

# Cocoa Diseases



**ECUADOR**



By Uriel Buitrago

# World Wide Distribution

- **Black Pod or Phytophthora Pod Rot**
  - Caused by: *P. palmivora*, *P. megakarya*, *P. capsici*
  - Worldwide distribution
  - Loss in global production → 450,000 MT
- **Ceratocystis Wilt (*Ceratocystis fimbriata*)**
  - Fungus: spread aided by *Xyleborus* beetle
  - Ecuador → outbreak 1918
  - Colombia 500,000 trees killed 1925 – 41; 1955 <50% trees lost in some areas
  - Venezuela 20% trees lost 1951 - 56
  - Trinidad, 1958 → 4,800 trees lost

# AFRICA

## **Cocoa Swollen Shoot Virus (CSSV)**

- Identified in Ghana in 1936
- Found in West Africa, particularly Nigeria and Ghana.
- Big Threat to Ivory Coast
- Reduction in production → 50,000 MT

# ASIA

## **Vascular Streak Dieback (*VSD*)**

- Identified in 1971.
- Found in Papua New Guinea, Malaysia, the Philippines and Indonesia.
- Reduction in production → 30,000 MT

# LATIN AMERICA

- **Frosty Pod Rot** (*Moniliophthora roreri*)
  - Fungal pod rot in North-west corner of South America.
  - Ecuador: Reported in Ecuador around 1914.
  - Ecuador: (1915) 50,000 MT → 30,000 (1923) → 20,000 MT (1925)
  - FFS 50 – 80% Losses

# Frosty Pod invasion

- Colombia
- Panama, 1956
- Costa Rica, 1978
- Nicaragua, 1996
- Honduras, 1998
- Guatemala, 2000
- Belize, , 2002
- Mexico, Jan 2006, It's been for 2 years

# FROSTY POD ROT



# Frosty Pod Control

## ICM approach

Integral attention → healthy trees

Good light penetration, soil drainage, tree spacing & shape, water, nutrition

- Cultural Practices
  - Pruning
  - Pod removal
- Breeding resistance
- Biocontrol Agents
- Chemical

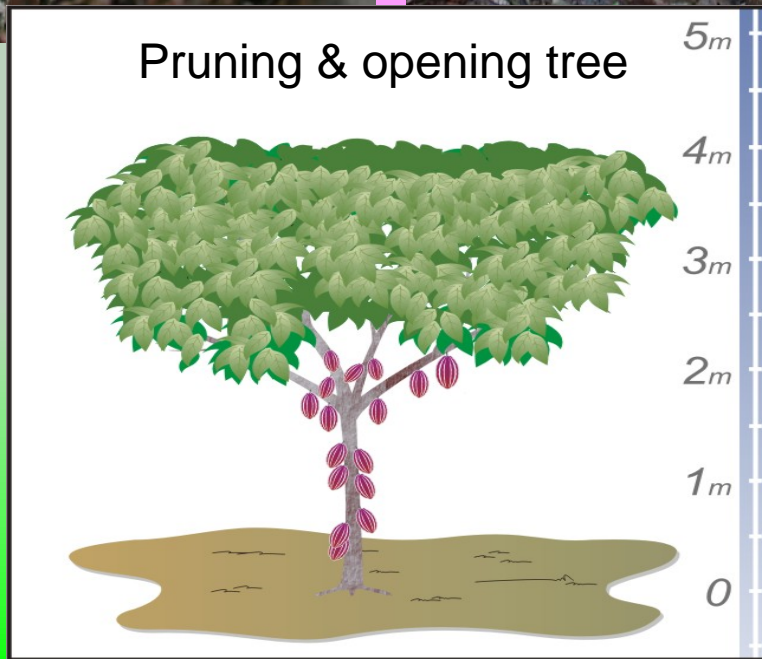
# FROSTY POD CONTROL ...cont'ned



Pod Removal



Pod left on ground



# Management Strategies:

- Good surface drainage
- Weed and chupon removal
- Pruning – short trees for easy management
- Early detection - swellings easily seen,
- Infected pod removal 7 - 10 days.
- Harvest often and on regular cycles.
- Resistant or less susceptible cultivars.

