

Production and Marketing Constraints Faced by the Chinese Onion (*Allium chinense*) Growers in Nagaland

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ABSTRACT

The present study was conducted to examine the in-depth information of the socio-economic and constraints faced by the respondents during the production and marketing of Chinese onion in the concerned place of study. The data were collected through personal interview schedule by the researcher by adopting the purposive simple random technique from one district and two blocks were purposely selected and three villages from each block were selected by random method, which has make a total of 90 respondents selected from the six numbers of selected villages. The study revealed that majority of the farmers (62.00%) belonged to the middle age group (40 to 61 years). The study revealed that

majority of the respondents had small sized field (0.008 to 0.024 ha). Among the various constraints in technology adoption to production, problems due to pest and diseases, lack of irrigation facility, lack of proper market, were the major challenges. Lack of all weather roads, no support prices and no reliable sources of distant market information were the major constraint faced in the marketing of Chinese onion.

Keywords Cultivation, Cost, Income, Marketing, Constraints.

INTRODUCTION

Nagaland, one of India's smaller hill states, is known for its diverse tribes and rich culture and traditions, and it is one of the North East's seven sister states. Nagaland has a total area of 16,579 square kilometers and is located between 26.1584°N and 94.5624°E. The state is mountainous, with elevations ranging from 194 meters to 3,048 meters above mean sea level. Nagaland's climate ranges from subtropical to temperate, with altitudes ranging from 200 m to 3,800 m above sea level. The terrain is mountainous, with forests that are among the richest in the Indian subcontinent, which is one of the reasons why Nagaland is designated as a mega bio region (Yani and Sharma 2022).

The Chinese onion (*Allium chinense*) is an edible *Allium* species native to China that is now grown in many Asian countries. Due to the strong

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pungent odour of Chinese onion it is thought to repel moles and other garden pests. It is widely grown as a vegetable, and its bulbs are frequently processed into pickles and spices. The bulb has anti-inflammatory and antiseptic properties. The most significant chemical constituents of *Allium chinense* essential oil are dimethyl disulfide, methyl propyl disulfide, allyl isothiocyanate and dimethyl trisulfide. *Allium* species are thought to be among the oldest cultivated vegetables on the planet. The majority of edible *Allium* species are native to Central Asian mountains (Zhu *et al.* 2017).

Allium chinense is an evergreen, perennial herb with a cluster of 15 to 35 cm long leaves and a flowering scale 20 to 40 cm tall that grows from an underground bulb. The bulb resembles a small onion, but the bulb is formed solely by thickened leaf sheets, with no bladeless scales like those found in onions. Chinese onion leaves are cylindrical and hollow, and the plants produce purplish flowers. This species is shade-intolerant and prefers moist, well-drained soil. It is primarily grown in Eastern Asia's tropical and subtropical regions. *Allium chinense* is a widely cultivated species with no known threats, though its exact distribution and ecology are unknown due to its long history of cultivation. Both the leaves and the bulb can be eaten raw or cooked. The bulb has an excellent crisp texture and a strong onion flavor, with a diameter of about 4 to 5 cm, though this size is not reached until the second or third year. It has approximately 3.10% protein, 0.12% fat, 18.30% soluble carbohydrate and 0.70% ash (Teshika *et al.* 2018).

The high-altitude species *Allium chinense* is grown mostly in the North-East region of India, up to 2,000 meters above mean sea level. This variety of Chinese onion is widely available in Nagaland and is mostly grown for commercial purposes. Kezoma village in the Kohima district has a reputation for producing the best among all the villages within Kohima. In both terrace fields and jhum areas, this crop is grown in the months of January and February. It is harvested in the months of June and July. Despite the possibility of large-scale production, the majority of farmers produce the crop on a small scale due to lack of marketing channels.

In Japan, Chinese onions are a significant cash crop. It provides good financial rewards. In order to meet the rising demand on the domestic and foreign markets, it has been commercialized as a blend with salted goods. In several south Asian nations, customers have accepted this blend. This crop is economically significant throughout eastern Asia, particularly in China, Japan and Korea. About 30,000 tonnes of Chinese onions are produced annually in Japan, the majority of which is used to make premium pickles (Mohanty *et al.* 2013).

