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A Study on Cultivation Practices and Problems of Turmeric Growers in Chamarajanagar District

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Abstract: India is considered as the largest producer, consumer as well as exporter of turmeric in the world. Turmeric cultivation in Karnataka not only supports the livelihood of farmers but also plays a crucial role in meeting the domestic demand for this versatile spice. It contributes to the country's agricultural economy, export earnings and traditional medicinal practices. Here attempt has been made to study the cultivation practices and problems faced by the turmeric growers in Chamarajanagar district which is highest in area under cultivation of turmeric in Karnataka**.** For this purpose, required data have been collected with both primary and secondary data. and with a sample of 150 small farmers as a convenient sampling method. The turmeric growers suffer from various problems like the non-availability of labors, less technical knowledge about disease management, the non-availability of agricultural research stations for turmeric crops, the absence of improved farm mechanization technologies, and the unavailability of quality seeds. The results indicated that the agricultural development strategy for developing countries needs to be geared towards increasing the productivity of land under cultivation, with reduced cost, and higher efficiency use of inputs with little or no harm to both humans and the environment.

Key words: Turmeric, Cultivation, Spices, Production, Preference

INTRODUCTION:

Turmeric (Curcuma Longa L.) the ancient and sacred spice of India known as 'Indian Saffron' is an important commercial spice crop grown in India. It is also known as the 'Golden Spice of life" and is one of the most essential spices used as an important ingredient in culinary all over the world. Turmeric is a tropical perennial plant, native to India and Indonesia and is cultivated throughout the tropics around the world. India is the world's largest producer of turmeric, accounting for approximately 80% of the global production.

In the year 2021-2022, turmeric production was 1334.31 thousand tonnes, with an area and productivity 349.43 thousand hectares and 3818.34 kg per hectare respectively. (Angrau Turmeric Output Report 2022) The country has ideal climatic conditions, fertile soil, and suitable agricultural practices that contribute to its abundant turmeric harvest. Turmeric cultivation is widespread across various states in India. Some of the major turmeric-producing regions include Andhra Pradesh, Telangana, Tamil Nadu, Maharashtra, Odisha, and Karnataka.

Each region may have specific varieties and cultivation techniques. India cultivates several turmeric varieties, each with its unique characteristics. Some of the important turmeric varieties grown in India are "Kasturi and Mundaga" (Karnataka), "Alleppey Finger" (Kerala), "Erode and Salem turmeric" (Tamil Nadu), "Rajapore and Sangali turmeric" (Maharashtra) and "Nizamabad Bulb" (Andhra Pradesh). These varieties differ in terms of colour, flavour, aroma, and curcumin content.

Karnataka, a state in southern India, is a significant contributor to the country's overall turmeric production. Within Karnataka, Chamarajanagar district stands out as a prominent region for traditional turmeric cultivation and the crop has been notified under "one district one product" programme. The district benefits from favourable agro-climatic conditions, including moderate temperatures and well-distributed rainfall, which support the growth of high-quality turmeric. The region's rich soil, consisting mainly of red soil and loamy soil, further enhances turmeric cultivation. Farmers in Chamarajanagar district cultivate various turmeric varieties, such as IISR Pratibha, IISR Allepy Supreme, Rajendra Sonia among that popular was "Salem local" or "Kadapa" variety known for its vibrant colour, aroma, and flavour. The district has witnessed a growing demand for organic turmeric, prompting farmers to adopt organic farming practices. Chamarajanagar contributes significantly to Karnataka's turmeric market, supplying turmeric to various parts of the state and even exporting it to international destinations. The district houses processing units equipped with modern machinery, facilitating activities such as cleaning, grading, drying, and powdering of turmeric. The industry plays a crucial role in the district's economy, providing employment opportunities to farmers, laborers, and workers involved in processing units. With government support, including financial assistance, subsidies, and training programs, the turmeric industry in Karnataka, particularly in Chamarajanagar district, continues to thrive, contributing to agricultural growth and rural development in the state.

LITERATURE REVIEW:

Kiran Kumar and Anand Avale(2022) The study aims Focuses on the cultivation practices of turmeric farmers in Karnataka. Turmeric growers face a variety of challenges, including a shortage of labour, a lack of agricultural research stations for the turmeric crop, a lack of quality seed, a lack of technology, and storage issues. Many essential suggestions have been offered to help turmeric growers solve their challenges. including a guaranteed and reasonable selling price, timely availability of quality seeds and credits, timely guidance of VEWs and the organisation of farmer exhibitions, subsidised fertilisers and pesticides, and the establishment of a separate turmeric research station.

