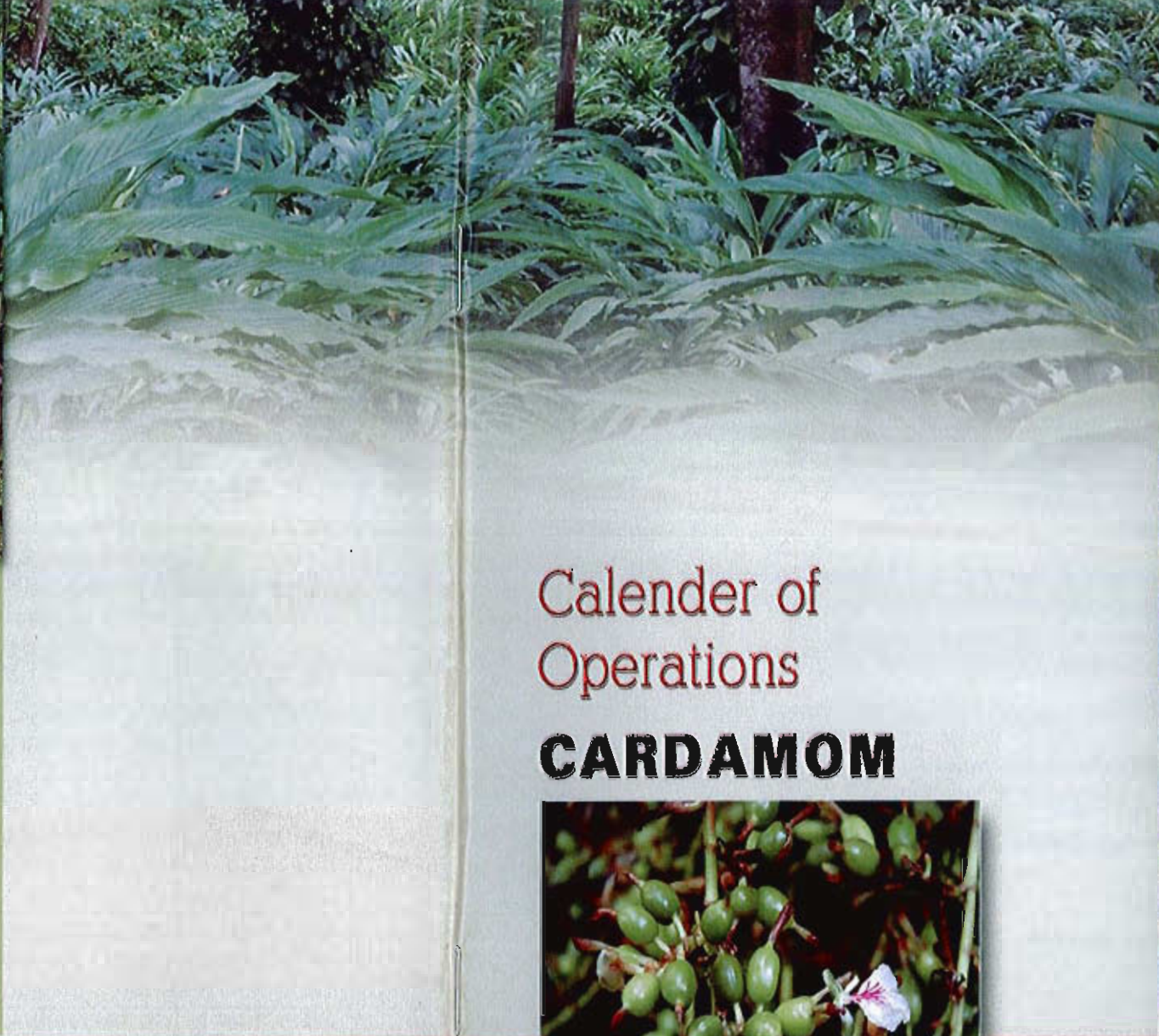




Contact

ICAR-Indian Institute of Spices Research
Post bag 1701, Marikunnu P. O.,
Kozhikode-673012, Kerala, India.
Phone: 0495-2731410, Fax: 0091-495-2731187,
E-mail: mail@spices.res.in, Web site: www.spices.res.in



