

PROCESSING OF CARDAMOM



AATMANIRBHAR BHARAT

**PM Formalisation of Micro Food Processing
Enterprises Scheme (PM FME Scheme)**

CARDAMOM

THE QUEEN OF SPICES

Cardamomum, is called the Queen of Spices because of its many uses as a medicine and as a flavoring in food and drink. It is an important ingredient in Indian cooking



7 Health Benefits of Cardamom



It prevents Asthma

Helpful in curing depression

It enhances your oral health

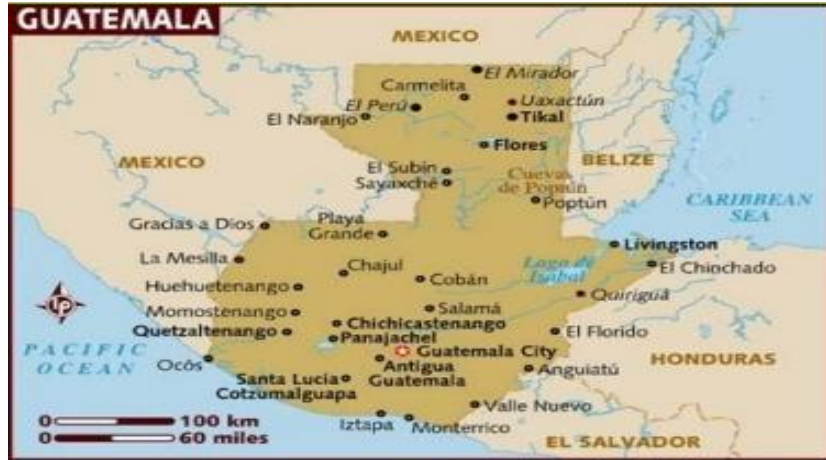
It prevents cancer

It takes care of your heart

It improves your digestive system

It improves the quality of your hair

TOP CARDAMOM PRODUCING COUNTRIES



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TYPES OF CARDAMOM

Elettaria cardamomum (small cardamom, green cardamom, true cardamom)

Amomum subulatum (small cardamom, green cardamom, true cardamom)

AGRONOMY MANAGMENT

S.NO	PARAMETERS	REQUIREMENTS
1	Annual rainfall ranges	1500-4000mm
2	Temperature	10-35° C
3	Altitude	600-1200m above Mean Sea Level
4	Soil	Deep black loam
5	Season	June – December
6	pH	5.0 – 6.5
7	Humidity level	75%



DIFFERENT STAGES IN CARDAMOM CULTIVATION



CULTIVATION

SOWING : Seedlings or scukers can be used for propagation. Seedlings are normally raised in primary and secondary nurseries.

PREPARATION OF THE FIELD

Dig pits of 60 cm x 60 cm x 60 cm size and fill with compost and top soil. Contour planting may be done in slopy areas.

IRRIGATION

Generally Cardamom is grown as a rainfed crop, but provide sprinkler irrigation during summer for increased yields.

