Invasive Ambrosia Beetle Conference
The Situation in California
August 12 – 14, 2012

Meeting sponsored by:

The Hofshi Foundation

University of California, Riverside

UC Center for Invasive Pest Research

The Huntington Botanical Gardens

The Los Angeles Arboretum

Invasive Ambrosia Beetle Conference
The Situation in California
August 12 – 14, 2012

Session 3

Biology of the Beetles

Shot Hole Borer of Tea - The Situation in Sri Lanka

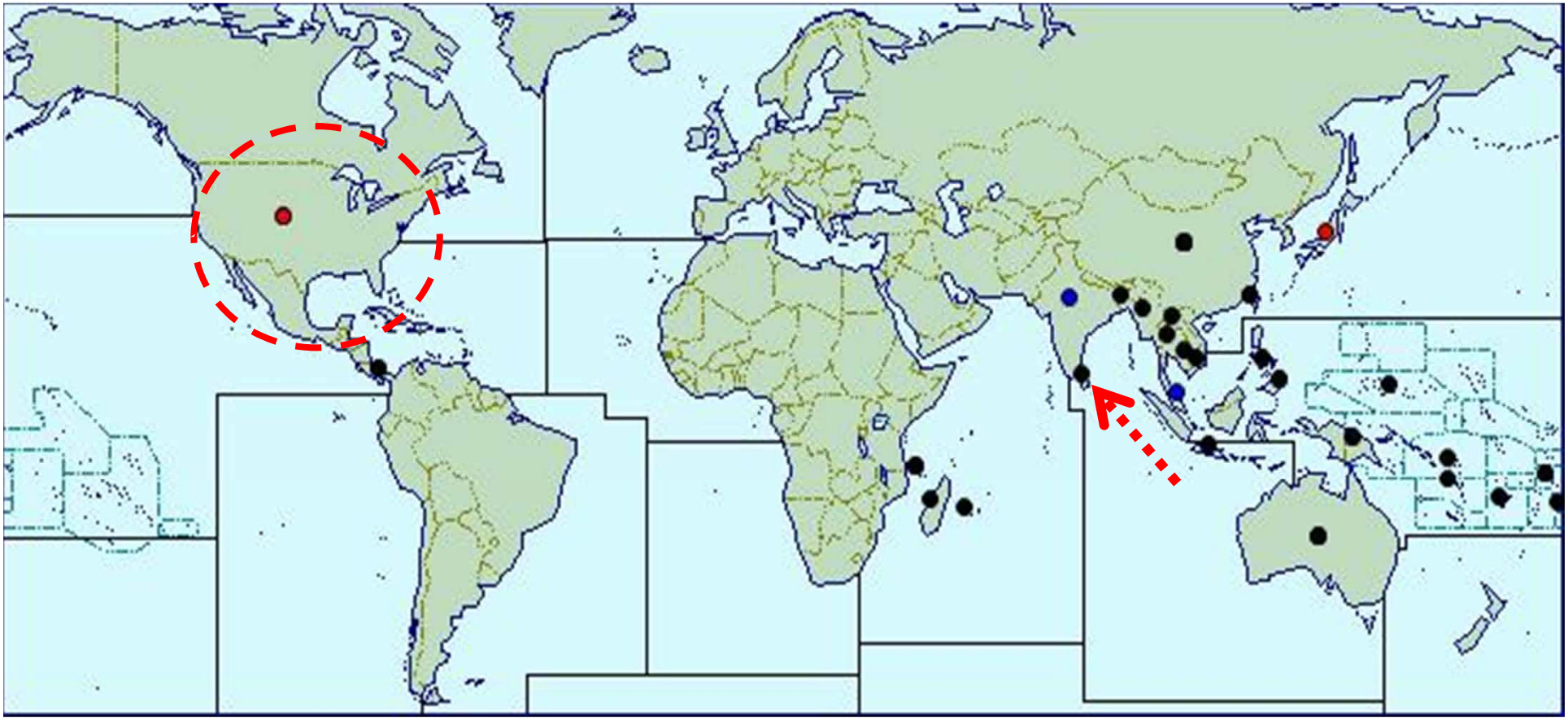
Invasive Ambrosia Beetle Conference – The Situation in California

