



# From Field to Market: The Challenges Faced by Onion Growers in Chitradurga, Karnataka, India

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

Horticultural crops are integral to the Indian economy, serving as a major source of employment, and supplying vital raw materials to the food processing sector. Their cultivation leads to enhanced farm profitability, driven by increased yields and improved market opportunities. Moreover, the export of horticultural produce significantly contributes to foreign exchange earnings, further

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strengthening India's economic framework. Onion grows extensively across the nation in a variety of climates. India is the world's second-largest producer of onions. It ranks first in terms of acreage, third in terms of exports, and contributes roughly 22.83% to global production. The present study was conducted in 2023 in the Chitradurga district of Karnataka, aimed to identify the challenges faced by onion growers and gather their recommendations for addressing these issues. A total of 120 farmers were selected for the study, comprising sixty small and sixty big farmers. Utilizing an ex post facto research design, data were collected through a pre-tested, structured interview method. The findings highlighted several key constraints in onion cultivation, including limited awareness of nutrient management, price fluctuations in the market, and inadequate access to credit. The majority of farmers recommended the implementation of a minimum support price for onions and timely provision of credit at low-interest rate to mitigate these challenges.

**Keywords:** *Onion growers; production constraints; marketing constraints; financial constraints; suggestions.*

## 1. INTRODUCTION

Onion (*Allium cepa L.*), a member of the Alliaceae family, is cultivated extensively across various climatic regions in India. It holds a significant place in the domestic market as an essential vegetable and condiment used in virtually every kitchen. Both the green leaves and bulbs, whether young or mature, are utilized for seasoning dishes, preparing soups and sauces, or consumed raw (Ambavane, 2014, Bare, 2017). Onions are indispensable in cooking, earning them the title of the "Queen of the Kitchen" in Germany. The crop can be cultivated throughout all three growing seasons and thrives in a variety of soil types, including sandy loam, silt loam, and heavy clay soils. However, heavy soils tend to slow bulb growth and delay crop maturity compared to lighter soils. Onions flourish in moderate climates without extreme temperature variations (Biradar, 2012, Choudhary et al., 2019, Shashidhar, 2018, Patil et al., 2024, Sundresha, 2018, Tavhare, 2016, Yashodara, 2011). Thriving in moderate climates, the crop can be cultivated year-round across all three growing seasons, making it a versatile and essential ingredient in countless dishes (Raj, 2020). Globally, India ranks as the second-largest onion producer, contributing approximately 22.83% to total global production (Anonymous, 2021). India leads in terms of onion acreage and is the third-largest exporter. Onion cultivation in India spans an area of 19.41 million hectares, yielding 31.68 million metric tons. During the 2021–22 growing season, Maharashtra ranked first among all states in both area under cultivation and total production, while Karnataka stood second, with 231,000 hectares cultivated, producing 2.779 million tons at an average yield of 11.99 tons per hectare. (Anonymous, 2021) Other major producing states include Madhya Pradesh, Rajasthan, and

Gujarat (National Horticulture Board, 2021). In Karnataka, Vijayapura leads the onion-producing districts, with an output of 893,001 tons from 45,441 hectares, followed by Chitradurga, producing 783,021 tons across 38,110 hectares. Despite advancements in horticulture, post-harvest losses—especially in perishable crops like onion—remain a major challenge and overall productivity is still relatively low. Many farmers do non adoption of recommended cultivation practices, which hinders progress. (Raj et al., 2020, Chaudhari et al., 2020, Khandvi et al., 2013, Kumar et al., 2020, Kumud et al., 2019, Sangam et al., 2018, Vaishnavi & Aski, 2018). To achieve self-sufficiency in onion production, it is crucial to identify and resolve the challenges faced by growers. This can be accomplished through the implementation of supportive government policies and encouraging farmers to adopt advanced production technologies.

