Safe Tea Production

A Handbook for Small Tea Growers

Sankala Foundation
2025

Safe Tea Production: A Handbook for Small Tea Growers.

This Handbook has been compiled by Sankala Foundation based on Plant Protection Code 18.0, November 2025, issued by Tea Board of India.

Design: Umesh

Published by
Sankala Foundation
414 - 416, Block B, Somdutt Chamber-1,
Bhikaji Cama Place
New Delhi – 110 066, India.
admin@sankala.org
https -//www.sankala.org

About the Handbook

This book is made for you. It will help you take good care of your tea garden. Inside, you will find easy steps to keep your plants healthy, control pests, use pesticides safely, and get better leaf quality.

The ideas in this book are simple. You can follow them every day in your field. You will learn how to check your garden, when to spray, how much to spray, how to protect the soil, and how to keep your garden clean. These small steps will help you save money, reduce problems, and grow more tea.

We want your garden to stay healthy and your family to stay safe. We hope this book makes your work easier and helps you get a better income from your tea. This handbook is for you. Keep it with you and use it whenever you need help. Wishing you a good harvest and a healthy tea garden

About FSSAI

As India's apex food safety authority, the FSSAI ensures that tea produced and marketed in India meets the highest standards of safety, hygiene, and compliance. Through the enforcement of Maximum Residue Limits (MRLs) and strengthening of testing and traceability systems, FSSAI has aligned national practices with global benchmarks, enhancing export competitiveness. Its initiatives such as FoSCoS (Food Safety and Compliance System) and Eat Right India extend regulatory outreach to Small Tea Growers, while fostering inter-agency coordination, capacity building, and a transparent, consumer-trust-based value chain.

About Sankala Foundation

The Sankala Foundation, a non-profit organisation, is dedicated to expanding knowledge, fostering research, and promoting dialogue among various stakeholders on climate issues, nature conservation, sustainability, and cultural and natural heritage. It is dedicated to the protection and conservation of forests and wildlife.

The Sankala Centre for Climate and Sustainability (SCCS) aims to advance knowledge and action to combat climate change and promote sustainability. The Centre focuses on building alliances with the government and non-governmental organisations, UN agencies, international organisations, scientific communities, and domain experts with shared objectives to create synergy and drive collective action.

The Sankala Centre for Cultural and Natural Heritage (SCCNH) aims to preserve, promote, and study India's rich cultural and natural heritage. The Centre is dedicated to advancing knowledge and awareness of cultural traditions, historical sites, ecosystems, and biodiversity through interdisciplinary research, conservation efforts, and community engagement.

Contents

Integrated Pest Management

What is IPM?

Integrated Pest Management (IPM) means using different safe and smart methods to control pests instead of depending only on chemicals. It includes regular field checking, keeping the garden clean, using natural predators, and spraying pesticides only when truly needed. IPM helps protect soil, water, workers, and tea quality while reducing costs. It becomes necessary when pest attacks start harming leaves or reducing yield, and when chemical use is increasing without giving good results.

IPM in Tea

- Check fields regularly for pests and damage
- Keep records of pest problems and spraying dates
- Keep the garden clean – remove weeds and old leaves
- Protect helpful insects like ladybirds and spiders
- Use natural methods first – traps or neem spray
- Spray only when needed and use approved pesticides safely
- Change pesticides often to prevent resistance

Significance of IPM

- Reduces chemical exposure risks
- Maintains environmental balance
- Prevents pesticide resistance
- Improves tea quality and safety

Natural Enemies of Pest

Proper identification of both pests and their natural enemies is fundamental to effective IPM. Learning to recognize these organisms helps you make informed management decisions.

Common Natural Enemies

Lady bird beetles (feed on aphids, mites)

Syrphid flies (larvae consume aphids)

Spiders (capture and eat various insects)

Parasitic wasps (attack caterpillars, beetles)

Benefits of Natural Enemies

- Natural pest suppression without chemicals
- Long-term control that prevents resurgence
- Reduced pesticide costs and applications
- Protection of tea quality and ecosystem health

Yellow Trap Deployed for Management of Pest Population in Small Holder Tea Garden in Darjeeling Plains in West Bengal

Identification of Common Pests

Tea Mosquito Bug (*Helopeltis theivora*)

A serious pest of tea, especially in shaded areas. Both adults and nymphs suck sap from buds, young leaves, and tender stems.

