COMMUNITY OF PRACTICE ON
HIGHLY HAZARDOUS PESTICIDES
Organized by the SAICM Secretariat and the University of Cape Town

- **Topic:** The Role of Alternatives in Phasing out Highly Hazardous Pesticides (HHPs)
- **Date:** 19th May 2021
- **Time:** 10H00 AM – 11H30 AM SAST (GMT + 2.00)
- **Presenter:** Alex Stuart, PAN UK; Sheila Willis, PAN UK; Francesca Mancini, FAO and Mark Davis, Independent Consultant
- **Facilitator:** Prof Andrea Rother, University of Cape Town
- **Chair:** Ms Tatum Louw, University of Cape Town

Introduce yourself (name, job title, organization and country) in the chat section.
Only the presenter and facilitator will speak. Any comments or questions from attendees should be typed in the chat section.
Please kindly keep you microphone muted and cameras off during the discussion.

**NOTE:**
If you are having technical issues, please join the HHP WhatsApp group, using this link, and we will assist you;
https://chat.whatsapp.com/JFbuA0TRuRZ0NAqm8JHpp0

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).
The Role of Alternatives in Phasing out Highly Hazardous Pesticides (HHPs)

Highly Hazardous Pesticides Community of Practice

Sheilla Willis (PAN UK)  
Alex Stuart (PAN UK)

Francesca Mancini (FAO)  
Mark Davis (Independent consultant)

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).
Availability of alternatives

- There may often be a perception that HHPs need to remain available because there would-be no-good alternatives. This can prove to be a misconception that may persist because of user habits or advice based on limited knowledge or by persons with interest in the products concerned. In most cases, there are alternatives that pose less risk. These may include suitable biopesticides or non-chemical pest management approaches, less hazardous chemicals, or different formulations that pose less risk. Pest and vector management based on Integrated Pest Management (IPM) and Integrated Vector Management (IVM) would be preferred. The same applies to other agro-ecologically based production systems, such as organic agriculture.
Introduction

- Finding viable alternatives to highly hazardous pesticides can either be relatively fast or require several months or years, depending on factors such as the extent to which the pesticides are in use, the complexity of the pest problem(s) and, more importantly, the resources and technical capacity available in the country acting.
Identifying alternatives to highly hazardous pesticides:

- starts with the understanding of the pest/crop problem. The need to register new pesticide active ingredients, products or specific pesticide uses, including low-risk or biological active ingredients, should always be assessed against the pest problem and within an Integrated Pest Management (IPM) approach.

- is not the mere replacement of a hazardous pesticide (or a class of pesticides) with another, less hazardous product? Pesticide history has shown the limitations of the replacement approach leading to a pattern known as “regrettable substitution”.

- is a multi-stakeholder, consultative process aimed at improving the overall crop performance and pest management strategy and it therefore involves several agricultural stakeholders including farmers, researchers, extension officers, agro-chemical industry and civil society and financing sector including finance ministry (Incentives). This means a wider process beyond pesticide management and beyond pesticide regulatory stakeholders (registrars).
Key steps in the identification of alternatives are:

1. Assess proposed or registered uses of the pesticide for which alternative(s) need to be sought
2. Evaluate crops/pests for which alternative(s) need to be sought
3. Identify potential alternatives
4. Compare alternatives and identify viable options
5. Conduct additional studies
6. Develop plan to implement alternative(s)
Replacements for HHPs need to fulfil a range of expectations to satisfy various stakeholders. These can be complex and need to be understood early in the process of removing HHPs and replacing them with alternatives in order to ensure success. Replacements for HHPs need to:

- Provide effective solutions to the pest/disease problems that the HHP previously dealt with (this might include several pest problems on different crops)
- Be equally or more readily available to farmers or other users.
- Give confidence to farmers that solutions are available and that their needs are being addressed.
Removing HHPs creates opportunities to:

- Reassess the pest/disease problems that farmers are dealing with,
- Review prevention and treatment methods that are available and
- Consider the compatibility of new pest management strategies and tools with policy directions such as
  - sustainability
  - conservation
  - climate change adaptation and mitigation and
  - SDG attainment.
Introduction to Question 1

- The aspirations listed may seem to be contradictory, but they do not have to be.
- They can be complementary and can even bring about additional benefits such as
  - Lower costs to farmers,
  - Higher prices for pesticide free produce,
  - Higher productivity resulting from higher pollinator populations
  - Other benefits.
Question 1

What is the role of alternatives in replacing Highly Hazardous Pesticides?