Sampath Walgama

August 2012

Riverside, CA

World Distribution of TSHB



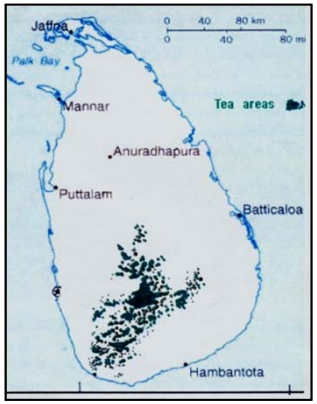
Distribution TSHB in the world

● = Present, no further details

● = Widespread

● = Localized

History of TSHB



First described in 1868 by Eichoff (host unknown, locality unknown)

First observed in 1892 a tea plantation situated in the mid elevations (600-1200m asl)

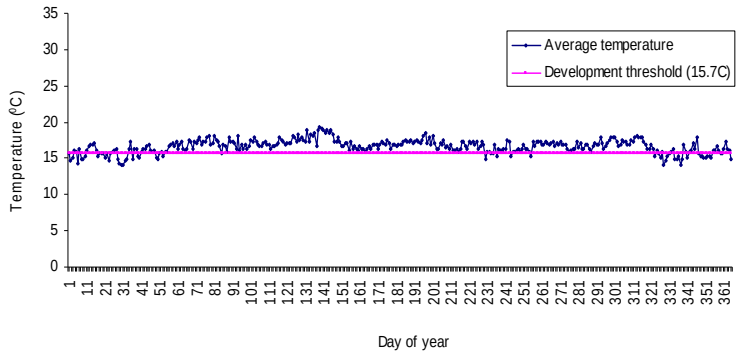
Spread in almost all tea growing areas and presntly gained a pest status in tea plantations from near sea level to about 1400m asl.