Bommaiah et.al (2019) attempted to study the level of adoption of modern cultivation practices among turmeric farmers and identify the factors influencing their adoption decisions. The authors conducted a survey among 120 turmeric farmers in Belagavi district using primary data on various aspects related to turmeric cultivation. The survey included questions regarding farmers' socio-economic characteristics, landholding patterns, knowledge of improved cultivation practices, adoption of these practices, and perceived benefits and challenges associated with their adoption. The author concluded that turmeric cultivation is a significant agricultural activity in the Belagavi district, with a substantial contribution to the local economy. However, the level of adoption of improved cultivation practices among turmeric growers is relatively low. The authors recommend that efforts should be made to enhance farmers' knowledge and awareness of improved cultivation practices through training programs, workshops, and extension services.

Sasikumar (2015) examines the challenges and opportunities faced by small-scale turmeric farmers in marketing their turmeric products and to identify potential prospects for improving their livelihoods in Erode District. The author collected data through interviews and surveys conducted among small farmers in the region. The paper discusses various issues faced by the farmers, including lack of proper marketing channels, price fluctuations, inadequate storage facilities, and limited access to credit and technology. the research highlights the prospects available for small-scale turmeric farmers. Author suggests that addressing the challenges faced by small farmers requires the development of effective marketing strategies, improvement in storage and post-harvest practices, access to financial services and technology, and promotion of sustainable and organic farming practices.

Jayanthi and vaideke (2015) The study deals with the cultivation practices of turmeric farmers in erode district. The turmeric growers suffering with problems on various aspects like monsoon failures, lacks of technology, storage problem, problems with private vendors and intermediaries. The study concludes that the agricultural development strategy for developing countries need to be geared towards increasing the productivity of land under cultivation, with reduced cost, higher efficiency use of inputs with little or no harm to both human and the environment.

3. STATEMENT OF THE PROBLEM

The study was conducted to find out the cultivation practices of turmeric growers in Chamarajanagar district. The Turmeric cultivation in Karnataka does generate more employment opportunities in rural areas. Right from the stage of nursery formation to the harvesting stage, a lot of manual labors is required. The introduction of machines in turmeric cultivation is almost impossible due to its peculiar nature and hence a turmeric grower has to rely mainly upon human labors for the preparation of land, mulching, weeding, manuring, spraying of pesticides, and harvesting. The grower faces problems in cultivating turmeric, such as the non-availability of laborers, non-availability of fertilizers and pesticides during peak time, high cost of labour, absence of improved farm mechanization technologies, and unavailability of quality seed.

4. OBJECTIVE OF THE STUDY:

1. To study the cultivation practices of turmeric growers in Chamarajanagar District.
2. To assess the problems faced by turmeric cultivators in the study area.

5. RESEARCH METHODOLOGY:

This study is descriptive research that relies on both primary and secondary data. The required preliminary data were collected with pre-tested, structured, and non-disguised interview schedules from the small farmers engaged in turmeric cultivation in Chamarajanagar district. Required secondary data were collected from the Directorate of Economics and Statistics of the Government website, Season and Crop Report of the Government of Karnataka; the sample size of the present study is 150 small farmers

6. LIMITATIONS OF THE STUDY

1. This study confined to the farmers cultivating in Chamarajanagar distract limits. Hence, the generalization of the results is restricted.
2. The size of the sample is restricted. Therefore, the limitations of a restricted sample size are applicable to the present study.

7. RESULT AND DISCUSSION:

7.1 Cultivation Practices of Turmeric Growers in Chamarajanagar District:

Chamarajanagar district, located in the southern state of Karnataka, India, is known for its favourable agro-climatic conditions that support turmeric cultivation. Turmeric growers in Chamarajanagar district follow specific cultivation practices to ensure a successful crop. Here are some key aspects of turmeric cultivation in this region:

1. **LAND PREPARATION:** The process begins with land preparation while preparing the land, minimum tillage operations may be adopted. Beds of 15 cm height, 1 m width and of convenient length may be prepared by giving at least 50 cm spacing between beds. In the case of the irrigated crop, ridges and furrows are prepared and the rhizomes are planted in shallow pits on the top of the ridges. Spacing generally adopted is 45-60 cm between the ridges and 15-20 cm between the plants. Solarisation of beds is beneficial in checking the multiplication of pests and diseases causing organisms. The polythene sheets used for soil solarisation should be kept away safely after the work is completed.

2. **CLIMATE AND SOIL:** Turmeric requires a warm and humid climate. It can be grown in diverse tropical conditions from sea level to 1500 mm above MSL within a temperature range of 20-30°C with a rainfall of 1500 mm or more per annum or under irrigated conditions. Though turmeric thrives in different types of soil ranging from light black loam, red soils to clayey loams, rich loamy soils having natural drainage and irrigation facilities are the best. Turmeric cannot stand water stagnation or alkalinity.

