

Analyzing Sugarcane Production across Indian States: A Big Data Analytics Approach

S.R Salunkhe¹, P. R. Kolhe², G. G. Kadam³, A. R. Patil⁴, A. H. Pisal⁵, D. R. Korade⁶, V.B Anarase⁶.

¹M.Tech, College of Agriculture Engineering and Technology, Dr. BSKKV, Dapoli Maharashtra, India

²Associate Professor (CAS), College of Agriculture Engineering and Technology,

Dr. BSKKV, Dapoli Maharashtra, India

³Phd Scholar, College of Agriculture Engineering and Technology, Dr. BSKKV, Dapoli Maharashtra, India

⁴Senior Research Assistant, AKMU, Dr. BSKKV, Dapoli Maharashtra, India

⁵M. Tech, D. Y. Patil Agriculture and Technical University, Talsande, Kolhapur, Maharashtra, India.

⁶M.Tech, College of Agriculture Engineering and Technology, Dr. BSKKV, Dapoli Maharashtra, India

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ABSTRACT

The application of big data analytics in analyzing sugarcane production across various states in India. The study focuses on collecting and processing large-scale agricultural data to uncover trends, patterns, and factors influencing sugarcane yield. By leveraging advanced data analysis techniques, this research aims to provide insights into optimizing cultivation practices, resource allocation, and policy decisions for enhancing sugarcane production in different Indian states. The study explores the utilization of large datasets encompassing factors such as climate, soil quality, agricultural practices, and historical production data. By employing advanced analytical techniques, this research aims to uncover patterns, trends, and correlations that impact sugarcane yields.

Keywords Sugarcane cultivation, yield, production, Area, Mechanization.

I. INTRODUCTION

Sugarcane production data for different states in India can be analyzed using Microsoft Excel for big data analytics. You can import and organize the data into Excel, use pivot tables, charts, and graphs to visualize trends, and perform calculations for insights into production variations among states. Introducing sugarcane production data from different states in India into a big data analytics platform like Microsoft Excel can provide valuable insights. You can import the data from various sources into Excel, create pivot tables, and generate charts to visualize trends in sugarcane production across states over time. This analysis could help in understanding factors influencing production and making informed decisions for the industry. Sugarcane production data across different

states in India can be effectively analyzed using Microsoft Excel for big data analytics. You can import and organize the data in Excel, then use its features to perform calculations, create charts, and identify trends in sugarcane production across various states. By utilizing Excel's tools, you can gain insights into the patterns and make informed decisions related to sugarcane production in different regions of India. (Ghaffar. et. al., 2016)

II. REVIEW OF LITERATURE

Analyzing the literature on sugarcane production in different states of India using big data analytics in Microsoft Excel reveals valuable insights into crop trends, yield variations, and potential growth opportunities. By leveraging Excel's data processing capabilities, researchers can efficiently manage and visualize large datasets, facilitating evidence-based decision-making for optimizing sugarcane cultivation strategies across various regions. The integration of big data analytics with Excel empowers stakeholders to enhance production efficiency, resource allocation, and overall agricultural sustainability in India's sugarcane industry. Analyzing sugarcane production in different states of India using big data analytics in Microsoft Excel involves examining various sources of literature that discuss the use of data analysis techniques to study this topic. This could include research articles, reports, and academic papers that delve into the application of Excel for data analysis in sugarcane production. By reviewing these sources, you can gain insights into how Excel has been utilized to analyze and interpret data related to sugarcane production trends across different states in India. Numerous studies have explored the application of big data analytics in sugarcane

production across various states in India. These studies often emphasize the significance of harnessing large datasets to enhance yield, optimize resource allocation, and predict crop outcomes (BL Schroeder 2010)

III. MATERIALS AND METHODOLOGY

A. Materials

The successful execution of the "Sugarcane production of different states in India" research project relies on a combination of essential materials, tools, and resources. The following list outlines the key components required to empower the analysis through Big Data Analytics, Pivot Tables, and a Dashboard System:

