			ТОМАТО
Crop Stage	Maturity Days	Management	Control
Nursery stage	0 - 15 days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained) Ensure the pH is adjusted to 5.5–6.5 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Pseudomonas fluorescens mixed with water Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1 cm deep and cover lightly with coir pith Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering Add biofertilizers like Azospirillum, Phosphobacteria, or Trichoderma to the medium Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 25 days	Micro Nutrients Management	Supplementary Feed: Biological control -At 2 Weeks After Germination: Apply a diluted solution of fish emulsion or compost tea (1:10 ratio). -Spray with seaweed extract (1:15 dilution) to provide potassium and trace elements for root strengthening. Cultural control: -Use well-rotten vermicompost for top-dressing around seedlings to provide a slow-release nutrient source. Frequency: -Feed once every 10–14 days, ensuring not to over-fertilize.
Pre-Seedling Stage	15- 25 days	Irrigation Management	Watering Frequency: -Keep the growing medium consistently moist but not waterlogged. Overwatering can lead to fungal diseases. -Water once the top 1–2 cm of the medium feels dry to the touch. Method: -Use a watering can with a fine nozzle or drip irrigation to avoid disturbing delicate seedlings. -Water early in the morning to reduce humidity and allow leaves to dry, preventing fungal infections.
Pre-Seedling Stage	15- 25 days	Pest Management	a)Aphids: Biological control -Spray with neem oil -5ml/L of water + a few drops of liquid soapLadybugs. Cultural control - Crop rotation Physical control - Yellow/Blue Sticky Traps - Pruning b) Whiteflies: Biological control - Spray with a garlic or chili extract solution. Cultural control - Remove weeds Physical control - Use yellow sticky traps c) Cutworms: Biological conrol - Sprinkle neem cake or wood ash around the seedlings as a natural deterrent. Cultural control - Remove crop residues. Physical control - Remove crop residues.
Pre-Seedling Stage	15- 25 days	Disease Management	a)Damping-Off: Biological control -Treat seeds with Trichoderma viride before sowingWater with a solution of diluted cow urine or vermi wash to suppress fungal activity. Cultural control - Avoid Excessive Watering. Physical control - Avoid overwatering and ensure proper drainage. b)Leaf Spot Diseases: Biological control - Spray a solution of 1% Bordeaux mixture or diluted neem oil. Cultural control - Control Nightshade weeds Physical control - Solarization - Sterilization - Sterilization c)Powdery Mildew: Biological control - Spray a mix of milk 10% and water. Cultural control - Proper Plant Spacing Physical control - Proper Plant Spacing Physical control - Periodic clipping of lower leaves

Vegetative Singer 25-40 days				227 27
Application Fire with dilimed this demailment or organic nitrogens outroes every 10-14 days.				1) Nitrogen (N):
25 + 40 days				- Encourages foliage and stem growth.
Supports root and early flowering preparation.				- Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days.
Application. Add bone mead or organic phosphate fertillares during the initial weeks. Solution				2) Phosphorus (P):
Potentier Stage 25-40 days Pot Management	Vegetative Stage	25 - 40 days	Micro Nutrients Management	- Supports root and early flowering preparation.
Segretative Stage 25-40 days Per Management Vegetative Stage 25-40 days Per Management Per M				- Application: Add bone meal or organic phosphate fertilizers during the initial weeks.
Applicative Stage 25 - 40 days Per Management				3) Potassium (K):
Nitrogen Deficiency: Symptoms: Veloving of older leaves, stanted growth. Solution Apply organic fertilizers like vermicompost or compost rea.				- Strengthens stems and disease resistance.
Nitrogen Deficiency: Symptoms: Veloving of older leaves, stanted growth. Solution Apply organic fertilizers like vermicompost or compost rea.				- Application: Use banana peel compost or potassium-rich liquid fertilizers.
Symptoms Velowing of older leves sturned growth.				1) Nitrogen Deficiency:
Vegerative Stage 25-40 days Port Management Part Managemen				-Symptoms: Yellowing of older leaves; stunted growth.
Vegetative Stage 25-40 days Pear Management				, .
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Vegetative Singe 25-40 days Per Management Per Ma				
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Solution: Apply wood ask or potassium-rich organic fertilizers.	Vegetative Stage	25- 40 days	Nutrient Deficiency Managemen	-Symptoms: Browning or scorching on leaf edges; weak stems.
A Magnesium Deficiency:				
Symptoms Vellowing between leaf veins (interveinal chlorosis) Solutions Spay as folia solution of Epsoms sul-1 styp. (1 of water). Symptoms Ceneral stumets growth and discoloration. Solutions Cheen statused growth and discoloration. Solutions Cheen status and in the medium without waterlogging. Frequency: Vergetative Stage Vegetative Stage Vegeta				
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Cultural control - Avoid planting Next to Onion & Garlic				
- Avoid planting Next to Onion & Garlic				· · · · · · · · · · · · · · · · · · ·

			a) Damping-Off:
			Biological control
			- Treat seeds with Trichoderma viride before sowing.
			- Water with a solution of diluted cow urine or vermi wash to suppress fungal activity.
			Cultural control
			- Avoid Excessive Watering.
			Physical control
			- Avoid overwatering and ensure proper drainage.
			b) Leaf Spot Diseases:
			Biological control Spray a solution of 1% Bordeaux mixture or diluted neem oil
			- Spray a solution of 1% Bordeaux mixture or diluted neem oil. Cultural control
			- Control Nightshade weeds
			Physical control
17	25 (0.1	D: 16	- Solarization
Vegetative Stage	25- 40 days	Disease Management	c) Powdery Mildew:
			Biological control
			- Spray a mix of milk 10% and water.
			Cultural control
			-Proper Plant Spacing
			Physical control
			- Periodic clipping of lower leaves
			d) Bacterial Spot:
			Biological control
			- Pseudomonas fluorescens
			- Bacillus subtilis
			Cultural control
			- Use disease free seedlings
			Physical control
	1		- Solarization
			1) Phosphorus (P):
			- Encourages flower formation and energy transfer.
			- Application: Use bone meal or rock phosphate at the start of flowering.
			2) Potassium (K):
			- Essential for flower and fruit quality.
			- Application: Use potassium sulfate or banana peel tea.
Flowering Stage	40 - 60 days	Micro Nutrients Management	3) Calcium (Ca): Property of owner and first deformation
	1		- Prevents flower and fruit deformities Application: Foliar spray calcium chloride every 2–3 weeks
			- Application: Foliar spray calcium chloride every 2–3 weeks. 4) Micronutrients:
			- Boron and zinc are crucial for flower retention.
			- Application: Use seaweed extract or organic trace element solutions.
			Frequency:
			- Feed plants every 10–14 days with balanced organic fertilizers that are higher in phosphorus and potassium.
			1) Nitrogen Deficiency:
			- Symptoms: Yellowing of older leaves and stunted growth.
			- Solution: Apply a mild organic nitrogen feed, like fish emulsion (low concentration).
			2) Phosphorus Deficiency:
			- Symptoms: Purplish leaf undersides and reduced flower production.
			- Solution: Add bone meal or phosphorus-rich organic fertilizers.
			3) Potassium Deficiency:
E1i C:	40 (0.1	Marriage Deficiency Marriage	- Symptoms: Yellowing and browning along leaf edges; weak flowering.
Flowering Stage	40 - 60 days	Nutrient Deficiency Manageme	
			4) Calcium Deficiency: - Symptoms: Blossom-end rot and distorted leaves.
			- Symptoms: Blossom-end rot and distorted leaves Solution: Apply calcium nitrate or eggshell tea.
			- Solution: Apply calcium nitrate or eggsneil tea. 5) Magnesium Deficiency:
			- Symptoms: Yellowing between leaf veins.
			- Symptoms: fellowing between real vents. - Solution: Foliar spray of Epsom salt -1 tsp/L of water
			6) Micronutrient Deficiencies (Zinc, Boron):
			- Symptoms: Poor flower development and leaf discoloration.
	1	+	7-1
			1) P confesion
Flowering Stage	40 - 60 days	Irrigation Management	1) Regularity: Water deeply 2 3 times per week or as peeded to maintain consistent maisture
			 Water deeply 2–3 times per week or as needed to maintain consistent moisture. Avoid Overwatering:
			- Excess moisture can lead to fungal issues like gray mold or root rot.
		_	Excess mosture can read to rungar issues fixe gray more of 1000 for.

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Flowering Stage	40 - 60 days	Pest Management	a)Aphids: Biological control -Spray with neem oil -5ml/L of water + a few drops of liquid soapIntroduce natural predators like ladybugs. Cultural control - Crop rotation Physical control - Yellow/Blue Sticky Traps - Pruning b) Whiteflies: Biological control -Spray with a garlic or chili extract solution. Cultural control - Remove weeds Physical control - Remove weeds Physical control - Use yellow sticky traps c) Leaf Miners: Biological control - Apply neem oil or bio-pesticides like Beauveria bassiana. Cultural control - Pest Deterrent Plant: Columbine, Lambsquarter, Velvet leaf Physical control - Remove infested leaves. d) Thrips: Biological control - Lacewing larvae - Ladybird beete Cultural control - Avoid planting Next to Onion & Garlic Physical control - Avoid planting Next to Onion & Garlic Physical control - Yellow/Blue Sticky Traps d) Fruit B/Buers: Biological control - Spray bio-pesticides like Bacillus thuringiensis (Bt). Cultural Control
		1	- Sanitation
Flowering Stage	40 - 60 days	Disease Management	a)Leaf Spot Diseases: Biological control - Spray a solution of 1% Bordeaux mixture or diluted neem oil. Cultural control - Control Nightshade weeds Physical control - Solarization b)Powdery Mildew: Biological control - Spray a mix of milk 10% and water. Cultural control - Proper Plant Spacing Physical control - Periodic clipping of lower leaves c)Bacterial Spot: Biological control - Pseudomonas fluorescens - Bacillus subtilis Cultural control - Crop Rotation Physical control - Crop Rotation Physical control - Removal of Infected Plants d) Flower Drop (Environmental Stress): Biological control - Azospirillum Cultural control - Azospirillum Cultural control
Fruiting Stage	60- 90 days	Micro Nutrients Management	Physical control 1) Phosphorus (P): - Encourages flower formation and energy transfer. - Application: Use bone meal or rock phosphate at the start of flowering. 2) Potassium (K): - Essential for flower and fruit quality. - Application: Use potassium sulfate or banana peel tea. 3) Calcium (Ca): - Prevents flower and fruit deformities. - Application: Foliar spray calcium chloride every 2–3 weeks. 4) Micronutrients: - Boron and zinc are crucial for flower retention. - Application: Use seaweed extract or organic trace element solutions. Frequency: - Feed plants every 10–14 days with balanced organic fertilizers that are higher in phosphorus and potassium. - Avoid excessive nitrogen to prevent excessive leaf growth over flower formation.

			1) Calcium Deficiency (Blossom-End Rot):
			- Symptoms: Sunken spots at the blossom-end of fruits.
			- Solution:Foliar spray with calcium chloride or calcium nitrate.
			2) Potassium Deficiency:
			- Symptoms: Browning or scorching at leaf edges; poor fruit quality.
			- Solution: Apply potassium sulfate or banana peel tea.
			3) Magnesium Deficiency:
Fruiting Stage	60 - 90 days	Nutrient Deficiency Manageme	- Symptoms: Yellowing between veins of older leaves.
Training ottage	oo yo dayo	Tructione Boriototey trainingeme	- Solution:Foliar spray with Epsom salt (1 tsp/liter water).
			4) Nitrogen Deficiency:
			- Symptoms: Pale green leaves and stunted growth of fruits.
			,
			- Solution: Apply organic nitrogen sources like compost tea sparingly.
			5) Micronutrient Deficiencies:
			- Symptoms: Poor fruit development and discoloration.
			- Solution:Use seaweed extract or micronutrient-enriched liquid fertilizers.
	1		Watering Frequency:
	1		1) Consistency:
	1		- Keep the medium consistently moist but avoid waterlogging.
Emiting Stage	(0. 90 days	Irrigation Management	- Water deeply 2–3 times a week or more frequently during hot weather.
Fruiting Stage	60 - 90 days	Irrigation Management	2) Method:
			- Drip Irrigation: Ideal for precise water delivery to roots.
			- Hand Watering: Water at the base to prevent wetting fruits and leaves.
			3) Avoid Water Stress:
			- Uneven watering can lead to fruit cracking or blossom-end rot.
			a)Aphids:
			Biological control
			-Spray with neem oil -5ml/L of water + a few drops of liquid soap.
			-Introduce natural predators like ladybugs.
			Cultural control
			- Crop rotation
			Physical control
			- Yellow/Blue Sticky Traps
			- Pruning
			b) Leaf Miners:
			Biological control
			-Apply neem oil or bio-pesticides like Beauveria bassiana.
			Cultural control
			- Pest Deterrent Plant: Columbine, Lambsquarter, Velvet leaf
	1		Physical control
Fruiting Stage	60 - 90 days	Pest Management	-Remove infested leaves.
	1	_	c) Thrips:
	1		Biological control
	1		-Lacewing larvae
	1		-Ladybird beetle
	1		Cultural control
	1		- Avoid planting Next to Onion & Garlic
	1		Physical control
	1		- Yellow/Blue Sticky Traps
			d) Fruit Borers:
	1		
			Biological control
			- Spray bio-pesticides like Bacillus thuringiensis (Bt).
			Cultural control
	1		- Collect and destroy infected fruits and larvae.
			Physical control
			- Handpick larvae and destroy.

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Fruiting Stage	60 - 90 days	Disease Management	a)Damping-Off: Biological control Treat seeds with Trichoderma viride before sowing. Water with a solution of diluted cow urine or vermi wash to suppress fungal activity. Cultural control Avoid Excessive Watering. Physical control Avoid overwatering and ensure proper drainage. b)Leaf Spot Diseases: Biological control Spray a solution of 1% Bordeaux mixture or diluted neem oil. Cultural control Control Nightshade weeds Physical control Solarization (Powdery Mildew: Biological control Spray a mix of milk 10% and water. Cultural control Proper Plant Spacing Physical control Sanitation. d)Bacterial Spot: Biological control Pseudomonas fluorescens Bacillus subtilis Cultural control Crop rotation Physical control Removal of Infected Plants Anthracnose: Biological control Removal of Infected Plants Anthracnose: Biological control Removal of Infected Plants Proper Plotic clipping of lower leaves Physical control Periodic clipping of lower leaves Physical control Periodic clipping of lower leaves Physical control Physical control Periodic clipping of lower leaves Physical control Staking
Harvesting Stage	90 - 120 days	Micro Nutrients Management	1) Potassium (K): - Essential for flower and fruit quality. - Application: Use potassium sulfate or banana peel tea. 2) Calcium (Ca): - Prevents flower and fruit deformities. - Application: Foliar spray calcium chloride every 2–3 weeks.
Harvesting Stage	90 - 120 days	Nutrient Deficiency Manageme	1) Potassium Deficiency: - Symptoms: Browning or scorching at leaf edges; poor fruit quality. - Solution: Apply potassium sulfate or banana peel tea. 2) Magnesium Deficiency: - Symptoms: Yellowing between veins of older leaves. - Solution: Foliar spray with Epsom salt -1 tsp/L of water. 3) Calcium Deficiency: - Symptoms: Fruit cracking and reduced firmness. - Solution: Apply calcium nitrate or calcium chloride sprays.
Harvesting Stage	90 - 120 days	Irrigation Management	Watering Frequency: 1) Consistency: - Maintain uniform soil moisture to avoid water stress, which can lead to cracking and uneven ripening. 2) Method: - Use drip irrigation for precise and consistent moisture delivery. - Avoid wetting fruits directly to reduce the risk of fungal infections. 3) Reduce Excessive Watering: - Excess moisture can cause fruits to become watery and prone to splitting. - Gradually reduce watering as fruits near harvest.

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			a)Aphids:
			Biological control
			-Spray with neem oil -5ml/L of water + a few drops of liquid soap.
			-Introduce natural predators like ladybugs.
			Cultural control
			- Crop rotation
			Physical control
			- Yellow/Blue Sticky Traps
			- Pruning
			b) Whiteflies:
	90 - 120 days		Biological control
Harvesting Stage	70 - 120 days	Pest Management	-Spray with a garlic or chili extract solution.
			Cultural control
			- Crop rotation
			Physical control
			'-Use yellow sticky traps
			c) Fruit Borers:
			Biological control
			- Spray bio-pesticides like Bacillus thuringiensis (Bt).
			Cultural control
			- Collect and destroy infected fruits and larvae.
			Physical control
			- Handpick larvae and destroy.
			a) Powdery Mildew:
			Biological control
			- Spray a mix of milk 10% and water.
			Cultural control
			-Proper Plant Spacing
			Physical control
			- Sanitation
			b) Bacterial Spot:
			Biological control - Pseudomonas fluorescens
	90 - 120 days		
Harvesting Stage	90 - 120 days	Disease Management	- Bacillus subtilis
			Cultural control
			- Crop rotation
			Physical control
			- Removal of Infected Plants
			c) Anthracnose:
			Biological control
			- Seed treatment - Trichoderma spp.
			Cultural control
			- Periodic clipping of lower leaves
			Physical control
			- Staking
Harvesting Stage	90 - 120 days	Signs of Maturity	
88-			r. p.10.
1			Firm, Red fruits.

			ONION
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 5.5–6.5 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Azospirillum mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 0.5 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Azospirillum, Neem cake powder, or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	1) Liquid Compost tea: - Prepare a compost tea by soaking 1 part compost in 10 parts water for 24 hours. Strain and dilute to a 1:10 ratio before use. - Apply every 7–10 days. 2) Seaweed Extract: - Dilute 2–5 ml/L and spray on leaves every 10 days to provide trace minerals and enhance growth.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen deficiency: Symptoms: Yellowing of leaves. Solution: Supplement with fish emulsion. 2) Iron deficiency: Symptoms: Yellowing between veins. Solution:) Chelated Iron - Natural chelates like citric acid. ii) Rusty Nails- Place a few rusty nails or steel wool in a bucket of water for a week. Use the water for irrigation.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Maintain constant moisture in the cocopeat. - Use a spray bottle or gentle watering to avoid waterlogging.
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Crop rotation. Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Garlic and Chili Spray- Blend garlic -50 g, chili -50 g, and water, strain and spray every 7–10 days. Cultural control - Use resistant/tolerant varieties. Physical control - Yellow/Blue Sticky Traps
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum. - Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control -Farmyard manure Physical control - Avoid overwatering to ensure good airflow. b)Basal Rot: Biological control - Pseudomonas cepacis - Trichoderma viride Cultural control - Mixed cropping - Crop rotation Physical control - Soil solarization
Vegetative Stage	30-60 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30-60 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Vellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water.

Vegetative Stage	30–60 Days	Irrigation Management	Watering Frequency: - Water when the top layer feels dry. - Overwatering can cause fungal problems.
Vegetative Stage	30–60 Days	Pest Management	a) Thrips: Biological control Garlic and Chili Spray- Blend garlic -50 g, chili -50 g, and water, strain and spray every 7–10 days. Cultural control - Use resistant/tolerant varieties. Physical control - Yellow/Blue Sticky Traps b) Onion maggot: Biological control - Ground beetle - Spiders Cultural control - Affected bulbs should be removed Physical control - Field sanitation Row covers. c) Bulb mite: Biological control - Green lacewings - Predatory mites Cultural control - Avoid planting successive onion or garlic crops. Physical control - Flood irrigation
Vegetative Stage	30–60 Days	Disease Management	a) Basal Rot: Biological control - Pseudomonas cepacis - Trichoderma viride Cultural control - Mixed cropping - Crop rotation Physical control - Soil solarization b) Leaf streak & bulb rot: Biological control - Trichoderma viride Cultural control - Remove infected plants Physical control - Good sanitation c) Downy Mildew: Biological control - Trichoderma spp. - Bacillus subtilis Cultural control - Select healthy bulbs Physical control - Poor drainage - Avoid excessive use of fertilizers. d) Purple Blotch: Biological control - Neem oil Cultural control - Neem oil Cultural control
Flowering Stage	60–75 Days	Micro Nutrients Management	1) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Sulfur (S): - Supplement sulfur if needed for better bulb flavor. - Application: Use organic fertilizers like bone meal-10–20 g/plant or blood meal.
Flowering Stage	60–75 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water. 3) Sulfur deficiency: - Symptoms: Pale bulbs and weak flavor Solution: Use gypsum or elemental sulfur.
Flowering Stage	60-75 Days	Irrigation Management	Watering Frequency: - Reduce watering slightly to prevent bulb splitting but ensure moisture consistency.

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Flowering Stage	60–75 Days	Pest Management	a) Root-knot nematode: Biological control - Poultry manure Cultural control - Remove weeds Physical control - Solarization b) Thrips: Biological control - Garlic and Chili Spray- Blend garlic -50 g, chili -50 g, and water, strain and spray every 7–10 days. Cultural control - Use resistant/tolerant varieties. Physical control - Yellow/Blue Sticky Traps c) Gram pod borer: Biological control - Tricogramma spp T. pretiosum Cultural control - Crop rotation Physical control - Field sanitation - Pheromone traps .
Flowering Stage	60– 75 Days	Disease Management	a) Leaf streak & bulb rot: Biological control -Trichoderma wiride Cultural control -Remove infected plants Physical control -Good sanitation b) Downy Mildew: Biological control - Trichoderma spp Bacillus subtilis Cultural control -Select healthy bulbs Physical control - Poor drainage - Avoid excessive use of fertilizers. c) Purple Blotch: Biological control - Neem oil Cultural control - Use resistant varieties Physical control - Proper drainage d) Onion Smut: Biological control - Bacillus subtilis Cultural control - Proper drainage d) Onion Smut: Biological control - Bacillus subtilis Cultural control - Crop rotation Physical control
Fruiting Stage	75–120 Days	Micro Nutrients Management	1) Nitrogen (N): - Reduce nitrogen levels to prevent excessive vegetative growth. - Application: Use natural nitrogen sources like compost. 2) Phosphorus (P): - Supports energy transfer and root activity. Essential for maintaining plant health during bulb growth. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 3) Potassium (K): - Key nutrient for bulb enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants. 4) Sulfur (S): - Supplement sulfur if needed for better bulb flavor. - Application: Use organic fertilizers like bone meal-10-20 g/plant or blood meal. 5) Calcium (Ca): - Prevents bulb splitting and enhances bulb strength. Application: Computers and the addition sulfur entered.
Fruiting Stage	75–120 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water. 3) Sulfur deficiency: - Symptoms: Pale bulbs and weak flavor Solution: Use gypsum or elemental sulfur.
Fruiting Stage	75–120 Days	Irrigation Management	Watering Frequency: - Water deeply but reduce the frequency to avoid bulb splitting. - Ensure the growing medium is moist but well-drained to facilitate nutrient uptake.

			a) Onion fly:
Fruiting Stage	75–120 Days	Pest Management	Biological control - Neem seed extract- 0.75 g/L of water - Neem oil 1% Azadirachtin- 30 ml/L of water Cultural control - Remove weeds Physical control - Yellow sticky traps. b) Red spider mite: Biological control - Mirid bugs - Syrphid Cultural control - Water spray washes off the mites Physical control - Sanitation.
Fruiting Stage	75–120 Days	Disease Management	a) Bacterial Brown Rot: Biological control - Bacillus subtilis Cultural control - Remove weeds Physical control - Affected bulbs should be discarded before storage Proper drainage. b) Bacterial soft rot: Biological control - Trichoderma harzianum - Bacillus subtilis. Cultural control - Avoid overwatering Physical control - Storage of bulbs in open baskets, mesh bags and netted bags. c) White rot: Biological control - Trichoderma viride Cultural control - Trichoderma viride Cultural control - Hot water treatment of bulbs at 49 °C Physical control - Hot water treatment of bulbs at 49 °C Physical control - Hot water treatment of bulbs at 50 °C Physical control - Hot water treatment of bulbs at 49 °C Physical control - Hot patients of the water - Pseudomonas fluorescens - 5 ml/L of water Cultural control - Use of resistant varieties Physical control
Harvesting Stage	120–150 Days	Micro Nutrients Management	1) Nitrogen (N): - By this stage, nitrogen's role diminishes as excessive nitrogen can delay bulb maturation and lead to poor storage quality. - Application : Stop nitrogen application at least 2 weeks before harvest. 2) Potassium (K): - Potassium enhances bulb firmness and boosts resistance to post-harvest diseases. - Application: Wood ash- 20 g/plant around the plants. Stop potassium application 7–10 days before harvest. 3) Sulfur (S): - Crucial for flavor and pungency, sulfur also supports bulb structure and disease resistance. - Application: Use organic fertilizers like Epsom salts-10–20 g/plant. Stop sulfur application 7–10 days before harvest. 4) Calcium (Ca): - Strengthens cell walls, preventing splitting and ensuring bulb firmness for storage. - Application: Gypsum as a dual calcium-sulfur source.
Harvesting Stage	120–150 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Premature yellowing and drying of leaves. Reduced bulb size. - Solution: Apply a mild foliar spray of fish emulsion (diluted 1:10). Limit nitrogen application 2 weeks before harvest. 2) Potassium Deficiency: - Symptoms: Brown or scorched leaf edges. Soft or poorly developed bulbs. - Solution: Use wood ash sparingly 10–20 g/Plant around plants. 3) Sulfur Deficiency: - Symptoms: Pale bulbs with weak flavor and aroma. - Solution: Apply Epsom salts -1 tbsp/5 L of water. 4) Boron Deficiency: - Symptoms: Deformed or hollow bulbs. - Solution: Apply a foliar spray of borax -0.5 g/L of water.
Harvesting Stage	120–150 Days	Irrigation Management	Watering Frequency: - Stop irrigation completely to dry out the bulbs and harden the necks.

Harvesting Stage	120–150 Days	Pest Management	a) Thrips: Biological control -Garlic and Chili Spray- Blend garlic -50 g, chili -50 g, and water, strain and spray every 7–10 days. Cultural control -Use resistant/tolerant varieties. Physical control - Yellow/Blue Sticky Traps. b) Leaf miner: Biological control - Azadiractin 10000 PPM -1.5 – 2.5 ml/L of water. Cultural control - Sanitation Physical control - Yellow sticky traps
Harvesting Stage	120–150 Days	Disease Management	a) Bacterial soft rot: Biological control -Trichoderma harzianum -Bacillus subtilis. Cultural control -Avoid overwatering Physical control - Storage of bulbs in open baskets, mesh bags and netted bags. b) Onion Smudge: Biological control - Trichoderma harzianum - T. asperellum Cultural control - Curing of the bulb after harvesting Physical control - Good drainage c) Neck rot: Biological control - Trichoderma viride Cultural control - Remove waste heaps - Good six wastillation in storage
Harvesting Stage	120–150 Days	Signs of maturity	Leaf Yellowing and Drying - Fully Formed Bulbs

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Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0-6.8 using lime if needed. b) Seed Treatment: - Soak seeds in a 2% hydrogen peroxide solution 2 g/L of water for 30 minutes to kill pathogens. - Treat seeds with Trichoderma viride- 2 g/L of water to prevent damping-off. c) Sowing: - Sow seeds 0.5 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Managemen	Nutrient Management: Use a balanced fertilizer to encourage root and shoot growth. Incorporate bio-fertilizers like Azospirillum for enhanced nitrogen uptake.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Water lightly when the top layer feels dry. - Use a spray bottle or gentle watering to avoid waterlogging.
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Crop rotation. Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Garlic and Chili Spray- (Blend garlic -50 g, chili -50 g, and water) strain and spray every 7–10 days. Cultural control - Use resistant/tolerant varieties. Physical control - Yellow/Blue Sticky Traps
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow. b) Root Rot: Biological control - Phosphobacteria - Trichoderma viride Cultural control - Sanitation Physical control - Proper Drainage.
Vegetative Stage	30–60 Days	Micro Nutrients Managemen	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–60 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves. - Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Phosphorus Deficiency: - Symptoms: Purplish tinge to leaves. - Solution: Add bone meal or fish emulsion.
Vegetative Stage	30-60 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days or when the top inch feels dry. - Ensure even moisture distribution. Avoid waterlogging.

				a) Thrips:
				Biological control
				- Beauveria bassiana
				Cultural control - Sanitation
				Physical control
				- Yellow/Blue Sticky Traps
				b) White Fly:
				Biological control
				- Verticillium lecanii
				- Wasp: Encarsia formosa
Veg	getative Stage	30–60 Days	Pest Management	Cultural control
				-Proper Irrigation Physical control
				- Sanitation.
				c) Mealy Bugs:
				Biological control
				- Encarsia formosa
				- Neem Oil
				Cultural control - Avoid Over-Fertilization
				Physical control
				- Yellow/Blue Sticky Traps
				a) Bacterial Soft Rot:
				Biological control
				- Bacillus subtilis
				- Trichoderma Spp
				Cultural control
				-Avoid Over watering
				Physical control - Sterilization
				b) Powdery Mildew:
				Biological control
				-Trichoderma harzianum
				- Neem Oil
Veg	getative Stage	30–60 Days	Disease Management	Cultural control
				- Use Resistant Varieties.
				Physical control
				- Remove Infected Leaves c) Downy Mildew:
				Biological control
				- Trichoderma spp
				- Bacillus subtilis
				Cultural control
				- Sanitation
				- Avoid Over watering
				Physical control - Remove Infected Leaves.
				1) Potassium (K): - Strengthens stems and disease resistance.
				- Strengulens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Flo	owering Stage	60-90 Days	Micro Nutrients Managemer	2) Phosphorus (P):
				- Encourages flower formation and energy transfer.
				- Application: Use bone meal or rock phosphate at the start of flowering.
				1) Calcium Deficiency:
				- Symptoms: Blossom end rot.
Flo	wering Stage	60–90 Days	Nutrient Deficiency Manage	- Solution: Apply calcium nitrate or eggshell tea.
	0 0 -			2) Magnesium deficiency:
				- Symptoms: Yellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water.
\vdash			+	
Flo	wering Stage	60-90 Days	Irrigation Management	Watering Frequency: - Water consistently to prevent flower drop.
\vdash			-	
				a) Spider Mite: Biological control
				- Bacillus thuringiensis
				Cultural control
				- Proper Watering
				Physical control Physical control
				-Yellow/Blue Sticky Traps
				b) Tobacco Caterpillar:
				Biological control - Bacillus thuringiensis
				- Bacillus thuringiensis Cultural control
Flo	wering Stage	60-90 Days	Pest Management	- Crop Rotation
1	Tiowering stage	<u> </u>		Physical control
				- Hand Picking
				c) Pod Borer:
			1	Biological control
				The office of the control of the con
				- Bacillus thuringiensis
				- Trichogramma spp.
				- Trichogramma spp. Cultural control
				- Trichogramma spp.
				- Trichogramma spp. Cultural control -Proper Watering

			a) Anthracnose:
			Biological control
			- Bacillus subtilis
			Cultural control
			-Avoid Over watering
			Physical control
			- Remove Infected Leaves
			b) Bacterial Leaf Blight:
			Biological control
			- Trichoderma spp.
			Cultural control
			- Use Resistant Varieties
			Physical control
Eli C	(0, 00 D	Disease Management	- Remove Infected Leaves
Flowering Stage	60-90 Days	Disease Management	c) Cercospora Leaf Spot:
			Biological control
			- Bacillus subtilis
			Cultural control
			-Use resistant varieties
			Physical control
			- Remove Infected Leaves
			d) Fusarium Wilt:
			Biological control
			- Bacillus subtilis
			Cultural control
			- Avoid Over watering
			Physical control
			- Sanitation
			1) Nitrogen (N):
			- Reduce nitrogen levels to prevent excessive vegetative growth.
			- Application : Use natural nitrogen sources like compost.
			2) Phosphorus (P):
Empiring Co	90 120 D	Mioro Nutriores Mana	
Fruiting Stage	90–120 Days	Micro Nutrients Managemen	- Supports energy transfer and root activity.
			- Application: Rock phosphate for slow release. Bone meal for organic phosphorus.
			3) Potassium (K):
			- Key nutrient for fruit enlargement and storage quality.
			- Application :Wood ash- 20 g/plant around the plants.
			1) Potassium deficiency:
			- Symptoms: Brown leaf tips.
			- Solution: Apply wood ash or potassium-rich organic fertilizers.
Fruiting Stage	90–120 Days	Nutrient Deficiency Manage	2) Magnesium deficiency:
			- Symptoms: Yellowing leaf edges.
			- Solution: Use Epsom salts -1 tbsp/5 L of water.
			Watering Frequency:
Fruiting Stage	90-120 Days	Irrigation Management	- Increase frequency slightly as fruits develop.
			- Maintain uniform moisture levels to prevent fruit cracking.
			a) Mites:
			Biological control
			- Amblyseius spp
			Cultural control
			-Remove weeds
			Physical control
			- Yellow sticky traps.
			b) Flea Beetle:
			Biological control
			- Predatory Beetles
			Cultural control
Fruiting Stage	90-120 Days	Pest Management	- Sanitation
0		0	Physical control
			- Hand Picking.
			c) Fruit Borer:
			Biological control
			- Bacillus thuringiensis
			- Nuclear Polyhedrosis Virus
			Cultural control
			- Sanitation
			Physical control
			- Hand Picking.
			- Light Traps.
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Fruiting Stage	90–120 Days	Disease Management	a) Branch Rot: Biological control Biological control Biological control Avoid Over watering Physical control Remove Infected Leaves Biological control Trichoderma spp Cultural control Avoid overwatering Physical control Remove Infected Leaves Fruit Spot: Biological control Biological control Remove Infected Leaves C) Fruit Spot: Biological control Biological control Biological control Biological control Biological control Use Resistant Varieties Physical control Fruning Just Blight: Biological control Frunderma spp Cultural control Fruning Just Blight: Biological control Fruning Frun
Harvesting Stage	120–150 Days	Micro Nutrients Managemer	1) Nitrogen (N): - Reduce nitrogen levels to prevent excessive vegetative growth. - Application: Use natural nitrogen sources like compost. 2) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 3) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	120–150 Days	Nutrient Deficiency Manage	1) Potassium deficiency: - Symptoms: Brown leaf tips Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	120–150 Days	Irrigation Management	Watering Frequency: - Increase frequency slightly as fruits develop Maintain uniform moisture levels to prevent fruit cracking.
Harvesting Stage	120–150 Days	Pest Management	a) Red Spider Mite: Biological control - Beauveria bassiana - Metarhizium anisopliae. Cultural control - Remove Weeds Physical control - Yellow/Blue Sticky Traps. b) Grey weevil: Biological control - Beauveria bassiana Cultural control - Proper Spacing and Pruning. Physical control - Water Spraying
Harvesting Stage	120–150 Days	Disease Management	a) Bacterial wilt: Biological control - Neem Oil - Bacillus subtilis. Cultural control - Avoid overwatering Physical control - Sterilization b) Yellow Leaf Curl Virus Transmitted by WhiteFly: Biological control - Beauveria bassiana - Verticillium lecanii Cultural control - Proper Irrigation Physical control - Yellow/Blue Sticky Traps c) Fruit rot: Biological control - Trichoderma spp Cultural control - Use Resistant Varieties Physical control - Vereseistant Varieties Physical control - Remove infected leaves.
Harvesting Stage	120–150 Days	Signs of maturity	Mature green chilies have a glossy appearance and firm texture.

