PRRP – Ethiopia Newsletter

Pesticide Risk Reduction Programme - Ethiopia

June, 2012 / newsletter # 3

Welcome to PRRP - Ethiopia

We are in the midterm of the project and many activities have been taken place in the first half of this year. Several workshops were organised. Guidance documents are being developed and step by step important issues are being addressed. Part I of this newsletter gives an update of some of the activities carried out from November 2011 till now. In spring an interesting stakeholders meeting was organized on status of Rotterdam Convention in Ethiopia and Importation of Agricultural input. During the workshop the use ,impacts and alternatives to endosulfan have been discussed. Part II of this newsletter is related to the production, use status, impacts on environment and health and alternatives of endosulfan in developing countries. Please enjoy and don't hesitate to contact us!

Upgrade of pesticide quality control laboratory

The FAO donated pesticide laboratory equipment and consumable items to the Ethiopian Federal Ministry of Agriculture (MoA). The handing over of the equipment was made on April 12 between Mr. Castro Camarda, FAO Sub-regional Coordinator for Eastern Africa, a Representative from Ethiopia and H.E Ato Wonderad Mandefero, State Minister of Agriculture.

The equipment donation will enable the Ministry in implementing existing pesticide policies in the country.
The equipment is presently being installed and some of the equipment are installed and used by the national pesticide laboratory under the Animal and Plant Health regulatory Directorate of MOA.

Workshop on Human health and MRLs

In April training in occupational health risk assessment methods (notably for operators and workers) and international criteria took place, followed by a training in consumer health risk assessment methods including national diet, Maximum Residue Levels (MRLs) and international criteria on these aspects (May). First steps have been made towards setting up an assessment of risks for human health. This new item will be used to evaluate chemical pesticide dossiers for registration in Ethiopia. Both interactive workshops were animated by international consultants of the Dutch Board for the Authorisation of Pesticides (Ctgb) in close collaboration with APHRD and Alterra. Discussions and proposals have been formulated for national registration criteria and an outline for an evaluation manual for future use by APHRD has been written.

Efficacy evaluation of chemical pesticides

Progress has been made in relation to the evaluation of efficacy of chemical pesticides. In April a meeting took place which resulted in a draft guideline on acceptance of pesticide efficacy data generated outside of Ethiopia. The major feature of this guideline is the specification of an area -covering a large part of East Africa- within which the climatic conditions may be considered comparable to those employed in Ethiopia at the evaluation of pesticide efficacy.
In May 2012 a training was conducted on the general efficacy testing guidelines and protocols. All testing protocols developed to

date have been discussed and improved where necessary resulting in the documents being formalised and implemented more efficiently.

Workshop Environmental Risk Assessment

In June a workshop was held at Debre Zeyit in order to develop a scientific evaluation system for environmental risks to be used at the registration stage in Ethiopia. It was attended by representatives of the Animal and Plant Health Regulatory Directorate (APHRD), the Federal Environmental Protection Authority (EPA) and the Dutch expert on environmental risk assessment.

The selected environmental protection goals of November 2011 were reviewed and national applicable registration criteria and risk classification criteria were discussed. Moreover, during the days before and after the workshop at the APHRD office a start was made to draft the APHRD manual on evaluation of chemical pesticide dossiers. Furthermore discussion was held on how the outputs of the workshop can be formalized in regulations and guidance. The main results of the workshop were:

- Agreement on protection goals and their prioritisation as defined in November 2011
- Agreement on the concept to base the risk assessment of the different protection goals on the registration criteria of the EU and to classify the risk.
- The proposals for registration criteria and risk classification criteria for the different protection goals were agreed.
- An agreement was made to add some toxicity data on ecotoxicology on top of the existing data requirements.

Reducing risks posed by pesticide use to human health and environment in Ethiopia.

