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## Constraints in cardamom cultivation in post disaster scenario: A study in Idukki District of Kerala

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**Abstract**

The extreme weather event in the form of heavy rains, floods and landslides had severely affected the Kerala state in 2018. Kerala, known as the land of spices accounts for 87 per cent of cardamom production in India. Idukki district is the leading producer of cardamom in Kerala and it is one of the major crops grown by the farmers here. The extreme weather event had severely affected the district causing much damage to agriculture. To study the constraints faced by the farmers in post flood scenario, a survey was conducted among the cardamom farmers of Idukki. The study was based on the primary data collected from 25 cardamom farmers each from Santhanpara and Senapathy gramapanchayats of Idukki district. The major constraints in production, marketing and adaptation were ranked by the farmers and analysed using Garrett's ranking technique. The major production constraints were high cost of plant protection chemicals and the high incidence of pests and diseases. The fluctuation in the market price of cardamom and delay in payment of sale proceeds were the marketing constraints. Major barriers to adaptation were lack of knowledge about proper adaptation strategies and lack of disease resistant varieties in cardamom.

**Keywords:** Constraints, extreme weather event, cardamom cultivation, Idukki, Garrett's ranking

**Introduction**

Cardamom is known as the queen of spices and one of the most expensive spices in the world. India is the second-largest producer of cardamom in the world. The three states cultivating small cardamom are Kerala, Karnataka and Tamil Nadu. Among these, 56.3 per cent of the area is cultivated in Kerala while Karnataka has 36.2 per cent and 7.4 per cent in Tamil Nadu. Kerala alone accounts for 87 per cent of the total production of cardamom in India. Karnataka and Tamil Nadu together contribute to 13 per cent of production [1]. Idukki district, known as the 'spice garden of Kerala', is very rich in the production of cardamom, pepper, nutmeg, clove, ginger and turmeric. Idukki accounts for 90 per cent of cardamom production and 70 per cent area of cardamom cultivation in Kerala [2].

In August 2018 Kerala suffered very heavy monsoon rainfall which devastated the state with flood and landslides. The extreme weather event severely affected Kerala and Idukki district was one of the worst affected districts with 143 landslides. There were 433 human casualties and an estimated loss of ₹31,000 crores happened. One of the worst affected sectors were agriculture and heavy damages occurred to crops such as rice, cardamom, banana, pepper and vegetables [3]. As per the report of IISR, Kozhikode 15,655 ha of cardamom plantation was affected and had a production loss of 6,600 tonnes in 2018-19 [4]. Therefore, the present study was conducted to assess the major constraints faced by cardamom farmers in production, marketing and adaptations to extreme weather event in post disaster scenario.

**Materials and Methods****Collection of data**

Primary data for the present study was collected using a well-structured pre-tested interview schedule from 50 farmers in the Idukki district of Kerala. From the district, two Panchayats viz., Santhanpara and Senapathy gramapanchayats were purposively selected based on the maximum loss incurred in cardamom cultivation. From the selected gramapanchayats twenty-five cardamom farmers each were randomly selected and thus making the sample size to 50.

**Methodology**

Garrett's ranking technique was used to analyse the constraints faced by farmers in the post disaster scenario. Several constraints have been listed in different groups

based on the literature, expert's suggestions and conditions prevailing in the area. They were classified into production constraints, marketing constraints and adaptation constraints. During the survey, respondents were asked to rank these constraints. These ranks were then converted to the percentage position using the formula.

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

Where,

$R_{ij}$  = Rank given for  $i^{\text{th}}$  factor by  $j^{\text{th}}$  individual

$N_j$  = No. of factors ranked by the  $j^{\text{th}}$  individual

With the help of Garrett's table, the estimated percentage position becomes a Garrett score [5]. Therefore, for each constraint, the scores of different respondents were added and the mean value was calculated. The mean scores obtained for each of the restrictions were sorted in descending order. The attribute with the highest mean value was considered to be the most important constraint.

## Results and discussion

### Production constraints

After the occurrence of the disaster, farmers faced different constraints in the production of cardamom. Most important constraints were tabulated and given to farmers. Constraints for production of cardamom faced by farmers were high cost of plant protection chemicals, high incidence of pests and diseases, high labour cost, variation in rainfall, shortage of labour, cost of replanting and availability of planting material with quality. These constraints were ranked by farmers according to the difficulty and analysed using the Garrett ranking technique and presented in table 1. It was found that the high cost of plant protection chemicals occupied the top position followed by a high incidence of pests and diseases.

