

**MORE FOOD
LESS RISK**

Pesticide risk reduction for sustainable agriculture

Symposium on Pesticide Reduction

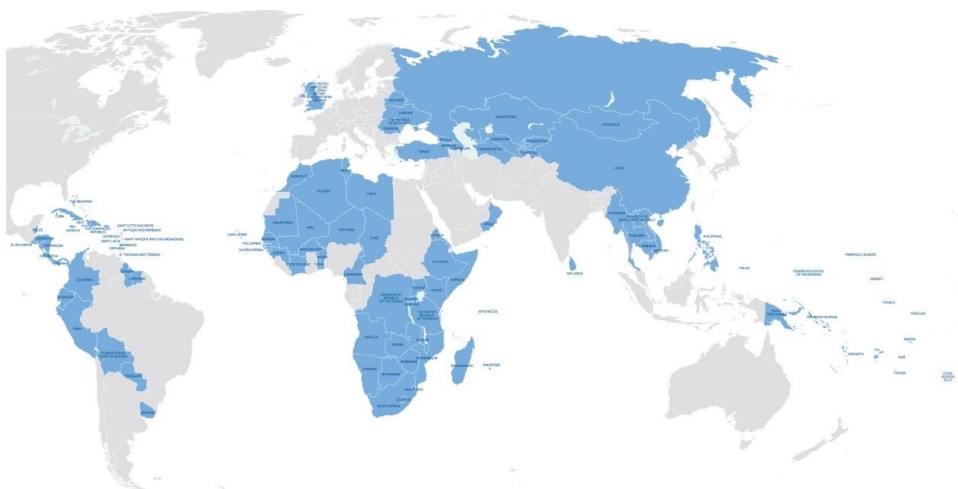
Zurich
3rd september 2015

Francesca Mancini
FAO



FAO Pesticide Risk Reduction team

Where we work



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Outline



Sustainable Agriculture



Pesticide Risk Reduction in 3 steps



Options



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Sustainable Agriculture



Pesticides have been primarily applied as a preventive treatment causing externalities on the environment and society, but also affecting the ecosystem services that underpin crop production.



Over-reliance on pesticides:

- impairs the natural crop ecosystem balance
- causes outbreaks of secondary pests
- contributes to a vicious cycle of resistance in pests
- subtracts investment on more sustainable options

Often less than 1% of pesticides applied actually reaches a target pest organism.

Can pesticides be used more effectively?



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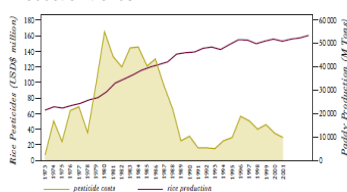
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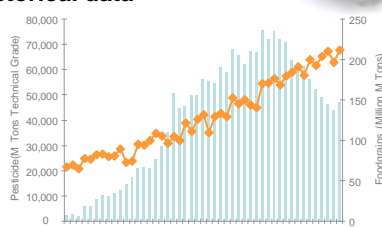


Pesticide use vs crop production: historical data

Production trends



Rice, Indonesia, 1973 -2001



Foodgrains, India, 1955 -2002

- **IPM: closing the disconnect between field ecology and plant protection practices has led to the a reduction in pesticide applications**
- **Right Policies: e.g. removal of pesticide subsidies**



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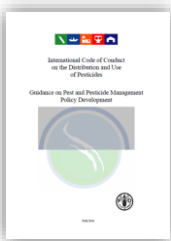
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Pesticide Risk Reduction in 3 steps



RISK = HAZARD x EXPOSURE



STEP 1 Reduce reliance on pesticides

Determine to what extent current levels of pesticide use are actually needed. Make optimum use of non-chemical pest management and eliminate unjustified pesticide use.

STEP 2 Select pesticides with the lowest risk

If use of pesticides is deemed necessary, select products with the lowest risk to human health and the environment from the available registered products that are effective against the pest or disease.

STEP 3 Ensure proper use of the selected products

for approved applications and in compliance with international standards.



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Step 1 Reduce reliance on pesticides

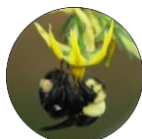


Production in a Farmer's Field is a result of:



Farmer knowledge

Understanding agro-ecosystems, making choices, +



Ecosystem Services

nutrient cycling, control of pests, pollination, water provisioning, +



Biodiversity

genetic resources, grasslands and forests, food webs, +



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Step 1 Reduce reliance on pesticides



Achievements in regional FAO Regional IPM Programme

Cotton India

- 55% Frequency
- 70% Volume
+ 23% Income



Rice Asia Indonesia

- 70% Cost

Vietnam

- 80% Frequency

Bangladesh

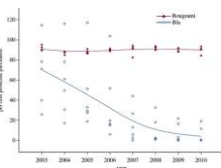
-76% Volume



Mali

- 92% Purchase

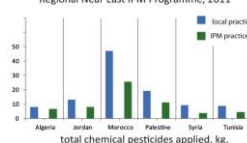
William Settle et al. Phil.
Trans. R. Soc. B
2014;369:20120277



Tomato

Near East

Greenhouse tomato, pesticide use
Regional Near East IPM Programme, 2011



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Step 2 Select pesticides with the lowest risk



Highly Hazardous Pesticides (HHPs)

Pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as WHO or GHS or their listing in relevant binding international agreements or conventions.