- Consider whether an alternative to an HHP is exclusively aimed at providing the same pesticidal action or something else in addition?
- Will an HHP be replaced by a single solution or product or could the HHP be replaced by many?
- What is needed for farmers to be assured that alternatives to HHPs are effective, available and address their needs?
- What would happen if farmers do not have confidence in HHP alternatives?

This question will be discussed for 20 minutes. Please use chat only, mute your microphone, and turn your video off.

Thank you!

NOTE:
If you are having technical issues, please join the HHP WhatsApp group, using this link, and we will assist you; https://chat.whatsapp.com/JFBuA0TRuRZ0NAqm8JHpp0
What do you understand by the concept "alternatives"?

- IPM
- lower hazard
- non-chemical
- Anything that can effectively replace another, whether it be a single or multiple alternative depends upon the problem at hand.
- They should be broad incl. existing practices and taking the total input vs harvest on board.
- A safer approach to managing the pest than the HHP being replaced, with priority being given to non-chemical agroecological methods of pest management.
- The 2 last 'R' of the 3R approach (Reduction, Replacement, Removal)

Another way to achieve a similar outcome
What do you understand by the concept “alternatives”?

- **IPM based approach which looks at whole crop health and uses pesticides as a last resort**
- **Other practices that may replace pesticides use. E.g. Use of Natural Enemies**
- **A product that is effective in providing pest management and is acceptable to farmers**
- **Understanding of alternatives is other options available with same effects to achieve desired outcome.**
- **Other available, safe, efficacious and sustainable products**
- **Other products agreed on through multi stakeholder consultation**
- **Something that can represent the existing one by doing the same function at low cost, more effectively and precisely**
- **Manageable solutions**
What do you understand by the concept "alternatives"?

- Safer and effective methods of controlling pests that have limited adverse impacts on public health and the environment
- Safer to the environment in long term
- A non-toxic way to achieve the same outcome
- For my understanding the concept of alternatives to hazardous pesticides is to have viable alternatives approaches available, with a low toxic profile, effective to regulate pests in cropping systems the hazardous pesticide is used for.
- product(s) or (importantly) practice(s) that is/are lower hazard to health and environment
- effective and safe (environmental, health) solution which fits the local farmers needs
- Safer for both human health and the environment
- Alternatives are other pest management options which should be sustainable, effective, safer, more economically viable and certainly not be ‘regrettable solutions’
- Any economically viable effective and efficient agroecological principle/method applicable on small/medium/large scale able to replace the chemical based HHPs.
What do you understand by the concept “alternatives”?

- Effective against the target pest(s), cost effective, farmer acceptability, that can be effectively managed to minimise adverse impacts.
- A product that can be used in place of another one. In the case for HHPs, this can be lower hazard pesticide, cultural methods, biological control, IPM.
- In the current context, alternatives would refer to other pest/disease management options that can replace/substitute or contribute to reduced use of an identified HHP. Preferably should be; cultural, biological, physical/mechanical methods.
- Addressing farmers' needs.
- All types of alternatives that meet safety needs and expectations, are more sustainable, and at the same time help farmers produce high quality and quantity crops.
- New ways of application technologies, e.g., mechanisation, drones.
- Alternatives are safe practises of eliminating vectors, pest and rodents. This include using safe chemicals that are less toxic.
- Holistic approach in addressing the crop-disease-pest problem taking care for the human health and environment.
- Germany, yes.
<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less toxic activities to achieve the same outcome as HHPs</td>
<td>Farmers, agroindustry, gov extension services</td>
</tr>
<tr>
<td>Industry association of agrochemicals</td>
<td>Pesticide Industry</td>
</tr>
<tr>
<td>Convenience</td>
<td>Would you see a difference between agroecology and integrated crop/pest management?</td>
</tr>
<tr>
<td></td>
<td>high efficacy - serves well a specific need</td>
</tr>
<tr>
<td></td>
<td>Germany, yes</td>
</tr>
</tbody>
</table>
Have HHPs been identified in your country? (put name of country and yes or no)