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Crop Stage	Maturity Days	Management	Control	
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0-6.8 using lime if needed. b) Seed Treatment: - Soak seeds in a 2% hydrogen peroxide solution 2 g/L of water for 30 minutes to kill pathogens. - Treat seeds with Trichoderma viride- 2 g/L of water to prevent damping-off. c) Sowing: - Sow seeds 0.5-1 cm spacing and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.	
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Managen	1) Nutrient Management: - Use a balanced fertilizer to encourage root and shoot growth. - Incorporate bio-fertilizers like Azospirillum for enhanced nitrogen uptake.	
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Mana	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.	
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Water lightly when the top layer feels dry. - Use a spray bottle or gentle watering to avoid waterlogging.	
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps	
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.	
Vegetative Stage	30–60 Days	Micro Nutrients Managen	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.	
Vegetative Stage	30–60 Days	Nutrient Deficiency Man.	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Phosphorus Deficiency: - Symptoms: Purplish tinge to leaves Solution: Add bone meal or fish emulsion. 3) Potassium Deficiency: - Symptoms: Browning of leaf edges - Solution: Apply wood ash or potassium-rich organic fertilizers.	
Vegetative Stage	30-60 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days or when the top inch feels dry. - Ensure even moisture distribution. Avoid waterlogging.	

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- Bacillus thuringiensis - Nuclear Polyhedrosis Virus Cultural control - Sanitation Physical control - Hand Picking.				
- Nuclear Polyhedrosis Virus Cultural control - Sanitation Physical control - Hand Picking.				
Cultural control - Sanitation Physical control - Hand Picking.				
- Sanitation Physical control - Hand Picking.				
Physical control - Hand Picking.				
- Hand Picking.				
- Light Traps.				
		<u> </u>		- Light Traps.

Fruiting Stage	90–120 Days	Disease Management	a) Branch Rot: Biological control - Bacillus subtilis Cultural control - Avoid Over watering Physical control - Remove Infected Leaves b) Root Rot: Biological control - Trichoderma spp Cultural control - Avoid overwatering Physical control - Remove Infected Leaves c) Fruit Spot: Biological control - Bacillus subtilis Cultural control - Use Resistant Varieties Physical control - Use Resistant Varieties Physical control - Pruning d) Late Blight: Biological control - Trichoderma spp Cultural control - Use of resistant varieties Physical control - Tothoderma spp Cultural control - Tichoderma spp Cultural control - Sanitation.
Harvesting Stage	120–150 Days	Micro Nutrients Managem	1) Nitrogen (N): - Reduce nitrogen levels to prevent excessive vegetative growth. - Application: Use natural nitrogen sources like compost. 2) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 3) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	120–150 Days	Nutrient Deficiency Mana	1) Potassium deficiency: - Symptoms: Brown leaf tips Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	120–150 Days	Irrigation Management	Watering Frequency: - Increase frequency slightly as fruits develop Maintain uniform moisture levels to prevent fruit cracking.
Harvesting Stage	120–150 Days	Pest Management	a) Red Spider Mite: Biological control - Beauveria bassiana - Metarhizium anisopliae. Cultural control - Remove Weeds Physical control - Yellow/Blue Stricky Traps. b) Grey weevil: Biological control - Beauveria bassiana Cultural control - Proper Spacing and Pruning. Physical control - Water Spraying
Harvesting Stage	120–150 Days	Disease Management	a) Bacterial wilt: Biological control -Neem Oil -Bacillus subtilis. Cultural control -Avoid overwatering Physical control - Sterilization b) Yellow Leaf Curl Virus Transmitted by WhiteFly: Biological control - Beauveria bassiana - Verticillium lecanii Cultural control - Proper Irrigation Physical control - Proper Irrigation Physical control - Yellow/Blue Sticky Traps c) Fruit rot: Biological control - Trichoderma spp Cultural control - Use Resistant Varieties Physical control - Use Resistant Varieties Physical control - Remove infected leaves.

Harvesting Stage | 120–150 Days | Signs of maturity | The fruit skin becomes smooth and firm, glossy appearance.

	BRINJAL			
Crop Stage	Maturity Days	Management	Control	
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0-6.8 using lime if needed. b) Seed Treatment: - Soak seeds in warm water (50°C) for 30 minutes to kill pathogens. - Treat seeds with Trichoderma viride- 2 g/L of water to prevent damping-off. c) Sowing: - Sow seeds 0.5-1 cm spacing and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.	
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Manageme	1) Nutrient Management: - Use a balanced fertilizer to encourage root and shoot growth. - Begin a light fertilizer schedule using liquid NPK or compost tea.	
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.	
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Water once daily or when the cocopeat surface feels dry. - Avoid waterlogging by ensuring proper drainage in trays.	
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps	
Pre-Seedling Stage	15-30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder-Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.	
Vegetative Stage	30-60 Days	Micro Nutrients Manageme	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.	
Vegetative Stage	30-60 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Potassium Deficiency: - Symptoms: Browning of leaf edges - Solution: Apply wood ash or potassium-rich organic fertilizers. 3) Magnesium Deficiency: - Symptoms:Yellowing between veins - Solution: Use Epsom salt - 1g/L of water	
Vegetative Stage	30-60 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days or when the top inch feels dry. - Ensure even moisture distribution. Avoid waterlogging.	

Vegetative Stage	30–60 Days	Pest Management	a) Jassids/ Leaf hopper: Biological control - Green lacewing - Lady bug Cultural control - Dispose garden debris or waste immediately after harvesting. Physical control - Kaolin clay b) White Fly: Biological control - Green lacewing Cultural control - Sanitation Physical control - Yellow/Blue Sticky Traps c) Cut worm / Army worm: Biological control - Trichogramma Parasitoids Cultural control - Trichogramma Parasitoids Cultural control - Weeds Removal Physical control - Weeds Removal Physical control - Handpicking Worms.
Vegetative Stage	30–60 Days	Disease Management	a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Root Rot: Biological control - Pseudomonas fluorescens Cultural control - Burn affected plants Physical control - Sterilization c) Collar Rot: Biological control - Seed treatment - Trichoderma viride 4g/ kg of seeds Cultural control - Collection and Destruction of Diseased parts. Physical control - Collection and Destruction of Diseased parts. Physical control - Sterilization.
Flowering Stage	60–90 Days	Micro Nutrients Managemen	1) Potassium (K): - Strengthens stems and disease resistance - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - Encourages flower formation and energy transfer Application: Use bone meal or rock phosphate at the start of flowering.
Flowering Stage	60–90 Days	Nutrient Deficiency Manage	1) Calcium Deficiency: - Symptoms: Blossom end rot Solution: Apply calcium nitrate or eggshell tea. 2) Boron Deficiency: - Symptoms: Poor flower development - Solution: Use - Azotobacter-1 tbsp/5 L of water.
Flowering Stage	60-90 Days	Irrigation Management	Watering Frequency: - Water regularly to maintain consistent moisture. Avoid wetting flowers and leaves during watering.
Flowering Stage	60–90 Days	Pest Management	a) Mites: Biological control - Amblyseius spp Cultural control - Weed Control Physical control - Yellow/Blue Sticky Traps b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Gram Caterpillar: Biological control - Bacillus thuringiensis - Trichogramma spp. Cultural control - Proper Watering Physical control - Light Traps - Pheromone traps.

			a) Little Leaf: Biological control - Lacewing larvae" Cultural control - Proper Sanitation Physical control - Insect Nets b) Powdery mildew: Biological control - Bacillus subtilis Cultural control - Proper Plant Spacing Physical control - Proper Jant Gpacing Physical control - Periodic clipping of lower leaves
Flowering Stage	60–90 Days	Disease Management	c) Yellow leaf mosaic virus: Biological control - Beauveria bassiana Cultural control - Remove alternate weed Abutilon indicum Physical control - Yellow/Blue Sticky Traps
			d) Fusarium Wilt: Biological control - Bacillus subtilis Cultural control - Avoid Over watering Physical control - Sanitation.
Fruiting Stage	90–120 Days	Micro Nutrients Manageme	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Apply liquid seaweed extract every 15 days for better fruit size and quality.
Fruiting Stage	90–120 Days	Nutrient Deficiency Manage	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Calcium Deficiency: - Symptoms: Wrinkled fruits Solution: Calcium nitrate -1 g/L of water weekly.
Fruiting Stage	90–120 Days	Irrigation Management	Watering Frequency: - Increase frequency slightly as fruits develop. - Maintain uniform moisture levels to prevent fruit cracking.
Fruiting Stage	90–120 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Root-Knot Nematodes: Biological control - Paecilomyces lilacinus Cultural control - Use nematode free transplants Physical control - Use nematode free transplants Physical control - Remove weeds.

			a) Yellow leaf mosaic virus:
			Biological control
			- Beauveria bassiana
			Cultural control
			- Remove alternate weed Abutilon indicum
			Physical control
			- Yellow/Blue Sticky Traps
			b) Fruit & shoot borer:
			Biological control
			-Neem seed kernel extract (NSKE) 5 %
			Cultural control
			- Remove the affected fruits and destroy
			Physical control
Fruiting Stage	90-120 Days	Disease Management	- Pruning
	,		c) Phythium wilt:
			Biological control
			-Trichoderma spp.
			Cultural control
			- Crop rotation with bhendi, tomato, potato should be avoided
			Physical control
			- Pruning
			d) Phomopsis blight:
			Biological control
			- Trichoderma spp
			Cultural control
			-Sanitation.
			Physical control
			- Pruning.
			1) Phosphorus (P):
			- Supports energy transfer and root activity.
Harvesting Stage	120-150 Days	Micro Nutrients Managemen	- Application: Rock phosphate for slow release. Bone meal for organic phosphorus.
	,	0	2) Potassium (K):
			- Key nutrient for fruit enlargement and storage quality.
			- Application :Wood ash- 20 g/plant around the plants.
			1) Potassium deficiency:
			- Symptoms: Brown leaf tips.
			- Solution: Apply wood ash or potassium-rich organic fertilizers.
Harvesting Stage	120–150 Days	Nutrient Deficiency Manage	2) Magnesium deficiency:
			- Symptoms: Yellowing leaf edges.
			- Solution: Use Epsom salts -1 tbsp/5 L of water.
			Watering Frequency:
Harvesting Stage	120–150 Days	Irrigation Management	- Increase frequency slightly as fruits develop.
			- Maintain uniform moisture levels to prevent fruit cracking.
			a)Aphids:
			Biological control
			- Use neem oil -5 ml/L of water at weekly intervals.
			Cultural control
			- Deep summer ploughing
			Physical control
			- Yellow/Blue Sticky Traps
			b) Thrips:
			Biological control
			- Pirate bugs
Harvesting Stage	120-150 Days	Pest Management	- Lacewing larvae
	ĺ ,		Cultural control
			- Avoid planting Next to Onion & Garlic.
			Physical control
			- Yellow/Blue Sticky Traps
			c) Root-Knot Nematodes:
			Biological control
			- Paecilomyces lilacinus
			Cultural control
			- Use nematode free transplants
			Physical control
			- Remove weeds.
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			a) Yellow leaf mosaic virus: Biological control - Beauveria bassiana Cultural control
Harvesting Stage	120–150 Days	Disease Management	- Remove alternate weed Abutilon indicum Physical control - Yellow/Blue Sticky Traps b) Fruit & shoot borer: Biological control - Neem seed kernel extract (NSKE) 5 % Cultural control - Remove the affected fruits and destroy Physical control - Pruning c) Phythium wilt: Biological control - Trichoderma spp. Cultural control - Crop rotation with bhendi, tomato, potato should be avoided Physical control - Pruning d) Phomopsis blight: Biological control - Trichoderma spp Cultural control - Pruning Cultural control - Pruning Cultural control - Trichoderma spp Cultural control - Pruning Cultural control - Trichoderma spp Cultural control - Trichoderma spp Cultural control - Sanitation. Physical control
Harvesting Stage	120-150 Days	Signs of maturity	The skin is smooth, glossy, and vibrant in color (purple, green, white, or striped, depending on the variety).

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Crop Stage	Maturity Days	Management	Control
			a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0-6.8 using lime if needed. b) Seed Treatment - Soak seeds in warm water (50°C) for 4–6 hours to soften the seed coat and promote faster germination. - Treat seeds with Trichoderma viride- 2 g/L of water to prevent damping-off.
Nursery stage	0-15 Days	Seed Sowing	c) Sowing: - Sow seeds 1–2 inches deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	the seeds to promote healthy microbial activity. 1) Nutrient Management: - Use a diluted nutrient solution (1/4 strength) containing nitrogen (N), phosphorus (P), and potassium (K). - Ensure pH is between 6.0 and 6.8
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Maintain consistent moisture in cocopeat without waterlogging. - Use a spray bottle for uniform watering.
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) White Fly: Biological control - Green lacewing Cultural control - Sanitation Physical control - Sunitation Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–45 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–45 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Calcium Deficiency: - Symptoms: Blossom end rot Solution: Apply calcium nitrate or eggshell tea. 3) Magnesium Deficiency: - Symptoms: Yellowing between veins - Solution: Use Epsom salt - Ig/L of water.
Vegetative Stage	30-45 Days	Irrigation Management	Watering Frequency: - Water regularly, ensuring cocopeat stays moist but not soggy. - Drain excess water to prevent root rot.
Vegetative Stage	30–45 Days	Pest Management	a) Spider Mites: Biological control - Amblyseius spp Cultural control - Weed Control Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps

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Vegetative Stage	30–45 Days	Disease Management	a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Powdery Mildew: Biological control - Use neem oil or milk spray Cultural control - Ensure proper airflow around plants. Physical control - Burn affected plants.
Flowering Stage	45–60 Days	Micro Nutrients Management	1) Potassium (K): - Strengthens stems and disease resistance - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - Encourages flower formation and energy transfer Application: Use bone meal or rock phosphate at the start of flowering. 3) Micronutrient Deficiencies (Zinc, Boron): - Poor flower development and leaf discoloration Solution: Spray seaweed extract or micronutrient solution once every 2 weeks.
Flowering Stage	45–60 Days	Nutrient Deficiency Management	1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: Poor flower development - Solution: Use Azotobacter-1 tbsp/5 L of water.
Flowering Stage	45-60 Days	Irrigation Management	Watering Frequency: - Reduce watering slightly to avoid excess moisture during flowering. - Use a drip irrigation system for uniform water delivery.
Flowering Stage	45–60 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Flowering Stage	45-60 Days	Disease Management	a) Blossom Blight: Biological control - Trichoderma spp Cultural control - Ensure good ventilation and reduce humidity. Physical control - Avoid wetting flowers during irrigation. b) Fusarium Wit: Biological control - Bacillus subtilis - Mix Trichoderma with cocopeat before planting. Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants. 1) Phosphorus (P): - Supports energy transfer and root activity.
Fruiting Stage	60–75 Days	Micro Nutrients Management	- Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Apply liquid seaweed extract every 15 days for better fruit size and quality.
Fruiting Stage	60-75 Days	Nutrient Deficiency Management	1) Potassium Deficiency: Symptoms: Poor fruit development Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Calcium Deficiency: Symptoms: Wrinkled fruits. Solution: Calcium nitrate -1 g/L of water weekly.
Fruiting Stage	60-75 Days	Irrigation Management	Watering Frequency: - Maintain even watering to avoid stress on fruiting plants. - Avoid wetting leaves to reduce fungal risks.

Fruiting Stage	60–75 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Fruit borers: Biological control - Yellow/Blue Sticky Traps c) Fruit borers: Cultural control - Bacillus thuringiensis Cultural control - Bacillus thuringiensis Cultural control - Even watering to avoid stress. Physical control - Even watering to avoid stress.
Fruiting Stage	60–75 Days	Disease Management	a) Yellow Vein Mosaic Virus: Biological control - Neem oil -2 ml/L of water Cultural control - Remove weeds Physical control - Remove the affected fruits and destroy b) Fruit & shoot borer: Biological control - Neem seed kernel extract (NSKE) 5 % Cultural control - Remove the affected fruits and destroy Physical control - Pruning c) Anthracnose: Biological control - Pruning c) Hartvascoper Biological control - Pruning c) Hartvascoper Cultural control - Trichoderma spp. Cultural control - Harvest fruits promptly and avoid injury Physical control - Pruning.
Harvesting Stage	75– 90 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	75– 90 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips. - Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges. - Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	75– 90 Days	Irrigation Management	Watering Frequency: - Increase frequency slightly as fruits develop Maintain uniform moisture levels to prevent fruit cracking.
Harvesting Stage	75– 90 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Bue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Fruit borers: Biological control - Yellow/Blue Sticky Traps c) Fruit borers: Cultural control - Bacillus thuringiensis Cultural control - Maintain hygiene

			CARROT
Crop Stage	Maturity Days	Management	Control
, ,			a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0-6.8 using lime if needed. b) Seed Treatment - Soak seeds in warm water for 12–24 hours to soften the seed coat and speed up germination. - Treat seeds with a fungicide or biofungicide like Trichoderma to prevent fungal infections.
Nursery stage	0- 15 Days	Seed Sowing	c) Sowing: - Sow seeds 1/4–1/2 inch deep and cover lightly with coir pith Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium Add a small amount of calcium nitrate to prevent calcium deficiencies Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Manageme	1) Nutrient Management:
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Manage	- Start with a diluted nutrient solution (1/4 strength) containing phosphorus (for root development) and a bit of nitrogen. 1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Keep cocopeat consistently moist but not waterlogged. - Use a spray bottle or fine nozzle to avoid disturbing seeds.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Fungus gnats: Biological control - Bacillus thuringiensis israelensis - Sprinkle cinnamon powder Cultural control - Allow cocopeat surface to dry slightly between waterings. Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	15- 30 Days	Disease Management	a) Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–45 Days	Micro Nutrients Manageme	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–45 Days	Nutrient Deficiency Manag	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots Solution: Use banana peel compost or wood ash. 3) Magnesium Deficiency: - Symptoms: Yellowing leaves - Solution: Use Epsom salt - 1g/L of water.
Vegetative Stage	30-45 Days	Irrigation Management	Watering Frequency: - Maintain even moisture levels to prevent uneven growth. - Avoid overwatering to reduce the risk of fungal diseases.
Vegetative Stage	30–45 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Caterpillars: Biological control - Bacillus thuringiensis Cultural control - Sanitation Physical control - Pheromone Traps

Vegetative Stage	30–45 Days	Disease Management	a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Alternaria leaf blight: Biological control - Spray with copper-based fungicides Cultural control - Remove infected leaves Physical control - Sanitation
Root Development Sta	45–60 Days	Micro Nutrients Manageme	1) Potassium (K): - To promote root growth. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - Encourages root formation and energy transfer. - Application: Use bone meal or rock phosphate
Root Development Sta	45-60 Days	Nutrient Deficiency Manag	1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: To prevent hollow roots and improve root structure Solution: Use Azotobacter-1 tbsp/5 L of water. Watering Frequency:
Root Development Sta	45-60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation.
Root Development Sta	45–60 Days	Pest Management	a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Root Development Sta	45–60 Days	Disease Management	a) Soft rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good ventilation and reduce humidity. Physical control - Avoid overwatering b) Fusarium Wilt: Biological control - Bacillus subtilis - Mix Trichoderma with cocopeat before planting. Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control - Remove and destroy infected plants.
Fruiting Stage	60–90 Days	Micro Nutrients Manageme	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - To ensure sweet and firm roots. - Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Apply liquid seaweed extract every 15 days for better fruit size and quality.
Fruiting Stage	60–90 Days	Nutrient Deficiency Manag	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water.

Fruiting Stage	60–90 Days	Irrigation Management	Watering Frequency: - Reduce watering slightly a week before harvest to enhance flavor and avoid soggy roots.
Fruiting Stage	60–90 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Carrot rust flies: Biological control - Neem oil Cultural control - Use row covers Physical control
Fruiting Stage	60–90 Days	Disease Management	a) Soft rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good ventilation and reduce humidity. Physical control - Avoid overwatering b) Cercospora leaf spot: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control - Prune affected leaves.
Harvesting Stage	90–120 Days	Micro Nutrients Manageme	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	90–120 Days	Nutrient Deficiency Manag	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water.
Harvesting Stage	90–120 Days	Irrigation Management	Watering Frequency: -Reduce watering slightly a week before harvest to enhance flavor and avoid soggy roots.
Harvesting Stage	90–120 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Carrot rust flies: Biological control - Neem oil Cultural control - Use row covers Physical control

Harvesting Stage	90–120 Days	Disease Management	a) Soft rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good ventilation and reduce humidity. Physical control - Avoid overwatering b) Cercospora leaf spot: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control - Prune affected leaves.
Harvesting Stage	90–120 Days	Signs of maturity	Mature carrots feel firmly rooted but can be easily pulled out.

			BEETROOT
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Ensure the pH is adjusted to 6.0–7.0 using lime if needed. b) Seed Treatment Soak beetroot seeds (technically seed clusters) in warm water for 6–12 hours to soften the seed coat and speed up germination. Treat seeds with biofungicides like Trichoderma harzianum or neem extract to protect against seed-borne diseases. c) Sowing: Sow seeds 1/2 inch deep and cover lightly with coir pith. Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. Add a small amount of calcium nitrate to prevent calcium deficiencies. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	1) Nutrient Management: - Add a small amount of calcium nitrate for early root growth. - Include micronutrients like magnesium and iron to support healthy foliage.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Keep cocopeat moist but not saturated. - Use a fine spray to avoid displacing seeds.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Fungus gnats: Biological control - Bacillus thuringiensis israelensis - Sprinkle cinnamon powder Cultural control - Allow cocopeat surface to dry slightly between waterings. Physical control - Yellow/Blue Sticky Traps. b)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–45 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–45 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots Solution: Use banana peel compost or wood ash. 3) Magnesium Deficiency: - Symptoms: Yellowing leaves - Solution: Use Epsom salt - 1g/L of water.
Vegetative Stage	30-45 Days	Irrigation Management	Watering Frequency: - Maintain even moisture levels to prevent uneven growth. - Water deeply but allow the top layer to dry slightly between irrigations.

		1	a) Flea beetles:
		1	Biological control
			- Use neem oil -2 ml/L of water at weekly intervals.
			Cultural control
		1	-Use row covers
		1	Physical control - Sterlization
Vegetative Stage	30- 45 Days	Pest Management	- Sterization b) Leaf miners:
			Biological control
			-Apply neem oil or bio-pesticides like Beauveria bassiana.
		1	Cultural control
		1	- Pest Deterrent Plant: Columbine, Lambsquarter, Velvet leaf
			Physical control
			-Remove infested leaves.
			a) Powdery mildew:
		1	Biological control
		1	- Use neem oil or milk spray
			Cultural control
			- Ensure proper airflow around plants.
		1	Physical control
Vegetative Stage	30-45 Days	Disease Management	- Burn affected plants.
			b) Alternaria leaf blight:
			Biological control - Spray with copper-based fungicides
			- spray with copper-based rungicides Cultural control
			- Remove infected leaves
			Physical control
			- Sanitation
			1) Potassium (K):
			- To promote root growth.
Root Davidon	45 60 Dave	Micro Nutrion to Manager	- Application: Use banana peel compost or potassium-rich liquid fertilizers.
Root Development Sta	4)-60 Days	Micro Nutrients Management	2) Phosphorus (P):
			- Encourages root formation and energy transfer.
			- Application: Use bone meal or rock phosphate
			1) Phosphorus Deficiency:
			- Symptoms: Stunted growth
Root Development Sta	45-60 Davs	Nutrient Deficiency Managemen	- Solution: Add Bone meal or Rock phosphate.
l	1 2 3	cricioney ividiagellici	2) Boron Deficiency:
			- Symptoms: To prevent hollow roots and improve root structure.
			- Solution: Use Azotobacter-1 tbsp/5 L of water.
n . D 1	(5 (0 D	T	Watering Frequency:
Root Development Sta	45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper.
Root Development Sta	45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation.
Root Development Sta	§ 45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes:
Root Development Sta	45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control
Root Development Sta	45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake
Root Development Sta	45-60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control
Root Development Sta	§ 45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake
Root Development Sta	45–60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation.
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Root Development Sta	45-60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-Knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control
Root Development Sta	45-60 Days	Irrigation Management	-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-Knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing
Root Development Sta			-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-Knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control
		Irrigation Management Pest Management	-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties
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			-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control
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			-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-Knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot:
			-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-Knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control
			-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Pseudomonas fluorescens.
			-Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Pseudomonas fluorescens. Cultural control
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Root Development Sta	45–60 Days	Pest Management	-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Pseudomonas fluorescens. Cultural control - Physical control - Pseudomonas fluorescens. Cultural control - Pseudomonas fluorescens. Cultural control - Pseudomonas fluorescens. Cultural control - Pseudomonas fluorescens.
	45–60 Days		-Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fy: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Pseudomonas fluorescens. Cultural control - Pseudomonas fluorescens. Cultural control - Posud good ventilation and reduce humidity. Physical control - Physical control - Pseudomonas fluorescens. Cultural control - Pseudomonas fluorescens.
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Root Development Sta	45–60 Days	Pest Management	Water deeply but less frequently to encourage roots to grow deeper. - Ensure proper drainage to prevent water stagnation. 3 Root-knot nematodes: Biological control - Vue neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Preudomonas fluorescens. Cultural control - Pseudomonas fluorescens. Cultural control - Bacillus subtilis - Mix Trichoderma with cocopeat before planting. Cultural control
Root Development Sta	45–60 Days	Pest Management	- Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Green Reacewing Cultural control - Grew Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Preudomonas fluorescens. Cultural control - Presudomonas fluorescens. Cultural control - Avoid overwatering b) Fusarium Wilt: Biological control - Avoid overwatering b) Fusarium Wilt: Biological control - Bacillus subtilis - Mix Tirchoderma with cocopeat before planting. Cultural control - Avoid Over watering
Root Development Sta	45–60 Days	Pest Management	- Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Grow Resistant Varieties Physical control - Grow Resistant Varieties Physical control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Yellow Bus Sticky Traps. a) Soft cott Biological control - Yellow Grow Sticky Traps. b) Fusarium Wilt: Biological control - Avoid overwatering b) Fusarium Wilt: Biological control - Bacillus subtilis - Mix Trichoderma with cocopeat before planting. Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control
Root Development Sta	45–60 Days	Pest Management	- Water deeply but less frequently to encourage roots to grow deeper Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Green Reacewing Cultural control - Grew Resistant Varieties Physical control - Yellow/Blue Sticky Traps c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps. a) Soft rot: Biological control - Preudomonas fluorescens. Cultural control - Presudomonas fluorescens. Cultural control - Avoid overwatering b) Fusarium Wilt: Biological control - Avoid overwatering b) Fusarium Wilt: Biological control - Bacillus subtilis - Mix Tirchoderma with cocopeat before planting. Cultural control - Avoid Over watering

Fruiting Stage	60–90 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - To ensure sweet and firm roots Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Avoid excess nitrogen to prevent overly large foliage at the expense of root development.
Fruiting Stage	60–90 Days	Nutrient Deficiency Managemen	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water or Add boric acid.
Fruiting Stage	60–90 Days	Irrigation Management	Watering Frequency: - Water lightly as roots approach maturity to enhance sweetness and prevent sogginess.
Fruiting Stage	60–90 Days	Pest Management	a) Cutworms: Biological control -Bacillus thuringiensis -10 ml/L of water -Beauveria bassiana -2.5 ml/L of water Cultural control -Remove weeds. Physical control - Pheromone lure. b) Snails: Biological control - Use barriers like crushed eggshells around plants. Cultural control - Remove infected leaves Physical control - Handpick pests
Fruiting Stage	60–90 Days	Disease Management	a) Root rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good drainage Physical control - Avoid overwatering b) Cercospora leaf spot: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Turne affected leaves.
Harvesting Stage	90–120 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	90–120 Days	Nutrient Deficiency Managemen	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water.
Harvesting Stage	90–120 Days	Irrigation Management	Watering Frequency: -Reduce watering slightly a week before harvest to enhance flavor and avoid soggy roots.
Harvesting Stage	90–120 Days	Pest Management	a) Cutworms: Biological control -Bacillus thuringiensis -10 ml/L of water -Beauveria bassiana -2.5 ml/L of water Cultural control -Remove weeds. Physical control - Pheromone lure. b) Snails: Biological control - Use barriers like crushed eggshells around plants. Cultural control - Remove infected leaves Physical control - Handpick pests

Harvesting Stage	90–120 Days	Disease Management	a) Root rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good drainage Physical control - Avoid overwatering b) Cercospora leaf spot: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control - Prune affected leaves.
Harvesting Stage	90–120 Days	Signs of maturity	The root should be round or slightly flattened, and the color should be vibrant and consistent red.