Calender of Operations

CARDAMOM



ICAR-Indian Institute of Spices Research
Kozhikode - 673012, Kerala, India





हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

*Agri*search with a *h*uman touch



Compiled and Edited by

C.K. Thankamani
C.N. Biju
S.J. Ankegowda
S. Hamza

Published by

K. Nirmal Babu
Director
ICAR - Indian Institute of Spices Research
Kozhikode, Kerala, India

Citation

C.K. Thankamani, C.N. Biju, S.J. Ankegowda, S.Hamza (Eds. 2018)
Calendar of Operations for Cardamom, ICAR - Indian Institute of
Spices Research, Kozhikode, Kerala, India.

March 2018

Financed by: ICAR-Indian Institute of Spices Research, Kozhikode

No: of Copies 1000
Cover Design: Sudakaran. A

Printed at

KT Printers, Mukkom

Calendar of Operations for Cardamom

January- February

Nursery

- ❖ Regular watering may be given to bed/polybag/sucker nurseries based on necessity.
- ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.3%) and carbendazim (0.2%), respectively after noticing early symptoms.

Main Field

- ❖ Provide adequate shade, so that 40 – 60% filtered light is available to the plants.
- ❖ Irrigation to be started based on necessity.
- ❖ In rainfed areas, mulching plant basins with dried leaf/weed materials need to be undertaken.
- ❖ In areas where the roots are exposed due to soil erosion, earthing up the base with topsoil need to be undertaken followed by mulching.
- ❖ If leaf blight disease is observed, spray Bordeaux mixture (1%) or carbendazim – mancozeb (0.1%). Providing adequate shade also would reduce leaf blight incidence.
- ❖ If symptoms of stem lodging are noticed, spray carbendazim (0.2%) or hexaconazole (0.2%) on the pseudostem.
- ❖ To manage viral diseases like, *Katte* and chlorotic streak, regular monitoring, tracing out and

	<p>destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out.</p> <ul style="list-style-type: none"> ❖ For pest management, prune dry leaves without removing green leaf sheath. ❖ To manage borer infestation, remove the infested suckers as indicated by the extrusion of frass and spray quinalphos 25%EC (0.075%). Collection and destruction of adult moths may also reduce the pest incidence. ❖ Harvesting can be continued with a gap of 25 to 30 days depending upon the weather conditions and maturity of the capsules. ❖ Wash harvested capsules thoroughly before drying in curing chamber. ❖ Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of the produce. ❖ Clean and store the cured cardamom at <10% moisture level in 300 gauge black polythene lined gunny bags inside wooden boxes.
March	<p>Nursery</p> <ul style="list-style-type: none"> ❖ Regular watering may be given to bed/polybag/sucker nurseries based on necessity.

	<ul style="list-style-type: none"> ❖ Avoid exposure of nursery to direct sunlight from top or side to prevent the incidence of leaf spot. To manage nursery leaf spot, spray mancozeb (0.2%) and subsequently 2-3 rounds at fortnightly intervals. To manage leaf rot disease, spray carbendazim (0.2%) after noticing early symptoms. ❖ Clipping and destruction of severely affected leaves after spraying need to be carried out to avoid further spread of the diseases. <p>Main Field</p> <ul style="list-style-type: none"> ❖ Continue irrigation based on necessity wherever irrigation facility is available. ❖ If symptoms of stem lodging are noticed, spray carbendazim (0.2%) or hexaconazole (0.2%) on the pseudostem. ❖ Mild pruning may be carried out by removing the hanging dry leaves and sheath. This will facilitate better pest control even at low spray volume of pesticide. To manage thrips infestation, trashing may be taken up. Spray quinalphos 25 % EC (0.05%) or Fipronil 5% SC (0.005%) or Spinosad 45% SC (0.0135%) concentration after undertaking trashing operation. ❖ To manage borer infestation, remove the infested suckers as indicated by the extrusion of frass and spray quinalphos 25% EC (0.025%). Collection and destruction of adult
--	--