## 2. METHODOLOGY

The study was conducted in the Chitradurga district of Karnataka in 2023. Out of the six taluks, Challakere and Hiriyur were specifically chosen due to their larger areas under onion cultivation. From each taluk, six prominent onion-growing villages were selected, and within each village, five small and five big farmers were chosen, resulting in a total sample size of 120 farmers. The research employed an ex post facto design, and data were collected using a pre-tested, personal interview method with the help of the constructed interview schedule. A set of common constraints was identified, (Jangwad, 2021, Khandvi et al., 2013, Kumar et al., 2020, Kumud et al., 2019) and farmers were asked to rate the extent to which they faced these challenges on a three-point scale: lesser extent, moderate extent, and larger extent. Scores were assigned accordingly, with 'one' for lesser extent,

'two' for moderate extent, and 'three' for larger extent. Similarly, a list of common suggestions was provided (Harshal, et al., 2019, Sangam et al., 2018, Vaishnavi Sangam & Aski SG, 2018, Vijayrao, 2024) and farmers were asked to respond to closed-ended questions. These responses were also scored on a three-point scale, with 'one' indicating least important, 'two' important, and 'three' very important. data was subjected to different statistical measures they are:

**Frequency:** A simple frequency distribution was also used to identify the number of farmers distributed into different groups.

**Percentage:** Percentages were used to make the simple comparison of different groups.

**Mean:** The measure of central tendency of a probability distribution referring to expected value or average. It is the sum of observed values of a set divided by the number of observations (n) in the set.

Mean formula:

$$\bar{X} = (\sum X_i) / n$$

where,  $\bar{X}$  = sample mean

$X_i$  = all of the X-values

n = number of items in sample

**Standard deviation(s):** It is referred to the measure of the amount of variation of a set of values. It was used to classify the respondents along with the mean value.

Standard Deviation formula:

$$s = \sqrt{(\sum (x - \bar{x})^2) / n}$$

where, X = each value

$\bar{x}$  = sample mean

s = sample standard deviation

n = number of values in sample

### 3. RESULTS AND DISCUSSION

#### A. Constraints as faced by the small farm onion growers

##### 1. Production constraints

It is found from Table 1 that significant number of small-scale onion farmers (45.00%) identified a lack of awareness about nutrient management as a major challenge. Many farmers are unsure of the correct quantities of fertilizers, Farm Yard Manure (FYM), and micronutrients, leading to excessive use of NPK fertilizers, which harms

soil health and raises production costs. Moderate issues included limited knowledge of pest and disease management (58.33%), delays in accessing quality inputs (56.67%), and insufficient understanding of post-harvest practices (43.34%). Additionally, over 60% of farmers reported labor shortages during critical periods as a minor constraint.

##### 2. Marketing constraints

Cent percent of the farmers experienced fluctuation in market price was the major problem, because price fluctuations are primarily driven by the balance between market supply and consumer demand, where an increase in supply leads to a decrease in prices and vice versa, resulting in significant price variability., high cost of transportation (58.33%), lack of storage facilities (55.00 %) were also the challenges faced at greater extent during marketing. Delay in payments (73.33%), lack of market accessibility at nearby places (51.66 %) and exploitation by middlemen (40.00 %) were the problems faced at moderate extant. More than three fifth (76.66 %) of farmers are perceived lack of market information will not pose any problem on marketing of onion.

##### 3. Financial constraints

More than three-fourths (81.67%) of onion growers reported that the high cost of improved agricultural inputs, such as quality seeds, fertilizers, and pesticides, posed a significant financial burden. Additionally, 80.00% of farmers cited inadequate access to credit as another major financial constraint. Limited availability of affordable credit options prevents many farmers from investing in better inputs or upgrading their farming practices, ultimately affecting their productivity and profitability.

Furthermore, half of the farmers (50.00%) felt that improper implementation of government initiatives, particularly in granting subsidies, was a moderate-level problem. Many expressed dissatisfactions with the lack of transparency and efficiency in the subsidy distribution process, which is meant to help alleviate some of the financial pressures they face. This improper allocation of resources limits their ability to adopt advanced technologies or cope with rising input costs, further constraining their capacity to improve yield and income. Addressing these issues through more accessible credit facilities and streamlined government support could significantly boost onion production and the economic well-being of farmers.