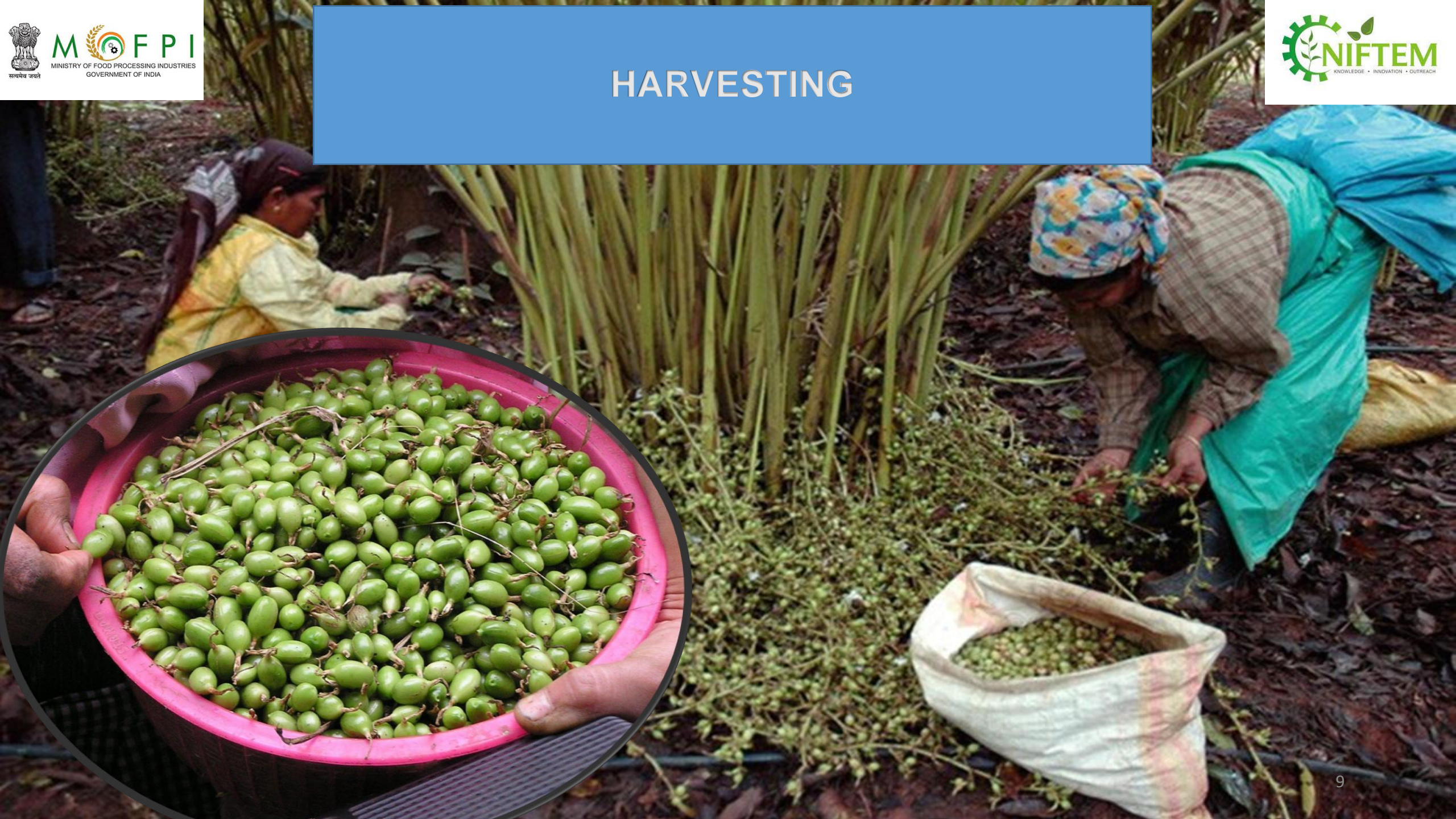
MANURING

Apply compost 25 t/ha; 75 kg N; 75 kg P and 150 kg K/ha in two split doses during June - July and October - November.

HARVESTING AND PROCESSING: Cardamom plants normally start bearing two years after planting. The yield ranges from 200 -250 Kg/ha.



HARVESTING





The cardamom plants start bearing two to three years after planting.

Panicles appear from the base of the plants; it is generally starting to appear on January on ward. The flowering starts from April to August or even after

The peak stage of flowering is may to June. Maturing time for fruit is up to 120 days after flowering

Fruits are small trilocular capsules containing 15-20 seeds. On maturity, seeds turn dark brown to black.

Harvesting commences in August- September and extends into February- March of the next year. Matured cardamom capsules are picked up



Post harvesting

- **CLEANING**

The crop should be cleaned before processing. The first stage is to remove dust and dirt using a winnowing basket.



After winnowing the crop needs to be washed in water, the capsules are washed thoroughly in water to remove any soil that has adhered to them.



CURING

- ❑ **Soaking green (wet) -2 per cent sodium carbonate solution for 10 min -Fixes green colour during subsequent drying and storage.**
- ❑ **Quick dip of capsules in hot water at 40 °C and dipping capsules for 10 min in 2 per cent sodium carbonate - Better retention of green colour of cured capsules.**
- ❑ **Pre-soaking of capsules in copper formulations and chemicals like NAA, IAA, GA and magnesium sulphate- retain more chlorophyll**



DRYING

- Cardamom capsules carry moisture levels of **70-80% at harvest.**
- For proper storage, the initial moisture level has to be brought down to **8-10%.**
- Cardamom capsules need to be dried within 24 h, any further delay would result in **deterioration of green colour and appearance.**