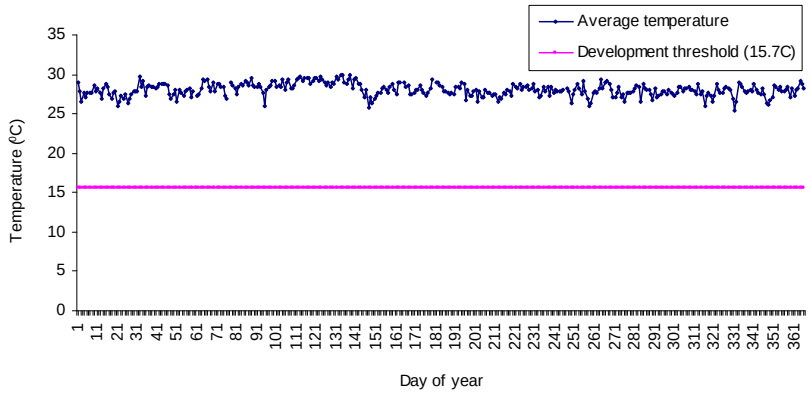
Biology of TSHB

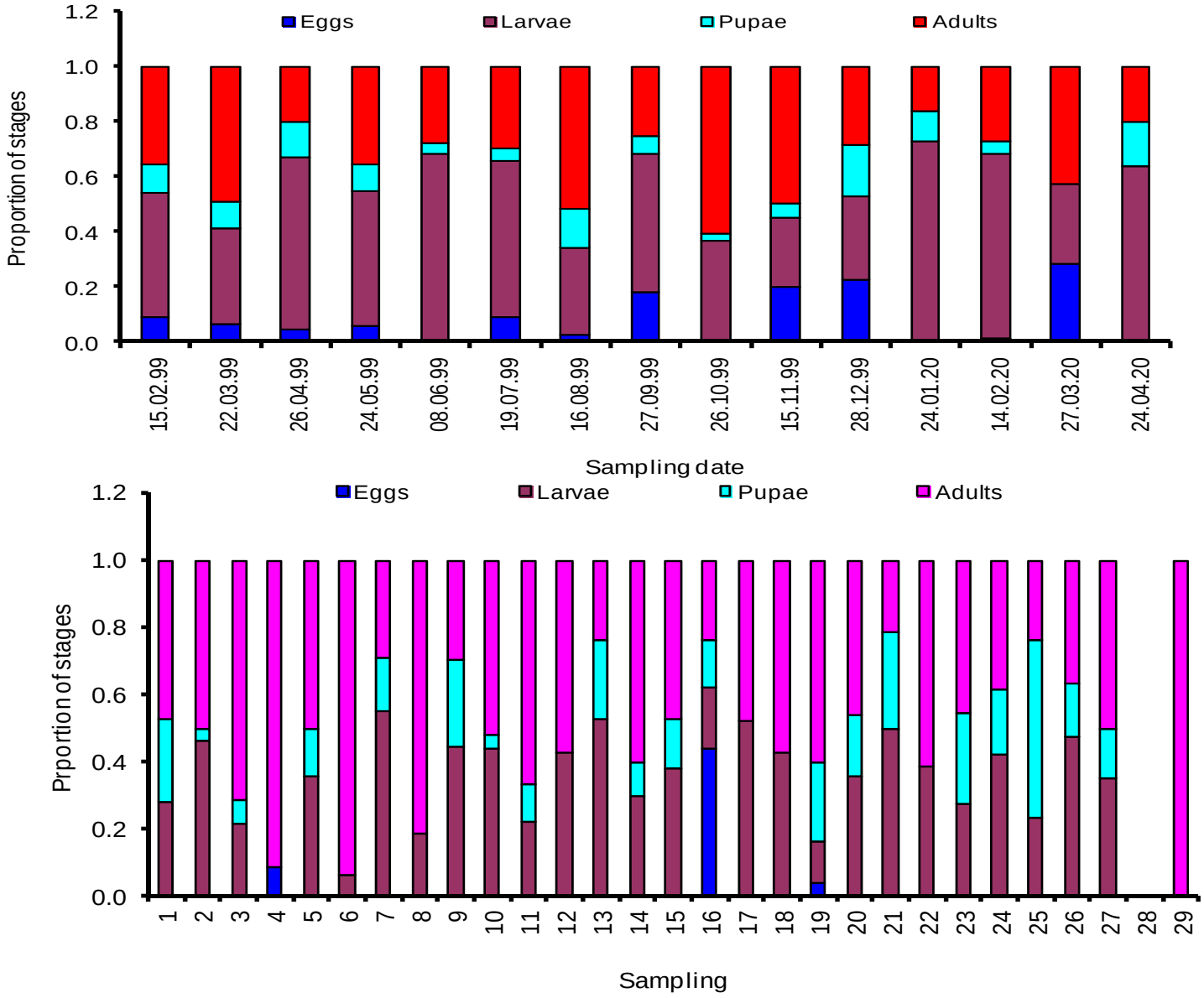
- Life cycle - eggs, 3 larval instars, pupa and sexually dimorphic adults
- Takes about 45 days to complete (depend on the temperature)
- Multivoltine
- Mycetophagous larvae – feed on symbiotic fungus cultivated in the galleries by the mother beetle (*Monacrosporium ambrosium*)
- Inbreeding (brother-sister mating) occurs

Number of SHB generations in different agro ecological regions

Region	Location	Number of DD accumulated per year (above 15^0C)	Approximate number of generations
High country	*Sita Eliya*	687 ± 87.5	1.8 ± 0.36
Mid country (wet)	*Hantana*	3371 ± 92.2	9.0 ± 0.40
Mid country (dry)	*Bandarawela*	2092 ± 102.4	6.0 ± 0.43
Low country	*Ratnapura*	4788 ± 121.5	12.0 ± 0.51