			RADISH
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0–7.0 using lime if needed. b) Seed Treatment - Soak seeds in warm water for 4–6 hours to soften the seed coat and speed up germination. - Soak seeds in a solution of biofungicides like Trichoderma or neem extract to prevent fungal diseases such as damping-off. c) Sowing: - Sow seeds 1/2 inch deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Add a small amount of calcium nitrate to prevent calcium deficiencies. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	Nutrient Management: Add a small amount of calcium nitrate for early root growth. Include micronutrients like magnesium and iron to support healthy foliage.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering Frequency: - Keep cocopeat moist but not saturated. - Use a fine spray to avoid displacing seeds.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Fungus gnats: Biological control - Bacillus thuringiensis israelensis - Sprinkle cinnamon powder Cultural control - Allow cocopeat surface to dry slightly between waterings. Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	15- 25 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	25–35 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	25–35 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves. - Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots. - Solution: Use banana peel compost or wood ash. 3) Magnesium Deficiency: - Symptoms: Yellowing leaves - Solution: Use Epsom salt - 1g/L of water.
Vegetative Stage	25–35 Days	Irrigation Management	Watering Frequency: - Maintain even moisture levels to prevent uneven growth. - Water deeply but allow the top layer to dry slightly between irrigations.
Vegetative Stage	25–35 Days	Pest Management	a) Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Leaf miners: Biological control - Apply neem oil or bio-pesticides like Beauveria bassiana. Cultural control - Pest Deterrent Plant: Columbine, Lambsquarter, Velvet leaf Physical control - Remove infested leaves.

Vegetative Stage Root Development Sta	25–35 Days 35–45 Days	Disease Management Micro Nutrients Management	a) Powdery mildew: Biological control - Use neem oil or milk spray Cultural control - Ensure proper airflow around plants. Physical control - Burn affected plants. b) Downy mildew: Biological control - Spray with copper-based fungicides Cultural control - Remove infected leaves Physical control - Sanitation 1) Potassium (K): - To promote root growth Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P):
Root Development Sta	35–45 Days	Nutrient Deficiency Managemen	- Encourages root formation and energy transfer Application: Use bone meal or rock phosphate 1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: To prevent hollow roots and improve root structure Solution: Use Azotobacter-1 tbsp/5 L of water.
Root Development Sta	35–45 Days	Irrigation Management	Watering Frequency: -Water deeply but less frequently to encourage roots to grow deeper. - Radishes prefer even moisture levels but do not like to sit in water.
Root Development Sta	35–45 Days	Pest Management	a) Cabbage root maggot: Biological control - Use neem cake Cultural control - Use row covers Physical control - Sanitation. b) White Fly: Biological control - Green lacewing Cultural control - Grow Resistant Varieties Physical control - Yellow/Blue Sticky Traps - C) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Root Development Sta	35–45 Days	Disease Management	a) Root rot: Biological control - Bacillus subtilis Cultural control - Ensure good drainage Physical control - Avoid overwatering
Fruiting Stage	45–55 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - To ensure sweet and firm roots. - Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Avoid excess nitrogen to prevent overly large foliage at the expense of root development.
Fruiting Stage	45–55 Days	Nutrient Deficiency Management	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water or Add boric acid.
Fruiting Stage	45–55 Days	Irrigation Management	Watering Frequency: -Stop watering excessively just before harvesting to prevent the roots from becoming too large and splitting. - Water lightly to ensure the roots stay firm and crisp.

Fruiting Stage	45–55 Days	Pest Management	a) Cutworms: Biological control -Bacillus thuringiensis -10 ml/L of water -Beauveria bassiana -2.5 ml/L of water Cultural control -Remove weeds. Physical control - Pheromone lure. b) Slugs and Snails: Biological control - Use barriers like crushed eggshells around plants. Cultural control - Remove infected leaves Physical control - Handpick pests
Fruiting Stage	45–55 Days	Disease Management	a) Root rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good drainage Physical control - Avoid overwatering b) White rust: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Prune affected leaves.
Harvesting Stage	55–60 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	55–60 Days	Nutrient Deficiency Managemen	1) Potassium Deficiency: - Symptoms: Poor fruit development - Solution: Apply wood ash or seaweed extract. 2) Boron Deficiency: - Symptoms: Cracked or hollow roots Solution: Use Azotobacter-1 tbsp/5 L of water.
Harvesting Stage	55-60 Days	Irrigation Management	Watering Frequency: - Stop watering excessively just before harvesting to prevent the roots from becoming too large and splitting.
Harvesting Stage	55–60 Days	Pest Management	a) Cutworms: Biological control -Bacillus thuringiensis -10 ml/L of water -Beauveria bassiana -2.5 ml/L of water Cultural control -Remove weeds. Physical control - Pheromone lure. b) Slugs and Snails: Biological control - Use barriers like crushed eggshells around plants. Cultural control - Remove infected leaves Physical control - Handpick pests
Harvesting Stage	55–60 Days	Disease Management Signs of maturity	a) Root rot: Biological control - Pseudomonas fluorescens. Cultural control - Ensure good drainage Physical control - Avoid overwatering b) White rust: Biological control - Spray copper-based fungicides Cultural control - Avoid Over watering Physical control - Avoid Over watering Physical control - Prune affected leaves. A mature radish should be crisp, firm, and juicy, with a slightly spicy flavor.
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SWEET CORN			
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 5.8 - 6.8 using lime if needed. b) Seed Treatment - Soak seeds for 8-12 hours in lukewarm water. - Treat seeds with a bio-fungicide like Trichoderma viride, Allow treated seeds to dry in the shade for 30 minutes before planting. c) Sowing: - Sow seeds 2-3 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	1) Nutrient Management: - Introduce a mild liquid fertilizer or compost tea (rich in nitrogen) weekly to promote healthy foliage development.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion or vermicompost tea. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Maintain consistent moisture in cocopeat without waterlogging Ensure drainage to prevent standing water.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Cutworms: Biological control -Bacillus thuringiensis ·10 ml/L of water -Beauveria bassiana ·2.5 ml/L of water Cultural control -Remove weeds. Physical control - Pheromone lure.
Pre-Seedling Stage	15- 30 Days	Disease Management	a) Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–60 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–60 Days	Nutrient Deficiency Management	1) Phosphorus Deficiency: - Symptoms: Purplish discoloration on leaves - Solution: Apply bone meal or a phosphorus-rich liquid feed. 2) Potassium Deficiency: - Symptoms: Browning or curling leaf edges - Solution: Use potassium sulfate or wood ash.
Vegetative Stage	30-60 Days	Irrigation Management	Watering Frequency: - Deep water every 2-3 days to encourage root development. - Adjust frequency based on temperature and humidity.
Vegetative Stage	30–60 Days	Pest Management	a) Spider Mites: Biological control - Amblyseius spp Cultural control - Weed Control Physical control - Vellow/Blue Sticky Traps b) Aphids: Biological control - Use neem oil or garlic extract Cultural control - Remove affected leaves Physical control - Yellow/Blue Sticky Traps

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Vegetative Stage Flowering Stage	30–60 Days	Disease Management Micro Nutrients Management	a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Rust: Biological control - Bacillus subtilis - Garlic Extract Cultural control - Use Resistant Varieties Physical control - Use Resistant Varieties Physical control - Burn affected plants. 1) Potassium (K): - To support flowering and ear development Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - Encourages flower formation and energy transfer Application: Use bone meal or rock phosphate at the start of flowering. 3) Micronutrient Deficiencies (Zinc, Boron):
Flowering Stage	60–90 Days	Nutrient Deficiency Management	- Poor flower development and leaf discoloration Solution: Spray seaweed extract or micronutrient solution once every 2 weeks. 1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: Poor pollination or malformed kernels Solution: Use Azotobacter-1 thsp/5 L of water. Watering Frequency:
Flowering Stage	60-90 Days	Irrigation Management	- Maintain consistent moisture levels Water deeply to avoid stress, especially during pollination.
Flowering Stage	60–90 Days	Pest Management	a) Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Corn carworms: Biological control - Bacillus thuringiensis Cultural control - Cover developing ears with fine mesh to prevent pests. Physical control - Remove the bugs. c) Silk beetles: Biological control - Bacillus thuringiensis Cultural control - Cover developing ears with fine mesh to prevent pests. Physical control - Cover developing ears with fine mesh to prevent pests.
Flowering Stage	60-90 Days	Disease Management	a) Corn Smut: Biological control - Trichoderma spp Cultural control - Plant resistant varieties Physical control - Remove and destroy infected galls b) Southern Corn Leaf Blight: Biological control - Garlic or Onion Extract Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants. c) Fusarium Ear Rot: Biological control - Bacillus subrilis Cultural control - Ensure good pollination Physical control - Ensure good pollination Physical control - Ensure good pollination
Fruiting Stage	90–120 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants. Micro-Nutrients: - Apply liquid seaweed extract every 15 days for better fruit size and quality.
Fruiting Stage	90–120 Days	Nutrient Deficiency Management	Potassium Deficiency: Symptoms: Poor fruit development Solution: Apply wood ash or potassium-rich organic fertilizers.
Fruiting Stage	90–120 Days	Irrigation Management	Watering Frequency: - Ensure consistent watering, especially during hot weather - Avoid wetting the ears directly to reduce fungal risks.

Fruiting Stage	90–120 Days	Pest Management	a) Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Stalk borers: Biological control - Yellow/Blue Sticky Traps c) Stalk borers: Cultural control - Use organic fungicides like sulfur-based sprays Cultural control - Use organic fungicides like sulfur-based sprays Cultural control - Even watering to avoid stress. Physical control - Inspect cars regularly and remove infected parts
Fruiting Stage	90–120 Days	Disease Management	a) Corn Smut: Biological control - Trichoderma spp Cultural control - Plant resistant varieties Physical control - Remove and destroy infected galls b) Southern Corn Leaf Blight: Biological control - Garlic or Onion Extract Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants. c) Fusarium Ear Rot: Biological control - Baeillus subrilis Cultural control - Baeillus subrilis Cultural control - Ensure good pollination Physical control - Ensure good pollination Physical control - Sanitation.
Harvesting Stage	120–150 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for fruit enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants.
Harvesting Stage	120–150 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips. - Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges. - Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	120-150 Days	Irrigation Management	Watering Frequency: - Reduce watering a week before harvest to improve kernel sweetness.
Harvesting Stage	120–150 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps c) Stalk borers: Biological control - Yellow/Blue Sticky Traps c) Use organic fungicides like sulfur-based sprays Cultural control - Use organic fungicides like sulfur-based sprays Cultural control - Even watering to avoid stress. Physical control - Inspect cars regularly and remove infected parts

Harvesting Stage Harvesting Stage	120–150 Days	Disease Management	a) Corn Smut: Biological control - Trichoderma spp Cultural control - Plant resistant varieties Physical control - Remove and destroy infected galls b) Southern Corn Leaf Blight: Biological control - Garlic or Onion Extract Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants. c) Fusarium Ear Rot: Biological control - Bacillus subrilis Cultural control - Bacillus subrilis Cultural control - Bacillus subrilis Cultural control - Basilus subrilis Cultural control - Basilus subrilis Cultural control - Basilus subrilis Cultural control - Sanitation. Kernels should have a bright, consistent color (yellow or white, depending on the variety)
1 1ai vesting stage	120-130 Days	Signs of maturity	Kerneis should have a bright, consistent color (yellow or writte, depending off the variety)

			CLUSTER BEANS
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Finsure the pH is adjusted to 6.0-7.0 using lime if needed. b) Seed Treatment Soak seeds in water for 6-8 hours to improve germination. Treat seeds with a bio-fungicide like Trichoderma viride or a neem-based solution. c) Sowing: Sow seeds 1.5-2 cm deep and cover lightly with coir pith. Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	Nutrient Management: Apply a diluted nitrogen-rich fertilizer, such as vermicompost tea or fish emulsion, once a week.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion or blood meal. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days, ensuring the top layer of cocopeat is moist but not waterlogged. - Ensure drainage holes in the grow bag are unobstructed.
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) White Fly: Biological control - Green lacewing Cultural control - Sanitation Physical control - Yellow/Blue Sticky Traps. c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–60 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 4) Micro-Nutrients: - Include micronutrients like magnesium and calcium for strong growth.
Vegetative Stage	30-60 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Calcium Deficiency: - Symptoms: Curling or tip burn on new leaves Solution: Apply calcium nitrate or eggshell tea. 3) Magnesium Deficiency: - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves Solution: Use Epsom salt - 1g/L of water.

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Vegetative Stage	30–60 Days	Irrigation Management	Watering Frequency: - Deep water once every 3-4 days. - Avoid wetting the leaves to reduce fungal risks.
Vegetative Stage	30–60 Days	Pest Management	a) Spider Mites: Biological control - Amblyseius spp Cultural control - Weed Control Physical control - Yellow/Blue Sticky Traps b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps
Vegetative Stage	30–60 Days	Disease Management	a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Powdery Mildew: Biological control - Use neem oil or milk spray Cultural control - Ensure proper airflow around plants. Physical control - Ensure proper airflow around plants. Physical control - Burn affected plants.
Flowering Stage	60–75 Days	Micro Nutrients Management	1) Potassium (K): - Strengthens stems and disease resistance - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - Encourages flower formation and energy transfer. - Application: Use bone meal or rock phosphate at the start of flowering. 3) Micronutrient Deficiencies (Zinc, Boron): - Poor flower development and leaf discoloration. - Solution: Spray seaweed extract or micronutrient solution once every 2 weeks.
Flowering Stage	60–75 Days	Nutrient Deficiency Managemen	1) Potassium Deficiency: - Symptoms: Browning or yellowing at leaf margins - Solution: Use potassium sulfate or wood ash 2) Boron Deficiency: - Symptoms: Flower drop or malformed pods - Solution: Use Azotobacter-1 tbsp/5 L of water.
Flowering Stage	60–75 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days to maintain consistent soil moisture - Do not allow the cocopeat to dry out during flowering, as stress can lead to flower drop.
Flowering Stage	60–75 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Pod borers: Biological control - Bacillus thuringiensis Cultural control - Remove the bugs. Physical control - Avoid overhead watering t c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.

			a) Powdery Mildew:
			Biological control
			- Use neem oil or milk spray
			Cultural control
			- Ensure proper airflow around plants.
			Physical control
TI C.	(0.75 D	D: M	- Burn affected plants.
Flowering Stage	60-75 Days	Disease Management	b) Fusarium Wilt:
			Biological control
			- Bacillus subtilis
			- Mix Trichoderma with cocopeat before planting.
			Cultural control
			- Avoid Over watering
			Physical control
			- Remove and destroy infected plants.
			1) Phosphorus (P):
			- Supports energy transfer and root activity.
			- Application: Rock phosphate for slow release. Bone meal for organic phosphorus.
Fruiting Stage	75-90 Days	Micro Nutrients Management	2) Potassium (K):
	•		- Key nutrient for fruit enlargement and storage quality.
			- Application :Wood ash- 20 g/plant around the plants.
			Micro-Nutrients:
			- Apply liquid seaweed extract every 15 days for better fruit size and quality.
			1) Potassium Deficiency:
			- Symptoms: Poor fruit development
			- Solution: Apply wood ash or potassium-rich organic fertilizers.
Fruiting Stage	75–90 Days	Nutrient Deficiency Manageme	2) Calcium Deficiency:
			- Symptoms: Wrinkled fruits.
	1	1	- Solution: Calcium nitrate -1 g/L of water weekly.
			Watering Frequency:
Fruiting Stage	75-90 Days	Irrigation Management	- Maintain even watering to avoid stress on fruiting plants.
			- Avoid wetting leaves to reduce fungal risks.
			a)Aphids:
			Biological control
			- Use neem oil -5 ml/L of water at weekly intervals.
			Cultural control
			- Deep summer ploughing
			Physical control
			- Yellow/Blue Sticky Traps
			b) Pod borers:
			Biological control
			- Bacillus thuringiensis
F 0	75 00 D	D 36	Cultural control
Fruiting Stage	75–90 Days	Pest Management	- Remove the bugs.
			Physical control
			- Avoid overhead watering t
			c) Thrips:
			Biological control
			- Pirate bugs
			- Pirate ougs - Lacewing larvae
			Cultural control
			- Avoid planting Next to Onion & Garlic.
			Physical control
	1		- Yellow/Blue Sticky Traps.
			a) Powdery Mildew:
			Biological control
			- Use neem oil or milk spray
			Cultural control
			- Ensure proper airflow around plants.
			Physical control
			,
Emiting Store	75_90 Dave	Disease Management	- Burn affected plants.
Fruiting Stage	75–90 Days	Disease Management	b) Fusarium Wilt:
			Biological control
			- Bacillus subtilis
			- Mix Trichoderma with cocopeat before planting.
			Cultural control
			- Avoid Over watering
			Physical control
			- Remove and destroy infected plants.
			1) Phosphorus (P):
Harvesting Stage			- Supports energy transfer and root activity.
	90–120 Days	Minn N	- Application: Rock phosphate for slow release. Bone meal for organic phosphorus.
		Micro Nutrients Management	
			- Key nutrient for pod enlargement and storage quality.
			- Application :Wood ash- 20 g/plant around the plants.
1			- Fertilize lightly with a balanced organic fertilizer to support ongoing pod production.

Harvesting Stage	90–120 Days	Nutrient Deficiency Managem	1) Potassium deficiency: - Symptoms: Brown leaf tips. - Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges. - Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	90–120 Days	Irrigation Management	Watering Frequency: - Water consistently to maintain plant health and support continuous pod formation. - Avoid waterlogging as it can cause root rot.
Harvesting Stage	90–120 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Pod borers: Biological control - Bacillus thuringiensis Cultural control - Remove the bugs. Physical control - Avoid overhead watering t c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Harvesting Stage	90–120 Days	Disease Management	a) Powdery Mildew: Biological control - Use neem oil or milk spray Cultural control - Ensure proper airflow around plants. Physical control - Burn affected plants. b) Fungal rots: Biological control - Bacillus thuringiensis Cultural control - Avoid Over watering Physical control - Remove infected pods.
Harvesting Stage	90-120 Days	Signs of maturity	Pods should be vibrant green (or light green in some varieties), smooth, and tender.

BROAD BEANS			
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Ensure the pH is adjusted to 6.0-7.0 using lime if needed. b) Seed Treatment Soak seeds in water for 6-8 hours to improve germination. Treat seeds with a bio-fungicide like Trichoderma viride or a neem-based solution. Sowing: Sow seeds 1.5-2 cm deep and cover lightly with coir pith. Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. Add biofertilizers like Neem cake powder, Bone meal or Azospirillum to the medium. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	Nutrient Management: - Apply a diluted nitrogen-rich fertilizer, such as vermicompost tea or fish emulsion, once a week.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion or blood meal. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: - Water every 2-3 days, ensuring the top layer of cocopeat is moist but not waterlogged. - Ensure drainage holes in the grow bag are unobstructed.
Pre-Seedling Stage	15- 30 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Leaf miner: Biological control - Ladybugs Cultural control - Sanitation Physical control - Yellow/Blue Sticky Traps. c) Spider Mites: Biological control - Yellow/Blue Sticky Traps. c) Spider Mites: Biological control - Amblyseius spp Cultural control - Weed Control - Weed Control Physical control - Weed Control Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	15- 30 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum. - Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30–60 Days	Micro Nutrients Management	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. - Add Azospirillum or Rhizobium biofertilizers to enhance nitrogen fixation. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Micro-Nutrients: - Include micronutrients like magnesium and calcium for strong growth.
Vegetative Stage	30–60 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of lower leaves Solution: Apply vermicompost tea or a nitrogen-rich fertilizer. 2) Magnesium Deficiency: - Symptoms: Yellowing between veins on older leaves Solution: Use Epsom salt - 1g/L of water.
Vegetative Stage	30-60 Days	Irrigation Management	Watering Frequency: - Water every 2–3 days or when the top layer of cocopeat feels dry. - Ensure the grow bag has adequate drainage.

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			a) Spider Mites:
			Biological control
			- Amblyseius spp
			Cultural control - Weed Control
			Physical control
			-Yellow/Blue Sticky Traps
Vegetative Stage	30-60 Days	Pest Management	b) Thrips:
	,		Biological control
			- Pirate bugs
			- Lacewing larvae
			Cultural control
			- Avoid planting Next to Onion & Garlic.
			Physical control
			- Yellow/Blue Sticky Traps
			a) Leaf spot:
			Biological control
			- Bacillus subtilis Cultural control
			- Control Nightshade weeds
			Physical control
V	20 (0 D	D: W	- Remove weeds and infected plants.
Vegetative Stage	30-60 Days	Disease Management	b) Powdery Mildew:
			Biological control
			- Use neem oil or milk spray
			Cultural control
			- Ensure proper airflow around plants.
			Physical control Burn offered plants
	+	-	- Burn affected plants.
			1) Potassium (K):
			- Strengthens stems and disease resistance Application I be bonne and compact or potentium rich liquid fartilizers
			- Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P):
Flowering Stage	60-75 Days	Micro Nutrients Management	- Encourages flower formation and energy transfer.
Tio wering ottage	00 / 5 2 2 4 5	Micro Nutrients Management	- Application: Use bone meal or rock phosphate at the start of flowering.
			3) Micronutrient Deficiencies (Zinc, Boron):
			- Poor flower development and leaf discoloration.
			- Solution: Spray seaweed extract or micronutrient solution once every 2 weeks.
			1) Potassium Deficiency:
			- Symptoms: Browning or yellowing at leaf margins
Flowering Stage	60-75 Days	Nutrient Deficiency Management	- Solution: Use potassium sulfate or wood ash
1 lowering stage	00-75 Days	Truthene Deficiency Wanagement	2) Phosphorus Deficiency:
			- Symptoms: Purplish discoloration on leaves.
			- Solution: Apply bone meal or rock phosphate.
			Watering Frequency:
Flowering Stage	60-75 Days	Irrigation Management	- Maintain consistent moisture, as flowering plants are sensitive to water stress.
			- Water every 2–3 days, ensuring the cocopeat remains moist but not waterlogged.
			a)Aphids:
			Biological control
			- Use neem oil -5 ml/L of water at weekly intervals. Cultural control
			- Deep summer ploughing
			Physical control
			- Yellow/Blue Sticky Traps
			b) White fly:
			Biological control
			- Green lacewing
Flowering Stage	60-75 Days	Pest Management	Cultural control
		0	- Grow Resistant Varieties
			Physical control Vallow/Blue Sticky Trans
			- Yellow/Blue Sticky Traps. c) Thrips:
			Biological control
			- Pirate bugs
			- Lacewing larvae
			Cultural control
			- Avoid planting Next to Onion & Garlic.
			Physical control
			- Yellow/Blue Sticky Traps.
			a) Powdery Mildew:
			Biological control
			- Use neem oil or milk spray
Flowering Stage			Cultural control
			- Ensure proper airflow around plants.
			Physical control - Burn affected plants.
	60-75 Days	Disease Management	b) Downy mildew:
			Biological control
			- Trichoderma spp
			Cultural control
			- Ensure good airflow
			Physical control
			- Remove and destroy infected plants.

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Fruiting Stage	75–90 Days	Micro Nutrients Management	1) Potassium (K): - Supports energy transfer and to pod filling. - Application :Wood ash- 20 g/plant around the plants. 2) Micro-Nutrients: - Apply liquid seaweed extract every 15 days for better fruit size and quality.
Fruiting Stage	75–90 Days	Nutrient Deficiency Management	1) Boron Deficiency: - Symptoms: Hollow pods or flower drop. - Solution: Spray boric acid (0.1 g/liter) on flowers and young pods. 2) Calcium Deficiency: - Symptoms: Tip burn or malformed pods. - Solution: Calcium nitrate -1 g/L of water weekly.
Fruiting Stage	75–90 Days	Irrigation Management	Watering Frequency: - Water deeply every 3–4 days, keeping the cocopeat evenly moist. - Avoid waterlogging to prevent root rot.
Fruiting Stage	75–90 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Pod borers: Biological control - Bacillus thuringiensis Cultural control - Remove the bugs. Physical control - Avoid overhead watering t c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Fruiting Stage	75–90 Days	Disease Management	a) Anthracnose: Biological control - Bacillus subtilis Cultural control - Ensure proper airflow around plants. Physical control - Burn affected plants. b) Botrytis: Biological control - Neem oil Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants.
Harvesting Stage	90–120 Days	Micro Nutrients Management	1) Phosphorus (P): - Supports energy transfer and root activity. - Application: Rock phosphate for slow release. Bone meal for organic phosphorus. 2) Potassium (K): - Key nutrient for pod enlargement and storage quality. - Application: Wood ash- 20 g/plant around the plants. - Fertilize lightly with a balanced organic fertilizer to sustain productivity during the harvest period.
Harvesting Stage	90–120 Days	Nutrient Deficiency Management	1) Potassium deficiency: - Symptoms: Brown leaf tips. - Solution: Apply wood ash or potassium-rich organic fertilizers. 2) Magnesium deficiency: - Symptoms: Yellowing leaf edges. - Solution: Use Epsom salts -1 tbsp/5 L of water.
Harvesting Stage	90-120 Days	Irrigation Management	Watering Frequency: - Water consistently to keep the pods tender but reduce the frequency as the plant matures.
Harvesting Stage	90–120 Days	Pest Management	a)Aphids: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Deep summer ploughing Physical control - Yellow/Blue Sticky Traps b) Pod borers: Biological control - Bacillus thuringiensis Cultural control - Remove the bugs. Physical control - Avoid overhead watering t c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Pirate out of the control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.

Harvesting Stage	90–120 Days	Disease Management	a) Anthracnose: Biological control - Bacillus subtilis Cultural control - Ensure proper airflow around plants. Physical control - Burn affected plants. b) Botrytis: Biological control - Neem oil Cultural control - Avoid Over watering Physical control - Remove and destroy infected plants.
Harvesting Stage	90-120 Days	Signs of maturity	Mature beans should feel firm and large. Vibrant green.

PUMPKIN			
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 6.8. using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Azospirillum mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 inches deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Azospirillum or Azotobacter, Neem cake powder and Trichoderma to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Managemen	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Supplement with organic compost or fish emulsion. 2) Magnesium Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves. - Solution: Apply Epsom salts -1 tbsp/5 L of water as a foliar spray.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Water lightly but consistently to keep the cocopeat moist. - Ensure good drainage to prevent root rot.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Use neem oil -1 ml/L of water at weekly intervals. Cultural control - 1.5 % fish oil soap. Physical control - Remove affected parts of the plant. b) Whiteflies: Biological control - Use neem oil -2 ml/L of water at weekly intervals Cultural control - Remove affected parts of the plant. Physical control - Yellow/Blue Sticky Traps c) Weeds-Nutsedge: Biological control - Bactra minima - B. venosana Cultural control - Remove weeds weekly. Physical control - Remove weeds weekly. Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a)Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder-Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Remove affected seedlings. Physical control - Avoid overwatering to ensure good airflow.

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Vegetative Stage	25-50 Days	Micro Nutrients Managemer	1) Nitrogen (N): - Supports lush, healthy leaf and stem growth, which are essential for photosynthesis and overall plant health Application: Use Vermicompost or fish emulsion - Apply weekly. 2) Phosphorus (P): - Important for strong root development, which is necessary for the plant to take up nutrients and water efficiently Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Aids in overall plant health, improving disease resistance and promoting strong stems and leaves Application: Use Seaweed extract - Every 15 days. 4) Calcium (Ca): - Strengthens cell walls, supports root development, and prevents issues like blossom end rot. Calcium also plays a role in photosynthesis Application: Use gypsum can be used to supply calcium without affecting soil pH. 5) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	25-50 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with organic compost or fish emulsion. 2) Magnesium Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves Solution: Apply Epsom salts -1 tbsp/5 L of water as a foliar spray.
Vegetative Stage	25- 50 Days	Irrigation Management	Watering: - Water consistently, keeping the cocopeat moist but not soggy. - Ensure that the top layer is dry between watering sessions.
Vegetative Stage	25- 50 Days	Pest Management	a) Aphids: Biological control - Use neem oil -1 ml/L of water at weekly intervals. Cultural control - 1.5 % fish oil soap. Physical control - Remove affected parts of the plant. b) Thrips: Biological control - Azadiractin 10000 ppm - 2 ml/L of water - Botanical Extracts -2 ml/L of water Cultural control - Neem cake. Physical control - Crop rotation c) Pumpkin flies: Biological control - Neem oil -3.0% Cultural control - Neem oil -3.0% Cultural control - Sanitation. d) Root Knot Nematode: Biological control - Bacterium Pasteuria penetrans Cultural control - Bacterium Pasteuria penetrans Cultural control - Clean up and remove garden debris Physical control - Clean up and remove garden debris Physical control - Clean up and remove garden debris Physical control - Soil solarization
Vegetative Stage	25-50 Days	Disease Management	a) Alternaria leaf blight: Biological control - Parasite - Apanteles sp, Trichogramma pretiosum. Cultural control - Crop debris should be removed. Physical control - Avoid overhead irrigation. b) Cercospora leaf spot: Biological control - Trichoderma aureoviride - Trichoderma virens. Cultural control - Diseased plants should be removed and destroyed. Physical control - Crop debris should be removed after harvest.

