Crop Data Analysis of Indian Region using Big Data Techinques for aiding Indian Farmers with Emergencies Alert

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Big Data

- Big data is a field that treats ways to analyze, systematically extract information from, or otherwise deal with data sets that are too large or complex to be dealt with by traditional data-processing application software.

Introduction

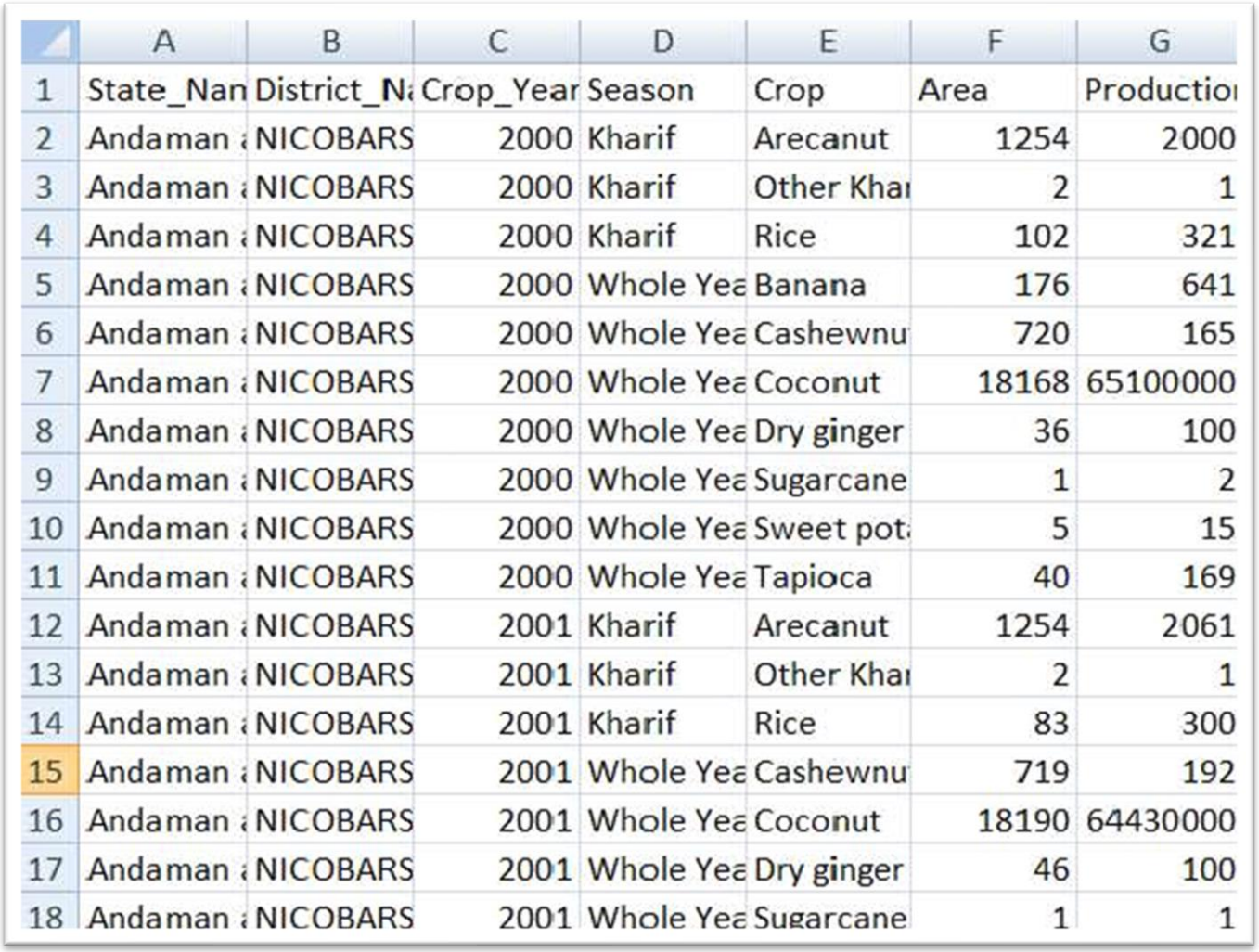
- Farming is the backbone of the country.
- Government is taking many initiatives to increase production in farming and also profit for farmers.
- We will tell the farmers which crops are beneficial for them in which season which crop should they grow based upon the humidity, temp., soil type, pH value and many other factors.
- This project also provides real time data of covid-19 cases & other natural calamities based upon the farmer’s location and also work as an emergencies alert.