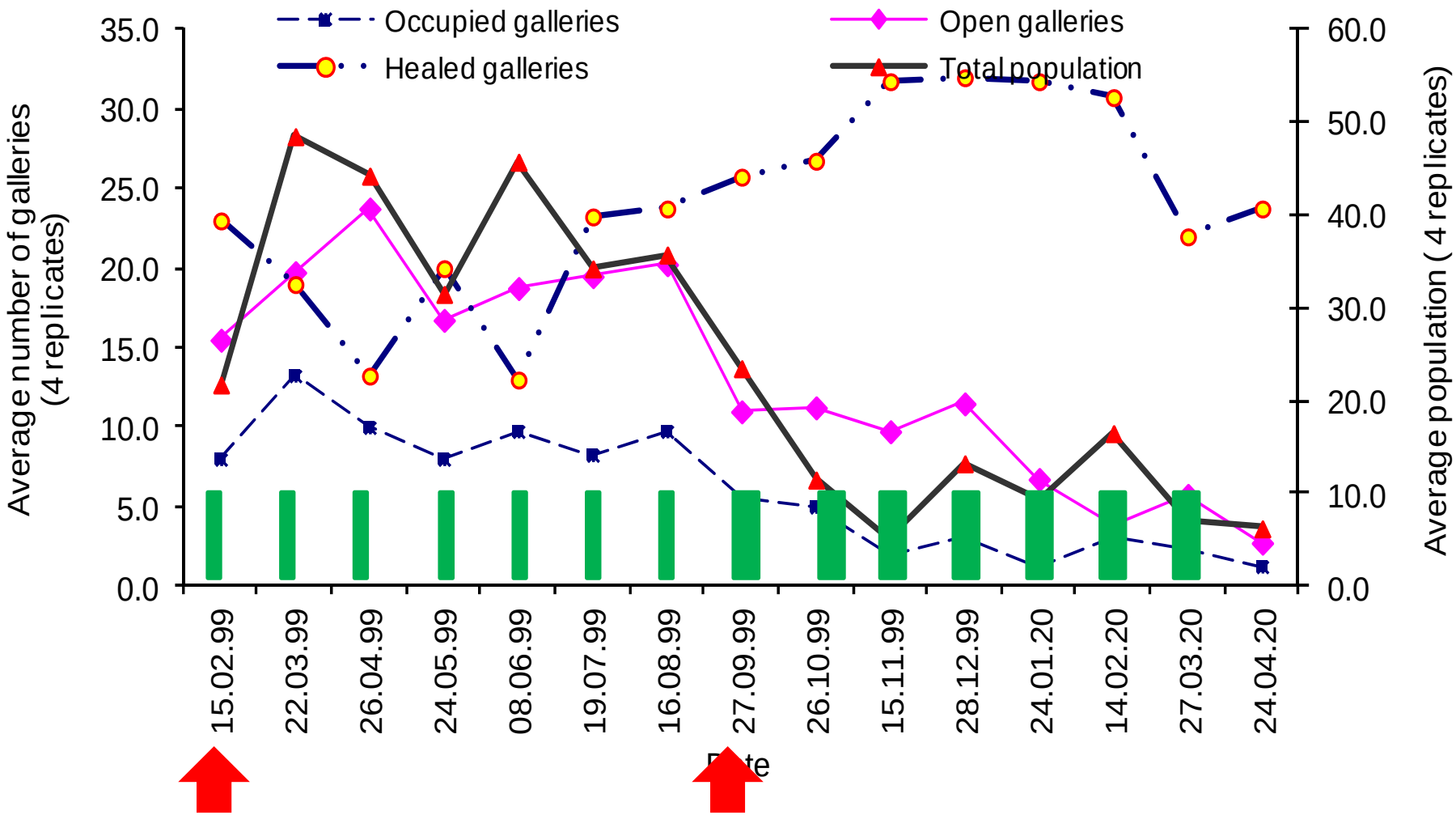




Appearance of life stages of shot-hole borer expressed as proportions over the sampling period in the pruning cycle in Nayapana estate representing mid country (wet zone).

Biology of TSHB

- Life cycle - eggs, 3 larval instars, pupa and sexually dimorphic adults
- Takes about 45 days to complete (depend on the temperature)
- Multivoltine
- Mycetophagous larvae – feed on symbiotic fungus cultivated in the galleries by the mother beetle (*Monacrosporium ambrosium*) (Gadd & Loos 1947)
- Inbreeding (brother-sister mating) occurs



Fluctuation of shot-hole borer population and the infestation (galleries), over a course of a pruning cycle in Nayapana estate, representing mid country (wet zone) and the sampling was initiated in the 10th month after prune (arrow).