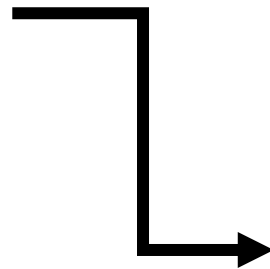
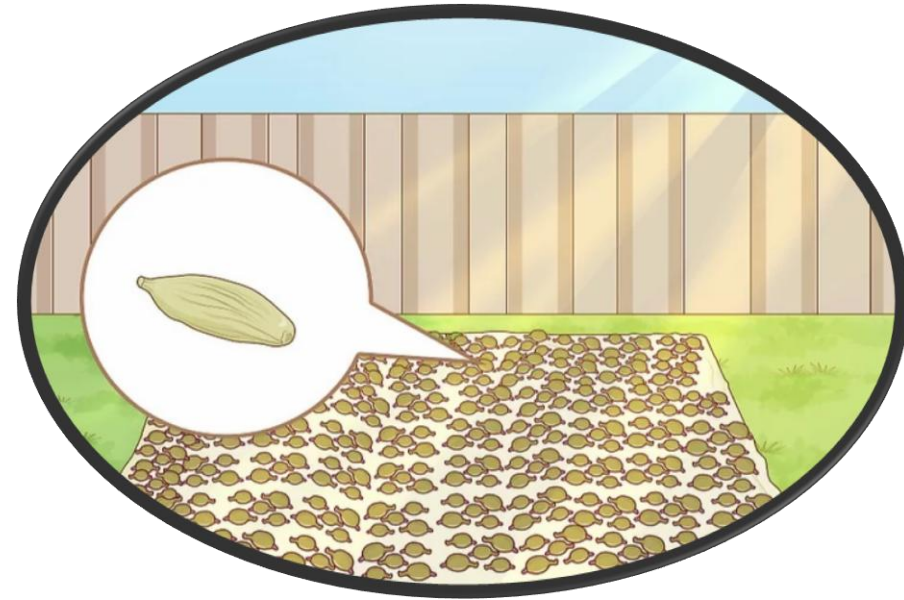


TYPES OF DRYING:

1. Sun Drying



2. Artificial drying



DRYING PARAMETER

Dryer	Temperature	Drying time (hrs)
Through flow dryer	50°C	22h
Solar cardamom dryers	-	3 days
Cross flow electric dryer	55°C	18 -20 hr
Bin dryer	55°C	10-12hr
Electrical dryer	45-50°C	10-12hr
Sun drying	-	5-6 days
Kiln dryer	45-50°C	18-22 hr

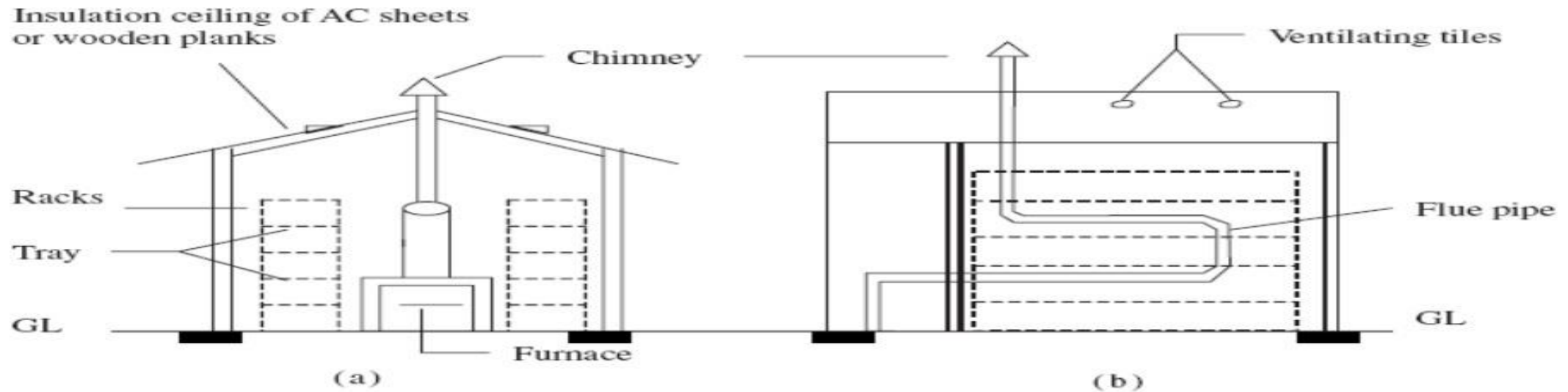


Figure 9.2 Kiln dryer for cardamom (Flue pipe curing). Diagrammatic views of the Kiln dryer (see text for details).