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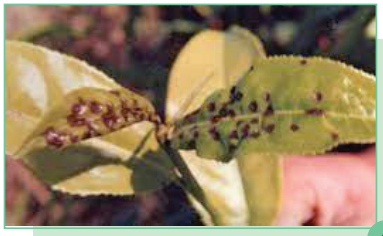
Identification

- Black body with a red middle part (thorax).
- Abdomen has black and white markings.
- Wings are greenish-brown.



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Damage symptoms

- Small reddish-brown spots on leaves and shoots.
- Leaves curl and become deformed.
- Shoots dry up due to sap loss.

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Plant Protection Code (PPC) Recommended Insecticides

S. No.	Pesticide	Chemical needed per 10 L		PHI (Days)
		Hand sprayed sprayer (ml)	Motorised sprayer (ml)	
1.	Deltamethrin 2.8 EC	5	10	3
2.	Deltamethrin 11 EC	5	10	15
3.	Bifenthrin 8% SC	6.25	12.5	11
4.	Thiamethoxam 25 WG	2.5	5	7
5.	Betacyfluthrin 8.49% w/w + Imidacloprid 19.81% w/w OD	7.5	15	7
6.	Thiamethoxam12.6% +L Cyhalothrin 9.5%	3.75	7.5	7
7.	Emamectin Benzoate 3% + Thiamethoxam 12% WG	5	10	7
8.	Quinalphos 25 EC	25	50	7
9.	Fenpropathrin 30 EC	6.25	12.5	7
10.	Neem Extract (Azadirachtin 5%)	6.67	13.3	
11.	Clothianidin 50 WDG	2.22	4.44	5
12.	Thiacloprid 21.7%	10	20	7

Red Spider Mite (*Oligonychus coffeae*)

A common pest of tea that damages leaves.

They feed by sucking plant sap from leaf tissue, reducing the leaf's green area.

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Identification

- Small red or reddish-brown mites.
- Usually found on the underside of leaves.

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Damage Symptoms

- Tiny white or yellow spots on leaves.
- In severe cases, leaves dry up and fall off.
- Fine webbing can be seen on leaf surfaces.
- When too many mites are present, they form silk balls that can move to new plants through the wind ("ballooning").

PPC Recommended Insecticides

S. No.	**Acaricide** (product)	Chemical needed per 10 L		PHI (Days)
		Hand sprayed sprayer (ml)	**Motorised sprayer** (ml)	
1.	Cyflumetofen 20 SC	~ 20	~ 40	5
2.	Ethion 50 EC	25	50	3
3.	Fenazaquin 10 EC	25	50	7
4.	Fenpyroximate 5 EC/SC	7	14	7
5.	Hexythiazox 5.45 EC	4	8	5
6.	Propargite 57 EC	25	50	7
7.	Spiromesifen 240 SC	10	20	7
8.	Etoxazole 10 SC	6.25	12.50	5
9.	Pyridaben 20 WP	10	20	7
10.	Propargite 42% + Hexythiazox 2% EC	25	50	7
11.	Bifenthrin 8 SC	6.25	12.50	11
12.	Fenazaquin 10% + Bifenthrin 4% EC	25	50	7
13.	Fenpropathrin 30 EC	6.25	12.50	7
14.	Sulfur Formulation 80 WG	50	100	

Looper complex (*Buzura suppressaria, Hyposidra talaca, Hyposidra infixaria*)

A serious pest found across North East India. The caterpillar feeds on tea leaves and causes heavy leaf loss (defoliation).


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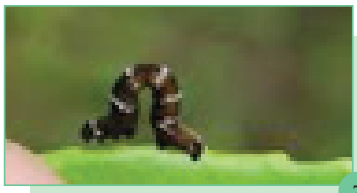
Identification:

- Green or brown caterpillar.
- Moves in a looping or "inchworm" motion.


7

Damage Symptoms:

- Small, uneven holes on tender leaves at first.
- Larger holes appear as the caterpillar grows.
- In severe cases, whole leaves are eaten, leaving only the midribs.
- Heavy infestation leads to complete leaf loss on bushes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PPC Recommended Insecticides

S. No.	Pesticide (active)	Chemical needed per 10 L		PHI (Days)
		Hand sprayed sprayer (ml)	Motorised sprayer (ml)	
1.	Betacyfluthrin 8.49% w/w + Imidacloprid 19.81% w/w (OD)	7.5	15	7
2.	Flubendiamide 20% WG	2	4	7
3.	Emamectin Benzoate 5% (SG)	4	8	1
4.	Emamectin benzoate 5% w/w + Lufenuron 40% w/w (WG)	1.5	3.0	7
5.	Emamectin Benzoate 3% + Thiamethoxam 12% WG	5	10	7
6.	Deltamethrin 10 EC	5	10	15
7.	Bifenthrin 8% SC	6.25	12.50	11
8.	Quinalphos 25 EC	25	50	7

Thrips

Thrips are small, slender insects that are primarily dry season pests.