Dataset

- Main Data source : https://data.gov.in/
- Main Columns are : **State, District, Season, Crop, Area & Production.**
- We added a new column of production per area.
- Imported the data into MongoDB from CSV file.

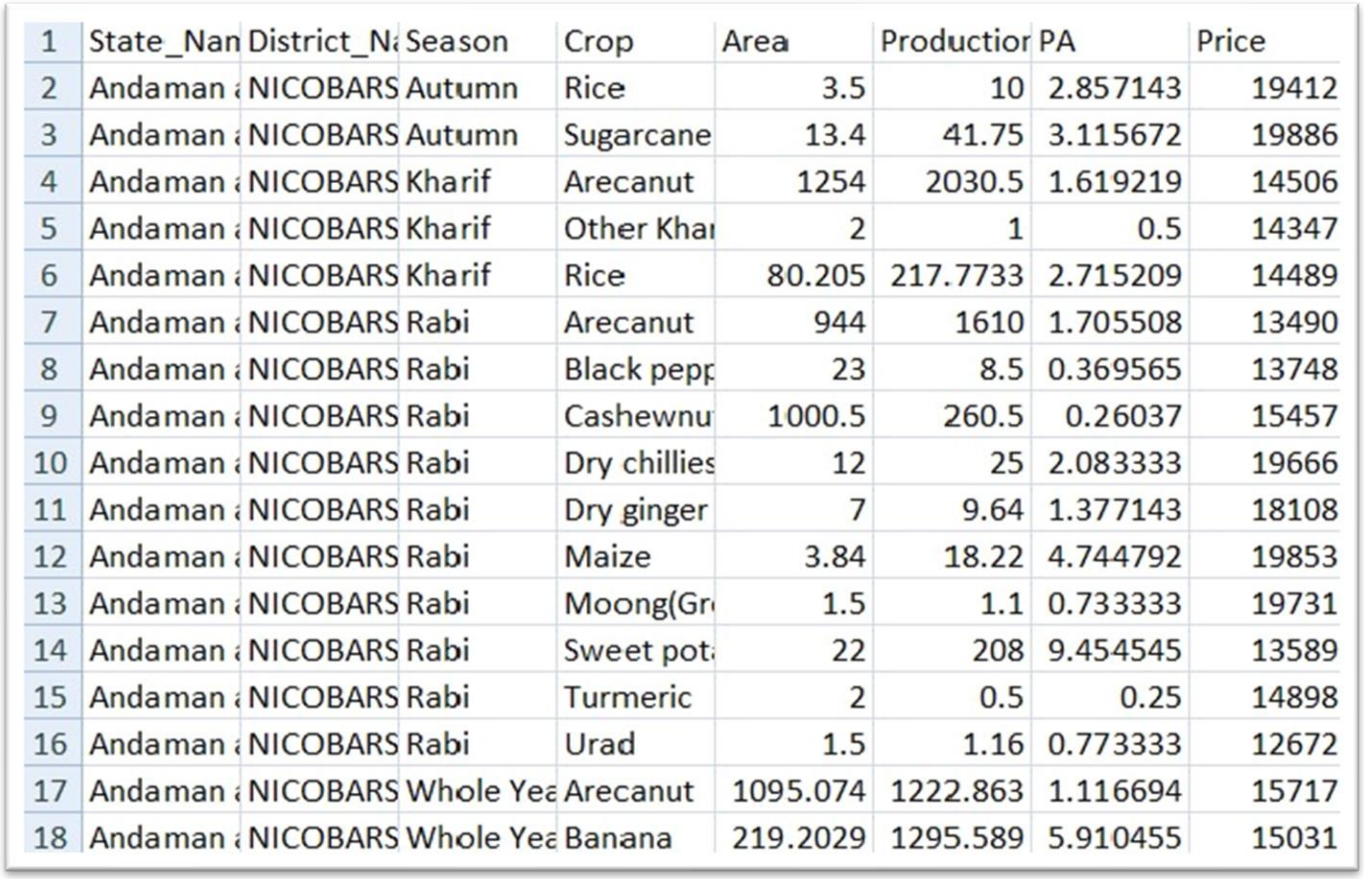
Covid-19 API

- https://covid-19-india-data-by-zt.p.rapidapi.com/GetIndiaDistrictWiseDataForState



	A	B	C	D	E	F	G
1	State_Nan	District_Na	Crop_Year	Season	Crop	Area	Productio
2	Andaman a	NICOBARS	2000	Kharif	Arecanut	1254	2000
3	Andaman a	NICOBARS	2000	Kharif	Other Kha	2	1
4	Andaman a	NICOBARS	2000	Kharif	Rice	102	321
5	Andaman a	NICOBARS	2000	Whole Yea	Banana	176	641
6	Andaman a	NICOBARS	2000	Whole Yea	Cashewnu	720	165
7	Andaman a	NICOBARS	2000	Whole Yea	Coconut	18168	65100000
8	Andaman a	NICOBARS	2000	Whole Yea	Dry ginger	36	100
9	Andaman a	NICOBARS	2000	Whole Yea	Sugarcane	1	2
10	Andaman a	NICOBARS	2000	Whole Yea	Sweet pot	5	15
11	Andaman a	NICOBARS	2000	Whole Yea	Tapioca	40	169
12	Andaman a	NICOBARS	2001	Kharif	Arecanut	1254	2061
13	Andaman a	NICOBARS	2001	Kharif	Other Kha	2	1
14	Andaman a	NICOBARS	2001	Kharif	Rice	83	300
15	Andaman a	NICOBARS	2001	Whole Yea	Cashewnu	719	192
16	Andaman a	NICOBARS	2001	Whole Yea	Coconut	18190	64430000
17	Andaman a	NICOBARS	2001	Whole Yea	Dry ginger	46	100
18	Andaman a	NICOBARS	2001	Whole Yea	Sugarcane	1	1

