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## Constraints in Ginger Cultivation by Farmers of West Garo Hills District of Meghalaya

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### Abstract

A research was conducted in West-Garo Hills district of Meghalaya State, India during October 2020 to January 2021 so as to identify the major constraints involved in ginger cultivation as perceived by the respondents. Following the multi stage sampling method, two RD blocks i.e., Rongram and Daluwere purposively selected for the study with a total of 120 respondents from six villages. Descriptive research design was followed in this study. The study concluded that most of the ginger cultivators belonged to middle age category. The land holding under ginger cultivation was medium because of the hilly terrain. It was found that ginger cultivation had been a family tradition for generations thus promote large scale cultivation of ginger commercially. Ginger growers of the study area had average income. The farmers were getting very less return from ginger cultivation, therefore, to mitigate it, the Department of Agriculture, Government of Meghalaya initiated the transportation system called the 1917 i-TEAMS Ginger mission (Integrated Technology Enabled Agri- Management System) to facilitate remunerative price by eliminating the middleman. It was also found that farmers had interest towards new innovations and technologies and were willing to take high risk to get more income from ginger cultivation, therefore, concerned departments should build upon this interest in bringing about adoption of new practices. The major constraint was the lack of knowledge on pest and disease management, hence, the study recommended for training on plant protection measures.

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**Keywords:** Constraints, ginger, cultivation, north-east, Meghalaya, socio-economic, West Garo

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### 1. Introduction

Ginger (*Zingiber officinale* Rosc.) is a perennial spice and medicinal crop usually grown as an annual for its rhizomes (Das et al., 2019). Ginger is a very valuable spices in India which is dominating the world production capacity contributing around 35% (Giri and Mohanty, 2022). Ginger occupies an area of 0.17 mha in India with a production of 1.84 mt having productivity of 10.72 t ha<sup>-1</sup> (Anonymous, 2020). Ginger is used in different products and is cultivated for both fresh vegetable and as a dried spice in India (Kumar, 2018). Ginger has a long history of use as a remedy and medicinal purposes due to its therapeutic and functional properties (Adamade et al., 2017; Kaushal, 2018; Soni et al., 2022). India is the second largest ginger producer in the world after China (Gogoi, 2021) and leading in area of ginger cultivation in the world with 40.1 per cent (Anonymous, 2021). Mawlong (2017) reported that ginger is a traditional crop in Meghalaya's Umroi region. Sharath and Dhananjaya (2015) mentioned that since ginger requires a lot of labour to grow, it might not be ideal to grow it on the same piece of land year after year.

Prakash (2018) highlighted the value of ginger growing and reported that it is a significant cash crop in the North East.

Most of the ginger area (49%) and production (72%) of India is contributed by the northeastern region (NER) of India, thus making the region as ginger hub of the country (Panwar et al., 2019). Ginger is grown in almost all the states of the region but the leading states are Meghalaya, Mizoram, Arunachal Pradesh and Sikkim (Rymbai et al., 2018).

Ginger is the major spice in the group of spices in terms of its production and area acreage in North east region (Singh et al., 2020; Kharjana, 2017). Meghalaya ranks 2nd in Ginger production among the North eastern states of India (Anonymous, 2015). Karthick et al. (2015) reported that the deregulation and WTO agreement have made ginger less competitive in global trade. Panme and Thangjom (2021) claimed that price volatility is one of the main issues affecting ginger marketing and production. Kumar et al. (2018) found that the major obstacles perceived by farmers in adopting improved ginger production technology in the study area were lack of knowledge about high-yielding varieties, lack of technical guidance, lack of processing facilities, high volatility of market price, high cost of inputs and low risk-bearing capacity of farmers. Peli et al. (2020) study shows that the constraints faced by the ginger growers were lack of labour availability (skilled and unskilled) followed by high price



expectation from the farmers.