**Table 1. Constraints faced by the small farm onion growers (n<sub>1</sub>=60)**

Sl. No	Constraints	Larger extent		Moderate extent		Lesser extent	
		No.	%	No.	%	No.	%
<b>A. Production constraints</b>							
1	Unawareness about nutrient management	27	45.00	20	33.34	13	21.66
2	Lack of knowledge on post-harvest practices	21	35.00	26	43.34	13	21.66
3	Poor knowledge on pest and disease management	11	18.33	35	58.33	14	23.34
4	Lack of timely availability of quality inputs	08	13.33	34	56.67	18	30.00
5	Lack of timely availability of labours	04	6.67	19	31.66	37	61.67
<b>B. Marketing constraints</b>							
1	Fluctuation in market price	60	100.00	00	0.00	00	0.00
2	High cost of transportation	35	58.33	20	33.34	05	8.33
3	Lack of storage facilities	33	55.00	17	28.32	10	16.67
4	Exploitation by Middlemen	22	36.66	24	40.00	14	23.34
5	Lack of market accessibility at nearby places	18	30.00	31	51.66	11	18.34
6	Delay in payments	07	11.67	44	73.33	09	15.00
7	Lack of market information	05	8.34	09	15.00	46	76.66
<b>C. Financial constraints</b>							
1	Inadequate credit facilities	48	80.00	12	20.00	00	0.00
2	High cost of improved inputs	49	81.67	06	10.00	05	8.33
3	Lack of government initiative in granting of subsidies	26	43.34	30	50.00	04	6.66

**B. Constraints as expressed by the big farm onion growers**

**1. Production constraints**

Lack of knowledge on post-harvest practices (58.34%) and lack of timely availability of labours (40.00 %) were the major production constraints faced by farmers at greater extent. The probable reasons may be the absence of advisory services and limited extension contact contributes to challenges in onion cultivation. Half of the farmers were unaware about nutrient management, two fifth of farmers have poor knowledge on pest and disease management which can lead to a significant reduction in crop yields. Lack of timely availability of quality inputs (46.67 %) was the constraint faced by the farmers at lesser extent.

**2. Marketing constraints**

The major marketing constraints as expressed by big farm onion growers at greater extent were fluctuation in market price (88.34%), high cost of transportation (68.34%), lack of storage facilities (66.66%) and exploitation by middlemen (46.67%). Farmers are worried about the substantial price fluctuations that occur from the

beginning of the season to the harvest time due to the no reliable price guarantees in the early stages and increased transportation costs borne by farmers when they transport their crops to the distant APMC Bangalore market from the study area. Nearly three fourth (73.34%) of farmers expressed lack of market accessibility at nearby places and delay in payments (63.34%) were the constraints at moderate level. More than three fourth (76.67%) of respondents mentioned lack of market information on time was not that much affected.

**3. Financial constraints**

Inadequate credit facilities (83.33%), high cost of improved inputs (81.67%) and Lack of government initiative granting of subsidies (71.66%) were the major financial constraints faced by the farmers at greater extent. Many big farmers encounter challenges in obtaining sufficient credit at the right time, hindering their capacity to invest in agricultural activities. The presence of high-interest rates on agricultural loans can exacerbate these difficulties. Additionally, the high cost of improved inputs deters farmers from adopting new technologies and practices, limiting their ability to enhance productivity.

**Table 2. Constraints faced by the big farm onion growers (n<sub>2</sub>=60)**

Sl. No	Constraints	Largereextent		Moderateextent		Lesser extent	
		No.	%	No.	%	No.	%
<b>A. Production constraints</b>							
1	Lack of knowledge on post-harvest practices	35	58.34	17	28.32	08	13.34
2	Lack of timely availability oflabours	24	40.00	24	40.00	12	20.00
3	Poor knowledge on pest and disease management	23	38.34	24	40.00	13	21.66
4	Unawareness about nutrient management	16	26.66	30	50.00	14	23.34
5	Lack of timely availability ofquality inputs	05	08.33	27	45.00	28	46.67
<b>B. Marketing constraints</b>							
1	Fluctuation in market price	53	88.34	07	11.66	00	0.00
2	High cost of transportation	41	68.34	13	21.66	06	10.00
3	Lack of storage facilities	40	66.66	12	20.00	08	13.34
4	Exploitation by Middlemen	28	46.67	19	31.66	13	21.67
5	Delay in payments	17	28.33	38	63.34	05	8.33
6	Lack of market accessibility at nearby places	11	18.33	44	73.34	05	8.33
7	Lack of market information	04	06.67	10	16.66	46	76.67
<b>C. Financial constraints</b>							
1	Inadequate credit facilities	50	83.33	10	16.67	00	0.00
2	High cost of improved inputs	49	81.67	08	13.33	03	5.00
3	Lack of government initiative granting of subsidies	43	71.66	12	20.00	05	8.34