As part of the technical assistance provided by FAO, the Pesticide Stock Management System (PSMS), already in use in the country for obsolete pesticide management purpose, is being upgraded to optimize the pesticide registration process. In order to address the issue of pesticide quality, FAO has also supported the training of national pesticide analysts at Walloon Agricultural Research Centre (CRA-W), Belgium on quality testing of technical and formulated pesticides. Existing laboratories have been upgraded with high performance chromatography instruments, which are currently used to develop protocols for pesticide residues analysis under a collaboration with the national JICA-funded project.

A field survey of pesticide use covering 179 farms has been carried out. The survey showed that tomatoes and onions are the mostly treated crops in the area under study, registering up to over 15 applications per season. Mostly herbicides are used on coffee farms.

National and international experts have analyzed the issue of container management in different production sectors: migratory pests, horticulture, floriculture, cotton, coffee and malaria prevention. Their findings and recommendations for a sustainable container management will be soon available at the PRRP website.

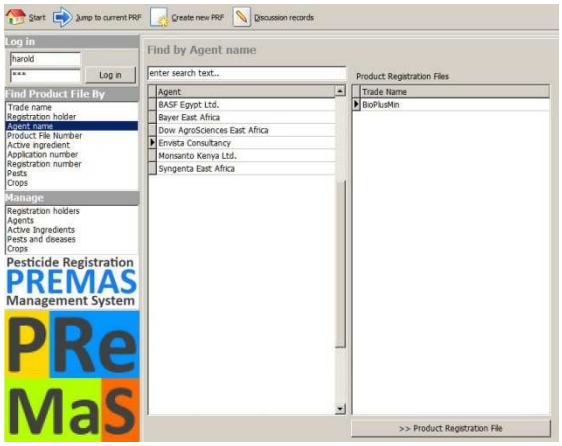
Proposed focus areas for the next future are the identification of Highly Hazardous Pesticides (HHPs) and development of mitigation strategies, promotion of Integrated Pest Management (IPM) and conducting field-based pesticide residue risk assessments to reduce reliance on pesticide use. This would in turn help to realize the production of safe food for local consumption and export trade.

PREMAS being "field-tested"

The Pesticide Registration Management System (PREMAS) is a software programme specifically developed to manage the administrative process of registering a pesticide. PREMAS allows easy tracking of the application and the status of evaluation of the registration dossier, establishes a database of basic information of each of the pesticides under evaluation, provides rapid access to contact information of registration holders, facilitates the production of standard letters, check-lists and receipts, allows real-time reporting of specific steps in the registration process, etc.

PREMAS has been developed to mirror the exact registration process and procedures applied by APHRD in Ethiopia. It is also compatible with the FAO Pesticide Stock Management System (PSMS), to allow easy uploading of registration data into PSMS.

Early April 2012, a beta-version of PREMAS was tested by APHRD staff during a workshop in Addis Ababa, problems were identified, and improvements were suggested. An updated version was then prepared and is now being "field-tested" by APHRD as part of the regular registration activities.
PREMAS is jointly developed under the PRRP by Alterra, APHRD and Envista Consultancy. More information can be obtained from Harold van de Valk (harold.vandervalk@planet.nl) or Joost Vlaming (joost@envista.nl).



Pesticide registration based on equivalence

On 9 and 10 April 2012 a workshop was organized in Addis Ababa to discuss the FAO/WHO equivalence determination procedure. This procedure can be used to assess whether a pesticide product submitted for registration, or its active ingredient, can be considered equivalent to an already registered pesticide. The objective of the equivalence determination is to facilitate registration of generic pesticides without jeopardizing product efficacy and safety.
The workshop was facilitated by Markus Müller, of the Swiss Federal Research Station at Wädenswil and chairman of the FAO/WHO Joint Meeting on Pesticide Specifications. Staff from the APHRD, the Ethiopian Institute of Agricultural Research, the Ethiopian Environmental Protection Agency and the Ethiopian Conformity Assessment Enterprise, participated.
During the workshop, the equivalence determination procedure of FAO/WHO was introduced, equivalence determination and evaluation using a number of pesticide cases was exercised, and generic pesticide registration process and procedures based on equivalence determination discussed. It was recommended to further develop a specific registration procedure in Ethiopia based on equivalence.

