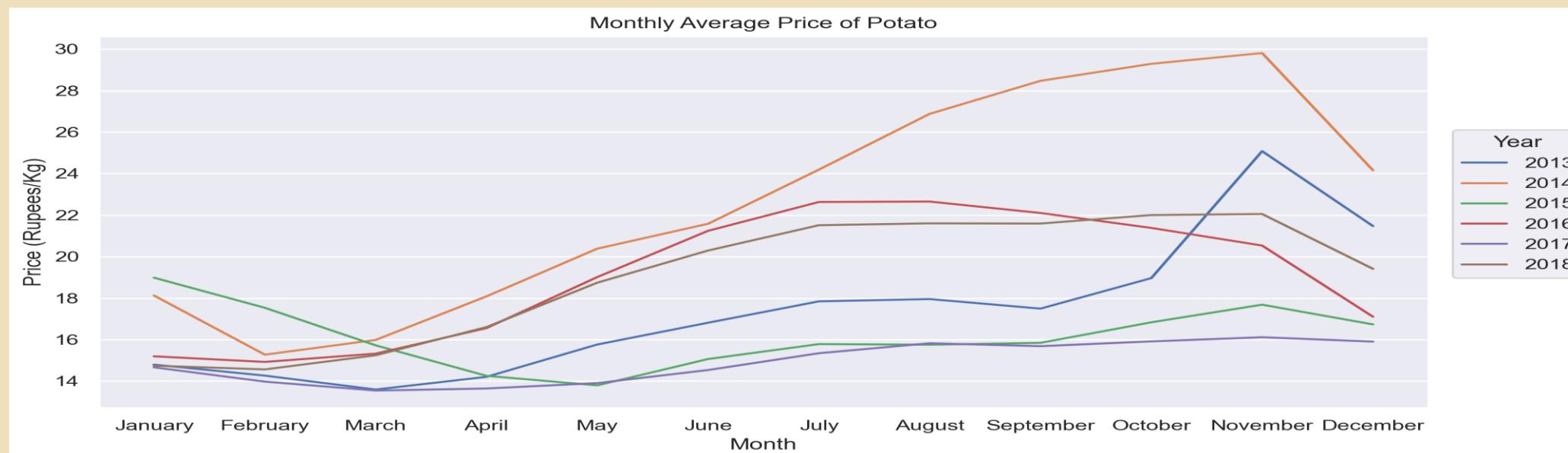
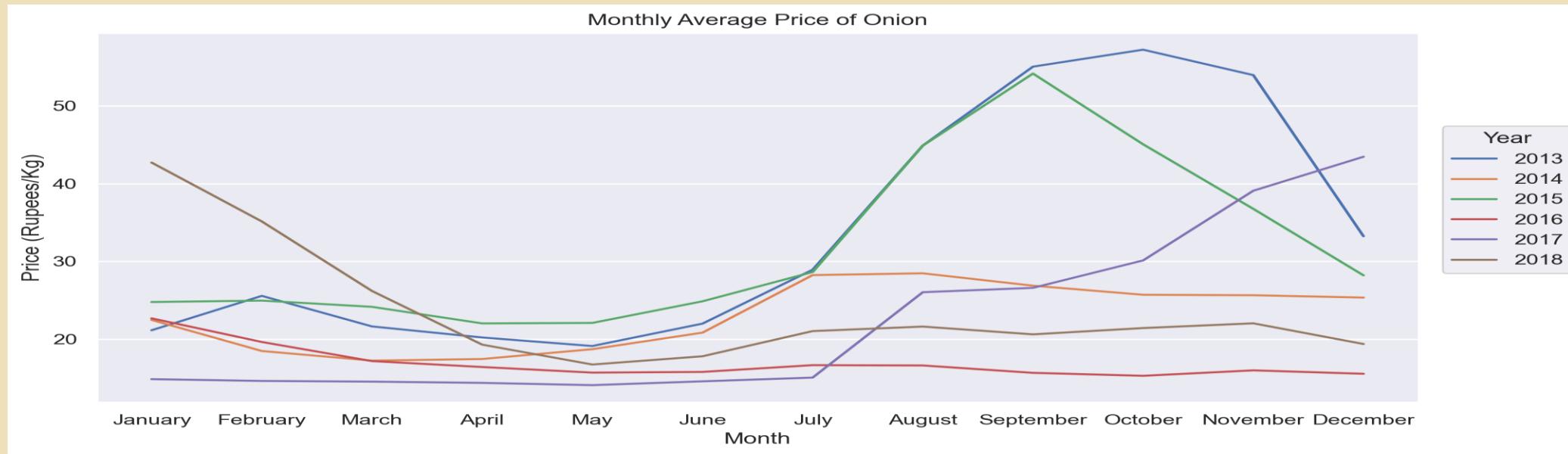
Tomato