**Table 1:** Production constraints

Sl. No	Constraint	Garrett's score	Rank
1	High cost of plant protection chemicals	70.02	I
2	High incidence of pests and diseases	64.24	II
3	High labour cost	60.28	III
4	Variation in rainfall	52.28	IV
5	Labour shortage	44.36	V
6	High cost of replanting	34.74	VI
7	Less availability of quality planting material	23.08	VII

High cost of plant protection chemicals was the major problem faced by cardamom farmers. Pesticides were mainly used to control stem borer in cardamom plants. The steady increase in prices of plant protection chemicals without a simultaneous increase in cardamom price was adding more to the burden of farmers. The incidence of pest attacks and diseases were increased in the area. The *azhukal* disease of cardamom caused by *Phytophthora sp.* caused severe loss to cardamom plants [6]. Major pests were stem borer and thrips. Farmers faced difficulty in identifying the pests and diseases and in turn, this was contributing more to the losses. Cardamom cultivation is highly laborious and harvesting requires skilled labour [7]. Less availability and high labour wage demanded by local workers have forced the farmers to bring cheaper workers from Tamil Nadu and other states. There was a sharp increase in labour cost and a decrease in working time in post disaster period. Variation in rainfall and changes in weather pattern affected the farming practices and plants were more prone to drying in summer. Farmers have to irrigate from February to May. Farmers also practice shade

nets to reduce the heat intensity. Planting material should be of good quality and disease free [6]. It is usually uprooted from existing mother plants. Hence the availability of planting material was the least important constraint faced by farmers.

### Marketing constraints

The marketing constraints faced by farmers were analysed using Garrett's ranking and presented in table 2. The major constraints were fluctuation in market price, delay in payment of sale proceeds, lack of storage facilities, high transportation cost, and unorganized marketing channels.

**Table 2:** Marketing constraints

Sl. No	Constraint	Garrett's score	Rank
1	Fluctuation in the market price	75	I
2	Delay in payment of sale proceeds	52.2	II
3	Lack of storage facilities	41.2	III
4	High transportation cost	40.9	IV
5	Unorganized marketing channel	40.7	V

The price of cardamom increased from ₹1000 to ₹ 4000 kg<sup>-1</sup> within one year of disaster and this fluctuation in price affected the marketing of cardamom. Farmers were unable to make decisions based on price and there was no guaranteed sale price for cardamom. The marketing of cardamom in Idukki district is mainly through auction centres. Auction fetches a higher price than local markets but the problem faced by farmers was the delay of about 20 days for the payment of sale proceeds. It forced the farmers to sell the produce in local markets to meet the urgent needs. Lack of proper storage facilities for keeping cardamom free from moisture was another constraint faced by farmers. Degradation in the quality of capsules can occur if it was not properly stored. Farmers were practising using a plastic bag inside gunny bags to keep it airtight. But once it is opened it is impossible to retain the same quality. The transportation cost of taking produce to auction centers was another constraint faced by farmers. Cardamom fetches highest price in auction and sale price was the average price of the auction. The small farmers found it difficult to take their produce to auction centres and they sell their produce to the local markets.

### Adaptation constraints

Adaptation strategies were followed by the farmers in order to mitigate the post flood disaster. The constraints faced by them in adaptation strategies were analysed using Garrett's ranking and presented in table 3. The constraints were ranked according to the Garrett's score.

**Table 3:** Adaptation constraints

Sl. No	Constraint	Garrett's score	Rank
1	Lack of knowledge about adaptation	63.22	I
2	Lack of disease resistant varieties	60.5	II
3	High cost of adaptation	46.6	III
4	Difficulty in availing credit	46.5	IV
5	Absence of practical training on adaptation practices	33.2	V

Most of the farmers pointed out that lack of knowledge about adaptation practices was the major constraint. Lack of disease resistant high yielding varieties in cardamom was another major constraint faced by farmers. Every year they spent large quantity of inputs for plant protection activities. The *azhukal* disease caused by *Phytophthora sp.* occurs after heavy rainfall

and destroys crops. Farmers suggested the need for disease resistant high yielding varieties of cardamom. The high cost of adaptation practices cannot be afforded by most of the small farmers. Adaptation measures such as prophylactic spraying, complete mulching of field and construction of check dams require large expense and unaffordable by small farmers. Other constraints faced by farmers were difficulty in availing credit and the absence of practical training on adaptation practices.

[http://spb.kerala.gov.in/ER2017/web\\_e/ch21.php?id=2&ch=21](http://spb.kerala.gov.in/ER2017/web_e/ch21.php?id=2&ch=21) [15 June 2020]

### Conclusions and policy implications

By using Garrett's ranking technique, the major problems of cardamom cultivation were prioritised. With respect to the production of cardamom, high cost of plant protection chemicals and the incidence of pests and diseases were the most serious constraints. The major marketing constraints were fluctuation in price of cardamom and delay in payment of sale proceeds. Among the adaptation constraints, most of the farmers thought that lack of knowledge about proper adaptation practices and lack of disease resistant high yielding varieties of cardamom were the major constraints. Better maintenance of farm with proper phyto sanitary measures will help the farmers in reducing the incidence of pests and disease and thereby they can minimize the cost on plant protection chemicals. Delayed payment for the produce and high volatility in prices is a matter of concern which point outs the need for urgent institutional interventions in cardamom marketing. Farmers need varieties resistant to pests and diseases without compromising the high yield. Future researches can be directed towards this aim.

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