This document has been developed in the framework of the project ***Growing Coffee without Endosulfan***, funded by the **Sustainable Coffee Program powered by IDH**, the **FAO** and the **ISEAL Alliance**, and implemented by the **Pesticide Action Network (PAN) UK** and the **4C Association**. (© 2014)

Growing Coffee without Endosulfan: Key findings, lessons and recommended next steps

Key findings on managing Coffee Berry Borer (CBB) without endosulfan

Project document *Comparison of IPM methods for CBB control based on assessment criteria* summarises the different cultural, physical, biological and chemical controls reported in use for Integrated Pest Management, along with pest monitoring and decision-making tools. Details of the different control methods, their costs, effectiveness and farmers' tips are provided in the project guidance documents *Experiences in CBB IPM*. The table below summarises use of different methods from the 22 farms visited in two regions with different coffee production calendars: (a) continuous flowering and harvesting – Colombia, and (b) defined flowering and one main harvest period- Central America.

One uncertified estate still using endosulfan was included in the interviews to provide a comparison with the 21 certified farms, of varying sizes, which are not using endosulfan. Of the 22 farms, 21 are certified or licensed under one or more standard: Fairtrade certified (10 farms); Rainforest Alliance (8); Utz Certified (4); 4C verified (3); organic (4).

Summary of IPM methods used for Coffee Berry Borer (CBB) on farms visited

IPM method	**Colombia** (9 farms)	**Central America** (13 farms)
Regular plot sampling to estimate CBB incidence	9	2
Plot observation to identify 'hotspots'	9	11
Dissecting bored berries to identify pest position, for accurate timing of controls	7	0
Using methanol-baited traps to monitor pest levels and time controls	2	1
Physical trapping using methanol-baited traps for mass-trapping	1	6
Physical trapping at pulping stations and berry collection points using greasy tarpaulins or 'trap' trees	3	0
Cultural control by collecting fallen berries and unpicked berries after harvest	2	13
Cultural control by picking bored early ripening berries between harvest periods	9	11
Regularly replanting or pruning coffee bushes to make cultural controls easier	6	4
Biological control applying *Beauveria* fungus biopesticide	4	5
Biological control via release of parasitic wasps (one or two releases in the past only)	1	1
Chemical control using insecticides other than endosulfan	5	5
Chemical control using endosulfan	0	1

Table indicates number of farms in each region which report using a particular IPM method.

Colombia: Interesting experiences were collected from the 9 farms visited, several of which are managing CBB very well almost without insecticides in areas where 10-12 years ago this pest was very problematic and many farmers were still using endosulfan. Successful IPM methods are being used by smallholders, medium scale farms and large estates, making use of research and extension advice from the National Coffeegrowers' Federation (FNC).

Nicaragua & El Salvador: A range of IPM methods are being used by certified farmers visited. Apart from the organic farms, several other farms are able to manage CBB without insecticides, or with much reduced use. There is increasing use of *Beauveria* biopesticides and of methanol-baited traps. In all cases, either the producer co-op or the export association or other technical support provider is working closely with these farmers to promote these alternatives. Farmers are adapting some of the methods to suit their own situation, e.g. using empty soft drink containers to hold the methanol bait, rather than more expensive commercial traps, and increasing the number of traps set per hectare.

Key lessons from both regions on IPM methods for Coffee Berry Borer:

(1) CBB control without endosulfan is perfectly feasible: The findings show that it is perfectly possible to achieve good CBB control without using endosulfan, across a range of farm sizes, climate zones and altitudes, pest pressure levels, coffee production systems, farmer ages and educational levels. All farms are using at least two different and complementary IPM methods. Several farmers who were using endosulfan routinely 3 years ago have succeeded in eliminating its use- so it is possible to change practices quickly.

(2) Cultural controls form the backbone of good CBB management: All farmers met are doing some form of good cultural controls as the backbone of CBB IPM. These include sanitary picking of bored berries or early maturing berries and collecting fallen berries and dried berries left on trees after the main picking season. These practices are essential to reduce the amount of pest breeding sites and reduce CBB levels in the following season.

(3) Field monitoring is an important tool for CBB decision-making: Almost all farmers carry out some form of field observation for monitoring pest presence and level, identifying 'hotspot' areas on their farm and for optimum timing of any control activities. Most Colombian farmers interviewed regularly sample their plots to assess % CBB incidence and may dissect beans to see if the borers can be reached with a biological or chemical control application.