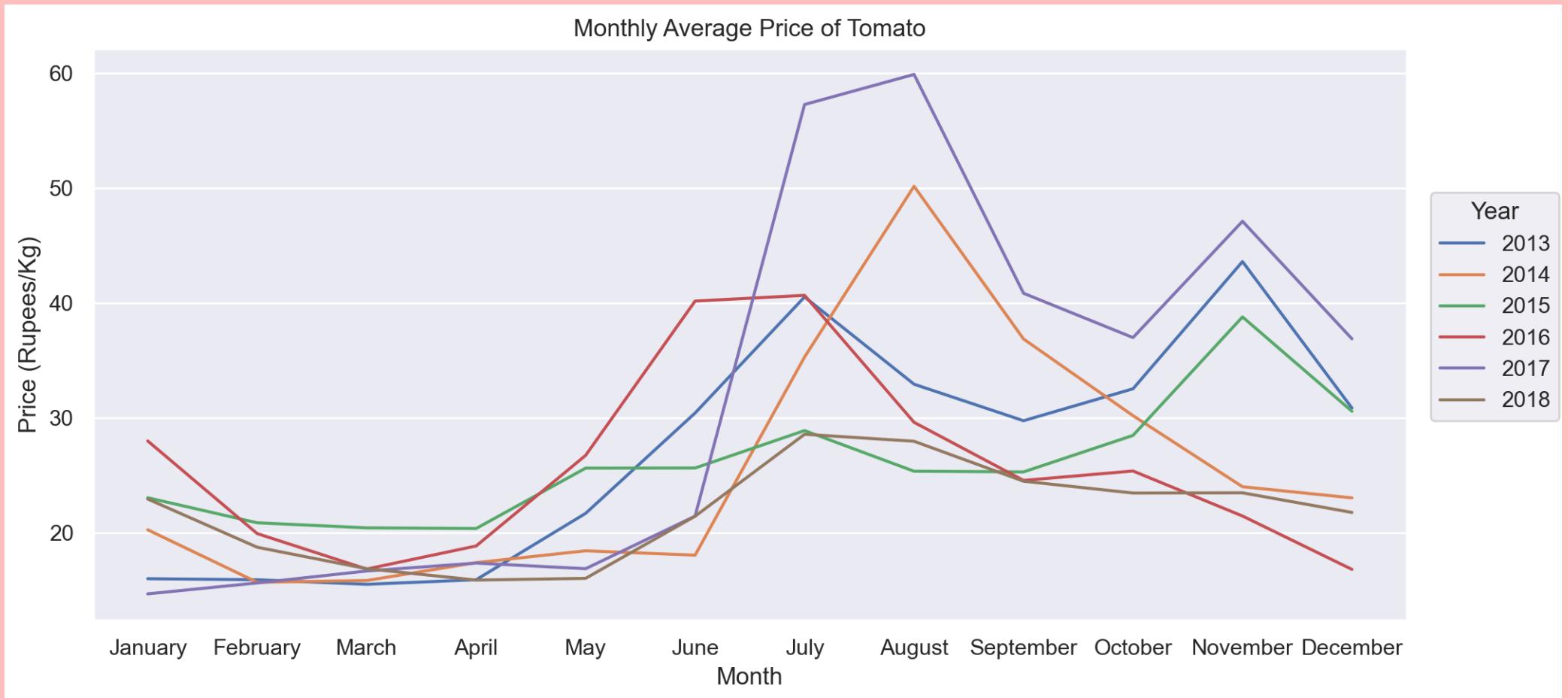
Tomato Production Trend



Monthly Average Price of Onion and Potato

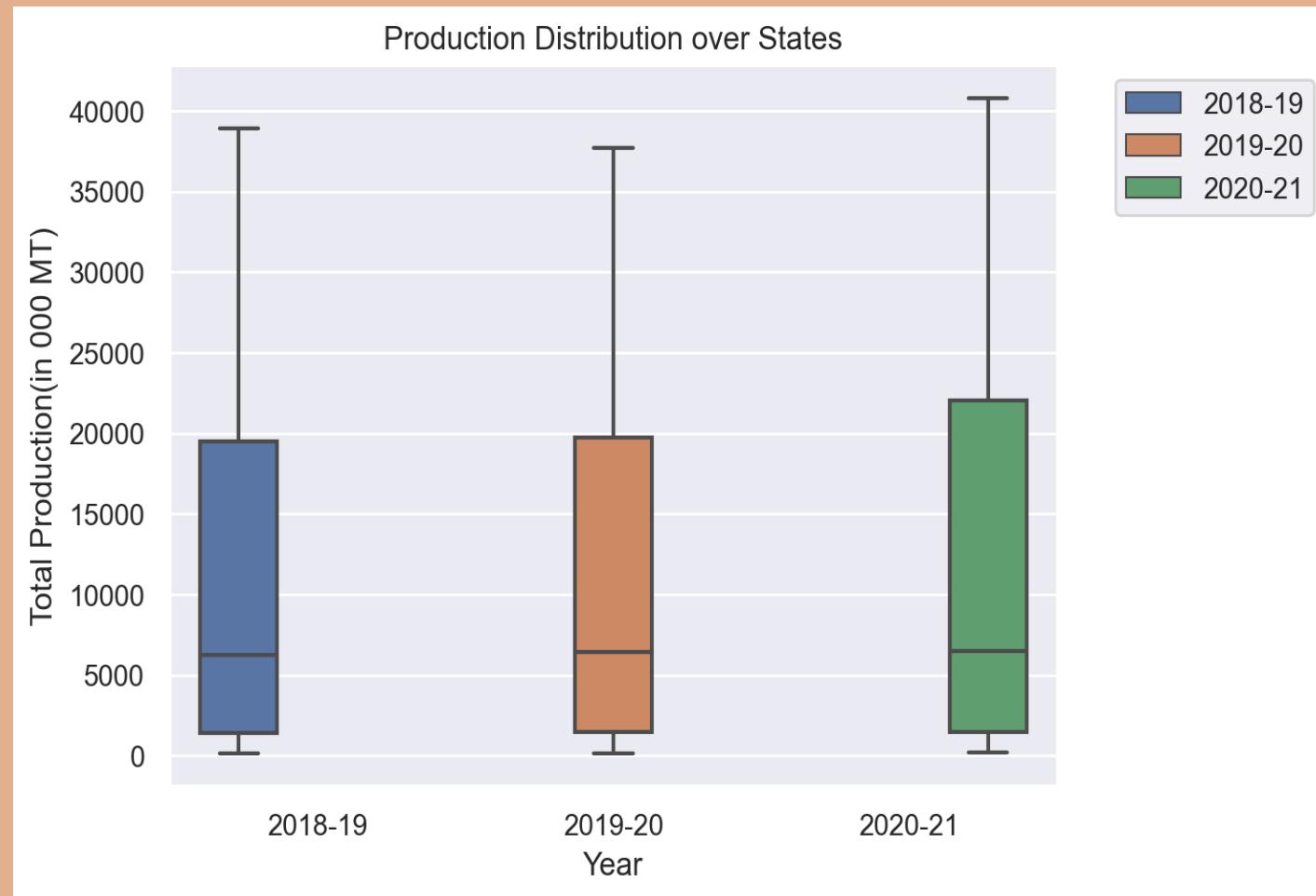


Monthly Average Price of Tomato

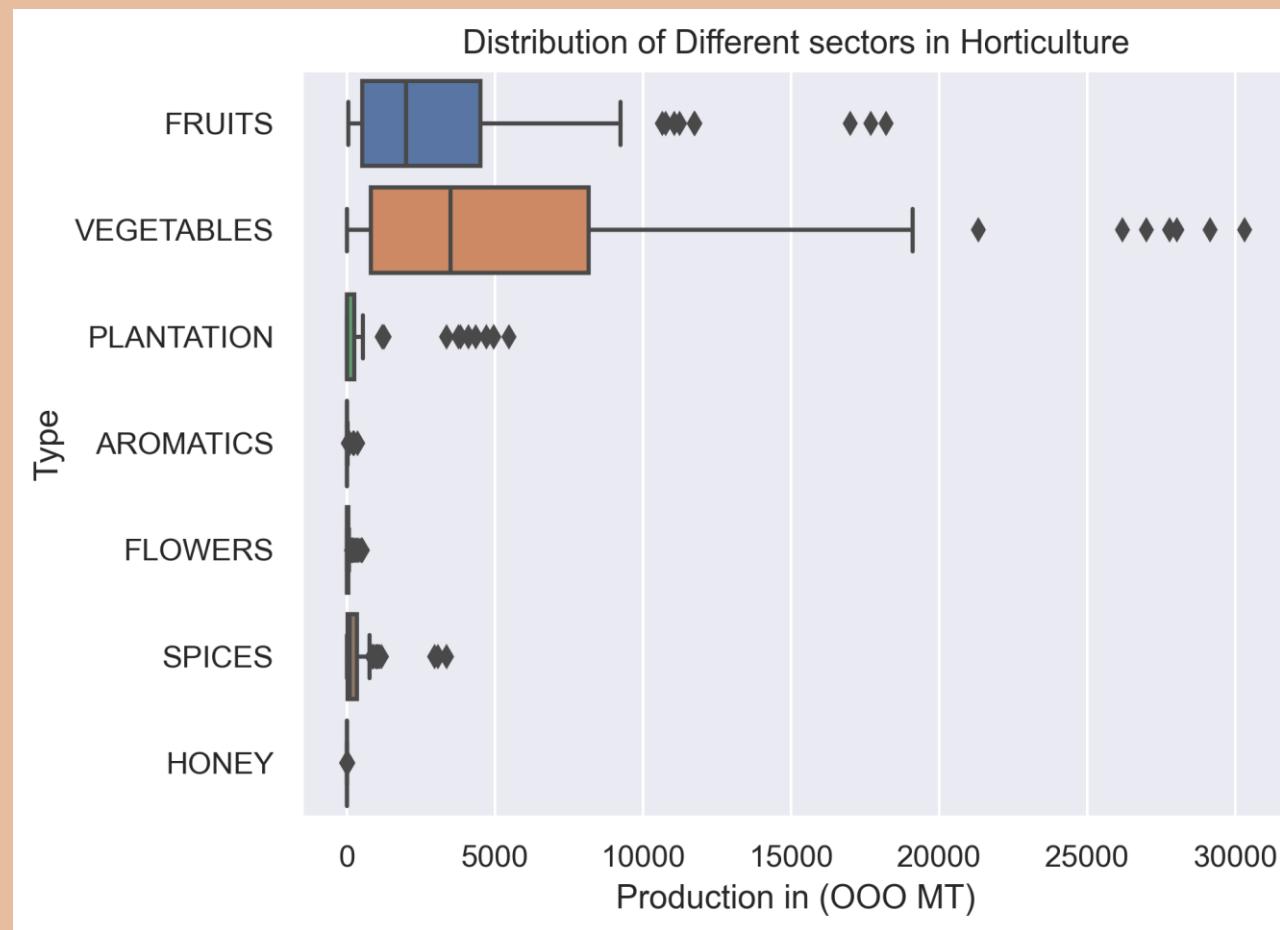


