

COMMUNITY OF PRACTICE ON HIGHLY HAZARDOUS PESTICIDES

Organized by the SAICM Secretariat and the University of Cape Town

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DISCUSSION 3 DIGEST

Topic of Discussion: Alternatives in Phasing Out HHPs: Industry innovations and the Substitution process

INTRODUCTION

This discussion aimed to promote engagement with and an understanding of alternatives to highly hazardous pesticides (HHPs). This was the second discussion on HHPs focusing specifically on industry innovations for transitioning to low toxic alternatives and how to use the substitution process to guide decision making on HHP and when no alternatives are available.

ABOUT THE PRESENTERS



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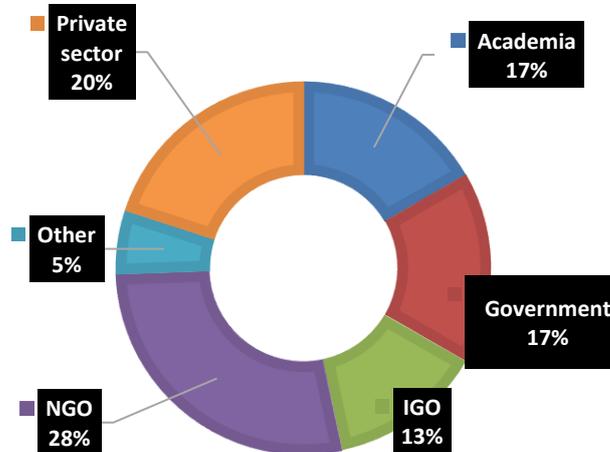
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2021 DISCUSSION 3 ATTENDANCE BREAKDOWN

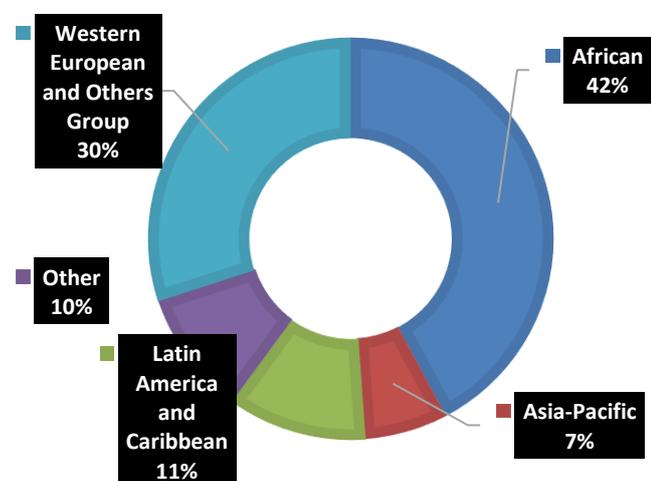
DISCUSSION
3 2021
TOTAL
ATTENDEES:
90
Female: 37
Male: 52
Other: 1

KEY:
IGOs - Intergovernmental organisations
NGOs - Non-governmental organisations

SECTOR REPRESENTATION



REGIONAL REPRESENTATION



2021 Discussion 3 Summary Points and Looking Ahead

From this discussion, the following key points were discussed and should be addressed and incorporated into the international discussions and work on HHPs:

1. In the **African and Eastern European region**, a key comment was that all stakeholders in the life cycle (e.g., NGOs, universities, agro-ecology certification bodies, importers of HHPs, agricultural research institutions, farmer organisations, farmers, agrochemical dealers, community leaders, retailers) should be engaged when decisions on viable alternatives to HHPs are made.

Among the stakeholder suggested in the African region, participants emphasized the involvement of the various government authorities. The most mentioned government department was the Ministry of Agriculture and the Ministry of Environment. However, a barrier that could exist is not having governmental buy-in. This therefore could hinder their engagement in identifying HHPs. On the other hand, barriers for small-scale end-users were not having sufficient knowledge on viable alternatives to be engaged in consultations.

In **Asia and the Pacific region**, participants commented on the involvement of start-up science-based companies in identifying and introducing alternatives to HHPs. In the region, despite the introduction of alternatives, HHPs are still used.