They feed on the plant's sap, causing damage to the leaves and buds.

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Identification:

- Thrips are usually yellow or brown and have fringed wings.
- They are often found in large numbers on the young leaves and buds.

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Symptoms of Damage:

- Silvery appearance with black specks (thrips excreta).
- This damage leads to leaf curling, distortion, and eventual leaf drop.

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PPC Recommended Insecticides

S. No.	**Pesticide** (active)	**Chemical needed per 10 L**		**PHI** (Days)
		Hand sprayed sprayer (ml)	**Motorised sprayer** (ml)	
1.	Betacyfluthrin 8.49% w/w + Imidacloprid 19.81% w/w (OD)	7.50	15	7
2.	Quinalphos 25 EC	25	50	7
3.	Thiamethoxam 25 WG	2.5	5	7
4.	Thiamethoxam 12.6% + Lambda-Cyhalothrin 9.5%	3.75	7.50	7
5.	Emamectin benzoate 5% + Lufenuron 40% WG	1.3	2.7	7
6.	Emamectin benzoate 3% + Thiamethoxam 12% WG	5	10	7
7.	Bifenthrin 8% SC	6.25	12.50	11
8.	Deltamethrin 2.8 EC	5	10	3
9.	Clothianidin 50 WDG	2	4.5	5
10.	Thiacloprid 21.7%	10	20	7

Greenfly (*Empoasca flavescens*): A common pest attacking young tea leaves

What They Attack

- Feed on tender, young leaves – important for good tea quality.
- Suck sap from leaf surface, weakening the plant.


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How to Identify

- Small, yellowish-green insect
- Less than ¼ inch long
- Commonly called Jassid


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Damage Symptoms

- Leaves show yellow or brown edges.
- Curling and uneven surface of leaves.
- Veins become distorted.
- The condition is called “Rim Blight.”
- Finally, leaves dry and become brittle.


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Key Impact

- Stunted plant growth
- Poor leaf quality
- Reduced tea yield

Farming Tip:

Check the young leaves regularly. Early control helps protect yield and tea quality.


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Safe and Smart Pesticide Use

1. Use Only Approved Products

- Use pesticides that are approved by CIB&RC and recommended by TRA for tea.
- These are safe for tea bushes, workers, and consumers.

2. Follow the Right Mixing Dose

- Always mix pesticides as per TRA guidelines.
- Too little = not effective.
- Too much = harmful to plants and soil.
- Adjust spray quantity as per field size and bush age.

3. Spray Only When Needed

- Check the garden regularly.
- Spray only when pests are seen and only in affected areas (spot spraying).
- This saves money and protects good insects.

4. Rotate Pesticides

- Don't use the same pesticide again and again.
- Change (rotate) products with different actions to stop pests from becoming resistant.

5. Safe Spraying Practices

- Spray in early morning or late afternoon.
- Do not mix chemical pesticides with bio-control agents.
- Follow the harvest gap – wait at least 7 days after spraying before plucking.

List of banned Pesticides for Use on Tea

S. No	Chemicals
1.	Aldicarb
2.	Aldrin, Dieldrin
3.	Chlordane
4.	Heptachlor
5.	Lindane
6.	Endosulfan
7.	Carbofuran
8.	Methomyl
10.	Captafol
11.	Ferbam
12.	Formothion
13.	Simazine
14.	Diazine
15.	D.D.T
16.	Fenitrothion
17.	Fenthion
18.	Methyl Parathion
19.	Ethyl Parathion
20.	Monocrotophos
21.	Cypermethrin
22.	Acephate
23.	Imidacloprid
24.	Acetamiprid
25.	Dinotefuran
26.	Fipronil

Plant Protection Formulations (PPFs)

Plant Protection Formulations (PPFs), their MRLs and PHIs (PPC 18.0, Tea Board of India, November 2025)