Horticulture Production Distribution

- No impact of COVID-19 on Production

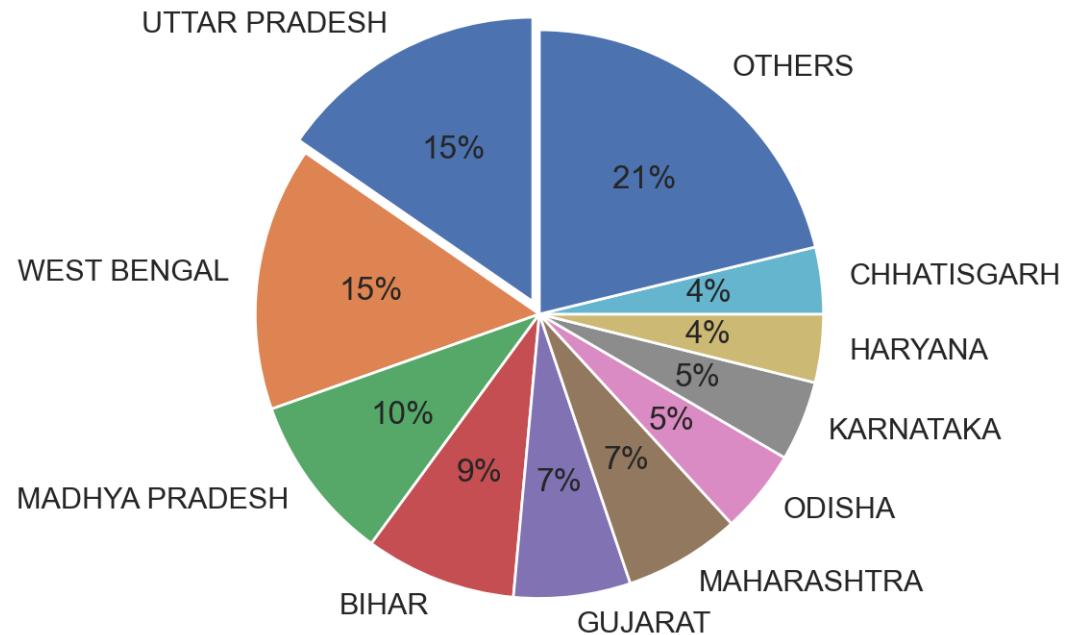


Distribution of different sectors in Horticulture

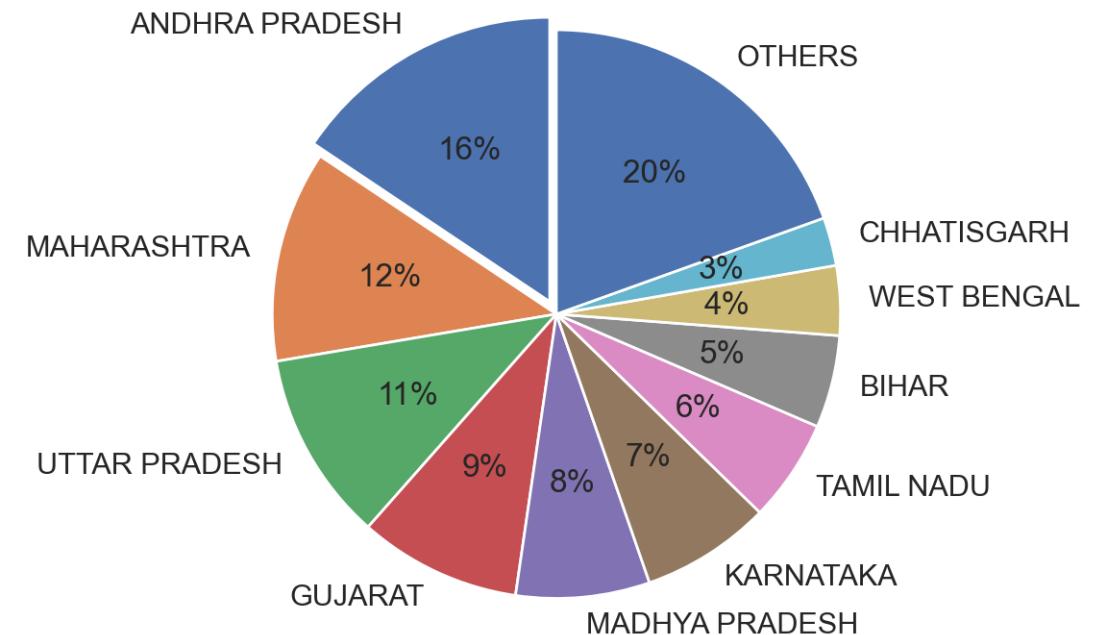