Highly polyphagous

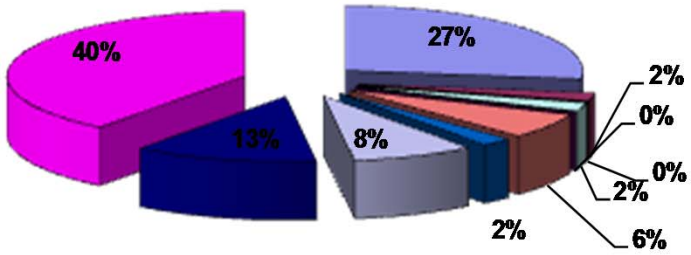
Damage of TSHB

Primary damage – branch breakage as a result of construction of galleries

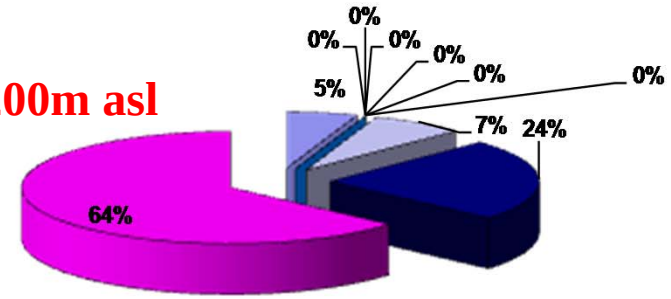
Secondary damage – Rotting of wood as a result of wood rotting fungi entering through gallery holes or from exposed unprotected prune cuts

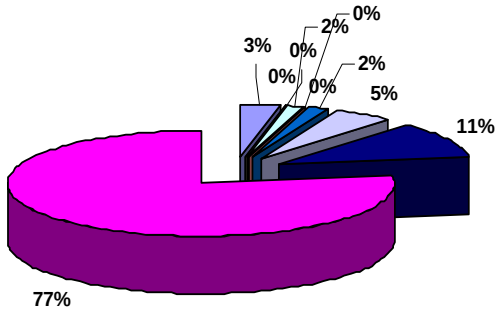
Leads to long term debilitation of the bush and thereby, capital loss

