



An Analysis of Chilli Cultivation in Karnataka: A Case Study of Gadag District

^{*1}Dr. Nagaraja O

^{*1}Assistant Professor and Head, Department of Economics, KLE'S Jagadguru Tontadarya Arts Science and Commerce College Gadag, Karnataka, India.

Abstract

Chilli is an important cash crop in India and is grown for its pungent fruits, which are used food. Green chillies are rich in Vitamin A and C, minerals and protein both green and ripe (the latter in the dried form) to impart pungency to the. The present study investigates the socio-economic conditions, cultivation practices, and challenges faced by chilli farmers in Hatalageri village, Gadag Taluk of Gadag District, Karnataka. Based on primary data collected from 30 chilli cultivators through structured interviews and supplemented with secondary data from scholarly sources, the research aimed to

- i). Assess the socio-economic profile of the farmers,
- ii). Gather their opinions on chilli cultivation,
- iii). Analyze the functioning of chilli farming in the region, and
- iv). Identify key problems and suggest practical remedies.

Findings reveal that the majority of chilli farmers are male (93.33%) with limited educational attainment, where 23.33% are illiterate and only 10% have completed graduation. Agriculture remains the primary occupation for 83.33% of respondents. While a significant portion (66.66%) have adopted modern cultivation practices, one-third still depend on traditional methods. Marketing challenges persist, with 53.33% of farmers selling through intermediaries, often at reduced profit margins. Additionally, while 60% expressed satisfaction with the current market system, 40% indicated the need for improvement. The study highlights issues such as gender disparity, lack of female literacy, limited market access, and insufficient community collaboration. Recommendations include promoting gender inclusion, expanding access to modern farming techniques, improving irrigation infrastructure, supporting direct marketing channels, and encouraging farmer cooperatives. These interventions could enhance productivity, equity, and income sustainability in the region.

Keywords: Chilli production, methods of cultivation, commercial crops farmers, cost o cultivation.

1. Introduction

Chilli, also known as red pepper, is a significant cash crop in India, known for its pungent, acidic fruits. These small, green, and ripe fruits are used as a condiment, medicine, and in chutneys and pickles. India is the largest producer of green chillies, with an annual production of 1.1 million tons. The world consumption of green chillies and paprika is increasing due to the popularity of ethnic foods. Major Chilli production areas are Andhra Pradesh, Karnataka, Maharashtra, Punjab, Tamil Nadu, and Rajasthan

Chilli is an important ingredient in day to day curries, pickles and chutneys oleoresin, sauce and essence are prepared from chilli. Chilli is used in various from as raw fresh green chopped chilli; or ground to a paste, broken split or whole from. To preserve chilli for longer time it is pickled or sun dried to get a 'red' coat chilli which when powdered is used in pinch to get the desired level of pungency.

In India chilli occupies an area of 7.50 lakh hectares which

an annual production of 11.67 lakh tones (2009). Andhra Pradesh, Maharashtra, Karnataka, and Tamil Nadu are major chilli growing states in India which together contributes about 75 percent of the total cultivated area.

Karnataka stands Second in area and production, while in productivity it ranks eight in position which an average yield of 1150 kg of dry chilli growing districts are Haveri, Dharwad, Gadag, Koppala, Belgaum, Ballary, and Raichur of which Haveri and Dharwad districts themselves make up 72 and 60 percent of total area and production, respectively. In recent years, there has been a great demand for increasing the diversity in chilli for within both culinary and ornamental purposes.

2. Topic of the Study

This study focuses on the cultivation of chilli in Hatalageri village, located in Gadag Taluk of Gadag District, Karnataka, with the aim of examining the agricultural practices, socio-

economic conditions of farmers, and the challenges they face in chilli production.

3. Objective of the Study

The objectives of the present study are as follows:

- To understand the socio-economic conditions of chilli cultivators in the study area.
- To gather farmers' opinions regarding chilli cultivation.
- To analyze the current practices and overall functioning of chilli cultivation in Hatalageri village.
- To identify the problems faced by farmers during chilli cultivation and suggest appropriate remedies.

4. Methodology and Source of Data

The present study is based on both primary and secondary data. Primary data were collected directly from 30 respondents using a specially designed structured interview schedule.

Secondary data were obtained from books, research articles, reports, newspapers, and journals. The research process began with an extensive literature review. During which relevant abstracts and references were identified and documented to support the study.