Fig. Initial Dataset

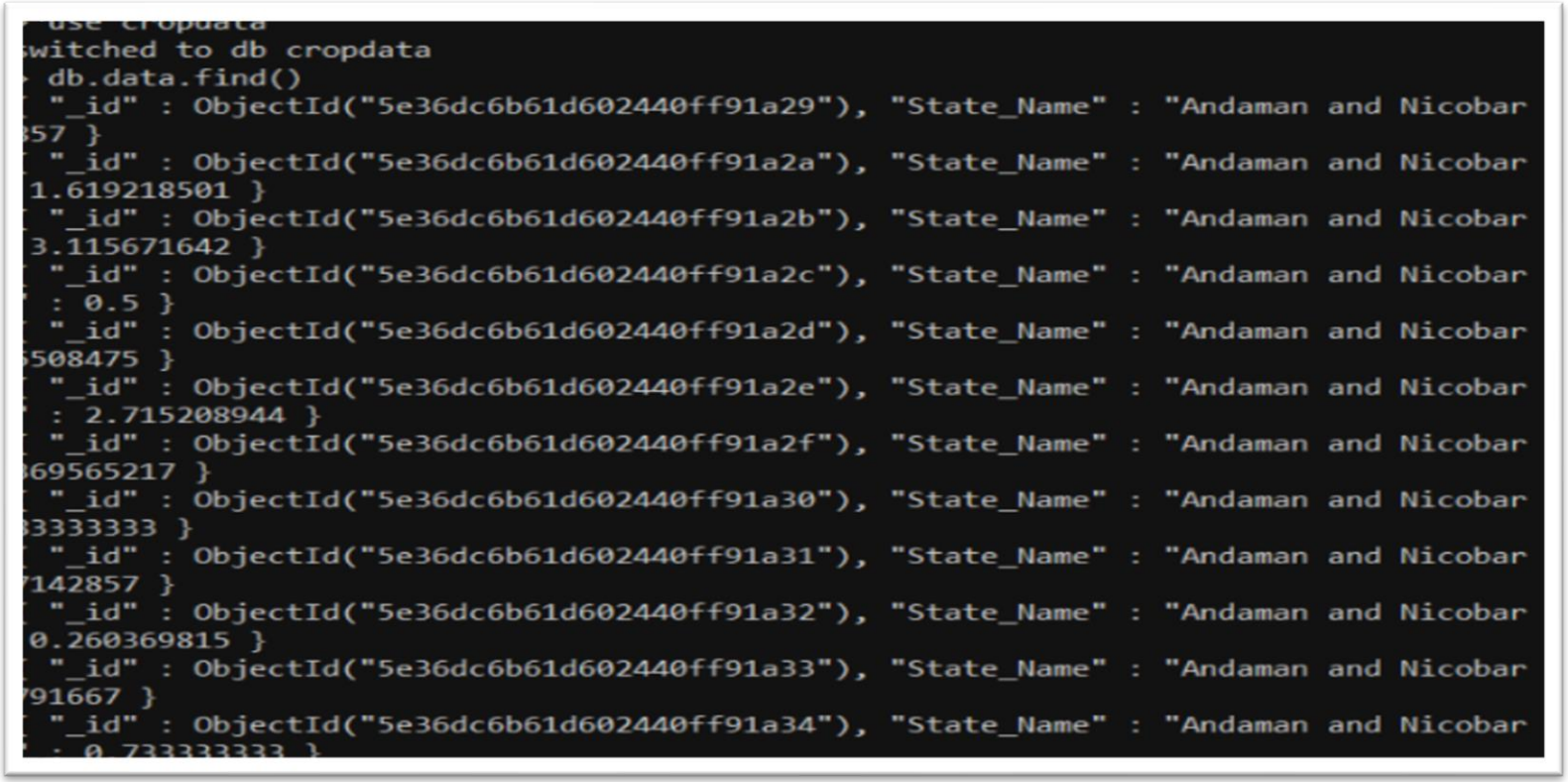


1	State_Nan	District_Na	Season	Crop	Area	Productior	PA	Price
2	Andaman a	NICOBARS	Autumn	Rice	3.5	10	2.857143	19412
3	Andaman a	NICOBARS	Autumn	Sugarcane	13.4	41.75	3.115672	19886
4	Andaman a	NICOBARS	Kharif	Arecanut	1254	2030.5	1.619219	14506
5	Andaman a	NICOBARS	Kharif	Other Khar	2	1	0.5	14347
6	Andaman a	NICOBARS	Kharif	Rice	80.205	217.7733	2.715209	14489
7	Andaman a	NICOBARS	Rabi	Arecanut	944	1610	1.705508	13490
8	Andaman a	NICOBARS	Rabi	Black pepp	23	8.5	0.369565	13748
9	Andaman a	NICOBARS	Rabi	Cashewnu	1000.5	260.5	0.26037	15457
10	Andaman a	NICOBARS	Rabi	Dry chillies	12	25	2.083333	19666
11	Andaman a	NICOBARS	Rabi	Dry ginger	7	9.64	1.377143	18108
12	Andaman a	NICOBARS	Rabi	Maize	3.84	18.22	4.744792	19853
13	Andaman a	NICOBARS	Rabi	Moong(Gr	1.5	1.1	0.733333	19731
14	Andaman a	NICOBARS	Rabi	Sweet pot	22	208	9.454545	13589
15	Andaman a	NICOBARS	Rabi	Turmeric	2	0.5	0.25	14898
16	Andaman a	NICOBARS	Rabi	Urad	1.5	1.16	0.773333	12672
17	Andaman a	NICOBARS	Whole Yea	Arecanut	1095.074	1222.863	1.116694	15717
18	Andaman a	NICOBARS	Whole Yea	Banana	219.2029	1295.589	5.910455	15031