Contribution of states in Fruits and Vegetable Production

Contribution in Vegetable Prodution(2017-18)

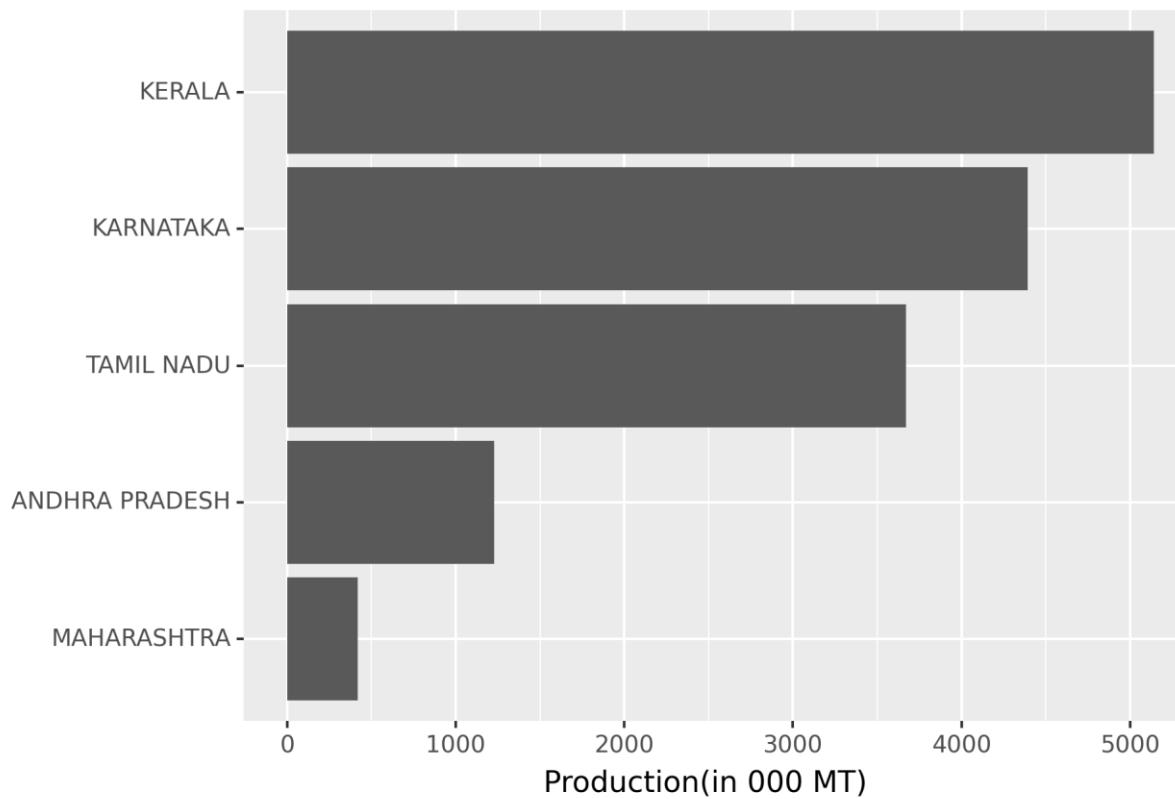


Contribution in Fruit Prodution(2017-18)