Lastly, participating members from the **Western European and other regions**, commented that for stakeholders such as non-governmental organisations, small companies and civil society, the financial capacity to conduct research and testing viable alternatives is a barrier. In addition, in the region, members were concerned about counterfeit products entering the market. Therefore, it was suggested that governmental stakeholders such as law enforcement and police authorities be key stakeholders in the process of consulting for alternatives and managing the process thereafter.

2. Participating members were asked what the important steps were for farmers to transition from HHPs to alternatives. There was a consensus that despite the existence of alternatives, many farmers are hesitant to use alternatives because they are not aware of the benefits they will have for their crops. Therefore, promotion and awareness of HHP alternatives were suggested as an important step towards helping farmers transition from HHPs to alternatives. The second important step discussed was appropriate timeframes. Participating members commented that for farmers to transition from HHPs to alternatives, they must implement new strategies and assess the outcomes, and this will take time.

From the poll responses, a range of stakeholders were identified that are needed to ensure the success of the transition away from using HHPs. These were:

- Government officials (e.g., government departments responsible for legislation and enforcement; Ministries of Agriculture, Health and Environment; Department of Forestry and Fisheries; Department of Health, Labour, Transport, Agriculture; Customs; Policymakers from relevant institutions; Customs; Certification bodies for agroecology)
 - Researchers (e.g., academia - studies showing data on the alternatives results; University extension scientists).
 - End-users (e.g., consumers, retailers, farmers)
 - Industry/Private sector
3. Members were asked what is required for innovative crop protection tools and approaches to be successfully incorporated into IPM approaches by farmers. Amongst the different sectors represented, a lot of discussions was held on the use of drones. Drones were discussed as means of precision agriculture, surveillance, chemical management and using drones to use fewer pesticides. However, members representing the NGO sector and government raised concerns of access to technology, the financial capacity to sustain drone usage and permits could be a challenge. Industry representatives pointed out that in Asia there has been a dramatic

rise in entrepreneurs using drones to provide crop protection services for significant numbers of smallholder farmers.

For a more detailed summary of the discussion, see the Annex below.

ANNEX

DETAILED SUMMARY OF DISCUSSION 3 2021:

Disclaimer: The information in this digest represents the opinions of members participating from different stakeholder groups expressed during the discussion. The views expressed in this document do not necessarily represent the opinion or the stated policy of the United Nations Environment Programme, the SAICM Secretariat, the GEF or UCT, nor does citing of trade names or commercial processes constitute endorsement.

THE DISCUSSION WAS STRUCTURED AROUND THREE QUESTIONS AND THE KEY DISCUSSION POINTS ARE PRESENTED UNDER EACH.

Question 1: Which stakeholders in your country or region are available to the authorities (regulators) or could be engaged with for consultation during decisions on viable alternatives to identified HHPs? Are there any barriers to these engagements?

REGION

AFRICA

Sudan

- The Ministries of Agriculture and Forestry, the Ministry of Health and the Ministry Environment are the authorities that can engage in consultations when decisions on viable alternatives are identified HHPs.

Rwanda

- Ministry of Environment, Ministry of Agriculture, Rwanda Agriculture Board, Rwanda Standard Board, Rwanda Environment Management Authority.

Kenya

- All the stakeholders in the life cycle should be consulted.
- Agrochemicals Association of Kenya (industry), Ministries of Trade, Environment, Health, and agriculture, National Environment Management Authority, Kenya Revenue Authority, Farmers and their associations, NGOs, Academia, Anti-Counterfeit Authority etc.

Zimbabwe

- Agricultural research institutions, farmer organisations, farmers, agro-chemical dealers, community leaders and retailers should be involved. However, barriers for their engagement may exist such as a lack of adequate knowledge for most smallholder farmers to adopt the new alternatives.
- In Zimbabwe there are some HHPs already banned by the Zimbabwean government. The enforcement in Zimbabwe should empower the police or the Ministry of Agriculture inspectors to have penalties (fine or imprisonment) for stores selling HHPs and individuals using it.

