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Chilli Crops in Nandurbar District: A Review of Agricultural Practices, Yield, and Export Performance

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Abstract:

Chillies are considered as one of the money-making spice crops. It is the most widely used global spice, named as wonder spice. The objective of the paper is to understand the area, production and productivity of chillies in Nandurbar district and export marketing of chillies.

The leading producer of chillies in the India is Maharashtra accounting for 23.73 lac tonnes of production annually. If the district is able to meet the strict quality demands of the international market, the exports can be further improved. Necessary steps have to be taken by the Government encouraging the exporters to maintain the Maharashtra dominance in the Indian market.

Keyword: Chilli cultivation, Agricultural practices, Yield analysis, Export performance.

Introduction:

Origin of the Chillies-

According to some theories, chillies originated in South America around 7000 B.C. Chilies were planted and raised beginning around 3500 B.C. When he discovered America in 1493, Christopher Columbus introduced the rest of the world to chilli. To bring spices like pepper back to his homeland, Christopher had made the decision to journey from Spain to India. Not only did Christopher mistakenly believe he was in America instead of India, he also confused spices with black pepper.

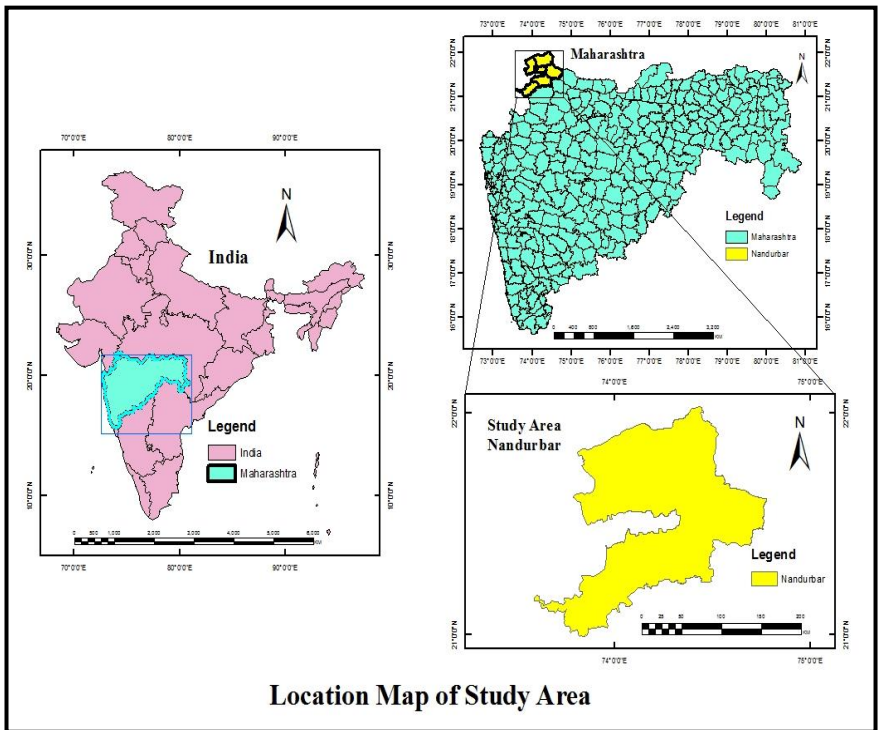
Given the similarities in taste, one of the first Europeans to taste chilli was Christopher Columbus, the man who discovered America. He named the spice pepper. He brought chilli pepper back to his own country, where it rose to prominence as a spice. Portuguese people started to enjoy chilli. The strong spice was brought to India's shores by Portuguese explorer Vasco-da-Gama in 1498. Seeds of chillies were brought to North America to be grown. Experiments to hybred chilli plants started in 1888. It swiftly gained popularity throughout all of Asia, and neighboring Asian countries began to cultivate these crops successfully.