Flowering Stage	50-70 Days	Micro Nutrients Managemer	1) Nitrogen (N): - Supports lush, healthy leaf and stem growth, which are essential for photosynthesis and overall plant health Application: Use Vermicompost or fish emulsion - Apply weekly. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance Application: Use wood ash or banana peel tea - Every 15 days. 4) Calcium (Ca): - Calcium is essential for strengthening cell walls and preventing issues like flower drop or poor fruit set Application: Use gypsum can be used to supply calcium without affecting soil pH. 5) Magnesium (Mg): - Magnesium is critical for photosynthesis and energy production, which directly supports flowering Application: Use Epsom salts -1 tbsp/5 L of water.
Flowering Stage	50- 70 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Supplement with organic compost or fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Slow growth and purplish leaves. - Solution: Apply bone meal or rock phosphate. 2) Magnesium Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves. - Solution: Apply Epsom salts -1 tbsp/5 L of water as a foliar spray.
Flowering Stage	50- 70 Days	Irrigation Management	Watering: -Water deeply to ensure the roots reach sufficient moisture. - Reduce watering frequency slightly compared to earlier stages to encourage fruit ripening, but don't let the soil dry out completely.
Flowering Stage	50- 70 Days	Pest Management	a) Aphids: Biological control - Use neem oil -1 ml/L of water at weekly intervals. Cultural control - 1.5 % fish oil soap. Physical control - Remove affected parts of the plant. b) Thrips: Biological control - Azadiractin 10000 ppm - 2 ml/L of water - Botanical Extracts -2 ml/L of water Cultural control - Neem cake. Physical control - Crop rotation - Pumpkin files: Biological control - Neem oil -3.0% Cultural control - Neem cake. Physical control - Sanitation. d) Squash bug: Biological control - Applications of insecticidal soaps and oils. Cultural control - Destroy all crops residue as soon as possible after harvest or on plant death. Physical control

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Flowering Stage	50- 70 Days	Disease Management	a) Alternaria leaf blight: Biological control - Parasite - Apanteles sp, Trichogramma pretiosum. Cultural control - Crop debris should be removed. Physical control - Avoid overhead irrigation. b) Cercospora leaf spot: Biological control - Trichoderma aureoviride - Trichoderma aureoviride - Trichoderma virens. Cultural control - Diseased plants should be removed and destroyed. Physical control - Crop debris should be removed after harvest. c) Powdery mildew: Biological control - Neem oil - Sodium bicarbonate Cultural control - Do not overcrowd plants. Physical control - Do not overcrowd plants. Physical control - Jon other overcrowd plants. Physical control - Jon ont overcrowd plants. Physical control - Jon wildew: Biological control - Jon ont overcrowd plants. Cultural control - Jon wildew: Biological control - Compete removal and destruction of the affected leaves. Physical control - Complete removal and destruction of the affected leaves.
Fruiting Stage	70- 90 Days	Micro Nutrients Managemen	1) Calcium (Ca): - Symptoms: Blossom end rot on fruits, weak fruit walls, or misshapen fruits. - Application: Crushed eggshells soaked in water or bone meal. 2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water.
Fruiting Stage	70- 90 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves, reduced fruit size, and poor overall plant vigor. - Solution: Apply compost tea or diluted fish emulsion -low nitrogen to maintain moderate nitrogen levels. 2) Phosphorus Deficiency: - Symptoms: Stunted plant growth, delayed fruit ripening, and poor root health. Leaves may develop a purplish hue. - Solution: Incorporate bone meal or rock phosphate into the soil to provide a slow-release source of phosphorus. 3) Potassium Deficiency: - Symptoms: Yellowing and browning of leaf edges, weak fruit development, poor fruit quality, or reduced flavor. - Solution: Apply banana peel tea or wood ash sparingly for potassium.
Fruiting Stage	70- 90 Days	Irrigation Management	Watering: - Continue to water deeply to avoid stress during fruit filling. - Reduce watering towards the end of the fruit ripening period to prevent waterlogging and encourage curing. - Water at the base to avoid wetting the foliage.
Fruiting Stage	70- 90 Days	Pest Management	a) Cucumber beetles: Biological control - Neem oil Cultural control - Kaolin clay Physical control - Use yellow sticky cup traps b) Fruit fly: Biological control - Neem oil -3.0 % Cultural control - Bury the damaged fruits deep in the soil Physical control - Install fruit fly trap c) Pumpkin beetle: Biological control - Use attractants like citronella oil, eucalyptus oil, vinegar, dextrose and lactic acid to trap flies. Cultural control - Keep 5 g of wet fishmeal in plastic container. Physical control

Fruiting Stage	70- 90 Days	Disease Management	a) Anthracnose: Biological control - Botanical extracts - 1 - 2 ml/L of water. - Herbal formulation - 2 ml/L of water. Cultural control - Use healthy, disease-free certified seed. Physical control - Crop rotation - Deep cultivation. b) Phytophthora blight: Biological control - Bacillus spp. - B. vallismortis Cultural control - Efficient management of water to avoid saturated soil. Physical control - Avoid long periods of irrigation. c) Phytophthora Fruit Rot: Biological control - B. thuringiensis Cultural control - Crop rotation Physical control - Avoid overhead watering d) Gummy stem blight: Biological control - Trichoderma viride . Cultural control - Use healthy, disease-free certified seed. Physical control - Crop rotation. e) Bacterial wilt: Biological control - Crop rotation. e) Bacterial wilt: Biological control
Harvesting Stage	90- 120 Days	Micro Nutrients Managemen	- Soil application of T.viride - 2.5 g/plant Cultural control - Use healthy, disease-free certified seed. Nutrient Management: Stop Fertilization
Harvesting Stage	90-120 Days	Nutrient Deficiency Manage	- No need for fertilization during the last few weeks before harvest as the plant is focused on maturing its fruit. 1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves, reduced fruit size, and poor overall plant vigor Solution: Apply compost tea or diluted fish emulsion -low nitrogen to maintain moderate nitrogen levels. 2) Phosphorus Deficiency: - Symptoms: Stunted plant growth, delayed fruit ripening, and poor root health. Leaves may develop a purplish hue Solution: Incorporate bone meal or rock phosphate into the soil to provide a slow-release source of phosphorus. 3) Potassium Deficiency: - Symptoms: Yellowing and browning of leaf edges, weak fruit development, poor fruit quality, or reduced flavor Solution: Apply banana peel tea or wood ash sparingly for potassium.
Harvesting Stage	90- 120 Days	Irrigation Management	Watering: - Stop watering about 7–10 days before harvest to allow the pumpkins to cure and reduce moisture content. - This will also help harden the skins for storage.

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			a) Cucumber beetles:
			Biological control
			- Neem oil
			Cultural control
			-Kaolin clay
			Physical control
			- Use yellow sticky cup traps
			b) Fruit fly:
			Biological control
			-Neem oil -3.0 %
			Cultural control
			- Bury the destroyed fruits deep in the soil.
			Physical control
Harvesting Stage	90- 120 Days	Pest Management	- Install fruit fly trap
	,		c) Pumpkin beetle:
			Biological control
			-Use attractants like citronella oil, eucalyptus oil, vinegar, dextrose and lactic acid to trap flies.
			Cultural control
			- Keep 5 g of wet fishmeal in plastic container.
			Physical control
			-Hand collection and destruction of infested leaves and fruits.
			d) Cabbage looper:
			Biological control
			- Bacillus thuringiensis
			- Trichogramma wasps.
			Cultural control
			- Plant debris should be removed.
			Physical control
			a) Phytophthora blight:
			Biological control
			- Bacillus spp.,
			- B. vallismortis
			Cultural control
			-Efficient management of water to avoid saturated soil.
			Physical control
			- Avoid long periods of irrigation.
			b) Phytophthora Fruit Rot:
			Biological control
			- B. thuringiensis
			Cultural control
			- Crop rotation
Harvesting Stage	90- 120 Days	Disease Management	Physical control
	,		- Avoid overhead watering
			c) Gummy stem blight:
			Biological control
			-Trichoderma viride .
			Cultural control
			- Use healthy, disease-free certified seed.
			Physical control
			- Crop rotation.
			d) Bacterial wilt:
			Biological control
			- Soil application of T.viride - 2.5 g/plant
			Cultural control
			- Use healthy, disease-free certified seed.
			Physical control Physical Physical Control Physical Physic
Harvesting Stage	90–120 Days	Signs of maturity	
Tan vesting stage	120 Days	O.5113 Of Hiacurity	Vibrant color, orange, green, white, or striped.
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			CUCUMBER
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Ensure the pH is adjusted to 6.0 - 6.8. using lime if needed. b) Seed Treatment: Prepare a slurry using Trichoderma viride or Azospirillum mixed with water. Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: Sow seeds 1 inch deep and cover lightly with coir pith. Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. Add biofertilizers like Bacillus or Pseudomonas, Neem cake powder and Trichoderma to the medium. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Apply compost tea or diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves. - Solution: Use chelated iron foliar spray.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering: - Water daily in small amounts to keep the cocopeat moist. - Ensure good drainage to avoid waterlogging.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Aphids: Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Seedcorn Maggot: Biological control - Bacillus thuringiensis Cultural control - Late plantings during cool springs. Physical control - Good field sanitation c) Cutworms: Biological control - Bacillus thuringiensis -10 ml/L of water - Beauveria bassiana -2.5 ml/L of water Cultural control - Remove weeds. Physical control - Pheromone lure.
Pre-Seedling Stage	15- 30 Days	Disease Management	a) Collar rot/Root rot: Biological control - Trichoderma spp - Streptomyces spp - Bacillus subtilis Cultural control - Destroy infected plants Physical control - Improve drainage b) Bacterial wilt: Biological control - Trichoderma koningii Cultural control - Destroy infected plants Physical control - Trichoderma koningii Cultural control - Destroy infected plants Physical control

			1) Nitrogen (N):
Vegetative Stage	30- 45 Days	Micro Nutrients Management	- Switch to a nitrogen-rich fertilizer to support leaf and vine growth Application : Use fish emulsion - Apply weekly 2) Phosphorus (P):
vegetative otalge	30 19 Dayo	THE OTT WATER OF THE STATE OF T	- Important for strong root development, which is necessary for the plant to take up nutrients and water efficiently Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K):
			- Aids in overall plant health, improving disease resistance and promoting strong stems and leaves Application : Use Seaweed extract - Every 15 days.
			1) Magnesium Deficiency: - Symptoms:Yellowing between veins of older leaves.
Vegetative Stage	30- 45 Days	Nutrient Deficiency Management	- Solution: Remedy with Epsom salts -1 tbsp/5 L of water. 2) Calcium Deficiency: - Symptoms: Leaf tip burns and curling.
			- Solution: Apply calcium nitrate.
Vegetative Stage	30- 45 Days	Irrigation Management	Watering: - Increase watering frequency as the plant size grows, keeping cocopeat consistently moist. - Avoid wetting the foliage to reduce fungal risks.
			a) Aphids:
			Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water
			Cultural control -1.5 % fish oil soap
			Physical control - Remove affected parts of the plant.
			b) Leaf miner:
			Biological control - Neem kernel extract 4%
			Cultural control -Remove plant residues
			Physical control
Vegetative Stage	30- 45 Days	Pest Management	- Yellow sticky traps c)Whitefly:
vegetative stage	30-43 Days	i est ivianagement	Biological control - Ladybugs
			- Lacewings
			Cultural control -Avoid excessive nitrogen fertilizer
			Physical control - Yellow sticky traps
			d) Mites:
			Biological control - Ladybugs
			- Lacewings
			- Predatory mites Cultural control
			-Regular Monitoring Physical control
			a) Powdery mildew:
			Biological control - Pseudomonas fluorescence -2.5 ml/L of water.
			Cultural control -Remove plant residues
			Physical control
			- Sanitation. b) Downy mildew:
			Biological control - Plant extracts - 2.5 ml/L of water
Vegetative Stage	30- 45 Days	Disease Management	- Pseudomonas fluorescence - 2.5 ml/L of water.
			Cultural control -Plucking and destruction of affected leaves
			Physical control - Remove infected leaves.
			c) Bacterial leaf spot:
			Biological control - Bacillus subtilis.
			Cultural control -Use healthy, disease-free certified seed.
			Physical control
	<u> </u>		- Remove and destroy infected leaves manually.

Flowering Stage	45-50 Days	Micro Nutrients Management	1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set. - Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance. - Application: Seaweed extract every 10 days to promote flowering.
Flowering Stage	45- 50 Days	Nutrient Deficiency Management	1) Phosphorus Deficiency: - Symptoms: Purplish leaves and poor flowering. - Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency: - Symptoms: Browning of leaf edges and weak flowers. - Solution: Use banana peel tea.
Flowering Stage	45- 50 Days	Irrigation Management	Watering: -Water deeply to ensure the roots reach sufficient moisture. - Reduce watering frequency slightly compared to earlier stages to encourage fruit ripening, but don't let the soil dry out completely.
Flowering Stage	45-50 Days	Pest Management	a) Aphids: Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Red pumpkin beetle: Biological control - Metarhizium anisopliae -10 g/L of water - Activated neem oil - 5 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Deep ploughing c) Whitefly: Biological control - Ladybugs - Lacewings Cultural control - Avoid excessive nitrogen fertilizer Physical control - Yellow sticky traps d) Epilachna beetle: Biological control - Neem oil Cultural control - Neem oil Cultural control - Remove the bugs and destroy Physical control

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Flowering Stage	45- 50 Days	Disease Management	a) Powdery mildew: Biological control - Pseudomonas fluorescence -2.5 ml/L of water. Cultural control - Remove infected leaves. C) Anthracnose: Biological control - Plant extracts - 1 - 2 ml/L of water - Pleuking and destruction of affected leaves Physical control - Plant extracts - 2.5 ml/L of water. Cultural control - Plucking and destruction of affected leaves Physical control - Remove infected leaves. C) Anthracnose: Biological control - Botanical extracts - 1 - 2 ml/L of water - Herbal formulation - 2 ml/L of water Cultural control - Use healthy, disease-free certified seed. Physical control - Crop rotation - Deep cultivation. d) Fusarium wilt: Biological control - Pseudomonas sp - 2 ml/L of water Cultural control - Pseudomonas sp - 2 ml/L of water Cultural control - Cultivation of resistant varieties Physical control
Fruiting Stage	50- 65 Days	Micro Nutrients Management	1) Calcium (Ca): - Symptoms: Blossom end rot on fruits, weak fruit walls, or misshapen fruits. - Application: Crushed eggshells soaked in water or bone meal. 2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water.
Fruiting Stage	50- 65 Days	Nutrient Deficiency Management	1) Calcium Deficiency: - Symptoms:Blossom-end rot on fruits Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency: - Symptoms:Poor fruit quality and flavor Solution: Use banana peel tea. 3)Sulfur Deficiency: - Symptoms: Pale fruits with weak flavor Solution: Add gypsum or elemental sulfur.
Fruiting Stage	50- 65 Days	Irrigation Management	Watering: - Continue to water deeply to avoid stress during fruit filling, - Reduce watering towards the end of the fruit ripening period to prevent waterlogging and encourage curing, - Water at the base to avoid wetting the foliage.
Fruiting Stage	50- 65 Days	Pest Management	a) Aphids: Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Red pumpkin beetle: Biological control - Metarhizium anisopliae -10 g/L of water - Activated neem oil - 5 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Deep ploughing c) Fruit fly: Biological control - Neem oil- 3.0% Cultural control - Collect the affected plants and destroy Physical control - Collect the affected plants and destroy Physical control - Fruit fly trap.

Fruiting Stage 5	50-65 Days	Disease Management	a) Anthracnose: Biological control - Botanical extracts - 1 - 2 ml/L of water - Herbal formulation - 2 ml/L of water Cultural control - Use healthy, disease-free certified seed. Physical control - Crop rotation - Deep cultivation. b) Fusarium wilt: Biological control - Pseudomonas sp - 2 ml/L of water - Herbal formulation - 2 ml/L of water Cultural control - Cultivation of resistant varieties Physical control - Sanitation. c) Vascular Wilt: Biological control - Trichoderma polysporum Cultural control - Use healthy, disease-free certified seed. Physical control - Sanitation. d) Scab: Biological control - B. subtilis - B. amyloliquefaciens Cultural control - Crop rotation with corn
Harvesting Stage	65- 90 Days	Micro Nutrients Management	Physical control 1) Nutrient Management: - Stop applying fertilizers 7–10 days before harvesting to avoid excessive vegetative growth and allow the plant to focus on fruit maturation. - Maintain a low-level nutrient supplement (e.g., compost tea or diluted seaweed extract) if harvesting is staggered over weeks to support plant vitality and extend fruiting.
Harvesting Stage (65- 90 Days	Nutrient Deficiency Management	1) Calcium Deficiency: - Symptoms:Blossom-end rot on fruits. - Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency: - Symptoms:Poor fruit quality and flavor. - Solution: Use banana peel tea.
Harvesting Stage	65- 90 Days	Irrigation Management	Watering: - Before Harvest: Reduce watering 2–3 days prior to harvesting to enhance fruit firmness and flavor. Do not let the plants wilt, as it can stress the plant and affect subsequent yields. - After Harvest: Water the plants lightly to maintain soil moisture and support further fruiting if the plant will continue producing.
Harvesting Stage	65- 90 Days	Pest Management	a) Aphids: Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Fruit fly: Biological control - Neem oil- 3.0% Cultural control - Collect the affected plants and destroy Physical control - Deep ploughing - Fruit fly trap.
Harvesting Stage (65- 90 Days	Disease Management	a) Fruit rot: Biological control - Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control - Destroy infected fruits. Physical control - Avoid overhead watering to keen foliage and fruits dry.
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Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 7.5. using lime if needed. b) Seed Treatment: - Prepare a slurry using Azospirillum or Azotobacter mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Bacillus or Pseudomonas, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion: Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients. - Incorporate micronutrients -iron, zinc, magnesium, every 2 weeks.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Water 1-2 times a day depending on ambient temperatures. - Avoid wetting the leaves to prevent fungal infections.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control -Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Leaf miner: Biological control - Neem kernel extract 4% Cultural control - Remove plant residues Physical control - Yellow sticky traps c) Thrips: Biological control - Botanical Extracts -2 ml/L of water - Organic blend of botanical extracts - 2 ml/L of water - Azadiractin 10000 ppm - 2 ml/L of water Cultural control - Neem cake. Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Root rot: Biological control - Trichoderma spp - Bacillus subtilis Cultural control - Remove affected plants Physical control - Avoid over watering b) Damping Off: Biological control - Trichoderma harzianum. Cultural control - Remove affected seedlings. Physical control
Vegetative Stage	25- 45 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development and vine growth. - Application: Use fish emulsion - Apply weekly
Vegetative Stage	25- 45 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Pale new leaves with green veins Solution: Foliar spray of chelated iron.

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Vegetative Stage	25- 45 Days	Irrigation Management	Watering: - Water regularly but ensure no stagnant water in the grow bag.
			- Maintain 50-60% moisture in cocopeat.
Vegetative Stage	25- 45 Days	Pest Management	a) Aphids: Biological control · Neem oil emulsion 2.5% with garlic paste-20g/L of water Cultural control · Remove affected parts of the plant. b) Mealybugs: Biological control · Lacewings · Ladybugs Cultural control · Avoid Over-fertilization Physical control · Yellow sticky traps · Mealy Bug Lure c) Whiteflies: Biological control · Neem oil -2 ml/L of water Cultural control · Remove weeds Physical control · Remove weeds Physical control · Yellow sticky traps d) Gall fly: Biological control · Neem oil with garlic mixture. Cultural control
Vegetative Stage	25- 45 Days	Disease Management	Restrict irrigation and nitrogen fertilizers. a) Collar rot/Root rot: Biological control - Trichoderma spp - Bacillus subtilis Cultural control - Remove affected plants Physical control - Improve drainage - Avoid over watering b) Powdery mildew: Biological control - Pseudomonas fluorescence -2.5 ml/L of water. Cultural control - Remove affected plants Physical control - Sanitation. c) Downy mildew: Biological control - Sanitation. c) Downy mildew: Cultural control - Pseudomonas fluorescence -2.5 ml/L of water. - Plant extracts - 2.5 ml/L of water. - Plant extracts - 2.5 ml/L of water Cultural control - Plucking and destruction of affected leaves. Physical control - Plucking and destruction of affected leaves. Physical control - Remove infected leaves.
Flowering Stage	45- 60 Days	Micro Nutrients Management	1) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set. - Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 2) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance. - Application: Seaweed extract every 10 days to promote flowering. 3) Magnesium (Mg): - Symptoms: Interveinal chlorosis yellowing between veins on older leaves. - Application: Use Epsom salts -1 tbsp/5 L of water.
Flowering Stage	45- 60 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Potassium Deficiency: - Symptoms: Brown edges on older leaves Solution: Use banana peel tea.
Flowering Stage	45- 60 Days	Irrigation Management	Watering: - Reduce watering slightly to avoid water stress, which can lead to flower drop Water early in the morning or late evening.

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			a) Epilachna beetle:
			Biological control
			- Neem oil
			Cultural control
			- Remove the bugs and destroy
			Physical control
			- Collection and destruction of egg masses and grubs.
			b) American serpentine leaf miner:
			Biological control
			- Neem oil emulsion 2.5%.
			Cultural control
			- Remove plant residues
ı			Physical control
			- Yellow sticky traps
Flowering Stage	45- 60 Days	Pest Management	c) Red Pumpkin Beetle:
			Biological control
			- Metarhizium anisopliae -10 gm/L of water
			- Activated neem oil - 5 ml/L of water.
			Cultural control
			- Remove the bugs and destroy. Physical control
			- Deep ploughing
			d) Gall fly:
			Biological control
			- Neem oil with garlic mixture.
			Cultural control
			- Restrict irrigation and nitrogen fertilizers.
			Physical control
			a) Anthracnose:
			Biological control
			- Botanical extracts - 1 –2 ml/L of water
			- Herbal formulation -2 ml/L of water
			Cultural control
			- Use healthy, disease-free certified seed. Physical control
			- Crop rotation
			- Deep cultivation.
	45- 60 Days		b) Powdery mildew:
			Biological control
			- Pseudomonas fluorescence -2.5 ml/L of water.
			Cultural control
			-Remove plant residues
Flowering Stage		Disease Management	Physical control
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			c) Downy mildew:
			Biological control
			- Pseudomonas fluorescence -2.5 ml/L of water.
			- Plant extracts - 2.5 ml/L of water
			Cultural control
			-Plucking and destruction of affected leaves
			Physical control
			- Remove infected leaves.
			d) Fusarium wilt:
			Biological control
			- Pseudomonas fluorescence -2.5 ml/L of water.
			- Plant extracts - 2.5 ml/L of water
			Cultural control
			- Cultivation of resistant varieties.
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			1) Calcium (Ca):
			- Symptoms: Blossom end rot on fruits, weak fruit walls, or misshapen fruits.
F	(0.00 F	16. 37	- Application: Crushed eggshells soaked in water or bone meal.
Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg):
Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size.
Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water.
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Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water. - Incorporate seaweed extract to boost fruit size and quality.
Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water. - Incorporate seaweed extract to boost fruit size and quality. 1) Calcium Deficiency:
Fruiting Stage	60-80 Days	Micro Nutrients Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water. - Incorporate seaweed extract to boost fruit size and quality. 1) Calcium Deficiency: - Symptoms:Blossom-end rot on fruits. - Solution: Remedy with bone meal or liquid phosphorus.
	60-80 Days	Micro Nutrients Management Nutrient Deficiency Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 thsp/5 L of water. - Incorporate seaweed extract to boost fruit size and quality. 1) Calcium Deficiency: - Symptoms: Blossom-end rot on fruits. - Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency:
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Fruiting Stage	60-80 Days	Nutrient Deficiency Management	2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water. - Incorporate seaweed extract to boost fruit size and quality. 1) Calcium Deficiency: - Symptoms:Blossom-end rot on fruits. - Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency: - Symptoms:Poor fruit quality and flavor. - Solution: Use banana peel tea. 3)Sulfur Deficiency: - Symptoms: Pale fruits with weak flavor. - Solution: Add gypsum or elemental sulfur.

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Cultural control - Cultivation of tolerant/resistant varieties.
- Cultivation of tolerant/resistant varieties.
Physical control
- Clean cultivation.
c) Gummy stem blight:
Biological control
- Pseudomonas
- Bacillus spp.
Cultural control
-Treat seeds prior to planting.
Physical control
1) Nutrient Management:
Harvesting Stage 80-100 Days Micro Nutrients Management - Stop applying fertilizers 7-10 days before harvesting to avoid excessive vegetative growth and allow the plant to focus on fruit maturation.
- Reduce fertilizer application gradually but continue small doses of potassium.
1) Calcium Deficiency:
- Symptoms:Blossom-end rot on fruits.
Harvesting Stage 80-100 Days Nutrient Deficiency Management - Solution: Remedy with bone meal or liquid phosphorus.
2) Potassium Deficiency:
- Symptoms:Poor fruit quality and flavor.
- Solution: Use banana peel tea.
Watering:
- Water sparingly to maintain fruit hydration and prevent splitting.
Harvesting Stage 80-100 Days Irrigation Management - Before Harvest: Reduce watering 2-3 days prior to harvesting to enhance fruit firmness and flavor.
Do not let the plants wilt, as it can stress the plant and affect subsequent yields.
- After Harvest: Water the plants lightly to maintain soil moisture and support further fruiting if the
plant will continue producing.

		1	
			a) Epilachna beetle:
			Biological control
			- Neem oil
			Cultural control
			- Remove the bugs and destroy
i			Physical control
			- Collection and destruction of egg masses and grubs.
			b) Red Pumpkin Beetle:
			Biological control
			- Metarhizium anisopliae -10 gm/L of water
Harvesting Stage	80-100 Days	Pest Management	- Activated neem oil - 5 ml/L of water.
Trairvesting otage	00 100 Days	1 est Wanagement	Cultural control
			- Remove plant residues
			Physical control
			- Deep ploughing
			c) Fruit fly:
			Biological control
			- Neem oil- 20-50 ml/L of water
			- Neem on- 20-30 mi/ L of water Cultural control
			- Collect and destroy affected fruits
			Physical control
			a) Alternaria blight and fruit rot:
			Biological control
			- Paenibacillus polymyxa
			- Sinomonas atrocyanea.
			Cultural control
			- Use of disease free seeds
			Physical control
			- Sanitation
			b) Mosaic Virus:
			Biological control
			- B. diffusa root extract
	00 100 D		- C. aculeatum leaf extract
Harvesting Stage	80-100 Days	Disease Management	- A. indica leaf extract.
			Cultural control
			- Cultivation of tolerant/resistant varieties.
			Physical control
			- Clean cultivation.
			c) Gummy stem blight:
			Biological control
			- Trichoderma viride
			- Pseudomonas
			- Bacillus spp.
			Cultural control
			-Treat seeds prior to planting.
			Physical control
	1		
Harvesting Stage	80-100 Days	Signs of maturity	
		1 ° ′	Ridged appearance, Dark green
	1	1	1

			BITTER GOURD
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 5.5 - 6.8. using lime if needed. b) Seed Treatment: - Prepare a slurry using Phosphobacteria or Pseudomonas fluorescens mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Bacillus or Pseudomonas, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients. - Incorporate micronutrients -iron, zinc, magnesium, every 2 weeks.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Keep the cocopeat moist but not waterlogged. - Water lightly once or twice daily, ensuring consistent moisture.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5% fish oil soap Physical control - Remove affected parts of the plant. b) Mites: Biological control - Ladybugs - Lacewings - Predatory mites Cultural control - Regular Monitoring Physical control - Proper irrigation. c) Beetles: Biological control - Proper irrigation. c) Beetles: Cultural control - Bacillus thuringiensis - Aspergillus spp. Cultural control - Remove and destroy infected plants Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Damping Off: Biological control - Trichoderma harzianum. Cultural control - Remove and destroy infected plants Physical control - Good aeration - Avoid waterlogging.
Vegetative Stage	25- 45 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development and vine growth. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Add micronutrients like magnesium, calcium, and boron using a chelated micronutrient mix once a week.
Vegetative Stage	25- 45 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Pale new leaves with green veins. - Solution: Foliar spray of chelated iron.