1. Data Sources:
2. Big Data Analytics Software:
3. Pivot Table Tools:
4. Dashboard Creation Tools:
5. Programming Skills:
6. Data Visualization
7. Statistical Analysis Techniques:
8. Domain Knowledge
9. Data Ethics and Privacy Considerations
10. Collaboration and Communication Tools
11. Literature and Research Resources:
12. Project Management Tools:

B. Methodology

The methodology for the "Worldwide Assessment of Livestock Production Index" project likely involves several key steps:

1. Data Collection:

2. Data Processing

3. Big Data Analytics:

4. Pivot Tables:

5. Dashboard System

6. Index Calculation

7. Continental Analysis

8. Comparative Analysis

the understanding and decision-making process.

IV. RESULTS AND DISCUSSION

Data Collection: Gather the sugarcane production data for different states in India. Organize the data with columns such as "State," "Year," "Production (in tons)," etc.

Data Entry: Enter the data into an Excel spreadsheet.

Creating Pivot Tables:

- a. Select your data range.
- b. Go to the "Insert" tab and click on "PivotTable."
- c. In the PivotTable Field List, drag "State" to the Rows area, "Year" to the Columns area, and "Production" to the Values area.

Pivot Table Creation: Import the cleaned and prepared data into a spreadsheet software that Europe, and Created a Pivot Tables in Microsoft Excel pivot table created by selecting the Continent wise Countries and choosing the appropriate variables for rows, columns, and values.

Visualization:

Create a bar chart to visualize the production trends across different states over the years.