	<p>moths may also reduce the pest incidence.</p> <ul style="list-style-type: none"> ❖ Observe for occurrence of beetles of root grub. If noticed, collect them with insect net and destroy to prevent them from egg laying. ❖ To manage viral diseases like, <i>Katte</i> and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out. ❖ Harvesting can be continued with a gap of 25 - 30 days depending upon the maturity of the capsules. ❖ To manage shoot fly, spray quinalphos 25 % EC (0.05%). ❖ Harvest only the matured capsules for getting better out turn. ❖ Ensure that 20-25 days pre-harvest interval is given if any pesticide spray has been done in the plantation. ❖ Wash harvested capsules thoroughly before drying in curing chamber. ❖ Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of produce. ❖ Always store the cured cardamom capsules at <10% moisture in 300 gauge black polythene lined gunny bags inside wooden box to retain green colour and quality.
--	---

<p>April</p>	<p>Nursery</p> <ul style="list-style-type: none"> ❖ Regular watering may be given to bed/polybag/sucker nursery based on necessity. ❖ Avoid exposure of nursery to direct sunlight from top or side to prevent the incidence of leaf spot. To manage leaf spot and leaf rot diseases, spray mancozeb (0.2%) and carbendazim (0.2%), respectively after noticing early symptoms. ❖ Clipping and destruction of severely affected leaves after spraying need to be carried out to avoid further spread of the diseases. <p>Main Field</p> <ul style="list-style-type: none"> ❖ Continue irrigation based on necessity wherever irrigation facility is available. ❖ To manage rhizome rot, trashing and cleaning of the plant basins need to be undertaken as a prophylactic measure. ❖ If symptoms of stem lodging are noticed, spray carbendazim (0.2%) or hexaconazole (0.2%) on the pseudostem. ❖ To manage viral diseases like, <i>Katte</i> and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out. ❖ Mild pruning may be done by
---------------------	--

	<p>removing the hanging dry leaves and sheath. This will facilitate better pest control even at low spray volume of pesticide. To manage thrips infestation, trashing may be taken up. Spray quinalphos 25 % EC (0.05%) or Fipronil 5% SC (0.005%) or Spinosad 45% SC (0.0135%) after undertaking trashing operation.</p> <ul style="list-style-type: none"> ❖ Observe for occurrence of beetles of root grub. If noticed, collect them with insect net and destroy to prevent them from egg laying. ❖ Give foliar cardamom micronutrient mixture spray @ 500 gm per 100 litres of water. ❖ Continue harvesting with a gap of 25 - 30 days depending upon maturity of the capsules in irrigated plantations. Harvest only the matured capsules for getting better out turn. ❖ Ensure that 20-25 days pre-harvest interval is given if any pesticide spray has been done in the plantation. ❖ Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of produce. ❖ Always store the cured cardamom capsules at <10% moisture in 300 gauge black polythene lined gunny bags inside wooden box to retain green colour and quality.
--	--

<p>May</p>	<p>Nursery</p> <ul style="list-style-type: none"> ❖ Regular watering may be given to bed/polybag/sucker nurseries based on necessity. ❖ To manage seedling rot/damping off, avoid over-crowding of seedlings and provide adequate drainage to prevent water stagnation. As a phytosanitary measure, remove infected and dead seedlings. Once initial symptoms are noticed, drench the beds with copper oxychloride (0.2%) @ 3- 5 litres per m². Application of <i>Trichoderma</i> to the nursery bed @ 100 g/m² (taic formulation with 10⁶cfu/g) also reduces disease spread. ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.2%) and carbendazim (0.2%), respectively after noticing early symptoms. ❖ Clipping and destruction of severely affected leaves after spraying need to be carried out to avoid further spread of the diseases to healthy leaves. <p>Main Field</p> <ul style="list-style-type: none"> ❖ In densely shaded areas, regulate the shade selectively to provide more sunlight during monsoon period. The desirable quantum for better performance would be 40 - 60% filtered sunlight. ❖ In open patches planting of saplings of shade trees like <i>Toona ciliata</i> (<i>Chandana viambu</i>), <i>Vernonia arborea</i> (<i>Karuna</i>), Jack can be
-------------------	---

undertaken to reduce the problems of root grub and better performance of cardamom.