Vegetative Stars	25, 45 Dave	Irrigation Management	Watering:
Vegetative Stage	25- 45 Days	Irrigation Management	- Increase watering frequency as the plant grows, but ensure proper drainage.
			- Avoid overwatering to prevent root rot.
			a) Aphids:
			Biological control
			- Ladybugs
			- Parasitic Wasps
			Cultural control
			-1.5 % fish oil soap
			Physical control
			- Remove affected parts of the plant
			b) Red pumpkin beetle: Biological control
			Biological control - Metarhizium anisopliae -10 gm/L of water
			- Activated neem oil - 5 ml/L of water
			Cultural control
			-Remove the bugs and destroy
Vegetative Stage	25- 45 Days	Pest Management	Physical control
			- Proper irrigation.
			c) Beetles:
			Biological control
			- Bacillus thuringiensis
			- Aspergillus spp.
			Cultural control
			-Remove and destroy infected plants
			Physical control Handrick and destroy boxtles
			- Handpick and destroy beetles.
			d) Epilachna beetle: Biological control
			- Neem oil
			Cultural control
			-Remove and destroy egg masses, grubs.
			a) Angular Leaf Spot :
			Biological control
			- Trichoderma viride -3 g/L of water
			Cultural control
			-Avoid overhead irrigation
			Physical control
			- Sanitation
			b) Cercospora Leaf Spot:
			Biological control
			- Trichoderma viride -3 g/L of water
			Cultural control -Remove crop debris and weeds.
			Physical control
			- Sanitation
Vegetative Stage	25- 45 Days	Disease Management	c) Powdery mildew:
			Biological control
			-Ampelomyces quisqualis -2.5 ml/L of water
			Cultural control
			-Do not overcrowd plants.
			Physical control
			- Sanitation.
			d) Downy mildew:
			Biological control
			- Pseudomonas fluorescence 2% - 20 g/L of water - Plant Extracts -2.5 ml/L of water
			- Plant Extracts -2.5 ml/L or water Cultural control
			- Complete removal and destruction of the affected leaves.
			Physical control
	1		Remove infected leaves
			1) Phosphorus (P):
			- Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set.
			- Application :Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			2) Potassium (K):
Flowering Stage	45- 55 Days	Micro Nutrients Management	- Potassium plays a critical role in improving flower quality, boosting disease resistance.
			- Application : Seaweed extract every 10 days to promote flowering. 3) Magnesium (Mg):
			Symptoms: Interveinal chlorosis yellowing between veins on older leaves.
			- Symptoms: Intervenia chorosis yenowing between vents on older leaves. - Application: Use Epsom salts -1 tbsp/5 L of water.
			- Continue providing micronutrients every 7–10 days.
			1) Nitrogen Deficiency:
			- Symptoms: Pale or Yellowing of leaves.
ru			- Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion.
Flowering Stage	45- 55 Days	Nutrient Deficiency Managemen	2) Potassium Deficiency:
			- Symptoms: Brown edges on older leaves.
			- Solution: Use banana peel tea.
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Flowering Stage	45- 55 Days	Irrigation Management	Watering: - Reduce watering slightly to avoid water stress, which can lead to flower drop. - Maintain even moisture levels. Water deeply but less frequently to promote deep root growth.
Flowering Stage	45- 55 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5% fish oil soap Physical control - Remove affected parts of the plant b) Red pumpkin beetle: Biological control - Metarhizium anisopliae -10 gm/L of water - Activated neem oil - 5 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Proper irrigation. c) Hadda Beetles: Biological control - Bacillus thuringiensis - Castor oil Cultural control - Plant resistant varieties Physical control - Handpick and destroy beetles Proper irrigation d) Galf fly: Biological control - Neem oil with garlic mixture Cultural control
Flowering Stage	45- 55 Days	Disease Management	- Restrict irrigation and nitrogen fertilizers. a) Anthracnose: Biological control - Herbal formulation -4 ml/L of water - Pseudomonas fluorescens -5 ml/L of water Cultural control - Use resistant varieties Physical control - Sanitation b) Bacterial Wilt:: Biological control - Trichoderma viride -3 g/L of water - Trichoderma viride -3 g/L of water - Trichoderma koningii Cultural control - Use disease-free seeds Physical control - Soil solarization c) Powdery mildew: Biological control - Ampelomyces quisqualis -2.5 ml/L of water Cultural control - Do not overcrowd plants. Physical control - Sanitation. d) Downy mildew: Biological control - Sanitation. d) Downy mildew: Biological control - Plant Extracts -2.5 ml/L of water Cultural control - Complete removal and destruction of the affected leaves. Physical control - Complete removal and destruction of the affected leaves.
Fruiting Stage	55- 75 Days	Micro Nutrients Management	1) Potassium (K): - Symptoms: Poor fruit quality and flavor. - Application: Use a potassium-dominant fertilizer like Banana peel. 2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water.

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Biological control - Verticillium lecanii - 2 ml/L of water - Azadirachtin 5% EC - 0.5 ml/L of water - Azadirachtin 5% EC - 0.5 ml/L of water - Cultural control - Uprooting and destruction of affected plants Physical control - Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp - 2 ml/L of water - Trichoderma viride - Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor. - Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.	Fruiting Stage	55- 75 Days	Disease Management	
- Verticillium lecanii - 2 ml/L of water - Azadirachtin 5% EC - 0.5 ml/L of water Cultural control - Uprooting and destruction of affected plants Physical control - Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride - Seed treatment: 10 gm/lit water. Cultural control - Pseudomonas sp -2 ml/L of water - Trichoderma viride - Seed treatment: 10 gm/lit water. Cultural control - Physical control - Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				'
- Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Uprooting and destruction of affected plants Physical control - Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
Cultural control - Uprooting and destruction of affected plants Physical control - Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
Physical control - Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. Harvesting Stage 75- 90 Days Micro Nutrients Management Micro Nutrients Management Micro Nutrients Management Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
- Row cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride - Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. Harvesting Stage 75- 90 Days Micro Nutrients Management Micro Nutrients Management New cover. d) Fusarium Wilt: Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride - Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				-Uprooting and destruction of affected plants
Harvesting Stage				1 1
Biological control - Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
- Pseudomonas sp -2 ml/L of water - Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
- Trichoderma viride -Seed treatment: 10 gm/lit water. Cultural control - Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
Cultural control -Reduce nitrogen Physical control - Disinfect tools. Harvesting Stage 75- 90 Days Micro Nutrients Management Micro Nutrients Management Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
-Reduce nitrogen Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				<u> </u>
Physical control - Disinfect tools. 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
Harvesting Stage 75- 90 Days Micro Nutrients Management 1) Potassium (K): - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				1
Harvesting Stage 75- 90 Days Micro Nutrients Management - Symptoms: Poor fruit quality and flavor Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				- Disinfect tools.
Harvesting Stage 75- 90 Days Micro Nutrients Management - Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				1) Potassium (K):
Plarvesting Stage 75-70 Days Mucro Nutrients Management 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.				
2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size.	Harvesting Stage	75- 90 Days	Micro Nutrients Management	
	100 - 100	.,,		
- Application: Liquid seaweed extract or compost tea can improve truit size and taste.				
		1		- Apprication. Enquiu scaweed extract of compost tea can improve fruit size and taste.

Harvesting Stage	75- 90 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Potassium Deficiency: - Symptoms: Fruits may appear misshapen or lack taste. - Solution: Use banana peel tea. 3) Calcium Deficiency: - Symptoms: Blossom-end rot may occur. - Solution: Use Eggshell tea. 4) Magnesium Deficiency: - Symptoms: Interveinal chlorosis on older leaves. - Solution: Spray Epsom salt -1 g/L water on foliage.
Harvesting Stage	75- 90 Days	Irrigation Management	Watering: - Water sparingly to maintain fruit hydration and prevent splitting. - Before Harvest: Reduce watering 2–3 days prior to harvesting to enhance fruit firmness and flavor. Do not let the plants wilt, as it can stress the plant and affect subsequent yields. - After Harvest: Water the plants lightly to maintain soil moisture and support further fruiting if the plant will continue producing.
Harvesting Stage	75- 90 Days	Pest Management	a) Caterpillars: Biological control - Apanteles spp. Cultural control - Collect and destroy early stage caterpillars Physical control - Pheromone traps. b) Cucumber moth: Biological control - Bacillus thuringiensis. Cultural control - Avoid overlapping crops Physical control - Collect and burn the bugs c) Hadda Beetles: Biological control - Bacillus thuringiensis - Castor oil Cultural control - Bacillus thuringiensis - Castor oil Cultural control - Plant resistant varieties. Physical control - Handpick and destroy beetles Proper irrigation d) Fruit fly: Biological control - Neem oil - 20 - 50ml/L of water Cultural control - Clean cultivation Physical control

Harvesting Stage 75- 90 Days Disease Management To be a part of the property o	
Harvesting Stage 75- 90 Days Disease Management Disease Management Physical control - Row cover c) Bitter Gourd Mosaic: Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Uprooting and destruction of affected plants	
Harvesting Stage 75- 90 Days Disease Management - Row cover c) Bitter Gourd Mosaic: Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Uprooting and destruction of affected plants	
Harvesting Stage 75- 90 Days	
Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Uprooting and destruction of affected plants	
- Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control -Uprooting and destruction of affected plants	
- Azadirachtin 5% EC -0.5 ml/L of water Cultural control -Uprooting and destruction of affected plants	
Cultural control -Uprooting and destruction of affected plants	
-Uprooting and destruction of affected plants	
Physical control - Row cover.	
d) Fusarium Wilt:	
Biological control	
- Pseudomonas sp -2 ml/L of water	
- Trichoderma viride - Seed treatment: 10 gm/lit water.	
Cultural control	
-Reduce nitrogen	
Physical control	
- Disinfect tools.	
Harvesting Stage 75- 90 Days Signs of maturity Firm, Bright green	

SPONGE GOURD			
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 6.8. using lime if needed. b) Seed Treatment: - Prepare a slurry using Phosphobacteria or Pseudomonas fluorescens mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Bacillus or Pseudomonas, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to support early root and shoot growth. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Add a pinch of humic acid or seaweed extract to stimulate root development.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Keep the cocopeat evenly moist but not soggy. - Mist lightly 1–2 times daily to maintain optimal moisture.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Leaf miner: Biological control - Neem kernel extract @ 4% - Neem oil with garlic mixture. Cultural control - Burning infested dried leaves Physical control - Use Traps - Use Yellow sticky cards c) Red spider mites: Biological control - Neem oil with garlic mixture. Cultural control - Use Traps - Use Yellow sticky cards c) Red spider mites: Biological control - Neem oil with garlic mixture. Cultural control - Collect and destroy the crop debris. Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Damping Off: Biological control - Trichoderma harzianum. Cultural control -Remove and destroy infected plants Physical control - Good aeration - Avoid waterlogging.
Vegetative Stage	25- 40 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development and vine growth. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Supplement with micronutrients like calcium, magnesium, and boron every 10 days.
Vegetative Stage	25- 40 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Weak stems - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium deficiency: - Symptoms: Leaf edge browning - Solution: Use Seaweed extract - Every 15 days.

Vegetative Stage	25- 40 Days	Irrigation Management	Watering: - Water deeply every 2–3 days, ensuring proper drainage to prevent waterlogging. - Avoid overwatering to prevent root rot.
Vegetative Stage	25- 40 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Leaf hopper: Biological control - Neem oil with garlic mixture. Cultural control -Avoid excessive use of nitrogen Physical control - Phermone traps. c) Thrips: Biological control - Lacewings - Minute pirate bugs Cultural control - Proper Plant Spacing Physical control - Lacewings - Minute pirate bugs Cultural control - Proper Plant Spacing Physical control - Proper Plant Spacing Physical control - Use of insect netting or fine mesh screens.
Vegetative Stage	25- 40 Days	Disease Management	a) Collar rot: Biological control - Trichoderma viride -3 g/L of water - Trichoderma harzianum Cultural control - Remove affected plants Physical control - Deep plowing - Sanitation. b) Powdery mildew: Biological control - Neem oil - Milk spray Cultural control - Pruning and Trellising Physical control - Proper water management c) Downy mildew: Biological control - Proper water management c) Downy mildew: Biological control - Proper water contr
Flowering Stage	40- 55 Days	Micro Nutrients Management	1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance Application: Seaweed extract every 10 days to promote flowering.
Flowering Stage	40- 55 Days	Nutrient Deficiency Management	1) Phosphorus Deficiency: - Symptoms: Purplish leaves and poor flowering Solution: Remedy with bone meal or liquid phosphorus. 2) Potassium Deficiency: - Symptoms: Browning of leaf edges and weak flowers Solution: Use banana peel tea.
Flowering Stage	40- 55 Days	Irrigation Management	Watering: - Keep moisture consistent, as fluctuating water levels can cause flower drop. - Avoid wetting flowers during watering.

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Flowering Stage	40- 55 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Red pumpkin beetle: Biological control - Metarhizium anisopliae -10 g/L of water - Activated neem oil - 5 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Deep plowing c) Gall fly: Biological control - Neem oil with garlic mixture Cultural control - Avoid excessive use of nitrogen Physical control - Restrict irrigation d) Nematodes: Biological control - Pseudomonas fluorescens Cultural control - Pseudomonas fluorescens Cultural control - Cultivation of resistant varieties.
Flowering Stage	40- 55 Days	Disease Management	Physical control a) Fusarium wilt: Biological control - Pseudomonas sp -2 ml/L of water Cultural control - Cultivation of resistant varieties. Physical control - Regular weeding b) Anthracnose: Biological control - Herbal formulation -4 ml/L of water - Pseudomonas fluorescens -5 ml/L of water Cultural control - Use resistant varieties Physical control - Proper water management c) Gummy stem blight: Biological control - Pseudomonas - Bacillus spp Cultural control - Treat seeds prior to planting. Physical control - Crop rotation.
Fruiting Stage	55- 80 Days	Micro Nutrients Management	- Crop rotation. 1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set. - Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving fruit quality, boosting disease resistance. - Application: Seaweed extract every 10 days to promote fruit set. - Continue providing micronutrients like magnesium and zinc once every 10–14 days.
Fruiting Stage	55- 80 Days	Nutrient Deficiency Management	1) Calcium Deficiency: - Symptoms: Blossom-end rot - Solution: Remedy with bone meal. 2) Potassium Deficiency: - Symptoms: Browning of leaf edges and weak flowers. - Solution: Use banana peel tea.
Fruiting Stage	55- 80 Days	Irrigation Management	Watering: - Water every 2–3 days, depending on weather conditions, to prevent water stress during fruit development. - Reduce watering slightly as fruits mature to improve sweetness and flavor.

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Fruiting Stage	55- 80 Days	Pest Management	a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Red pumpkin beetle: Biological control - Metarhizium anisopliae -10 g/L of water - Activated neem oil - 5 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Deep plowing c) Fruit fly: Biological control - Neem oil - 20-50 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Veem oil - 20-50 ml/L of water Cultural control - Remove the bugs and destroy Physical control - Pseudomonas fluorescens Cultural control - Pseudomonas fluorescens Cultural control - Pseudomonas fluorescens Cultural control - Pseudomonas fluorescens Cultivation of resistant varieties. Physical control - Cultivation of resistant varieties.
Fruiting Stage	55- 80 Days	Disease Management	1) Mosaic Virus Disease: Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Use disease free seeds Physical control - Sanitation. b) Alternaria blight and fruit rot: Biological control - Paenibacillus polymyxa - Sinomonas atrocyanea Cultural control - Use of disease free seeds. Physical control - Sanitation c) Gummy stem blight: Biological control - Pseudomonas - Bacillus spp Cultural control - Treat seeds prior to planting. Physical control - Treat seeds prior to planting. Physical control - Treat seeds prior to planting.
Harvesting Stage	80-100 Days	Micro Nutrients Management	1) Potassium (K): - Symptoms: Poor fruit quality and flavor. - Application: Use a potassium-dominant fertilizer like Banana peel or compost. 2) Phosphorus (P): - Symptoms: Poor fruit setting, and reduced fruit size. - Application: Liquid seaweed extract or compost tea can improve fruit size and taste. - Use compost tea or diluted seaweed extract to enhance fruit taste.
Harvesting Stage	80-100 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves. - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Potassium Deficiency: - Symptoms: Fruits may appear misshapen or lack taste. - Solution: Use banana peel tea.
Harvesting Stage	80-100 Days	Irrigation Management	Watering: - Keep moisture levels consistent. Avoid waterlogging, as mature plants are more susceptible to root rot. - This will also help harden the skins for storage.

			a) Aphids: Biological control - Ladybugs - Parasitic Wasps Cultural control -1.5 % fish oil soap Physical control - Remove affected parts of the plant. b) Red pumpkin beetle: Biological control
Harvesting Stage	80-100 Days	Pest Management	- Metarhizium anisopliae -10 g/L of water - Activated neem oil - 5 ml/L of water Cultural control -Remove the bugs and destroy Physical control - Deep plowing c) Fruit fly: Biological control - Neem oil - 20-50 ml/L of water Cultural control -Remove the bugs and destroy Physical control - Use light trap.
			1) Mosaic Virus Disease:
Harvesting Stage	80-100 Days	Disease Management	Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC -0.5 ml/L of water Cultural control - Use disease free seeds Physical control - Sanitation. b) Alternaria blight and fruit rot: Biological control - Paenibacillus polymyxa - Sinomonas atrocyanea Cultural control - Use of disease free seeds. Physical control - Sanitation c) Gummy stem blight: Biological control - Pseudomonas - Bacillus spp Cultural control - Pseudomonas - Bacillus spp Cultural control - Treat seeds prior to planting. Physical control - Crop rotation.
Harvesting Stage	80-100 Days	Signs of maturity	Firm but pliable -Bright to medium green.

			WATERMELON
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 7.0 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Pseudomonas fluorescens mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1 inch deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Apply compost tea or diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves Solution: Use chelated iron foliar spray.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Keep the cocopeat moist but not soggy. - Mist or water lightly once a day to ensure consistent moisture.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Verticillium lecanii -2 ml/L of water - Azadirachtin 5% EC - 0.5 ml/L of water Cultural control - Avoid excessive use of nitrogen fertilizer Physical control - Yellow sticky traps b) Red Pumpkin Beetle: Biological control - Metarhizium anisopliae -10 gm/L of water - Activated neem oil - 5 ml/L of water Cultural control - Neem seed cake Physical control - Chromatic trap c) Cutworms: Biological control - Bacillus thuringiensis -10 ml/L of water - Beauveria bassiana -2.5 ml/L of water Cultural control - Proper tillage Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Damping Off: Biological control - Trichoderma harzianum Bacillus subtilis Cultural control - Use sterile soil or soilless mix for transplant production Physical control - Good aeration - Remove weeds
Vegetative Stage	25- 40 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Calcium (Ca): - Strengthens cell walls, supports root development, and Calcium also plays a role in photosynthesis. - Application: Use gypsum can be used to supply calcium without affecting pH. 3) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis. - Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	25- 40 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Apply compost tea or diluted fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Weak stems and slow growth - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
Vegetative Stage	25- 40 Days	Irrigation Management	Watering: - Water deeply every 2–3 days, allowing excess to drain. - Maintain consistent moisture, as cocopeat can retain water well without becoming waterlogged.

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			a) Aphids:
			Biological control
			- Green lacewing
			- Verticillium lecanii -2 ml/L of water
			Cultural control
			-Avoid excessive use of nitrogen fertilizer
			Physical control
			- Yellow sticky traps
			b) White Fly: Biological control
			- Verticillium lecanii - 2 ml/L of water - Azardiractin 300 PPM EC formulation - 5-10 ml/L of water
			- Azardiractin 500 PPM EC formulation - 5-10 mi/L or water Cultural control
Vegetative Stage	25- 40 Days	Pest Management	-Remove weed
			-Sanitation
			Physical control
			- Yellow Sticky Trap
			- Use insect proof mesh
			c) Thrips:
			Biological control
			- Botanical Extracts -2 ml/L of water
			- Azadiractin 10000 ppm - 2 ml/L of water
			Cultural control
			-Soil application of neem cake.
			Physical control
			- Yellow sticky traps
			a) Alternaria Leaf Spot:
			Biological control
			- Trichoderma viride- 2.5 ml/L of water
			- Pseudomonas fluorescens - 8 – 10 ml/L of water
			Cultural control
			-Avoid overhead irrigation
			Physical control
			- Sanitation.
			b) Cercospora leaf spot:
			Biological control
		n	- Plant extracts - 2.5 ml/L of water
Vegetative Stage	25- 40 Days	Disease Management	- Pseudomonas fluorescence - 2.5 ml/L of water.
			Cultural control
			"-Breakdown and /or remove pruning debris entirely from the field.
			Physical control
			- Remove crop debris.
			c) Sudden wilt:
			Biological control Trich odorno virido 2.5 ml/L of vator
			- Trichoderma viride- 2.5 ml/L of water
			Cultural control
			-20 g -Farmyard manure or Well decomposed Cowdung. Physical control
			- Good drainage.
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			1) Nitrogen (N):
			- Reduce nitrogen slightly
			- Application : Use fish emulsion - Apply 15 days once. 2) Phosphorus (P):
Flowering Stage	40- 60 Days	Micro Nutrients Management	- Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set.
Tiowering stage	10- 30 Days	Tricio ividicità managentent	- Important for strong foot development, figur-phosphorus let tilizer to support novering and fruit set. - Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			3) Potassium (K):
			- Potassium plays a critical role in improving flower quality, boosting disease resistance.
			- Application : Seaweed extract every 10 days to promote flowering.
			1) Phosphorus Deficiency: Suppropuls Purplish leaves and poor flowering
	40- 60 Days		- Symptoms: Purplish leaves and poor flowering Solution: Remedy with bone meal or liquid phosphorus.
Flowering Stage		Nutrient Deficiency Management	2) Potassium Deficiency:
			- Symptoms: Browning of leaf edges and weak flowers.
			- Solution: Use banana peel tea.
	 		
Florgerina Crass	40- 60 Days	Irrigation Management	Watering: - Increase watering frequency slightly to meet the plant's increased demand during flowering
Flowering Stage	40- 60 Days	Irrigation Management	Increase watering frequency slightly to meet the plant's increased demand during flowering Avoid wetting flowers during watering to prevent fungal infections.
	1	1	- Avoid weeting nowers during watering to prevent fungariniections.

			a) Red Spider Mite:
			Biological control
			- Plant extracts -1 – 2 ml/L of water
			- Phyto-extracts – 30%
			Cultural control
			-Provide irrigation at critical stages of the crop.
			Physical control
			- Chromatic trap
			b) Serpentine leaf miner:
			Biological control
			- Neem oil @ 10-20 ml/L of water
Flowering Stage	40- 60 Days	Pest Management	- Azadiractin 10000 PPM - 1.6 – 2.4 ml/L of water
			Cultural control
			-Remove weeds
			Physical control
			- Chromatic trap
			c) Cucumber Beetle:
			Biological control
			- Pongamia Pinnata Extract - 2-3gm/L of water
			Cultural control
			-Intercropping
			Physical control
			- Beetle removed with a strong spray of water.
			a) Bud necrosis:
			Biological control
			- Trichoderma viride- 2.5 ml/L of water
			Cultural control
			-Intercropping
			Physical control
			- Inter-cropping with maize (1:3)
			b) Powdery mildew:
			Biological control
			- Botanical extracts - 1.5 – 2 ml/lit water.
			- Pseudomonas fluorescence - 2.5 ml/L of water.
Flowering Stage	40- 60 Days	Disease Management	Cultural control
1 lowering stage	10- 00 Days	Disease Wanagement	-Remove weeds
			Physical control
			- Remove infected leaves
			c) Downy mildew:
			Biological control
		- Plant extracts - 2.5 ml/L of water	
			- Pseudomonas fluorescence - 2.5 ml/L of water
			Cultural control
			-Trellising watermelon.
			Physical control
			- Remove crop debris.
			1) Potassium(K):
			- Symptoms: Potassium plays a critical role in improving fruit size, sweetness, and color.
Fruiting Stage	60- 90 Days	Micro Nutrients Management	- Application: Use Banana peel tea or bone meal.
Training orange	00- 70 Days	Trace of the control	2) Magnesium (Mg):
			- Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size.
			- Application: Use Epsom salts -1 tbsp/5 L of water.
			1) Calcium Deficiency:
			- Symptoms:Blossom-end rot on fruits.
r u o	(0.00.5	N D. G	- Solution: Remedy with bone meal or liquid phosphorus.
Fruiting Stage	60- 90 Days	Nutrient Deficiency Management	2) Potassium Deficiency:
			- Symptoms:Poor fruit quality and flavor.
			- Solution: Use banana peel tea.
		1	*
Fruiting Stage	60- 90 Days	Irrigation Management	Watering: Maintain consistent mainture without waterlooging to avoid cracking or irregular fruit dayslopment
1 running stage	OU- JU Days	Irrigation Management	 Maintain consistent moisture without waterlogging to avoid cracking or irregular fruit development. Water deeply every 2–3 days.
			a) Pumpkin caterpillar:
			Biological control
			- Encourage activity of parasioid - Apantheles spp.
			Cultural control
			-Remove weeds
			Physical control
			- Hand pick them off and drop them into a bucket of soapy water.
			b) Cucumber Beetle:
			Biological control
Fruiting Stage			- Pongamia Pinnata Extract - 2-3gm/L of water
		l	Cultural control
	60- 90 Days	Pest Management	-Flaming
			Physical control
			- Beetle removed with a strong spray of water.
			c) Fruit fly:
			Biological control
			- Azadiractin 10000 PPM - 3 ml/L of water
			- Neem oil - 20 - 50ml/L of water
			Cultural control
			-Remove all unharvested fruits or vegetables from a growbag by completely burying them deep into the soil.
			Physical control
			- Put fly traps
			- Pheromone lure.
		-	

			a) Watermelon mosaic virus:
			Biological control
			- C. aculeatum leaf extract
			- A. indica leaf extract
			Cultural control
			-Remove weeds
			Physical control
			-Use clean, disease-free seed
			b) Bacterial fruit blotch:
			Biological control
			- Paenibacillus polymyxa
			- Sinomonas atrocyanea
			Cultural control
			-Planting pathogen-free seed and transplants.
			Physical control
Fruiting Stage	60- 90 Days	Disease Management	- Crop rotation
			c) Gummy stem blight:
			Biological control
			- Trichoderma viride
			- Pseudomonas
			Cultural control
			-Treat seeds prior to planting.
			Physical control
			- Crop rotation.
			d) Verticillium wilt:
			Biological control
			- B. amyloliquefaciens
			Cultural control
			-Farm yard manures
			Physical control
			- Use plastic mulch.
			1) Potassium(K):
			- Symptoms: Potassium plays a critical role in improving fruit size, sweetness, and color.
			- Application: Use Banana peel tea or bone meal.
Harvesting Stage	90- 120 Days	Micro Nutrients Management	2) Magnesium (Mg):
			- Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size.
			- Application: Use Epsom salts -1 tbsp/5 L of water.
			1) Calcium Deficiency:
			- Symptoms:Blossom-end rot on fruits.
Liammeting Stage	90 120 Dave	Nutrient Deficiency Management	- Solution: Remedy with bone meal or liquid phosphorus.
Harvesting Stage	90- 120 Days	Nutrient Deficiency Management	- Symptoms:Poor fruit quality and flavor.
			- Solution: Use banana peel tea.
			- Ensure consistent potassium and calcium supply to maintain fruit quality.
			Watering:
Harvesting Stage	90- 120 Days	Irrigation Management	- Gradually reduce watering as fruits near harvest to concentrate sugars and improve sweetness.
			- Avoid waterlogging at this stage to prevent fruit cracking.
			a) Pumpkin caterpillar:
			Biological control
			- Encourage activity of parasioid - Apantheles spp.
			Cultural control
			-Remove weeds
			Physical control
			- Hand pick them off and drop them into a bucket of soapy water.
			b) Cucumber Beetle:
			Biological control
			- Pongamia Pinnata Extract - 2-3gm/L of water
			Cultural control
Harvesting Stage	90- 120 Days	Pest Management	-Flaming
			Physical control
			- Beetle removed with a strong spray of water.
			c) Fruit fly:
			Biological control
			- Azadiractin 10000 PPM - 3 ml/L of water
			- Neem oil - 20 - 50ml/L of water
			Cultural control
			-Remove all unharvested fruits or vegetables from a growbag by completely burying them deep into the soil.
			Physical control
			- Put fly traps
			- Pheromone lure.
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			a) Watermelon mosaic virus:
			Biological control
			- C. aculeatum leaf extract
			- A. indica leaf extract
			Cultural control
			-Remove weeds
			Physical control
			-Use clean, disease-free seed
			b) Bacterial fruit blotch:
			Biological control
			- Paenibacillus polymyxa
			- Sinomonas atrocyanea
			Cultural control
			-Planting pathogen-free seed and transplants.
			Physical control
Harvesting Stage	90- 120 Days	Disease Management	- Crop rotation
			c) Gummy stem blight:
			Biological control
			- Trichoderma viride
			- Pseudomonas
			Cultural control
			-Treat seeds prior to planting.
			Physical control
			- Crop rotation.
			d) Verticillium wilt:
			Biological control
			- B. amyloliquefaciens
			Cultural control
			-Farm yard manures
			Physical control
			- Use plastic mulch.
Harvesting Stage	90- 120 Days	Signs of maturity	
1 1ai vesting stage	70-120 Days	oigns of maturity	Tendril turns brown and dry -Pale green to a creamy yellow

			MUSKMELON
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained) Ensure the pH is adjusted to 6.0 - 7.0 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Pseudomonas fluorescens mixed with water Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 cm deep and cover lightly with coir pith Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	the coole to promote healthy microbial activity 1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Managemet	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Apply compost tea or diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Yellowing between veins, starting from the lower leaves. - Solution: Use chelated iron foliar spray.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Keep the cocopeat moist but not soggy. - Mist or water lightly once a day to ensure consistent moisture.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Green lacewing - Verticillium lecanii -2 ml/L of water Cultural control - Hot pepper extract or soap solution. Physical control - Yellow sticky traps b) Seedcorn maggot: Biological control - Neem oil Cultural control - Late plantings during cool springs. Physical control - Sanitation c) Cutworms: Biological control - Bacillus thuringiensis -10 ml/L of water Cultural control - Bacillus thuringiensis -10 ml/L of water Cultural control - Destruction of plant residues from previous crops. Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Damping Off: Biological control - Trichoderma harzianum Bacillus subtilis Cultural control - Use sterile soil or soilless mix for transplant production. Physical control - Good aeration - Remove weeds
Vegetative Stage	25- 45 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Calcium (Ca): - Strengthens cell walls, supports root development, and Calcium also plays a role in photosynthesis. - Application: Use gypsum can be used to supply calcium without affecting pH. 3) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis. - Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	25- 45 Days	Nutrient Deficiency Managemet	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves. - Solution: Apply compost rea or diluted fish emulsion.
Vegetative Stage	25- 45 Days	Irrigation Management	Watering: - Water deeply every 2–3 days, ensuring proper drainage to avoid waterlogging. - Maintain consistent moisture levels to support vine development.

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			a) Aphids:
			Biological control
			- Green lacewing
			- Azadirachtin 5% EC - 0.5 ml/L of water
			Cultural control
			-Hot pepper extract or soap solution.
			Physical control
			- Yellow sticky traps
			b) Leaf miner:
			Biological control
	25 (5 B	D . M	- Azadiractin 10000 PPM -1.5 – 2.5 ml/L of water
Vegetative Stage	25- 45 Days	Pest Management	Cultural control
			-Remove and destroy plant debris
			Physical control Valleys Stieles Teap
			- Yellow Sticky Trap
			c) Red Pumpkin Beetle :
1			Biological control - Metarhizium anisopliae -10 g/L of water
			- Metarnizium anisopiiae -10 g/L or water - Activated neem oil - 5 ml/L of water
			- Activated neem oil - 5 ml/L or water Cultural control
1			-Neem seed cake
			Physical control
1			- Collection and destruction of adult beetle.
		 	
1			a) Alternaria Leaf Spot: Biological control
1			Biological control - Trichoderma viride- 2.5 ml/L of water
			- Irichoderma viride- 2.5 ml/L of water - Pseudomonas fluorescens - 8 – 10 ml/L of water
			- Pseudomonas fluorescens - 8 – 10 ml/L or water Cultural control
			- Plant disease-free seed
			Physical control
1			- Sanitation.
1			b) Angular Leaf Spot:
1			Biological control
1			- T. koningi
Vernor:	25. 45 D	Dicarco W	- T. polysporum
Vegetative Stage	25- 45 Days	Disease Management	Cultural control
			-Plant disease-free seed
1			Physical control
			- Avoid excessive nitrogen.
			c) Vascular Wilt:
			Biological control
			- Trichoderma harzianum
			- Trichoderma viride
			Cultural control
			-Remove infected plants
			Physical control Sanitiza equipment
<u> </u>	 	+	- Sanitize equipment
			1) Nitrogen (N):
			- Reduce nitrogen slightly
			- Application : Use fish emulsion - Apply 15 days once.
EI .	// / / / /	Mr. N.	2) Phosphorus (P):
Flowering Stage	45- 60 Days	Micro Nutrients Management	- Important for strong root development, high-phosphorus fertilizer to support flowering and fruit set.
I			- Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
I			3) Potassium (K): Potassium plaus a critical role in improving flower quality boosting disease recistance
I			- Potassium plays a critical role in improving flower quality, boosting disease resistance. Application - Segment average average 10 days to promote flowering.
-	+	+	- Application : Seaweed extract every 10 days to promote flowering.
I			1) Phosphorus Deficiency:
			- Symptoms: Purplish leaves and poor flowering.
Flowering Stage	45- 60 Days	Nutrient Deficiency Managemen	- Solution: Remedy with bone meal or liquid phosphorus.
James orașe			2) Boron Deficiency:
			- Symptoms: Deformed flowers
			- Solution :Apply a foliar spray of borax -0.5 g/L of wate.
			Watering:
Flowering Stage	45- 60 Days	Irrigation Management	- Increase watering frequency slightly during flowering to meet the plant's higher demand.
			- Avoid wetting flowers during watering to prevent fungal infections.