In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous.



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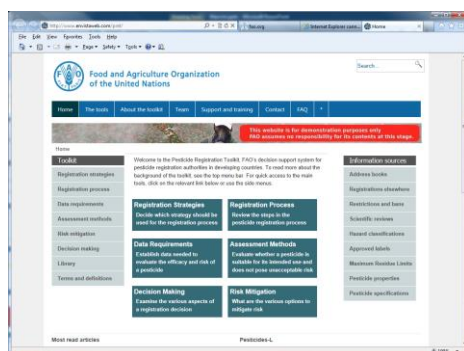
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Step 2 Select pesticides with the lowest risk



- I. Guidelines on HHPs (being finalised)
- II. Tools and trainings for regulators (registration tool kit)
- III. Assist Countries in phasing out - Mozambique



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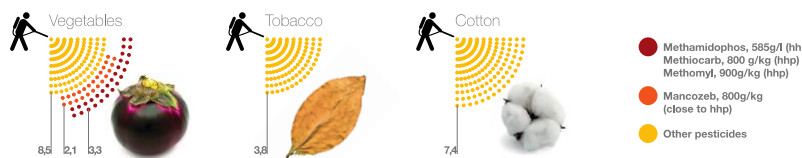
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Step 2 Select pesticides with the lowest risk



HHPs frequency of applications

HHP and potential HHP application (mean) per plot for one crop cycle



- 1 An assessment of registered pesticides to identify HHPs
- 2 A review of pesticide import trends as a proxy for pesticide use
- 3 Field surveys of pesticide use in key crops
- 4 An assessment of pesticide ser risks
- 5 An assessment of environmental hazard
- 6 Consultation with stakeholders and capacity building
- 7 Cancellation of HHPs and formulation of a risk reduction plan



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Step 2 Select pesticides with the lowest risk



Republica de Moçambique

MINISTÉRIO DA AGRICULTURA
DIRECÇÃO NACIONAL DE SERVIÇOS AGRÁRIOS

Deliberação Nº 001/DNSA/2014

1. O Cancelamento imediato de todos os pesticidas que contenham as seguintes substâncias activas:

- | | |
|-------------------------|--|
| a. Alachlor | l. Furfural |
| b. Aldicarb | m. Methidathion |
| c. Carboendazim | n. Methiocarb |
| d. Carbofuran | o. Monocrotophos |
| e. Diafenthiuron | p. Terbufos |
| f. Diazinon (> 300 g/L) | q. Thiodicarb |
| g. Diclofop-methyl | r. Zine phosphide |
| h. Difenacoum | s. Brodifacoum (formulações líquidas – 0.75 & 2.5 g/L) |
| i. Ethion | t. Difenacoum |
| j. Fenamiphos | u. Difethialone |
| k. Iprodione | v. Fenamiphos |
| | w. Furfural |
| | x. Aldicarb |
| | y. Carbofuran |
| | z. Methamidophos |
| | aa. Benomyl |
| | bb. Methomyl 900 g/kg |
| | cc. Chlorfenvinphos |
| | dd. Carbaryl |
| | ee. Oxyfluorfen |

Maputo aos 26 de Agosto de 2014

O Director Nacional

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Step 3 Ensure proper use of the selected products



Training Users on:

- handling and use according to label instructions;
- emphasizing that products should be used only for those crops and pests the product has been approved for;
- respecting of pre-harvest intervals;
- appropriate use of adequate protective gear;
- proper application;
- cleaning of application equipment and proper disposal of empty containers and left-over product.

Cannot substitute for step 2

Not a solution for HHPs in developing countries



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Options for reduction of risks



- Promotion of, investment and farmer education on **agroecological approach** to agriculture (local solutions)
- **Concerted policy support** to promote sustainable production: removal of pesticide subsidies (recently reintroduced in African countries)
- **Strengthening capacity of regulatory authorities** to:
 - make the right decision: risk assessment tools, training for regulators, regional collaborations...
 - enforce the three Conventions: Rotterdam, Stockholm and Basel
 - control counterfeit and illegal trafficking



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Options for reduction of risks



- **Reduce building up of obsolete stock and prevent contamination of sites**
(disposal and remediation are very expensive operations!)
- **Market incentives for sustainably produced products**
(proliferation of new standards – might provide an opportunity?)
- ...



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PESTICIDE RISK REDUCTION



MORE FOOD LESS RISK



www.fao.org/agriculture/pesticides