the pesticide problem in Africa

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ESN, September 2010, Vienna, Austria
More evidence links pesticides to hyperactivity (USA)
http://www.latimes.com/health/boostershots/la-heb-pesticides-adhd-20100819,0,1176316.story
ADHD: Misdiagnosis rampant? Pesticides a possible cause (USA)
Medical Experts Prove That Pesticide Exposure In Pregnancy Causes ADHD
UK media: Babies exposed to pesticides in the womb 'more likely to develop ADHD'
http://www.dailymail.co.uk/health/article-1304437/Pesticides-increase-risk-ADHD-children.html
Australia media: ADHD pesticide link confirmed
Canada media: Study links pesticides to attention problems
http://www.canada.com/health/Study+links+pesticides+attention+problems/3417411/story.html
Canada media: Certain pesticides linked to attention problems in kids
Don’t Get So Hyperactive About Pesticides (USA)
Atrazine causes prostate inflammation in male rats and delays puberty
http://www.eurekalert.org/pub_releases/2010-08/nioe-acp082410.php
Wide Range of Diseases Linked to Pesticides
http://www.organicconsumers.org/articles/article_21484.cfm
Farmers Oppose EPA's Proposed Dust Regulation (USA)
Bald Eagle Nestlings Contaminated by Chemicals (USA)
http://news.discovery.com/animals/bald-eagle-pesticides-chemicals.html#mkcpgn=rssnws1
Pesticides may be a leading cause of major diseases
More bunk about gender-bender chemicals
# Pesticide use

## World Pesticide Demand

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</table>

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Cereal Productivity – yield gaps

Hazell & Wood, 2008
Challenges for Plant Production

- Greater importance of pests and diseases in production systems
- Need for innovative IPM crop protection approaches
- Effective pathways for transfer to the NARS and farmers
SO?

Pesticides?
Some basic stats

- Developing nations have the greatest food safety threats from food (pesticides, mycotoxins)

- Globally 3-5 million instances of pesticide poisonings globally a year results in 20,000-40,000 deaths in developing countries

*International Labour Office 1994*
August 2010: Yemen returns 195 tons illegal pesticides to their countries

“Pesticides smuggling is active like medicine smuggling”
Inappropriate use of pesticides
SO?

Africa?
Pesticides

AFRICA

😊 Regular sickness after pesticide application

😢 Regular use of pesticides for ‘other’ uses
   - Non registered crops
   - Non crop (agricultural) use
Increased safety awareness

Protective clothing??
Safety awareness

Storage issues?
Safety awareness

Safety issues??
Increased safety awareness
AFRICA

 лица

 3 of 4 WHO Class I compounds in use are nematicides

 Ia = extremely hazardous; Ib = highly hazardous
Nematode damage
Plantation / export crops
IITA showed *Meloidogyne* as a principal problem in peri-urban vegetable in W Africa.

And

A principal reason for misuse and abuse of pesticides
Nematode pests of vegetable crops

Severely galled carrots due to RKN

and lettuce
Peri Urban Agriculture
Characteristics: heavy drudgery for irrigation
Meloidogyne spp. in urban vegetables.

Regions

% plants with RKN damage

High damage

Low damage

Eco magazine

Houeyho

Sékandji

Cocotiers

Cadjèhoun

Novotel

James et al., 2007
- 15 diff pesticides used
- Cotton insecticides used on vegetables

No of applications

- Cabbage: 12 wks
- Pepper: 10 wks
- Tomato: 10 wks
- Gboma: 10 wks
- Onion: 16 wks
- Lettuce: 4 wks
- Carrot: 10 wks
- Amaranth: 3 wks
- Cucumber: 8 wks

Fenpropathrin
Rambo
Endosulfan
Furadan
Topsin M
Decis
Maneb
Talstar

James et al., 2007
Healthy vegetables for better nutrition?

BUT

How healthy are they?
Misuse of Chemical Nematicicides
Pesticides

AFRICA

⚠️ AVAILABILITY
- Out of date products
- Repackaging – ‘dilution’, adulteration
- Unregistered, obsolete products (e.g. DDT)
- ‘wrong’ use of products

⚠️ KNOWLEDGE / Understanding
- diagnosis
- which products to use? When? How?

⚠️ The High Cost of Pesticides?
Pesticides

AFRICA

Pesticide Problem is complex
Pesticides

Syngenta

Bayer CropScience

DuPont

MONSANTO

Etc.
Interventions with respect to pesticide use

- Pest diagnosis (targeted use)
- Technology development and application
- Capacity building / advocacy
0.2 % of extension workers have some training in crop protection

Nematology, entomology and weed science training on the decrease

NO nematology expertise in many countries

Pest information scant at best?

e.g. *Meloidogyne* spp?
Cocoa

conducted with 16,000 farmers in West Africa

Yields

up - 15 to 40%

down - 10 to 20% less pesticides.
Pesticides

Technologies for Crop Health Management

- Remote sensing
- **Precision crop protection**
- Pest risk assessment
- Early disease detection tools
- Landscape management
- **Seed, seedling, and seedbed treatment**
- Behaviour modification
Targeted Pesticide Use

Healthy planting material - Disinfection - pesticide

Generation of sustainable seed systems
Healthy seed yam production
Nigeria

- Pesticide
- Farmer treatment (wood ash)
CASE STUDY: *Striga hermonthica*

**Herbicide resistant maize**

CIMMYT developed a range of herbicide (imidazolinone) resistant maize lines and hybrids

Exploiting natural source of resistance

- natural mutation in a Pioneer maize line
- not GMO
Herbicide resistant maize

no herbicide 30g / ha Imazapyr

Targeted Use of Pesticides
Advanced seed/seedling treatment technologies
Interventions with respect to pesticide use

THE PROBLEM

• Training
  – Which chemical?
  – Where to get it?
  – How to apply? How much to apply?
  – Alternatives
Capacity building using participatory approaches

TRAINING

• Targeted at extension agents/farmer association
• Improve safety awareness
• Best practices in pesticide techniques
The "Green World" project

Food Chain Partnership - farmers
store keepers
suppliers
company reps
consumers
Targeted Use of Pesticides

Cotton nematicide seed treatment.

Combination of nematicide, insecticide and fungicide seed treatment.

“Avicta Complete Corn will provide the greatest impact on yield when early-season stress is combined with nematode feeding,” Syngenta Seedcare.
Institutional / infrastructural approaches

Involve the industry

- suitable packet size
- availability – outlets
- suitable products
- training in use
- training in awareness
- develop extension materials (safety, choice of pesticide)
- etc.

-Demand led – EU, USA etc. residue restrictions
FUTURE of Pesticides in Africa

- Industry responsibility / stewardship
- Food chain – nematologists critical!
- Targeted use (suitable products, mechanisms)
- AWARENESS
Healthy vegetables?