The data in Table 3 shows that rank-wise information about the production, marketing and financial constraints faced by the small and big farm onion growers in the research area. A thorough analysis of the data shows that the small farmers were facing many constraints like with respect to production constraints unawareness about nutrient management ranked first followed by lack of knowledge on post-harvest practices (Rank II), poor knowledge on pest and disease management (Rank III), lack of timely availability of quality inputs (Rank IV) and lack of timely availability of labors (Rank V). during marketing of onion majority of farmers facing marketing constraints they were fluctuation in market price ranked first because prices are dependent on supply of produce in the market at a time and demand from consumers, as supply increases price decrease, vice versa as a result of which high fluctuation in the prices will prevail. followed by high cost of transportation (Rank II), lack of storage facilities (Rank III), exploitation by middleman (Rank IV), lack of market accessibility at nearby places (Rank V), delay in payments (Rank VI) and lack of market information (Rank VII). Inadequate credit facilities ranked first followed by high cost of improved

inputs (Rank II) and lack of government initiative in granting of subsidies (Rank III) were the financial constraints. Production constraints faced by the big farm onion growers were lack of knowledge on post-harvest practices ranked first followed by lack of timely availability of labours (Rank II), poor knowledge on pest and disease management (Rank III), unawareness about nutrient management (Rank IV) and lack of timely availability of quality inputs (Rank V). marketing constraints like fluctuation in market price placed in first rank followed by high cost of transportation (Rank II), lack of storage facilities (Rank III), exploitation by middlemen (Rank IV), delay in payments (Rank V), lack of market accessibility at nearby places (Rank VI) and lack of market information (Rank VII). Inadequate credit facilities ranked first followed by high cost of improved inputs (Rank II) and lack of government initiative granting of subsidies (Rank III) were the financial constraints ranked by the big farmers.

It is found from Fig. 1 that, compared to small farm onion growers, big growers face greater production, marketing, and financial constraints as indicated by their higher mean scores. Big

farmers tend to maintain extensive land holdings, invest significantly in seeds, inputs, and labour, and generally do not use improved bulbs. Due to the large land area, managing and maintaining these farms becomes challenging, and storing onions after harvest is problematic due to the high volume of produce. Marketing also poses difficulties, as transporting the produce to distant markets like in Bengaluru results in high transportation costs. Additionally, investment in pesticides and fungicides to manage pests and diseases is considerable. Labor availability during critical management operations is another issue. Moreover, there is a lack of government support for post-harvest management, which further complicates the situation for big farmers compared to small farmers.

