PESTICIDE RESIDUES IN TEA PRESENT TRENDS & FUTURE STRATEGIES

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Pesticide Residues

- Chemical substance(s) which remains in or on a feed or food commodity, soil, air or water following use of a pesticide

- For regulatory purposes it includes the parent compound and any specified derivatives such as degradation and conversion products, metabolites and impurities considered to be of toxicological significance (FAO, 1986)

WHO Classification of Pesticides

WHO class	Toxicity classification	LD_{50} for rat (mg/Kg of body weight)	
		Oral	Dermal
I a	Extremely hazardous	< 5	< 50
I b	Highly hazardous	5- 50	50-200
II	Moderately hazardous	50 – 2000	200 – 2000
III	Slightly hazardous	Over 2000	Over 2000
U	Unlikely to present acute hazard	5000 or higher	

Field trials & lab studies

Field trials –GAP

Different locations

Different harvest intervals

Residues in Black tea, Soil & Water

Residues in infusion

TRI labs-ISO 17025 & GLP certified

AOAC/IS methods

Plant Protection Code

- PPC deals with the safe usage of crop protection products and that of methodologies to be followed to reduce pesticide residues in tea.

- The code encourages tea growers to critically review their use of PPFs, reduce the use of PPFs where possible and over time, apply the PPFs in the safest way possible.

PLANT PROTECTION CODE

- **Plant Protection Code' is being issued to the tea industry as a comprehensive guideline for safe usage of Plant Protection Formulations (PPFs) in the tea plantations in India.**

- The tea industry is aggrieved with the Plant Protection Code (PPC) issued by the Tea Board of India.

- PPC had come into effect from 1st September 2014.

- PPC is meant for maintaining good food safety standard of tea industry.

MONITORING PESTICIDE RESIDUES

- Regional sampling from member estates
- Survey on market samples
- Golden leaf award- samples
- Tea council export samples
- Survey on heavy metals

Pesticide residues in south Indian black teas 2011 - 16

Régions	Residues (mg/kg)		
	Quinalphos	Hexaconazole	Dicofol, DDT, Hexaconazole, Bifenthrin, Deltamethrin & Propargite
Anamallais	ND (97%)	ND (98 %)	ND (100%)
Gudalur & Meppadi	ND (100%)	ND (100%)	ND (100%)
Vandiperiyar	ND (96%)	ND (97%)	ND (100%)
Munnar	ND (100%)	ND (100%)	ND (100%)
Nilgiris	ND (100%)	ND (100 %)	ND (100%)
Karnataka	ND (100%)	ND (100%)	ND (100 %)

ND –Non Detectable

MEMBER ESTATES

- More than 90 % devoid of pesticides residues
- Banned chemicals not used
- 10 % Below MRL prescribed by EU & FSSAI

Export/Import Samples

Analysis at regular intervals

3223 samples analyzed for 6 residues, 3 heavy metals and total aflatoxin

All met the prescribed standards of MRL for toxic residues & Heavy Metals

GOLDEN LEAF INDIA AWARDS

- For the past 12 years
- More than 800 samples analyzed for pesticide residues and heavy metals
- All met the prescribed standards of EU and FSSAI

ALTERNATIVE STRATEGIES

- **Cultural (Plucking, pruning , shade management, weed control and use of pest resistant clones)**
- **Mechanical (Manual collection and destruction)**
- **Biological (Use of predators, parasites and pathogens)**
- **Chemical(Insecticides, pheromones, juvenile hormones and chemosterilants)**
- **IPM (Combination of different methods of control)**

Pheromone traps for TMB

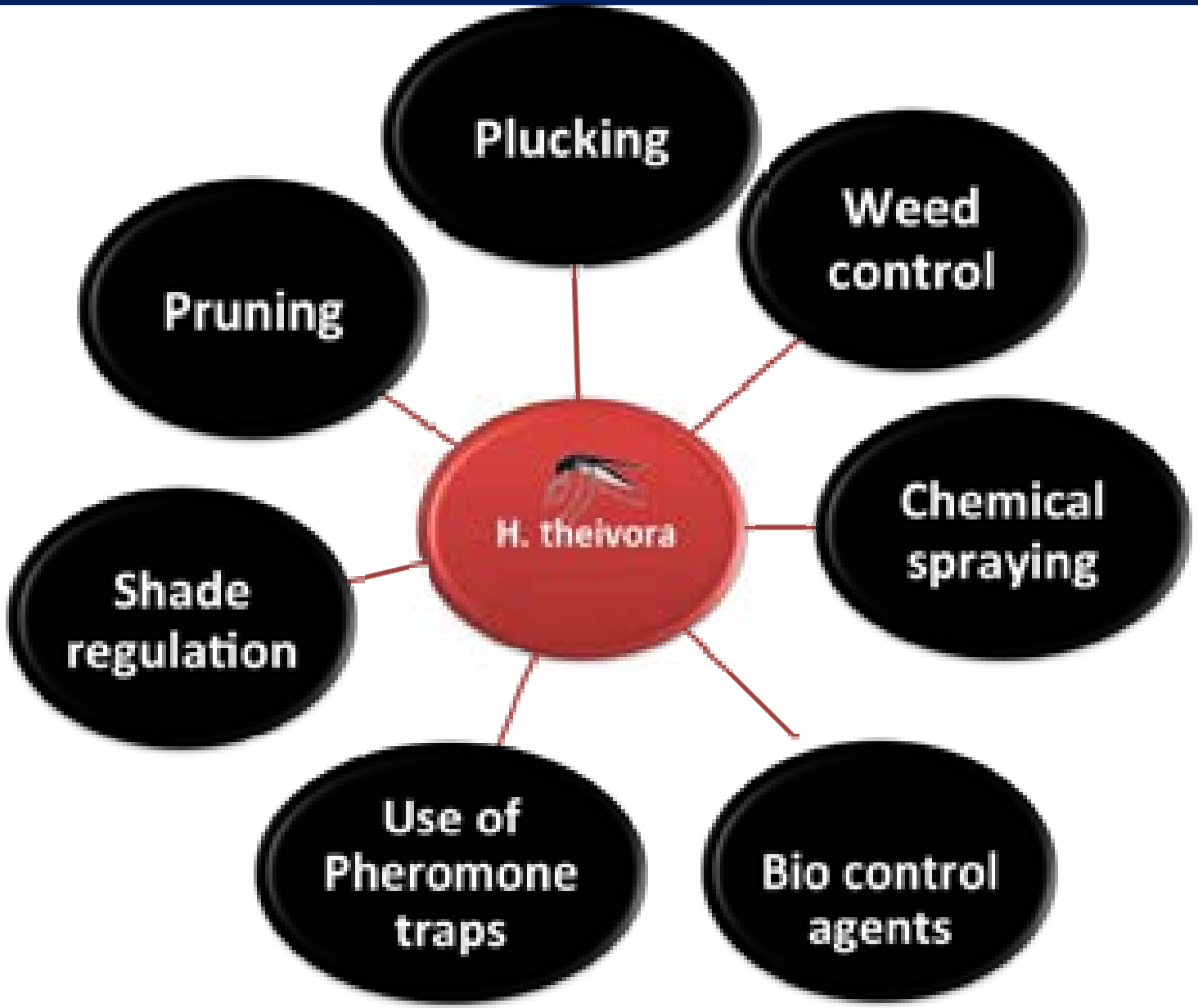
Kairomone traps for SHB


Yellow traps for tea thrips

Alternative strategies

Biological control

IPM STRATEGY FOR TMB




Thank You