An Assessment of constraints faced by Cabbage growers in the East Khasi Hills district of Meghalaya

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ABSTRACT

Aims: The study aimed to analyze the common, technical, economical, and marketing constraints faced by the cabbage farmers in East Khasi Hills district of Meghalaya (2019-2020)
Study design: Purposive random sampling was employed in this study. One District and two blocks were selected purposively on the basis of their highest contribution to the area and production of cabbage further villages and respondents were selected randomly.
Place and Duration of Study: The study was conducted in the Mawrykneng and Mawkynrew blocks of East Khasi Hills District of Meghalaya. Five villages namely Umphyrnoi, Sohryngkhem, Rapleng, Tynroit and Tangsning were selected and 80 cabbage growers were selected for the study. The data was collected for the period of 2019-to 2020.
Methodology: The Garette ranking technique was worked out to analyze the constraints.
Results: The major economical constraints observed were high initial investment with the garette score of (77.95), followed by costly plant material (76.39). The major marketing constraints were high fluctuations in the market prices (63.22), and a lack of cooperative market (55.11). The top technical constraints were control of pests and diseases (53.35), water management (52.63), and the common constraints were lack of knowledge on the recommended package of practices (59.43) and labor problems (52.08).
Adequate need-based training programs may enhance the production of cabbage and thereby increases the farm income. Proper marketing channels and infrastructural development will help the growers fetch remunerative price for their produce.

Keywords: [Cabbage, Constraints, Garette Ranking}

1. INTRODUCTION

India is one of the leading producers of vegetables all over the world. India's agricultural and horticultural sectors registered spectacular growth during former decades and are the source of revenue for the government. The horticultural sector helps to enhance the economy of the country. The horticulture sector has established its credibility in improving the income of the farmer by generating employment through increased productivity. This sector has established its credibility in ameliorating the earnings of the farmer by generating employment and boosting the foreign exchange through escalating productivity. The contribution of vegetables remains high in horticultural crop production during the last five years (58-61%). Vegetables and fruits account for nearly 85-90 per cent of total horticultural production. Vegetables in general have considerable commercial value and the importance of vegetable cultivation is well acknowledged with rising per capita and domestic income. [1] India is the second-largest producer of cauliflower, eggplant, onion, garlic, cabbage, cucumber, and okra. India stands second in the area and production of cabbage globally. [2]

Cabbage is one of the Cole crops which grow all over the world. In India, Cabbage covers an area of 395,000 ha with the production of 8,870 thousand MT in 2016-17 and has increased to 400 thousand ha in area with production of 897 thousand MT in 2017-18 The major cabbage-producing states in India are West Bengal, Odisha and Madya Pradesh. In the North-Eastern Hill region, Assam, Tripura, Nagaland and Meghalaya are the major cabbage-producing states. [3].

The total area under vegetable cultivation in Meghalaya was 18969 ha, and the production of vegetables was 261310 MT, with a yield of 13776 kg/ha in the year 2017. In Meghalaya, the area under a cabbage in 2017 was 1943 hectares, the production was 42677 MT, with an of yield of 21964kg /ha.[4] Among the different districts of Meghalaya, the

East Khasi Hills contributes the highest in area, production and yield with respect to the cabbage. Besides, there has been a large area expansion for vegetable farming, particularly Cole crops under the study area. There is a huge gap between potential yield at different research stations and at farmers' fields. The yield gaps are mainly because of the constraints faced by the farmers. To overcome the constraints and reduce the yield gap, systemic analysis and policymaking are essential, so the present study was carried out to analyze the constraints perceived by the farmers, thereby helping to realize the potential problems that exist in the study area.