Fig. Updated Dataset

Implentation of Dataset

- Used the command Mongo Import to import the dataset into MongoDB:-
  - mongoimport -d cropdata -c data --type csv --file finalcrops.csv --headerline



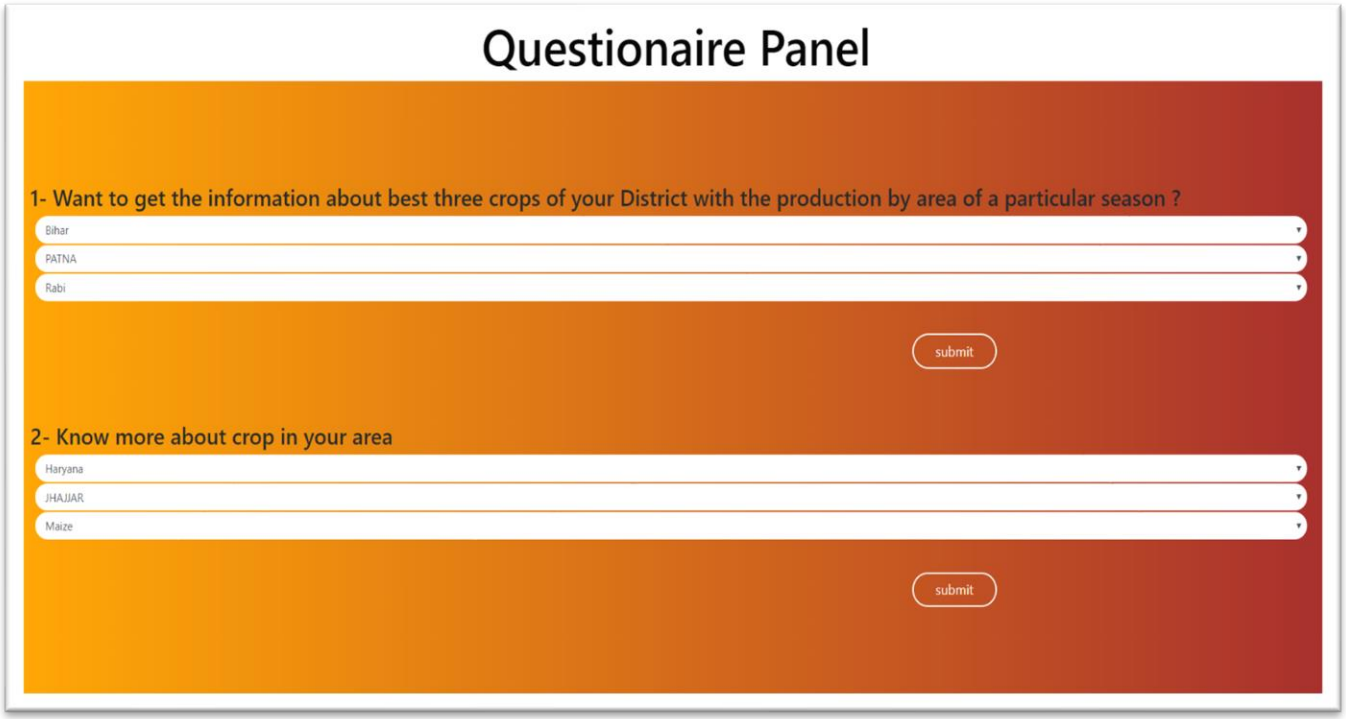
Methodology

- We took the data from data.gov.in and cleaned it.
- Transferred the data into mongoDB.
- Connection of database with node.js used Express to create local server.
- Embedded queries of mongoDB into node.js.
- Displaying results on the basis of queries of farmers.
- Lastly, we also showed the number of active cases, confirmed cases and recovered cases of covid-19 bases upon the farmer’s location or the inputted query.