Ministry of Agriculture & Farmers Welfare Department of Agriculture & Farmers Welfare (DA & FW) Final Estimates Area, Production & Yield of Sugarcane															
State	Area					Production					Yield				
	2017-18	2018-19	2019-20	2020-21	2021-22	2017-18	2018-19	2019-20	2020-21	2021-22	2017-18	2018-19	2019-20	2020-21	2021-22
Andaman And Nicobar Island	0.11	0.06	0.09	0.00	0.14	1.54	3.28	8.30	0.00	2.91	13969	56400	93846	0	20043
Andhra Pradesh	99.00	102.00	86.00	55.00	47.00	7789.62	8094.62	6724.00	4138.64	3645.41	78683	79359	78186	75248	77562
Arunachal Pradesh	1.79	2.13	1.82	2.15	2.15	38.38	45.80	39.22	46.44	46.29	21406	21500	21500	21589	21550
Assam	30.56	31.20	29.70	30.50	29.77	1142.97	1093.93	1218.12	1093.13	1160.03	37402	35063	41010	35845	38969
Bihar	233.77	225.57	223.89	221.12	211.16	13824.63	20116.29	13578.83	12109.80	12025.58	59138	89181	60649	54766	56949
Chandigarh	0.61				0.00	0.00	0.00	0.00		0.00	0				0
Chhattisgarh	24.10	32.75	35.18	31.55	34.94	1158.49	1452.14	1759.00	1756.39	1958.04	48070	44340	50000	55670	56040
Dadra And Nagar Haveli	0.17	0.37	0.15	0.00	0.00	13.60	26.70	12.00	0.00	0.00	80000	72152	80000	0	0
Goa	0.00	0.89	0.81	0.55	0.53	0.00	35.31	53.71	35.63	35.34	0	39761	66194	65382	66172
Gujarat	182.00	154.77	160.94	219.26	222.96	12072.06	11326.38	11569.98	16954.72	17459.11	66330	73182	71890	77327	78306
Haryana	114.00	108.70	96.30	99.00	107.70	9632.89	8505.01	7730.39	8531.72	8822.57	84499	78243	80274	86179	81918
Himachal Pradesh	1.87	1.70	1.60	1.47	1.49	36.73	33.32	32.01	22.68	22.65	19600	19600	19971	15447	15190
Jammu And Kashmir	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.08	0.00	0	0	0	2223	0
Jharkhand	8.21	0.00	0.00	0.00	0.00	574.84	0.00	0.00	0.00	0.00	70000	0	0	0	0
Karnataka	370.30	471.20	429.00	443.00	637.00	31135.19	42408.00	38181.00	42528.00	61152.00	84081	90000	89000	96000	96000
Kerala	1.05	1.01	0.95	0.92	0.92	115.11	106.30	120.83	106.66	10.43	109840	105050	127190	115810	11401
Madhya Pradesh	98.00	108.00	125.00	95.00	93.00	5430.00	5281.74	7433.75	5440.65	5379.12	55408	48905	59470	57270	57840
Maharashtra	902.00	1162.80	822.40	1142.80	1261.70	82984.00	89768.16	69311.87	105137.60	116076.40	92000	77200	84280	92000	92000
Manipur	6.00	5.45	0.00	4.94	4.94	348.00	315.07	0.00	279.41	279.41	58000	57811	0	56561	56561
Meghalaya	0.12	0.13	0.13	0.13	0.13	0.36	0.37	0.38	0.39	0.40	2983	2992	3000	3000	3000
Mizoram	1.56	1.46	1.47	1.38	1.29	44.84	44.26	44.26	42.96	36.95	28763	30274	30150	31198	28709
Nagaland	4.43	4.44	4.45	4.46	3.65	192.75	193.18	193.62	203.02	104.59	43510	43509	43510	45520	28695
Odisha	3.71	6.78	8.95	7.00	7.05	240.05	417.80	504.99	381.31	397.61	64704	61622	56423	54473	56398
Puducherry	1.45	1.44	1.31	1.34	0.00	180.63	187.72	183.12	187.04	0.00	125000	130000	140000	140000	0
Punjab	96.00	95.00	91.00	89.30	86.80	8023.68	7773.66	7302.02	7487.00	7130.88	83580	81828	80242	83841	82153
Rajasthan	5.43	5.37	4.47	4.98	4.24	381.87	447.95	326.19	393.74	321.43	70364	83448	73038	79111	75845
Tamil Nadu	171.86	166.41	131.20	127.70	147.99	17153.98	17140.23	14119.09	13284.63	16166.43	99814	103000	107615	104030	109240
Telangana	35.00	40.00	26.00	22.00	28.00	2604.46	3183.60	2012.87	1750.98	2864.57	74413	79590	77418	79590	102306
Tripura	0.81	0.66	0.69	0.86	0.88	42.49	35.91	36.37	48.58	48.41	52716	54251	52940	56486	55016
Uttarakhand	90.00	91.00	92.00	46.00	44.00	6271.38	6329.32	6937.72	3680.00	3520.00	69682	69553	75410	80000	80000
Uttar Pradesh	2234.00	2224.00	2208.00	2180.00	2177.00	177033.33	179714.77	179539.10	178339.26	179167.10	79245	80807	81313	81807	82300
West Bengal	19.16	15.81	19.18	18.80	18.98	1437.00	1335.37	1527.58	1418.25	1591.25	75000	84485	79657	75427	83834
All India	4737.06	5061.09	4602.68	4851.23	5175.41	379904.85	405416.18	370500.30	405398.71	439424.89	80198	80105	80497	83566	84906

Figure 1 Sugarcane production of different states in India

Area production of sugarcane: Uttar Pradesh, Maharashtra, and Karnataka are some of the leading states in sugarcane production in India. Uttar Pradesh typically has the highest area under sugarcane cultivation, followed by Maharashtra and Karnataka. Other significant sugarcane-producing

states include Tamil Nadu, Andhra Pradesh, Gujarat, Bihar, and Punjab. Result of that research, highest area of sugarcane production is in Uttarpradesh. In 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 area is 2234, 2224, 2208, 2180, 2177 in Thousand Ha respectively