More information

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MoA

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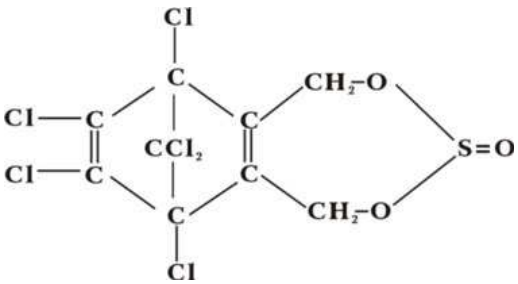
PRRP – Ethiopia Newsletter

Special topic: Endosulfan,Production & use status, impacts on environment and health and alternatives in developing countries

Newsletter # 3, part 2, special topic

Production and use status

Globally up to 20,000 Metric tonnes of endosulfan is produced every year and India, which with more than 60 endosulfan manufacturers and formulators is registered as being the world's largest producers and users. The production capacity in India is 9900 tonnes (50% of the world production). Endosulfan is a broad spectrum organochlorine insecticide that has been widely used in developing countries mainly on cotton and vegetables for the control of polyphagous insect pests , African bollworm (*Helicoverpa armigera*) and several other insect pests. Large use of the same pesticide for the control of African bollworm on cotton has been also reported in 8 of the 9 CILSS (Permanent Interstate Committee for Drought Control in the Sahel) West African member states (FAO and UNEP, 2011). According to Animal and Plant Health Regulatory Directorate database of Ethiopia, it is third in volume of import in Ethiopia, next to 2,4-D and glyphosate.



Endosulfan is the only organochlorine insecticide registered in Ethiopia (in 3 trade names: thiodan, thionex, ethiosulfan) for the control of African bollworm (*Helicoverpa armigera*) on cotton, maize, sorghum and tobacco. Although this pesticide has been approved for the above indicated pest/crop combinations in the country, illicit use of endosulfan has been reported in vegetable farms in the central Rift Valley of Ethiopia. Similar misuse in connection to endosulfan use has also been recorded in some West African countries.

Impacts on environment

Endosulfan is highly toxic to birds, fish, bees, earthworms and the environment, highly persistent in soil (DT_{50}: 60 - 8800 days) and water (DT_{50}; 35-187 days) and can be transported in the atmosphere distant from use sites such as the Arctic, Antarctic, Great Lakes, Canadian Rockies, Costa Rica rain forests, Alps and Himalayas and Mount Everest regions (PAN 2007 and 2008). Strechan et al 1980 sited in WHO (2003) also reported the precipitation of the same pesticides in Great Lakes areas of Canada and USA. Moreover, endosulfan has been found in fish in North America, Benin, Nigeria, Tanzania, Uganda and Kenya and has caused massive kills in numerous countries including Germany, Canada, USA, Sudan and is also implicated as a cause for world-wide decline of amphibians (PAN, 2007). In Côte d'Ivoire, endosulfan has been detected in 85% of the wells above the European standard for drinking water of 0.1 µg/L (PAN Africa and IPEN,2009). The maximum concentration measured in the same wells were 25 µg/L.

Figure 1 Mass death of fishes from endosulfan use (source: ejfoundation.org)

For alpha isomer and 14 µg/L. for beta isomer. On the other hand, in the Central Rift Valley of Ethiopia, around Meki and Ketar area, it was detected at 0.06 µg/l (Jansen and Harmsen, 2011), fortunately below the European standard for drinking water. Persistent organic pollutants

accounted for 1/3 of the total obsolete pesticide accumulations in the country and 3% of this total concerns endosulfan.

Impacts on human health

Table 1 Some examples of recorded problems with endosulfan.