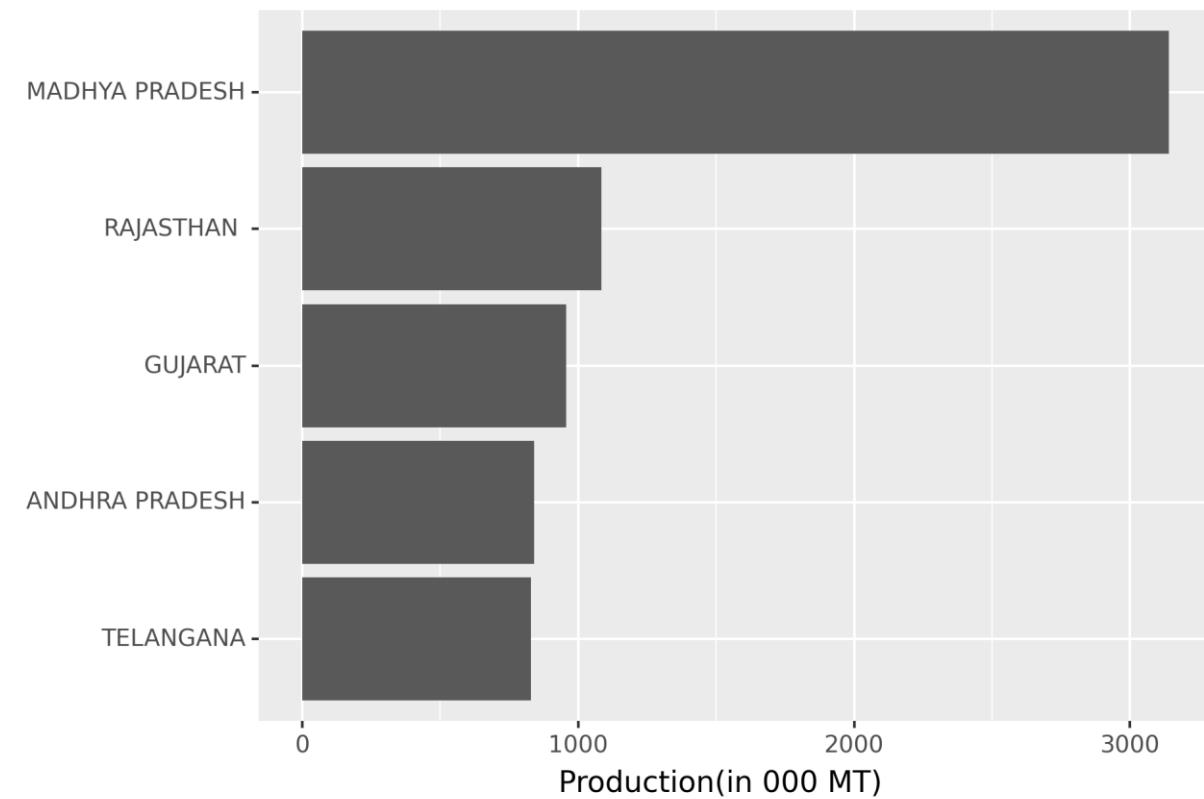


Top States in Different Sectors

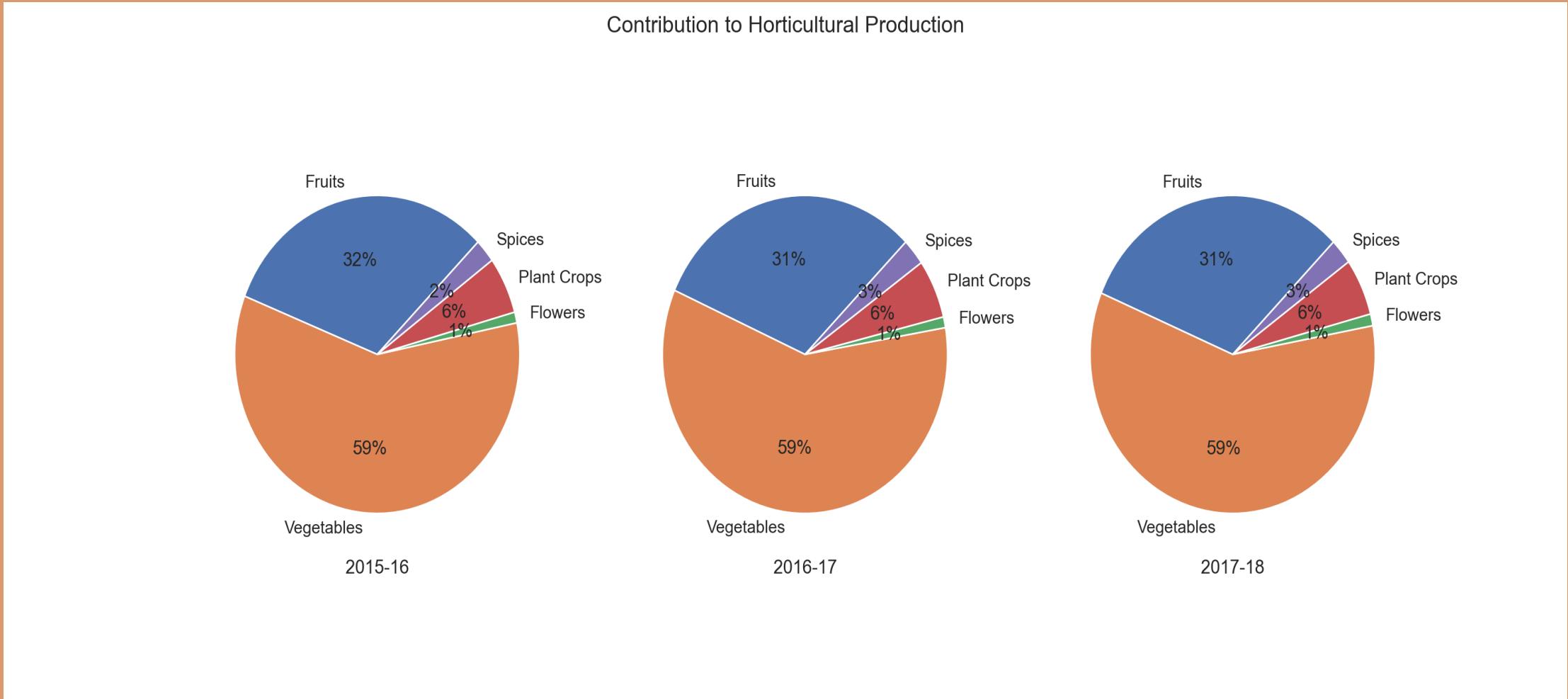
Top 5 States in terms of Plantation Crops Production