**C. Suggestions as expressed by onion growers**

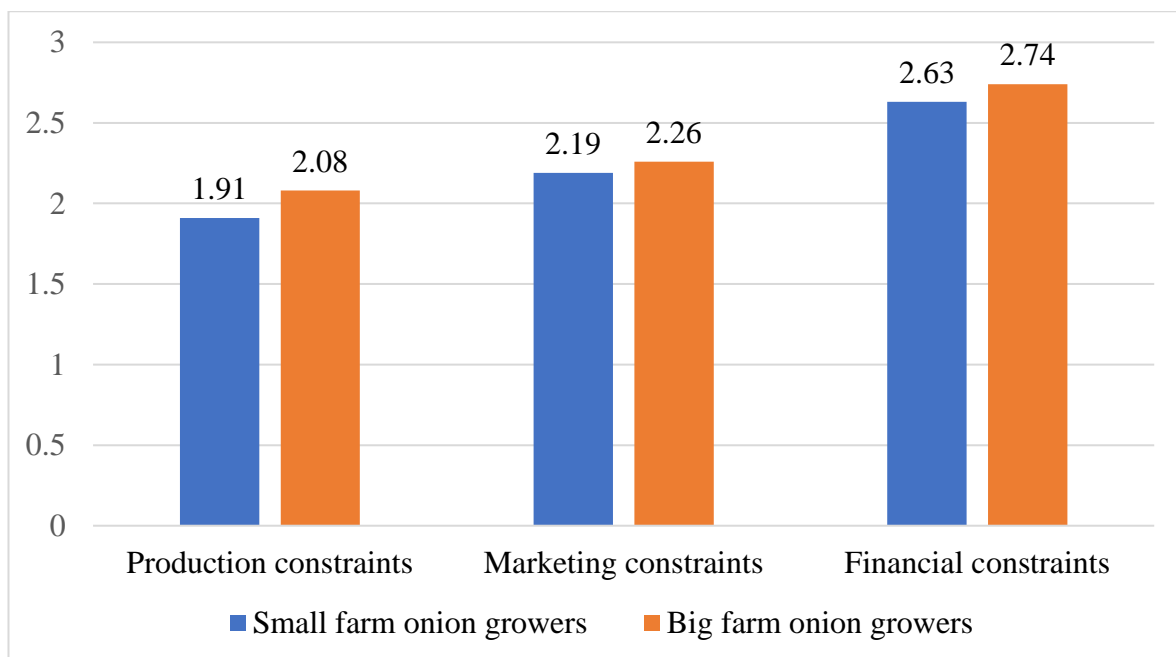
**1. Suggestions as expressed by small farm onion growers**

The data presented in Table 4 revealed that majority of the small onion growers had suggested Provide minimum support price like other crops to onion and it ranked first followed by providing credit to farmers on time at low interest rate (Rank II), availability of inputs at right time in subsidized rates (Rank III) Many respondents

emphasized the need for fair pricing of agricultural products, recognizing that farmers satisfaction relies on receiving better prices for their yields. Providing timely and interest-free credit to farmers was seen as a crucial step in enabling them to efficiently conduct their agricultural operations and to address the resource limitations faced by small farmers. Providing proper information about pest and disease management in time (Rank IV), establishment of improved storage facilities (Rank V), extend crop insurance scheme to onion (Rank VI), conducting demonstration, training programmes for acquiring adoption of improved onion cultivation practices (Rank VII), providing timely market information to farmers (Rank VIII) and export of onion to foreign countries (Rank IX).

**2. Suggestions as expressed by small farm onion growers**

The data presented in Table 5 revealed that remarkable number of the big onion growers had suggested provide minimum support price like other crops to onion and it ranked first followed by providing credit to farmers on time at low interest rate (Rank II), establishment of improved storage facilities (Rank III), availability of inputs at right time in subsidized rates (Rank IV), providing proper information about pest and disease



**Fig. 1. Comparative analysis of constraints expressed by the farmers on onion production technologies**

**Table 3. Comparative analysis of constraints expressed by the farmers on onion production technologies (n=120)**

Sl. No	Constraints	Small farm onion growers		Big farm onion growers	
		Mean	Rank	Mean	Rank
<b>A. Production constraints</b>					
1	Lack of knowledge on post-harvest practices	2.12	II	2.45	I
2	Lack of timely availability oflabours	1.45	V	2.20	II
3	Poor knowledge on pest anddisease management	1.95	III	2.16	III
4	Unawareness about nutrient management	2.23	I	2.00	IV
5	Lack of timely availability ofquality inputs	1.83	IV	1.61	V
<b>B. Marketing constraints</b>					
1	Fluctuation in market price	3.00	I	2.88	I
2	High cost of transportation	2.50	II	2.58	II
3	Lack of storage facilities	2.38	III	2.53	III
4	Exploitation by Middlemen	2.13	IV	2.25	IV
5	Delay in payments	1.96	VI	2.20	V
6	Lack of market accessibility at nearby places	2.11	V	2.10	VI
7	Lack of market information	1.31	VII	1.30	VII
<b>C. Financial constraints</b>					
1	Inadequate credit facilities	2.85	I	2.83	I
2	High cost of improved inputs	2.70	II	2.76	II
3	Lack of government initiativegranting of subsidies	2.36	III	2.63	III