Type of incidence	Country	Year
73 pesticide poisonings have occurred (endosulfan was the main culprits)	Mali	2001
31 to 40% of the 162 poisoning cases were due to endosulfan including 20 deaths	Senegal	2003-2004
37 people died and 36 suffered severe poisonings	Benin	Sep 1999
In one district 162 people had been admitted to hospitals and health centers	Benin	May 2007 - July 2008
Every year more than 500 pesticide poisoning cases are reported related to endosulfan	Togo	Every year
263 poisonings with 31 deaths	Sudan	1991
46 deaths	Sudan	1981-1991
Endosulfan accounted for the largest poisonings reported to poison center	Philip-pines	1991
Neuro behavioral disorders, congentital malformations in girls, reproductive abnormalities in males , cancer	India	1994

Acute effects

Endosulfan is highly toxic after oral or inhalation administration and clinical signs of acute intoxication include convulsions, piloerection, salivation, hyperactivity, respiratory distress, diarrhea and hunching (FAO and UNEP 2011).

Chronic Effects

Endosulfan is a proven endocrine disrupter and suppresses the immune system. It causes delay in sexual maturation in males or damage the reproductive system and causes chronic depression of testosterone. It also increases the risk of breast cancer among women.

The banning of endosulfan

Globally, 80 countries have banned or are phasing out endosulfan, and it is not permitted but not banned in 13 countries. However it is still used in 27 countries and no phase out is announced there.

Listing of endosulfan under Stockholm and Rotterdam convention

Based on the decision of the Conference of Parties (CoP) of the Stockholm Convention (meetin held from april 25th -29th 2011) endosulfan has been listed under Annes A, with exemptions, meaning a global ban of all production and use after 5 years (possibly extended to 10 years for some exemptions). Only India, China and Uganada have asked for exemptions for certain pests on cotton, coffee, tea, jute, tobacco, cowpeas, beans and other crops (IPEN list server through Vula, University of Cape town website). For the majority of countries, not asking for exemptions, the ban takes place in 1 year (i.e. May 2012).

Moreover, it has been decided by the CoP of the Rotterdam Convention to include endosulfan under Annex III (meeting of CoP held between June 20 – 24 2011).

Alternatives to endosulfan

Table 2: Chemical alternatives for African bollworm on cotton.

Pesticides recommended by Sahelian Pesticide Committee (CILSS countries)	Pesticides registered (approved) in Ethiopia
Chlorfluazuron, chromafenozide, flubendramide, inoxacarb, isoxathion, lufenoron, malathion, profenofos, spinosad, spirotetramat, thiodicarb	Indoxacarb, alphacypermethrin, chlorantraniliprole, cypermethrin, fenopropathrin, deltamethrin, lambda-cyhalothrin, profenofos + lambda-cyhalotrhin, spinosad

Chemical alternatives for control of insect pests on vegetables

Based on experience of CILSS countries it is suggested that the selection of alternatives to endosulfan against insect pests on vegetables should consider the evaluation and use of the pesticides that has been registered in EU so as

to allow vegetable exporters to EU import criteria.

Integrated pest management

With the technical and financial assistance of Food and Agriculture Organization of the UN, the IPM – Farmer Field School scheme was launched in the southern region of Ethiopia in 2006 and 2007.
This scheme enabled over 700 smallholder cotton farmers to minimize the damage of

cotton by bollworms, aphids, flea beetles, jassids and broad mites. This in turn allows cotton farmers to attain more production from IPM-FFS plots compared to conventional plots.

Actions by Ethiopia

In principle Ethiopia agreed to replace endosulfan with the less hazardous pesticides. Until effective alternative pesticides are available for bollworm control on cotton, endosulfan would be treated by the country according to Prior Informed Consent Procedure of Rotterdam Convention.

References

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- IPEN and PAN Africa (2009). Endosulfan in West Africa: Adverse Effects, its Banning and Alternatives.
- PAN (2007) One step closer to listing under international toxics treaty.
- PAN Europe (2007) Endosulfan fact sheet
- WHO (2003) Endosulfan in drinking water

More information

For more information you can contact Alemayehu Woldeamanual, National Project Coordinator (alemaworke@yahoo.com)

Figure 2 . Spraying of endosulfan by aircraft in middle Awash large scale cotton farm –Ethiopia
(Photo by Alemayehu Woldeamanuel)