

PROBLEMS AND CHALLENGES FACED BY CARDAMOM CULTIVATION IN IDUKKI DISTRICT

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ABSTRACT

The hill district of Idukki is famous for its cardamom and pepper cultivations. Cardamom is widely cultivated in Kumily, Annavilasam, Vandanmedu, Nedumkandam, Udumbanchola, Shanthampara and Poopara counties of Idukki district. Cardamom is considered as a blessing for the people of Idukki as this cash crop brought in a lot of prosperity to their land in the hills. But at present, the cardamom farming goes through a challenging period as the growers of cardamom are facing declining profit margins due to various problems, both in the production and marketing of cardamom. The present project is an attempt to study about various problems and challenges faced by cardamom cultivation in Idukki district. The present study was conducted in randomly selected cardamom estates in Idukki district, coming under Adimaly, Kattappana and Nedumkandam blocks. Primary information about the sample planters was collected through a field survey using a structured questionnaire and secondary data from the official sources and other publications. Cardamom is grown under perennial shade, heavy rainfall, humid conditions which leads to the occurrence of many fungal, viral and bacterial diseases. Katte disease is the most common disease that cause severe yield losses. Others include leaf streak disease, cardamom necrosis,

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damping off, mosaic disease, capsule rot, leaf spot disease etc. Pests also damage leaves and roots of plants leading to poor yield. Some of the major pests are leaf caterpillar, stem borer, cardamom thrips, Hairy caterpillars, cardamom aphid, whitefly, shoot fly, Root grub, Root knot nematodes etc. Marketing is one of the major challenges for farmers because of lack of knowledge, skills and also varying prices, lack of market facilities. Unfavorable weather conditions and insufficient irrigation facilities also affect the cardamom cultivation. The sudden change in climate leads to the occurrence of certain diseases. Heavy rainfall would lead to decay of the cardamom plants. Also this would have an effect on the harvesting of cardamom. Other problems affecting cardamom cultivation include the attack of wild animals, lack of laborers, high cost of equipments, lack of awareness about new resistant varieties, subsidies and other financial assistance from spices board, insurance schemes to those affected by natural calamities etc. and high cost of fertilizers. The price value of cardamom is not steady, the decrease in price value of farmers leads to a challenge. An average price should be fixed and given to farmers is one solution for this problem.

Key words: *Cardamom, pests and diseases affecting Cardamom, Cardamom cultivation, problems.*

INTRODUCTION

The economy of Idukki district is primarily agricultural and its sole physiographic individuality and climatic feature favours the cultivation of spices, especially cardamom. Now, it became only a cherishing fact that Idukki district was once the leading producer of cardamom in the country which made the nation become the leading producer and exporter of cardamom in the world until the 1980's (KC, 2019). Cardamom, renowned as the "Queen of Spices", is one of the most exotic and highly priced spices.

We have the best quality cardamom and its demand is also high and therefore the farmers are trying their level best to improve the production, but our cardamom sector is facing a total doom due to diverse reasons. When the impact created by adverse market price, increased cost of production, Competition from international markets, piling of agricultural debts etc. hit the farmers intensely and it would further shatter the economic backbone of the farmers especially with small and medium sized holdings. The crop loss due to the infestation of pests and diseases multiplies the burden by reducing the yield of cardamom. Thus, not only the farmers, but the livelihood and future of thousands of people who are engaged in cardamom related activities including the traders, exporters, labourers etc. depends on the success and prosperity of its cultivation (KC, 2019). To counter the yield loss due to disease and pest, farmers have switched to applying new chemicals and cocktails of one or two chemical pesticides (Gautam, 2017). Therefore, necessary steps must be taken to sort out the constraints in order to put the industry back on the right track (Meeran et al., 2020). The present paper analyses various problems of cardamom cultivation and cardamom farmers in Idukki district.

METHODOLOGY

The present study was conducted in randomly selected cardamom estates in Idukki district, coming under Adimaly, Kattappana and Nedumkandam blocks (Figure 1). The planters with 1-3 hectares of land were selected for the study. The study was based on both primary and secondary data. Secondary data were collected from the official sources and other publications and primary data were collected through a field survey. Both have been used for the analysis in the study. Information about the sample planters was collected through a structured questionnaire. The objectives of the study were explained to the farmers and the responses were elicited.