2. MATERIAL AND METHODS

Meghalaya is one of the seven sister states and hilly regions in northeastern India with the capital city of Shillong. During British rule in India the imperial authorities nicknamed Meghalaya as "Scotland of East." The Meghalaya is popularly known as the "Abode of clouds." This state is bounded on the north and east by Assam; on the south by the Bangladesh divisions of Mymensinghsyheit; and to the west by the Bangladesh divisions of Rangpur. Meghalaya is spread over an area of 22,429 square kilometers bearing a length-to breadth ratio of 3:1. It lies between 85.49°E and 92.52°E longitude 20.1°N and 26.5°N latitude.This state is a predominantly mountainous region with Brahmaputra valley lying in the north and Surma valley (Bangladesh) in the south. The soils are abundant in organic carbon which assesses efficient supply of nitrogen to the soil and deficient in available phosphorus and low to medium available in potassium. The reactions of soils vary from Acidic with a pH ranging from 5.0 to 6.0 to strongly acidic with a pH of 4.5 to 5.0. [5]

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Meghalaya is expansively an agrarian economy with a notable commercial forestry industry. It is rural-based with agriculture carrying a predominant role in the state economy. 81 percent of the state population depends on agriculture as their source of livelihood. The net sown area under Meghalaya was 286325 ha, area sown more than once accounted for 57276 ha and the total cropped area was 48993 ha. in the year 2017. [6]

The administrative district of Meghalaya is East Khasi hills and the district headquarters is Shillong. The geographical area of this district is 2752 sq.mt which has two subdivisions. It lies between 25°07 & 25°41 N latitude. and 91°21' & 92°09' E longitude. It is bounded by Karbi Anglong district on the north east and Ri-Bhoi District on the north, Jaintia Hills district on the east, Bangladesh on the south and West Khasi Hills district on the west. The net sown area was 37866 acre and the area sown more than twice was 11127 acre and total cropped area was 343601 acre in the year 2017. The major cereal crops grown in the district are rice, wheat and maize. Cotton, Jute and Sugarcane are major commercial crops grown in this area. Pineapple, Banana, Citrus and Papaya are major fruit crops grown in the research area. Potato, cabbage, cauliflower, peas, tomato, chilli and mustard leaves are the vegetable crops cultivated in this region. Among the spices, ginger is mainly grown in this area. The plantation crops like tea and coffee are cultivated in a little area [7]

Mawkynrew is one of the blocks in East Khasi Hills district of Meghalaya. It is 25 km from Shillong. The longitude and latitude are 25.4533°N, 91.8744°E. The principle crops grown here are rice, maize and wheat. Potato and cabbage are the main vegetables grown in this area. The villages selected for the study under this block were Thangsning, Tynroit, Rapleng villages.

Mawrekneneg block in East Khasi Hills district has 64 villages. It is 42 km from Shillong. The latitude and longitude of the block are 24.4533° N, 90.7544° E. The principle crops grown here are maize, rice and potato followed by tapioca, ginger, pineapple and other citrus fruits. The villages which were selected for the under this block were Umphyrnoi and Sohryngkhem villages.

From the five villages in the two blocks under East Khasi Hills District, 80 cabbage growers were selected randomly as the respondents for the study.

2.1 Analytical tools:

Garett's ranking technique was used to analyze the constraints faced in production. This technique is used to identify and rank the constraints. Under this technique the important constraints are identified and arranged. The per cent position of each rank are converted into scores by referring to the table given by Woodswordh (1969). For each factor the scores of the respondents were added together and divided by the number of the respondents whose score was added.

Garrett's formula for converting ranks into per cent is represented as:

$$Per\ cent\ position = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given for i^{th} item by j^{th} individual

N_j = number of items ranked by j^{th}individual.

Chart 1 : Garett's ranking technique

Rank	Percent Position		Garette table
1	100(1-0.5)/10	5	82
2	100(2-0.5)/10	15	70
3	100(3-0.5)/10	25	63
4	100(4-0.5)/10	35	58
5	100(5-0.5)/10	45	52
6	100(6-0.5)/10	55	48
7	100(7-0.5)/10	65	42
8	100(8-0.5)/10	75	36
9	100(9-0.5)/10	85	29
10	100(10-0.5)/10	95	18

3. RESULTS AND DISCUSSION

1. Technical Constraints faced by cabbage growers:

The technical constraints faced by cabbage growers are presented in Table1.These findings were in adherence with [1] and [8] The study revealed that the top major technical constraints faced by cabbage growers were control of pests and diseases (53.35) followed by water management (52.63), Training exposure (49.99), fertilizer management (46.13), extension advisory (44.72), and soil suitability (41.81).