5. Scope of the Study

Geographically, the present study is confined to Hatalageri village in Gadag Taluk of Gadag District, Karnataka. Specifically, the study focuses on a brief analysis of chilli cultivation practices in this village. The data for the study were collected during the period from April 2024 to May 2025.

6. Review of Literature

In this part a brief review of earlier studies related in to the topic of present study is made.

Marinus Nguillie and Loli Daiho (2013) in this study says Available biocontrol agents were evaluated either alone or in various combinations for finding out their efficacy in suppressing *Rhizoctonia* seedling rot incidence and promoting plant growth of Naga king chilli in green house as well field conditions. Among all tested combination, the treatment containing combination of *T. viride* + *P. fluorescens* was found most effective in reducing the incidence of seedling rot in both greenhouse and field condition.

S.S. Pawar, N.V. Bharude, *et al.* (2011) writers' state Since ancient times, people have used chillies as a spice, food, and domestic remedy for a variety of common ailments, including high blood pressure, high cholesterol, joint pain, and skin issues. They have also been used as a carminative, appetizer, stomachic, and beverage, as well as a pain reliever for neuropathy and a counterirritant for lumbago and rheumatism. Although it's biological purpose is to ward off animals, fungus, and herbivores. The name "capsicum" comes from the Greek word "kapsimo," which means "to bite." The components of chillies that have a medicinal effect are ascorbic acid, protein, fixed oil, thiamine, and capsaicin. The study of pharmacognosy, pharmacology, its beneficial benefits, various herbal formulas for different ailments, preparations made with chilies, commercial formulations, along with its main adverse effects and contraindications are all covered in this review.

Dr. B.N. Shivalingappa and Dr. D. Mahesh (2012) in this study found that agriculture sector of Karnataka has undergone wide-ranging changes in terms of ownership of land, cropping pattern, cultivation practices, productivity, and

intensity of cultivation. Unlike the other regions in India, the farm front of Karnataka is characterized by extreme diversity in its bio-physical resource base and agro-climatic endowments providing multiple opportunities for raising a variety of crops. It has a wide range of cropping pattern vary widely from region to region and to a lesser extent from one year to another year, there are various ways of utilizing the land intensively.

Dr. Premakumar G.S Usharani N.D. (2013) in the present paper an attempt has made estimate the financial productivity of selected agricultural crops in order to recommend crops for cultivation, based on financial productivity of crops. The financial productivity of sugarcane is comparatively high, given the irrigation facilities and cost constraints. Hence, it has been recommended for selection as a commercial crop.

Pesaralanka *et al.* 2021: authors say one of the major commercial spices is chilli. Due to its widespread usage in daily life, there is a considerable demand for it on the market. Due to biotic (diseases & insects) and a biotic (issues with water & nutrients) hazards, chilli cultivation presents unique challenges. An integrated strategy is needed to manage both risks in a seamless and economical manner. Weeds and pests grow rapidly as a result of overwatering. Drip irrigation is one way to regulate it; it can reduce water usage by up to 62% and increase chili production by up to 43%. A crop's vulnerability may also stem from a nutrient deficit. It needs to be maintained by applying the right fertilizers in the suggested amounts. Applying organic manures in combination (FYM, H Hernath *et al* 2021. Writers says the Capsicum species, which produces chillies, is a major crop and spice worldwide. Species of capsicum have been employed extensively in the food and pharmaceutical industries. This is as a result of the many phytochemicals with antioxidant and antidiabetic properties found in these species. Because of the nutritional content and health advantages of chilli, there has been a constant demand for the crop on a global scale. Increasing the production of chillies quickly is crucial to meeting the world's demand for them while also enhancing their nutritional value and health benefits. Various breeding techniques have been used by plant breeders working on chillies in an effort to enhance the crucial economic characteristics of chillies. Heterosis breeding is one of the many plant breeding techniques that may be used to enhance such features, and it is essential to the quick

Dr. Balaraj *et al* 2018 Author says Chilli, a commercial spice crop, is widely used in various cuisines worldwide for its pungency, taste, flavor, and color. India is the world leader in chilli production, followed by China and Pakistan. The demand for chilli comes from countries like India, China, Mexico, Thailand, USA, UK, Germany, and Sweden. The paper aims to identify problems faced by farmers in the cultivation and marketing of chilli in Thirupullani Bolck, Ramanathapuram District, Tamil Nadu.