Zambia

- Ministry of Health, Ministry of Environment, Ministry of Local Government, local authorities, Zambia Environmental Management Agency, Zambia Bureau of Standards, Ministry of Agriculture, Human Rights Commission in Zambia, Ministry of Finance. Faith Based Organisations, Zambia Institute of Environmental Health, NGOs

on Environment and Health, Ministry of Commerce, Trade and Industry, Farmers Unions, Education as well as Policy makers and Traditional Chiefs. Political buy-in will be necessary for the country to support the enforcement process.

ASIA AND THE PACIFIC GROUP

Iran

- In recent years there has been start-up companies (i.e., science-based companies) who introduced innovation activities to help different problems of the country including use of some alternative methods for agricultural pest control.
- Despite various methods tried over the years (e.g., neem tree *Azadirachta indica*, trainings on agroecology and integrated pest management (IPM)), HHPs are still used, especially in low to middle-income countries (LMICs) due to compounds being exported from EU countries as regulations stop at the border.

EASTERN EUROPEAN GROUP

Armenia

- NGOs, universities, agro-ecology certification bodies, importers of HHPs.

WESTERN EUROPEAN AND OTHERS GROUP

Italy

- A big barrier is limited funds for researching and testing alternatives. Creators of alternatives expect similar financial gains to those made by chemical pesticide producers and are not often motivated to share their methods for free.

Germany

- For civil society, NGOs, and science institutions there is a barrier in finance and personnel resources, especially in the asymmetry compared to the huge financial and personnel resources employed by multinational industry companies. There is no equal playing field.

Belgium

- It is important to ensure banned HHPs are not replaced by counterfeit or illegal versions of the HHPs. Otherwise, removing HHP will have no impact if criminal counterfeiters fill the void. Police and enforcement agencies must be aware before removing HHPs that the risk is illegal products entering the market.

HHP IDENTIFICATION

The FAO registration toolkit guides countries on how to use the JMPM criteria for HHP identification. Here is an example of Criterion 8: <http://www.fao.org/pesticide-registration-toolkit/special-topics/highly-hazardous-pesticides-hhp/identification-of-hhps/hhp-criteria-8/en/>

Poll 1: How could enforcement support the decisions on HHPs made by the authorities (regulators) in your country? Propose 2-3 major activities linked to the decisions and list your country. (N=17)

1. Enforcement in LMICs is a myth. **Help from the FAO, WHO**, etc. is needed to redefine enforcement for LMICs and to ensure it is really enforced.
2. Enforcement would need to **address identified HHPs** as illegal products are likely to make their way into countries.
3. Enforcement **could encourage participation from many farmers** especially those belonging to legal formal bodies like farmer organizations.
4. In LMICs authorities need to be aware of the importance to reduce HHPs. Awareness will allow authorities to **promote the reduction HHP use**.
5. **Easy control of illegal use** of non-registered pesticides (HHPs).
6. For small countries (e.g., Armenia) enforcement of the national legislation is not a concern, it is mainly about **controlling imported HHPs**, as the problem lies in the list of HHPs that are still allowed and are prohibited in many countries (EU).
7. Since enforcements come with **a penalty, it will encourage users to avoid it** and as a result, end the use of HHPs.

8. Frequent controls and measurement of soils, waters, and products to **detect if banned HHP are still used** is necessary. Enforcement authorities like douane and trade authorities need capacity building to understand and have the necessary personnel resources.
9. Enforcement could **help authorities confiscate** goods containing HHP.
10. Enforcement encourages farmers and consumers to **comply with the decisions by regulators**.
11. Challenges to enforcement is that involved staff are often not qualified, underpaid, understaffed, and not supported by police or military authorities. **Need for sufficient resources and capacity building** in many countries.
12. In Germany, clear legislation is necessary to forbid creating and selling items abroad which are already banned domestically. In addition, these **companies need to be stopped from dumping banned pesticides** elsewhere.
13. Awareness for activities to **make competent authorities aware of the importance of reducing HHPs**.
14. Activities should be performed by the competent authority to **make farmers and related stakeholders aware**.
15. Alternatives should be piloted to **show the effectiveness to farmers**.
16. In Kenya, the **illegal use and illegal importation of banned pesticides is a concern**.
17. **Share information with all stakeholders** related to the topic.

