FOOD OR POISON?

The Cost of Highly Hazardous Pesticides to Africa's Food Security

GREENPEACE AFRICA

People Action Solutions

CONTENTS

SUMMARY

Shared Toxic Burden - A Continental Call to End the use of Highly Hazardous Pesticides

The use of Highly Hazardous Pesticides (HHPs) continues to rise across Africa often sold as the solution to boost crop yields and secure food production. Yet this promise comes at a devastating cost. These chemicals contaminate our food, harm our health, and destroy the ecosystem by killing pollinators (e.g. bees) and soil life, undermining the very foundation of our food security. As extreme weather events intensify from prolonged droughts to erratic rains, farmers face new pests outbreaks and crop diseases, driving even greater dependence on chemical pesticides. **In countries like Ghana, Kenya, and South Africa, nearly half of all registered pesticides are classified as HHPs and are already banned in Europe for their proven dangers to people and the planet.**

WHY IT MATTERS

Evidence from across the continent shows that HHPs contaminate rivers, soils, pollen, and nectar, spreading far beyond the farms where they are applied. The same kind of HHPs are widespread, like e.g. the insecticides chlorpyrifos and imidacloprid, the fungicide tebuconazole and the herbicides glyphosate and atrazine.

They also kill bees and harm soil life which the majority of our food crops rely on for pollination and growth. Yet, most countries lack monitoring systems for pesticide residues, pollinators, or soil health, making the true scale of this contamination invisible.

WHY YOU SHOULD CARE

HHPs threaten our health, our food quality, and our harvests. When pollination declines, yields fall, farmers' earn less, and food prices rise, threatening not just smallholder livelihoods but consumers and entire communities.

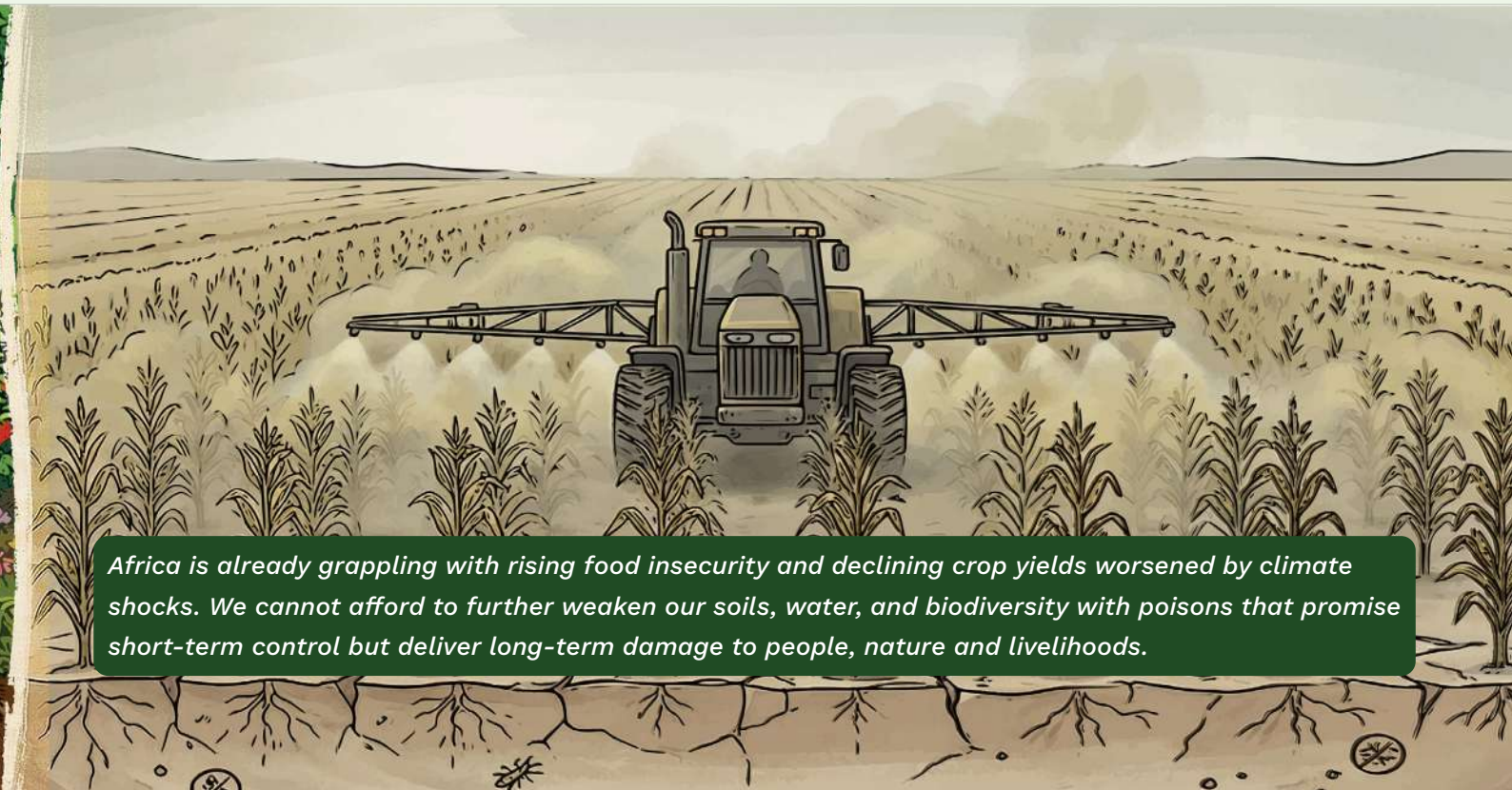
For decades, the pesticide industry has sold the illusion that we need toxic chemicals to feed the world.[1] As a result the use of HHPs is widespread across Africa (Kenya, Ghana, South Africa as case studies), mainly to control pests, diseases and weeds in staple crops like maize and wheat, vegetables like tomatoes, various fruits and export crops like coffee, sugarcane and cocoa. In reality, these same products are poisoning the foundations of our food systems, the soil, water, and living organisms that make agriculture possible.