7. Research Gap

Most of the existing studies on chilli cultivation focus on technical aspects such as pest control, irrigation methods, and crop breeding, or they analyze data at broader regional or national levels. However, there is a lack of localized research addressing the socio-economic conditions and real-world challenges faced by chilli farmers in specific rural areas like Hatalageri village in Gadag district. Few studies explore farmers' perspectives on cultivation methods, marketing practices, and income-related issues. Additionally, issues like gender disparity, limited access to direct markets, and lack of

farmer collaboration remain underexplored. This study addresses these gaps by providing a micro-level analysis of chilli cultivation and farmer experiences in Hatalageri village.

8. Analysis of the Study

The present study is analytical in nature. Analysis of the primary data was carried out using simple statistical tools such as percentages and averages. Charts and figures have also been used in the analysis. The data gathered through the field survey are presented in several tables and interpreted accordingly.

9. District & Taluk Agri Profile

9.1. Introduction:

The net sown area of the district is 3.77 lakh ha, of which 42.4% (1.60 lakh ha) is irrigated and the rest (57.6%) is rain fed. The district is a part of Krishna basin, divided into two sub basins namely Malaprabha and Tungabhadra

The Gadag district of Karnataka, located in the western part of northern Karnataka, is known for cultivating a wide variety of crops. Agriculture in this region reflects both regional and national trends in crop production. The major cereals grown in the district include wheat, jowar, and maize. These form an essential part of the local diet and are widely cultivated due to their adaptability to the region's climatic conditions. Among the pulses Bengal gram and green gram are the most commonly grown. These crops play a vital role in improving soil fertility through nitrogen fixation and also serve as an important source of protein in the local diet. In the category of oilseeds, groundnut and sunflower are the dominant crops. These are not only consumed locally but also contribute to the district's agrarian economy through trade and oil production. The district also grows several commercial crops such as sugarcane and cotton, which are cultivated primarily for market sale and contribute significantly to farmers' income. Horticultural crops like mango, sapota, banana, grapes, and pomegranate are widely cultivated and have growing demand in both domestic and export markets.

Vegetables such as tomato, onion, brinjal, and chili are commonly grown, supporting both local consumption and supply to nearby markets. In terms of plantation crops, coconut and palm are notable, especially in areas with suitable irrigation and soil conditions. Additionally, the district cultivates medicinal and aromatic plants, like amla, ashwagandha, citronella, and lemongrass, which are gaining popularity due to their commercial and therapeutic value. The main sources of irrigation in Gadag district are canals, tube wells, and tanks, which support the agricultural activities across various seasons and crop types.

9.2. Overview of Agricultural Practices in Gadag District

Crops: The Gadag district falls under two agro-climatic zones: the North Dry Zone and the North Transitional Zone. The region features a mix of black and red sandy soils, which support the cultivation of a wide variety of crops. In recent years, the area under vegetable, fruit, and pulse cultivation has expanded more rapidly than that under cereals, oilseeds, and fiber crops, reflecting a shift towards more diversified and high-value agriculture.

Irrigation: Irrigation coverage in the district has been steadily increasing, leading to improved agricultural productivity. The majority of irrigated land is found in the Naragund and Ron taluks, which benefit from water supplied by the Malaprabha Reservoir. This development has significantly supported the cultivation of water-intensive and

commercial crops in these areas.

Land Holding: The average land holding in the district is 2.9 hectares per person. Around 65% of all land holdings fall under the small and semi-medium categories. A significant portion of the farming population consists of small and marginal farmers, with 80,241 individuals in this category, making up 57.58% of the total farming community in the district.

Infrastructure: Gadag district is equipped with good infrastructure for agricultural marketing and support services. The Department of Agriculture has established Raitha Samparka Kendras which serve as information centers providing guidance on crop production techniques, availability of agricultural inputs, and services such as soil and seed testing. These centers play a crucial role in supporting farmers with up-to-date agricultural practices and government schemes.

Table 1: Overview of Profile of Gadag District

Temperature	37.3 °C (Max.) 16.5 °C (Min.)
Relative Humidity (%)	88 (Max) 40 (Min)
Average Annual Rainfall	631 mm
Rivers	Tungabhadra, Malaprabha and Bennisahla
Geographical Area	4657 Sq.Km
District headquarter	Gadag
Population	1,064,570
Population density	229 per km ²
Male	537147
Female	527423
Agriculturists	139338
Agricultural Labours	179595
Non-workers	514018
SC Population	174196
ST Population	61654
Sex ratio	982 female per 1000 male
Literacy rate	75.12 per cent

Source: Karnataka at Glance 2013-14. Census of India 2011

9.3. Hatalageri Village Profile:

Hatalageri Local Language is Kannada. Hatalageri Village Total population is 3218 and number of houses are 603. Female Population is 48.9%. Village literacy rate is 55.0% and the Female Literacy rate is 22.1%.