- UK, yes
- South Africa, yes
- Germany, yes
- UK - Yes
- Iran, Yes
- Rwanda - Yes
- Yes, Zimbabwe has identified HHPs and further risk reduction activities are ongoing - needs & risk assessment; identification of mitigation measures for the shortlisted HHPs
- New Zealand: no by the government, yes by PAN
- Zimbabwe, Yes
Have HHPs been identified in your country? (put name of country and yes or no)

- Recently Govt of India (may 2020) has identified 27 AIs widely used as HHPs. Many more HHPs - as per WHO/GHS/JARC/PAN - are still outside this list and are widely used in agriculture.

- UK - we have followed EU processes until now. We'll see what happens post Brexit

- Not yet - this requires also a multi Stakeholder approach to the issue of handling HHPs - in the spirit of ICCM4 resolution IV/3 - concerted efforts to reduce risks posed by HHPs

- kenya - No

- Zambia yes

- I am from Macedonia. Not aware at this point that the country is aware of this terminology or classification of pesticides and has taken any steps in this regards.

- Malawi, Botswana, Tanzania yes

- Uganda: No (not aware of an official HHP identification by the government), though through my work, last year I generated an HHP list from pesticides registered for use by our Government.
<table>
<thead>
<tr>
<th>Country</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>yes</td>
</tr>
<tr>
<td>Mozambique</td>
<td>yes</td>
</tr>
<tr>
<td>Benin</td>
<td>yes</td>
</tr>
<tr>
<td>Cameroon</td>
<td>yes</td>
</tr>
</tbody>
</table>

Note: HHP criteria 1 to 7 are straightforward identification; criteria 8 is location/use specific and needs further work and understanding.
Introduction to Question 2

- National authorities, sustainability standards and others often tell us that they are having difficulty phasing out an HHP because ‘there is no alternative’.
- When we look into the issue, we consistently find that there are multiple potential alternatives but there may be many reasons they are not accessible to those that need them.
- A pesticides regulator, for example, may only look for alternatives among chemical pesticides, particularly the ones that are already registered.
- This is understandable but means that alternative products and effective and low-cost practices might be overlooked.
- Even if these are identified it is not within a regulator’s power to disseminated skills and knowledge of new practices to farmers.
- Farmers may report that there are no alternatives, but they also lack the opportunity to do the necessary research or to test possible alternatives to make sure that they are suitable and effective for the intended use.
Question 2

How might potential alternatives be identified and who should be involved in the process of evaluating and disseminating them?

- List the stakeholders that should be involved in identifying potential alternatives to HHPs.
- Farmers are more likely to switch to an alternative when they are confident that it will work effectively. How can that confidence be built?
- Sometimes effective solutions to a certain pest are found in suites of complementary methods of control. How can they be effectively evaluated and disseminated to replace an HHP?
- How can these changes be brought about to improve the range of alternatives available to farmers?

This question will be discussed for 25 minutes. Please use chat only, mute your microphone, and turn your video off.

Thank you!

**NOTE:**
If you are having technical issues, please join the HHP WhatsApp group, using this link, and we will assist you; https://chat.whatsapp.com/JFBuA0TRuRZONAqm8JHpp0
Which institution should lead efforts to identify suitable alternatives to HHPs in your country?
Which sources of evidence should be used to identify alternatives?

- Extension services: 16
- Published literature: 15
- Farmers: 20
- Research institutions: 20
- Manufacturers: 7
- The pesticide regulatory authority: 9
- All of them: 16
- Other - specify in chat: 2
Alex Stuart (PAN UK)

Introduction to Question 3

• Many HHPs remain widely used in agriculture. Fortunately, a growing body of evidence is showing that by **working with nature** rather than against it, **agroecology** can provide farmers with safer and more sustainable alternatives to HHPs.