- ❖ After the receipt of sufficient summer showers, planting of seedlings/clones can be taken up in the main field.
- ❖ After planting, stake the plants with stick and mulch the plant basins with dried leaves or weeded materials.
- ❖ Ensure adequate drainage facilities to avoid water stagnation especially at base of the plants. Prior to monsoon showers, trashing operation may be completed materials shall be removed from basin.
- ❖ Application of first round manures for irrigated areas can be done, after receiving one or two adequate showers at the end of May or early June. This may be done with 90 kg urea, 208 kg mussoriphos and 137 kg muriate of potash per ha (1/3rd dose of 125:125:250 NPK/ha/year).
- ❖ For rainfed areas, apply fertilizers @ 81 kg urea, 187 kg mussoriphos and 125 kg muriate of potash as first round (1/2 of 75:75:150 kg NPK/ha/year).
- ❖ Fertilizers may be applied along with any one of the organic manures like farmyard manure (FYM) or compost @ 5 kg or neem cake 1-2 kg per plant in 20 cm wide circular band about 30-40 cm away from the plant base.
- ❖ In the case of young plants, 1/3rd and 2/3rd of recommended dose of the

fertilizers may be applied for 1st and 2nd year, respectively.

- ❖ Foliar spray with cardamom micronutrient mixture @ 500 gm per 100 litres of water may be given.
- ❖ To manage *Azhukal*/capsule rot and rhizome rot, trashing need to be undertaken as a prophylactic measure. Provide adequate drainage, regulate thick shade, remove and destroy remnants of infected/dead plants before the onset of monsoon.
- ❖ As a prophylactic measure to manage *Azhukal*/capsule rot, spray Bordeaux mixture (1%) and drench the plant basins with copper oxychloride (0.2%). When disease occurs in field drenching and spraying with potassium phosphonate (0.3%) or metalaxyl – mancozeb (0.125%) may be taken up.
- ❖ Basin application of biocontrol agents like, *T. harzianum* @ 1 kg per plant may be taken up.
- ❖ If the soil is drenched with copper oxychloride or other fungicides, *Trichoderma* should be applied after 15 days.
- ❖ To manage leaf blight, maintain optimum shade level (40 – 60%), remove and destroy infected leaves, spray Bordeaux mixture (1%) or carbendazim (0.2%) or carbendazim – mancozeb (0.1%).
- ❖ To manage viral diseases like, *Katte* and chlorotic streak, regular

	<p>monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out.</p> <ul style="list-style-type: none"> ❖ For pest management, prune dry leaves without removing green leaf sheath. Apply quinalphos 25% EC (0.05%) @ 200 ml per 100 litres of water (spray may coincide with shoot borer moth emergence; this spraying operation also manages thrips infestation). Observe for occurrence of beetles of root grub. If noticed collect them with insect net and destroy to prevent them from egg laying. To manage root grub, apply chlorpyrifos 20% EC (0.075%). ❖ If nematode attack is noticed, neem cake 250 to 1000 grams per plant may be applied.
June	<p>Nursery</p> <ul style="list-style-type: none"> ❖ To manage seedling rot/damping off, avoid over crowding of seedlings and provide adequate drainage to prevent water stagnation. As a phytosanitary measure, remove infected and dead seedlings. Once initial symptoms are noticed, drench the beds with copper oxychloride (0.2%) @ 3-5 litres per m². Application of <i>Trichoderma</i> to the nursery bed @ 100 g/m² (talc formulation with 10⁶ cfu/g) also reduces disease spread.

	<ul style="list-style-type: none"> ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.3%) and carbendazim (0.2%), respectively after noticing early symptoms. <p>Main Field</p> <ul style="list-style-type: none"> ❖ Trashing plants and weeding in interspaces may be continued and completed. Plant saplings of shade trees in open patches. Depending upon weather conditions, replanting and gap filling to be continued. ❖ After planting, stacking and tying around sticks, mulching plant basins with leaves and weeds to conserve soil and moisture is required. Provide adequate drains, if water stagnates around plant basins. ❖ If fertilizer application is not taken up during previous month, apply 90 kg urea, 207 kg rock phosphate and 137 kg muriate of potash/ha (1/3rd dose of 125:125:250 NPK/ha/year for irrigated areas). ❖ For rainfed areas, apply 81 kg urea, 187 kg mussoriphos and 125 kg muriate of potash as first round (1/2 of 75:75:150 kg NPK/ha/year). ❖ The above recommendations can be modified based on nutrient content values and other physio-chemical properties of soil. ❖ The recommended fertilizers may be applied along with any one of the organic manures like well
--	---