Table 2: Village Population Details

Census Parameter	Census Data
Total Population	3218
Total No of Houses	603
Female Population %	48.9% (1573)
Total Literacy rate %	55.0% (1771)
Female Literacy rate	22.1% (710)
Scheduled Tribes Population %	12.4% (400)
Scheduled Caste Population %	5.8% (187)
Working Population %	59.8%
Child (0-6) Population by 2011	441
Girl Child (0-6) Population % by 2011	44.4% (196)

Source: 2011 Census

According to the census data, the total population of the area is 3,218, residing in 603 houses. This indicates an average household size of approximately 5 to 6 individuals per house, which is typical for rural or semi-urban regions in India. Females make up 48.9% of the total population, with 1,573 individuals

The overall literacy rate stands at 55.0%, with 1,771 literate individuals. However, the female literacy rate is considerably lower at 22.1% (710 females), highlighting a significant gender gap in education. Scheduled Tribes (ST) constitute 12.4% (400 people) of the population, while Scheduled Castes (SC) makes up 5.8% (187 people). The working population accounts for 59.8% of the total, indicating a reasonably high level of economic activity.

The data paints a picture of a moderately populated area with a decent work participation rate but facing challenges in female literacy and slight gender imbalance in child population. The presence of a significant ST population also highlights the need for inclusive policies in education, employment, and health.

10. Results and Discussion

The results of the study are presented in this section. The study focuses on chilli cultivation in Hatalageri village of Gadag Taluk. The information gathered has been presented in the form of tables. Data were collected using random sampling from a total of 30 respondents in the study area. The data collection was carried out with the help of an interview schedule.

Table 3: Sampling Details

Sex	No of Respondents	In Percentage (%)
Male	28	93.33
Female	2	6.67
Total	30	100

Source: Field survey, April 2025.

The study sample consists of 30 respondents involved in chilli cultivation in Hatalageri village of Gadag Taluk. Out of these, 28 respondents are male, accounting for 93.33% of the total, while only 2 respondents are female, making up 6.67%. This indicates a significant gender disparity in agricultural participation, particularly in chilli cultivation, within the study area.

Table 4: Education Level

Qualification	No of Respondents	In Percentage (%)
Illiterate	7	23.33
Primary	8	26.67
Secondary	-	-
High School	6	20
P U C	6	20
Graduation	3	10
P G	-	-
Total	30	100

Source: Field survey.2025.

The educational qualifications of the 30 respondents involved in chilli cultivation show a varied distribution. About 23.33% (7 respondents) are illiterate, indicating that nearly one-fourth of the farmers lack formal education. Those with primary education make up the largest group at 26.67% (8

respondents), suggesting basic literacy among many farmers. Around 20% (6 respondents) have completed high school education, and another 20% (6 respondents) have completed Pre-University Course (PUC), indicating that a significant portion of respondents have attained secondary-level education or higher. Only 10% (3 respondents) have graduated, and none have completed postgraduate education.

Table 5: Occupational Pattern

Occupation	No of Respondents	Percentage to Total
Agriculture	25	83.33
Govt. Employee	-	-
Coolly	5	16.67
Total	30	100

Source: Field survey, April 2025.

The occupational distribution among the 30 respondents in Hatalageri village reveals that a majority, 83.33% (25 respondents), are engaged in agriculture as their primary occupation. A smaller segment, 16.67% (5 respondents), work as coolies, which indicates participation in casual or manual labor, possibly supplementing their income alongside agricultural activities. There are no respondents employed in government jobs, which suggests limited involvement in formal sector employment within this sample.

Table 6: Annual Income of Family.

Income (Rs)	No of Respondents	Percentage to Total
10,000-20,000	4	13.33
21,000-30,000	3	10
31,000-40,000	4	13.33
41,000-50,000	6	20
51,000-Above	13	43.34
Total	30	100

Source: Field survey, April 2025.

The table presents data on the annual income distribution of families surveyed in April 2024. The data is categorized into five income brackets ranging from Rs. 10,000 to Rs. 50,000 and above. In total, 30 respondents were surveyed. The majority (43.34%) have an income above Rs. 51,000, while the smallest group (10%) falls in the Rs. 21,000 – 30,000 brackets. This suggests a high concentration of respondents in the higher income category. About 10 percent 21,000-30,000. It is more decreased income and 43.34 in 51,000 above. It is most increased of annual income of family.