Poll 2. Propose three critical steps in a possible process, including timelines, to phase out or minimize the use of HHPs still on the market in your country or region". List country/region in response. (open-ended) (N=20)

Iran: (n=3)

- A special team of 3-4 scientists working in connection with the Ministry of Agriculture and Ministry of Health. The FAO, WHO, SAICM, BRS, should control and deal with enforcement issues in the field.
- A special team of 3-4 scientist (entomologist, chemist, ecologist) to look for alternatives in labs and globally.
- Evaluation team consist of high-level scientist reporting to the president/ vice president of Iran.

Costa Rica: (n=3)

- HHPs regulation.
- Less toxic alternatives are available.
- Training on IPM and alternatives.

Zimbabwe: (n=8)

- Consultations, decision and action to de-register and phase-out.
- Identify HHP(s) (3 months), identify viable existing alternatives (6-12 months), set target elimination date that enables alternative solutions and adoption (<3 yrs).
- Consultation with relevant ministries, drafting and issuing notification.
- Minimize the registration time.
- Stop using the product in the country.
- Short survey on actual use of HHP (e.g., 03 months).
- Information of farmers about alternatives and its efficiency based on pilot project (e.g., 1 year)
- Enforcement and advocacy on alternatives.

Armenia: (n=3)

- Improve registration schemes especially the capacity to assess risks.
- Conduct needs assessment to establish the extent to which a product is required for use.
- Information about effective alternatives.

Other: (n=3)

- Identification of HHPs.
- Deregistration.
- Regulation for avoiding importation of HHPs.

Question 2: What are the important steps that need to be taken so that farmers can transition from HHPs to alternatives?

Increased capacity

- Realistic transition of the farmers from using of HHPs to better alternatives will require the appropriate tools, information, and organization.
- The type of technology needed should be considered including the accessibility, affordability, and ease of use of it.
- Financial and technical support is necessary for farmers (especially small-scale farmers) to transition from HHPs to alternatives.
- Support innovators of alternatives to HHPs. Provide subsidies to farmers using alternative inputs.

Financial support

- There should be an allocation of sufficient funds from budgets to introducing alternatives. In Sudan many projects using pesticide alternatives stopped due to institutional and financial problems.

Taking local conditions into consideration

- Demonstrating the effectiveness of alternative methods under local conditions should be done. Thereafter, results should be appropriately communicated to farmers.
- Local research and development to demonstrate the alternatives should take place, particularly, to avoid 'regrettable substitutions' which may bring poor results and hence disengage potential users, or even cause unexpected hazards or damage to users or the environment.

Appropriate management

- The biggest challenge is moving from a mindset of quick fixes to one of meticulous management.

Stop exportation of HHPs to LMIC

- A wide global decision made by the European Union and other high-income countries (HICs) should be made to stop exportation of HHPs LMICs.

Farmer field school (FFS)

- FFS should teach farmers about health and environmental dangers of HHPs, agroecology and IPM, values of pesticidal plants (there is approximately 2000 pesticidal plants on the

planets:

https://newsletters.agropages.com/x/c/?BcFRCoAgDADQq3SBtFZDCfbXb4cYKSpRQICl1.v7YRSCBCsPDR0M5gBJdOExkqkWOu9aN1aUxye6_bgX7VfRRcO.KXTa_crp9yDARVrEUfrtuZ0Hh3_A71

- FFS should be used to disseminate information, training, and awareness creation.