	<p>decomposed expand farmyard manure or vermicompost (5 kg) and neem cake (1 – 2 kg) per plant in 20 cm wide circular band within about 10-40 cm from the plant base.</p> <ul style="list-style-type: none"> ❖ For young plants, 1/3rd and 2/3rd of the recommended dose of the fertilizers may be applied for first and second year, respectively. ❖ Foliar spray with cardamom micronutrient mixture @ 5 gm per 1 litre of water may be given. ❖ To manage <i>Azhukall</i>/capsule rot and rhizome rot, trashing need to be undertaken as a prophylactic measure. Provide adequate drainage, regulate thick shade, remove and destroy remnants of infected/dead plants before the onset of monsoon. ❖ To manage <i>Azhukall</i>/capsule rot, basin application of biocontrol agents like, <i>T. harzianum</i> @ 1 kg per plant may be taken up. ❖ As a prophylactic measure to manage <i>Azhukall</i>/capsule rot, spray Bordeaux mixture (1%) and drench the plant basins with copper oxychloride (0.2%). When disease occurs in field drenching and spraying with potassium phosphonate (0.3%) or metalaxyl – mancozeb (0.125%) may also be taken up. ❖ If the soil is drenched with copper oxychloride or other fungicides,
--	--

	<p><i>Trichoderma</i> should be applied after 15 days.</p> <ul style="list-style-type: none"> ❖ To manage leaf blight maintain optimum shade level (40 – 60%), remove and destroy infected leaves, spray Bordeaux mixture (1%) or carbendazim (0.2%) or carbendazim – mancozeb (0.1%). ❖ To manage viral diseases like, <i>Katte</i> and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out. ❖ To manage root grub, apply chlorpyrifos 20% EC (0.075%). ❖ If nematode attack is noticed, neem cake @ 250 to 1000 grams per plant may be applied.
<p>July</p>	<p>Nursery</p> <ul style="list-style-type: none"> ❖ To manage seedling rot/damping off, avoid over-crowding of seedlings and provide adequate drainage to prevent water stagnation. As a phytosanitary measure, remove infected and dead seedlings. Once symptoms are noticed, drench the beds with copper oxychloride (0.2%) @ 3-5 litres per m². Application of <i>Trichoderma</i> to the nursery bed @ 100 g/m² (talc formulation with 10⁶cfu/g) also reduces disease spread. ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.3%) or

carbendazim (0.2%), respectively after noticing early symptoms.

Main Field

- ❖ Trashing plants and weeding in interspaces may be continued and completed.
- ❖ Planting of shade tree saplings in open patches may be continued.
- ❖ Depending upon weather conditions, replanting and gap filling to be continued.
- ❖ After planting, stacking and tying around sticks, mulching plant basins with leaves and weeds to conserve soil and moisture is required. Provide adequate drains, if water stagnates around plant basins.
- ❖ If manuring is not completed yet, organic manures such as neem cake @ 1 kg/plant or poultry manure/farm yard manure/compost @ 5 kg/plant can be applied.
- ❖ First round manuring, can be continued if not completed earlier @ 37.5:37.5:75 kg NPK per ha.
- ❖ If soil test recommendations are available, apply fertilizers accordingly.
- ❖ To manage *Azhukal*/capsule rot and rhizome rot, trashing need to be undertaken. Provide adequate drainage, regulate thick shade, remove and destroy remnants of infected/dead plants.
- ❖ To manage *Azhukal*/capsule rot, spray

Bordeaux mixture (1%) and drench the plant basins with copper oxychloride (0.2%). Drenching and spraying with potassium phosphonate (0.3%) or metalaxyl – mancozeb (0.125%) may also be taken up.

- ❖ Basin application of biocontrol agents like, *T. harzianum* @ 1 kg per plant may be taken up.
- ❖ If the soil is drenched with copper oxychloride or other fungicides, *Trichoderma* should be applied after 15 days.
- ❖ To manage viral diseases like, *Katte* and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like *Colocasia* and *Caladium*) need to be carried out.
- ❖ If nematode attack is noticed, neem cake @ 250 to 1000 grams per plant may be applied.