Justification of the study

Chinese onion is a widely cultivated crop grown as an important cash crop and plays significant role in the livelihood of the people in Nagaland. It is consumed by all classes of people and can be seen in every Naga kitchen. The present study attempts to reveal the potentials and constraints in Chinese onion production from the farmers' perspectives in Kohima. Other aspects such as economics and income of Chinese onion cultivation, marketing channels, price spread, will also be highlighted. Moreover research studies pertaining to this particular crop with regard to economic aspects is lesser known so therefore it is felt necessary to analyze on this particular crop. The study will also help to provide feedback to policy makers, concerned departments and researchers to plan future course of actions.

Objectives of the study

1. To study the socio-economic status of Chinese onion growers / respondents,
2. To identify various constraints in Chinese onion cultivation and suggest relevant solution.

MATERIALS AND METHODS

For the present study primary data were collected from the respondents through personal interview with the help of a prepared interview schedule and discussions with the respondents as well as through observations. All the information collected from the respondents relate to the production year 2020-21. The data including socio-economic characteristics

of the respondents, information relating to Chinese onion production and marketing, yields and returns were collected. Kohima district of Nagaland was purposively selected and the study was conducted as this crop was prevalent in the said area. After thorough consultation with the Agriculture Department Officials, two blocks were purposively selected viz, Chiephobozou and Jakhama blocks. A total of 6 villages were identified and selected for having sufficient Chinese onion farmers viz, 3 villages namely Meriema, Tsiesema and Zhadima from Chiephobozou block and from Jakhama Block Namely Viswema, Kidima and Kezoma. After the selection of villages, 15 respondents from each of the 6 villages were selected at random, so as to ensure a fair selection and equal probability for each of the farmers. Therefore, a total of 90 respondents were selected and the data were collected accordingly.

The different types of constraints such as technical constraints, infrastructural, related to the production and marketing was explored through the schedule interview with the respondents. To find out the most significant factor which influences the respondent, Garrett's ranking technique was used. As per this method, respondent was asked to assign the rank for all factors and the outcome of such ranking has been converted into score value with the help of the formula :

$$\text{Percent position} = 100 (R_{ij} - 0.5) / N_j$$

Whereas : R_{ij} = Rank given for the i^{th} variable by j^{th} respondents.

N_j = Number of variable ranked by j^{th} respondent.

RESULTS AND DISCUSSION

Table 1 reveals the distribution of the population according to the age, gender and marital status. The average age of the respondents was 50.60 years and a maximum number (62.00%) of the respondents were aged between 40 to 61 years. The gender wise distribution of the sample farmers was 37.00 and 63.00% for males and females, respectively. While, on the other hand, majority (88.00%) of the respondents were married as opposed to only 12.00% unmarried

Table 1. Distribution of population according to age, gender and marital status (N = 90).

Sl. No.	Particulars	Number of farmers	Per cent (%)
1	Age		
	Below 40 years	18	20.00
	40 to 61 years	56	62.00
	Above 61 years	16	18.00
2	Gender		
	Male	33	37.00
	Female	57	63.00
3	Marital status		
	Married	79	88.00
	Unmarried	11	12.00

ones, respectively. Similar studies in the line were carried out by Singh and Sharma (2021), Devi and Singh (2023).

Table 2 reveals the maximum number of the respondents had a qualification till primary education (52.00%), followed by high school (36.00%). It was observed that 12.00% of the sample population was illiterate owing to the fact that the study was conducted in villages, it was also found that 57.00% of the sample farmers lived in nuclear family and 43.00%

Table 2. Distribution of population according to education, type and size of family (N = 90).

Sl. No.	Particulars	Number of farmers	Per cent (%)
1	Educational qualifications		
	Illiterate	11	12.00
	Primary	47	52.00
	High school	32	36.00
2	Type of family		
	Joint	39	43.00
	Nuclear	51	57.00
3	Size of family		
	3 Members	12	13.00
	4 Members	21	23.00
	5 Members	27	30.00
	More than 5 members	30	34.00

Table 3. Distribution of farmers according to cultivation area of Chinese onion.

Sl. No.	Particulars	Size of land holding (ha)	No. of farmers	Per cent(%)
1	Marginal	<0.008	12	13.00
2	Small	0.009 to 0.024	62	69.00
3	Medium	>0.024	16	18.00
	Total		90	100.00

of the population lived in a joint family, respectively. Even the number of members in each family of the respondent, even the majority (34.00%) of the sample respondents had a family size of more than 5 members, while 30.00% of the respondents' family had a size of 5 members. The families with 4 members accounted up to 23.00% of the total population and only 13.00% of the respondents had a family size of 3 members, respectively. Similar studies in the line were carried out by Singh and Sharma (20201), Randhavel *et al.* (2023).