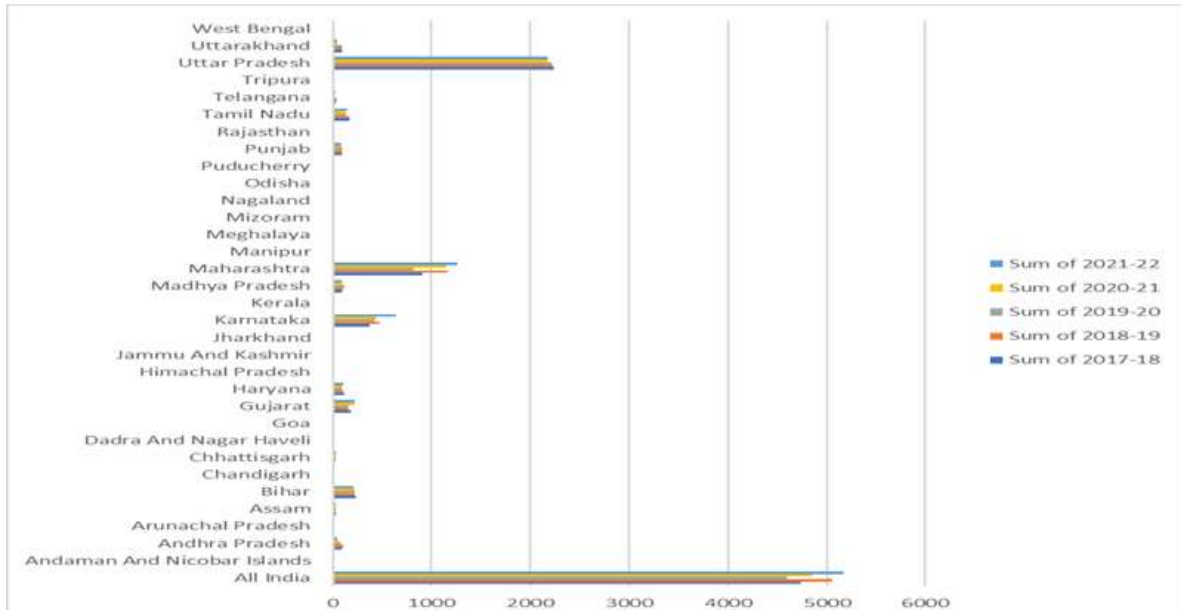


Figure 2 Sugarcane area in different states in India

Production of sugarcane Uttar Pradesh is the leading sugarcane-producing state in India. It accounts for a significant portion of the country's total sugarcane production. Highest

production of sugarcane is in Uttar Pradesh. In 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 production are 177033.33, 179714.77, 179539.10, 178339.26, 179167.10 respectively in Thousand Tonn.

