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**RESEARCH ARTICLE**

# Constraints experienced in commercial vegetable production by growers of Assam

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## Abstract

India is the second-largest vegetable producer in the world after China. However, there is a discrepancy between current output and productivity potential as vegetable growers are discouraged by a number of constraints. Therefore, the current study was conducted in Golaghat and Udalguri districts of Assam during 2021-2022 to figure out the numerous challenges experienced by the small and marginal vegetable growers. The study completely depends on primary data, which was gathered through the personal interview method with the help of a structured schedule on a sample of 20 numbers of growers from each of six vegetable growing villages of two districts, which makes a total of 240 numbers of respondents. Garrett's ranking technique was employed to analyze the data. Investigations were made relating to constraints associated with technical, labor, economic, marketing and environmental. The study revealed that lack of suitable varieties in every season as a major technical constraint with Garrett score (78.95), non-availability of labor during harvesting period (59.07) as labor constraint, High cost of quality seeds (65.89) as an economic constraint, Perishable nature of product (68.15) as marketing constraint and lastly insects and pests attack (63.22) as environmental constraint are being claimed by the small and marginal vegetable growers. Hence, there is a need for the provision of cold storage facilities, the establishment of more agro-processing units and advanced research on gene mutations to delay fruit ripening, etc., to promote Indian vegetables and make them globally competitive.

**Keywords**: Vegetable growers, Constraints, Garrett ranking.

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## Introduction

The horticultural sector includes a wide range of crops, such as fruits, vegetables, flowers medicinal and aromatic plants. Among them, in recent years, vegetable production has accounted for 212 million metric tons, occupying a large share (Statista, 2023). It is usually an essential part of the daily diet in India and is in high demand throughout the year for most segments of the population. Horticulture contributes around 30.40% to the gross domestic product (GDP) while using only 13.10% of the gross cropped area, making it a significant player in India's agricultural growth (The Economic Times, 2023). Vegetable cultivation is highly commercialized. The commercial value of direct consumption, processing and trading of vegetables has increased significantly in recent years. The economic importance of vegetables is also increasing and since the production of most vegetable crops is highly labor-intensive, they are also important from an employment perspective (Sharma, 1991). The efficiency of vegetable marketing in India has become a big problem in recent years. According to a report of the Committee for Doubling Farmer's Income, the projected demand for vegetables in India by 2050 is 342 million tonnes. That means we need to increase our vegetable production by about 76.00. However,

given limited arable land, freshwater, dwindling energy sources and climate change issues, this significant increase in vegetable production will not be easily achievable. Promising alternatives could be the development of efficient strategies to overcome various constraints that hinder vegetable profitability or the development of innovative agricultural techniques to increase productivity and productivity. Indian farmers tend to rely heavily on middlemen, especially when it comes to selling fruits and vegetables. Producers and consumers often make bad deals and middlemen control the market but add little value. In addition, there are lot of waste, poor quality and frequent spatial and temporal discrepancies between supply and demand. Despite its large-scale vegetable cultivation, India often faces many constraints and challenges in the vegetable sector. Constraints are the circumstance that restricts the activity or performance of a particular production and sale of market vegetables. There is a large gap between current production and potential productivity. Farmers are reportedly not getting the expected return on their investment due to various restrictions. Furthermore, limits vary from farm to farm, influenced by various factors (Rahman et al., 2008-10). This information is essential for the future planning and execution of any extension program. In view of this, the present study was conducted with the aim of investigating the constraints and limitations faced by farmers in commercial vegetable cultivation in Assam.

## Materials and Methods

The present study was conducted in the Golaghat and Udalguri districts of Assam during 2021-2022 in order to figure out the numerous challenges experienced by the small and marginal vegetable growers. A sample of twenty numbers of vegetable growers from each six vegetable growing villages of each two districts were selected randomly, which makes a total of two hundred and forty numbers of vegetable growers as respondents. The study completely depends on primary data, which was gathered through the personal interview method with the help of a well-structured schedule. The constraints were enlisted from practicing farmers, agricultural scientists and also from literature. All the identified constraints were categorized into five groups, i.e., technological, labor, economic, marketing and environmental constraints. The respondents were given these constraints to rate them on a five-point continuum from very severe, quite severe, severe, not so severe and least severe. The collected data were analyzed using Garrett's ranking technique.