3. **SELECTION OF VARIETIES:** Turmeric growers in Chamarajanagar district cultivate various turmeric varieties but main emphases was given to high yielding, good quality improved varieties viz., Kasturi, Mundaga, Balaga, Yalachaga, IISR Alleppey supreme, IISR Pratibha, IISR Pragathi (source IISR Calicut) and CIMAP Peetambhari (CIMAP Lucknow), Rajendra Sonia, Salem local are the some of the varieties which are suitable for the region.

4. **SEED SELECTION AND TREATMENT:** High-quality seed rhizomes are selected for planting. Growers ensure that the rhizomes are disease-free and healthy. Before planting, the rhizomes are usually treated with suitable fungicides or biocontrol agents to protect them from soil-borne diseases.

5. **PLANTING:** Turmeric planting in Chamarajanagar district typically takes place between April and May, coinciding with the onset of the monsoon season. The rhizomes are planted at a depth of around 5-7 centimetres in rows or furrows. Spacing between the plants is maintained at approximately 25-30 centimetres to allow adequate room for growth.

6. **IRRIGATION:** Adequate water supply is crucial for turmeric cultivation. Growers in Chamarajanagar district follow different irrigation methods, including furrow irrigation, sprinkler irrigation, or drip irrigation, depending on the availability of resources and the farmer's preference. First irrigation should be given before planting. Second is given just after planting. Subsequent irrigations are given at 7-10 days interval depending on soil. Regular and proper irrigation helps maintain optimal soil moisture levels throughout the growing period.

7. **WEED CONTROL:** Controlling weeds is essential to ensure the healthy growth of turmeric plants. Farmers employ various methods such as hand weeding, mechanical weeding, or mulching with organic materials to suppress weed growth and maintain a weed-free field.
8. **FERTILIZATION:** Turmeric plants require a balanced supply of nutrients for optimum growth. Farmers in Chamarajanagar district typically apply organic manures, such as farmyard manure or compost, during land preparation. Additionally, they may use chemical fertilizers, incorporating a blend of nitrogen, phosphorus, and potassium (NPK), based on soil test results and specific crop requirements.

9. **PEST AND DISEASE MANAGEMENT:** Turmeric is susceptible to various pests and diseases. Turmeric growers in Chamarajanagar district employ integrated pest management (IPM) practices, including the use of biocontrol agents and organic insecticides to manage pests like rhizome scale insects, shoot borers, and root-knot nematodes. Disease management strategies involve the use of disease-resistant varieties, proper crop rotation, and the timely application of fungicides to control diseases such as leaf spot and rhizome rot.

10. **HARVESTING:** In Chamarajanagar district, turmeric harvesting starts form February and continues till April. Rhizomes are ready for harvest in 7-9 months after planting. Longa type – 9 months, Amada type-8 months and Aromatica type-7 months. Turmeric is harvested when leaves start yellowing and ultimately the stem dries down. The crop is irrigated lightly for easy digging. Harvesting consists of digging of underground clumps of rhizomes with pick axe or digging fork. Finally, Fingers are separated from mother rhizomes.

TABLE 1

Reasons for the Preference of the Turmeric Cultivation

Sl.No	Reasons	No. of Growers supporting the reasons	Percentage	Rank
1	High demand	93	62	**VIII**
2	Export potential	81	54	**X**
3	Crop rotation & Soil health benefit	111	74	**V**
4	Adoptability & low input requirement	102	68	**VI**
5	Cash crop	144	96	**I**
6	Possibility of inter cropping	129	86	**II**
7	Profitability	123	82	**III**
8	Availability of water	99	66	**VII**
9	Long term Crop	114	76	**IV**
10	Easy loan facility	75	50	**XI**
11	Good storage facility	87	58	**IX**

Source: Primary Data

The above Table indicates that turmeric cultivation is preferred by growers for several reasons. The most significant factor is its status as a cash crop, with a high market value and the potential for significant income. Growers also recognize the profitability of turmeric cultivation, indicating a favourable return on investment. The possibility of inter-cropping with turmeric and its adaptability with low input requirements further contribute to its appeal. Turmeric is also recognized as a long-term crop, providing growers with sustained income and stability. Additionally, factors such as high demand, export potential, crop rotation benefits, availability of water, easy loan facility, and good storage facilities further support the preference for turmeric cultivation. Overall, the data highlights the economic viability, market potential, and agronomic advantages associated with turmeric cultivation

7.2 PROBLEMS OF TURMERIC GROWERS IN CHAMARAJANAGARA DISTRICT

The preference for turmeric cultivation in Chamarajanagara district is influenced by its climatic suitability, with the region having a tropical climate and temperatures between 20°C and 30°C. The fertile soils and good drainage in the district make it suitable for turmeric cultivation. Additionally, the high demand for turmeric in the culinary industry and its cultural significance in Indian traditions contribute to its preference. However, turmeric cultivation in Chamarajanagar district faces challenges such as pest and disease management, inadequate water supply, price fluctuations, limited access to modern farming techniques, and insufficient post-harvest management infrastructure. These issues can affect crop yield, quality, and the income of farmers in the region

