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## PARTICIPATING ORGANISATIONS

The project is coordinated by the **Regional Institute of Studies on Toxic Substances (IRET)**, based at Costa Rica's **National University (UNA)**. IRET has over 30 years' experience in research, training and policy advocacy in pesticide health and environmental problems and serves as a WHO Collaborating Centre on Occupational and Environmental Epidemiology and Toxicology. IRET staff have detailed knowledge on pesticide risks and impacts in the Central American context. Its Pesticide Diagnostics & Alternatives team maintains a pesticide database and researches safe and sustainable alternatives in agriculture and forestry. <http://www.iret.una.ac.cr/index.php/area-de-diagnostico>

Costa Rica's **Ministry of Environment & Energy (MINAЕ)** [www.minae.go.cr](http://www.minae.go.cr) is the national SAICM focal point. The Ministry will play a key role in capacity building and stakeholder collaboration to strengthen national chemicals management and implement the BRS Conventions and the FAO/WHO initiative on Highly Hazardous Pesticides.

Activities will involve smallholder farmer organisations, commercial grower associations and individual estates, farm worker unions and NGOs. Certified private standards play an important role in influencing pesticide practices and the project has support from the **Sustainable Agriculture Network (SAN)** of the Rainforest Alliance <http://>

[san.ag/web/](http://san.ag/web/) and from the **4C Association**, the entry-level standard for mainstream coffee production [www.4c-coffeeassociation.org/](http://www.4c-coffeeassociation.org/)

**Pesticide Action Network (PAN) UK** [www.pan-uk.org](http://www.pan-uk.org) will share information from outside Costa Rica on successful IPM alternatives to HHPs prioritised in the project. PAN UK will help build links with the international policy forums and with private sector players, including UK retailers sourcing produce from Costa Rica.

The lesson-sharing regional workshop in 2017 will invite participants from other Central American countries (Panama, Nicaragua, Honduras, El Salvador, Guatemala and Belize).

# Highly Hazardous Pesticides phase out and alternatives in Costa Rica



## Strategic Approach to International Chemicals Management (SAICM)

## Regional Institute of Studies on Toxic Substances (IRET)

This leaflet introduces the background to the Costa Rica SAICM Quick Start Project, the objectives and organisations involved.

The project directly addresses the serious problems caused by hazardous pesticide use and risky practices in Costa Rica. Activities during 2015-2017 will explore aspects of inadequate management of pesticides throughout the lifecycle from import, regulation, to distribution, use and disposal of waste and empty containers. The focus is on capacity building of a range of key stakeholders including: decision makers in government agencies and in the agricultural sector, farmers cultivating at small, medium and large scales and civil society organisations. Safer alternatives based on Integrated Pest Management (IPM) will be explored for selected HHPs prioritised at national level.



Unsafe mixing practice. Credit: F. Ramírez Muñoz

### Pesticide use issues in Costa Rica

Costa Rica has one of the highest intensities of pesticide use in the world. Importation of pesticides has increased much more steeply than the area devoted to agriculture, rising from 8.2 kg active ingredients per hectare of cultivated land in 1977 to 25.8 kg/ha in 2006.

Pesticide use is particularly high on important export crops, e.g. banana, pineapple, melon, coffee, which generate significant foreign exchange and jobs. Banana plantations use around 49kg/ha, pineapple 30kg and coffee 4kg/ha per season. Much of the production is on large estates but there are also small and medium farms involved. Areas cultivated are increasing rapidly - from 2000 to 2009, pineapple cultivation trebled, to reach 40,000 ha.

Many of the pesticides in use are highly hazardous in terms of acute toxicity, chronic health risk and/or environmental contamination. The fungicide mancozeb forms the highest volume of imports and is used intensively in banana and pineapple

cultivation, sometimes via aerial spraying. Biomonitoring studies have found that tissues of children living close to banana plantations are contaminated with 2-5 times the levels of chlorpyrifos and mancozeb metabolites than children close to organic farms.