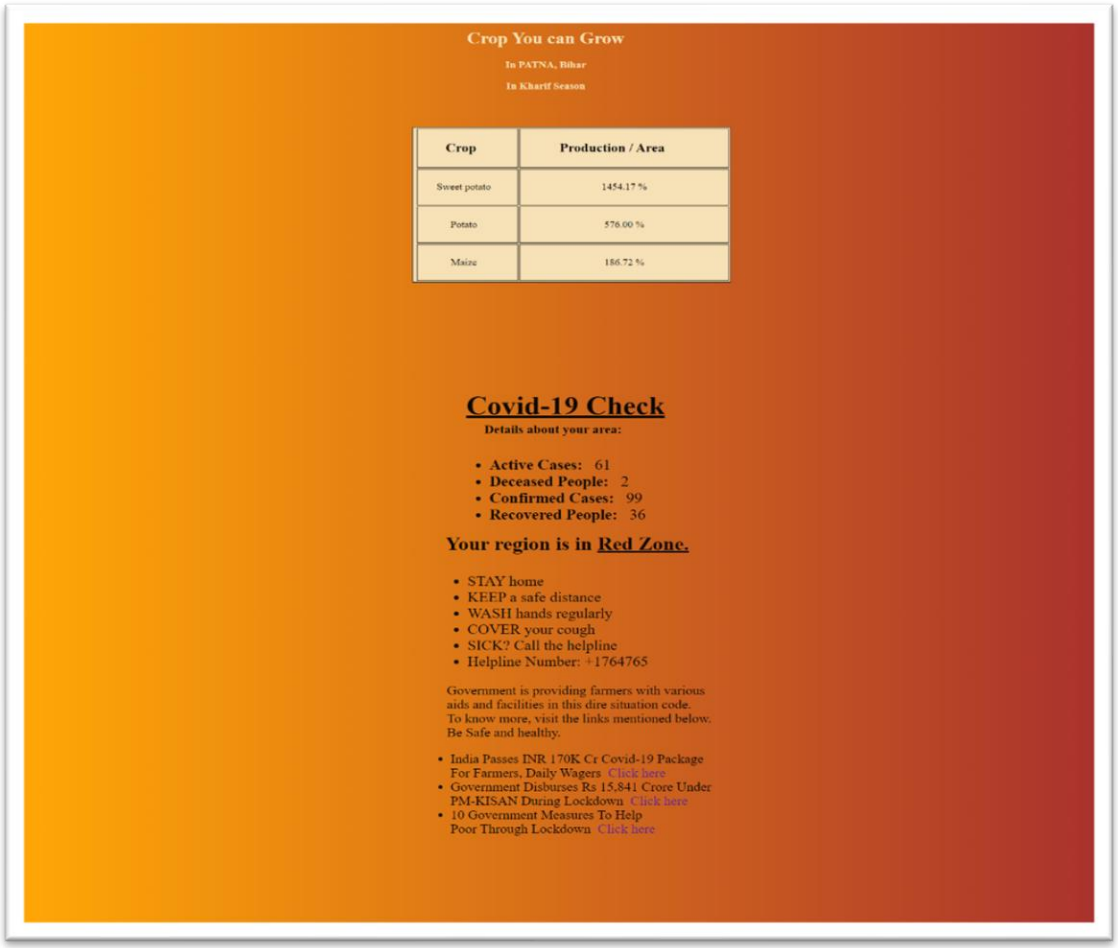
User Interface

- Starting Page

