Major pests situations on cocoa in Togo

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Plan

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Introduction

• Cocoa: 3rd agricultural product exported after cotton and coffee.

• It is grown in the south-west of the “Region des Plateaux” by approximately 27,000 smallholders (DSID, 2001).

• Between 1999-2000: contribution to Gross Domestic Product (GDP) was 0.4% in average (BDPA, 2000).
Introduction

Today cocoa plantations are facing many constraints due to many factors:

• Total liberalization of the sector in 1996
• No renewing of plantations → ageing of existing plantations
• Abandoned plantations
• Decrease of soil fertility
• Resurgence of pests and diseases

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Introduction

• Concerning the latter constraint, several insect pests and diseases are recorded in cocoa farms

• Damages and losses they cause are hindering seriously the development of cocoa production in Togo
Insect pests in cocoa plantations

I. *Eulophonotus myrmeleon* (Lepidoptera: Cossidae)

1.1. Population dynamics

- Two annual cycles separated from each other by a long period coinciding with the dry season (embryonic diapause).
- Each cycle lasts about 4-5 months (Wegbe et al, 1997; Wegbe, 1997).
1.2. Area of distribution

- In 1995, 50% of plantations in Agou district were attacked, while 23% and 24% occurred respectively in Kpalimé and Litimé.

- In 1996, these rates increased to 100% in Agou and 87.5 and 73.5% in Kpalimé and Litimé (Wegbe et al., 1997).
Insect pests in cocoa plantations

1.3. Damages

Entrance / exit hole of *E. myrmeleon*

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1.4. Losses

- Production losses are estimated at more than 50% when a tree has more than 5 active holes (Wegbe, 1997).

- Lavabre (1977) estimated losses between 30 and 40% annually
Insect pests in cocoa plantations

1.5. Control methods

• Based on the use of chemical insecticides:
  – Gawa (imidacloprid)

• Use of tolerant plant materials such as:
  – T86/799 x Na 32, Na T60/887 x 32, 100 x Na ICS 32, IMC67 SNK x 64 x IMC67 CS 100
Insect pests in cocoa plantations

II. Cocoa mirids

2.1. Population dynamics

• Dynamics are not established in Togo;
• However, it is known that the damages are observed during drought periods (October to February)
• Climate anomalies over the past 10 years sporadic appearances
Insect pests in cocoa plantations

2.2. Area of distribution
• Mirids are present in all togolese cocoa farms

2.3. Damages
• Characterized by bites of soft tissue, of greedy or twigs, pods, causing their drying
2.3. Damages

Plot of cocoa trees showing mirids’ attacks in Litimé (Togo)

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2.4. Losses

- No quantitative study on the losses caused by mirid has been yet done.
- But if we know that these insects can cause the death of cocoa trees severely attacked, we realize that the losses they cause can not be negligible.
Insect pests in cocoa plantations

2.4. Losses

• The only reference for yield losses is that given by LAVABRE (1977) who estimated it between 25-30% in case of heavy attacks.
2.5. Control methods

- Chemical Control: Imidacloprid
  - When the need be (as is often done by the producers)
  - Or on threshold (Based on good organization and the existence of a network of information)
Insect pests in cocoa plantations

2.5. Control methods

• Chemical control based on threshold

Pretests: calculation of rates and compared to standards

– IR = Nb. of killed mirids / Nb. Cocoa trees leached (Infestation Rate)
– PR = Nb. of mirids killed / Nb. Cocoa trees holding mirids (Proliferation Rate)
Insect pests in cocoa plantations

2.6. Control methods

• Chemical control based on threshold
  If IR is greater than or equal to 0.7 or if the PR is greater than or equal to 3, the area represented by the alert post has to be treated.
Insect pests in cocoa plantations

2.6. Control methods

- Chemical control based on threshold
  If IR is less than 0.7 and the PR greater than 3, then there are pockets of mirids only pockets should be treated → Risk of outbreak in this zone.
Insect pests in cocoa plantations

III- Mealybugs

3.1. Population dynamics

- High densities observed in January – March
- Major species
  - Planococcoïdes njalensis
  - Planococcus kenyae
  - Ferrisia virgata
  - Pseudococcus longispinus
III- Mealybugs

3.2. Area of distribution

- Mealybugs are present in all togolese cocoa farms
- CSSV vectors
Insect pests in cocoa plantations

III- Mealybugs

3.2. Control methods

- Chemical control
  - Decis 10 (deltamethrin): 1 liter per hectare
  - Gawa (imidacloprid): 30g per ha.

- Agronomic practices
  - Protection of new plots by barrier cropping (Coffee trees, Cola trees, palm trees, lemon trees etc.).
I. Swollen Shoot Disease

1.1. Area of distribution

• Present in all cocoa growing areas in Togo.

• It is estimated that more than 5,000 ha were attacked by this disease (roughly one third -1/3- of the total area)
I. Swollen Shoot Disease

1.2. Symptoms

Manifestation of CSSVD

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1.3. Damages
1.3.1. Attack rate of swollen shoot disease by canton
1.3. Damages

1.3.2. Severity of swollen
1.3. Damages

Evolution of Swollen Shoot’s damages
(a : Attacked plantation, b : Destroyed plantation showing a light hole)

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Diseases affecting cocoa plantation

1.4. Losses

• Quantitative losses due to CSSVD have never been evaluated

• However, it is estimated that when a cocoa tree is attacked, it dies after 3 - 4 years
Diseases affecting cocoa plantation

1.5. Control methods

Based on an IPM approach

- Breeding
- Cultural practices: Delay re-infection by a complete uprooting of all trees (attacked cocoa trees and host plants) on the plot
- Using of barrier crops against vectors
- Chemical control against vectors
Diseases affecting cocoa plantation

II. Black pod disease due to *Phytophthora* spp.

2.1. Area of distribution

- Agou
- Kloto
- Kpele
- Litimé
- Adele

*P. palmivora

Progression

*P. megakarya

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1.2. Damages

Severe attack of black pod disease

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Diseases affecting cocoa plantation

2.3. Losses

• Losses is estimated at 80% if any treatment is carried out.

• 2.4. Control methods
  • Crop sanitation
  • Chemical control (Metalxyl + copper oxide)
  • Selection of tolerant materials
Conclusion

- Cocoa growing in Togo is facing many biotic constraints
  - Insects: mainly mirids, stem borer and some emerging pod borers
  - Diseases: the CSSVD, Black pod disease due to *Phthophthora* spp.
Conclusion

- To ensure the survival of this speculation
  - Continue research activities
  - Strengthen the links between research, extension services, plant protection services and producers to better contain these pests,
  - Transfer of proven technologies to farmers,
  - Exchange of tolerant materials within the framework of regional cooperation.
Thank you for your attention