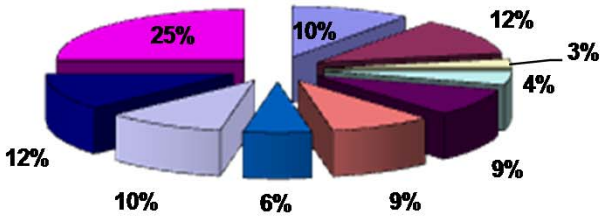
>1200m asl

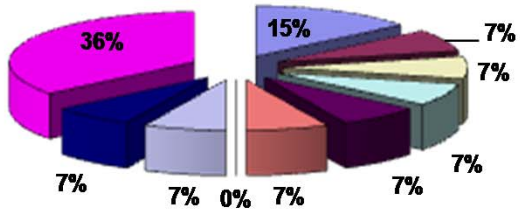


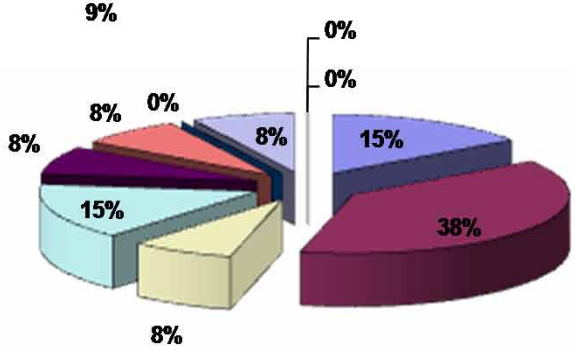
600- 1200m asl







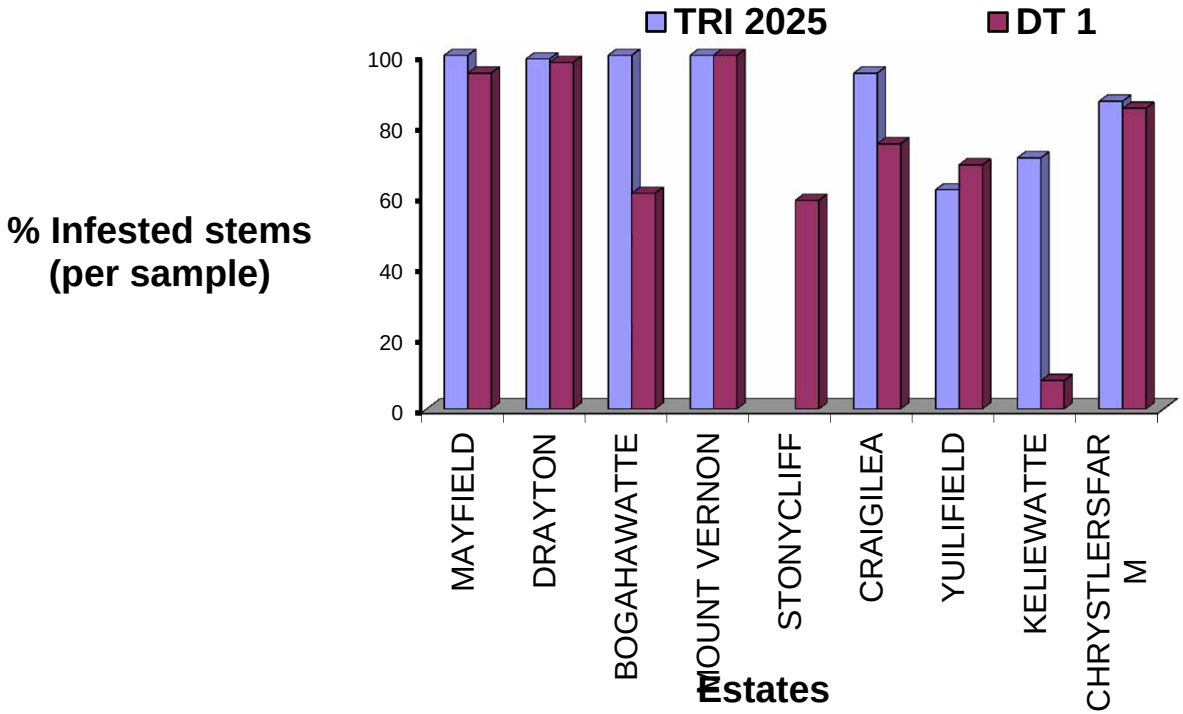


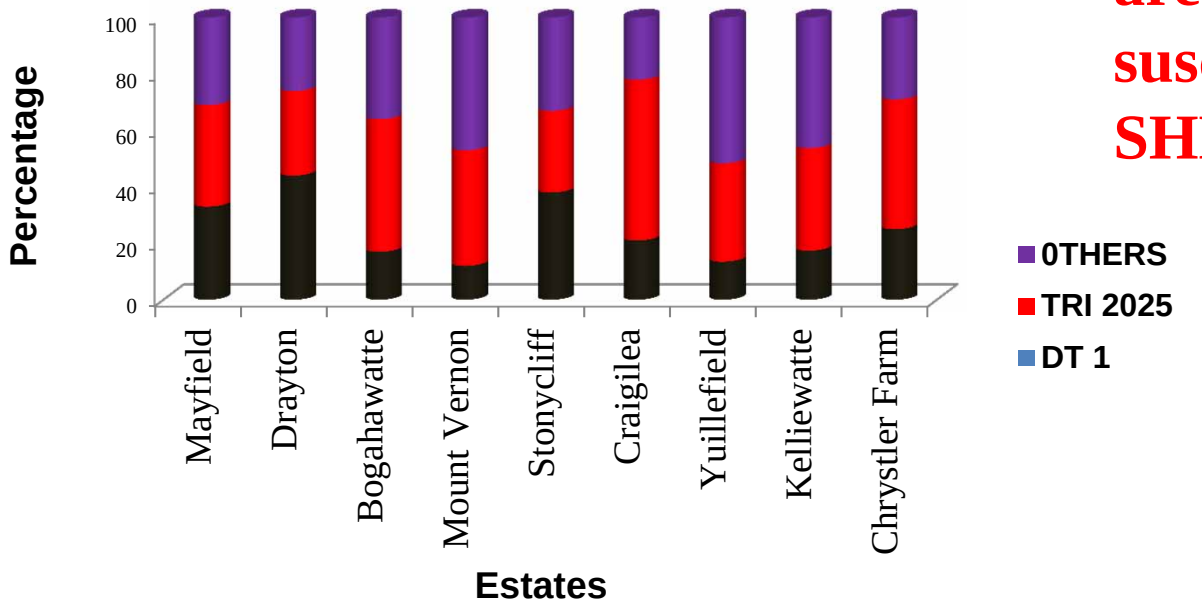


Management/control of TSHB

- **Plant resistance**
- **Resistant/tolerant cultivars produced by the institute**
- **Recommended different cultivars for different agro ecological regions based on specific charateristics (yield potential, quality, resistant to pest and diseases and drought etc etc.**