August

Main Field

- ❖ Trashing plants and weeding in interspaces may be continued and completed.
- ❖ Planting of shade tree saplings in open patches may be continued.
- ❖ Depending upon weather conditions, replanting and gap filling works may be continued.
- ❖ After planting, stacking and tying around sticks, mulching plant base

with leaves and weeds to conserve soil and moisture is needed.

- ❖ To manage *Azhukal*/capsule rot and rhizome rot, trashing need to be undertaken as a prophylactic measure. Provide adequate drainage, regulate thick shade, remove and destroy remnants of infected/dead plants.
- ❖ To manage *Azhukal*/capsule rot, spray Bordeaux mixture (1%) and drench the plant basins with copper oxychloride (0.2%). Drenching and spraying with potassium phosphonate (0.3%) or metalaxyl – mancozeb (0.125%) may also be taken up.
- ❖ Basin application of biocontrol agents like, *T. harzianum* @ 1 kg per plant may be taken up.
- ❖ If the soil is drenched with copper oxychloride or other fungicides, *Trichoderma* should be applied after 15 days.
- ❖ To manage rhizome rot, spray Bordeaux mixture (1%) and drench the plant basins with copper oxychloride (0.25%). Alternatively, drenching and spraying with potassium phosphonate (0.3%) or metalaxyl–mancozeb (0.125%) may also be taken up. Basin application of biocontrol agent like, *T. harzianum* @ 1 kg per plant may also be undertaken. If the soil is drenched with copper oxychloride or other fungicides, *Trichoderma* should be applied after 15 days.

- ❖ To manage leaf blight maintain optimum shade level (40 – 60%), remove and destroy infected leaves, spray Bordeaux mixture (1%) or carbendazim (0.2%) or carbendazim – mancozeb (0.1%).
- ❖ To manage viral diseases like *Katte* and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like *Colocasia* and *Caladium*) need to be carried out.
- ❖ Collect and destroy beetles of root grubs from the plantation. For Integrated Pest Management, spray either quinalphos 25% EC (0.05%)@ 200 ml in 100 litres of water (sprays must coincide with shoot borer moth emergence, this spraying operation manages thrips infestation also). To manage root grub, apply chlorpyrifos 20% EC (0.075%).
- ❖ Annual maintenance of curing houses and cleaning of flue pipes may be attended for efficient fuel management and curing.
- ❖ Collection of firewood for curing purpose may be completed without disturbing the ecosystem if curing devices with alternate fuels like LPG, diesel or Bio-mass are not available.
- ❖ Fly picking can be started. Harvest only mature capsules for better out-turn on curing.

	<p>150 ml per 100 litres of water may be taken up during end of the month in rainfed as well as irrigated areas. To manage thrips infestation, trashing may be taken up. Spray quinalphos 25 % EC (0.05%) or Fipronil 5% SC (0.005) or Spinosad 45% (SC 0.0135%) after undertaking trashing operation. To manage borer infestation, remove the infested suckers as indicated by the extrusion of frass and spray quinalphos 25% EC(0.075%). Collection and destruction of adult moths may also reduce the pest incidence. To manage root grub, apply chlorpyrifos 20% EC(0.075%).</p> <ul style="list-style-type: none"> ❖ If nematode attack is noticed, neem cake 250 to 1000 grams per plant may be applied. ❖ Harvesting can be continued with gap of 25 - 30 days depending on weather conditions and maturity of the capsules. Always ensure, right maturity for better out-turn. ❖ Wash harvested capsules thoroughly before drying in curing chamber. ❖ Clean and store the cured cardamom at <10% moisture level in black polythene lined gunny bags and inside wooden boxes. ❖ Improved cardamom curing devices with alternate fuels like LPG, Diesel, bio-mass etc. may be set up for minimizing the use of firewood.
--	--