The tastiest and most valuable varieties of chiles available today are grown exclusively in Asia, Japan, Ethiopia, Mexico, Uganda, and Turkey. The principal countries that grow chillies include Nigeria, India, Thailand, China, Indonesia, and Pakistan. Additionally, Hungary, Spain, Italy, and the United States grow it.

It is said to have started in India in the 1700s thanks to the Portuguese. India received its first shipment of chilli seeds from Brazil in 1584–1585 thanks to the Portuguese. The Nandurbar district, which is the most well-known for producing chillies, has a huge potential to produce and export a variety of chilli varieties, including *Lavangi Mirchi* and *Fafda Mirchi*. appropriate environmental factors and infrastructure, including soil, irrigation capabilities, climate expertise, and varieties of chilies needed for different markets surrounding the intense farming methods used by country farmers.

Location of Study Region:

Nandurbar is located in the north of Maharashtra, bordering the states of Gujarat and Madhya Pradesh. The latitude and longitude coordinates for Nandurbar district in Maharashtra, India, are Latitude: 21.3869° N Longitude: 74.2411° E.



Location Map of Study Area

The district is primarily hilly and undulating, with the Satpura mountain range extending through parts of the district. The Satpuda ranges mark the northern boundary of the district. Several rivers flow through Nandurbar district, including the Tapi (also known as Tapti), Narmada, Toran, Arunavati, and Aner.

These rivers are significant for agriculture and provide water for irrigation. With warm summers and comparatively moderate winters, the district has a tropical climate. Agriculture depends on the heavy rainfall that comes with the monsoon season, which lasts from June to September. In the district of Nandurbar, agriculture is the primary industry. Pulses, wheat, cotton, jowar, bajra, and chilli are among the main crops farmed. Agriculture and irrigation are made possible by the rivers and sufficient rainfall.

Motivation and Objectives of the Paper:

The following are the primary goals of the proposed study:

1. **Assess Agricultural Practices**: Evaluate current agricultural practices used in chilli cultivation in Nandurbar District, focusing on irrigation methods, fertilization techniques, pest and disease management, and sustainability practices.
2. **Study Market Dynamics**: Investigate the local, regional, and international market dynamics for chilli crops from Nandurbar District, including pricing trends, demand-supply balance, market segmentation, and consumer preferences.
3. **Recommend Improvements**: Provide actionable recommendations to enhance chilli crop productivity, quality, and market competitiveness in Nandurbar District, focusing on agronomic practices, technology adoption, market access, and policy support.

Study Methods and Materials:-

- **Primary Data**:-
  - **Farm Surveys**: Conduct surveys or interviews with chilli farmers in Nandurbar District to gather data on agricultural practices, including irrigation methods, fertilization practices, pest and disease management, and sustainability initiatives.
  - **Yield Data**: Collect historical data on chilli yield per hectare over the past decade from agricultural records and farmer associations.
  - **Quality Assessment**: Evaluate chilli quality standards through on-site inspections and laboratory testing for parameters like size, color, heat intensity (Scoville units), and contaminants.
- **Secondary Data**:-
  - **Market Analysis**: Gather data on local, regional, and international market dynamics for chilli crops, including pricing trends, demand-supply dynamics, market segmentation, and consumer preferences.
  - **Export Data**: Obtain data on chilli export performance from Nandurbar District, including volumes, destinations, export value, and regulatory requirements.
- **Statistical Analysis**:-
  - **Yield Trends**: Use statistical methods to analyze historical yield data and identify trends, seasonality, and factors influencing yield variations.
  - **Market Dynamics**: Analyze market data to understand pricing trends, demand-supply

balance, and market segmentation using statistical tools and techniques.

- **Qualitative Analysis**:-
  - **Agricultural Practices**: Conduct thematic analysis of qualitative data from farmer interviews to identify common practices, challenges, and innovative approaches in chilli farming.
  - **Export Performance**: Qualitatively analyze export data to identify challenges faced by exporters, regulatory issues, market access barriers, and opportunities for expansion.