S. No.	Type and name of PPFs	MRL (ppm)	PHI in days
	Acaricides		
1.	Acynonapyr 18.19% SC	MRL yet to be notified	7
2.	Cyflumetofen 20 SC	0.05*	5
3.	Ethion 50 EC	5.0	3
4.	Etoxazole 10 SC	15.0	5
5.	Etoxazole 6% + Abamectin 1.5% SC	MRL of Abamectin yet to be notified	3
6.	Fenazaquin 10 EC	3.0	7
7.	Fenazaquin 18.3% SC	3.0	7
8.	Fenpyroximate 5 EC/SC	6.0**	7
9.	Flufenzine 20 SC	MRL yet to be notified	7
10.	Fenazaquin 10% + Bifenthrin 4% EC	Fenazaquin= 3.0 Bifenthrin= 30.0	7
11.	Hexythiazox 5.45 EC	15.0	5
12.	Propargite 57 EC	10.0	7
13.	Propergite 42% +Hexythiazox 2%EC	Propergite= 10.0 Hexythiazox= 15.0	7
14.	Pyridaben 20% WP	MRL yet to be notified	7
15.	Sulphur 80 WP	Not required	-
16.	Sulphur 40 SC		
17.	Sulphur 52 SC		
18.	Spiromesifen 22.9 SC	70.0	7
19.	Tebufenpyrad 20 % WP	MRL yet to be notified	7

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Insecticides			
20.	Azadirachtin 1 EC	-	-
21.	Azadirachtin 5 EC		-
22.	Bifenthrin 8 SC	30.0	11
23.	Betacyfluthrin 8.49% w/w + Imidacloprid 19.81% w/w OD	0.7	5
24.	Clothianidin 50 WDG	0.7	5
25.	Deltamethrin 2.8 EC	5.0	3
26.	Deltamethrin 11 EC		15
27.	Dimethoate 30 % EC***	MRL yet to be notified	-
28.	Emamectin Benzoate 5 SG	0.06***	1
29.	Emamectin benzoate 5%w/w + Lufenuron 40%w/w WG	Lufenuron: MRL yet to be notified	7
30.	Emamectin Benzoate 3% + Thiamethoxam 12% WG	Emamectin Benzoate: 0.06 Thiamethoxam : 20.0	7
31.	Fenpropathrin 30 EC	2.0	7
32.	Flubendiamide 20 WG	50.0	7
33.	Flubendiamide 19.92% w/w + Thiacloprid 19.92% w/w SC	Flubendiamide = 50.0 Thiacloprid = 5.0	7
34.	Flupyradifurone 17.09% w/w SL	MRL yet to be notified	7
35.	Quinalphos 25 EC	0.7**	7
36.	Spirotetramat 15.31% w/w OD	MRL yet to be notified	7
37.	Thiacloprid 21.7 SC	5.0	7
38.	Thiamethoxam 25 WG	20.0	7
39.	Thiamethoxam 12.6% + L-Cyhalothrin 9.5%	Thiamethoxam= 20.0 L-Cyhalothrin= 0.05*	7
Fungicides			
40.	Carbendazim 12% + Mancozeb 63% WP	Carbendazim= 0.5 Mancozeb= 3.0	7
41.	Hexaconazole 4% + Zineb 68% WP	Zineb= 0.1*	7
42.	Hexaconazole 5 EC	5.0**	7
43.	Propiconazole 25 EC	6.0**	7
44.	Copper Oxychloride	150.0 (as elemental copper)	-
45.	Copper Hydroxide 61.41% WG	150.0 (as elemental copper)	-

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46.	Kresoxim-methyl 44.3% w/w SC MRL yet to be notified	MRL yet to be notified	7
47.	Tetraconazole 3.8% w/w (4% w/v)	MRL yet to be notified	7
48.	Trifloxystrobin 25% + Tebuconazole 50% WG	MRL yet to be notified	7
Herbicides			
49.	2,4-D amine salt 58 % WSC	0.05	-
50.	Carfentrazone Ethyl 0.43% + Glyphosate 30.82% EW	Carfentrazone Ethyl= 0.02* Glyphosate= 1.0	7
51.	Indaziflam 1.65% w/w + Glyphosateiso-propyl ammonium 44.63% w/w SC	MRL of Indaziflam is yet to be notified	7
52.	Glyphosate 41 SL	1.0	21
53.	Glyphosate 71 SG		7
54.	Glyphosate Ammonium Salt 5 SL		7
55.	Glufosinate Amonium13.5 SL	0.01	15
56.	Glufosinate Ammonium 13.4% + Oxyfluor-fen 4.8% w/w	Glufosinate Amonium=0.01 Oxyfluorfen=0.2	10
57.	Oxyfluorfen 23.5 EC	0.2	15
58.	Oxyfluorfen 2.5% + Isopropyl amine salt of Glyphosate 41% w/w SC	Oxyfluorfen=0.2 Glyphosate=1.0	-
59.	Paraquat Dichloride 24 WSC	0.2	-
60.	Paraquat Dichloride 24% + Oxyfluorfen 5% SC	Paraquat Dichloride=0.2 Oxyfluorfen=0.2	15
61.	Saflufenacil 70 % WG	MRL yet to be notified	7
62.	Triasulfuron 20% WG	MRL yet to be notified	7