TABLE 2

Major Problems Faced by Turmeric Growers

Sl.No	Problems	No. of Growers	Percentage	Rank
1	Lack of awareness on improved cultivation practices	96	64	**VIII**
2	Low yield due to use of local varieties	105	70	**VI**
3	Inadequate credit facility	117	78	**IV**
4	Imbalanced nutrient Management	90	60	**IX**
5	Lack of awareness on mechanization in turmeric cultivation	114	76	**V**
6	Unhygienic processing Practices	99	66	**VII**
7	Middlemen involvement in marketing	84	56	**X**
8	Non availability of labour	138	92	**I**
9	High cost of pesticide and fertilizer	123	82	**III**
10	High transportation cost	132	88	**II**
TOTAL	SAMPLE SIZE	150	100%	**X**

source: Primary Data

The above Table indicates that Turmeric growers face significant challenges, such as non-availability of labour affecting 92% of growers, high transportation costs impacting 88% of growers, and inadequate credit facility affecting 78% of growers. Other issues include low yield due to local varieties (70%), lack of awareness on improved practices (64%), and high costs of inputs like pesticides and fertilizers (82%). the analysis reveals that the non-availability of labour, high transportation costs, inadequate credit facilities, high costs of inputs, and lack of awareness on improved practices are the most prominent challenges faced by turmeric growers. Addressing these issues can significantly benefit the turmeric cultivation industry.

FINDINGS:

The findings are summarized as follows:

1. Non-availability of labour: The most significant problem faced by turmeric growers, with 138 growers (92%) affected. It ranks first in terms of severity, indicating challenges in finding labour for turmeric cultivation and related activities.
2. High transportation cost: Approximately 132 growers (88%) face this problem, ranking it second in severity. The high cost of transporting turmeric from farms to markets or processing units is a significant concern for growers
3. High cost of pesticide and fertilizer: This problem affects 123 growers (82%), ranking it third in severity. Turmeric growers face financial burdens due to the expensive costs of pesticides and fertilizers.
4. Inadequate credit facility: With 117 growers affected (78%), this problem ranks fourth in terms of severity. It indicates a lack of access to sufficient credit for turmeric cultivation.
5. Lack of awareness on mechanization in turmeric cultivation: This problem affects 114 growers (76%) and ranks fifth in severity. Growers may lack knowledge and understanding of mechanized practices in turmeric cultivation.

SUGGESTION:

Based on the findings, some suggestions to address the major problems faced by turmeric growers:

1. Encourage training and education programs to attract and retain labour for turmeric cultivation and Explore partnerships with local communities, educational institutions, or government agencies to address labour scarcity. And Implement mechanization and automation techniques to reduce the dependency on manual labour.
2. Proper storage facilities to be arranged and proper training may be given to improve their storage practice in order to get remunerative price for turmeric.

3. Promote the use of organic and sustainable farming practices to minimize the need for excessive pesticide and fertilizer usage. And Provide subsidies or financial support to reduce the burden of input costs for turmeric growers. And Educate growers about efficient and targeted application of pesticides and fertilizers to optimize their usage and reduce costs.
4. Establish farmer cooperatives or collective transportation systems to pool resources and reduce transportation costs. And Advocate for improved infrastructure and logistics support to streamline transportation of turmeric produce. And Explore opportunities for local processing or value addition to minimize transportation distances and costs.
5. Work with financial institutions and government agencies to develop tailored credit facilities specifically for turmeric growers. And provide financial literacy and entrepreneurship training to empower growers in managing their finances effectively. And establish cooperative credit systems or community-based lending programs to enhance access to credit for turmeric cultivation.
6. Organize workshops, training sessions, and demonstrations to educate growers about the benefits and techniques of mechanized cultivation. And collaborate with agricultural extension services and research institutions to disseminate information on modern practices and technologies. And Facilitate access to machinery and equipment through rental schemes or subsidies to encourage adoption of mechanization.

CONCLUSION:

The study on cultivation practices and problems of turmeric growers in Chamarajanagar district concludes that labour scarcity, high cost of pesticide and fertilizer, transportation expenses, inadequate access to credit facilities, and lack of awareness on mechanization are significant challenges faced by the growers. And based on preference The findings highlight the economic viability, market potential, and agronomic benefits associated with turmeric cultivation, reinforcing the preference of growers for this crop. Addressing these issues through measures such as attracting and retaining labour, promoting sustainable farming practices, improving transportation infrastructure, developing tailored credit facilities, and enhancing awareness about mechanization can contribute to the growth and sustainability of turmeric cultivation in the region.

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