Discussion and Data Analysis:

One of the most profitable spice crops is said to be chilies. It is known as the "wonder spice" and is the most widely used spice worldwide. A multitude of types are grown for a variety of purposes, including pickles, condiments, spices, and vegetables. Chilies are the most significant spice in daily life because they bring taste, essence, colour, and spiciness to a wide variety of foods prepared in kitchens across the globe. The hue and pungency levels of Nandurbar's chillies are two of their most notable and lucrative attributes. The pigment in certain kinds gives them their distinctive red colour. Other factors that determine quality in chilli include thickness, breadth, and coat extent. Growing on 55 lac hectares of land, the state of Maharashtra produces about 23.73 lac tonnes of chilli.

In terms of chilli output, Maharashtra leads the pack, followed by Andhra Pradesh, Telangana, Madhya Pradesh, and Karnataka. This indicates that although chilli is produced all across India, the states in the centre hold the lion's share of the manufacturing industry. Maharashtra contributes between 1.20 and 1.27 percent of the nation's total output. Still, the state of Maharashtra gets its fiery chillies primarily from the Nandurbar district.

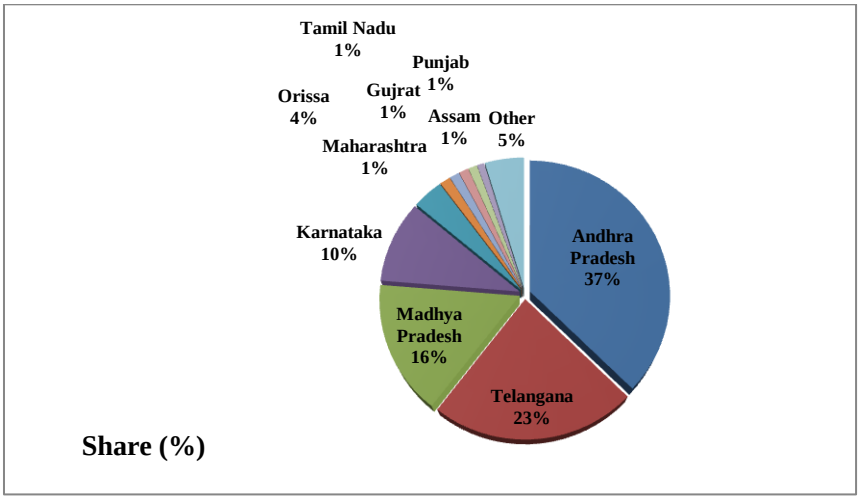
Countrywide Scenario:

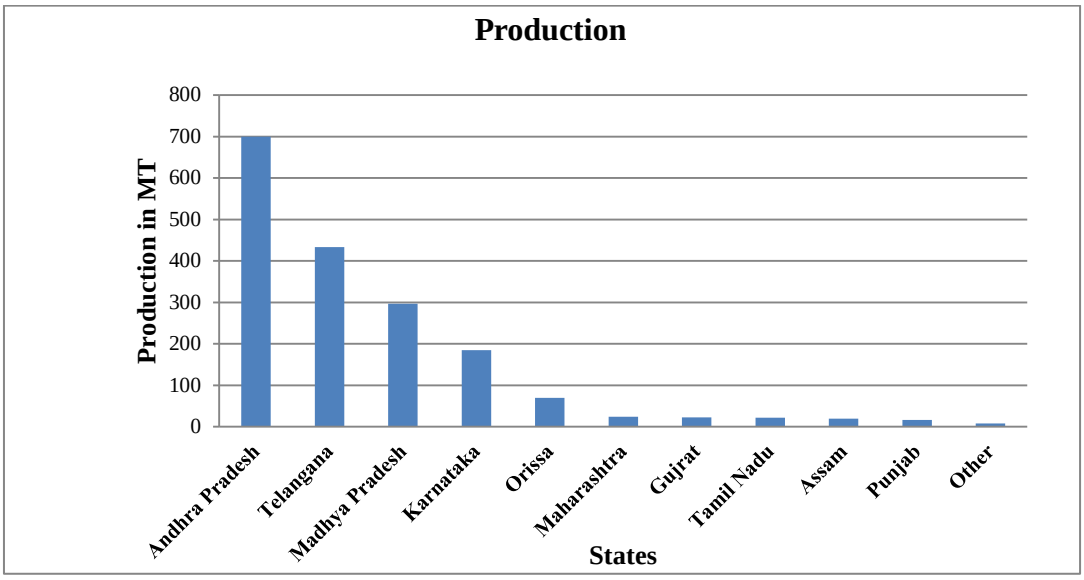
Among India's most important and lucrative crops is chilli. Among them, pepper, ginger, cardamom, and turmeric are significant. Certain spices, like as clove, nutmeg, vanilla, and several types of chilies, were brought to the nation. Numerous types of chilli are cultivated for use in pickles, sauces, condiments, and vegetables. Among the other major producers in the globe, India is the largest producer and user of chilli. India is the world's leading producer, accounting for 36% of global output, and leads international trade, with roughly 30% of its total output exported. The following table provides information on the area, production, and yield of chillies in key Indian producing states.

Table No.01.Top 10 Largest Producer of Chilli in India 2024

Sr.	State	Area (‘000ha)	Production (MT)	Share (%)
1	Andhra Pradesh	131.4 (16.94)	700.00	37.35
2	Telangana	78.8 (10.18)	433.12	23.11
3	Madhya Pradesh	54.3 (7.01)	296.69	15.83
4	Karnataka	89.7 (11.57)	184.53	9.85
5	Orissa	75.0 (9.68)	69.26	3.70
6	**Maharashtra**	**99.6 (12.85)**	**23.73**	**1.27**
7	Gujrat	43.4 (5.60)	22.36	1.19
8	Tamil Nadu	50.7 (6.54)	21.69	1.15
9	Assam	18.9 (2.44)	19.65	1.05
10	Punjab	10.6 (1.37)	15.88	0.85
11	Other	115 (15.82)	7.5	4.65
TOTAL		**767.4 (100)**	**1794.41**	**100**

Source: *https://testbook.com/static-gk & Compiled by researcher*





As According to bar graph, the Andhra Pradesh produces approximately 700 metric tones, Telangana more than 400, Madhya Pradesh up to 300, Karnataka more than 150, Orissa more than 50 and rest of the states produces up to 50 metric tones chilli. If we consider the pie chart the state Andhra Pradesh shares maximum chilli production up to 37 %, then 23% Karnataka, 16% Madhya Pradesh, 10% Karnataka, 4% Orissa and rest remaining percentage of the chilli production is share by other states.

In India, the top 10 states have a large cultivation of chillies. India grew 767.4 thousand hectares of chilli and produced 1794.41 tonnes of chilli. The greatest area of chilli in India is found in Andra Pradesh, which provides around 131.4 (16.94%) thousand hectares of chilli. The state produces 700 (37.35%) thousand tonnes of chilli, with a productivity of 5.33 tonnes per hectare, ahead of Telangana, Karnataka, and Gujarat. A total of 23.73 (1.55 percent) thousand tonnes of chilli were produced in Maharashtra on 99.6 (12.85 percent) thousand hectares of planted land, with a productivity of 4.20 tonnes per hectare.