Cultivar TRI 2023 (resistant to SHB)
Cultivar TRI 2025 (Susceptible to SHB)



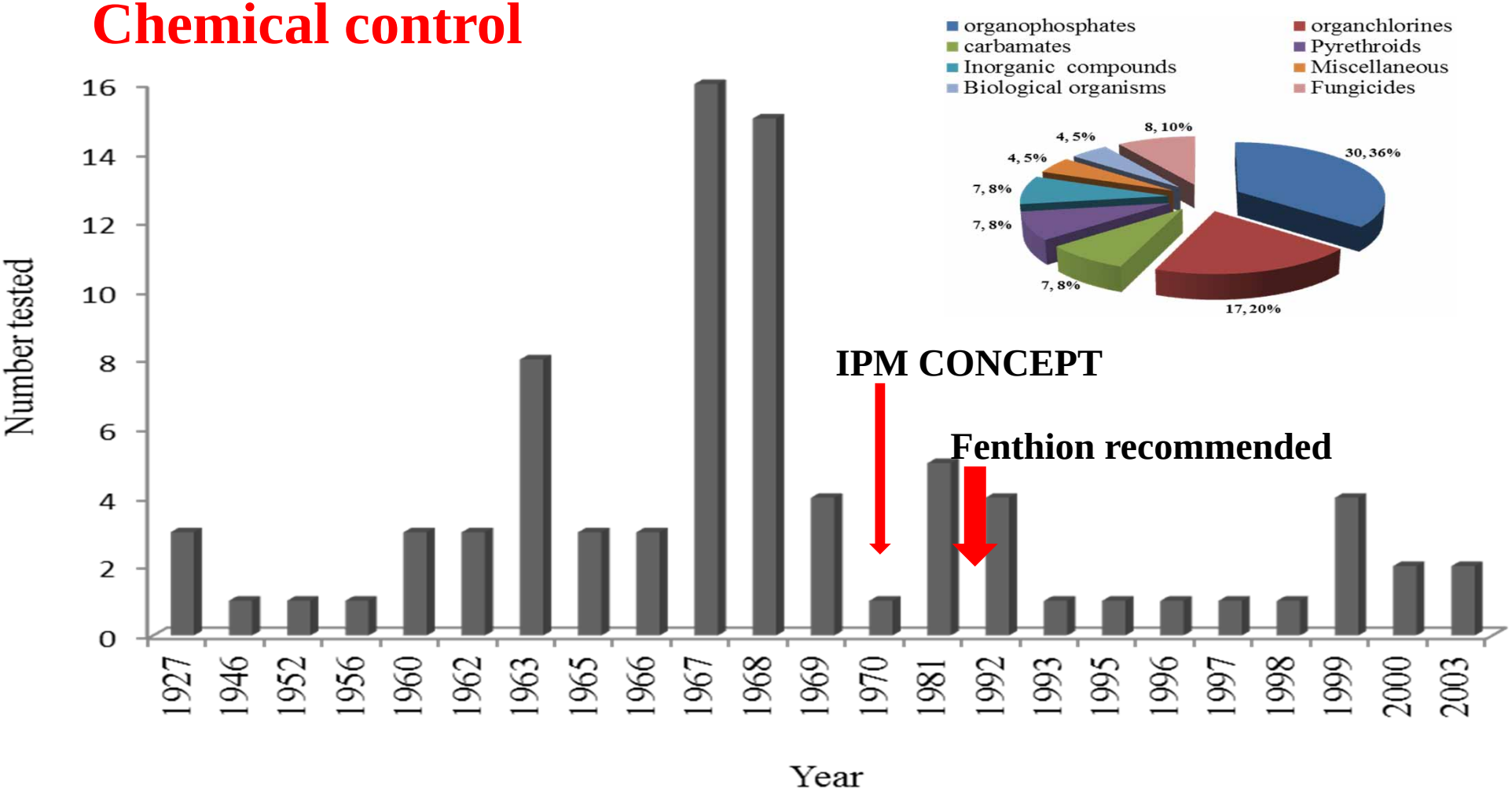


♣ **TRI 2025 (grown for yield)**

♣ **DT 1 (grown for quality)**

♣ **Both cultivars are highly susceptible to SHB**

Chemical control



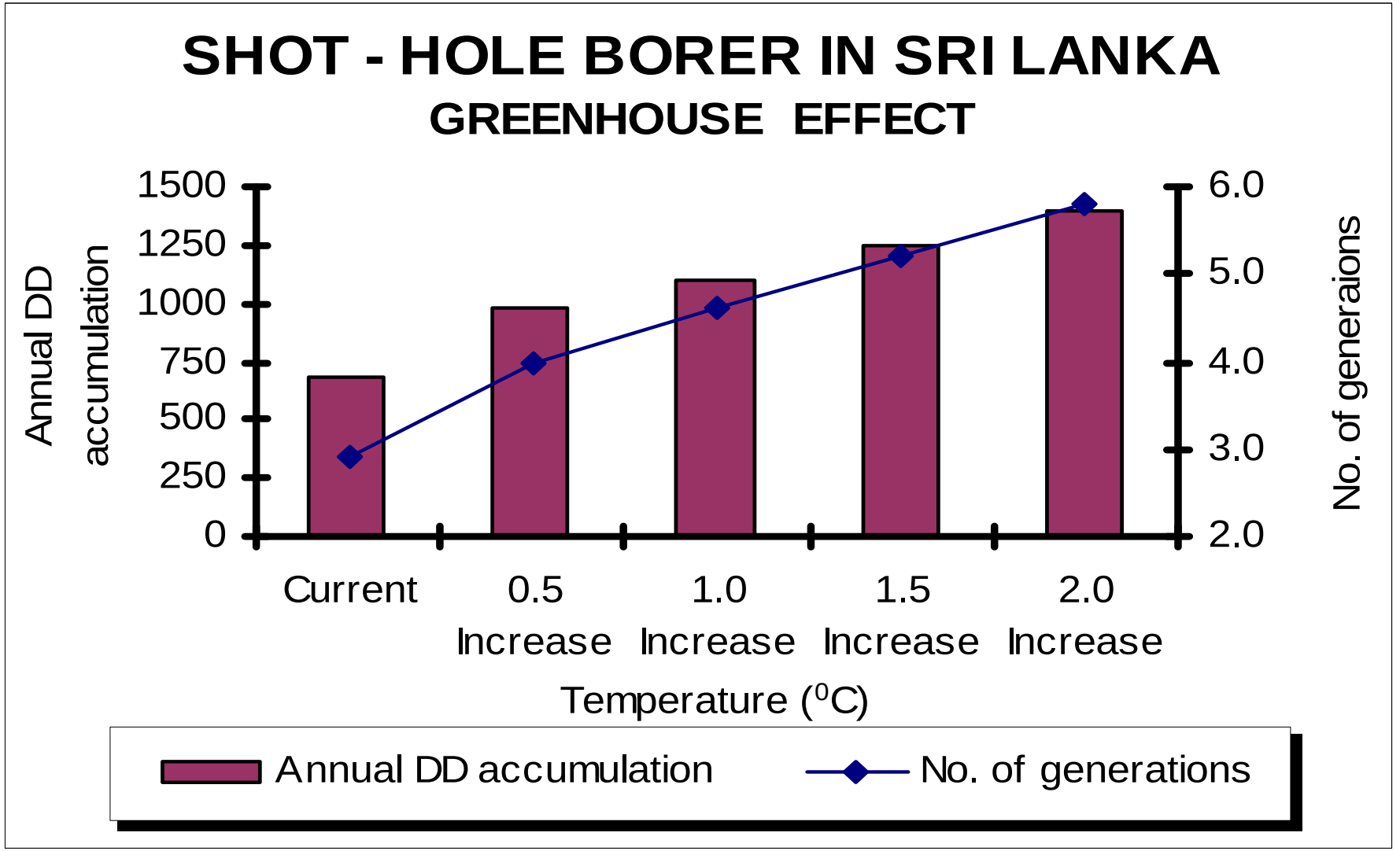
♣ **Many types tested but came very few into recommendations from time to time**

♣ **OP's used (since 1985 it was Fenthion only in recommendation)**

Cultural control

Cleaning dead areas at prune (sanitary cleaning) to remove decayed parts

Application of wound dressings on surfaces more than 5 cm's in diameter



Range extension into cooler areas above 1400m asl is a concern

THANK
YOU