Ginger not only generate income for the farmer but contributes much in the health sector with its medicinal values. Singletary (2010) emphasized the benefits of ginger's medical characteristics and how it is used in various nations around the world to cure various illnesses or ailments. Shivakumar et al. (2013) emphasized the therapeutic value of ginger and its medical uses. Bag (2018) by taking into account the rising demand for ginger as health beneficial items worldwide, the emphasis was placed on various government programmes and the export potential of the country.) Ginger has the potential to become more commercially successful on a larger scale on both the national and international levels in the current setting due to its medicinal and aromatic characteristics (Gogoi, 2021). Keeping all these views, the present investigation has been aimed to identify the major constraints involved in ginger cultivation as perceived by the respondents.

## 2. Materials and Methods

A research was conducted in West-Garo Hills district of Meghalaya State during October 2020 to January 2021. Following the multi stage sampling method, two RD blocks i.e., Rongram and Daluwere selected purposively for the study since they are prominent regions of ginger cultivation within the district whereby a total of 120 respondents were selected from six villages (3 villages from each rural development block) for the study. Descriptive research design was followed in this study so as to identify the major constraints involved in ginger cultivation as perceived by the respondents.

'Ranking' is an expression of respondent's priority about their thoughts and feelings. The method of analysis for ranking of items depends on frequency of responses on a particular statement. Thus, the constraints were prioritized and ranked according to the response of the ginger growers by using structured schedule.

## 3. Results and Discussion

### 3.1. socio-economic characteristics of the respondents

Table 1 shows the status of ginger growers in respect of their socio-economic characteristics. Majority of the respondents 60.00% fall within the age group of 36–59 years of age. Majority (53.33%) of the respondents were from male category. Majority (82.5%) of the respondents were belonged to medium sized family because of nuclear family type. Majority (48.33%) of the respondent were illiterate. Majority had a land of 3.97 acre and more. 75.00% of respondents had medium land under ginger cultivation. Majority had 9–27 years of cultivation because of it has been a family tradition for generations and this factor could be used to promote large scale cultivation of ginger commercially in the study area. Majority 95.00% of the respondents had medium income i.e. ₹ 19711.29 to ₹ 89369.71. Majority (72.50%) of the ginger growers had income between ₹ 7319.05 to ₹ 21325.95 from ginger cultivation which was considered as very less return

Table 1: socio-economic and personal characteristics of the respondents

Sl. No.	Category	Status	Percentage
1.	Age	36–59 years (Middle)	60.00
2.	Gender	Male	53.33
3.	Family size	4 to 8 (Medium)	82.50
4.	Education	Illiterate	48.00
5.	Land Holding Size	Medium	75.83
6.	land under ginger cultivation	0.34 to 1.34 acres	75.00
7.	Ginger farming experience	9–27 years	74.17
8.	Annual income	₹ 19711.29–89369.71	95.00
9.	Annual income from ginger	₹ 7319.05–21325.95	72.50
10.	Scientific Orientation	Medium (11.73–15.97)	45.83
11.	Risk Orientation	High (>16.88)	45.00
12.	Members of social organization	Non-members	59.70

from ginger cultivation. The reason for the less return was because of price fluctuation, improper marketing channel where the major share has been taken by the middleman. 45.83% of respondents had medium level of scientific orientation towards improved cultivation practices of ginger in the study area which showed the interest of the farmers towards new innovations and technologies. 45.00% had high level of risk orientation and if they had the financial backing and support, they were willing to try out the new practices. 50 per cent of the respondents had no social participation.

### 3.2. Constraints faced by the ginger growers of the study area

Under this objective, the major constraints involved in ginger cultivation were identified based on the opinion of the respondents and measures suggested by them. The constraints were prioritized according to the response of the ginger growers and improvement measures suggested by them were also recorded.

Table 2 shows the information about the major constraints involved in ginger cultivation in the study area by the growers and the measures suggested by them to overcome the constraints. The major constraints were ranked based on the number of respondents highlighting the problems or constraints.

