Pests and Diseases: Impact on the Sustainability of Cocoa Production

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The purpose of this presentation is to highlight the impact of pests and diseases as a threat to sustainable cocoa production, and to show how this project could address some of the concerns.
Cocoa production (supply)

WORLD COCOA PRODUCTION (Gross)
2012/13: 4.003 million tonnes

Latin America: 16%
(644,000 tonnes)

Asia & Oceania: 14%
(563,000 tonnes)

Africa: 70%
(2.796 million tonnes)

Source: ICCO, Quarterly Bulletin of Cocoa Statistics
Main cocoa producing countries

(production in thousand tonnes)

Source: ICCO, Quarterly Bulletin of Cocoa Statistics
Cocoa grindings (demand)

WORLD COCOA GRINDINGS
2012/13: 4.008 million tonnes

Europe (incl. Russian Fed.):
39%
(1.556 million tonnes)

Asia & Oceania
22%
(897,000 tonnes)

Americas:
21%
(859,000 tonnes)

Africa: 17%
(696,000 tonnes)

Source: ICCO, Quarterly Bulletin of Cocoa Statistics
Historical cocoa supply & demand

World cocoa bean production, grindings and supply/demand balance

Source: ICCO, Quarterly Bulletin of Cocoa Statistics
Forecasts for Supply and Demand

Projections of world cocoa supply and demand

- Net Production
- Grindings
Challenges to Sustainable Cocoa Production

- Low productivity of planting material
- Pests and diseases
- Availability of farm inputs
- Soil fertility and nutrients
Challenges to Sustainable Cocoa Production

- Poor farm management practices
- Weather, climate and environment
- Inefficient marketing systems
- Poor knowledge transfer and inadequate extension services
Cocoa Pests and Diseases

- Black pod disease
- Cocoa Swollen Shoot Virus Disease (CSSVD)
- Mirids
- Frosty Pod Rot
- Witches’ Broom
Cocoa Pests and Diseases

- Cocoa Pod Borer
- Cocoa Die-back Disease
- Sting bugs
- Stem borers
- Mistletoes and epiphytes
Global crop losses to pests and diseases are often estimated at about 30 – 40% of annual total cocoa production.

Is it more or less?
# Cocoa Pests and Diseases

<table>
<thead>
<tr>
<th>Pests and Diseases</th>
<th>Distribution/Location</th>
<th>Estimated Losses (MT) 2001</th>
<th>Estimated Losses (MT) 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Black Pod Rot</td>
<td>Global</td>
<td>450,000</td>
<td>?</td>
</tr>
<tr>
<td>2 CSSVD</td>
<td>Africa</td>
<td>50,000</td>
<td>?</td>
</tr>
<tr>
<td>3 Mirids/Capsid</td>
<td>Global</td>
<td>200,000</td>
<td>?</td>
</tr>
<tr>
<td>4 Witches’ Broom Disease</td>
<td>Latin America</td>
<td>250,000</td>
<td>?</td>
</tr>
<tr>
<td>5 Frosty Pod Rot</td>
<td>Latin America</td>
<td>30,000</td>
<td>?</td>
</tr>
<tr>
<td>6 Cocoa Pod Borer</td>
<td>Southeast Asia</td>
<td>40,000</td>
<td>?</td>
</tr>
<tr>
<td>7 Parasitic Plants (mistletoes and epiphytes)</td>
<td>Africa</td>
<td>-</td>
<td>?</td>
</tr>
</tbody>
</table>
BRAZIL

cocoa production (in thousand tonnes)

Source: ICCO, Quarterly Bulletin of Cocoa Statistics
Impact of pests and diseases on farmers

- Low yield and poor quality
- Low income
- High cost of production – control of pests and diseases
- Health hazards
- Lower morale/low investment
Impact of pests and diseases on farmers
Impact of pests and diseases on farmers
Impact of pests and diseases on Governments

• Lost of revenue
• High cost of control programmes
• Social and political implication
### TABLE 4.3 - CODAPEC ESTIMATES FOR BLACK POD INFESTATION

<table>
<thead>
<tr>
<th>Year</th>
<th>Acreage Infested (in Ha, est.)</th>
<th>Acreage Sprayed (in Ha)</th>
<th>(p)+</th>
<th>Crop Loss* (in MT)</th>
<th>Price (US$/MT)</th>
<th>Loss/Gain (in US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,039,725</td>
<td>976,332</td>
<td>0.94</td>
<td>117,593</td>
<td>$2,104</td>
<td>$247,415,456</td>
</tr>
<tr>
<td>2009</td>
<td>1,113,503</td>
<td>1,020,432</td>
<td>0.92</td>
<td>125,937</td>
<td>$2,400</td>
<td>$302,249,254</td>
</tr>
<tr>
<td>2010</td>
<td>1,156,622</td>
<td>1,156,622</td>
<td>0.9</td>
<td>130,814</td>
<td>$2,702</td>
<td>$353,459,227</td>
</tr>
</tbody>
</table>

**Source:** CODAPEC Annual Report, 2009/10; Authors’ calculations

+ ‘p’ is a gross estimate of the proportion of estimated hectarage infested in relation to hectares actually sprayed. Since multiple applications could (and should) take place, the value can be >1. The low values for black pod spraying suggest that considerable under-dosage is taking place.

*Nominal potential loss @ 30% with an average yield of 377 kg/ha.
### TABLE 4.4 - CODAPEC ESTIMATES FOR MIRID/CAPSID INFESTATION

<table>
<thead>
<tr>
<th>Year</th>
<th>Acreage Infested (in Ha, est.)</th>
<th>Acreage Sprayed (in Ha)</th>
<th>(p)+</th>
<th>Crop Loss* (in MT)</th>
<th>Price (US$/MT)</th>
<th>Loss/Gain (in US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,705,115</td>
<td>1,660,998</td>
<td>0.97</td>
<td>64,283</td>
<td>$2,104</td>
<td>$135,251,086</td>
</tr>
<tr>
<td>2009</td>
<td>1,708,815</td>
<td>2,106,929</td>
<td>1.23</td>
<td>64,442</td>
<td>$2,400</td>
<td>$154,613,581</td>
</tr>
<tr>
<td>2010</td>
<td>2,212,200</td>
<td>2,185,255</td>
<td>0.99</td>
<td>83,400</td>
<td>$2,702</td>
<td>$225,346,638</td>
</tr>
</tbody>
</table>

**SOURCE:** CODAPEC Annual Report, 2009/10

*Nominal potential loss @ 10% with an average yield of 377 kg/ha.

+p is a gross estimate of the proportion of estimated hectarage infested in relation to hectares actually sprayed. Since multiple applications could (and should) take place, the value can be >1. While some infested areas get recommended doses of spraying, some receive less than optimal and some might not receive any spraying at all. The low values for spraying suggest that considerable under-dosage is taking place.
Impact of pests and diseases on Industry and Consumers of cocoa

- Low supply
- Supply uncertainties
- High cost of products
Pests and Pathogens project

- Enhance the capacity of the participating countries to manage and control pests and diseases

- Develop early warning systems, emergency actions and national plans for the prevention of spread of cocoa pests and pathogens
Thank You