Bio-Pesticides:

S. No.	Name
1.	*Bacillus thuringiensis* var. kurstaki strain HD-1, Serotype 3a, 3b, 3.5% ES (Potency 17600 IU/mg)
2.	*Trichoderma asperellum* 2% AS 2X107 CFU/ml (min) strain KBN29
3.	*Beauveria bassiana* 5% AS 1x108 cfu/ml (min) strain BKN 1/14
4.	*Metarhizium anisopliae* 5% AS 1x108 cfu/ml (min) strain MET 5-1

* Maximum Residue Limit fixed at Limit of Quantification (LOQ). Tolerance limit of 0.01 mg/kg shall apply in cases of pesticides for which MRL have not been fixed

** Revised and operational vide FSSAI order No. F. No. SS-T007/1/2023-Standard-FSSAI dated 27th April,2023

***** Ad-hoc approval given by CIB-RC under national exigency.**

Pre-Harvest Interval

What is PHI?

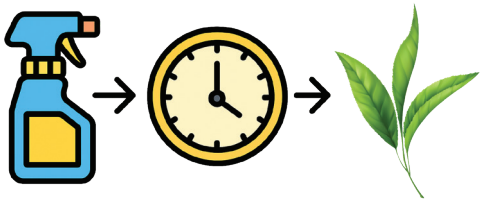
The Pre-Harvest Interval (PHI) means the minimum waiting time between the last pesticide spray and plucking of tea leaves. It allows the chemical residues on the leaves to break down to safe levels before harvest. Following PHI keeps tea safe for drinkers, protects your reputation in the market, and ensures compliance with Tea Board and FSSAI standards.

Why PHI Matters

- Prevents excess pesticide residue in made tea.
- Keeps tea within maximum residue limits (MRL).
- Protects workers handling fresh leaves.
- Builds trust with buyers and export markets.

How to Follow PHI

- Check the pesticide label: Each product has its own PHI (for example, 7, 14, or 21 days).
- Record the spray date in your field notebook.
- Wait for the full PHI period before plucking.
- Do not mix or shorten intervals, even if pest pressure is high.
- Use alternative IPM methods during the waiting period if needed.



Record Keeping of Sprays & Yield

Why it Matters

- Ensures safe pesticide use
- Helps trace produce quality
- Improves planning for yield & inputs
- Required for certification & audits

Spray Records – What to Note

Date of Spray

Crop/ Block Name

Pesticide Name & Dose

Target Pest/ Disease

Operator Name

Pre-Harvest Interval (PHI)

Yield Records – What to Note

Date of Harvest

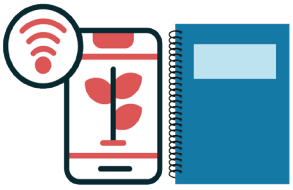
Quantity Plucked (kg)

Section/ Field

Quality Grade

How to Maintain Records

- Keep a bound register or digital logbook
- Record entries same day of activity
- Use clear handwriting or simple digital format
- Keep records safe & updated for inspections



Common Mistakes to Avoid

Leaving blanks or guessing data	Recording after many days	Mixing up spray & yield sheets

Remember

Good Records = Safe Produce + Better Planning + Higher Market Value

Spray Records

Date of Spray	Crop/ Block name	Pesticide Name/ Dose	Target Pest/ Disease	Operator Name	PHI

Yield Records

Date of Harvest	Quantity Plucked (in Kg)	Section/ field	Quality grade

Pesticide Use and Safety

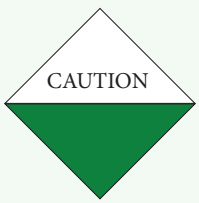
Color code for Safe Pesticide Use

Every pesticide bottle in India has a colour band on its label.
Check the colour band before using any pesticide.