This study utilizes primary data regarding irrigation patterns, land holding pattern, size of operational holding, variety of cardamom, common pests and diseases, seasonal fluctuations in pests and diseases, fertilizer application, natural disasters, wild animal attacks etc damaging crops, availability of laborers, financial assistance from government, intercropping, and other challenges faced by farmers.

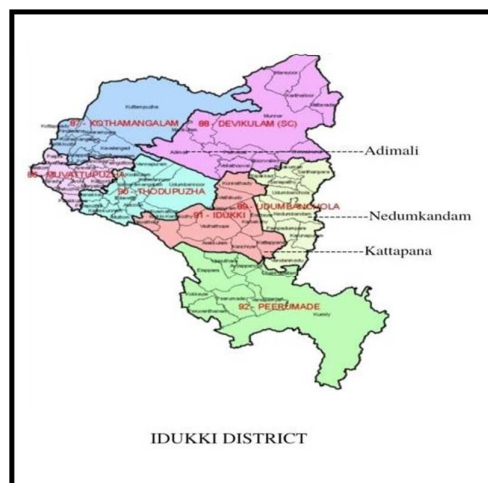


Figure 1: Study area

The present study is an attempt to study different criteria in the cardamom cultivation, the challenges and risks faced by them, the marketing strategy, manuring and irrigation in the field, the control measures adopted by farmers in the field etc.

The major problems faced by planters include attacks of pests and diseases, climate change and natural disasters, lack of laborers, marketing challenges, inadequate irrigation facilities etc. . Other problems include while marketing that the harvested cardamom should be dried, not all the farmers had this dryer system at their field, so they have to depend on other organizations or dryer centers for this purpose. The amount for this drying purpose is high. The high installation cost of this dryer system and lack of skilled laborers is a challenge for them.

Pests and diseases

Cardamom is grown under perennial shade, heavy rainfall, humid conditions which leads to the occurrence of many fungal, viral and bacterial diseases. The diseases affecting cardamom are mosaic or 'Katte', Nilgiri disease, cardamom vein clearing or 'kokke kandu' etc. Among these, katte disease is the most important disease and causes severe yield losses to cardamom and affects the farmers. Major diseases include

Leaf streak disease

It is prevalent round year and results in considerable damage to foliage in variety. Translucent streaks on young leaves along veins is the symptom. By spreading copper oxychloride and bordeaux mixture (1%) can be used to manage this.

Damping Off

In this disease leaves turn pale and tips become yellow collar, portion decays and seedlings die. The disease is caused by soil-borne fungi such as *Pythium vexans* and *Rhizoctonia solani*. *Fusarium oxysporum* also causes similar seedling rot resulting in wilting of the entire seedlings. As a result, the infected seedlings die and collapse in masses. Pre-treatment of seeds with *Trichoderma* or *Pseudomonas* before sowing reduces the chance of early incidence of the disease in nurseries.

Cardamom Necrosis

It is a transmitting disease which is transmitted through planting of infected rhizomes. Young leaves exhibit whitish to yellowish continuous or broken streaks from midrib to leaf margin and turn reddish brown. The symptoms are manifested on the young leaves as whitish to yellowish continuous or broken

streaks proceeding from the midrib to the leaf margins. In the advanced stages of infection, these streaks turn reddish brown leading to shredding of the leaves. The leaves are reduced in size with distorted margins

Mosaic Disease

It is first observed in young leaves of cardamom which shows a general chlorosis of the entire blade with slender, interrupted, parallel streaks of pale green tissues running along with veins from midrib to the margin. It is transmitted by banana aphids. The affected plants may die before the time of bearing flowers. Cultural control is a part of sustainable agricultural systems to achieve high crop yield and is an important tool to minimize disease loss in many crops.

Phoma Leaf spot Disease

Leaf Spot caused by phoma was found to be a serious concern in seedling nurseries we observed. Its major symptoms include water soaked lesions on leaves, and round shape appear on lamina after they dry out. Field Sanitation is done to avoid this, Drainage facilities should be provided, spraying 1% bordeaux mixture can also be adopted.

Capsule Rot/Azhukal disease

Water soaked lesions appear first by rotting and shredding of leaves. Field sanitation is necessary. As a control measure remove the affected portions. During heavy and continuous rainfall, crop loss is as high as 40 per cent. Plants of all ages are susceptible to the disease; however under field conditions, disease incidence is noticed mainly on the bearing plants. High incidence of the disease is usually noticed during July-August with heavy rainfall and high relative humidity.