Table No. 02. Area, Production and Productivity of Chillies in Nandurbar District

Year	Area	Trend Value	Production (Tonnes)	Trend Value	Productivity (tons/ha)	Trend Value
2012-13	255	737.03	150	1117.23	1.62	1.53
2013-14	230	742.65	135	1147.64	1.54	1.55
2014-15	215	748.27	117	1178.06	4.64	1.58
2015-16	233	753.88	11	1208.47	1.62	1.61
2016-17	228	759.50	128	1238.88	1.56	1.62
2017-18	250	765.12	145	1269.30	1.55	1.67
2018-19	267	770.74	159	1299.71	1.60	1.70
2019-20	269	776.35	155	1330.12	1.65	1.71
2020-21	279	781.97	174	1360.54	1.94	1.72
2022-23	288	787.59	184	1390.95	1.95	1.78
2023-24	279	793.20	168	1421.37	1.70	1.80
Average	**253.90**		**138.72**		**1.94**	

Source: *APMC Nandurbar annual reports &Compiled by researcher*

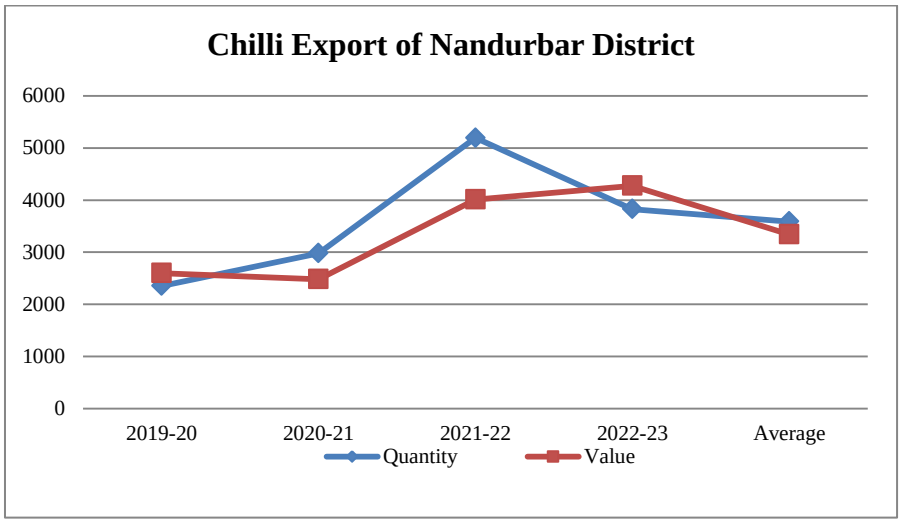
During the period spanning from 2012-13 to 2023-24, the average agricultural landscape in Nandurbar saw chilli cultivation covering approximately 253.90 hectares. This cultivation effort yielded an average production of 138.72 tonnes of chillies annually. Calculating the yield per hectare reveals an average productivity rate of 1.94 tonnes of chillies per hectare. These statistics underscore the consistent agricultural output of chillies in Nandurbar over the years, reflecting both the stability and productivity.

Export of Chillies from Nandurbar District:

Table No. 03. (Qty. in MT, Value in Rs. Lakhs)

2019-20		2020-21		2021-22		2022-23		Average	
Quantity	**Value**	**Quantity**	**Value**	**Quantity**	**Value**	**Quantity**	**Value**	**Quantity**	**Value**
2353.67	2600.37	2979.85	2481.49	5192.72	4009.67	3826.15	4274.90	3588.098	3341.608

Sources: *APMC Nandurbar annual reports, and Reports from District Agriculture Department Nandurbar*



As according to line graph we interpret that during 2019-20 the quantity and value located at the same point but scenario changed in year 2020-21 value decreased but quantity increased, in year 2021-22 quantity and value hiked highest among four year, 2022-23 slightly fall down can be seen and overall we can say that average quantity and value is matched at the same level. .

Based on the statistical data, Nandurbar exported an average quantity of 3,588.098 metric tonnes of chilli, amounting to a total value of Rs. 3,341.608 lakhs. Additionally, neighboring districts and states are noteworthy importers of Nandurbar's chilli produce. The export figures highlight Nandurbar's significant role in the regional chilli market, with its produce being sought after not only within the district but also in nearby regions. This export activity underscores the economic importance of chilli cultivation in Nandurbar, contributing to both local agricultural prosperity and regional trade dynamics.

