Project Title:

The development of forecasting methods for cocoa fruiting and pest attack to inform pest management strategies

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Introduction

- **Cocoa mirids, the most important insect pest on cocoa in West Africa**

- **Mirids could cause between 20-30% yield loss and up to about 70% in a period of three years if not effectively controlled.**

Introduction cont.

- **Control of cocoa mirids in Ghana and CODAPEC**
- **Research into safe control of cocoa mirids**
- **The need for a multi-sectorial approach to mirid control**

Objectives

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- To produce physiological models of cocoa flushing and fruiting as a function of environmental parameters (experimental and field data as well as published information).

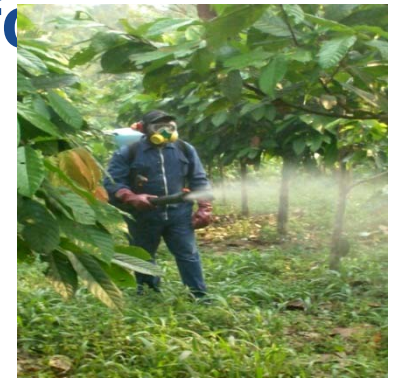
- To gain some basic understanding of the effect of light and temperature on nutrients in plants needed for insect development as well as some plant defence compounds (bulk phenolics) in cocoa

Objectives cont.

- To combine entomological, flush and pod data to find any possible relationships to inform mirid management decisions

- To produce a management tool based on the above to inform pest management strategies

- Investigate the willingness of cocoa farmers to accept and use such information fo mirid management



Experiments (University of Reading)

Cocoa flushing studies at different temperature and light levels

- To gain a better understanding of the effect of temperature and intercepted light on flushing, most importantly their interaction effect

- The experiment will be a split-plot design with four levels of light in the sub-plots and two levels of temperature in the main plots

Experiments (University of Reading) cont.

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Basic studies on insect nutrients in cocoa and plant defence compounds

- Nutrient and plant defence compound analysis to determine the effect of light and temperature on them.

- A similar experiment will be conducted to find out if insect presence and activity on cocoa will influence defence compounds produced.

Experiments (Ghana)

- On-going survey in Ghana
- Experiments to be conducted will be imposed on some farms selected for the survey work in Ghana
- Data collection on frequency of flushing and pod load on cocoa
- Mirid population studies on selected farms (with reference to work done by Joe): this will be done to investigate relationships between mirid numbers, flushes and pods in selected

Experiments (Ghana) cont.

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Framer survey:

- To find out if farmers have some source of information on time of insecticide application, if any and its implications on mirid control and yield.

- To test the acceptability of information system to inform pest management decisions in the control of cocoa mirids on a regular basis.

- To identify the most appropriate way to package the information to the farmer.

Summary

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- To have a better understanding of the interactive effect of light and temperature on cocoa flushing
- To produce physiological models that predicts vegetative and reproductive activities in cocoa
- To have some basic knowledge on the effect of light and temperature on nutrients in plants needed for insect growth as well as some defence compounds

Summary cont.

- **Investigate the relationships between mirid numbers, flush and pod numbers in cocoa farms**
- **Investigate farmers' willingness to use an information system for mirid control**

Conclusion

A multi-sectorial approach should be adopted for control of cocoa mirids taking into consideration data on mirid population, vegetative and reproductive growth of the crop (feeding sites), to provide information that could help manage the pest in an effective and environmentally friendly manner.

Sponsors

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- **Kraft Foods Inc.**

- **BBSRC, Dorothy Hodgkin Postgraduate Award**

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Thank you