**Table 4. Suggestions as expressed by small farm onion growers (n<sub>1</sub>=60)**

Sl. No	Suggestions	Very Important		Important		Least important		Mean	Rank
		No.	%	No.	%	No.	%		
1	Provide minimum support price like other crops to onion	45	75.00	11	18.34	04	6.66	2.68	I
2	Providing credit to farmers on time at low interest rate	32	53.34	25	41.66	03	5.00	2.48	II
3	Availability of inputs at right time in subsidized rates	31	51.66	21	35.00	08	13.34	2.38	III
4	Providing proper information about pest and disease management in time	23	38.34	32	53.34	05	8.32	2.30	IV
5	Establishment of improved storage facilities	24	40.00	26	43.33	10	16.67	2.23	V
6	Extend crop insurance schemeto onion	21	35.00	27	45.00	12	20.00	2.15	VI
7	Conducting demonstration, training programmes for acquiring adoption of improved onion cultivation practices	14	23.34	32	53.33	14	23.33	2.00	VII
8	Providing timely market information to farmers	13	21.66	23	38.34	24	40.00	1.80	VIII
9	Export of onion to foreign countries	07	11.67	25	41.66	28	46.67	1.65	IX

**Table 5. Suggestions as expressed by big farm onion growers (n<sub>2</sub>=60)**

Sl. No	Suggestions	Very Important		Important		Least important		Mean	Rank
		No.	%	No.	%	No.	%		
1	Provide minimum support price like other crops to onion	37	61.66	20	33.34	03	5.00	2.56	I
2	Providing credit to farmers ontime at low interest rate	30	50.00	30	50.00	00	0.00	2.50	II
3	Establishment of improved storage facilities	34	56.66	19	31.67	07	11.67	2.45	III
4	Availability of inputs at right time in subsidized rates	31	51.66	21	35.00	08	13.34	2.40	IV
5	Providing proper information about pest and disease management in time	28	46.66	25	41.67	07	11.67	2.35	V
6	Extend crop insurance schemeto onion	23	38.34	33	55.00	04	6.66	2.30	VI
7	Conducting demonstration, training programmes for acquiring adoption of improvedonion cultivation practices	25	41.67	27	45.00	08	13.33	2.28	VII
8	Providing timely market information to farmers	17	28.34	27	45.00	16	26.66	2.00	VIII
9	Export of onion to foreign countries	13	21.66	32	53.34	15	25.00	1.95	IX

management in time (Rank V), extend crop insurance scheme to onion (Rank VI), conducting demonstration, training programmes for acquiring adoption of improved onion cultivation practices (Rank VII), providing timely market information to farmers (Rank VIII) and export of onion to foreign countries (Rank IX). Onion growers recommend the implementation of a minimum support price for onions, akin to other crops to ensure fair returns for their produce. They also emphasize the importance of providing farmers with timely access to low-interest credit to support their agricultural activities and they advocate for the establishment of enhanced storage facilities to reduce post-harvest losses and the availability of subsidized inputs at the right time to improve overall agricultural efficiency.

#### 4. CONCLUSION

This study revealed that both small and large-scale onion farmers face numerous production,

marketing, and financial challenges. Key issues include limited knowledge of post-harvest practices, disease, pest, and nutrient management, market price fluctuations, high transportation costs, and inadequate storage facilities. Additionally, insufficient access to affordable credit further hinders their productivity. These challenges can be effectively addressed through targeted government interventions. Key solutions include establishing a minimum support price for onions, offering low-interest credit to farmers, developing improved storage and processing infrastructure, and providing essential information on pest, disease, and nutrient management. Furthermore, the government should conduct demonstrations and training programs to promote advanced onion cultivation techniques, working closely with line departments and grassroots-level extension workers to ensure effective implementation.



## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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