Serial No. 1 of the Table 2 shows that 100% of the respondents



Table 2: Prioritization of constraints involved in ginger cultivation as perceived by respondents

Sl. No.	Constraints	Nature of constraints	Measures suggested	P	Rank
1.	Plant protection	Lack of knowledge on pest and disease	Agriculture and allied department should provide training on plant protection measures	100	I
2.	Marketing	Price fluctuation. Existing of Middle man	Need a fixed selling price of ginger Proper channel of marketing by intervention of concerned department	98.33	II
3.	unavailability of quality planting material	Attack of white grub during storage underground Rotting while storage in pits	Discarding of damaged Rhizomes Need a proper storage facility for ginger storage	96.67	III
4.	Storage	Lack of storage facility	Need a proper storage facility	95	IV
5.	Harvesting	No proper tools for harvesting.	Digging using lever only	93.33	V
6.	Labour	Low availability High charge	Self-operated by family members Procuring from other villages	91.67	VI
7.	Transportation	High charge of public transport	Public transport Paying high price Need own transport facility for distant marketing	81.67	VII
8.	Weeds	Unaware of other methods of management	Manual hand weeding	76.67	VIII

had revealed that plant protection was the major constraints being faced by them. Lack of knowledge about the insect and disease management makes them unable to check the insect and disease infestation. Soft rot was found to be the major disease and attack of white grub insect pest was the major constraint found in the study area because of this disease and insect, every year, farmers faced huge problem.

Serial No. 2 of the Table 2 reveals that the 98.33% of the respondents expressed that marketing was the second constraints faced by them in the study area. Price fluctuation is the main reason behind the low income of farmers and market agents also bargained for low prices which forced them to sell at lower rates. Therefore, it is necessary to make proper marketing channel to sell the produce and the government should include the ginger in minimum support price and also proper dissemination of marketing information with the help of ICTs (Information and communication technology) so that the farmers can get the updated information in all the aspects and get the remunerative price of their produce.

Serial No.3 of the Table 2 reveals that respondents faced problems like unavailability of planting material, yadav *et al.* (2004) reported the same; attack of white grub and rotting of mother rhizomes while storing underground. There was a lack of proper management and facilities regarding storage of ginger in the study area.

Serial No. 4 of the Table 4 shows that 95% of the respondents faced the major problem of storage as they simply stored the mother rhizome on the floor of the bamboo house as well in

under the soil which led to attack by ants, white grubs rotting of rhizome respectively. Thus, it is necessary to make the cold storage facility in the study area so as to protect the produce from deterioration.

Serial No. 5 of the Table 2 states that the 93.33% of the respondent's faced problem related to harvesting of ginger. They expressed that there were no proper tools for harvesting and they managed only with a lever to dig the rhizomes. Using of spade was not adopted as it often results in accidental slicing and damages the rhizome which serves as a great loss to the harvest.

Serial No.6 of the Table 2 revealed that 91.67% of the ginger growers faced problem related to low availability as well as high charge of labor. Respondents stated that the labor charged per day was ₹ 400/- which was not affordable by the growers.

Serial No.7 of the Table 2 shows that the 81.67% of the respondents faced problem of transportation to sell their produce due to high charge of public transport, so, many of the respondents sold their produce to nearby market and middle man at less price that led to low return of their produce.

Serial No. 8 of the Table 2 shows that weeds were also one of the major problems faced by the respondents in the study area. 76.67% of the respondents face the problem of weeds infestation as they were unaware of the management practices to control the weed infestation and thus, manual weeding is time though it was time consuming and labour charge was costly.

#### 4. Conclusion

The study concluded that most of the respondents belonged to middle age and medium land holding under ginger cultivation because of the hilly topography. Ginger cultivation had been family tradition for generations; however, the farmers were getting very less return. The study recommended for training on plant protection measures since it was the major constraint.

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