Garrett's ranking technique was employed to find out and rank the major constraints faced by the respondents. It provides the change of orders of constraints into numerical scores. The benefit of this technique is that the constraints are arranged based on their importance from the point of view of respondents. Hence, the same number of respondents on more constraints may have been given different ranks. Garrett's formula for converting ranks into percent was given by,

Percent position = 100 (Rij - 0.5) / Nj

Where Rij = Rank given for the ith factor by the jth respondent
Nj = a number of factors ranked by the jth respondent.

The percent position of each rank was then converted into scores by using the Garrett table given by Garrett and Woodsworth (1969). For each factor, the individual scores were added together and divided by the total number of respondents for whom scores were added. These mean scores for all the factors were arranged in descending order, ranks were given, and the most important factors were identified.

## Results and Discussion

It is important to understand the constraints faced by vegetable growers in order to increase their effectiveness and also to give suggestions to the policymakers. Constraints can give us the way we can plan our policy for the betterment of the farmers. The constraints faced by them are categorized as following different components.

### Technical constraints

Table 1 revealed that the lack of suitable varieties of vegetables every season was the major technical constraint (Garrett score 78.95) faced by the vegetable growers with the rank I followed by unavailability of inputs at the right time and lack of knowledge about scientific cultivation practices was ranked II and III with Garrett score of 69.05 and 50.97 respectively. According to the viewpoint of farmers, the lack of post-harvest processing facilities was also an important constraint, which was ranked IV with a score of 49.07. Among other technical constraints faced by the growers were a lack

**Table 1:** Technical constraints faced in commercial vegetable farming N = 240

| Constraints | Garrett score | Garrett rank |
|---|---|---|
| Lack of suitable varieties of vegetables every season | 78.95 | I |
| Unavailability of inputs at right time | 69.05 | II |
| Lack of knowledge about scientific cultivation practices | 50.97 | III |
| Lack of post-harvest processing facilities | 49.07 | IV |
| Lack of storage facilities | 46.52 | V |
| Lack of availability of farm literature | 45.38 | VI |
| Problems in the adoption of recommended practices | 35.28 | VII |
| Lack of adequate technical guidance | 28.78 | VIII |

of storage facilities, lack of availability of farm literature, problems in the adoption of recommended practices and lack of adequate technical guidance, with the ranking of V, VI, VII and VIII having scores of 46.52, 45.38, 35.28 and 28.78, respectively. Similar results were reported by Pandit et al. (2013), Rohit et al. (2017), Ghanghas et al. (2021) and Samantaray et al. (2009).

### Labor constraints

The data displayed in Table 2 depicted that the non-availability of labor during the harvesting period was considered the most important constraint related to labor, with a Garrett score of 59.07. The involvement of labor in other activities and programs implemented by the government can be the reason for their unavailability, as perceived by the farmers. Nath et al. (2011), Kumar et al. (2019) and Ghanghas et al. (2021) also reported the same in their study. High cost of labor and lack of skilled labor were ranked II and III with Garrett scores of 50.41 and 41.51, respectively. These findings were in line with the findings of Rohit et al. (2017) and Anamika et al. (2023).