Promotion and awareness

- Organizations, along with other local government agencies should organize a recognition activity that includes practitioners of organic agriculture or safer alternatives in farming. This will promote awareness and an avenue for exchange of practices.
- The first step should be to create an understanding and acceptance of the dangers and disadvantages of using HHPs. Thereafter, alternatives should be introduced. The benefits of alternatives for farmers will demonstrate how effective they are.
- There should be awareness on the impacts of HHPs to smallholder farmers health and the environment.
- The first step is to raise awareness amongst the users on the use of the alternatives and its benefits.
- As farmers want interventions that work, they need to see that alternative increased other crop yields.
- Despite good seed treatment practices existing and being cost-effective (e.g., use of Azetobacter, PSB etc), uptake is poor. Therefore, more awareness should be raised on the existence and cost of it.
- The first step is to communicate and encourage farmers to accept transformation to alternatives until they see the benefits.
- A programme on education, training and awareness raising on HHP for the public is necessary.
- Awareness of HHP hazards, and how alternative methods function should be incorporated into school curriculums.

Use of JMPM process

- The JMPM process should be used. Once an HHP has been identified, mitigations such as precision application, lower risk formulations, etc., should be considered.

Information sharing and training

- For small-scale farmers, information about alternatives and training thereon would help to introduce them to alternatives.
- Farm extension services (when/where available and with means toward support) could be essential towards rapid knowledge and fostering adaptation based on national circumstances as well as international resources.

Availability

- Alternatives should be made more easily available to small-scale farmers.

Availability of information by industry

- When products are registered, post-marketing data on performances, environmental health and safety results is collected and reported by producers. This helps users (e.g., farm workers), and consumers build core factual intelligence. Furthermore, it allows for comparing with other products and processes.

Multi-stakeholder approach

- It takes education, empowerment, and collaboration to identify, and seek steps towards greener and safer solutions. However, it must be accompanied by vertical and horizontal commitments towards compliance.
- It is important that there is a multi-stakeholder and co-ordinated approach to avoid mixed messages to farmers. Stakeholders include but are not limited to, the relevant government departments, farmers, pesticide industry (manufacturers and others in the food value chain), regulators, agro-dealers extension, and NGOs.

Approaching pesticide dealers

- Since small-scale farmers receive their information from Pesticide dealers/retailers, they are important stakeholders in helping phase out HHPs.

Appropriate timeframes

- Time is needed to conduct appropriate research, for education, and accessibility.
- For a farmer population to adopt an innovation- time is needed considering good/bad year (weather, yield, marketing); time to share good practices (farmers trust most the good experience of their peers), time for government to enforce, etc.
- Time is needed to set-up regerminations in Africa as banned HHPs from EU or the USA is frequently sent to African countries.
- Five years is necessary based on the time it takes to develop a track record of success for new technology, demonstrate benefits, and subsequent adoption.
- Five years is acceptable as farmers need to implement new inputs, especially where habits in agricultural production exist. Additionally, low literacy amongst farmers is a barrier that needs time to overcome.

Acknowledging farmers existing skills

- There is often an under-estimation of farmers' capacity. Many farmers are knowledgeable and wise and can adopt factors, such as adoption of effective tools that can help with the transition from HHPs to alternatives.
- It has been reported that there are cases where HHPs have been removed from use, even over a short time, there has never been a case of increased losses to pests following that ban. Farmers, their advisors, and input providers always find solutions when they are needed.

Sustainable alternatives

- To incorporate innovative tools and approaches of IPM, it is necessary that the approach is safer to use, safer to the environment, effective to use, easy to use, cost-effective, sustain for long time and meet the expectation of the farmer.

Poll 3: To ensure the success of the transition away from HHPs which stakeholders should be involved and why? (N=26)

Iran: (n=3)

- Government ministries that work with importing pesticides need to prevent HHPs from entering the country.
- Local NGOs and community workers need to raise awareness and report on HHPs that have been prevented from being imported into the country.
- Academia and governmental scientist.

USA: (n=3)

- Growers should be at the centre of it.
- Industry, Crop Advisors, Authorities, Academics, IGOs.
- University extension scientists to train on to effectively use the new technology and educate on the benefits

Armenia: (n=3)

- AWHHE NGO and government for legislation and enforcement.
- Certification bodies for agroecology - cooperation with farmers.
- Small-scale farmers - info, awareness, training; greenhouse enterprises- owners (alternatives, economic and social gains).