This band shows how poisonous (toxic) the chemical is.

- Always choose green or blue band pesticides for safety.
- Avoid yellow and red band chemicals unless advised by an expert.

This keeps you, your family, animals, and the environment safe.

Label	Name	Level of Toxicity
	Red Label	Extremely Toxic
	Yellow Label	Highly Toxic
	Blue Label	Moderately Toxie
	Green Label	Slightly Toxic

Safe Pesticide Handling Guidelines

- Do not smoke, eat, or drink while using pesticides.

- Avoid breathing in sprays or dust. Always wear protective clothing and a mask.

- Keep soap, water, and a towel nearby. If pesticide touches your skin, eyes, or face, wash immediately.

- Wash hands and face before eating, drinking, or using the toilet.

- Bathe and change clothes after work. Wash used clothes separately every day.

- If feeling unwell, get medical help right away. Take the pesticide container or label with you.

- Store pesticides safely away from children, food, and animal feed.

- Keep herbicides and insecticides separately to prevent mixing. Lock storage areas.

- Never transfer pesticides to bottles or containers used for food or drinks.

- Dispose containers properly triple rinse, puncture, and take them to an approved disposal site.

Safe Pesticide Use

Why it Matters

- Protects farmer's health
- Protects soil, water & environment
- Ensures residue-safe tea
- Required for certification

Before Spraying

Read the label carefully

Wear PPE (gloves, mask, goggles, boots)

Measure correct dose only

Mix chemicals safely: use stick, not hands

During Spraying

Spray only recommended crops/ areas

Spray along wind direction

No eating, drinking, or smoking

Keep children & animals away

After Spraying

Wash hands & face with soap and water

Change and wash clothes separately

Clean sprayer & store safely

Record spray details in register

Never Do This

- Over-dosing pesticides
- Using banned/ unapproved chemicals
- Spraying just before harvest
- Throwing empty containers in the field (bury safely instead)

Remember

Safe Use of Pesticides = Safe Farmer + Safe Tea + Safe Environment

USE Personal Protection Equipment (PPE) For Safety

Protect Yourself • Protect Your Family • Protect Your Crop

Why PPE Matters

- Prevents pesticide poisoning
- Protects skin, eyes, and lungs
- Reduces risk of accidents
- Keeps family & environment safe

Essential PPE Items

- Cap/ Hat – protects head
- Mask/ Respirator – prevents inhalation of chemicals
- Goggles – protects eyes from spray
- Gloves – protects hands from chemical contact
- Apron/Overall – covers body & clothes
- Rubber Boots – keeps feet safe from spills

When to Use PPE

During pesticide mixing

During spraying

During cleaning of equipment

After Use

Wash PPE with soap & water separately

Dry in shade, not sun

Store in clean, dry place away from chemicals

Never Do This

- Spray without PPE
- Share PPE without cleaning
- Keep PPE inside living areas

Remember

Wearing PPE = Safe Worker + Safe Family + Safe Tea

Soil Fertility and Management

Why it Matters

- Healthy soil = Healthy crops
- Improves yield & tea quality
- Reduces cost of inputs
- Sustains soil for long-term use

Key Practices

1. Soil Testing

Test soil once in 2–3 years

Identify nutrient needs

2. Right Fertilizer Use

Apply recommended dose only

Match fertilizer to soil test results

Split application during growing season

3. Organic Matter Addition

Apply compost/ manure

Mulch with pruned litter/ green leaves

Soil Conservation

Maintain shade trees

Avoid soil erosion with contour planting

Use cover crops

Common Mistakes to Avoid

- Over-application of fertilizer
- Using same fertilizer every year
- Burning prunings / leaves
- Ignoring soil test reports

Remember

Right Soil Care = Better Bushes + Higher Yield + Sustainable Farming

Cold Weather Practices for Pest Management in Tea Gardens

Why Winter Care is Important

- December–January is the rest time for tea bushes.
- Many pests like Looper caterpillars, thrips, termites, and borers hide or sleep during this time.
- Cleaning and soil work now helps reduce pests before the next plucking season.

1. Remove Bad or Dead Branches

- Cut and remove dry, diseased, or infested branches from bushes.
- Collect and burn or bury the cut branches away from the garden.
  - This destroys pest eggs and larvae hiding in the bushes.