Flowering Stage	45- 60 Days	Pest Management	a) Leaf eating caterpillar: Biological control - Lacewings Cultural control - Crop rotation Physical control - Pheromone trap b) Squash Bug: Biological control - Trichopoda pennipes Cultural control - Removing debris and squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Squash Vine Borer: Biological control - Trichopoda pennipes Cultural control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Squash Vine Borer: Biological control - Trichopoda pennipes Cultural control - Destroy vines after harvest to destroy any larvae still inside stems. Physical control - Stems covered with barriers - Catch and destroy the moths.
Flowering Stage	45- 60 Days	Disease Management	a) Powdery mildew: Biological control - Eugenol, Thymol, potassium salts, cationic surface agent, sodium salts & preservatives - 1.5 – 2 g/L of water Cultural control - Remove afected leaves Physical control - Remove infected leaves. b) Downy Mildew: Biological control - Plant extracts - 2.5 ml/L of water - Pseudomonas fluorescence - 2.5 ml/L of water Cultural control - Crop rotation Physical control - Remove infected leaves. c) Bacterial wilt: Biological control - Trichoderma viride - Trichoderma koningii. Cultural control - Crop rotation Physical control - Trichoderma koningii. Cultural control - Trichoderma koningii. Cultural control - Remove crop debris.
Fruiting Stage	60-80 Days	Micro Nutrients Management	1) Potassium(K): - Symptoms: Potassium plays a critical role in improving fruit size, sweetness, and color. - Application: Use Banana peel tea or bone meal. 2) Magnesium (Mg): - Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size. - Application: Use Epsom salts -1 tbsp/5 L of water. - Apply seaweed extract or compost tea to improve overall plant health.
Fruiting Stage	60- 80 Days	Nutrient Deficiency Managemen	1) Calcium Deficiency: - Symptoms:Blossom-end rot on fruits Solution: Remedy with bone meal. 2) Potassium Deficiency: - Symptoms: Small or deformed fruits - Solution: Use banana peel tea.
Fruiting Stage	60- 80 Days	Irrigation Management	Watering: - Water deeply every 2–3 days, ensuring even moisture without waterlogging. - Mulch around the plant base with straw or dry leaves to retain moisture and regulate root temperature.
Fruiting Stage	60- 80 Days	Pest Management	a) Aphids: Biological control - Green lacewing - Azadirachtin 5% EC - 0.5 ml/L of water Cultural control - Hot pepper extract or soap solution. Physical control - Yellow sticky traps b) Leaf miner: Biological control - Azadiractin 10000 PPM -1.5 – 2.5 ml/L of water Cultural control - Remove and destroy plant debris Physical control - Yellow sticky traps c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water Cultural control - Yellow sticky traps c) Fruit fly: Biological control - Neem oil - 20 - 50ml/L of water Cultural control - Sanitation. Physical control - Sanitation. Physical control

			a) Anthracnose:
			Biological control
			- Botanical extracts - 1 –2 ml/L of water
			- Herbal formulation -2 ml/L of water
			Cultural control
			-Collection and destruction of infected plant.
			Physical control
			, ·
			- Using clean, disease-free seed
			b) Gummy Stem Blight:
			Biological control
			- Pseudomonas
Fruiting Stage	60- 80 Days	Disease Management	- Bacillus spp
			Cultural control
			-Transplants is essential to prevent serious crop losses.
			Physical control
			- Crop rotation
			c) Sudden Wilt:
			Biological control
			- Trichoderma viride
			Cultural control
			-Apply with 50 g -Farmyard manure
			Physical control
		1	- Destroy diseased plant debris.
			1) Potassium(K):
			- Symptoms: Potassium plays a critical role in improving fruit size, sweetness, and color.
	00 400 D	26. 27	- Application: Use Banana peel tea or bone meal.
Harvesting Stage	80- 100 Days	Micro Nutrients Management	2) Magnesium (Mg):
			- Symptoms: Interveinal chlorosis (yellowing between veins) on older leaves, poor fruit setting, and reduced fruit size.
			- Application: Use Epsom salts -1 tbsp/5 L of water.
			1) Calcium Deficiency:
			- Symptoms:Blossom-end rot on fruits.
			- Solution: Remedy with bone meal or liquid phosphorus.
Harvesting Stage	80- 100 Days	Nutrient Deficiency Managemen	2) Potassium Deficiency:
			- Symptoms:Poor fruit quality and flavor.
			- Solution: Use banana peel tea.
			- Ensure consistent potassium and calcium supply to maintain fruit quality.
			Watering:
Harvesting Stage	80- 100 Days	Irrigation Management	- Gradually reduce watering as fruits near maturity to concentrate sugars and improve sweetness.
		88	- Avoid waterlogging at this stage to prevent fruit cracking.
			a) Aphids:
			Biological control
			- Green lacewing
			- Azadirachtin 5% EC - 0.5 ml/L of water
			Cultural control
			-Hot pepper extract or soap solution.
			Physical control
			- Yellow sticky traps
			b) Squash Bug:
			Biological control
			Biological control - Trichopoda pennipes
			- Trichopoda pennipes
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants.
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly:
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water Cultural control
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water Cultural control -Sanitation.
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water Cultural control -Sanitation. Physical control
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water Cultural control -Sanitation.
Harvesting Stage	80- 100 Days	Pest Management	- Trichopoda pennipes Cultural control -Removing debris and old squash bugs Physical control - Early season row covers, such as thin cloth or screens, can reduce squash bug access to plants. c) Fruit fly: Biological control - Azadiractin 10000 PPM - 3 ml/L of water - Neem oil - 20 - 50ml/L of water Cultural control -Sanitation. Physical control

			a) Anthracnose: Biological control - Botanical extracts - 1 - 2 ml/L of water - Herbal formulation -2 ml/L of water Cultural control -Collection and destruction of infected plant. Physical control - Using clean, disease-free seed b) Damping-off: Biological control - Bacillus spp Cultural control
Harvesting Stage	80- 100 Days	Disease Management	Cultural control -Collection and destruction of infected plant. Physical control - Using clean, disease-free seed b) Damping-off: Biological control - Bacillus spp
Harvesting Stage	80- 100 Days	Signs of maturity	Sweet, aromatic fragrance - Pale green to a creamy yellow or golden color.

			MARIGOLD
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 6.5 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma or Bacillus subtilis mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1-2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 25 Days	Micro Nutrients Management	1) Nitrogen (N): Increase the nitrogen level to promote leaf development. Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Use a foliar spray of seaweed extract for additional micronutrients.
Pre-Seedling Stage	15- 25 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Apply compost tea or diluted fish emulsion.
Pre-Seedling Stage	15- 25 Days	Irrigation Management	Watering: - Water lightly to maintain moisture. Allow the top layer of cocopeat to dry slightly between waterings to prevent fungal growth.
Pre-Seedling Stage	15- 25 Days	Pest Management	a) Aphids: Biological control - Neem oil - 2-5 ml/L of water Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) Leaf miner: Biological control - Ladybugs - Lacewings Cultural control - Remove infected leaves Physical control - Remove and destroy infected leaves manually c) Thrips: Biological control - Azardiractin -3 ml/L of water. Cultural control - Removal of crop residues Physical control
Pre-Seedling Stage	15- 25 Days	Disease Management	a) Damping Off: Biological control - Trichoderma harzianum Bacillus subrillis Cultural control - Removal of affected plants Physical control - Good aeration b) Collar rot/Root rot: Biological control - Seed treatment with Trichoderma viride at 6 ml/kg of seed. Cultural control - Avoid over watering Physical control - Sanitation.
Vegetative Stage	25- 45 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development Application: Use fish emulsion - Apply weekly 2) Calcium (Ca): - Strengthens cell walls, supports root development, and Calcium also plays a role in photosynthesis Application: Use gypsum can be used to supply calcium without affecting pH. 3) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	25- 45 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale green leaves - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Purple edges - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
Vegetative Stage	25- 45 Days	Irrigation Management	Watering: - Water when the cocopeat feels dry an inch below the surface. - Ensure good drainage to prevent waterlogging.

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- Yellow / Blue sticky trap. 3) Let a your and blight: Bological control - Peadomonas fluorescence - 5 g/L of water Cultural control - Remove infected leaves manually b) Collar row / Row recommendation - Remove infected leaves manually b) Collar row / Row recommendation - Remove watering - Physical control - Remove watering - Remove watering - Physical control - Scale treatment with Trich oderma viride at 6 ml/kg of seed. Cultural control - Avado over watering - Physical control - Remove and distroy infected leaves manually b) Collar row / Row recommendation - Apply 15 days once. 2) Physical control - Reduce introgen slightly - Application - Remove and row row watering - Application in Some can be used to ensure phosphorus availability. 3) to a physical row row of recommendation of Row physical physical row row of recommendation of Row physical row row of the row recommendation of Row physical row row of the row recommendation of Row physical row row of the row recommendation of Row physical row row of the row row row recommendation of Row physical row of the row row of the row
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Bodding Stage 45-55 Days Disease Management
Bodolgical control
Performance Report
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Budding Stage 45-55 Days Micro Nutrients Management
Biological control
- Seed treatment with Trichoderma viride at 6 ml/kg of seed. Cultural control - Avoid over watering Physical control - Sanitation. 1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering Application Bone meal of Rock phosphate can be used to ensure phosphorus availability. 3) Porassium (K): - Porassium (K): - Population Seaweed extract every 10 days to promote flowering disease resistance Application Seaweed extract every 10 days to promote flowering Symptoms Weak stems - Solution: Remedy with hone meal. 2) Porassium Deficiency: - Symptoms Small or discolored buds - Solution: Use banana ped tea. Watering: - Regular but moderate watering. Avoid wetting the leaves to reduce fungal issues. a) Bud borer: Biological control - Buells thuringiensis at 2 g/L of water Cultural control - Bulls thuringiensis at 2 g/L of water Cultural control - Bulls thuringiensis at 2 g/L of water Cultural control - Bulls thuringiensis at 2 g/L of water Cultural control - Neem of 3-30 ml/L of water Cultural control - Neem of 3-30 ml/L of water Cultural control - Remove the caterpillars at night
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Budding Stage 45-55 Days Pest Management -Remove the caterpillars at night
-remove the caterpliars at night
I Physical control
- Handpick the caterpillars
c) Red Spider Mites:
Biological control
- 100% derived from plant extracts - 2ml/L of water
- Ladybugs
Cultural control
-Cow urine diluted with water - 1:20
Physical control - Mites removed with a strong spray of water.

Budding Stage	45- 55 Days	Disease Management	a) Bud rot: Biological control - Chaetomium globosum - Bacillus subtilis Cultural control - Allium cepa Physical control - Remove infected leaves and buds b) Wilt and Stem rot: Biological control - Pseudomonas fluorescence - 10 ml/L of water - Trichoderma viride 1.5% WP - 20 g/L of water Cultural control - Farmyard manure Physical control - Sanitation. c) Septoria leaf spot: Biological control - Leaf extract of A. indica - Aerated compost tea Cultural control - Thinning Physical control
Flowering Stage	55-75 Days	Micro Nutrients Management	- Removal of crop debris from the planting area. 1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance Application: Seaweed extract every 10 days to promote flowering.
Flowering Stage	55-75 Days	Nutrient Deficiency Management	1)Calcium Deficiency: - Symptoms: Weak stems - Solution: Remedy with bone meal. 2) Potassium Deficiency: - Symptoms: Small or discoloured flowers - Solution: Use banana peel tea.
Flowering Stage	55- 75 Days	Irrigation Management	Watering: - Regular but moderate watering. Avoid wetting the leaves to reduce fungal issues.
Flowering Stage	55- 75 Days	Pest Management	a) Beetles and Weevils: Biological control - Metarhizium anisopliae -10 ml/L of water. Cultural control - Remove infected leaves Physical control - Remove the beetles. b) Helicoverpa: Biological control - Neem oil - 30 ml/L of water Cultural control - Remove and discard any Helicoverpa caterpillars Physical control - Heli lures and floral lures c) Earwigs: Biological control - Remove hiding places like fallen leaves Cultural control - Thinning Physical control - Thinning Physical control - Thinning Physical control - Homemade traps - Sanitation
Flowering Stage	55- 75 Days	Disease Management	a) Alternaria Leaf Spot: Biological control - Volatile oils from A. indica and Eucalyptus sp Cultural control -Good watering practices Physical control - Removal of crop debris from the planting area. b) Cercospora Leaf Spot: Biological control - Garlic Extract + Cow urine +Soap Nut Cultural control -Crop Rotation Physical control - Tillage buries residue and decreases innocultum. c) Powdery mildew: Biological control - Cinnamomum cassia (M.C.)7.0% - Anethum graveolens (M.C.) 5.0% Cultural control -Remove afected leaves Physical control - Avoid water logging. 1) Nutrients Management:
Harvesting Stage	75- 90 Days	Micro Nutrients Management	- Use a balanced liquid fertilizer (NPK 10:10:10) every two weeks to promote continuous flowering.

Harvesting Stage	75- 90 Days	Nutrient Deficiency Management	1)Calcium Deficiency: - Symptoms: Weak stems - Solution: Remedy with bone meal. 2) Potassium Deficiency: - Symptoms: Small or discoloured flowers - Solution: Use banana peel tea. 3) Nutrient Deficiency Management: - Minimal deficiencies occur if managed well earlier.
Harvesting Stage	75- 90 Days	Irrigation Management	Watering: - Reduce watering slightly but avoid drying out the cocopeat entirely.
Harvesting Stage	75- 90 Days	Pest Management	a) Aphids: Biological control - Neem oil - 2-5 ml/L of water Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) Thrips: Biological control - Azardiractin -3 ml/L of water. Cultural control - Removal of crop residues Physical control - Yellow / Blue sticky traps c) Whiteflies: Biological control - Lacewings - Ladybugs Cultural control - Avoid excessive nitrogen fertilizer Physical control - Avoid excessive nitrogen fertilizer Physical control - Avoid excessive nitrogen fertilizer Physical control - Yellow / Blue sticky trap.
Harvesting Stage	75- 90 Days	Disease Management	a) Damping off: Biological control - Trichoderma Viride - 10 gm/L of water Cultural control - Crop rotation Physical control - Proper drainage should be maintained. b) Botrytis blight / Gray mold: Biological control - Ampelomyces Quisqualis - 5-10ml/L of water Cultural control - Crop rotation Physical control - Sanitation. c) Aster yellows: Biological control - Ladybugs - Lacewings Cultural control - Clear of leaf debris and weeds Physical control - Clear of leaf debris and weeds Physical control - Infected plants are removed.
Harvesting Stage	75- 90 Days	Signs of maturity	Full bloom with vibrant, bright colors -Rich yellows, Oranges, or Reds (depending on the variety).

			TUBEROSE
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 21 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 6.5 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma or Bacillus subtilis mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1–2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	21- 45 Days	Micro Nutrients Management	Nutrients Management: No heavy feeding needed initially. Mix cocopeat with a small amount of organic compost for a slow nutrient release.
Pre-Seedling Stage	21- 45 Days	Nutrient Deficiency Manageme	Nutrient Deficiency Management: Not significant at this stage since bulbs store nutrients.
Pre-Seedling Stage	21- 45 Days	Irrigation Management	Watering: - Water sparingly to keep the cocopeat moist but not wet. - Avoid overhead watering to prevent fungal growth.
Pre-Seedling Stage	21- 45 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) Grasshoppers: Biological control - Nosema locustae Cultural control - Hand pick and remove the hoppers. Physical control - Row covers - Nets or screens c) Thrips: Biological control - Azardiractin -3 ml/L of water. Cultural control - Azardiractin -5 ml/L of water. Cultural control - Alternate host plants Physical control
Pre-Seedling Stage	21- 45 Days	Disease Management	a) Bulb rot: Biological control - Bulb treatment with Trichoderma viride - 6 ml/L of water Cultural control - Farmyard manure Physical control - Avoid waterlogging. b) Basal rot (or) stem rot: Biological control - Drenching with Pseudomonas fluorescens- 2g/L of water Cultural control - Farmyard manure Physical control - Farmyard manure Physical control - Sanitation.
Vegetative Stage	45- 60 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis. - Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	45- 60 Days	Nutrient Deficiency Managemen	1) Nitrogen Deficiency: - Symptoms: Pale, yellowing leaves - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Magnesium Deficiency: - Symptoms: Weak growth - Solution: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	45- 60 Days	Irrigation Management	Watering: - Water regularly to maintain consistent moisture, but avoid overwatering. - Ensure proper drainage as tuberose is sensitive to waterlogging.

			a) Aphids:
			Biological control
			- Lady beetles
			Cultural control
			-Wash them off the plants with a strong jet (water)
			Physical control
			- Blue sticky traps
			b) Thrips:
			Biological control
			- Azardiractin -3 ml/L of water.
			Cultural control
Vegetative Stage	45- 60 Days	Pest Management	
			-Alternate host plants
			Physical control
			- Yellow / Blue sticky trap
			c) Nematodes:
			Biological control
			- Neem based formulation of Pochonia chlamydosporia
			Cultural control
			-Use of resistant varieties
			Physical control
			- Deep plowing
			- Weed control.
			a) Basal rot (or) stem rot:
			Biological control
			- Drenching with Pseudomonas fluorescens- 2g/L of water
			Cultural control
			-Farmyard manure
			Physical control
			- Sanitation.
			b) Leaf blight or Botrytis blight:
			Biological control
			- Bacillus subtilis
			- Trichoderma spp.
Vegetative Stage	45- 60 Days	Disease Management	Cultural control
vegetative stage	45-00 Days	Disease Management	
			-Removing and properly disposing of plant debris, fallen leaves, or flowers.
			Physical control
			- Sanitation.
			c) Alternaria leaf spot:
			Biological control
			- Trichoderma asperellum
			- P. fluorescens
			Cultural control
			-Good watering practices
			Physical control
			- Removal of crop debris from the planting area.
			1) Magnesium (Mg):
			- Essential for chlorophyll production and to enhance bud quality.
			- Application: Use Epsom salts -1 tbsp/5 L of water.
			2) Phosphorus (P):
Budding Stage	60-75 Days	Micro Nutrients Management	- Important for strong root development, high-phosphorus fertilizer to support flowering.
Budding Stage	0077 Days	8	- Application :Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			3) Potassium (K):
			- Potassium plays a critical role in improving flower quality, boosting disease resistance.
			- Application : Seaweed extract every 10 days to promote flowering.
			1) Potassium Deficiency:
			- Symptoms: Small or undeveloped buds
Budding Stage	60-75 Days	Nutrient Deficiency Manageme	- Solution: Use Banana peel tea.
		, manageme	2) Phosphorus Deficiency:
			- Symptoms: Purple edges on leaves
			- Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			Watering:
Budding Stage	60-75 Days	Irrigation Management	- Reduce watering slightly but maintain consistent moisture.
3	Í ,	3	- Avoid waterlogging at this stage to prevent root rot.
			a) Aphids:
			' •
			Biological control
			- Lady beetles
			Cultural control
Budding Stage			-Wash them off the plants with a strong jet (water)
			Physical control
			- Blue sticky traps
			b) Thrips:
			Biological control
			- Azardiractin -3 ml/L of water.
	60-75 Days	Pest Management	Cultural control
			-Alternate host plants
			Physical control
			- Yellow / Blue sticky trap
			c) Bud borer:
			Biological control
			- Neem oil 1%
			Cultural control
			-Collection and destruction of damaged buds
			Physical control
			- Setting up of light traps.

			a) Alternaria leaf spot:
			Biological control
			- Trichoderma asperellum
			- P. fluorescens
			Cultural control
			-Good watering practices
			Physical control
			- Removal of crop debris from the planting area.
			b) Bud rot:
			Biological control
			-T. viridae
			- Bacillus subtilis.
Budding Stage	60-75 Days	Disease Management	Cultural control
Dudding Stage	00-7) Days	Disease Management	-Diseased plants should be uprooted and destroyed
			Physical control
			- Remove infected leaves and buds.
			c) Sclerotial Wilt:
			Biological control
			- Penicillium spp
			- Gliocladium virens.
			Cultural control
			- Crop Rotation
			- Plowing.
			Physical control
			- Soil solarization
			1) Potassium (K):
Flowering Stage	75- 120 Days	Micro Nutrients Management	- Potassium plays a critical role in improving flower quality, boosting disease resistance.
Jungo		- I I I I I I I I I I I I I I I I I I I	- Application :Add liquid seaweed extract every 10 days to enhance bloom quality.
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			1)Calcium Deficiency:
			- Symptoms: Weak stems
Flowering Stage	75- 120 Days	Nutrient Deficiency Manageme	- Solution: Remedy with bone meal.
0			2) Potassium or Boron Deficiency:
			- Symptoms: Reduced flower size or discoloration
			- Solution: Use wood ash or banana peel tea - Every 15 days.
			Watering:
Flowering Stage	75- 120 Days	Irrigation Management	- Water lightly and regularly to keep the medium moist.
The werning ottage	7 5 120 2 4 3 5	Trigution framagement	- Ensure that excess water drains out to prevent root or bulb rot.
			a) Aphids:
			Biological control
			- Lady beetles
			Cultural control
			-Wash them off the plants with a strong jet (water)
			Physical control
			- Blue sticky traps
			b) Thrips:
			Biological control
			- Azardiractin -3 ml/L of water.
			Cultural control
Flowering Stage	75- 120 Days	Pest Management	-Alternate host plants
			Physical control
			- Yellow / Blue sticky trap
			c) Red Spider Mites:
			Biological control
			- Neem oil 1%
			- Beauveria bassiana
			Cultural control
			-Weed management
			Physical control
			- Mites removed with a strong spray of water.
			a) Anthracnose:
			Biological control
			- Bacillus subtilis
			Cultural control
			-Cultivating resistant crop varieties
			Physical control Societation
			- Sanitation.
			b) Blossom blight:
			Biological control
			- Trichoderma virens
<u>L</u> .			- Mustard oil cake - 3%
Flowering Stage	75- 120 Days	Disease Management	Cultural control
			-Use of disease free soil for cultivation
			Physical control
			- Affected flowers should be collected and destroyed.
			c) Peduncle blight:
			Biological control
			- Fluroescent pseudomonads
			- Bacillus spp.
			Cultural control
			-Reducing moisture level.
			Physical control
			- Sanitation.
Harvesting Stage	120- 180 Days	Micro Nutrients Management	1) Nutrients Management:
0 0			- Stop feeding fertilizers after flowering is complete.

Harvesting Stage	120- 180 Days	Nutrient Deficiency Manageme	Nutrient Deficiency Management: No active management needed during dormancy.
Harvesting Stage	120- 180 Days	Irrigation Management	Watering: - Gradually reduce watering as the foliage dies back. - Allow the cocopeat to dry out if bulbs are left in the medium for storage.
Harvesting Stage	120- 180 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) Thrips: Biological control - Azardiractin -3 ml/L of water. Cultural control - Alternate host plants Physical control - Yellow / Blue sticky trap c) Rodents: Biological control - Predators - Snakes, vultures, mongoose, cats and dogs. Cultural control - Predators - Snakes, vultures, mongoose, cats and dogs. Cultural control - Physical control - Poison bait - Poison bait - Traps.
Harvesting Stage	120- 180 Days	Disease Management	a) Anthracnose: Biological control - Bacillus subtilis Cultural control - Cultivating resistant crop varieties Physical control - Sanitation. b) Blossom blight: Biological control - Trichoderma virens - Mustard oil cake - 3% Cultural control - Use of disease free soil for cultivation Physical control - Affected flowers should be collected and destroyed. c) Peduncle blight: Biological control - Fluroescent pseudomonads - Bacillus spp. Cultural control - Reducing moisture level. Physical control - Sanitation.
Harvesting Stage	120- 180 Days	Signs of maturity	Peak fragrance and display vibrant, fresh color.

			CHRYSANTHEMUM
Crop Stage	Maturity Days	Management	Control
Nursery stage	0- 15 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 6.0 - 7.0 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma or Bacillus subtilis mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1–2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Management	Nutrients Management: - Use a diluted liquid fertilizer weekly to promote initial growth. - Supplement with seaweed extract to encourage root development.
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Manageme	Nutrient Deficiency Management: - Minimal as seedlings rely on stored nutrients.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering: - Keep cocopeat moist but not soggy. - Use a spray bottle for uniform moisture without washing away seedlings.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) White fly: Biological control - Garlic oil - Lacewings Cultural control - Remove and destroy infected leaves Physical control - Use sticky traps c) Thrips: Biological control - Ves tricky traps c) Thrips: Biological control - Azardiractin -3 ml/L of water. Cultural control - Alternate host plants Physical control - Alternate host plants Physical control - Yellow / Blue sticky trap
Pre-Seedling Stage	15- 30 Days	Disease Management	a) Root rot: Biological control - Seed treatment with Trichoderma viride -6 ml/kg of seed Cultural control - Provide good drainage conditions to prevent water logging Physical control - Avoid waterlogging. b) Stem Rot: Biological control - Seed treatment with Trichoderma viride- 6 ml/kg of seed Cultural control - Crop rotation Physical control - Sanitation. c) Rust: Biological control - Leucanthemum - Argyranthemum Cultural control - Early removal of infected leaves. Physical control - Roughing of infected plants
Vegetative Stage	30- 60 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis. - Application: Use Epsom salts -1 tbsp/5 L of water.
Vegetative Stage	30-60 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing lower leaves - Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Magnesium Deficiency: - Symptoms: Stunted growth - Solution: Use Epsom salts -1 tbsp/5 L of water.

Page traine Stage 30 - 60 Days Page Management				Watering:
Japaine Japa	Vegetative Stage	30- 60 Days	Irrigation Management	
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Budding Stage 60- 90 Days Micro Nutrients Management 9. Solution: Remedy with bone meal. 2) Potassium or Boron : - Symptoms: Reduced flower size or discoloration - Solution: Use wood ash or banana peel tea - Every 15 days. 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
Budding Stage 60- 90 Days Micro Nutrients Management - Symptoms: Weak stems - Solution: Remedy with bone meal. 2) Potassium or Boron: - Symptoms: Reduced flower size or discoloration - Solution: Use wood ash or banana peel tea - Every 15 days. 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Osen meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				- Practice good sanitation.
Budding Stage 60-90 Days Micro Nutrients Management - Solution: Remedy with bone meal. 2) Potassium or Boron: - Symptoms: Reduced flower size or discoloration - Solution: Use wood ash or banana peel tea - Every 15 days. 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
Budding Stage 60-90 Days Nutrient Deficiency Management 2) Potassium or Boron: - Symptoms: Reduced flower size or discoloration - Solution: Use wood ash or banana peel tea - Every 15 days. 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
Budding Stage 60-90 Days Nutrient Deficiency Management 1 Potassium or Boron : Symptoms: Reduced flower size or discoloration Solution: Use wood ash or banana peel tea - Every 15 days. Potassium Deficiency: Symptoms: Small or undeveloped buds Solution: Use Banana peel tea. Phosphorus Deficiency: Symptoms: Purple discoloration Symptoms: Purple discoloration Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.	Budding Stage	60- 90 Days	Micro Nutrients Management	
Budding Stage 60-90 Days Nutrient Deficiency Management - Solution: Use wood ash or banana peel tea - Every 15 days. 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.		<u> </u>		
Budding Stage 60- 90 Days Nutrient Deficiency Managems 1) Potassium Deficiency: - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
Budding Stage 60-90 Days Nutrient Deficiency Management - Symptoms: Small or undeveloped buds - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
Budding Stage 60-90 Days Nutrient Deficiency Management - Solution: Use Banana peel tea. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				
2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.	D 11: 0	60- 90 Days	N	
- Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.	Budding Stage		Nutrient Deficiency Manageme	
Budding Stage 60-90 Days Irrigation Management Watering: - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				'
Budding Stage 60-90 Days Irrigation Management - Maintain consistent moisture, as drying out can stress the plants and affect bud development.				- Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
- Avoid waterlogging to prevent fungal diseases.	Budding Stage	60- 90 Days	Irrigation Management	
				- Avoid waterlogging to prevent fungal diseases.

Budding Stage	60- 90 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Wash them off the plants with a strong jet (water) Physical control - Blue sticky traps b) Bud borer: Biological control - Neem seed kernel extract 4% - Neem oil 1% Cultural control - Collection of mature larvae and destroy Physical control - Use pheromone traps. c) Leaf folder: Biological control - Lacewings - Neem oil Cultural control - Cauting and burning the infested plants Physical control - Cutting and burning the infested plants Physical control - Cutting and burning the infested plants Physical control - Weed control
Budding Stage	60- 90 Days	Disease Management	a) Powdery mildew: Biological control - Cinnamomum cassia 7.0% - Anethum graveolens 5.0% Cultural control - Proper plant spacing Physical control - Adequate light levels. b) Fusarium Wilt: Biological control - Bacillus thruingiensis Cultural control - Addjust pH Physical control - Sanitation. c) Verticillium Wilt: Biological control - B. amyloliquefaciens Cultural control - Use pathogen-free cuttings Physical control
Flowering Stage	90- 120 Days	Micro Nutrients Management	1) Nitrogen (N): - Reduce nitrogen slightly - Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Potassium plays a critical role in improving flower quality, boosting disease resistance Application: Seaweed extract every 10 days to promote flowering.
Flowering Stage	90- 120 Days	Nutrient Deficiency Manageme	1)Calcium Deficiency: - Symptoms: Weak stems or drooping flowers - Solution: Remedy with bone meal. 2) Potassium or Boron Deficiency: - Symptoms: Discolored or smaller blooms - Solution: Use wood ash or banana peel tea - Every 15 days. Watering:
Flowering Stage	90- 120 Days	Irrigation Management	- Reduce watering slightly but maintain even moisture Water at the base of the plant to prevent wetting flowers and foliage, which can cause fungal issues.
Flowering Stage	90- 120 Days	Pest Management	a) European corn borer: Biological control - Parasitic wasp Trichogramma Cultural control - Remove the caterpillars at night Physical control - Blue sticky traps b) Mexican mealybug: Biological control - Fish oil rosin soap at 25 gm/L of water Horticultural oil Cultural control - Prune the infected plant parts Physical control - Remove the bugs c) Spider mite: Biological control - Pongamia or neem oil or jatropa oil -5ml/L of water Cultural control - Avoid overcrowding Physical control - Avoid overcrowding Physical control - Cutting and burning of infested parts.