(4) Some farms have greatly reduced or eliminated insecticide use for CBB: Several of those farms using insecticides have reduced use considerably in recent years and some have managed not to use any insecticide in the 2013 season, thanks to careful IPM management. The latter group includes 3 large estates, which are replacing insecticides with either biopesticides or using methanol traps (in addition to cultural controls and monitoring).

(5) It is a myth that endosulfan alternatives are always more expensive: Estimates with farmers interviewed revealed that methods such as trapping and use of *Beauveria* can be cheaper than endosulfan application or similar in cost. Central American farmers using methanol traps found it much cheaper and less laborious than organising workers to spray insecticide - and far less risky to worker health. None of the farms considered IPM methods to be too costly. Instead, they viewed labour costs of cultural controls and other IPM methods as a necessary investment to guarantee good coffee quality and which can deliver benefits in higher price, worker welfare, wildlife protection and less environmental pollution.

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(6) Phasing out endosulfan use is possible with public and private sector support: Getting more countries to ban endosulfan and implement the POPs Convention phase out will not cause havoc in the coffee sector. However, governments and, especially, the coffee traders and roasters need to support training and advice for farmers to change practices. Farmer support organisations, sustainability standards and coffee research institutes all play an essential role in helping to phase out endosulfan and replace it with safer, IPM methods.

Issues regarding use and disposal of endosulfan and other Highly Hazardous Pesticides (HHP) used in coffee production

A third of farmers interviewed knew of local human poisoning incidents involving coffee pesticides (mainly endosulfan) and a quarter had witnessed wildlife killed after spraying. Local health authorities in Colombia confirmed that pesticide poisoning remains a concern in farming communities and pesticide health impacts are a major issue in El Salvador.

Colombia: Farmers and co-operatives expressed frustration about how to deal with small quantities of left-over and now expired endosulfan or other insecticides. The national agrochemical industry-funded container collection scheme does a reasonably good job BUT it will not collect expired pesticides or opened containers of any pesticide. Farmers have no choice but to keep these on their farm, causing problems for them in terms of compliance with the pesticide storage requirements of certification standards.

Endosulfan has been banned in Colombia for some years, however, there is some illegal cross-border entry of mislabelled products. Producer co-ops are confident that none of their members will even think about buying these products, but poorer farmers who are not in a farmer organisation may be tempted. Many Colombian coffee farmers, including 3 of those we interviewed, are using chlorpyrifos as a replacement for endosulfan. Producer co-ops want to phase this use out too as it is also a risky HHP pesticide and recently recognised as a potential POP list candidate.

***Nicaragua and El Salvador*:** Endosulfan was widely available in both countries in July 2013. In Nicaragua it is restricted for use in coffee only yet 2 of 3 agricultural supply stores we visited offered us it 'for lots of pests on a range of crops'. Collaborators informed us of similar retail store non-compliance with product restrictions in El Salvador. In August 2013 the Salvadoran government announced plans to ban endosulfan, along with a range of other HPPs, in order to tackle serious pesticide-related ill health incidence in parts of the country. However, it is not clear whether or when any ban decisions will pass into legislation, especially with elections due in 2014.

Recommended project follow-up and next steps

The following recommendations were made by participants at the project lesson-learning workshop and by some of the farmers and collaborating organisations interviewed:

(a) Disseminate project lessons and farmers' IPM experiences to relevant Ministries of Agriculture, Environment and Health in all coffee-growing countries where endosulfan is not yet banned, to encourage them countries to implement bans as soon as possible.

(b) Set up a network of farms, with their support organisations, to document over 2-3 seasons their IPM methods, costs and effectiveness in reducing CBB damage. The network

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should look closely at biological control and trapping effectiveness in different contexts, and HHP phase out options, especially of chlorpyrifos. It could link with ongoing 4C Platform activities on coffee rust management and climate change monitoring.

(c) Distribute project findings widely, especially the videos on IPM methods, via coffee organizations in producing countries, coffee trade press and social media.

(d) Conduct pilot projects with farmer groups on phase-out training & implementation in countries where endosulfan is still used, including farmer exchange visits.

(e) Involve Central America regional PROMECAFE coffee initiative in outreach and include Brazilian IPM farm experiences in any videos to be produced in a second project phase.

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