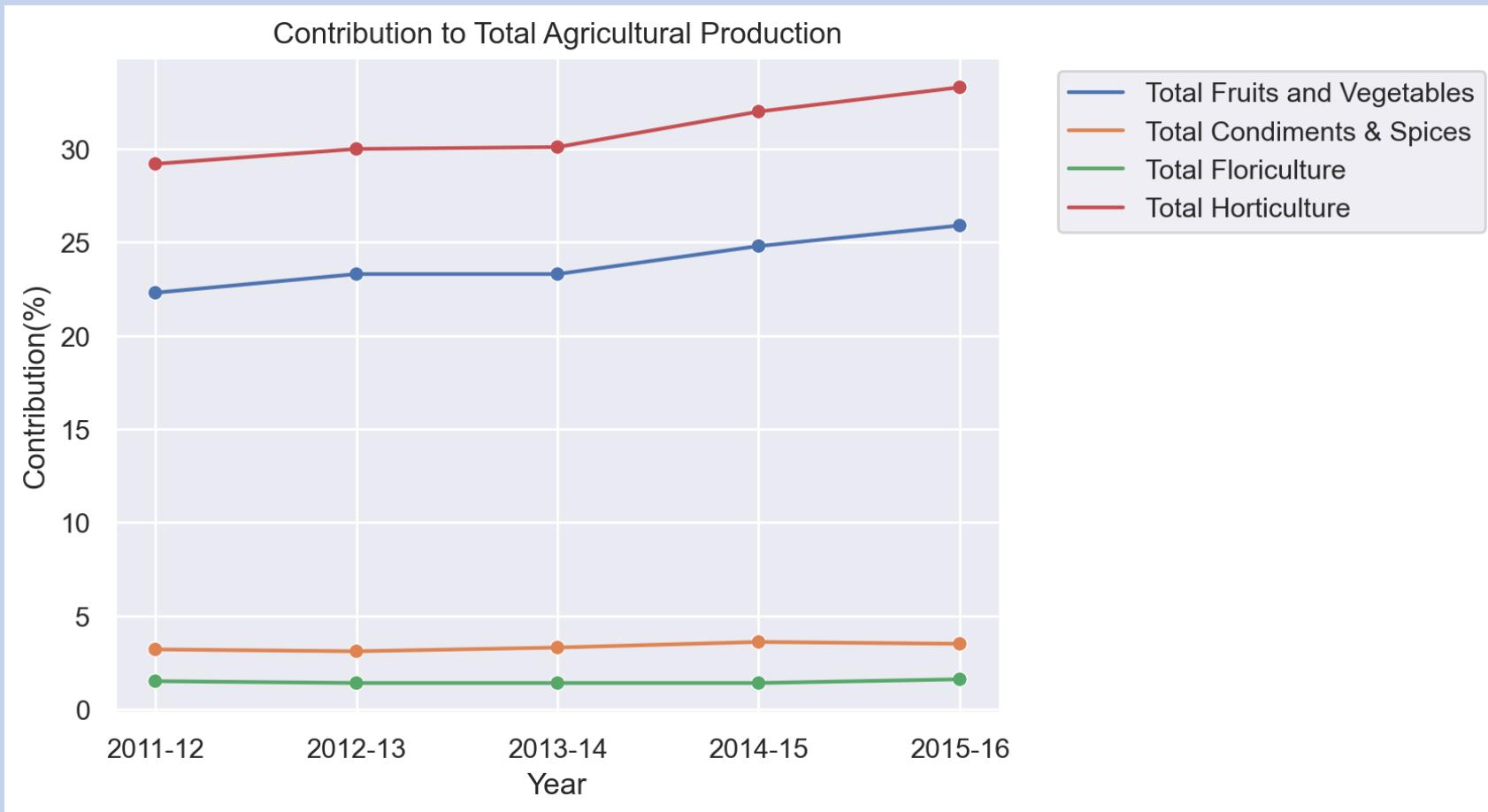
Top 5 States in terms of Spices Production