### Economic Constraints

The data regarding economic constraints, as reported in Table 3, revealed that the high cost of quality seeds, the high cost of plant protection chemicals and the high cost of fertilizers and manures were the most severe constraints faced by the growers which ranked I, II and III and with the scores of 65.89, 61.25 and 50.92, respectively followed by unawareness of credit facilities of government (Garrett score

**Table 2:** Labor constraints faced in commercial vegetable farming N = 240

| Constraints | Garrett score | Garrett rank |
|---|---|---|
| Non-availability of labor during harvesting period | 59.07 | I |
| High cost of labor | 50.41 | II |
| Lack of skilled labor | 41.51 | III |

**Table 3:** Economic constraints faced in commercial vegetable farming N = 240

| Constraints | Garrett score | Garrett rank |
|---|---|---|
| High cost of quality seeds | 65.89 | I |
| High cost of plant protection chemicals | 61.25 | II |
| High cost of fertilizers and manures | 50.92 | III |
| Unawareness of credit facilities of government | 47.10 | IV |
| High cost of irrigation | 41.84 | V |
| Lack of price policy by the government | 36.57 | VI |

47.10), high cost of irrigation (Garrett score 41.84) and finally lack of price policy by the government (Garrett score 36.57) with the ranking of IV, V and VI respectively. These findings are in conformity with the findings of Sai et al. (2022) and Mishra (2020).

### Marketing Constraints

Table 4 shows the different constraints faced by vegetable producers in marketing as perceived by the vegetable growers farmers viz. Perishable nature of product (ranked I), Market price fluctuation (ranked II), Lower prices during the harvesting season (rank III), Lack of marketing facilities at the local place (rank IV), high cost of transportation (rank V), Absence of grading and processing (rank VI), the long chain of intermediaries (rank VII), non-availability of market information (rank VIII), lack of remunerative price for producers (rank IX) and lastly high marketing cost (rank X) with Garrett score of 68.15, 66.50, 63.08, 56.54, 51.75, 51.66, 46.18, 35.81, 34.04 and 27.03 respectively. Similar constraints were also found by Kumar et al. (2020), Kumar et al. (2019), Kumar et al. (2023) and Singh et al. (2022).

Poor and non-availability of market information and inadequate marketing infrastructure are believed to be the cause of not only high and fluctuating consumer prices but also to lesser share of consumer rupee reaching the farmer. High transportation costs are one of the major constraints in the cultivation of highly perishable vegetable crops, as reported by Bharadwaj et al. (2011) and Prakash (2014). Further, Mishra et al. (2022) also stated that erratic power supply is no longer a major constraint faced by farmers in rural areas. The results emphasize the need for setting up cold storage and warehouses at the village level so that farmers can avoid post-harvest losses.

**Table 4:** Marketing constraints faced in commercial vegetable farming N = 240

| Constraints | Garrett score | Garrett rank |
|---|---|---|
| Perishable nature of products | 68.15 | I |
| Market price fluctuation | 66.50 | II |
| Lower prices during the harvesting season | 63.08 | III |
| Lack of marketing facilities at the local place | 56.54 | IV |
| High cost of transportation | 51.75 | V |
| Absence of grading and processing | 51.66 | VI |
| The long chain of intermediaries | 46.18 | VII |
| Non-availability of market information | 35.81 | VIII |
| Lack of remunerative price for producers | 34.04 | IX |
| High marketing cost | 27.03 | X |

**Table 5:** Environmental constraints faced in commercial vegetable farming N = 240

| Constraints | Garrett score | Garrett rank |
|---|---|---|
| Attack by insects and pests | 63.22 | I |
| Heavy incidence of diseases | 55.82 | II |
| Highly fluctuating weather conditions | 50.22 | III |
| Natural calamity | 42.15 | IV |
| Low soil fertility status | 39.44 | V |

### *Environmental Constraints*

The environment is also posing some constraints to the farmers. The data related to the environmental constraints is depicted in Table 5. Among different environmental constraints faced by the farmers, attacks by insects and pests were the most severe and ranked I. Heavy incidence of diseases was ranked II with Garretts score of 63.22 and 55.82, respectively. Highly fluctuating weather conditions (Garrett score 50.22), natural calamity (Garrett score 42.15), and finally, low soil fertility status (Garrett score 39.44) with the ranking of III, IV and V, respectively.