Leaf blight Disease

This is a major disease affecting cardamoms. First the infection starts on young leaves in the form of elongate, large, coloured patches and later it becomes necrotic and they dry up.

Chirke Disease

This is caused by the aphid *Rhopalosiphum malidis*. This is spreading from one area to another through infected rhizomes and also spread by contaminated implements and aphids which is a major threat. The symptoms include mosaic patterns on leaves and the flowering of plants will be reduced. Field sanitation is very important.

Leaf blotch disease

We can see large blotches of irregular lesions with light and dark brown necrotic leaves. This is a serious disease of cardamom and affected plant materials should be removed.

Rhizome Rot

This is also one of the major diseases affecting cardamom plants which cause the decay of tillers and discolouration of basal portions of clumps.

Cardamom vein clearing

This disease is also called "kokke kandu". The major symptoms include stunting, rosetting of plants, mottling on stems. The fruits will be cracked and later the seeds become sterile. Proper sanitation of the field is necessary to prevent this disease.

Pests of Cardamom

Some of the major pests affecting *Cardamom* yields include Leaf caterpillar, stem borer, cardamom thrips, Hairy caterpillars, cardamom aphid, whitefly, shoot fly, Root grub, Root knot nematodes etc.

Leaf caterpillar

This is one of the major disease causing pests of cardamom. The caterpillar of moth feeds mainly on leaf lamina from under the surface of leaves and later the leaves defoliate completely leaving midrib. It is mainly noticed in May - July and October - March. The best way to manage is to collect infested leaves and burn them.

Cardamom Thrips

This attacks the plants. We can see the shedding of flowers and immature capsules and it will reduce the total number of capsules formed. Field should be cleaned properly.

Stem Borer

Here the larvae bore into the pseudo stem above the collar and it feeds on the central part of the pseudo stem causing a dead heart. It can be managed by phytosanitation, Removal of affected parts, Burning of infested tillers is helpful for managing pests. Do not use infested planting material for new plantations. Avoid the use of excess chemicals.

Cardamom white fly

This is a severe infection. In severe cases, the leaves turn yellow and vigorous. Growth of plants is reduced is another problem. Warm weather conditions will help them for multiplication. The field should clean and remove infected leaves.

Hairy Caterpillar

When the plant is affected, these larvae defoliate plants. To manage this, spraying quinalphos is effective.

Root Grub

This is a major pest affecting roots. Its damage includes the severely affected leaves turning yellow and dry. The grubs feed on roots in the form of irregular scraping. Phyto sanitation is necessary. *Rhizome weevil*

Here the grubs mainly feed on rhizomes. It results in drying of leaves. Affected leaves should be removed.

Shoot fly

Drying of terminal leaves is one of the major symptoms. Its larvae feed on growing shoots. This is seen mainly in open areas. Its activity starts during November and high during March- April.

Cardamom Aphid

Both nymphs and adults suck up plant sap. Aphids seriously affect the plant parts. Colonies of aphids are seen inside leaf sheaths. Field should be cleaned properly.

Root- Knot Nematode

This nematode infects mainly on cardamom roots. Narrowing of leaves, Thickening of veins, Appearance of rosette and stunted growth are the major symptoms. Remove affected plants and proper sanitation.

Growth of Weeds

Weeding at frequent intervals are necessary for cardamom cultivation. By the application of fertilizers and water a large number of weeds will grow along with plants. It absorbs the nutrients and minerals required for the cardamom plants and adversely affects the growth and adversely affects the growth and results in reduction of yield. Depending on the intensity of weed growth 2-3 rounds of weeding at the plant base and splash weeding in the interspaces are necessary. The present study revealed that hand weeding is mostly used among farmers. In some places mechanical weed cutters are also used for weeding.

Marketing

Cardamom is a high value agri -plantation commodity produced at Idukki district and traded in domestic and international markets. It is also known as "Green Gold" and "Queen of spices" due to its high commercial value and aroma. Marketing is one of the major challenges for farmers because of lack of knowledge, skills, varying prices, lack of market facilities etc.