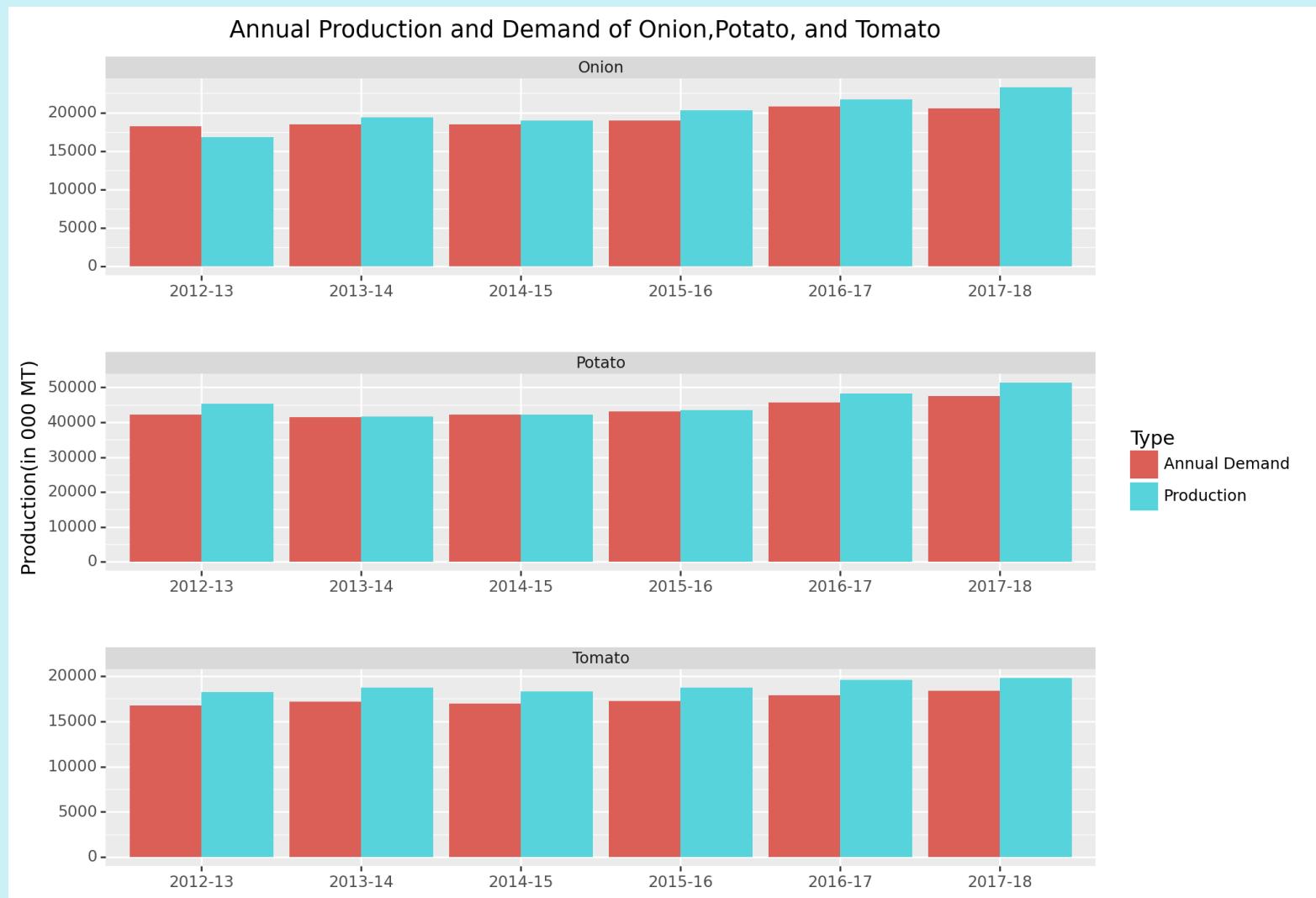
Contribution to Horticulture Production



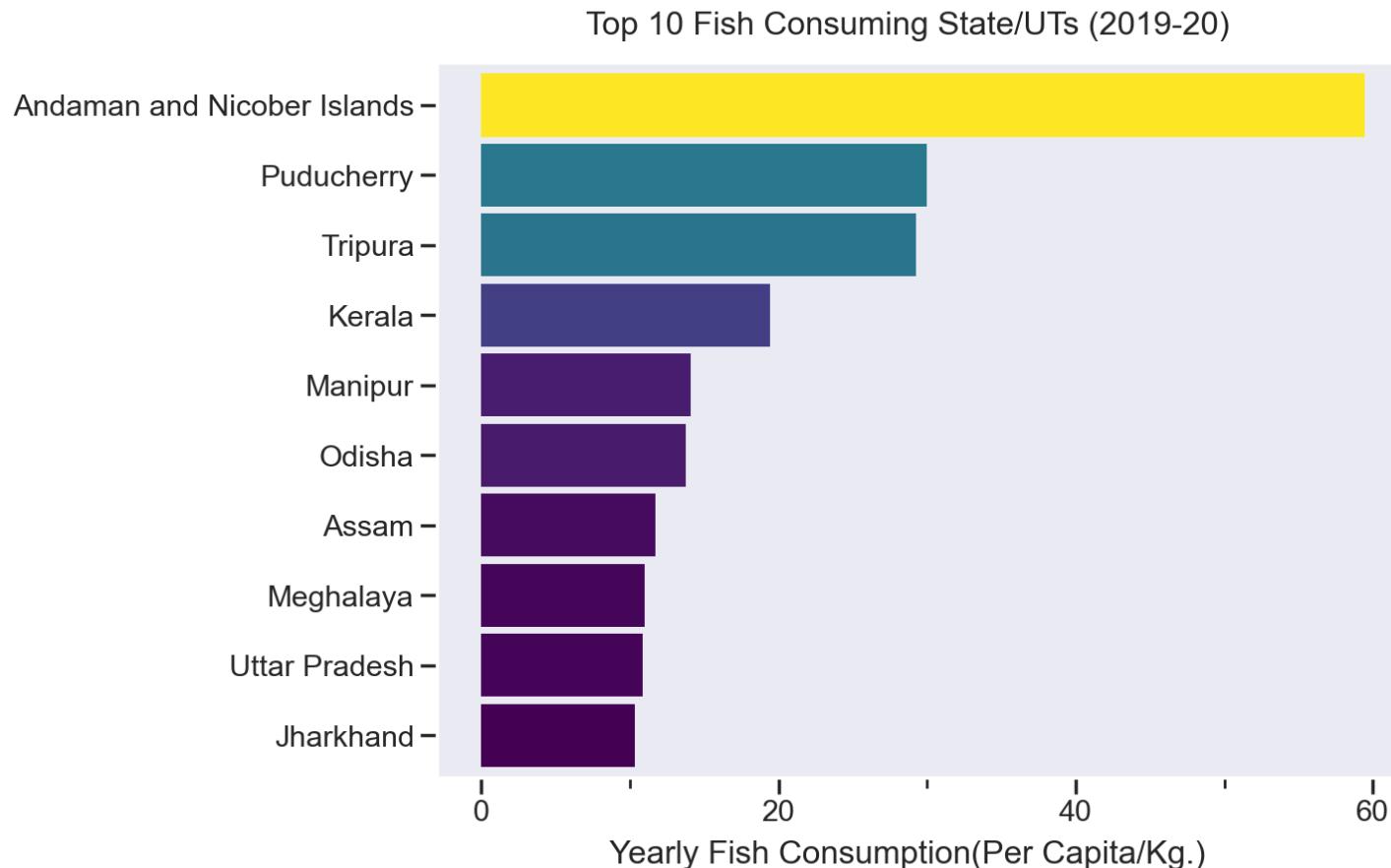
Contribution in overall Agriculture Production