2. Clean and Loosen the Soil

- Fork or stir the soil gently around the bush collar.
- This brings out hibernating pests that birds and sun can kill.
- Fill small pits and level the ground to stop water from collecting.
  - Prevents root rot and pest breeding.

3. Clean the Bush Frame

- Brush the stem and apply lime (alkaline) wash on the main stem and frame.
  - Kills moss, lichen, and hidden pests.
  - Keeps the bush clean and healthy.

Best Time:

- December to January (cold months)

Benefits:

- Less pest attack in spring
  - Fewer sprays needed later
  - Strong, clean, and healthy bushes
  - Saves money and protects the environment

Remember:

Winter Cleaning = Fewer Pests + Better Yield Next Season

Fertiliser Use

Mixture applied to the hole at the time of planting

- Old rotten dry manure: 4-5 kg
- Super Phosphate- 30 gm around the base of the seedling
- Rock Phosphate- 30 gm at the bottom of the base

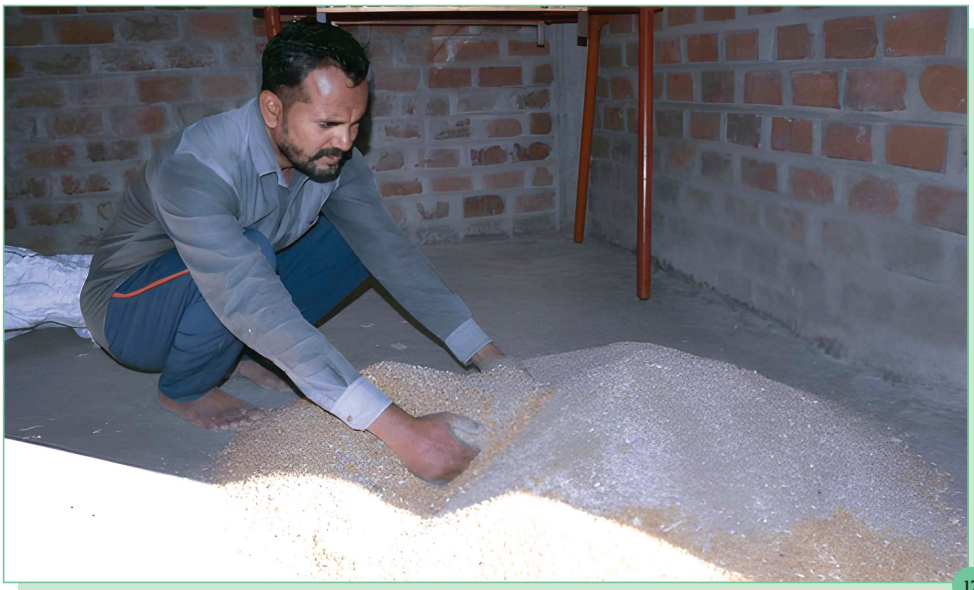
Soil Fertiliser Mixture (NPK or YTD) for seedlings

Type of Fertiliser	**N:P:K (2:1:2)** (kg)	**N:P:K (If soil is low on Potash, 2:1:3)** (kg)
Urea	21.74	21.74
SSP	31.25	31.25
MOP	16.67	25.00
The Filler	30.34	22.01
	100	100

Fertiliser Mixture for Spraying on Leaves

The mixture should be sprayed at a rate of 1-2% every 15 days on leaves

Type of Fertiliser	**N:P:K (2:1:2)** (kg)	**N:P:K (If soil is low on Potash, 2:1:3)** (kg)
Urea	39	32.8
DAP	24	20.4
MOP	37	46.8



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Fertiliser Appplication

Fertiliser application on seedlings

Age of the Plant (in Years)	NPK/YTD in Kg/acre	Method of application	Frequency (No of times)
0	80-160	Circular at the base	2-3
+1	320-400	Circular at the base	4
+2	400-480	Circular at the base	4
+3	480-560	Circular at the base	4
+4	560-600	Between the rows	2
+5	560-600	Between the rows	2

Fertiliser application to manure trees on the basis of production and soil fertility

Year per acre of raw leaves	Nitrogen (kg/acre/year)	Phosphate (kg/acre/year)	Potash (kg/acre/year) based on soil potash content		
			Low (1)	Medium (2)	More (3)
2640	36	Circular at the base	36	28	20
2640-3520	36-45	Circular at the base	36-45	28-32	20-28
3520-4800	45-57	Circular at the base	45-57	32-45	28-40
4800-5240	57-67	Circular at the base	57-67	45-57	40-45