Serious contamination levels of bromacil, diuron and diazinon have been documented in water courses, groundwater and wells. Bromacil use in pineapple has led to residues in water sources 20 times higher than EU permitted levels for drinking water. Pesticide spray drift or run-off into watercourses has triggered numerous mass kills of fish and other aquatic life. Some plantations have been associated with overspraying, drift and contamination of neighbouring villagers, crops and livestock, with incidents of non-compliance with national laws on buffer zones and other risk mitigation measures.

Farmworker exposure concerns include handling of chlorpyrifos-impregnated covers for bananas, dermal exposure to fungicides in fruit packing plants and weak

compliance with occupational Health & Safety norms. Smallholder farmers growing export and basic food crops face different exposure risks, related to knapsack and motorised spraying with inadequate PPE and poor understanding of acute and chronic health hazards.

National statistics from 2008 revealed an average of 100 fatal poisonings per year, with methomyl causing the highest frequency, followed by paraquat and terbufos. Acute poisonings documented over 200 acute cases each year. Costa Rica has introduced legislation to try and put stricter controls on pesticide distribution and use. For example, in 2008 tougher restrictions were imposed on paraquat, following official recognition of high risk of occupational and accidental health effects, notably via dermal exposure in workers. All aerial spraying for this herbicide is now banned and paraquat products can only be purchased via professional 'prescription'. Despite these efforts, acute and chronic ill health continues, linked to inappropriate handling of HHPs.



## Project Objectives

1. Identify pesticides and use patterns which can be considered Highly Hazardous in the Costa Rican context, using a life cycle approach (regulation/import to disposal).
2. Engage government agencies, the agriculture sector and NGOs in development of a joint National HHP Action Plan for risk and use reduction.
3. Raise awareness of the FAO/WHO HHP approach and of short-term actions to reduce risks, with training of smallholder farmer organizations.
4. Identify potential alternative pest management options for HHPs prioritized in the National HHP Action Plan and trial the most feasible with a network of pilot farms for IPM, with a preference for non-chemical methods.
5. Review project results, share lessons and develop recommendations for follow-up actions and funding proposals for medium-term implementation.

## Ecologically-based methods for phasing out priority HHPs

The project will run field trials on phasing out specific HHPs in selected crops and phasing in safer and more sustainable alternatives methods for managing the pests, diseases or weeds targeted by those HHPs. The priorities may include:

- **Paraquat** for weed control in coffee and for destroying pineapple crop residues (which provide breeding grounds for the stable fly which attacks livestock)
- **Endosulfan** for control of Coffee Berry Borer, for which Costa Rica has derogated phase out by 2017
- Potential priority HHPs such

as the insecticide **chlorpyrifos** and several fungicides linked to chronic health effects.

For endosulfan, PAN UK has compiled useful lessons from farmer experiences in other Central American countries on Growing Coffee without Endosulfan, via a recent collaborative project with FAO and the Rotterdam Convention Secretariat. IRET is investigating alternatives to paraquat for destroying pineapple foliage, using micro-organisms to break down the foliage.

For risk reduction methods, survey work has identified smallholder needs for safe

disposal of knapsack sprayer washing and leftover solution. The project will test mini 'biobeds' using barrels filled with decomposing plant matter enhanced with microorganisms, to mimic the effect of reedbeds in degrading chemical contamination.



Mixing cyproconazole fungicide with foliar fertiliser, without any personal protection. Credit: F Ramirez

Some HHPs in use in Costa Rica

Active Ingredient	Acute toxicity WHO classification and Costa Rican hazard label colour	
Abamectin	II Moderately hazardous	
Carbaryl	II Moderately hazardous	
Carbofuran	Ib Highly hazardous	
Cypermethrin	II Moderately hazardous	
Diazinon	II Moderately hazardous	
Endosulfan	II Moderately hazardous	
Fipronil	II Moderately hazardous	
Imidacloprid	II Moderately hazardous	
Benomyl		
Chlorothalonil		
Mancozeb		
Zineb		
Diuron		
Diquat	II Moderately hazardous	
Glufosinate ammonium	III Slightly hazardous	
Glyphosate		
Linuron		
Paraquat	II Moderately hazardous	