Flowering Stage 90	00- 120 Days	Disease Management	a) Alternaria leaf spot: Biological control - Volatile oils from A. indica and Eucalyptus sp Cultural control - Good watering practices Physical control - Removal of crop debris from the planting area b) Blossom blight: Biological control - Trichoderma virens - Mustard oil cake - 3% Cultural control - Avoid frequent use of nitrogenous fertilizers. Physical control - Keep humidity at low level. c) Petal Blight: Biological control - B. subtilis - Fluroescent pseudomonads Cultural control - Keep flowers dry Physical control - Control weeds - Dispose of severely infected plants and flowers.
Harvesting Stage 12	20- 180 Days	Micro Nutrients Management	1) Nutrients Management: - Stop fertilizing gradually Allow the plant to enter dormancy or prune it for a new growth cycle.
Harvesting Stage 12	20- 180 Days	Nutrient Deficiency Manageme	1) Nutrient Deficiency Management: - No significant deficiencies as the plant prepares for dormancy.
Harvesting Stage 12	20- 180 Days	Irrigation Management	Watering: - Gradually reduce watering as the plant stops growing actively.
Harvesting Stage 12	20- 180 Days	Pest Management	a) European corn borer: Biological control - Parastitic wasp Trichogramma Cultural control - Remove the caterpillars at night Physical control - Blue sticky traps b) Mexican mealybug: Biological control - Fish oil rosin soap at 25 gm/L of water Horticultural oil Cultural control - Prune the infected plant parts Physical control - Remove the bugs c) Spider mite: Biological control - Pongamia or neem oil or jatropa oil -5ml/L of water Cultural control - Avoid overcrowding Physical control - Avoid overcrowding Physical control - Cutting and burning of infested parts.
Harvesting Stage 12	20- 180 Days	Disease Management	a) Ray Blight: Biological control - Trichoderma viren Cultural control - Avoid overhead irrigation Physical control - Avoid wetting foliage and flowers b) Aster yellows: Biological control - Lacewings - Neem oil Cultural control - Use good sanitation Physical control - Remove and destroy infected plants c) Crown gall: Biological control - Agrobacterium tumefaciens K-84 - Agrobacterium tumefaciens K-84 - Agrobacterium radiobacter Cultural control - Avoid wounding plants Physical control - Oig out and destroy infected plants
			Digott and destroy infected plants.

	CROSSANDRA				
Crop Stage	Maturity Days	Management	Control		
Nursery stage	0-21 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 5.5 - 6.5 using lime if needed. b) Seed Treatment: - Prepare a slurry using Trichoderma viride or Pseudomonas fluorescens mixed with water. - Coat the seeds thoroughly and let them dry in shade before sowing. c) Sowing: - Sow seeds 1–2 cm deep and cover lightly with coir pith. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add biofertilizers like Bacillus orPhosphorus-Solubilizing Bacteria, Neem cake powder and Trichoderma harzianum to the medium. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing		
Pre-Seedling Stage	21- 45Days	Micro Nutrients Management	1) Nutrients Management: - Use a diluted liquid fertilizer weekly to promote initial growth. - Supplement with seaweed extract to encourage root development.		
Pre-Seedling Stage	21- 45Days	Nutrient Deficiency Management	Nutrient Deficiency Management: - Minimal nutrient requirements as seeds rely on stored nutrients.		
Pre-Seedling Stage	21- 45Days	Irrigation Management	Watering: - Maintain even moisture in the cocopeat, but do not saturate. - Use a spray bottle to avoid displacing seeds or damaging young seedlings.		
Pre-Seedling Stage	21- 45Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Remove infected leaves Physical control - Blue sticky traps b) Mealy bugs: Biological control - Lacewings Cultural control - Lacewings Cultural control - Remove infected leaves Physical control - Physical barriers such as ant fences c) White files: Biological control - Garlic oil Cultural control - Garlic oil Cultural control - Garlic oil Cultural control - Remove and destroy infected leaves Physical control		
Pre-Seedling Stage	21- 45Days	Disease Management	a) Foot and Root rot: Biological control - Neem-cake Cultural control - Crop rotation Physical control - Sanitation. b) Stem Rot: Biological control - Seed treatment with Trichoderma viride- 6 ml/kg of seed Cultural control - Roughing of infected plants Physical control - Sanitation.		
Vegetative Stage	45- 60 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Magnesium (Mg): - Essential for chlorophyll production and efficient photosynthesis. - Application: Use Epsom salts -1 tbsp/5 L of water.		
Vegetative Stage	45- 60 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: Symptoms: Yellowing lower leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Magnesium Deficiency: Symptoms:Weak growth Solution: Use Epsom salts -1 tbsp/5 L of water.		
Vegetative Stage	45- 60 Days	Irrigation Management	Watering: -Water regularly to keep the cocopeat moist but well-drained. - Avoid waterlogging, as Crossandra roots are sensitive to excess water.		

Vegetative Stage	45-60 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Remove infected leaves Physical control - Blue sticky traps b) Leaf eating caterpillar: Biological control - Bacillus thuringiensis - Neem oil Cultural control - Remove the caterpillars at night Physical control - Handpick the caterpillars e) Root-Knot Nematode: Biological control - Pseudomonas fluorescence Cultural control - Interculturing and bordering of Tagetes Physical control - Interculturing and bordering of Tagetes Physical control - How water treatment of corms at 57.8 C for 30 mins.
Vegetative Stage	45- 60 Days	Disease Management	a) Leaf blight: Biological control - Bacillus subtilis - Trichoderma spp. Cultural control - Removing and properly disposing of plant debris, fallen leaves, or flowers. Physical control - Irrigation management b) Alternaria leaf spot: Biological control - Bacillus subtilis - 5 gm/L of water Cultural control - Vus healthy seeds Physical control - Avoid moisture and stagnant condition c) Cercospora leaf spot: Biological control - Garlic Extract + Cow urine + Soap Nut Cultural control - Garlic Extract + Cow urine + Soap Nut Cultural control - Tillage buries residue and decreases innoculum
Budding Stage	60- 75 Days	Micro Nutrients Management	1)Calcium: - Symptoms: Weak stems - Solution: Remedy with bone meal. 2) Potassium or Boron: - Symptoms: Reduced flower size or discoloration - Solution: Use wood ash or banana peel tea - Every 15 days.
Budding Stage	60-75 Days	Nutrient Deficiency Management	1) Potassium Deficiency: - Symptoms: Poor bud development - Solution: Use Banana peel tea or Wood ash. 2) Phosphorus Deficiency: - Symptoms: Purple discoloration - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
Budding Stage	60-75 Days	Irrigation Management	Watering: - Water deeply but less frequently to encourage deeper root growth. - Ensure the cocopeat remains moist, especially as buds develop.
Budding Stage	60-75 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Remove infected leaves Physical control - Blue sticky traps b) Leaf eating caterpillar: Biological control - Bacillus thuringiensis - Neem oil Cultural control - Remove the caterpillars at night Physical control - Handpick the caterpillars c) Root-Knot Nematode: Biological control - Pseudomonas fluorescence Cultural control - Pseudomonas fluorescence Cultural control - Pseudomonas fluorescence Cultural control - Pseudomonas fluorescence - Senot-Knot Nematode: Biological control - Interculturing and bordering of Tagetes Physical control - Hot water treatment of corms at 57.8 C for 30 mins.

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Budding Stage	60-75 Days	Disease Management	a) Brown Scale: Biological control - Pseudomonas fluorescence - 5 g/L of water - Bacillus subtilis - 5 gm/L of water Cultural control - Removal and burning of infested portion of plants Physical control - Avoid splashing water onto plant foliage b) White scale: Biological control - Bacillus subtilis - 5 gm/L of water Cultural control - Removal and burning of infested portion of plants Physical control - Sanitation c) Powdery mildew: Biological control - Cinnamomum cassia 7.0% - Anethum graveolens 5.0% Cultural control - Proper plant spacing Physical control - Adequate light levels
Flowering Stage	75- 90 Days	Micro Nutrients Management	1) Nitrogen (N): Reduce nitrogen slightly Application: Use fish emulsion - Apply 15 days once. 2) Phosphorus (P): Important for strong root development, high-phosphorus fertilizer to support flowering. Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): Potassium plays a critical role in improving flower quality, boosting disease resistance. Application: Seaweed extract every 10 days to promote flowering. 1)Calcium Deficiency: Symptoms: Weak stems or drooping flowers
Flowering Stage	75- 90 Days	Nutrient Deficiency Management	- Solution: Remedy with bone meal. 2) Potassium Deficiency: - Symptoms: Discolored or smaller blooms - Solution: Use wood ash or banana peel tea - Every 15 days. Watering:
Flowering Stage	75- 90 Days	Irrigation Management	- Water consistently, keeping the medium moist but not soggy Avoid wetting the flowers to prevent fungal infections.
Flowering Stage	75-90 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Remove infected leaves Physical control - Blue sticky traps b) Leaf eating caterpillar: Biological control - Bacillus thuringiensis - Neem oil Cultural control - Remove the caterpillars at night Physical control - Handpick the caterpillars et night Physical control - Garlic oil Cultural control - Femove and destroy infected leaves Physical control - Yellow / Blue sticky trap
Flowering Stage	75- 90 Days	Disease Management	a) Brown Scale: Biological control - Pseudomonas fluorescence - 5 g/L of water - Bacillus subtilis - 5 gm/L of water Cultural control - Removal and burning of infested portion of plants Physical control - Avoid splashing water onto plant foliage b) Flower blight: Biological control - Trichoderma virens Cultural control - Remove infected flowers Physical control - Avoid water stagnation c) Powdery mildew: Biological control - Avoid water stagnation c) Cinnamomum cassia 7.0% - Anethum graveolens 5.0% Cultural control - Proper plant spacing Physical control - Proper plant spacing Physical control - Adequate light levels

Harvesting Stage	90- 150 Days	Micro Nutrients Management	Nutrients Management: Reduce fertilizer application gradually.
12m resting stage	70-130 Days	There i valuents management	- Allow the plant to rest or prepare for a new growth cycle by feeding with a diluted balanced fertilizer
TT C.	00 150 D	N D C M	1) Nutrient Deficiency Management:
Harvesting Stage	90- 150 Days	Nutrient Deficiency Management	- Minimal deficiencies occur in this stage if plants are pruned and cared for.
Harvesting Stage	90- 150 Days	Irrigation Management	Watering: - Reduce watering frequency during dormancy but do not let the cocopeat dry out completely.
Harvesting Stage	90-150 Days	Pest Management	a) Aphids: Biological control - Lady beetles Cultural control - Remove infected leaves Physical control - Blue sticky traps b) Leaf eating caterpillar: Biological control - Bacillus thuringiensis - Neem oil Cultural control - Remove the caterpillars at night Physical control - Handpick the caterpillars colories - Handpick the caterpillars c) White files: Biological control - Garlit oil Cultural control - Carlit oil Cultural control - Carlit oil Cultural control - Remove and destroy infected leaves Physical control - Yellow / Blue sticky trap
Harvesting Stage	90-150 Days	Disease Management	a) Brown Scale: Biological control - Pseudomonas fluorescence - 5 g/L of water - Bacillus subtilis - 5 gm/L of water Cultural control - Removal and burning of infested portion of plants Physical control - Avoid splashing water onto plant foliage b) Flower blight: Biological control - Trichoderma virens Cultural control - Remove infected flowers Physical control - Avoid water stagnation c) Powdery mildew: Biological control - Cinnamomum cassia 7.0% - Anethum graveolens 5.0% Cultural control - Proper plant spacing Physical control - Adequate light levels
Harvesting Stage	90- 150 Days	Signs of maturity	Flowers open fully and display vibrant colors - Orange, Yellow, Pink,etc

			CORIANDER
Crop Stage	Maturity Days	Management	Control
Nursery Stage	0-7 Days	Seed Sowing	a) Seed Treatment: - Soak seeds in clean, lukewarm water for 12-24 hours. - Coat seeds with Trichoderma viride powder - 4-5 g /kg of seeds. Air-dry the seeds before sowing. b) Sowing: - Sow coriander seeds at a depth of 1-2 cm to allow easy sprouting and prevent rotting. - Maintain proper spacing to avoid overcrowding.
			c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add neem cake or neem powder with cocopeat as a natural pest deterrent. - Incorporate compost or liquid organic fertilizers like seaweed extract or vermiwash.
Seedling Stage	7- 15 Days	Micro Nutrients Management	Nutrient Management: No additional nutrients are required yet.
Seedling Stage	7- 15 Days	Nutrient Deficiency Manageme	1) Nutrient Deficiency Management: - No deficiencies appear at this stage.
Seedling Stage	7- 15 Days	Irrigation Management	 Watering: Keep the cocopeat consistently moist by misting. Ensure proper drainage to avoid waterlogging.
Seedling Stage	7- 15 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Cutworms: Biological control - Sprinkle Wood ash around the base to deter cutworms. Cultural control - Remove weeds Physical control - Pheromone lure.
Seedling Stage	7- 15 Days	Disease Management	a) Damping-off: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration.
Vegetative Stage	15- 30 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use diluted fish emulsion or seaweed extract once every 7-10 days.
Vegetative Stage	15- 30 Days	Nutrient Deficiency Managemo	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves Solution: Apply compost tea or diluted fish emulsion.
Vegetative Stage	15- 30 Days	Irrigation Management	Watering: - Water once the top layer of cocopeat feels dry, ensuring even moisture without waterlogging.
Vegetative Stage	15- 30 Days	Pest Management	a) Leaf Miner: Biological control - Bacillus thuringiensis Cultural control -Remove and destroy infested leaves. Physical control - Use sticky traps. b) Thrips: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Maintain humidity Physical control - Yellow sticky traps.
Vegetative Stage	15- 30 Days	Disease Management	a) Leaf Spot: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Avoid overwatering.
Flowering Stage	30- 40 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use diluted fish emulsion or seaweed extract once every 7-10 days. 2) Phosphorus (P): - Important for strong root development, high-phosphorus fertilizer to support flowering. - Application: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium (K): - Aids in overall plant health, improving disease resistance and promoting strong stems and leaves. - Application: Seaweed extract every 10 days to promote flowering.

TI	30 (0 D	N D.C M	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves. - Solution: Apply compost tea or diluted fish emulsion.
Flowering Stage	30- 40 Days	Nutrient Deficiency Manageme	2) Potassium Deficiency: - Symptoms: Curling or browning leaf edges. - Solution: Use banana peel tea.
Flowering Stage	30- 40 Days	Irrigation Management	Watering: - Increase watering frequency slightly if plants are exposed to higher temperatures. Always water in the early morning or late evening.
			a) Aphids:
			ibiological control Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps.
Flowering Stage	30- 40 Days	Pest Management	- Osesticky traps. b) Thrips: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Maintain humidity Physical control
			- Yellow sticky traps.
Flowering Stage	30- 40 Days	Disease Management	a) Leaf Spot: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Avoid overwatering.
Harvesting Stage	40- 45 Days	Micro Nutrients Management	Nutrient Management: - After harvesting, apply diluted organic fertilizers to promote regrowth.
Harvesting Stage	40- 45 Days	Nutrient Deficiency Manageme	1) Nutrient Deficiency Management: - No new deficiencies typically arise during this stage, but weakened plants may need additional nitrogen if regrowth is expected. - Solution: Apply compost tea or diluted fish emulsion.
Harvesting Stage	40- 45 Days	Irrigation Management	Watering: - Water immediately after harvesting to support regrowth. Reduce watering frequency if temperatures drop.
Harvesting Stage	40- 45 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Thrips: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Maintain humidity Physical control - Yellow sticky traps.
Harvesting Stage	40- 45 Days	Disease Management	a) Damping-off Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Avoid overwatering. Physical control
			- Good aeration.
Harvesting Stage	40- 45 Days	Signs of Maturity	- Good aeration Lush green leaves with a full aroma. Leaves are broad and well-formed.

			MINT
Crop Stage	Maturity Days	Management	Control
Nursery Stage	0-7 Days	Seed Sowing	a) Seed Treatment: - Soak seeds in lukewarm water for 12-24 hours. - Treat seeds with a fungicide like Trichoderma viride or a mild hydrogen peroxide solution (1%) for 15 minutes to prevent fungal diseases. b) Sowing: - Sow seeds at a depth of 1-1.5 cm to allow easy sprouting and prevent rotting. - Maintain proper spacing to avoid overcrowding. c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add neem cake or neem powder with cocopeat as a natural pest deterrent Incorporate compost or Blood meal, Bone meal, wood ash to promote lush and green foliage.
Seedling Stage	7- 15 Days	Micro Nutrients Management	Nutrient Management: Apply diluted organic liquid fertilizer like vermiwash once every 7 days.
Seedling Stage	7- 15 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and pale seedlings. - Solution: Use diluted liquid compost tea or seaweed extract.
Seedling Stage	7- 15 Days	Irrigation Management	Watering: - Mist lightly twice daily to keep the cocopeat evenly moist but not soggy.
Seedling Stage	7- 15 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water Natural predators like Dragonfly, Spiders, etc, Cultural control - Maintain clean and weed-free Physical control - Use sticky traps.
Seedling Stage	7- 15 Days	Disease Management	a) Damping-off Biological control - Trichoderma solution -4-5 g/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration.
Vegetative Stage	15- 30 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Foliar spray with micronutrients once every two weeks.
Vegetative Stage	15- 30 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Purpling leaves - Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability. 3) Potassium deficiency: - Symptoms: Browning edges - Solution: Use Seawed extract - Every 15 days.
Vegetative Stage	15- 30 Days	Irrigation Management	Watering: - Water every 2–3 days or when the top layer feels slightly dry. - Avoid waterlogging.
Vegetative Stage	15- 30 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Whiteflies: Biological control - Garlic oil - Lacewings Cultural control - Remove and destroy infested leaves. Physical control - Use sticky traps.
Vegetative Stage	15- 30 Days	Disease Management	a) Powdery mildew: Biological control - Baking soda spray- 1-2 tsp/L of water. Cultural control - Increase ventilation Physical control - Avoid overwatering.
Harvesting Stage	30- 60 Days	Micro Nutrients Management	Nutrient Management: - Post-harvest, add organic compost or fertilizer to cocopeat for continued production.
Harvesting Stage	30– 60 Days	Nutrient Deficiency Management	1) Nutrient Deficiency Management: - Switch to a higher potassium fertilizer (e.g., NPK 5:5:15) to enhance flavor and resilience. - Solution: Apply compost tea or diluted seaweed extract.
Harvesting Stage	30- 60 Days	Irrigation Management	Watering: - Water daily to maintain consistent moisture without waterlogging.
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Harvesting Stage	30– 60 Days	Pest Management	a) Spider mites: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Caterpillars: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Hand-pick and destroy the caterpillars.
Harvesting Stage	30– 60 Days	Disease Management	a) Root rot: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Avoid overwatering. Physical control - Proper drainage.
Harvesting Stage	30- 60 Days	Signs of Maturity	- Leaves are fully developed, broad, and vibrant green.

			SPINACH
Crop Stage	Maturity Days	Management	Control
Nursery Stage	0-7 Days	Seed Sowing	a) Seed Treatment: - Soak seeds in water for 6-8 hours. - Treat seeds with a neem oil solution -3-5 ml/L of water to prevent fungal infections. Air-dry the seeds for 15-20 minutes before sowing. b) Sowing: - Sow seeds at a depth of 1-1.5 cm to allow easy sprouting and prevent rotting. - Maintain proper spacing to avoid overcrowding. c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add neem cake or neem powder with cocopeat as a natural pest deterrent. - Incorporate compost or liquid organic fertilizers like seaweed extract or vermiwash.
Seedling Stage	7- 15 Days	Micro Nutrients Managemen	1) Nutrient Management: - Apply diluted organic liquid fertilizer like vermiwash or seaweed extract once every 7 days.
Seedling Stage	7- 15 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and slow growth. - Solution: Apply compost tea or diluted fish emulsion.
Seedling Stage	7- 15 Days	Irrigation Management	1) Watering: - Water when the top layer of cocopeat feels dry. Avoid waterlogging to prevent fungal diseases.
Seedling Stage	7- 15 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps.
Seedling Stage	7- 15 Days	Disease Management	a) Damping-off Biological control - Trichoderma solution -4-5 g/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration.
Vegetative Stage	15- 30 Days	Micro Nutrients Managemen	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use diluted fish emulsion or seaweed extract once every 7-10 days.
Vegetative Stage	15- 30 Days	Nutrient Deficiency Manage	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and slow growth Solution: Apply compost tea or diluted fish emulsion. 2) Iron Deficiency: - Symptoms: Yellowing between leaf veins - Solution: Foliar spray of chelated iron.
Vegetative Stage	15- 30 Days	Irrigation Management	Watering: - Water thoroughly but avoid waterlogging. - Irrigate 2-3 times per week depending on weather conditions.
Vegetative Stage	15- 30 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Leaf Miner: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Use sticky traps.
Vegetative Stage	15-30 Days	Disease Management	a) Leaf Spot: Biological control - Neem oil -1-2 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Avoid overwatering.
Harvesting Stage	30- 45 Days	Micro Nutrients Managemen	Nutrient Management: - Post-harvest, add organic compost or fertilizer to cocopeat for continued production.
Harvesting Stage	30– 45 Days	Nutrient Deficiency Manage	1) Nutrient Deficiency Management: -Regular monitoring will help prevent deficiencies at this stage, but weakened plants may need additional nitrogen if regrowth is expected. - Solution: Apply compost tea or diluted fish emulsion.
Harvesting Stage	30- 45 Days	Irrigation Management	Watering: - Water after harvesting to encourage regrowth.

Harvesting Stage	30– 45 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Thrips: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Maintain humidity Physical control
Harvesting Stage	30– 45 Days	Disease Management	- Yellow sticky traps. a) Damping-off Biological control - Neem oil -1-2 ml/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration.
Harvesting Stage	30- 45 Days	Signs of Maturity	- Spinach leaves are broad, tender, and vibrant green.

	1		SORREL/GONGURA
Crop Stage	Maturity Days	Management	Control
			a) Seed Treatment: - Soak seeds in water for 12-24 hours before planting to improve germination Treat seeds with a neem oil solution -3-5 ml/L of water to prevent fungal infections. Air-dry the seeds for 15-20 minutes before sowing. b) Sowing:
Nursery Stage	0-7 Days	Seed Sowing	- Sow seeds at a depth of 1-1.5 cm to allow easy sprouting and prevent rotting. - Maintain proper spacing to avoid overcrowding. c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add neem cake or neem powder with cocopeat as a natural pest deterrent.
Seedling Stage	7- 21 Days	Micro Nutrients Management	- Incorporate compost or liquid organic fertilizers like seaweed extract or vermiwash. 1) Nutrient Management: - Start applying a balanced NPK fertilizer (preferably 2:1:1) after the plants have established 2-3 leaves. Do this every 7-10 days.
Seedling Stage	7- 21 Days	Nutrient Deficiency Management	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and slow growth Solution: Apply compost tea or diluted fish emulsion. 2) Iron Deficiency: - Symptoms: leaves turn yellow with green veins - Solution: Apply chelated iron or iron sulfate.
Seedling Stage	7-21 Days	Irrigation Management	Watering: Water when the top 2-3 cm of the cocopeat feels dry. Avoid waterlogging and ensure good drainage.
Seedling Stage	7- 21 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps.
Seedling Stage	7- 21 Days	Disease Management	a) Damping-off Biological control - Trichoderma solution -4-5 g/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration.
Vegetative Stage	21- 40 Days	Micro Nutrients Management	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use diluted fish emulsion or seaweed extract once every 7-10 days. - Use organic compost or vermicompost for long-term fertility.
Vegetative Stage	21-40 Days	Nutrient Deficiency Manageme	1) Nitrogen Deficiency: - Symptoms: Leaves turn pale or yellow - Solution: Supplement with fish emulsion or compost tea. 2) Phosphorus Deficiency: - Symptoms: Growth is slow and leaves are dark green with red edges - Solution: Use a Bone meal or Rock phosphate 3) Potassium Deficiency: - Symptoms: Browning of leaf edges - Solution: Apply a potassium-rich fertilizer like Banana peel tea or Vermicompost.
Vegetative Stage	21- 40 Days	Irrigation Management	Watering: - Water thoroughly but avoid waterlogging. - Irrigate 2-3 times per week depending on weather conditions.
Vegetative Stage	21-40 Days	Pest Management	- Irrigate 2-3 times per week depending on weather conditions. a) Caterpillars and Bugs: Biological control - Bacillus thuringiensis Cultural control - Maintain clean and weed-free Physical control - Hand-pick pests. b) Leaf Miner: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Use sticky traps.
Vegetative Stage	21-40 Days	Disease Management	a) Leaf Spot: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Avoid overwatering.
Harvesting Stage	40- 60 Days	Micro Nutrients Management	1) Nutrient Management:
Harvesting Stage	40- 60 Days	Nutrient Deficiency Management	- Post-harvest, add organic compost or fertilizer to cocopeat for continued production. 1) Calcium Deficiency: - Symptoms: Causes leaf deformation and tip burn Solution: Apply calcium nitrate or Eggshells 2) Nutrient Deficiency Management:
			-Regular monitoring will help prevent deficiencies at this stage, but weakened plants may need additional nitrogen if regrowth is expected Solution: Apply compost tea or diluted fish emulsion.

Harvesting Stage	40–60 Days	Pest Management	a) Aphids: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Thrips: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Maintain humidity Physical control - Maintain humidity Physical control - Yellow sticky traps.
Harvesting Stage	40–60 Days	Disease Management	a) Powdery Mildew Biological control - Apply baking soda solution -1 tbsp/L of water Cultural control - Avoid overwatering. Physical control - Good aeration. b) Leaf Spot: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Remove and destroy infested leaves. Physical control - Avoid overwatering.
Harvesting Stage	40- 60 Days	Signs of Maturity	Leaves should be large, deep green, and vibrant.

			METHI
Crop Stage	Maturity Days	Management	Control
			a) Seed Treatment:
			 Soak methi seeds in lukewarm water for 8–12 hours before sowing. Treat seeds with a natural fungicide like Trichoderma viride or neem oil - 2–3 ml/L of water to prevent fungal diseases.
			b) Sowing: - Sow seeds at a depth of 1–2 cm to allow easy sprouting and prevent rotting.
Nursery Stage	0-7 Days	Seed Sowing	- Maintain proper spacing to avoid overcrowding.
			c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag,
			leaving 2–3 inches of space at the top for watering.
			 Add neem cake or neem powder with cocopeat as a natural pest deterrent. Incorporate compost or Bone meal, wood ash to promote lush and green foliage.
	_		Theorporate composit of none meat, wood asn to promote fush and green ronage. 1) Nutrient Management:
Seedling Stage	7- 15 Days	Micro Nutrients Management	- Apply diluted organic liquid fertilizer like vermiwash once every 7 days.
			1) Nitrogen Deficiency:
			- Symptoms: Yellowing leaves and pale seedlings Solution: Use diluted liquid compost tea or Fish emulsion.
			2) Phosphorus Deficiency:
Seedling Stage	7- 15 Days	Nutrient Deficiency Managen	- Symptoms: Poor root development Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			3) Potassium Deficiency:
			- Symptoms: Weak stems.
			- Solution: Use Seaweed extract - Every 15 days. 1) Watering:
Seedling Stage	7- 15 Days	Irrigation Management	- Water lightly every 2–3 days, ensuring even moisture.
			- Use a spray bottle or gentle watering can.
			a) Aphids: Biological control
			- Neem oil - 5 ml/L of water.
Seedling Stage	7- 15 Days	Pest Management	- Natural predators like Ladybugs, Green Lacewings.
	, 23 2 3)*		Cultural control - Maintain clean and weed-free
			Physical control
			- Use sticky traps.
			a) Damping-off: Biological control
			- Trichoderma solution -4-5 g/L of water.
			Cultural control
			- Avoid overwatering. Physical control
Seedling Stage	7- 15 Days	Disease Management	- Good aeration.
occurring orange	1, 1, 2, 2, 3, 5	Disease Management	b) Fungus gnats:
			Biological control - Neem oil - 5 ml/L of water.
			Cultural control
			- Avoid overwatering. Physical control
			- Good aeration.
			1) Nitrogen (N):
Vegetative Stage	15- 30 Dave	Micro Nutriente Management	- Increase the nitrogen level to promote leaf development Application - Use fish emplsion - Apply weekly
Vegetative Stage	15- 30 Days	Micro Nutrients Management	- Application : Use fish emulsion - Apply weekly 2) Micronutrients:
			- Add micronutrients (Fe, Zn, Mg) via foliar sprays every 10–14 days.
			1) Nitrogen Deficiency:
			- Symptoms: Pale or Yellowing of leaves Solution: Feed a nitrogen-rich fertilizer diluted fish emulsion or mustard cake solution.
			2) Phosphorus Deficiency:
Vegetative Stage	15- 30 Days	Nutrient Deficiency Managen	- Symptoms: Slowed growth, dark green or purple lower leaves Solution: Bone meal or Rock phosphate can be used to ensure phosphorus availability.
			- Solution: Bone meal or Kock phosphate can be used to ensure phosphorus availability. 3) Iron Deficiency:
			- Symptoms: Interveinal chlorosis yellowing between leaf veins on younger leaves.
			- Solution: Foliar spray with fermented compost tea (high in iron)
Vegetative Stage	15- 30 Days	Irrigation Management	Watering: - Water every 2–3 days or when the top layer of cocopeat feels slightly dry.
	,		- Avoid waterlogging by ensuring proper drainage.

			,
Vegetative Stage	15- 30 Days	Pest Management	a) Thrips: Biological control - Pirate Bugs Cultural control - Maintain clean and weed-free Physical control - Use Blue sticky traps. b) Whiteflies: Biological control - Garlic oil - Lacewings Cultural control - Remove and destroy infested leaves. Physical control - Use sticky traps. c) Mites: Biological control - Use sticky traps. c) Mites: Biological control - Neem oil or insecticidal soap. Cultural control - Se sticky traps.
Vegetative Stage	15- 30 Days	Disease Management	a) Powdery mildew: Biological control - Baking sod a spray- 1-2 tsp/L of water Use sulfur-based sprays if needed. Cultural control - Increase ventilation Physical control - Avoid overwatering. b) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control
Harvesting Stage	30- 45 Days	Micro Nutrients Management	Nutrient Management: Post-harvest, add organic compost or fertilizer to cocopeat for continued production.
Harvesting Stage	30– 45 Days	Nutrient Deficiency Managen	1) Calcium Deficiency: Symptoms: Curling or distorted leaves, weak stems. Solution: Apply egg shell tea. 2) Potassium deficiency: Symptoms: Browning leaf tips and edges, weak stems. Solution: Foliar spray with banana peel tea or use wood ash solution.
Harvesting Stage	30- 45 Days	Irrigation Management	Watering: - Water every 1–2 days, keeping the cocopeat evenly moist. - Avoid overwatering to prevent leaf yellowing and root rot.
Harvesting Stage	30– 45 Days	Pest Management	a) Spider mites: Biological control - Neem oil - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves.
Harvesting Stage	30- 45 Days	Disease Management	a) Rust: Biological control - Neem oil - 1-2 ml/L of water. Cultural control - Avoid overwatering. Physical control - Alernate host.
Harvesting Stage	30- 45 Days	Signs of Maturity	- Leaves are fully developed, vibrant green, and tender.