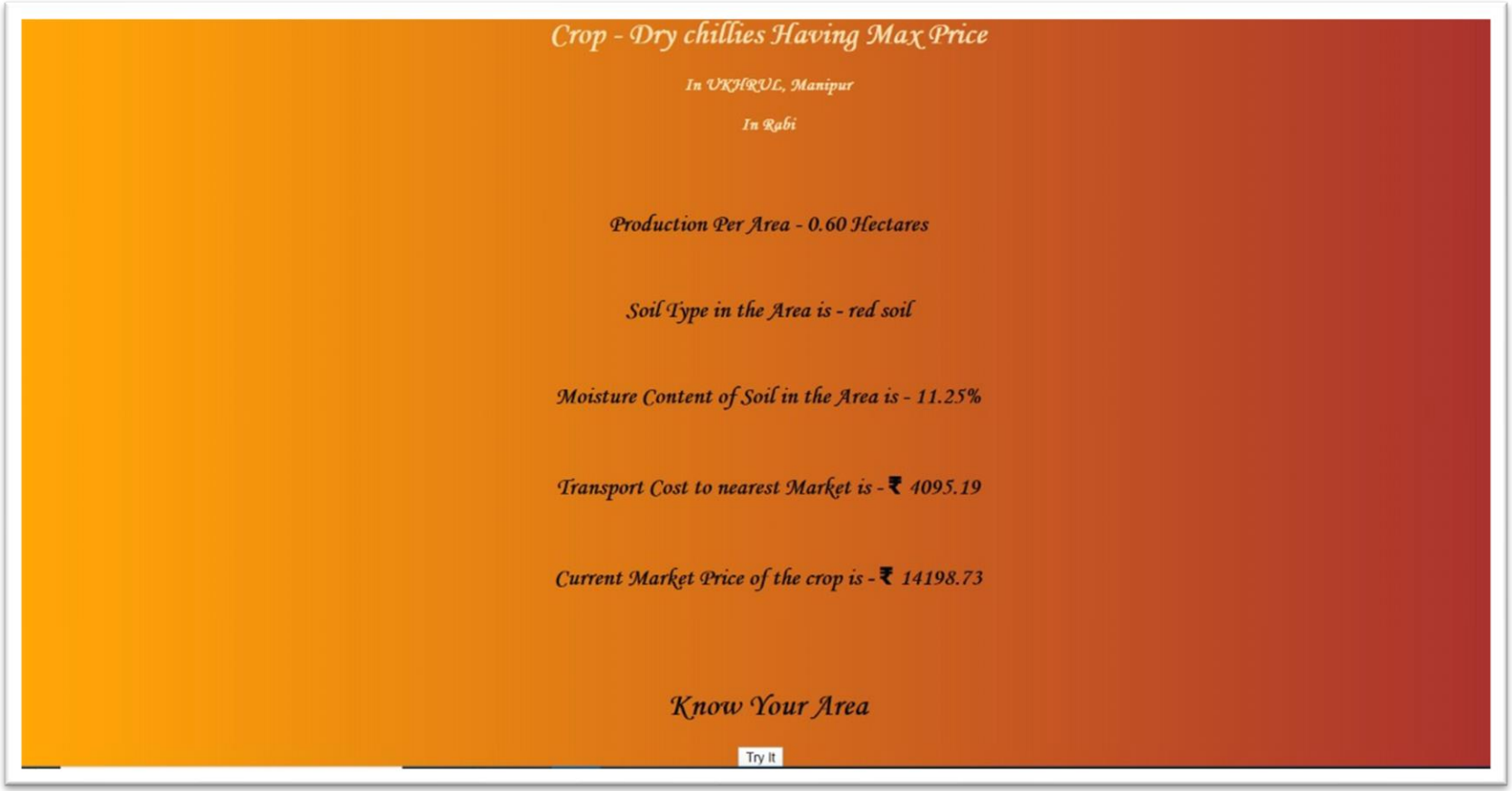
- Questionnaire Panel asks about your area and crop you want to grow.