Conclusion:

Nandurbar is renowned as the hub of chili production in Maharashtra, India. Located in the northern part of the state, Nandurbar boasts a significant agricultural landscape ideal for chili cultivation. The region's climate and soil conditions are particularly favorable for growing a variety of chilies, contributing to its status as a primary producer within Maharashtra. Farmers in Nandurbar employ traditional and modern agricultural practices to cultivate chilies of different varieties and qualities, ensuring a consistent supply throughout the year.

The Government should prioritize enhancing chili production and facilitating exports from Nandurbar district through strategic steps and support measures. Nandurbar's prominence as a major chili-producing region presents a significant opportunity for economic growth and agricultural advancement. To capitalize on this potential, several crucial initiatives could be considered:

1. **Infrastructure Development:** Invest in improving agricultural infrastructure such as irrigation facilities, cold storage units, and transportation networks to ensure better preservation and distribution of chili produce.
2. **Research and Development:** Allocate funds for research and development in agricultural practices specifically tailored for chili cultivation in Nandurbar. This could involve promoting efficient water usage, pest control strategies, and soil enrichment techniques.
3. **Training and Education:** Provide training programs and workshops for local farmers to enhance their skills in modern farming techniques, quality control, and post-harvest management.
4. **Market Linkages:** Facilitate partnerships between chili farmers in Nandurbar and potential buyers, both domestic and international. Establishing market linkages can ensure stable demand and fair prices for chili producers.
5. **Financial Support:** Offer subsidies, loans at favorable rates, and financial incentives to encourage farmers to expand chili cultivation and invest in modern agricultural equipment.

6. **Quality Certification:** Implement quality control standards and certification processes to ensure that Nandurbar's chilies meet international standards, thereby boosting export potential.
7. **Promotion and Awareness:** Launch promotional campaigns to raise awareness about the quality and uniqueness of Nandurbar's chili produce, both within India and globally.

The government can greatly increase the district of Nandurbar's output of chilies, boost regional economic development, generate jobs, and position Nandurbar as a major player in the international chilli market by implementing these aggressive measures.

Reference:

1. R. Geetha, Dr. K.Selvarani (2017) 'A STUDY OF CHILLI PRODUCTION AND EXPORT FROM INDIA' Vol-3 Issue-2 2017, IJARIIE-ISSN(O)-2395-4396 p. 205-210.
2. Jorwar R.M., S.M. Sarap and V.U. Chavan, (2018). Economics of production and marketing of chilli in Amravati district. Journal of Pharmacognosy and Phytochemistry; 7(2): 310-316
3. Desale, V.A., (2008). Production and marketing of red chillies (wet) in Dhule, Nandurbar district. Unpublished M.Sc. (Agri.) thesis submitted to M.P.K.V., Rahuri, Maharashtra.
4. Deshmukh, M.S., (2001). Economics of production of chilli in Achalpur tahsil of Amravati district Unpublished M.sc. (Agri.) thesis submitted to Dr. P.D.K.V., Akola, Maharashtra.
5. Bosland, P.W. and E.J., Votava (2003). Peppers: Vegetable and spice Capsicums. CAB International, England: Pp233.
6. Rechard . I. Levin, Statistics for Management, (New Delhi: Printice hall of India Private Ltd., 1986)
7. Barkeley Hill, An introduction to Economics for students of Agriculture, (Oxford: Perguman Press, 1980)
8. Donald, S.Tull, Del. I. Hawakins, "Marketing Research – Measurement and Methods", Sixth Edition, Asole. K. Ghosh, Prentice Hall of India.
9. Yearly APMC Nandurbar, reports.
10. www.commodityindia.com
11. www.agri.tn.gov.in
12. https://testbook.com/static-gk
13. www.agrifarming.in, asiafarming.com