			AMARANTHUS
Crop Stage	Maturity Days	Management	Control
Crop Stage	Maturity Days	Wanagement	a) Seed Treatment: - Soak Amaranthus seeds in lukewarm water for 4–6 hours to enhance germination.
Nursery Stage	0- 7 Days	Seed Sowing	 Treat seeds with a natural fungicide like Trichoderma viride -2 g /kg of seeds to prevent fungal infections. b) Sowing: Sow seeds at a depth of 0.5-1 cm to allow easy sprouting and prevent rotting. Maintain proper spacing to avoid overcrowding.
			c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add neem cake or neem powder with cocopeat as a natural pest deterrent. - Incorporate Bone Meal or Rock Phosphate to promote lush and green foliage.
Seedling Stage	7- 15 Days	Micro Nutrients Manage	Nutrient Management: Apply diluted organic liquid fertilizer like Vermicompost tea or Fish emulsion-5 ml/L water.
Seedling Stage	7- 15 Days	Nutrient Deficiency Man	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and stunted growth. - Solution: Lightly top-dress with vermicompost or apply diluted compost tea.
Seedling Stage	7- 15 Days	Irrigation Management	1) Watering: - Water lightly every 2–3 days or when the top cocopeat feels slightly dry. - Use a spray bottle or gentle watering can.
Seedling Stage	7-15 Days	Pest Management	a) Aphids: Biological control - Neem oil - 5 ml/L of water. - Natural predators like Ladybugs, Green Lacewings. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Thrips: Biological control - Neem oil - 5 ml/L of water. Cultural control - Remove weeds. Physical control - Use sticky traps.
Seedling Stage	7- 15 Days	Disease Management	a) Damping-off: Biological control - Trichoderma solution -4-5 g/L of water. Cultural control - Avoid overwatering. Physical control - Good aeration. b) Root rot: Biological control - Neem oil - 5 ml/L of water. Cultural control - Use well-drained cocopeat. Physical control - Avoid overwatering.
Vegetative Stage	15- 30 Days	Micro Nutrients Manage	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Foliar spray of seaweed extract or fish emulsion every 10–15 days.
Vegetative Stage	15- 30 Days	Nutrient Deficiency Mar	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Apply compost tea or fermented mustard cake solution. 2) Phosphorus Deficiency: - Symptoms: Poor root development, purple leaves - Solution: Use bone meal or banana peel tea. 3) Potassium Deficiency: - Symptoms: Leaf curling or browning edges - Solution: Apply wood ash solution or seaweed extract.
Vegetative Stage	15- 30 Days	Irrigation Management	Watering: - Water every 2–3 days, keeping cocopeat moist but not waterlogged. - Reduce watering frequency if the weather is cool or humid.

			a) Thrips:
			Biological control
			- Pirate Bugs
			Cultural control
			- Maintain clean and weed-free
			Physical control
			- Use Blue sticky traps.
			b) Whiteflies:
			Biological control
			- Garlic oil
Voqotativo Stago	15- 30 Days	Post Management	- Lacewings
Vegetative Stage	13-30 Days	Pest Management	Cultural control
			-Remove and destroy infested leaves.
			Physical control
			- Use sticky traps.
			c) Leaf miner:
			Biological control
			- Neem oil or insecticidal soap sprays.
			Cultural control
			-Wash leaves with water
			Physical control
			- Remove and destroy infected leaves.
			a) Powdery mildew:
			Biological control
			- Baking soda spray- 1-2 tsp/L of water.
Vegetative Stage	15- 30 Days	Disease Management	- Use sulfur-based sprays if needed.
	,		Cultural control
			- Increase ventilation
			Physical control
			- Avoid overwatering.
			-
			1) Nutrient Management:
Harvesting Stage	30– 45 Days	Micro Nutrients Manager	- Reduce fertilizer application 7–10 days before harvesting to maintain a natural taste.
			- Apply compost tea lightly if regrowth is expected for a second harvest.
			1) Potassium deficiency:
			'
Harvesting Stage	30– 45 Days	Nutrient Deficiency Man	- Symptoms: Weak stems or Browning leaf edges.
			- Solution: Add banana peel tea or wood ash.
			Watering:
Llamosting Stage	20 45 Days	Irrigation Management	
Harvesting Stage	30- 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist.
Harvesting Stage	30– 45 Days	Irrigation Management	
Harvesting Stage	30- 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist.
Harvesting Stage	30– 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars:
Harvesting Stage	30– 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control
Harvesting Stage	30– 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water.
Harvesting Stage	30– 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control
Harvesting Stage	30- 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free
Harvesting Stage	30– 45 Days	Irrigation Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free
Harvesting Stage Harvesting Stage	30– 45 Days 30– 45 Days	Irrigation Management Pest Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy.
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner:
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays.
			- Warer daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water
			- Warer daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves.
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew:
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew:
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage.
			- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control
Harvesting Stage		Pest Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control - Good Drainage. Physical control - Trim infected leaves.
	30– 45 Days		- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control - Tirin infected leaves. b) Leaf spots:
Harvesting Stage	30– 45 Days	Pest Management	- Water daily or as needed to keep cocopeat evenly moist Avoid overwatering to prevent leaf yellowing and root rot. a) Caterpillars: Biological control - Bacillus thuringiensis - 3-5 ml/L of water. Cultural control - Maintain clean and weed-free Physical control - Handpick and destroy. b) Leaf miner: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves. a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control - Good Drainage. Physical control - Trim infected leaves.
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			CURRY LEAVES
Crop Stage	Maturity Days	Management	Control
Nursery Stage	0- 15 Days	Seed Sowing	a) Seed Treatment: - Soak the seeds in lukewarm water for 12–24 hours to soften the seed coat and accelerate germination. - Treat seeds with an organic fungicide like Trichoderma viride -0.2 g/L of water. b) Sowing: - Sow seeds at a depth of 1–2 cm to allow easy sprouting and prevent rotting. - Maintain proper spacing to avoid overcrowding. c) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. - Add Neem Cake or Mustard Cake with cocopeat as a natural pest deterrent. - Incorporate Bone Meal or Rock Phosphate to promote lush and green foliage.
Seedling Stage	15- 45 Days	Micro Nutrients Mana	1) Nutrient Management: - Seaweed extract-5 ml/L of water as a foliar spray or root drench. - Fish emulsion- 5 ml/L of water for root drenching.
Seedling Stage	15- 45 Days	Nutrient Deficiency M	1) Nitrogen Deficiency: - Symptoms: Yellowing leaves and stunted growth. - Solution: Lightly top-dress with vermicompost or apply diluted compost tea. 2) Phosphorus Deficiency: - Symptoms: Poor root development, dark purple leaves. - Solution: Add bone meal or banana peel tea.
Seedling Stage	15- 45 Days	Irrigation Managemen	1) Watering: - Water every 2–3 days, ensuring cocopeat is moist but not soggy.
Seedling Stage	15- 45 Days	Pest Management	a) Aphids: Biological control - Neem oil - 5 ml/L of water. - Natural predators like Ladybugs, Green Lacewings. Cultural control - Maintain clean and weed-free Physical control - Use sticky traps. b) Mealybugs: Biological control - Neem oil - 5 ml/L of water. Cultural control - Remove the bugs. Physical control - Maintain proper Drainage.
Seedling Stage	15- 45 Days	Disease Management	a) Root rot: Biological control - Neem oil - 5 ml/L of water. Cultural control - Use well-drained cocopeat. Physical control - Avoid overwatering.
Vegetative Stage	45–180 Days	Micro Nutrients Mana	1) Nitrogen (N): - Increase the nitrogen level to promote leaf development. - Application: Use fish emulsion - Apply weekly 2) Micronutrients: - Foliar spray of seaweed extract or fish emulsion every 10–15 days.
Vegetative Stage	45–180 Days	Nutrient Deficiency M	1) Nitrogen Deficiency: - Symptoms: Pale or Yellowing of leaves Solution: Apply compost tea or fermented mustard cake solution. 2) Iron Deficiency: - Symptoms: Yellowing between leaf veins (interveinal chlorosis) Solution: Foliar spray with chelated iron or seaweed extract. 3) Magnesium Deficiency: - Symptoms: Yellowing edges on older leaves - Solution: Use Epsom salt solution -1 tsp/L of water.
Vegetative Stage	45–180 Days	Irrigation Managemen	Watering: - Water every 3–4 days or when the top 2–3 cm of cocopeat feels dry. - Increase frequency during hot weather and reduce in cooler months.

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Vegetative Stage	45–180 Days	Pest Management	a) Thrips: Biological control - Pirate Bugs Cultural control - Maintain clean and weed-free Physical control - Use Blue sticky traps. b) Whiteflies: Biological control - Lacewings Cultural control - Remove and destroy infested leaves. Physical control - Use sticky traps. c) Scale insects: Biological control - Garlic spray Cultural control - Garlic spray Cultural control - Garlic spray Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves.
Vegetative Stage	45–180 Days	Disease Management	a) Powdery mildew: Biological control - Baking soda spray- 1-2 tsp/L of water. - Use sulfur-based sprays if needed. Cultural control - Increase ventilation Physical control - Avoid overwatering. b) Leaf spot: Biological control - Baking soda spray- 1-2 tsp/L of water. Cultural control - Good Drainage. Physical control - Avoid overwatering.
Harvesting Stage	180 + Days	Micro Nutrients Mana	1) Nutrient Management: Fertilize monthly with: - Compost or Vermicompost- 1–2 handfuls per grow bag. - Seaweed Extract or Fish Emulsion-10 ml/L of water as foliar spray or root drench. - Wood Ash: Sprinkle lightly around the plant for potassium.
Harvesting Stage	180 + Days	Nutrient Deficiency M	1) Potassium deficiency: - Symptoms: Browning leaf edges and weak stems - Solution: Use banana peel tea or wood ash. 2) Calcium Deficiency: - Symptoms: Distorted young leaves - Solution: Apply eggshell tea or lime water. 3) General Deficiencies: - Symptoms: Stunted growth and pale leaves Solution: Monthly application of compost tea.
Harvesting Stage	180 + Days	Irrigation Managemen	Watering: Deep watering once every 4–5 days. Avoid overwatering to prevent root rot, especially in cooler months.
Harvesting Stage	180 + Days	Pest Management	a) Mealybugs: Biological control - Horticultural soap sprays 5 ml/L of water. Cultural control - Remove the bugs. Physical control - Maintain proper Drainage b) Mites: Biological control - Neem oil or insecticidal soap sprays. Cultural control - Wash leaves with water Physical control - Remove and destroy infected leaves.

Harvesting Stage	180 + Days	Disease Management	a) Downy mildew: Biological control - Trichoderma viride-2 g/L of water. Cultural control - Good Drainage. Physical control - Trim infected leaves. b) Sooty mold: Biological control - Neem oil or copper-based organic fungicide. Cultural control - Improve airflow. Physical control - Prune affected leaves.
Harvesting Stage	180 + Days	Signs of Maturity	- The leaves will be dark green, aromatic, and glossy.

TURMERIC				
Crop Stage	Maturity Days	Management	Control	
Nursery stage	0- 30 Days	Seed Sowing	a) Nursery Tray Preparation: - Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). - Ensure the pH is adjusted to 5.5 - 7 using lime if needed. b) Seed Treatment - Soak the turmeric rhizomes in water for 12–24 hours before planting. This helps in hydrating the rhizomes and encourages sprouting. - Treat seeds with a fungicide or biofungicide like Trichoderma to prevent fungal infections. c) Sowing: - Plant the turmeric rhizomes at a depth of 2-4 inches in cocopeat. - Maintain proper spacing to avoid overcrowding. d) Grow Bag Preparation: - Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. - Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. - Add bone meal or superphosphate for phosphorus, which is vital for root and rhizome development. - Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.	
Pre-Seedling Stage	30- 60 Days	Micro Nutrients Manageme	1) Nitrogen: - Focus on nitrogen-rich fertilizers (like urea) to support early vegetative growth. Apply once a month. 2) Phosphorus: - Add bone meal or phosphate-based fertilizers at planting to stimulate early root development	
Pre-Seedling Stage	30- 60 Days	Nutrient Deficiency Manag	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.	
Pre-Seedling Stage	30- 60 Days	Irrigation Management	Watering Frequency: - Cocopeat retains moisture well, so water regularly to keep it evenly moist but avoid overwatering. - Keep humidity high by misting occasionally or using a humidifier, as turmeric thrives in a humid environment.	
Pre-Seedling Stage	30- 60 Days	Pest Management	a) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. b) Root Maggots: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Ensure good drainage.	
Pre-Seedling Stage	30-60 Days	Disease Management	a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Leaf Spot: Biological control - Neem oil Cultural control - Remoe affected leaves Physical control - Avoid overwatering to ensure good airflow	
Vegetative Stage	60–180 Days	Micro Nutrients Manageme	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.	
Vegetative Stage	60–180 Days	Nutrient Deficiency Manag	1) Nitrogen Deficiency: - Symptoms: Yellowing of older leaves. - Solution: Apply organic fertilizers like vermicompost or compost tea. 2) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots. - Solution: Use banana peel compost or wood ash. 3) Zinc and Iron Deficiency: - Symptoms: Yellowing leaves - Solution: Foliar spray with fermented compost tea (high in iron)	
Vegetative Stage	60–180 Days	Irrigation Management	Watering Frequency: - Maintain consistent moisture in the cocopeat, but ensure proper drainage. Water when the top layer of cocopeat begins to dry out. - Avoid overwatering to reduce the risk of fungal diseases.	

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			a) Spider Mites:
			Biological control
			- Use neem oil -5 ml/L of water at weekly intervals.
			Cultural control
			-Weed management
			Physical control
			- Mites removed with a strong spray of water.
Vegetative Stage	60–180 Days	Pest Management	b) Thrips:
			Biological control
			- Pirate bugs
			- Lacewing larvae
			Cultural control
			- Avoid planting Next to Onion & Garlic.
			Physical control
			- Yellow/Blue Sticky Traps.
			a) Leaf spot:
			Biological control
			- Bacillus subtilis
			Cultural control
			- Control Nightshade weeds
			Physical control
			- Remove weeds and infected plants.
Vegetative Stage	60–180 Days	Disease Management	b) Bacterial Wilt:
			Biological control
			- Spray with copper-based fungicides
			Cultural control
			- Avoid watering
			Physical control
			- Sanitation
			1) Potassium (K):
			- Ensure adequate potassium levels to enhance disease resistance and rhizome development.
Root Development Stag	180– 270 Days	Micro Nutrients Manageme	- Application: Use banana peel compost or potassium-rich liquid fertilizers.
			2) Phosphorus (P):
			- A small dose of phosphorus may be required to aid in tuber formation and development.
			- Application: Use bone meal or rock phosphate
			1) Phosphorus Deficiency:
			- Symptoms: Stunted growth
			- Solution: Add Bone meal or Rock phosphate.
			2) Boron Deficiency:
Root Development Stag	180– 270 Days	Nutrient Deficiency Manag	- Symptoms: To prevent hollow roots and improve root structure.
			- Solution: Use Azotobacter-1 tbsp/5 L of water.
			3) Zinc and Iron Deficiency:
			- Symptoms:Yellowing leaves
			- Symptoms:Yellowing leaves - Solution: Foliar spray with fermented compost tea (high in iron)
Root Development Stag	180– 270 Days	Irrigation Management	- Solution: Foliar spray with fermented compost tea (high in iron)
Root Development Stag	180– 270 Days	Irrigation Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency:
Root Development Stag	180– 270 Days	Irrigation Management	Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings. Ensure proper drainage to prevent water stagnation.
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	180– 270 Days		- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow.
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt:
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Neem oil or insecticidal soap. Cultural control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Khizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Vellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings. - Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Ves neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overbatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overbatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overbatering to ensure good airflow. - Avoid overbatering to ensure stagnation.
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Use disease-free Rhizome Physical control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Avoid watering
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Vellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wit: Biological control - Avoid watering to ensure good airflow. b) Bacterial Wit: Biological control - Spray with copper-based fungicides Cultural control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Sanitation 1) Potassium (K):
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Avoid overwatering Physical control - Avoid overwatering Physical control - Avoid overwatering Physical control - Vellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Cultural control - Use disease-free Rhizome Physical control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Sanitation - Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and rhizome development.
Root Development Stag	180– 270 Days	Pest Management Disease Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use nem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Neem oil or insecticidal soap. Cultural control - Yellow/Blue Sticky Traps. a) Rhizome Rot: Biological control - Yellow/Blue Sticky Traps. a) Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wit: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wit: Biological control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Sanitation 1) Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and rhizome development Application: Use banana peel compost or potassium-rich liquid fertilizers.
Root Development Stag	180– 270 Days	Pest Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid watering Physical control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control
Root Development Stag	180– 270 Days	Pest Management Disease Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. 3) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Rhizome Rot: Biological control - Rhizome Rote Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid dwatering Physical control - Sanitation 1) Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and rhizome development Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - A small dose of phosphorus may be required to aid in tuber formation and development.
Root Development Stag	180– 270 Days	Pest Management Disease Management	- Solution: Foliar spray with fermented compost tea (high in iron) Watering Frequency: - Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation. a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Avoid watering Physical control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Spray with copper-based fungicides Cultural control

Harvesting Stage	270– 360 Days	Nutrient Deficiency Manage	1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: To prevent hollow roots and improve root structure Solution: Use Azotobacter-1 tbsp/5 L of water. 3) Zinc and Iron Deficiency: - Symptoms:Yellowing leaves - Solution: Foliar spray with fermented compost tea (high in iron)
Harvesting Stage	270- 360 Days	Irrigation Management	Watering Frequency: -Reduce watering frequency as the plant approaches maturity to prevent waterlogging. Allow cocopeat to dry slightly between waterings Ensure proper drainage to prevent water stagnation.
Harvesting Stage	270– 360 Days	Pest Management	a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps.
Harvesting Stage	270– 360 Days	Disease Management	a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Sanitation
Harvesting Stage	270– 360 Days	Signs of maturity	Mature rhizomes are plump, well-developed, and have a deep orange or yellow color

			GINGER
Crop Stage	Maturity Days	Management	Control
Nursery stage	0-30 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Ensure the pH is adjusted to 5.5 - 6.5 using lime if needed. b) Seed Treatment Soak rhizomes in a solution of seaweed extract or a biofertilizer (e.g., Trichoderma) for 30 minutes to enhance sprouting and disease resistance. Treat seeds with a fungicide or biofungicide like Trichoderma to prevent fungal infections. Sowing: Plant the turmeric rhizomes at a depth of 2-4 inches in cocopeat. Maintain proper spacing to avoid overcrowding. Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2-3 inches of space at the top for watering. Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. Add 1-2 tablespoons per grow bag for phosphorus to support root and rhizome development. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	30- 60 Days	Micro Nutrients Manag	 Nitrogen: Focus on nitrogen-rich fertilizers (like urea) to support early vegetative growth. Apply once a month. Phosphorus: Add bone meal or phosphate-based fertilizers at planting to stimulate early root development.
Pre-Seedling Stage	30- 60 Days	Nutrient Deficiency Ma	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	30- 60 Days	Irrigation Management	Watering Frequency: - Maintain even moisture without waterlogging. Cocopeat retains water well, so check the top 1-2 inches for dryness before re-watering.
Pre-Seedling Stage	30- 60 Days	Pest Management	a) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. b) Fungus gnats: Biological control - Bacillus thuringiensis israelensis - Sprinkle cinnamon powder Cultural control - Allow cocopeat surface to dry slightly between waterings. Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	30- 60 Days	Disease Management	a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	60–180 Days	Micro Nutrients Manag	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	60–180 Days	Nutrient Deficiency Ma	1) Magnesium Deficiency: - Symptoms: Interveinal chlorosis in older leaves - Solution: Apply magnesium sulfate or Epsom salts. 2) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots Solution: Use banana peel compost or wood ash. 3) Zinc and Iron Deficiency: - Symptoms: Yellowing leaves - Solution: Foliar spray with fermented compost tea (high in iron)
Vegetative Stage	60–180 Days	Irrigation Management	Watering Frequency: - Maintain a humid environment by misting or using a humidifier, especially in dry climates. - Avoid overwatering to reduce the risk of fungal diseases.

Vegetative Stage	60–180 Days	Pest Management	a) Mites: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control -Weed management Physical control - Mites removed with a strong spray of water. b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Vegetative Stage	60–180 Days		a) Leaf spot: Biological control - Bacillus subtilis Cultural control - Control Nightshade weeds Physical control - Remove weeds and infected plants. b) Soft Rot: Biological control - Trichoderma harzianum - Bacillus subtilis. Cultural control - Avoid overwatering Physical control - Storage of bulbs in open baskets, mesh bags and netted bags.
Root Development Sta	180– 270 Days	Micro Nutrients Manag	 Potassium (K): Ensure adequate potassium levels to enhance disease resistance and rhizome development. Application: Use banana peel compost or potassium-rich liquid fertilizers. Phosphorus (P): A small dose of phosphorus may be required to aid in tuber formation and development. Application: Use bone meal or rock phosphate
Root Development Sta	180– 270 Days	Nutrient Deficiency Ma	1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: To prevent hollow roots and improve root structure Solution: Use Azotobacter-1 tbsp/5 L of water. 3) Potassium Deficiency: - Symptoms: Leaf edges turn brown; stunted roots Solution: Use banana peel compost or wood ash.
Root Development Sta	180– 270 Days	Irrigation Management	Watering Frequency: - Reduce frequency slightly but ensure the cocopeat remains moist. Allow slight drying between waterings.
Root Development Sta	180– 270 Days		a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. c) Mites: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Weed management Physical control
Root Development Sta	180– 270 Days		A Rhizeme Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Sanitation

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270- 300 Days	Micro Nutrients Manag	1) Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and rhizome development. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - A small dose of phosphorus may be required to aid in tuber formation and development. - Application: Use bone meal or rock phosphate
270- 300 Days	Nutrient Deficiency Ma	1) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate. 2) Boron Deficiency: - Symptoms: To prevent hollow roots and improve root structure Solution: Use Azotobacter-1 tbsp/5 L of water. 3) Zinc and Iron Deficiency: - Symptoms:Yellowing leaves - Solution: Foliar spray with fermented compost tea (high in iron)
270- 300 Days	Irrigation Management	Watering Frequency: - Allow the top layer of cocopeat to dry slightly before harvest to make rhizome extraction easier and prevent diseases.
270- 300 Days	Pest Management	a) Root-knot nematodes: Biological control - Use neem cake Cultural control - Avoid planting in the same cocopeat repeatedly without sterilizing. Physical control - Sanitation. b) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps.
270- 300 Days	Disease Management	a) Rhizome Rot: Biological control - Rhizome treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Bacterial Wilt: Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Sanitation
270- 300 Days	Signs of maturity	Mature rhizomes are larger, have a robust aroma, and exhibit a characteristic golden-brown outer skin.
	270– 300 Days 270– 300 Days 270– 300 Days	270– 300 Days Nutrient Deficiency Ma 270– 300 Days Irrigation Management 270– 300 Days Pest Management 270– 300 Days Disease Management

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Crop Stage	Maturity Days	Management	Control
Nursery stage	0-15 Days	Seed Sowing	a) Nursery Tray Preparation: Fill bags with sterilized coir pith (soaked in water for 24 hours and excess water drained). Ensure the pH is adjusted to 6 –7 using lime if needed. b) Seed Treatment Soak cloves in a solution of 1% baking soda and a few drops of liquid soap for 30 minutes to kill pathogens. Treat seeds with a fungicide or biofungicide like Trichoderma to prevent fungal infections. Sowing: Plant the turmeric rhizomes at a depth of 1–2 inches in cocopeat. Maintain proper spacing to avoid overcrowding. Grow Bag Preparation: Mix 70% cocopeat + 30% vermicompost to create a nutrient-rich, aerated medium, and fill the grow bag, leaving 2–3 inches of space at the top for watering. Add biofertilizers like Neem cake powder, Bone meal or Trichoderma to the medium. Evenly distribute the biofertilizers into the top layer of the growing medium before Transplanting/sowing the seeds to promote healthy microbial activity.
Pre-Seedling Stage	15- 30 Days	Micro Nutrients Manageme	1) Nitrogen: - Focus on nitrogen-rich fertilizers (like urea) to support early vegetative growth. Apply once a month. 2) Phosphorus: - Add bone meal or phosphate-based fertilizers at planting to stimulate early root development
Pre-Seedling Stage	15- 30 Days	Nutrient Deficiency Manag	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Phosphorus Deficiency: - Symptoms: Stunted growth - Solution: Add Bone meal or Rock phosphate.
Pre-Seedling Stage	15- 30 Days	Irrigation Management	Watering Frequency: -Keep cocopeat evenly moist but not waterlogged. - Water lightly to ensure sprouting without causing rot.
Pre-Seedling Stage	15- 30 Days	Pest Management	a) Fungus gnats: Biological control - Bacillus thuringiensis israelensis - Sprinkle cinnamon powder Cultural control - Allow cocopeat surface to dry slightly between waterings. Physical control - Yellow/Blue Sticky Traps. b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Pre-Seedling Stage	15- 30 Days	Disease Management	a) Damping-Off: Biological control - Trichoderma harzianum Cinnamon Powder- Sprinkle ground cinnamon over seedlings as a natural antifungal Cultural control - Farmyard manure Physical control - Avoid overwatering to ensure good airflow.
Vegetative Stage	30-90 Days	Micro Nutrients Manageme	1) Nitrogen (N): - Encourages foliage and stem growth. - Application: Feed with diluted fish emulsion or organic nitrogen sources every 10–14 days. 2) Phosphorus (P): - Supports root and early flowering preparation. - Application: Add bone meal or organic phosphate fertilizers during the initial weeks. 3) Potassium (K): - Strengthens stems and disease resistance. - Application: Use banana peel compost or potassium-rich liquid fertilizers.
Vegetative Stage	30–90 Days	Nutrient Deficiency Manag	1) Nitrogen Deficiency: - Symptoms: Yellowing of leaves Solution: Supplement with fish emulsion. 2) Magnesium Deficiency: - Symptoms: Interveinal chlorosis in older leaves - Solution: Apply magnesium sulfate or Epsom salts.
Vegetative Stage	30-90 Days	Irrigation Management	Watering Frequency: - Water every 2–3 days, depending on the climate, keeping the cocopeat consistently moist. - Avoid waterlogging to prevent root rot.

Vegetative Stage	30–90 Days	Pest Management	a) Aphids: Biological control - Neem oil or insecticidal soap. Cultural control - Avoid overwatering Physical control - Yellow/Blue Sticky Traps. b) Mites: Biological control - Use neem oil -5 ml/L of water at weekly intervals. Cultural control - Weed management Physical control - Mites removed with a strong spray of water. c) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Pavoid planting Next to Onion & Garlic. Physical control
Vegetative Stage	30–90 Days	Disease Management	a) White rot: Biological control - Trichoderma viride Cultural control - Hot water treatment of bulbs at 49 °C Physical control - Solarization b) Soft Rot: Biological control - Trichoderma harzianum - Bacillus subtilis. Cultural control - Avoid overwatering Physical control - Storage of bulbs in open baskets, mesh bags and netted bags.
Root Development Stag	90– 150 Days	Micro Nutrients Manageme	1) Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and bulb development. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - A small dose of phosphorus may be required to aid in tuber formation and development. - Application: Use bone meal or rock phosphate
Root Development Stag	90– 150 Days	Nutrient Deficiency Manaş	1) Boron Deficiency: - Symptoms: Poor bulb development or hollow bulbs. - Solution: Use Azotobacter-1 tbsp/5 L of water. 2) Potassium Deficiency: - Symptoms: Leaf tips turn brown and edges curl. - Solution: Use banana peel compost or wood ash.
Root Development Stag	90– 150 Days	Irrigation Management	Watering Frequency: -Reduce watering frequency slightly but maintain consistent moisture in the medium.
Root Development Stag	90–150 Days	Pest Management	a) Leaf miner: Biological control - Encourage natural predators like spiders, solider beetles. Cultural control - Remove and destroy infected leaves Physical control - Remove weeds. b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Root Development Stag	90– 150 Days	Disease Management	a) Fusarium Rot: Biological control - Bulb treatment with Trichoderma viride - 6 ml/L of water Cultural control -Use disease-free Rhizome Physical control -Avoid overwatering to ensure good airflow. b) Bortyris (Gray Mold): Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Sanitation
Harvesting Stage	150– 210 Days	Micro Nutrients Manageme	1) Potassium (K): - Ensure adequate potassium levels to enhance disease resistance and bulb development. - Application: Use banana peel compost or potassium-rich liquid fertilizers. 2) Phosphorus (P): - A small dose of phosphorus may be required to aid in tuber formation and development. - Application: Use bone meal or rock phosphate

Harvesting Stage	150– 210 Days	Nutrient Deficiency Manag	1) Boron Deficiency: - Symptoms: Poor bulb development or hollow bulbs Solution: Use Azotobacter-1 tbsp/5 L of water. 2) Potassium Deficiency: - Symptoms: Leaf tips turn brown and edges curl Solution: Use banana peel compost or wood ash.
Harvesting Stage	150– 210 Days	Irrigation Management	Watering Frequency: - Gradually reduce watering as the plants approach maturity. - Allow the cocopeat to dry slightly before harvesting to ensure firm, well-formed bulbs.
Harvesting Stage	150– 210 Days	Pest Management	a) Leaf miner: Biological control - Encourage natural predators like spiders, solider beetles. Cultural control - Remove and destroy infected leaves Physical control - Remove weeds. b) Thrips: Biological control - Pirate bugs - Lacewing larvae Cultural control - Avoid planting Next to Onion & Garlic. Physical control - Yellow/Blue Sticky Traps.
Harvesting Stage	150– 210 Days	Disease Management	a) Fusarium Rot: Biological control - Bulb treatment with Trichoderma viride - 6 ml/L of water Cultural control - Use disease-free Rhizome Physical control - Avoid overwatering to ensure good airflow. b) Botrytis (Gray Mold): Biological control - Spray with copper-based fungicides Cultural control - Avoid watering Physical control - Avoid watering Physical control - Sanitation
Harvesting Stage	150- 210 Days	Signs of maturity	Bulbs are fully formed, with tight skin around the cloves.