Sudan: (n=1)

- Ministries of Agriculture, Health and the Environment are the authorities should be involved, because they are responsible bodies of pesticides practices and safety in Sudan.

South Africa: (n=1)

- Various departments involved with chemical management in the country (Department of forestry, fisheries & the environment, department of health, labour, transport, agriculture).

Rwanda: (n=1)

- Awareness and policy advocacy to engage government institutions and other key stakeholders such as researchers is necessary.

Germany: (n=1)

- EU and national ministries who give the laws.

Other: (n=13)

- Important is making farmers aware of how an alternative model could work for them, and the health hazards caused by using HHPs.
- Farmers experiences are invaluable and will inform interventions.
- Alternatives should be practically shown to farmers.
- Policy makers should provide adequate support for the transition.
- Research/academia - studies showing data on the alternatives results.
- Farmers, policy/decision-makers, and consumers.
- Group of farmers to facilitate adoption by seeing success or issues.
- End-users, policymakers from relevant institutions, pesticide manufacturing companies should be involved.
- Poison manufacturers greatly influence farmers' decisions, they invest a lot of money in convincing farmers, governments, and civil associations.
- Farmers, importers, distributors, retailers, universities, investigation institutions, Ministry of Agriculture, Ministry of Environment, Ministry of Health, Customs, care of the environment organize civil society.
- We need a responsible industry.
- All stakeholders along the pesticide life cycle including farmers, traders, policy makers and even consumers have a role to play. The farm-to-fork approach would be very relevant here.
- The precautionary principle must be applied.

Poll 4: In your opinion, how long would it take more than 50% of a farming population to identify, develop, and adopt a new innovation or methodology? (N= 32)

From the responses to the poll:

- 6.25% said 1-2 years
- 59,37% said 5 years
- 18,75 said 15 years
- 6.25% said 15+ years
- 0% said they don't know.

Question 3: What is required so that innovative crop protection tools and approaches are successfully incorporated into IPM approaches by farmers?

SECTOR	PARTICIPANT RESPONSES PER SECTOR
Private	<p><u>Education and training</u></p> <ul style="list-style-type: none"> ➤ Education and training are key. As an example, many years ago in Brazil, farmers were asked what the barriers were to adopt a biopesticide and many advised that they wanted a better understanding of how it works, how to use it and the effectiveness thereof. ➤ Education and training are required to help farmers understand how the technology (e.g., insect protected crops such as Bt Brinjal and Cowpea) can be effectively integrated into an IPM program. ➤ The effectiveness should be demonstrated to farmers (and adaption following their feedback). ➤ Participatory farmer research on demonstration of effectiveness of alternatives, training and education is key to effective replacement of HHPs. <p><u>Drones</u></p> <ul style="list-style-type: none"> ➤ Some examples exist of drone and precision agriculture uses in small farms. ➤ Drones can be used for surveillance. Being able to evaluate fields to identify if there is even a pest problem and then to be able to pinpoint the application site (versus entire fields) and effective timings to apply whatever option may work. ➤ Drones would be a best fit for large scale applications as opposed to small-scale farmers. <p><u>Innovations</u></p> <ul style="list-style-type: none"> ➤ Technology needs to be beneficial to people. It should consider their culture, environment, and end-users expected involvement. If this is not done, it will be an irresponsible innovation. ➤ Innovations can be very useful to the resource poor farmers given that they cannot afford them. <p><u>Improved active ingredient</u></p> <ul style="list-style-type: none"> ➤ Improved active ingredients and formulation should be introduced. <p><u>Chemical use</u></p> <ul style="list-style-type: none"> ➤ Some farmers recognize that some pests require chemical treatment and cannot rely on alternative means of control. For HHPs in LAC, risk mitigation training has been key in allowing farmers to safely use of chemicals. ➤ The perception in Kenya is that some diseases require chemical pesticides. <p><u>Cost-effective safer strategies</u></p> <ul style="list-style-type: none"> ➤ Accept that safe strategies that lead to pest control do not have to come at a price or be patented.
Non-governmental organisation	<p><u>Addressing challenges for farmers:</u></p> <ul style="list-style-type: none"> ➤ Precision agriculture is beyond the reach of smallholder farmers. ➤ Drone technology - it's not permitted in India; if it's ever permitted, smallholder farmers will have difficulty adopting. (e.g., of endosulfan poisoning aggravated by spraying by helicopter). ➤ We cannot compare European farmers with poor smallholder farmers in India or other countries. ➤ Money. It seems beyond impossible that the solutions promoted by CropLife and the chemical industry could be adopted in most LMICs. ➤ Ensuring that drifts coming from drones used in pesticides applications in monocrop plantations are regulated or do not affect or contribute to the threat on the health of the communities near these monocrop plantations (Communities within Comocrop plantations or near monocrop plantations).