### Conclusion

It is evident from the study that vegetable growers are facing a lot of constraints that act as discouraging factors for them. Understanding the constraints helps in the efficient allocation of resources such as labor, capital and land. By identifying where limitations exist, these vegetable growers can prioritize their investments and efforts to overcome or mitigate these constraints, which can hinder optimal production levels and by evaluating them, the growers can find ways to increase yields and enhance overall productivity. Recognizing the constraints helps foster innovation and drives continuous improvement. Breeders may develop new techniques or practices to overcome limitations and achieve better outcomes in vegetable production. Overall, evaluating constraints is essential for the sustainable growth and success of vegetable farming operations, enabling growers to overcome challenges, maximize opportunities, and contribute to food security and economic development.

Hence, to improve the efficiency of vegetable production and marketing in the state, the provision of cold storage facilities and sufficient refrigerated transportation facilities to village-level farmers for smooth transportation of vegetables from production areas to various consumption areas is required. More number of mandis need to be accessed with the e-NAM portal so that vegetable growers can target the best possible price. Vegetables need to be included in governmental schemes like cluster development programs to promote Indian vegetables and make them globally competitive. More processing agro-industries units should be established to reduce the distress sales and glut in the market in the peak harvesting period. The government should make adequate arrangements for the timely supply of necessary inputs at reasonable prices to the growers so as to increase per-hectare productivity as well as net returns.

### Acknowledgment

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## सारांश

चीन के बाद भारत दुनिया में सब्जियों का दूसरा सबसे बड़ा उत्पादक है। हालाँकि, वर्तमान उत्पादन और उत्पादकता क्षमता के बीच एक विसंगति है क्योंकि सब्जी उत्पादक कई बाधाओं से हतोत्साहित हैं। इसलिए, वर्तमान अध्ययन छोटे और सीमांत सब्जी उत्पादकों द्वारा अनुभव की जाने वाली कई चुनौतियों का पता लगाने के लिए 2021-2022 के दौरान असम के गोलाघाट और उदलगुरी जिलों में आयोजित किया गया था। अध्ययन पूरी तरह से प्राथमिक डेटा पर निर्भर करता है, जिसे दो जिलों के छह सब्जी उगाने वाले गांवों में से प्रत्येक से बीस उत्पादकों के नमूने पर एक संरचित अनुसूची की मदद से व्यक्तिगत साक्षात्कार विधि के माध्यम से इकट्ठा किया गया था, जो कुल दो सौ चालीस बनता है। उत्तरदाताओं की संख्या. डेटा का विश्लेषण करने के लिए गैरेट की रैंकिंग तकनीक का उपयोग किया गया था। तकनीकी, श्रम, आर्थिक, विपणन और पर्यावरणीय बाधाओं से संबंधित जांच की गई। अध्ययन से पता चला कि गैरेटस्कोर (78.95) के साथ हर मौसम में उपयुक्त किस्मों की कमी एक प्रमुख तकनीकी बाधा के रूप में, कटाई अवधि के दौरान श्रमिकों की अनुपलब्धता (59.07) श्रमबाधा के रूप में, गुणवत्ता वाले बीजों की उच्च लागत (65.89) एक आर्थिक बाधा के रूप में छोटे और सीमांत सब्जी उत्पादकों द्वारा उत्पादकी खराब होने की प्रकृति (68.15) को विपणन बाधा के रूप में और अंततः कीट-पतंगों के हमले (63.22) को पर्यावरणीय बाधा के रूप में दावा किया जा रहा है। इसलिए, कोल्ड स्टोरेज सुविधाओं के प्रावधान, अधिक कृषि-प्रसंस्करण इकाइयों की स्थापना और फलों के पकने में देरी के लिए जीन उत्परिवर्तन पर अग्रिम अनुसंधान आदि की आवश्यकता है। भारतीय सब्जियों को बढ़ावा देने और उन्हें विश्वस्तर पर प्रतिस्पर्धी बनाने की आवश्यकता है।