# LATIN AMERICA

## **Witches' Broom** (*Moniliophthora perniciosa*)

- Surinam → 1895
- Ecuador → detected in 1918; In 1986
- infection @ 20 – 40%, loss of 30,00 MT
- Brazil, Bahia → 1989, 50% losses
- Reduction in production → 250,000 MT

# Witches' Broom



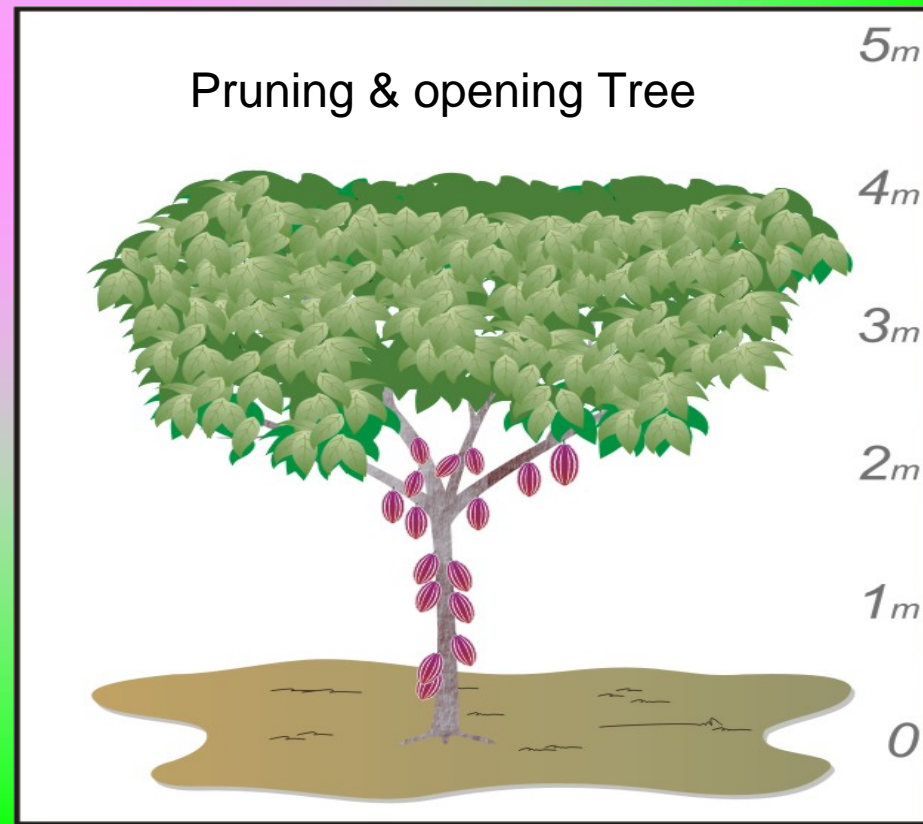
# Witches' Broom Control

## ICM approach

Integral attention → healthy trees

Good light penetration, soil drainage, tree spacing & shape, water, nutrition

- Cultural Practices
  - Pruning (Dry season)
  - Remove affected parts (Dry season)
- Breeding resistance
- Biocontrol Agents
- Chemical



# Why Pest Invasions occur:

- World increasing socioeconomic changes
- Increasing world trade
- Human Travel
- Expansion of cocoa production into new areas
- Global warming
- Weather phenomena
- Bioterrorism

# Minimizing Risks or Impact

- Phytosanitary precautions
- Raising awareness about pathways of spread
- Early warning systems
- Surveillance
- Emergency response plans for containment
- Eradication
- Management options (Control) → information to farmers

**! THANKS A LOT !**



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