- Access to these technologies and alternatives.

Agroecology

- Agroecology is the best way to phase out HHP.
- In Armenia, overall, alternative approaches are being promoted, and organic farming is a priority for the Ministry of Agriculture. IPM initiatives in Armenia are implemented at the level of individual initiatives of international organizations for about two decades. No significant progress has been seen due to lack of knowledge and interest from farmers, lack of consumer awareness, certain implementation difficulties and other reasons. There are some initiatives of various organizations that contain components and methods of agroecology. The Agrarian University offers graduate degrees in agroecology. There is a local certification body that provides organic certifications recognized in the US, Canada, EU and Switzerland markets, as well as in the Caucasus. Law on the Organic Agriculture has been in effect since 2009.
- In collaboration with researchers, training activities should be done for farmers on agroecology approaches and practices.
- Creating a networking farmer on agroecology.

Precision agriculture

- Precision agriculture sounds innovative considering precision irrigation is a revolutionary development.

Legislation

- It important to establish a legally binding instrument to ban HHPs.

Academic

Digital agriculture

- One important issue that should not be forgotten is “Digital Agriculture” (DA), DA exists and surely have some help for an efficient IPM.

Drones

- Less use of total pesticides by using drones, and we need new definitions for pesticide regulations by using this technology.

Green pesticides

- Pesticide formulations can play a big role. There is already sophisticated progress for new formulations. We already have good news about many different efficient “biopesticides” as well as green and Sus. Chemistry sectors are all trying to use fewer toxic compounds.
- Toxicologists (life based) should be given priority in all.

Biopesticides

- Insects and plants coevolved with each other for 100s of million years and there are still lots of pesticidal plants to be used efficiently like Azadirachtin, Pyrethrins, etc. In some cases, like Pyrethrins, and Azadirachtin had remarkable relationships.
- IPM, Biopesticides and botanicals.

Awareness

- It is important to let farmers know that many of the pesticides used are banned for use in the Global North, but companies based in the Globally North can legally produce these to export to the Global South.

Government

Training and accessible information

- The information must be easily accessible by all farmers and therefore training is key.
- “Slow and better” could be an important requirement for bio-based development. While the private sector is taking risks toward more customized approaches (incl. microcapsulations/biologics/etc).

Consideration of local circumstances

- Depending on local circumstances, and crop production, innovative solutions could be part of the toolbox.

Drones

- Chemical management in relation to farm workers, food production, consumption should be considered.
- Pesticides delivered by drones would need to be serviced by crop protection experts (e.g., in terms of products to use, period/location, as well as product compliance). Hence, the farm community would need solid participation/support and to take "ownership" in contracting/using/ and anticipated results.
- Drones are used in Sudan by Plant protection Directorate in monitoring Desert Locust, particularly in Surveys.
- Drone technology requires special permits in Kenya.

