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Garrett's ranking analysis of green cardamom growers and exporters constraints in Idukki district of Kerala during COVID-19

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Abstract
The present study was carried out to find constraints faced by green cardamom growers and exporters in Idukki district of Kerala state. A complete list of all the cardamom registered (CR) growers of both the blocks are collected from the Spices Board. Thus, altogether 210 green cardamom growers were selected in all the selected villages, which consist of 62 small, 118 medium and 30 large size farm groups were randomly selected. Hence, in all 36 market intermediaries were selected, which include 5 auctioneers, 4 institutions/companies, 10 traders, 10 retailers and 7 exporters. As the problems vary based on size of farming, these were analyzed from the point of view of small, medium, large green cardamom growers and selected exporters with the help of Garett's Ranking Technique. The major cultivation problems encountered is 'high cost of cultivation' (74.33)was the most dominant factor, drought or heavy rainfall (68.22), Insect and Pest of green cardamom (65.33).The highest constraint faced by the green cardamom growers due to labour constraints are due to 'high labour wage'(67.10), 'lack of skill labour'(57.30) and 'scarcity of agricultural workers'(50.30).At present (2020-21) shortage of laborer due to COVID-19, family laborers play as local skill laborers come forward to overcome the crisis situation. The marketing constraints faced by the green cardamom exporter. The highest constraint faced by the exporter due to poor quality supply/production (73.90). Thepresent study on the marketing of green cardamom, marketing problems, encountered by the growers, the strength and weaknesses of the present marketing system in Idukki district is analysed. In these areas, the attention of planners and policy makers is requiredto overcome the constraints experienced by growers and intermediaries in production and marketing of green cardamom.

Keywords: Green cardamom, constraints, export

1. Introduction
Green cardamom, also called as "cardamon" or "cardamum" is an elite spice of Indian, Bhutan and Nepal origin. It is regarded as the mother and/or queen of spices. It comes from Zingiberaceae family having elite, sweet and a strong aroma similar to that of other products of this family such as ginger and cinnamon. It is one of the oldest and most famous spices in the world. The scientific name given to Green cardamom is Elettaria cardamom (Singh, 2008) [10]. The plant of green cardamom at its mature stage heights around 2 to 4 metres in length. The primary leaves have a round or uniform shape. The ligules have green or reddish purple colour with a midrib which is pigmented or at times non-pigmented (Jayanth *et al.*, 2020) [3]. The production of tiller occurs whole year whereas January to March is the peak period. November to March is the peak time of their emergence; the flowers of green cardamom are open and bisexual consisting of calyx, staminode, stigma, corolla, anther and a fully formed labellum. The plant shows cross pollination with the help of external agent such as honey bees which also are the main pollinators. Approximately, 90 to 120 days post fruits set are needed by the fruits for attaining majority. The capsules have ovoid or slightly ellipsoid shape or are globose having elongated shape. Capsules are trilocular and contain about 15 to 20 seeds. The colour of seeds changes to dark brown or black on maturity (Anonymous, 2016) [1]. A study to improve the opportunity to manage cost of production, improving the market efficiency, expressing the prospects for the product will help the stakeholders to improve the condition of cultivating and marketing the product thereby helping the growers to grow. Lack of market information, inaccessibility to modern technology and exploitation of middlemen through high marketing margin are some of the reasons.

Cardamom is also highly labourintensive in nature (Ravindran, P.N, 2002) [7]. Only skilled labours could recognize the "Green gold" in precise time of harvest and distinguish the matured capsules. Similarly, if immature cardamom pods areplucked and dried, they become very light in weight, which will be quotedonly at lower prices in the market (Seetha V, 2013) [9]. Cardamom in Idukki is reputed for its superior quality with bold size and green colour. Post-harvest operations like washing, curing, grading etc. are also important requirement to fetch good price for the produce and hence require skilled labours. Much care and attention is essential in curing to achieve the reputed green colour and quality (Rengaraj, 2012) [8].

