



Sulawesi farmers' strategies regarding Cocoa Pod Borer USDA/CIRAD survey

Memo No 1:

A need for participative research in CPB related extension programmes

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Cocoa Pod Borer (CPB) is currently responsible for destroying a large proportion of the harvests in Southeast Asian cocoa producing countries, especially in Indonesia and Malaysia.¹ As described by Peter Van Grinsven, this insect generates losses both for smallholders and for the country as a whole: a) physical losses in volume (provisionally estimated at around 40%), b) loss in value due to reduction in the fat content of CPB beans from 53 to 49% fat c) loss in trade value through the mixing of good and bad beans and the incorporation of rubbish, and not respecting the export certificate etc., in other words: losses due to a reduction in quality. In 2006, even based on a very cautious estimate of 20% loss, this implies an estimated economic loss for smallholders of around 245 million US \$ (based on the farmgate price) and 275 million US \$ at the national scale (based on the FOB price). (Van Grinsven 2006)². These figures are probably underestimated and could increase, which would imply even greater losses and higher world prices.

After six or seven years of generalised infestation in Sulawesi, this level of losses has been reached despite a range of CPB control programmes launched by extension services in addition to specific projects. As a consequence, we believe that this major economic problem deserves strong investment in research in entomology, selection of planting material, but also in farm economics. What are Sulawesi smallholders' strategies with respect to the CPB and to cocoa farming in general? How can these strategies be taken into account in a global national strategy to control CPB and improve the sustainability of cocoa?³

These questions led the USDA/CIRAD to conduct a brief survey with the aim of contributing to a 'CPB research action plan' to be discussed with Indonesian partners in mid 2007. The outputs of this survey will be a few memos with qualitative findings and considerations and longer papers with a more detailed analysis.

¹ The damage is caused by the insect *Conopomorpha cramerella* Snellen, a moth whose larvae bores into the cocoa pods to feed.

² Personal communication, Sept 2006

³ A project such as Prima provided some valuable information but concentrated on only one village, Noling.

This first memo summarizes the very first qualitative results from a preliminary sample of 51-farms conducted in December 2006: 31 smallholders were interviewed in two villages in Bungku (Central Sulawesi), where the CPB started to infest part of the cocoa farms as recently as in 2005/06, and 20 smallholders were interviewed in three villages in Southern and Northern Palopo (South Sulawesi) where CPB has been active for at least seven years.

Before conducting a complete analysis of these data, some preliminary results of the survey led us to draw provisional conclusions that may seem too strong at this stage but we believe it is useful to put them forward as hypotheses to be verified in the next steps of the survey.

1. Pesticides only

The only way for these farmers to control CPB is by spraying pesticide. All other possible alternatives such as bagging/sleeving and biological control may be known but have been rejected.

Reasonable pruning and frequent harvesting, which are sometimes presented as key IPM components, are of course also necessary, but farmers were already using both these practices well before the first CPB attacks. Our records concerning Noling in 1993, i.e. five years before the arrival of the CPB, showed the average number of harvest to be 20 per year. This was already a world record (compared to 6-8 harvests per year in West Africa).

Twenty harvests a year means roughly one harvest every two weeks during the peak season. As shown in Tables 1 and 2, labour management is already extremely tight and it would be practically impossible and unreasonable to increase the number even more.

Figure 1. Farming calendar for three plots on a cocoa farm at Noling in June.

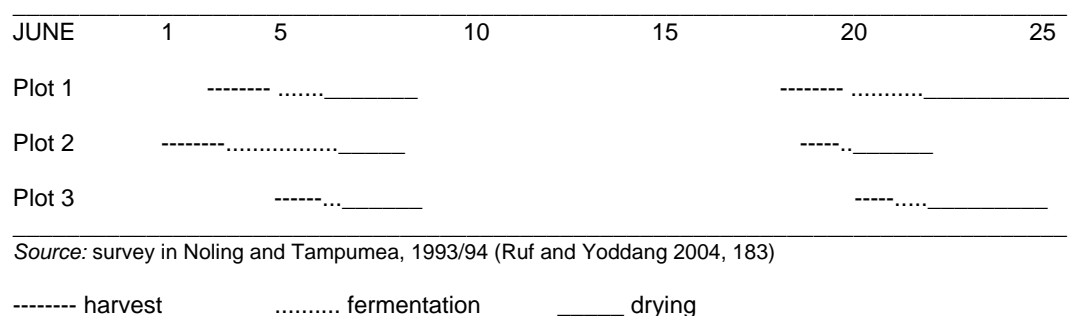
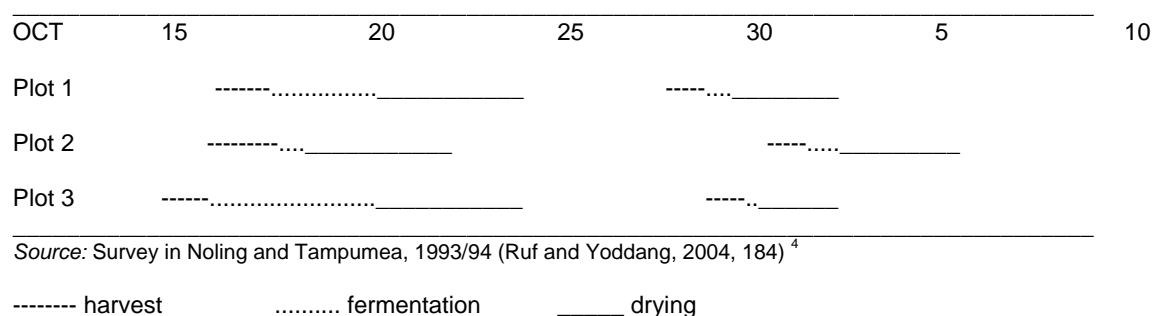


Fig. 2. Farming calendar for three plots on a cocoa farm at Noling in October-November.



⁴ In: Ruf, F. and F. Lançon, 2004. From Slash and Burn to Replanting: Green Revolutions in the Indonesian Uplands. The World Bank, Regional and Sectorial Studies, Washington, 220 p.

Sulawesi farmers probably now have a better knowledge of CPB than they did in the early 2000s thanks to efforts by extensions services among others, but with respect to practical strategies to control the pest itself, in 2007, not much has changed since the problem started in 1996.

2. Is the current level of pesticide consumption a major problem?

The current level of pesticide consumption is not that high. Although we need to wait for the results from a larger sample, current use of pesticides appears to be only slightly higher than in Côte d'Ivoire, especially when it is calculated per tonne of cocoa rather than per hectare of land.

3. Lack of information on the different pesticides

We observed the farmers lacked information about pesticides: they rely mostly on pesticide sellers and try to evaluate the efficiency of pesticides on their own farms and on their successful neighbours' farms. But this is an area in which much improvement can still be made.

4. As a consequence of the above, possible solutions:

- In our opinion, it is really important to continue research on IPM and on partial alternatives to pesticides
- Meantime, some short-term research should focus on re-thinking the strategy currently used by extension services: instead of promoting the current 'IPM' recommendations (some of which are somewhat questionable e.g. too high harvest frequency and digging in infested pod husks, which is too labour-consuming), participative research should concentrate on how to optimize pesticide applications:
 - how to get information about the different products to cocoa farmers,
 - how to help farmers identify 'fake' products, and also how to eliminate them
 - how to ensure farmers use 'real' pesticides as efficiently as possible at the right concentration (although we are still not sure they do not already use the right doses).

In another memo, we will review all the arguments for the need for a thorough reappraisal of the content of 'IPM' strategies.