The cabbage growers in the sample area were poor in identifying the pests and diseases so they were not taking any control measures for the eradication. In order to enhance productivity Suitable IPM practices should be followed. According to the study the majority of the farms were rainfed and faced the problem of water management during the Zaid season. Adequate training and extension advisory will help take the justified decisions regarding the cultivation practices of the crop.

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Table 1: Technical constraints faced by cabbage growers:

Ranks: Technical Constraints											
S. No	**Constraints**	**1**	**2**	**3**	**4**	**5**	**6**	**Total No. of Respondents**	**Total Score**	**Mean score**	**Rank**
1	Soil suitability	5	10	12	17	14	0	80	3345	41.81	VI
2	Water management	18	13	12	20	13	4	80	4211	52.63	II
3	Control of Pests and diseases	20	17	7	19	6	11	80	4268.66	53.35	I
4	Fertilizer management	9	14	12	21	6	18	80	3691	46.13	IV
5	Extension advisory	17	0	29	3	15	16	80	3578.33	44.72	V
6	Training exposure	11	26	8	0	25	10	80	3999.33	49.99	III

2. Economical Constraints faced by cabbage growers:

Economical constraints faced by cabbage growers are depicted in Table 2. It gave evidence that farmers were investing a higher amount during the initial period viz., nursery preparation, ploughing, and application of FYM (77.95),*etc.* followed by the costly plant material (76.39), high labor charges (74.95) and lack of credit facilities (71.51). These findings are similar to Sasane *et al.* (2012). [8]

The farmers under the study area revealed that High initial investment was the major problem from ploughing and nursery preparation to harvesting. The costly plant materials

like seeds, fertilizers, plant protection chemicals, *etc.* might be overcome by the proper functioning of Government institutions like banking systems in the study area.

Table 2: Economical constraints faced by cabbage growers

Ranks: Economical Constraints									
S.No	**Constraints**	**1**	**2**	**3**	**4**	**Total No. of Respondents**	**Total Score**	**Total Mean**	**Rank**
1	Lack of credit facilities	34	24	13	9	80	5720.8	71.51	IV
2	High labor charges	16	22	24	18	80	5996.44	74.95	III
3	Costly plant material	12	20	25	23	80	6111.25	76.39	II
4	High Initial Investment	18	14	18	30	80	6236.58	77.95	I

3. Marketing Constraints faced by cabbage growers:

The main market constraint as given in Table 3 was high fluctuation in the market prices (63.22) and these findings were similar to Mahesh *et al.* (2012). [9] This was followed by lack of cooperative market (55.11). Because of the high fluctuations in market prices, many farmers want to form cooperative marketing societies in order to get remunerative prices for selling their farm produce. It was similar to the findings of Gupta *et al*. (2017). [10] Other constraints include no assurance in prices for farm produce in the market (53.61) followed by the poor quality of production (52.25) because of the poor quality of seedlings etc., low purchasing power of consumers (48.15), high transportation charges (47.32), and storage facility (39.35).

The main objective of the cabbage growers is to produce more and to get better prices for the farm produce so when they produce more, supply increases thereby demand price of produce decreases and *vice versa* which results in the fluctuations in the market. Because of a lack of assurances for the price of the produce the farmers were unable to get better prices in the market. Farmers should get adequate market information before selling the farm produce. In order to get good produce, it is better to take initiative for cooperative marketing. The poor conditions of the road and high prices of fuel results in high transportation costs.