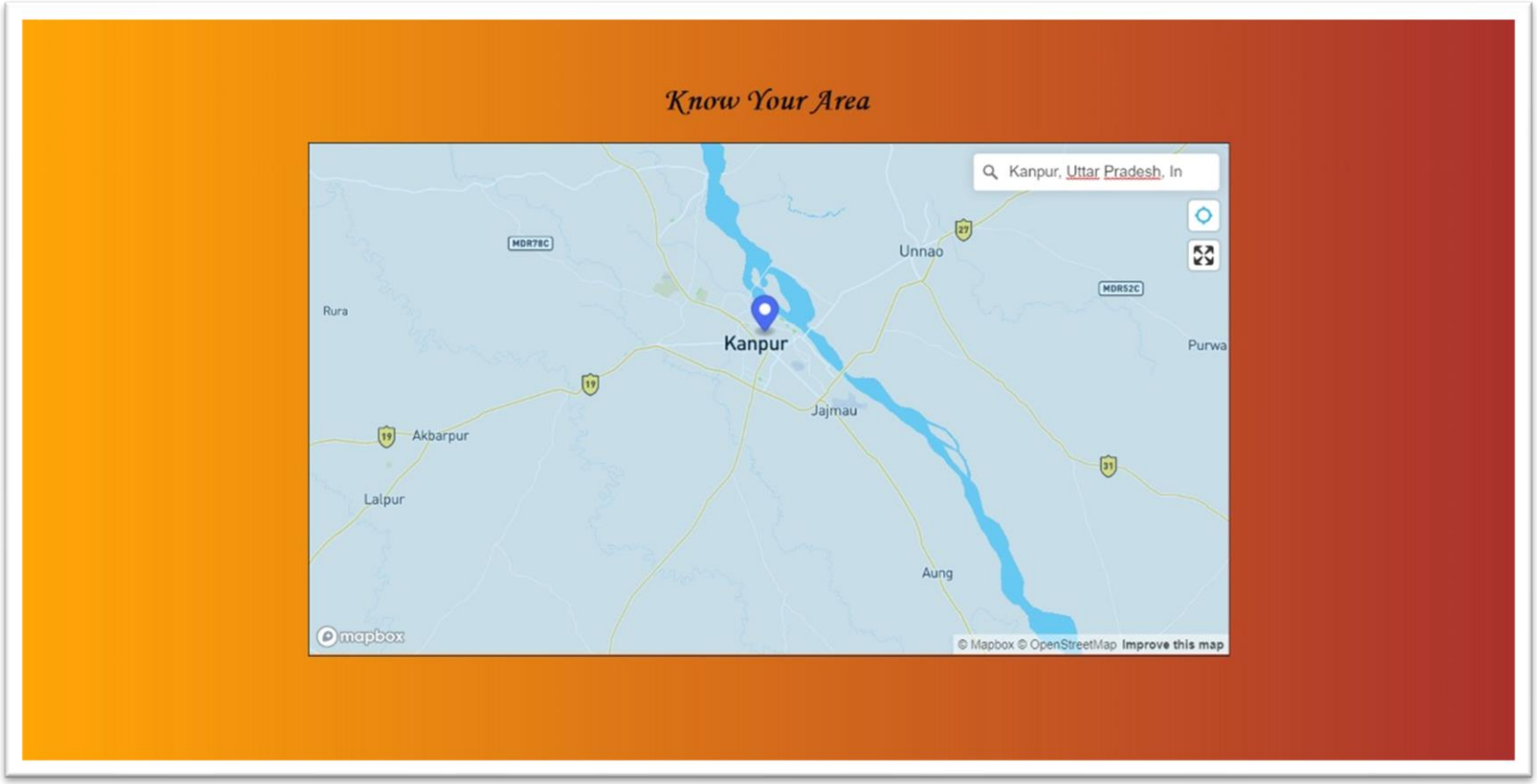
- Gives information about the crops you can grow efficiently in the area and also the status about the covid-19 in that area



- Show the cost analysis of the crop like transportation cost and market price. Also, other information like soil type and moisture content.



- Shows the area in google maps.



Future Prospective

- Currently, we are able to display the top three crops of farmer’s district, by which he will be able to decide which crop he should grow.

- We are planning to show the prices of the market for that crop which he wants to grow by using the real time data provided by government.

- We will try to also make an app of this website so that farmers can get information by using GPS and it would be even less work on their part and they can also be informed for emergencies by sending push notifications rather than opening the website to see them.

Thank You