Demand and Annual Production of Onion, Potato, and Tomato

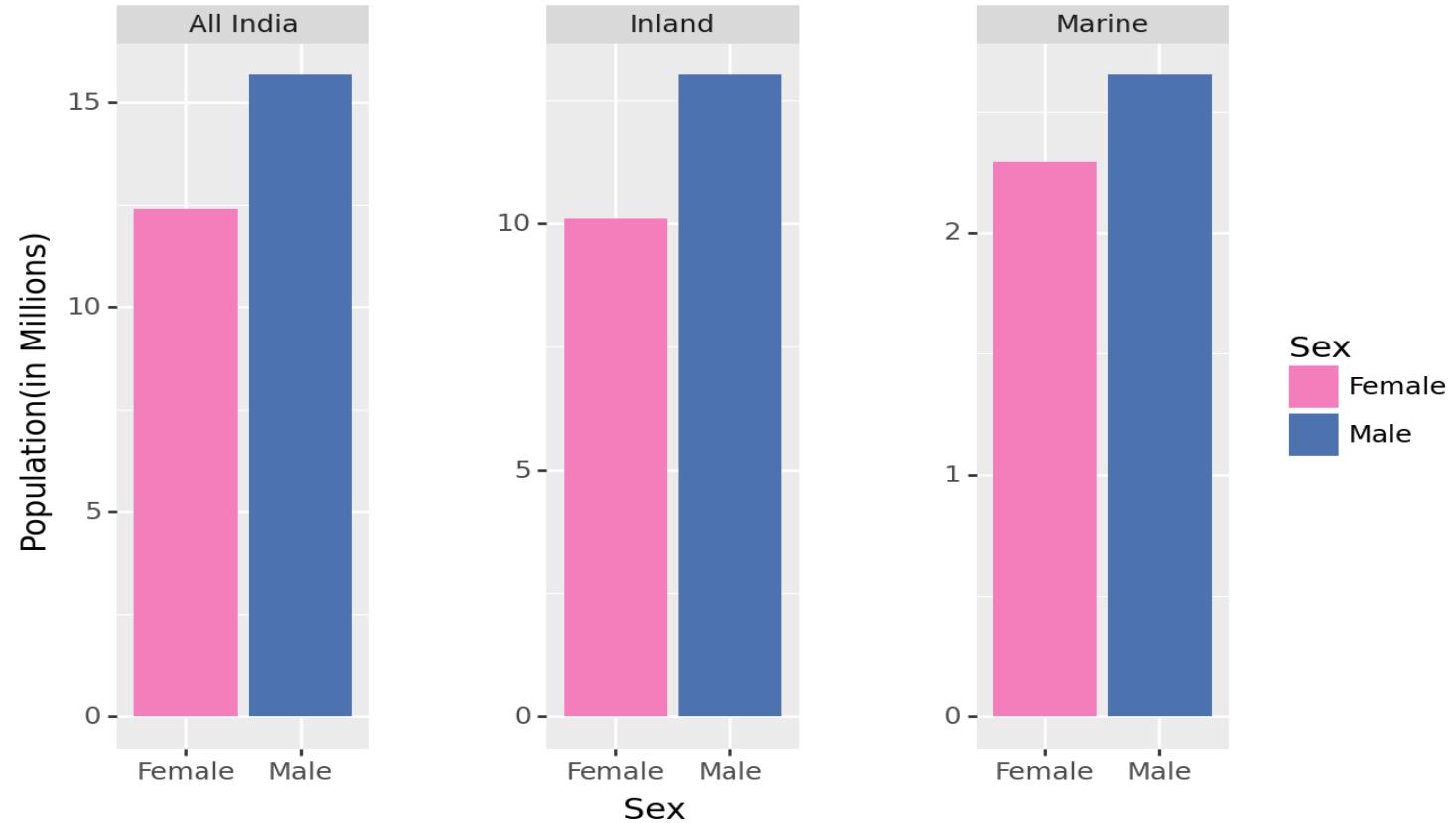


Which States are consuming more fish ?

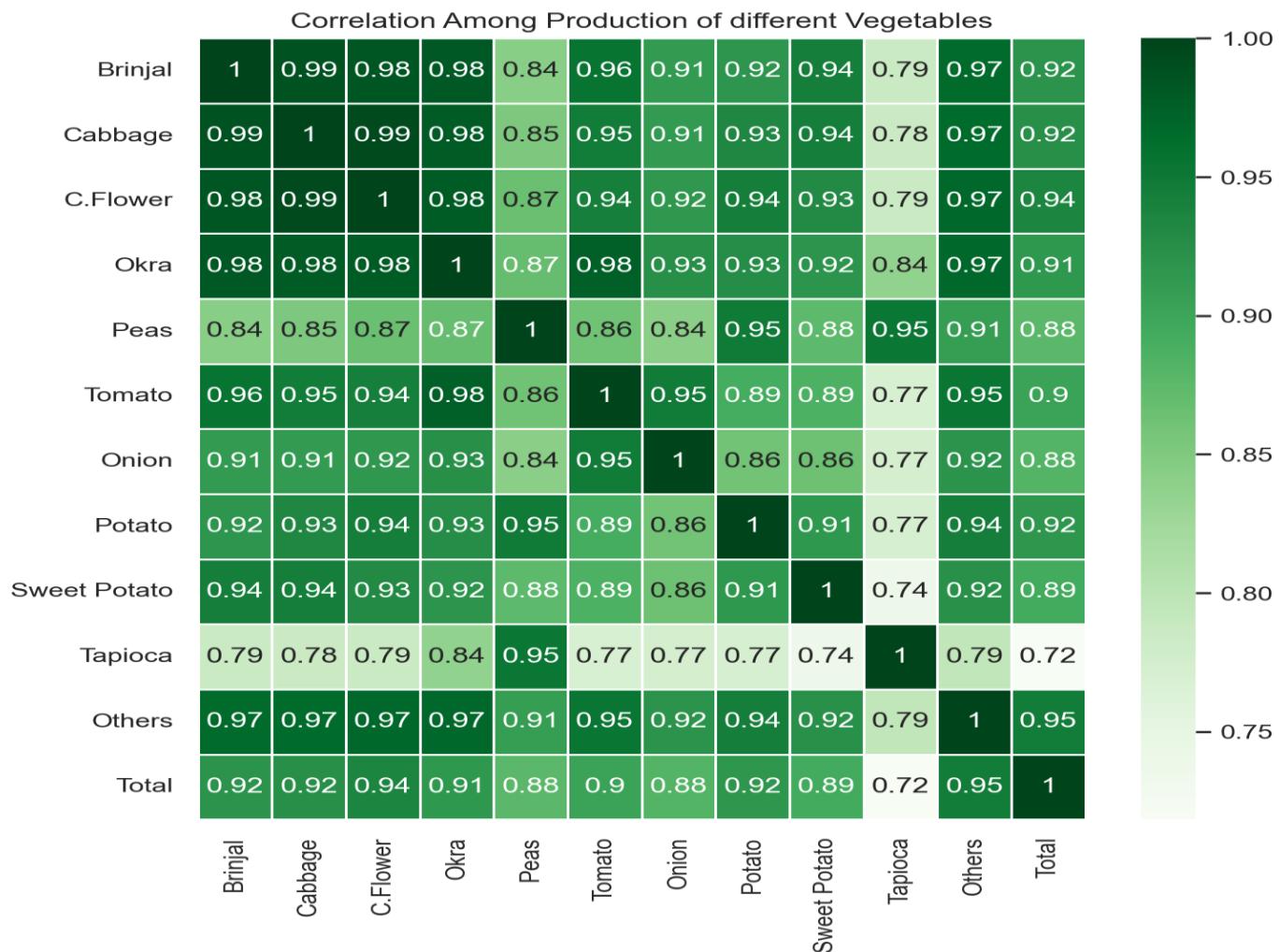


Fishermen Population

Fisherman Population(2019-2020)



Correlation of Production



Average Production of the Vegetables