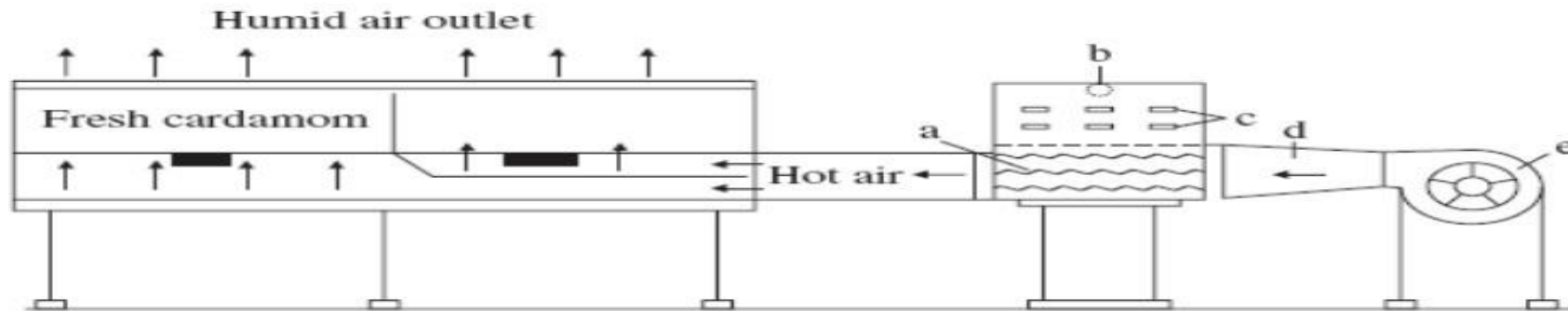


Figure 9.6 Mechanical dryer for drying pepper and cardamom: (a) electric heating system; (b) thermostat; (c) control switch; (d) cold air; (e) blower.

GRADING

• INDIAN GRADES OF CARDAMOM

- **Bold** is a popular export grade where 90 percent of the cardamom pods have a diameter of 6.5mm or above. The product has a mature green coloration with a weight in grams per liter of 415 grams.
- **Super Bold** is a high quality variety where all pods should have a diameter of 8mm or above. The product has a mature green coloration with a weight per liter of over 450 grams.
- **Extra Bold** is also a popular export grade where all pods will have a diameter of 7 mm or above. The product has a mature green coloration with a weight in grams per liter of 435 grams.
- **Bulk** is cardamom that has not been graded. As such, it contains all sizes, both mature and immature capsules, as well as black, yellow and/or split cardamom.

- **Small** is a grade with pods that measure between 5.5 mm and 6.5 mm in diameter. The weight in grams per litre is approximately 385 grams.
- **Open/Splits** is lower quality cardamom where over 60 percent of the pods are “open” (i.e. seeds exposed) and the colour of the pods may be greenish/pale yellow. All pods will be mature with a diameter of 6.5 mm or above
- **Seeds** are the black/brown seeds of the cardamom pods (i.e. husk fully removed). The weight in grams per litre is typically 550 to 600 grams.
- **Fruit** are generally over matured pods with slight yellowish in colour. The weight in grams per litre is 425 grams or above.