Poll 5: Which of the six innovation(s) do you think are viable as alternative uses to HHP use in your country? (N= 31)

Biological pest control (n=15):

- Biological pest control, biodynamical agriculture with controlled audits.
- Biologicals as part of an IPM/agroecology approach.
- Biological Pest control and biodynamical agriculture.
- Biologicals, inoculants, formulations are the most alternatives currently in use in Sudan.
- Biological control.
- Biological pest controls.
- Biological, improved active ingredients and formulations and Insect protected plants.
- Botanicals.
- Biologicals and Precision agriculture.
- Biology control.
- Biopesticides are used extensively in Colombia in the context of IPM and it is widely recognized that chemicals cannot always be substituted. Some HHPs may still be needed and used under rigorous risk mitigation practices.
- Biological pest management and IPM to farmers through FFS as alternatives.
- Biocontrol, IPM, improved pesticide formulations, biotech (pheromones).
- Insect protected crops and there are many examples already to recue application of high-risk pesticides and support adoption of IPM (e.g., Bt cotton, Bt corn, Bt Brinjal, Bt Cowpea).
- Mixed crops growing together in a natural environment and helping each other, such as the Three Sisters mais, squash and beans or cocoa and coffee in a forest canopy setting.

Agroecology and IPM (n=5):

1. Agroecology.
2. Agroecology is the best way to phase out HHP.
3. AWHHE Armenia: IPM, agroecology, organic farming (these are initiatives that are being actively used/promoted).
4. IPM.
5. Ecological agriculture (agroecology).

All six innovations (n=3):

1. All of them should be considered, as effectiveness and availability need to be addressed to ensure adoption in a holistic manner. IPM should consist of a toolbox for the farmer to draw on when pest challenges arise.
2. A combination of all the six would be more viable.
3. All innovations could be viable - even though maybe not for all uses and all farmers everywhere, all of them could be considered as safe(r) tools and alternatives.

Other (n=8):

1. Computational chem, big data, formulations, newly developed biologicals, drones. Control environment crop production.
2. Bio-pesticides.
3. Less toxic active ingredients and formulations.
4. Start with the concept of not poisoning food.
5. The options must all be put forward so that the farmers are able to adopt whichever option they understand better. The farmers need to be comfortable with the effectiveness and ease of use of an option.
6. Unfortunately, these are not innovations that have real potential. They are driven by the legitimate desire of CropLife to make their business thrive. Reducing pesticides use and phase-out of HHPs are key drivers a responsible agrochemical industry.
7. Ban large industrial agriculture multinational companies.
8. Another innovation is to shorten the food chain which means less meat and more plant species on the menu.

Poll 6: In your opinion, could the CropLife innovations presented be incorporated realistically into IPM approaches by farmers in your country? (N= 31)

From the responses to the poll:

- 35% said yes
- 12,9% said no
- 41,9% said some could
- 9,6% I do not know

Useful Resources:

1. [Plant Production and Protection Division: Highly Hazardous Pesticides \(HHPs\) \(fao.org\)](https://www.fao.org/)
2. [Sustainable use of pesticides \(europa.eu\)](https://www.europa.eu/) (recent evaluation 2021)
3. [The information campaign on safe pesticide management - Säkert Växtskydd \(sakertvaxtskydd.se\)](https://www.sakertvaxtskydd.se/)
4. E.M. Rogers Diffusion of Innovation (1962), updated summary [here](#)
5. <https://croplife.org/news/7-innovations-that-could-save-our-planet-2/>
6. <https://croplife.org/crop-protection/innovation-in-crop-protection-products/>

HHP COP: The Secretariat of the Strategic Approach to International Chemicals Management (SAICM) and the Environmental Health Division at the University of Cape Town (UCT) created this Community of Practice (CoP) to foster online discussions and address key issues related to Highly Hazardous Pesticides (HHPs) among stakeholders from governments, international organizations, industry, academia and civil society. This CoP is contributing to the SAICM/GEF project on Emerging Chemicals Policy Issues Knowledge Management Component.

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Join the SAICM/UCT HHP CoP at: <https://saicmknowledge.org/community>

If you have any questions or require clarification on this initiative, please contact the SAICM Secretariat at saicm.chemicals@un.org or UCT at uctcops@outlook.com.