2. Materials and Methods

Idukki district had highest green cardamom cultivated area mainly in Indian Cardamom Hills (ICH) covering an area of 1050 Sq. km designated as Cardamom Hill Reserves (CHR) which is reserved for the green cardamom cultivation (Murugan, M. 2011) [6]. The production and productivity of green cardamom (Elettaria Cardamomum Maton) has highest in Idukki district as compare to other states of India. Green cardamom is considered superior in quality owing to its sweet fragrance. So Idukki district was selected purposively. There are eight blocks in Idukki district *viz*. Adimaly, Azhutha, Devikulam, Elemdesam, Idukki, Kattappana, Nedumkandum and Thodupuzha. Out of which Kattappana and Nedumkandum blocks were selected purposively due to the maximum area under green cardamom cultivation. The majority of inheritance depends on the production of the green cardamom and easily access to well-structured markets. It is the source of their livelihood, employment and their income in farming community. A complete list of all the cardamom registered (CR) growers of both the blocks were collected from the Spices Board. Then the green cardamom growers were arranged in the ascending order on the basis of their cultivated land holdings. Thereafter, these growers were categorized in three size farm groups on the basis of their cultivated land holding under green cardamom cultivation in all the selected villages *viz*. After that 10 per cent of respondent/green cardamom growers were randomly selected in each size farm groups from each selected villages. Thus, altogether 210 green cardamom growers were selected in all the selected villages, which consist of 62 small, 118 medium and 30 large size farm groups were randomly selected. The study also aims to study the market functionaries/ intermediaries at various level of marketing. So, all market functionaries involved in the movement of green cardamom produce from the producers to the ultimate consumers are considered for the study. The main market functionaries engaged in the marketing of green cardamom in selected district are auctioneers, traders / wholesalers, retailers and exporters. Therefore, lists of all functionaries were prepared and out of that, 15 per cent of each market intermediaries were randomly selected for the study. Hence, in all 36 market intermediaries were selected, which include 5 auctioneers, 4 institutions/companies, 10 traders, 10 retailers and 7 exporters. To identify the constraints in production and marketing as a constraint in green cardamom production, Garett ranking technique was used. As the first step in constraint analysis, major problems faced in production and marketing were identified. The respondents were then asked to rank the identified problems and the major constraints were identified by Garett ranking technique. In this method, the rank assigned to different constraints were transformed into percentage using the formula:

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

Where, Rij = Rank given for i^{th} factor by j^{th} individual
Nj= Number of factors ranked by j^{th} individual
Here 0.5 is subtracted from each rank because the rank is an interval on a scale, and its midpoint best represents the interval. Then, the percentage positions were transformed into scores on a scale of 100 points (Garett and Woodworth, 1969) [2]. From the scores so obtained, the mean score level was derived and constraints were ranked based on the mean score level.

3. Results and Discussion

As cardamom cultivation is not done in an organized and systematic way in India, the growers have to face a lot of problems while cultivating cardamom. The problems and prospects of cardamom cultivation were discussed in detail from the view point of cardamom growers. As the problems vary based on size of farming, these were analyzed from the point of view of small, medium and large cardamom growers with the help of choice based ranking technique.

Table 1: Problems faced by the growers in the production of green cardamom

S.N.	Problems	Total Score of Growers	Garrett's Mean Score	Rank
1.	High cost of cultivation	4.55	74.33	I
2.	Due to drought or heavy rainfall	13.64	68.22	II
3.	Insect and Pest of green cardamom	22.73	65.33	III
4.	Poor production quality	50.00	57.00	IV
5.	Low Productivity	31.82	54.33	V
6.	Lack of finance	40.91	51.77	VI
7.	Climate changes	59.09	48.11	VII
8.	Lack of input supply centre	68.18	43.22	VIII
9.	Problems of replanting	77.27	38.00	IX
10.	Inadequate quality improvement programme	86.36	30.44	X
11.	Poor irrigation	95.45	24.00	XI

***Source*:** Author's calculated

It was observed from table 1.0, that among the major cultivation problems encountered by the selected growers in the study area 'High cost of cultivation' (74.33) was the most dominant factor, which was ranked first. This is followed by Due to drought or heavy rainfall (68.22),Insect and Pest of green cardamom (65.33), Poor production quality (57.77), Low Productivity (54.33), Lack of finance (51.77), Climate changes (48.11), Lack of input supply centre (43.22),

