



Food safety in cocoa; promoting producer and consumer confidence

M. Rutherford, J Crozier and J. Flood,

www.cabi.org

KNOWLEDGE FOR LIFE

Outline of presentation

- Introduction
- Surveys along the supply chains in major cocoa producing areas
- Key Observations
- Examples of training in West Africa
- Study on heavy metal contamination
- Project methodology
- Summary of findings
- Conclusions
- Acknowledgements

Introduction



- Access to lucrative markets is a key part of the livelihoods of many smallholder producers who produce cocoa.
- Consumers in these markets have high expectations of the quality of the food they consume.
- The EU and other markets are modifying their legislation for imported materials; produce entering must comply with this legislation.
- For cocoa, concerns include levels of pesticide residues, mycotoxins, poly-aromatic hydrocarbons (PAHs) and heavy metal contamination.
- For pesticide residues, EC regulations are already in place whilst for other contaminants eg heavy metals, legislation is still being debated and research is needed to inform this debate.

Cocoa is attacked by a number of pests and diseases



Black pod rot



*Bean damage
caused by
cocoa pod
borer*



Mirid damage

*Vascular streak
dieback*



Surveys undertaken in West African and Indonesia

Objectives:

- Investigate supply of chemicals within supply chain
- Use of chemicals by different stakeholder groups
- Initiate awareness raising activities and promote good agrochemical practice (West Africa only)



Project methodology



- Information acquired via surveys across major production areas
- Via one-to-one stakeholder consultations
- Stakeholders - cocoa farmers, post-harvest cocoa handlers, chemical suppliers
- Structured questionnaires devised for each group



Key Observations



- Chemical usage was very high across the farming communities studied.
- The majority of farmers receive information on proper chemical use in all countries; post harvest organizations receive proper information in some countries but less so in others.
- Information is generally primarily received from extension workers; neighbours, radio, TV, research organizations and chemical retailers
- PHHOs receive information primarily from chemical suppliers in most countries surveyed but also from radio, extension workers, TV.
- Across the countries, between 10-50% of producers and PHHOs had received training on the proper use of chemicals.
- Of chemical suppliers, up to 90% stated that they provided information and training to customers.

Information & training - chemical suppliers



Provided primarily via:

- In-person visits and discussion
- Leaflets
- Formal training sessions
- Demonstrations
- Radio and television broadcasts



Key Observations

- Across the 5 countries, the majority of producers wear some form of protective clothing including rubber boots, aprons, gloves, eye goggles.
- All the PPHOs interviewed used some form of protective clothing.
- In some countries there is a heavy reliance by PPHOs on specialised pest control companies to undertake chemical applications.
- Not all chemical products are registered and approved for use nationally and/or by cocoa importing regions.
- Supply and use of some chemical products and substances for cocoa needs to be better regulated nationally.

Examples of training being conducted on GAP

- Educational rallies and workshops.....

Organised for farmers in towns and villages across production areas to:

- highlight products and substances that should be avoided
- recommend approved products and substances,
- generally promote good agrochemical practice



Examples of training being conducted on GMPs



Cocoa buyers/traders consulted.....to raise awareness of, and discuss:

- Chemical regulations (products/active substances)
- Use of appropriate products in correct manner,
- Need to avoid accidental contamination of beans in storage

Traders important to farmers – source of advice and monetary assistance



*Informing and
discussing pesticide
requirements with
cocoa traders*



Study on heavy metals

Heavy metals are toxic to both animals & plants

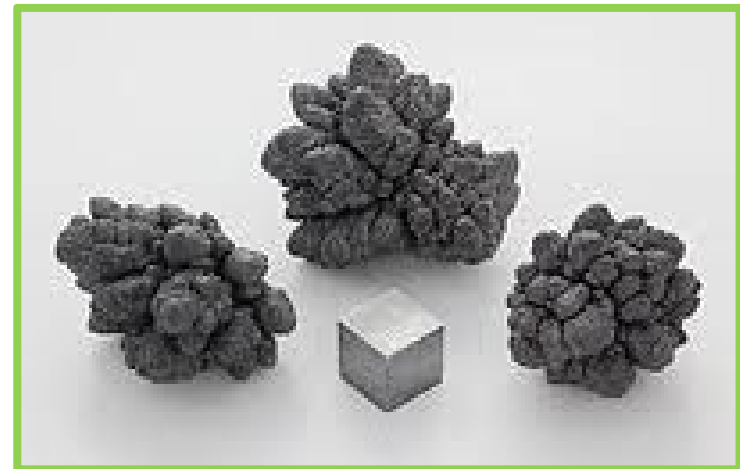
They can accumulate in human tissue over time causing:

Cadmium (Cd)

- Kidney & bone damage
- Carcinogenic

Lead (Pb)

- Kidney failure
- Brain damage



Project methodology



- Information through farmer questionnaires from major production areas in Peru and Venezuela
- 60 farms selected 10 from each of three main cocoa producing regions in each country
- Soil samples taken from different depths.
- Bean samples taken from same sites, oven dried and 50% samples had testa removed; fermented/dried beans also sampled at farms and collection centres where available



Summary of heavy metal project results



Soil

- pH was found to have a positive relationship with total Cd and negative relationship with available Cd
- No relationship was found between Cd or Pb with clay or organic matter
- Total Cd and Zn concentrations in the soil showed a strong positive relationship as did available Cd and Zn

Beans

- No relationship was found between the Cd content of the beans and the concentration of available Cd in the soil, the same was observed for Pb
- Cd concentrations in the beans were found to be positively correlated with the concentration of total Cd in the soil

Conclusions

- MRLs for pesticide residues are in place for cocoa in importing countries and regions eg EU and Japan.
- Our surveys have found that generally most cocoa producers use chemicals on their farms but use is not always as recommended.
- Promoting and capacity building in GAP and GMP is a major part of allowing supply chain actors to comply with this legislation.
- For HM, the situation is more complicated, the EU continue to discuss with producer countries but some general recommendations can be made eg increase soil pH to reduce availability; avoid use of phosphate fertilizers and manure which can contain high levels of Cd; avoid irrigation with contaminated water; test for macro /micro nutrient deficiencies; remove cocoa waste materials (pod husks, pruned material)
- This project and others have to inform the debate to allow realistic levels to be set

Conclusions cont

- Compliance is beneficial not only for consumers concerned with the food safety of the end product but is also beneficial to the health and well-being of producers and other stakeholders in the supply chain.
- Helps safeguard the environment.
- Compliance helps to safe guard a sustainable supply and hence income for cocoa communities and nations as a whole.
- Consequently, awareness of, and adherence to, food safety legislation forms a large part of any agenda on sustainability

Future Work

- Successful in obtaining funding for an SPS capacity building project in SE Asia.
- The project is entitled “Cocoa Safe: SPS Capacity Building in Southeast Asia to Mitigate the Effects of Harmful Contaminants in Cocoa and to Maintain Market Access”
- Project is funded by STDF with co-financing from the cocoa industry and the countries involved (Indonesia, Malaysia and PNG).
- ICCO is project supervisory body and work will begin in early 2013

The pesticide work in West Africa was funded by:

The Ministry of Agriculture, Nature and Food Quality in the Netherlands (LNV) and administered by ECA & CAOBISCO; in country partners were CRIG, CRIN, IRAD and CNRA

The pesticide work in Indonesia was funded by the cocoa industry and administered by NCA; in-country partner ICCRI

The HM work in Peru and Venezuela was funded by LNV and administered by ECA and CAOBISCO; in-country partners ICT in Peru & FJBM in Venezuela

Thank you