The main problem reported includes lack of adequate transport facilities causing high marketing cost, lack of adequate storage Facilities, high marketing cost due to lack of proper infrastructure and high commission charges to the middlemen, lack of sufficient financial support, absence of open market.

Unfavorable Weather Conditions

The changing climate affects the cardamom cultivation. The heavy rainfall would lead to decay of the cardamom plants and lead to complete destruction. Also this would have an effect on the harvesting of cardamom. The reduction of cardamom leads to decline in marketing. If heavy rainfall prolongs it leads to attack of fungus and causes other infections.

The heavy rise in temperature also affects the growth. A moist and cold condition promotes the growth of plants. Also the sudden changes in climate would increase the attack of pests and diseases. Changing climate delays the harvesting of cardamom and reduces yield. Natural disasters like flood and landslide would be a cause of the destruction of fields and crops.. The cyclones also cause heavy damage and crop loss to farmers. During heavy winds the plants may get damaged and lead to destruction and it gradually affects the yield

Irrigation

There is no particular irrigation scheme for the cultivation of cardamom. Most of the farmers depend on the natural facilities in the form of ponds, well, bore well, rivers etc.

In many areas farmers developed irrigation systems like huge tanks to harvest and store rain water, sprinkler irrigation systems etc. The installation cost of these irrigation systems is very high. Other problems affecting cardamom cultivation include the attack of wild animals, lack of laborers, high cost of equipments, Lack of awareness about the marketing methods and production, new resistant varieties, subsidies and other financial assistance from spices board, insurance schemes to those affected by natural calamities etc., high cost of fertilizers, etc. The price value of cardamom is not steady, the decrease in price value of farmers leads to a challenge. An average price should be fixed and given to farmers is one solution for this problem.

DISCUSSION

The present study gives insights about the challenges and problems faced by cardamom cultivators in Idukki district of Kerala. As the largest producer and exporter of cardamom in India, the district has created an assiduous industry

around the spice. Most of the farmers in the Idukki district are cultivating cardamom. One of their major income is cultivation of crops. Cardamom sector in Idukki district faces a total doom due to diverse reasons which hit the farmers intensely and it would further shatter the economic backbone of the farmers especially with small and medium sized holdings. Most of them use wells for irrigation. Shoot borer attacks are severe for cardamom and is a major problem that affects the plant growth. In the rainy season there is more chance for the attack of pests. Most of the farmers are using organic manure for their cultivation while some use chemical fertilizers along with organic manure. June-July are the harvesting seasons of cardamom, most of the farmers harvest in these months. Thiruthali varieties of cardamom are cultivated by most farmers in their field.

Cardamom is grown under perennial shade, heavy rainfall, humid conditions which leads to the occurrence of many fungal, viral and bacterial diseases. Katte disease is the most common disease that cause severe yield losses. Others include leaf streak disease, cardamom necrosis, damping off, mosaic disease, capsule rot, leaf spot disease etc. Pests also damage leaves and roots of plants leading to poor yield. Some of the major pests are leaf caterpillar, stem borer, cardamom thrips, Hairy caterpillars, cardamom aphid, white fly, shoot fly, Root grub, Root knot nematodes etc. Marketing is one of the major challenges for farmers because of lack of knowledge, skills and also varying prices, lack of market facilities. Unfavorable weather conditions and insufficient irrigation facilities also affect the cardamom cultivation. The sudden change in climate leads to the occurrence of certain diseases. Heavy rainfall would lead to decay of the cardamom plants. Also this would have an effect on the harvesting of cardamom. Other problems affecting cardamom cultivation include the attack of wild animals, lack of laborers, high cost of equipments, lack of awareness about new resistant varieties, subsidies and other financial

assistance from spices board, insurance schemes to those affected by natural calamities etc. and high cost of fertilizers.

CONCLUSION

In order to recapture India's past glory in its production and trade, government and other responsible agencies should make proper initiatives to tackle the issues in the cultivation of cardamom. For that, attempts improve its productivity is highly needed. Government agencies should make and implement policies for development of high yield varieties, development of biological control measures to mitigate diseases and pests attack, proper financial support through subsidies and other schemes, insurance schemes to mitigate the loss due to natural disasters like flood, landslide, cyclones etc. The price value of cardamom is not steady, the decrease in price value of farmers leads to a challenge. An average price should be fixed and given to farmers is one solution for this problem.

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