<p>October</p>	<p>Nursery</p> <ul style="list-style-type: none"> ❖ To manage seedling rot/damping off, avoid over-crowding of seedlings and provide adequate drainage to prevent water stagnation. As a phytosanitary measure, remove infected and dead seedlings. Once initial symptoms are noticed, drench the beds with copper oxychloride (0.2%) @ 3-5 litres per m². Application of <i>Trichoderma</i> to the nursery bed @ 100 g/m² (talc formulation with 10⁶cfu/g) also reduces disease spread. ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.3%) and carbendazim (0.2%), respectively after noticing early symptoms. <p>Main Field</p> <ul style="list-style-type: none"> ❖ In the irrigated field, apply second dose of fertilizer according to soil test result and recommendations. General recommendation is 41.5:41.5:83 kg NPK/ha. This can be supplied through 90 kg urea, 200 kg mussoriphos and 138 kg muriate of potash (if not done during the previous month). ❖ General recommendation for rainfed area is; 37.5:37.5:75 kg NPK/ha as final round application. This can be supplied by 81 kg of urea, 187 kg mussoriphos and 125 kg muriate of potash (if not done during the previous month). ❖ If deficiency symptoms due to zinc is noticed, apply, zinc sulphate as foliar
----------------	--

	<p>spray @ 250 gm/100 litres of water, covering both lower and upper surface of the leaves.</p> <ul style="list-style-type: none"> ❖ If boron deficiency is observed, apply borax @ 3.75 kg along with NPK fertilizers. ❖ Observe for occurrence of beetles of root grub. If noticed collect them with insect net and destroy to prevent them from egg laying. ❖ Dry leaves may be pruned during middle of the month and spraying of phenthoate 150 ml per 100 litres of water may be taken up during end of the month in rainfed as well as irrigated areas, if not carried out during the previous month. To manage borer infestation, remove the infested suckers as indicated by the extrusion of frass and spray quinalphos 25%EC (0.075%). Collection and destruction of adult moths may also reduce the pest incidence. ❖ Spray should coincide with shoot borer moth emergence. ❖ To manage shoot fly, spray quinalphos 25% EC (0.05%). ❖ Raking the soil and removal of dried leaves may be done before soil application. Application of Entomo Pathogenic Nematodes (EPN) infected <i>Galleria</i> cadaver @ 4 cadaver/plant at 1.5 inches below surface soil at plant base may be done. ❖ To manage viral diseases like, <i>Katte</i>
--	---

	<p>and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like <i>Colocasia</i> and <i>Caladium</i>) need to be carried out.</p> <ul style="list-style-type: none"> ❖ Harvesting can be continued with gap of 25 to 30 days depending upon the weather conditions and maturity of the capsules. Ensure always, right maturity for better out-turn. ❖ Wash harvested capsules thoroughly before drying in curing chamber. ❖ Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of the produce. ❖ Clean and store the cured cardamom below 10% moisture level in black polythene lined gunny bags and inside
December	<p>Nursery</p> <ul style="list-style-type: none"> ❖ Observe for germination of seeds sown during previous month. ❖ Once sprouting is observed remove the mulch material and cover inter spaces thinly with sliced mulch materials. ❖ Overhead pandal to be erected to protect the seedlings from direct sunlight. ❖ Irrigation may be done to bed/polybag/sucker nurseries based on necessity.

- ❖ To manage leaf spot and leaf rot diseases, spray mancozeb (0.3%) and carbendazim (0.2%), respectively after noticing early symptoms.

Main Field

- ❖ Mulch the base of the plants with organic waste materials.
- ❖ In areas where weeding is not carried out, clean weeding at the base of the plants and slash weeding in the inter spaces can be adopted and use the weeded materials as mulch.
- ❖ To manage leaf blight maintain optimum shade level (40 – 60%), remove and destroy infected leaves, spray Bordeaux mixture (1%) or carbendazim (0.2%) or carbendazim – mancozeb (0.1%).
- ❖ If symptoms of stem lodging are noticed, spray carbendazim (0.2%) or hexaconazole (0.2%) on the pseudostem.
- ❖ To manage viral diseases like, *Katte* and chlorotic streak, regular monitoring, tracing out and destruction of infected plants, volunteers and collateral hosts (like *Colocasia* and *Caladium*) need to be carried out.
- ❖ To check the incidence of root grubs, beetles may be trapped by nets.
- ❖ Harvesting can be continued with gap of 25 to 30 days depending upon the weather conditions and maturity of the capsules. Ensure always, right

maturity for better out-turn.

- ❖ Wash harvested capsules thoroughly before drying in curing chamber.
- ❖ Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of the produce.
- ❖ Clean and store the cured cardamom at <10% moisture level in black polythene lined gunny bags and inside wooden boxes.