Table 7: Methods of Cultivation

Method	No of Respondents	Percentage to total
Modernity	20	66.66
Traditional	10	33.34
Total	30	100

Source: Field survey, April 2025.

The study reveals that out of the 30 respondents involved in chilli cultivation, 66.66% (20 respondents) use modern methods of cultivation. This indicates a significant adoption of improved agricultural practices, such as the use of better seeds, fertilizers, irrigation techniques, and mechanization. On the other hand, 33.34% (10 respondents) still rely on traditional methods of cultivation. These methods may

include manual plowing, indigenous seed varieties, and minimal use of modern inputs. The presence of a substantial number of farmers using traditional techniques highlights the coexistence of both modern and conventional practices in the village.

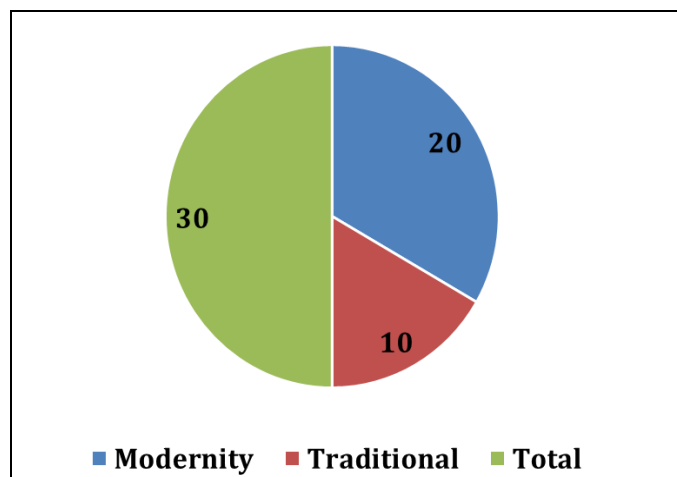


Fig 1: Method of Cultivation

Table 8: Have a good marketing system

Opinion	No of Respondents	Percentage to total
Yes	18	60
No	12	40
Total	30	100

Source: Field survey, April 2025

Among the 30 respondents surveyed, 60% (18 respondents) believe that there is a good marketing system available for their chilli produce. This indicates a majority satisfaction with the existing marketing infrastructure; however, 40% (12 respondents) feel that the marketing system is not adequate. This significant minority highlights challenges such as poor market access, lack of transparency, price fluctuations, or insufficient support services, which may be affecting their ability to sell, produce profitably.

Table 9: Method of sales

Method	No of respondents	Percentage to total
Direct Marketing	14	46.67
Through Agency	16	53.33
Total	30	100

Source: Field survey, April 2025.

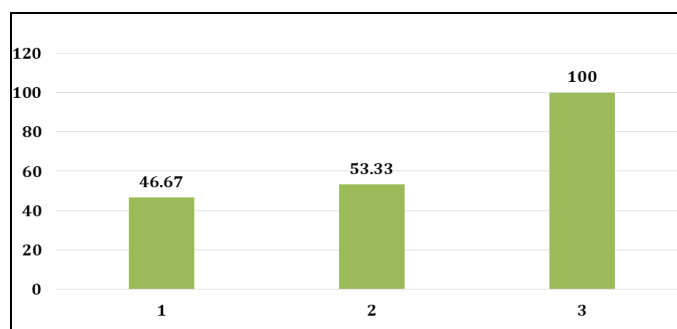


Fig 2: Method of Sale

The data on the method of sales among the 30 chilli cultivators in Hatalageri village shows that 53.33% (16

respondents) sell their produce through agencies. This indicates that more than half of the farmers rely on intermediaries or middlemen for marketing their crops, which might offer convenience but could also; reduce their profit margins due to commissions or lower bargaining power. On the other hand, 46.67% (14 respondents) practice direct marketing, selling their produce directly to buyers such as wholesalers, retailers, or consumers. Direct marketing often allows farmers to receive better prices by eliminating intermediaries, though it may require more effort in terms of finding buyers and managing sales logistics.

11. Summary

11.1. Summary of Study Findings on Chilli Cultivation in Hatalageri Village

The study conducted among 30 chilli cultivators in Hatalageri village of Gadag Taluk reveals important insights into the socio-economic and agricultural profile of the farmers.