Problems of replanting (38.00), Inadequate quality improvement programme (30.44) and Poor genetic trait (24.00). Moreover, cardamom farming requires sudden decision from growers and plantation managers. When there is a heavy rainfall the growers should take immediate decision about controlling major diseases like capsule rot (Azhukal). The major diseases prevalent in all Idukki areas in Kerala include katte (mosaic), capsule rot (Azhukal) disease and rhizome rotclump rot. The insect and pest in cardamom are thrips, shoot/capsule borer/panicle, cardamom whitefly root grub, early capsule borer, shoot-fly lace wing bug hairy caterpillars, spotted red spider, mites and nematodes, etc. Growers were take timely action to control onpests and other minor & major diseases. Otherwise the quality of produce from the cardamom area will suffer and this will be the major reason in fetching lower production or prices. Further, agricultural produce like cardamom cannot be produced exactly the same in colour, size and weight. This affects the sorting and grading practices. Against these hurdles, cardamom growers have to make attempts to succeed in their agribusiness activities. The growers were consulting the agricultural scientist available either in the Research station (Spices Board) or the ICRI (Kerala Agriculture University), Mayiladumparai, to improve the productivity. In general the cardamom growers in the study area are expected to apply the pesticides/insecticides as per the recommendations made by the experts with an interval period of 35-45 days. Cultivation of green cardamom needs financial support. All the growers may not be in a position to start cultivation with balance cash. In Idukki, generally the green cardamom growers start to cultivate depending on either local dealer or money-lender. "This is the reason why the Royal Commission on Agriculture has pointed out that farmers in India are boom in debt, live in debt and die in debt" (K. Gunaseelaprabhu, 2007). Cardamom growers are not free from the debt trap. Replantation wherever the green cardamom plants either did not survive/have notgrown/loss due to uncertainty. Their replanting has to be done so as to fill up the gap in the field. Gap filling should also be done if there are more gaps in the field. In the study area finds that the most of the cardamom growers depend on rain for irrigation of green cardamom. The growers adopt different systems of irrigation in their land. Some growers use more than one mode of irrigation. Though many of the growers depend on rainfall for irrigation, those who have

Open wells and bore wells use the modern methods of irrigation in their land. Thus, it can be stated that there is a marked difference among the states with regard to the mode of irrigation. Tap irrigation was the most popular mode of irrigation among majority of the growers, which is followed by sprinkler irrigation.

Table 2: Labour problems faced by the green cardamom growersduring production

S.N.	Problems	Total Score of Planters	Garrett's Mean Score	Rank
1.	High Labour wage	7.14	67.10	I
2.	Lack of skill labour	21.43	57.30	II
3.	Scarcity of agricultural workers	35.71	50.30	III
4.	Low labour productivity	50.00	42.30	IV
5.	Migration of plantation workers to other occupations	64.29	38.30	V
6.	Out dated plantation labour laws	78.57	33.50	VI
7.	Labour unrest and indiscipline	92.86	27.80	VII

***Source*:** Author's calculated

The labour constraints faced by the green cardamom growers are presented in Table 2.0. It is found that the highest constraint faced by the green cardamom growers due to labour constraints are high labour wage (67.10), Lack of skill labour (57.30) and Scarcity of agricultural workers (50.30). The other constraints faced by the green cardamom growers are Low labour productivity (42.30), and migration of plantation cultivators and workers to other occupations (38.30). The least constraint faced by the green cardamom growers due to labour constraints are out dated plantation labour laws (33.50) and labour unrest and indiscipline (27.80).