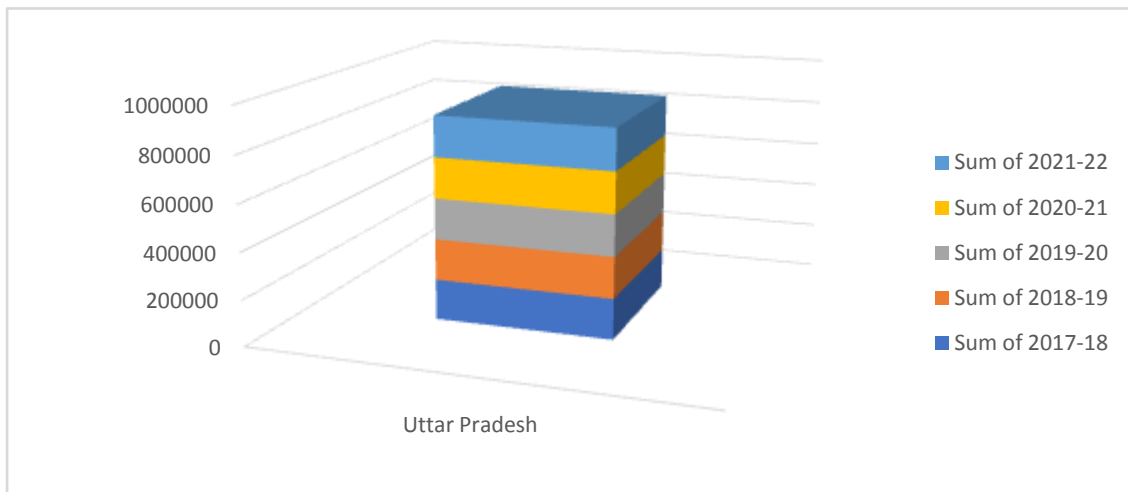


Figure 3 Sugarcane production in Uttar Pradesh

Yield of sugarcane production Uttar Pradesh, Maharashtra, and Karnataka were among the top states in India for sugarcane production and yield. Uttar Pradesh typically leads in sugarcane

production, followed by Maharashtra and Karnataka. The yield can vary based on factors like climate, soil conditions, and agricultural practices in each state

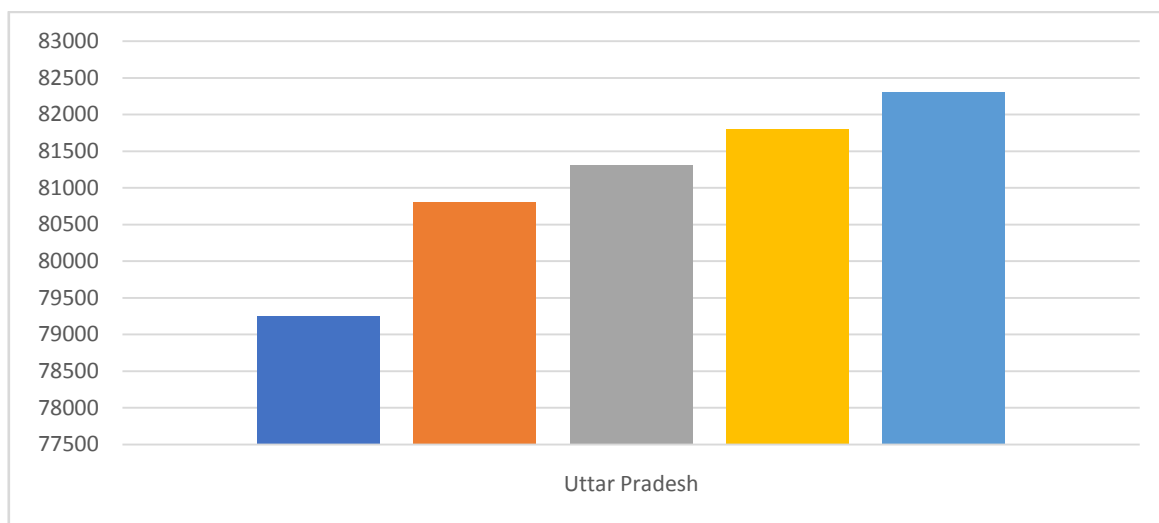


Figure 4 Yield of Sugarcane production in Uttar Pradesh

Result – From data we can observe that :
 Result of that research, highest area of sugarcane production is in Uttar Pradesh. In 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 area is 2234, 2224, 2208, 2180, 2177 in Thousand Ha respectively. Highest production of sugarcane is in Uttar Pradesh. In 2017-18, 2018-19, 2019-20, 2020-21, 2021-22

production are 177033.33, 179714.77, 179539.10, 178339.26, 179167.10 respectively in Thousand Tonn

Highest yield of sugarcane is in Uttar Pradesh 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 yield are 125000, 130000, 192417.6, 140000, 109240



Figure 5 Sugarcane area, production, yield in Uttar Pradesh



Figure 6 Sugarcane area, production and yield of all states

V. CONCLUSION

India's sugarcane production varied across states from 2017 to 2022. States like Uttar Pradesh, Maharashtra, and Karnataka were some of the top producers. The conclusion would likely involve identifying trends, factors affecting production, and potential implications for the agricultural sector and economy. For the most recent and accurate data, I recommend checking with reliable sources like the Ministry of Agriculture or agricultural research institutions in India.

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