• Since the dawn of agriculture, farmers have benefited from the ecosystem services provided by organisms living in and around their fields, e.g. through predation

• **Agroecology** is based on applying ecological concepts and principles to optimize interactions between plants, animals, humans, and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system ([http://www.fao.org/agroecology](http://www.fao.org/agroecology))
7 Principles of Agroecology

1. Adapting to local environments
2. Building healthy soils rich in organic matter
3. Promoting biodiversity
4. Enhancing beneficial biological interactions
5. Minimizing losses of energy and water
6. Minimizing the use of nonrenewable external resources.
7. Maximizing the use of local knowledge and skills and collective action
Agro-ecological approaches for pest management

Based on three complementary strategies:

- Sustainable soil fertility management, which improves crop health and pest resistance
- Promoting biodiversity at a range of spatial scales from the field up to the landscape and thereby providing living space for natural enemies
- Specific management activities designed to prevent outbreaks or reduce their impact
Case study 1: Vegetable farming in Ethiopia

- **Context:** Smallholder vegetable production in Ethiopia’s Central Rift Valley (Ziway district)
- **High reliance on HHPs:** 18 of 28 active ingredients (64%) in use by survey respondents qualify as HHPs
- **High spray frequency:** Onions, average spray frequency: 12-22 times; Cabbage 20 times. Tomato at least 20 times
- **Health & environmental impacts:** In 2018, 20% of smallholders reported at least one personal pesticide poisoning incident or affecting a family member in the last 12 months.

PAN Ethiopia/PAN UK project 2018-2020 to reduce HHP use via agroecological alternatives

- Field trials to test the ‘food spray’ method
- Farmer Field School training and validation via FFS comparison plots with Farmers’ Practice
- Almost 600 farmers trained and 23 local government extension staff
# Agroecological methods for managing pests

<table>
<thead>
<tr>
<th>Method</th>
<th>Pest management aims and comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat borders of alfalfa</td>
<td>Provides refuge and breeding sites for natural enemies from early in the season</td>
</tr>
<tr>
<td>Application of food sprays (made from waste brewers’ yeast)</td>
<td>Attracts predatory insects by mimicking the odour released by their plant-feeding prey</td>
</tr>
<tr>
<td>Application of neem seed extract</td>
<td>Mainly repels pests but it can also repel natural enemies so it is best to apply only when food sprays alone fail to give enough control.</td>
</tr>
<tr>
<td>Avoiding HHP insecticides harmful to natural enemies</td>
<td>Many broad-spectrum insecticides will kill natural enemies or disrupt their performance. Only using insecticides as a last resort and selecting those such as spinosad, which are less harmful to natural enemies.</td>
</tr>
<tr>
<td>Applying vermicompost at transplanting and/or as a side dressing in mid-season</td>
<td>High levels of synthetic nitrogen applied produce soft, sappy foliage attractive to sucking pests in particular. Vermicompost can help reduce volumes of synthetic fertiliser. Helps conserve soil moisture and can reduce plants suffering from drought stress</td>
</tr>
<tr>
<td>Sanitary pruning of mined, older and yellowing leaves</td>
<td>Removes some pest larvae and reducing pest survival in soil and leaf litter</td>
</tr>
<tr>
<td>Thorough clean-up of all crop waste after harvest and removal from field</td>
<td>Reduces survival of pests which pupate or shelter as adults in crop waste</td>
</tr>
</tbody>
</table>
### Pesticide use in 3 seasons of field trials on tomato:

<table>
<thead>
<tr>
<th>Trial date/site</th>
<th>Treatment plot with food spray # applications</th>
<th>Conventional chemical plot # applications</th>
<th>Synthetic insecticide frequency reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 rainy season</td>
<td>Food spray x 10 Neem x 0 Insecticides x 0</td>
<td>Profenofos x 2 Spinosad x 7</td>
<td>100%</td>
</tr>
<tr>
<td>2019 dry season</td>
<td>Food spray x 7 Neem: 2 Insecticides x 1</td>
<td>Profenofos x 3 Spinosad x 2</td>
<td>80%</td>
</tr>
<tr>
<td>2019 rainy season</td>
<td>Food spray x 3 Neem x 4 Insecticides x 1</td>
<td>Profenofos x 3 Spinosad x 2</td>
<td>60%</td>
</tr>
</tbody>
</table>

Using the ‘food spray’ method to attract predatory insects into farmers’ fields

Successes in large and small scale cotton in Australia, Benin, Ethiopia, Uganda using ‘Farmers’ Friends’
Change in key economic indicators for agroecological production compared with Farmers’ Practice, averaged over seven FFS plots during 2019-2020.

<table>
<thead>
<tr>
<th>% change vs Farmers’ practice</th>
<th>Onion</th>
<th>Tomato</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>+1%</td>
<td>-4%</td>
</tr>
<tr>
<td>Pest and disease management costs</td>
<td>-60%</td>
<td>-73%</td>
</tr>
<tr>
<td>Total production costs</td>
<td>-8%</td>
<td>-20%</td>
</tr>
<tr>
<td>Net income</td>
<td>+6%</td>
<td>+7%</td>
</tr>
</tbody>
</table>
Case study 2: Coffee without endosulfan

- 20 certified farms owners of small, medium and large scale were interviewed in Colombia, Nicaragua and El Salvador.
- All had succeeded in eliminating endosulfan use and many had been able to avoid or greatly reduce the use of other HHPs.
- 56% no longer used chlorpyrifos or other insecticides and none of these were organic farms, suggesting that avoidance of HHP insecticides is feasible when insecticide reduction is an aim of the farmer.
- All farmers were implementing at least two agroecological methods (regular sanitary picking of berries, biopesticides and/or trapping with methanol/ethanol).
- Regular monitoring of fields was also deemed important to assess CBB levels and make informed decisions on timely control practices.
Agroecology – the benefits

- Improved health and nutrition
- Improved food and livelihood security
- Conservation of biodiversity and natural resources and sustaining critical ecosystem services
- Increased economic stability and ecological resilience
- Mitigation of climate change
- Increased social resilience and community capacity
Question 3

From your experience, what are the barriers to replacing HHPs with agroecology? Please share any examples of successful interventions to overcome these barriers.

This question will be discussed for 25 minutes. Please use chat only, mute your microphone, and turn your video off.

Thank you!

NOTE: If you are having technical issues, please join the HHP WhatsApp group, using this link, and we will assist you; https://chat.whatsapp.com/JBuA0TRuRZONaqm8JHpp0
What do you think are the biggest reasons for HHP use in agriculture?

- Risk aversion: 2
- Low cost: 6
- Subsidies: 0
- Lack of knowledge on alternatives: 14
- Weak extension services: 1
- Successful promotion by agro-dealers: 9
- Other - specify in chat: 2
- 0
Are you aware of any agroecological practices being applied in your country?

- Yes: 16
- Not sure: 4
- No: 1
How can agroecology be better supported?

Multiple choice

- Training: 8
- Better resource: 3
- More availability of inputs such as biorealisals and seeds for intercrops: 0
- Financial incentives: 4
- Supportive policies: 7
- More research: 3
- Other - specify in chat: 0
- 0
THANK YOU for attending the second Highly Hazardous Pesticides CoP Discussion for 2021!

Please fill out the following survey to give feedback on today’s discussion:

https://forms.office.com/Pages/ResponsePage.aspx?id=NUNFkk5Wz0ywsCREW4wD92pVK-1gQzNHlYW4qnca1WNUNIdUT1o2VjRVTA1N0EwRkpFMzhVQThTSyQIQCNOPWcu

SAVE THE DATE FOR DISCUSSION 3:

DATE: 15th September 2021
TIME: 14h00-15h30 (GMT +2)
TOPIC: TBC