Table 3: Marketing constraints faced by cabbage growers:

S. No	Constraints	1	2	3	4	5	6	7	Total No. of Respondents	Total score	Total mean	Rank
1	High fluctuations in	34	15	4	18	3	0	6	80	5056	63.22	I

	the market											
2	Lack of cooperative market	16	14	12	11	10	9	8	80	4409	55.11	II
3	Poor quality production	9	20	8	5	18	8	12	80	4180	52.25	IV
4	No Assurance in the market	8	15	13	12	16	13	3	80	4289	53.61	III
5	Storage facility	3	4	18	3	0	24	28	80	3148	39.35	VII
6	High transportation charges	6	9	17	10	6	18	14	80	3786	47.32	VI
7	Low purchasing power	4	3	8	21	27	8	9	80	3852	48.15	V

4. Common constraints faced by cabbage growers:

The constraints in cabbage production faced by the growers in the study area are given in Table 4. The findings of the study were similar to Dhurwey*et al.* (2015). [11] The table reveals that the major constraints were lack of knowledge on technical Know-How (59.43) followed by labour problems (52.08), lack of labour during the peak period during the initial stages of crop like transplanting to final phases like harvesting. Here almost all farmers who grow cabbage require labour at the same time and majority of agricultural laborers were migrating from villages to cities for employment particularly in small and medium scale industries. The quality of seedlings (51.18) and Road facility (47.45) were some other constraints faced by the growers. The respondents in the sample area were facing huge problems because of the bumpy roads and potholes so transportation became a big problem for respondents in the sample area. The steepness of land (46.40) and small landholding size (43.43) were identified by the respondents as constraints. Most of the respondents in the sample area were having small and fragmented land holding so they were not producing a large amount of produce and the marketable surplus was very low.

Table 4: Common constraints faced by cabbage growers:

Ranks: Common Constraints

S. No	Constraints	1	2	3	4	5	6	7	Total Score	Total Mean	Rank
1	Road facility	8	14	11	21	9	17	80	3796	47.45	IV
2	small landholding	6	10	13	16	15	20	80	3555	44.43	VI
3	Labour Problem	15	13	17	15	8	12	80	4167	52.08	II
4	Quality of seedlings	12	18	14	11	13	12	80	4095	51.18	III
5	Lack of Knowledge of Technical Know-How	27	16	13	10	12	2	80	4755	59.43	I
6	Steepness of land	12	9	12	7	23	17	80	3712	46.4	V

4. CONCLUSION:

The major common constraints faced by the respondents under the study area were found to be a lack of knowledge regarding latest agricultural practices. The major technical constraints faced by the respondents were control of pests and diseases followed by water management, especially during the Zaid season, and lack of training exposure. The major economical constraints faced by the farmers were high initial investment followed by high labor charges, costly input materials, and lack of credit facility. The major marketing constraints faced by respondents were high fluctuations in the market prices followed by a lack of cooperative market in the concerned study area. The cabbage growers in the study area were facing a wide range of constraints in terms of technical, economical as well as marketing issues. The findings can also be extended to similar areas of the state having similar conditions.

Suggestions:

Government Institutions like KVK, ATMA, ICAR, CAU, *etc*. should provide training programs on the latest agricultural practices in order to increase the quality and quantity of the product, and also need-based training programmes by ICAR should be carried out to reduce the yield gap. Usage of optimum level of seeds, fertilizers, and protection chemicals should be encouraged to increase the gross returns. Branches of regulated markets are needed to be established in the block markets which could help to reduce the price fluctuation and help to set up the price mechanism. Training program on IPM practices is needed in the study area as the majority of respondents face problems with control of pests and diseases. The shortage of labour & low accessibility of labor can be overcome by co-operative farming because most of the respondents faced labour scarcity during the peak season. As the majority of respondents faced problem with the high price of input materials, provision of subsidy for inputs like seeds, fertilizers & farm implements should be carried out

by the concerned authority. The Agriculture engineering department of the state should come forward to develop small size machinery to reduce human labor use which will reduce the dependence on human labour and helps to reduce the cost of cultivation.

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