Table 3: Problems faced by the growers in the marketing of green cardamom

S.N.	Problems	Total Score of Planters	Garrett's Mean Score	Rank
1	Low selling prices	5.00	75.90	I
2	Seasonality of production	15.00	63.20	II
3	Volatility in prices	25.00	60.40	III
4	Middlemen in marketing of cardamom	35.00	58.00	IV
5	Absence of grading and processing	45.00	55.40	V
6	Lack of market information	55.00	47.50	VI
7	Problems in the auction system	65.00	45.50	VII
8	competition from International market	75.00	40.00	VIII
9	Un-organised channels ofmarketing mechanism	85.00	33.50	IX
10	Problem of transportation	95.00	26.20	X

***Source*:** Author's calculated

Table 3.0 reveals the marketing constraints faced by the green cardamom growers. It is found that the highest constraint faced by the green cardamom growers due to Low selling prices (75.90). The other constraints faced by the green cardamom growers are seasonality of production (63.20), volatility in prices (60.40), middlemen in marketing of green cardamom (58.00) and absence of grading and processing (55.40) respectively. The least marketing constraint faced by the green cardamom growers due to lack of market information (47.50), competition from international market (40.00), un-organized channels of marketing mechanism (33.50) and problem of transportation (26.20), which were ranked seven, eight, nine and ten respectively.

Table 4: Problems faced by the exporter in the marketing of green cardamom

S.N.	Problems	Total score of planters	Garrett's mean score	Rank
1	Poor quality supply/production	4.55	73.90	I
2	High domestic price	13.64	67.80	II
3	Problem of chemical residue	22.73	64.00	III
4	Mixing of different varieties	50.00	60.10	IV
5	Uncertainty in government export policy	31.82	55.60	V
6	Illegal imports	40.91	50.80	VI
7	Lack of phyto-sanitary measures	59.09	46.80	VII
8	Improper international market information	68.18	40.90	VIII
9	Lack of export promotional measures	77.27	34.50	IX
10	Low domestic demand	86.36	30.00	X
11	Poor infrastructure	95.45	25.10	XI

***Source*:** Author's calculated

Table 4.0 reveals the marketing constraints faced by the cardamom exporter. It is found that the highest constraint faced by the exporter due to poor quality supply/production (73.90). The other constraints faced by the cardamom exporter are high domestic price (67.80), problem of chemical residue (64.00), mixing of different varieties (60.10), uncertainty in government export policy (55.60) and illegal imports (50.80) respectively. The least marketing constraint faced by the cardamom exporter due to lack of phyto-sanitary measures (46.80), improper international market information (40.90), lack of export promotional measures (34.50), low domestic demand (30.00), poor infrastructure (25.10) which were ranked seven, eight, nine, ten and eleven respectively. Export fulfilment is very much dependent upon quantity of produce. Export quality is depending on the standards according to importer countries.

4. Conclusion

There is also a chance of getting better qualitative production while proper application of inputs likes fertilizer, pesticide, etc. It was found that 'erratic climatic behaviour', for small and 'increasing cost of inputs' for medium and large was the dominant production problems of farmers (Korikanthimath. V. S, 1987) [4]. Skill labours are needed for planting, application of plant protection (chemical) and fertilizer, harvesting of cardamom, threshing and weeding etc. At present (2020-21) shortage of laborer due to COVID-19, family laborers play as local skill laborers come forward to overcome the crisis situation. Women in family laborer play a major role in harvest weeding and care-taking of their plants. Low price or price fluctuation was found to be the most dominant marketing problem of small, medium and large farmers considered for the study. Export fulfilment is very much dependent upon quantity of produce. Export goods having poor quality not only affects the image of the exporter but the reputation of the country, in international markets. Illegal import of green cardamom into the India hurts exporter, who had already been affected by the less production with fluctuating prices. However, a set of problems, prominently the impact of international price to domestic markets visa-versa, high-rate of rejection from international market due to sanitary and phyto-sanitary (SPS) measures. The agreement, the operations of the sanitary and phyto-sanitary (SPS) measures are on the basis of transparency, equivalence, risk assessment and scientific facts as to prevent using it as an instrument of protection. The purpose of SPS shield is to protect cardamom producers, trader and exporters etc., and also for preventing processed products from abroad countries to the domestic market (Lal, M. 2004) [5]. The different risks on the part of the importer and exporter along with the policy measures and supportive schemes given by the Spices Board and the Government of India.

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