** Less than (1) 60 ppm, (2) 13-100 ppm; (3) More than 100 ppm*

Source: TRA

18

Tea Cultivation Practices

Tea Leaf Pruning

Healthy Bushes • Better Yield • Quality Tea

Why Pruning Matters

- Rejuvenates tea bushes
- Improves shoot growth & yield
- Maintains bush height & shape
- Reduces pests & diseases

When to Prune

After 3–4 years of continuous plucking

During dormant/ low growth season

Remember

Proper Pruning = Healthy Bushes + More Shoots + Higher Income

Types of Pruning

Light Prune – Maintain frame, done regularly

Medium Prune – To renew frame after several years

Rejuvenation/ Heavy Prune – For old, unproductive bushes

How to Prune Correctly

Cut at recommended height

Make clean, slanting cuts

Apply pruning sealant if needed

Remove dead/ diseased branches

Keep pruned field clean of cut branches

Never Do This

- Random/ uneven pruning
- Pruning in rainy season
- Leaving stubs or ragged cuts
- Mixing pruned wood with green leaf collection

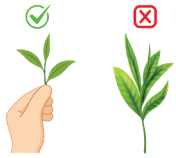
Correct Plucking in Tea

Why it Matters

- Ensures better quality made tea
- Promotes healthy bush growth
- Increases yield over time

Correct Plucking Standard

"Two Leaves and a Bud"
Avoid: Hard leaves, banjhi shoots (dormant buds), over-mature shoots

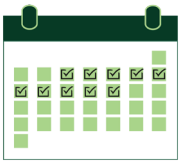


Plucking Technique

- Hold shoot gently between thumb & forefinger
- Snap cleanly at the base of the third leaf
- Do not damage surrounding buds or break twigs
- Collect shoots in basket lined with leaf/ paper to avoid bruising

Plucking Round

- Every 7–10 days during peak season
- Adjust rounds based on flush (shoot growth rate)
- Maintain uniformity across the section



Common Mistakes to Avoid

- Plucking too deep → damages bushes
- Plucking too coarse → poor tea quality
- Skipping rounds → uneven growth, lower yield

Remember

Correct Plucking = Better Quality + Healthy Bushes + Higher Income

19

Clean Collection & Handling

Avoiding Contamination in Tea

Why it Matters

Protects tea quality & safety

Ensures compliance with standards

Increases market value

Builds consumer trust

During Plucking

Wash hands before work

Use clean baskets lined with leaf/ paper

Do not use fertilizer/ pesticide bags

Keep baskets off ground when resting

Handling After Collection

- Move leaves quickly to withering trough
- Protect leaves from sun/ rain during transport
- Keep collection sheds clean & free from dust
- No eating, smoking, or spitting near leaf handling

Never Do This

- Mixing fresh leaf with old/ fermented leaf
- Using dirty containers, bags, or cloth
- Allowing animals inside collection area

Remember

Clean Handling = Safe, High Quality Tea = Better Income

Shade Trees in Pest Management

Permanent Shade Tree Species	Vernacular Name	Time of Flowering	Leafless Period
Albizzia odoratissima	Kala Siris	May - June	End December - End February
Albizzia chinensis	Siris, Sau koroi	May - June	February - April
Anadenanther aperegrina		March - April	Evergreen
Acacia lenticularis	Kakur, Babul, Kolsa, Kanta	May - July	December - March
Derris robusta	Korai	May	Mid December - February

The following species can be used as temporary shade trees for a short duration of 5-6 years.

Temporary Shade Trees	Vernacular Names
Indigofera teysmanii	True Indigo, Duli, neel, Neel gach
Leucaena leucocephala	Subabul
Melia azadarach (Bokain)	Ghora neem / Mahaneem
Albizzia procera	White siris / Safed siris/ Shada siris/ Koroi
Albizzia lebbek	Kothiya koroi / Shirish

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8 Tea looper larva by Redsvx, licensed under CC BY-SA 4.0 via Wikimedia Commons. (page 9)

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Sankala Foundation
Voice for a sustainable planet

414 - 416, Block B,
Somdutt Chamber-1,
Bhikaji Cama Place,
New Delhi – 110 066, India.
admin@sankala.org
https -//www.sankala.org

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