Table 3 reveals the distribution of farmers according to their cultivation area of Chinese onion and it depicted that maximum of the farmers (69.00%) had cultivation area between 0.008 ha to 0.024 ha. On the other hand, the medium farmers with cultivation area holding more than 0.024 ha made up 18.00% of the total farmers and the marginal farmers with less than 0.008 ha had the least cultivation area which constitut-

Table 4. Constraints/Problems faced by the respondent during the production (N = 90).

Sl. No.	Production constraints / Problems	Garrett's mean score	Rank
1	Problems due to pest and diseases	72.40	I
2	Lack of irrigation facility	70.40	II
3	Lack of proper market	59.93	III
4	Scarcity of labor at peak season and high wage rate	59.63	IV
5	Small and fragmented land holding	52.06	V
6	Lack of own capital	50.08	VI
7	Lack of quality seed	48.56	VII
8	Inadequate inputs	43.79	VIII
9	Lack of training and other extension facilities provided by NGOs/State department	32.63	IX
10	High price of input	31.09	X
11	Low price of output	30.43	XI

Table 5. Constraints/Problems faced by the respondent during the marketing (N = 90).

Sl. No.	Marketing constraints/Problems	Mean score	Rank
1	Transportation related		
a	Lack of all weather / metallic roads	66.00	I
b	High transportation charges	58.29	II
c	Quick and timely transportation facilities not available	56.74	III
d	Lack of linking roads	38.32	IV
e	Unauthorized and illegal taxes	29.64	V
2	Weighing related		
a	Weighing not done accurately	52.60	I
b	Use of improper scales	47.40	II
3	Price related		
a	No support prices	63.93	I
b	Low prices	43.88	II
c	Glut in peak marketing season	42.19	III
4	Market information related		
a	No reliable sources of distant market information	52.60	I
b	Lack of timely availability of market news	47.40	II

ed 13.00% of the total farmers, respectively. Similar studies in the line were carried out by Nirmala and Muthuraman (2009), Sharma *et al.* (2022).

Table 4 reveals the problems related to technology adoption to production by Chinese onion growers. Through Garrett's ranking technique it has been found that the first and most serious problem was due to pest and diseases (Rank I) with a mean score of 72.40 as the farmers does not encourage on the use of synthetic pesticides. The second most prevalent was lack of irrigation facilities Rank (II) with a mean score of 70.40 owing to the fact that majority of the farmers are rainfall dependent. Other problems such as lack of proper market, scarcity of labor at peak season and high wage rate, small and fragmented land holding, lack of own capital, lack of quality seed, inadequate inputs, lack of training and other extension facilities provided by NGO's / State Department, high price of input and low price of output were rank III, IV, V, VI, VII, VIII, IX, X and XI, respectively. Similar studies in the line were carried out by Sharma *et al.* (2014), Meena *et al.* (2022).

Table 5 reveals the constraints related to marketing of Chinese onion under the sub-heading Trans-

portation related, using Garrett's ranking technique it has been found that the most common constraints hindering the transportation was lack of all weather/metallic roads (Rank I) with a mean score of 66.00. The second most prevalent was the high transportation charges (Rank II) with a mean score of 58.29, followed by quick and timely transportation facilities not available (Rank III), lack of linking roads (Rank IV) and lastly unauthorized and illegal taxes (Rank V). While under weighing related, it has been found that the major problem was weighing not done accurately (Rank I) with a mean score of 52.60, followed by use of improper scales (Rank II) with a mean score of 47.40, with regard to price related, it has been found that the major problem was the absence of support prices (Rank I) followed by low prices (Rank II) and glut in peak marketing season (Rank III). In market information related, it has been found that the major problem was no reliable sources of distant market information (Rank I) followed by lack of timely availability of market news (Rank II). Similar studies in the line were carried out by Braj *et al.* (2009), Bhattacharjee and Sharma (2021).

CONCLUSION

The main conclusions may be drawn from the present study that majority (69.00%) of the respondents had cultivation area between 0.008 ha to 0.024 ha and the average area wise distribution was 0.006 ha, 0.014 ha and 0.029 ha for marginal, small and medium farms group of Chinese onion cultivation, respectively. Pest and disease infestation was the main production constraints, lack of all weather roads, weighing not done accurately, no reliable sources of market information were the major marketing constraints.

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