- Gender and Education:** The vast majority of respondents are male (93.33%), highlighting significant gender disparity in agricultural participation. Educational qualifications vary, with a notable portion (23.33%) being illiterate and only 10% having graduation-level education. Most farmers possess basic to moderate education, which could influence their adoption of modern agricultural practices.
- Occupation and Cultivation Methods:** Agriculture is the primary occupation for 83.33% of respondents, confirming the agrarian nature of the community. A significant majority (66.66%) use modern cultivation methods, reflecting a positive shift towards improved farming techniques, though one-third still rely on traditional practices.
- Land and Productivity:** The study suggests increasing irrigation facilities in the region, which contribute to improved productivity, especially in certain taluks benefiting from reservoir water.
- Marketing and Sales:** While 60% of farmers believe the marketing system is good, 40% feel there is room for improvement, indicating challenges in market access and price realization. Regarding sales methods, 53.33% sell through agencies, potentially reducing their profits, while 46.67% engage in direct marketing, which can offer better returns but may require more effort and market knowledge.

Overall, the findings indicate a community primarily dependent on agriculture with growing adoption of modern farming methods. However, issues such as gender disparity, low female literacy, reliance on intermediaries for marketing, and some farmers still using traditional methods suggest areas where targeted interventions could enhance productivity, equity, and income.

11.2. Study Suggestions

- Promote Gender Inclusion in Agriculture:** There is a clear gender imbalance in participation, with women representing only a small fraction of respondents. Programs should be designed to empower and encourage women farmers through training, access to resources, and involvement in decision-making processes.
- Enhance Female Literacy and Education:** The low female literacy rate indicates the need for focused educational initiatives targeting women in the community. Adult education programs, awareness

campaigns, and scholarships could help improve literacy and empower women to actively participate in agriculture and allied sectors.

- iii). **Expand Adoption of Modern Cultivation Practices:** Although a majority use modern methods, one-third of farmers still rely on traditional techniques. Extension services should intensify efforts to educate farmers about the benefits of improved seeds, fertilizers, irrigation, and mechanization to boost productivity and sustainability.
- iv). **Improve Agricultural Marketing Infrastructure:** While many farmers are satisfied with the marketing system, a significant number face challenges. Strengthening market facilities, establishing farmer producer organizations (FPOs), and providing real-time market information can help farmers obtain better prices and reduce dependence on middlemen.
- v). **Encourage Direct Marketing Channels:** Nearly half of the farmers sell through agencies, which may reduce their profit margins. Facilitating direct marketing through platforms such as farmer markets, online marketplaces, or contract farming can increase their earnings and bargaining power.
- vi). **Provide Training and Support for Diversification:** Encouraging diversification into high-value crops and value-added products can increase farmers' income. Training in post-harvest handling, processing, and packaging can open new market opportunities.
- vii). **Focus on Irrigation Expansion and Water Management:** Continued investment in irrigation infrastructure, especially in underserved areas, will further enhance productivity. Promoting water-saving techniques like drip irrigation can ensure sustainable use of water resources.
- viii). **Target Support for Small and Marginal Farmers:** Given the large proportion of small and marginal farmers, tailored support such as credit facilities, subsidies, and access to technology can help improve their livelihoods. Many farmers are facing the lack of market facilities and due to entry of mediators they are not getting required price to their crops.
- ix). They required providing good market facilities village, and preventing the intermediate of the mediators.
- x). Next is lack of the creativity; every farmer should be creative to grow new-new crops in has land and to improve his boost to the farmer to get yield product.
- xi). Another one lack of community productive system, basically our farmer have now community, every one want self-system, this is the selfish thinking of farmers they should come over from this thinking and they have to build their own organization or group. Productivity systems, problem which are arise at the time of sowing.

12. Conclusion

Since chilies are members of the Solanaceae family, there are several claims regarding their health benefits and applications. Although research investigating the health benefits of chilies has shown both positive and negative findings, chiles have the broadest spectrum of physiological impacts. The most popular and regular application is as a spice, despite the fact that there are many common uses and advantages. Capsaicin, a key component of chilli extract, is used to treat diabetic neuropathy, lower cholesterol, and heart arrhythmia. Additionally, chilies are utilized to treat cancer. It is not recommended for nursing mothers or pregnant women. One of the main issues facing agriculture is productivity. Knowing

a crop's productivity is crucial when choosing it to prevent potential losses. Karnataka, throughout the Karnataka state Gadag district Hatalageri village being coming in Gadag taluk. It is from being more dry landed. Doing agriculture depending on rain fall. In the situation of researching about the system of chilli crop. I have many problems chilli cultivators had to be faced some more problem, what I am government should place very importer to role in solving such kind of problems.

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