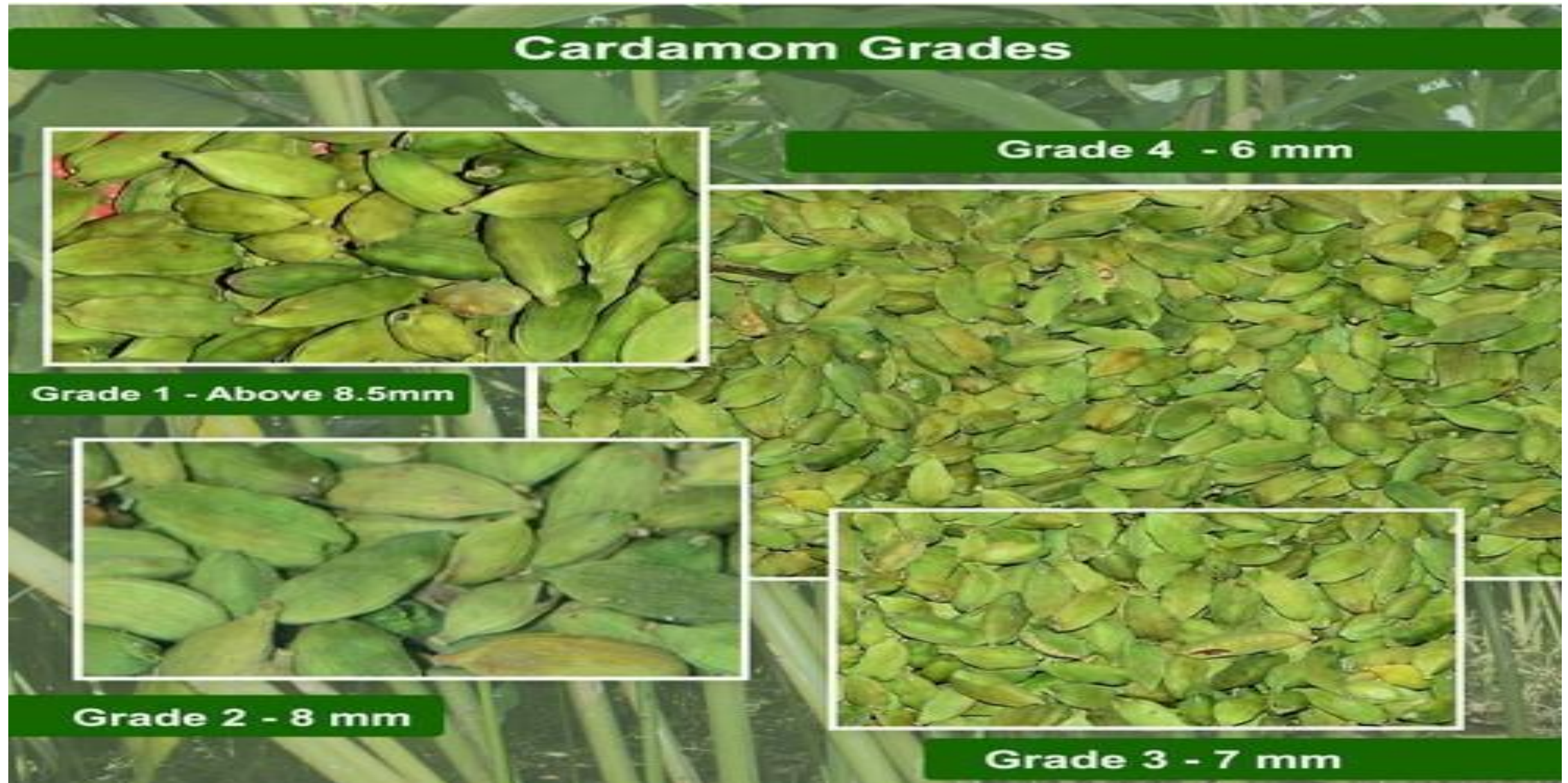
- **Standard Export Grades:**

- ❖ AGEB Alleppey Green Extra Bold Size 7mm above wt/lit 435 gms
- ❖ AGB Alleppey Green Bold Size 6mm above wt/lit 415gms
- ❖ AGS Alleppey Green Superior Size 5mm above wt/lit 385 gms AGS-1
- ❖ Alleppey Green Shipment Green-1 Size 4mm above wt/lit 350gms
- ❖ AGS-2 Alleppey Green Shipment Green-2 Size 4mm above wt/lit 320gms

- Internationally accepted and most commercially imported varieties of Cardamom are **Malabar Cardamom**, **Sri Lankan Cardamom** and **Cambodian Cardamom**.

- a) Grade of Guatemala Cardamom
- b) Jumbo Green (extra large green)
- c) Imperial Best Green (large green)
- d) Fancy Green Extra (Extra green)
- e) Fancy Green (Medium size green)
- f) Imperial Mixed Green (large pale green)
- g) Mixed green (assorted colors)
- h) Mixed green split (medium size open green pods)
- i) Yellow mixed (yellow medium/large close pods)
- j) MYQ mixed yellow quality (medium light brown color for grinding)
- k) Cardamom seeds (decorticated)





STORAGE

- Dried cardamom capsules must be stored in moisture-proof containers away from direct sunlight.
- For long term bulk storage, polythene-lined gunny bags inside wooden boxes are used.
- The polythene bags help to preserve the green colour of the pods.
- It is essential that the capsules are fully dry before they are placed in the gunny bags for storage



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