While a few governments across the continent have begun banning certain HHPs on human health grounds, their devastating environmental impacts remain largely ignored. The damage is slow, often invisible, but lasting; polluted soils, poisoned water and collapsing pollinator populations that will haunt production for generations.

THE WAY FORWARD

Agroecology, farming that works with nature, not against it, offers a proven pathway to restore biodiversity, rebuild healthy soils, build more resilience and reduce dependence on imported chemical inputs. Achieving this transition requires national phase-out timelines for HHPs, strong enforcement, regional coordination, farmer training and access to organic inputs, as well as investment in agroecological practices as well as research and monitoring (including residue testing, pollinator health, and soil health), supported through collaboration among governments, civil society, donors, and responsible private actors.

Phasing out HHPs is not just an environmental issue; it's a fight for Africa's health, food security, and future.



Africa is already grappling with rising food insecurity and declining crop yields worsened by climate shocks. We cannot afford to further weaken our soils, water, and biodiversity with poisons that promise short-term control but deliver long-term damage to people, nature and livelihoods.

INTRODUCTION

NO FOOD WITHOUT NATURE

African farming depends on fertile soils, clean water, and the diversity of living organisms that keep ecosystems in balance. This biodiversity includes the hidden allies of agriculture: bees and other pollinators, beneficial insects that naturally control pests, soil microbes, earthworms, birds, fish, and aquatic life. These organisms quietly maintain fertility, pest control, and harvests.

Pollinators

A healthy environment is the backbone of sustainable food production and access to it is a basic human right.

Globally, 87 of major food crops depend on animal pollination. Together these account for 35 % of the world food production volume, emphasizing the significant economic and nutritional value of these crops and the importance of pollinators for food security. Overall, around 75 % of all crop species benefit from greater yields from animal pollination. These crops include important foods such as fruits (mango, apple, watermelon, citrus), vegetables (tomato, okra, pumpkin, cucumber, and carrot), and certain nuts and legumes (beans, pigeon pea, and groundnut). In Kenya's Kakamega Forest, for example, bee pollination increased crop yields dramatically, by 25% in tomatoes and by more than 99% in squash. While staple root crops like yam, cassava, and sweet potato are not directly pollinator-dependent, they still benefit from healthy pollinator activity that sustains surrounding ecosystems and biodiversity. fodder crops for cattle breeding (such as alfalfa and soy), biofuel crops (e.g., canola), timber crops (e.g., eucalyptus), ornamental plants, and plants for the production of phytopharmaceuticals (e.g., Cinchona from which quinine is made, which is still used in some severe malaria cases and for other medicinal purposes) also depend on insect pollination.

Reduced pollination hits farmers' incomes and drives up food prices, threatening smallholder livelihoods. The FAO estimates that total global pollinator losses could result in economic costs of about US$330 billion. The tropics, especially sub-Saharan Africa, face the greatest risks from pollinator losses, putting both nutrition and food security at stake. Additionally in many African countries traditional beekeeping is a vital source of income for rural communities and plays a critical role in the country's food security.

Do you know?

Bee pollination improves crop quality, shelf life and commercial value

In the diets of many Africans, legumes such as beans, cowpeas, green grams, and bambara nuts are an important and affordable source of protein. These crops benefit greatly from bee pollination, with studies showing up to a 40% increase in yield. Improved pollination not only boosts harvests but also enhances the protein and nitrogen content of these crops, supporting better nutrition and overall food quality.

Experiments with strawberries and apples showed that bee pollination makes fruits bigger, better, and more valuable. Bee-pollinated strawberries were heavier, redder, and less deformed, with a longer shelf life and better taste. These improvements happen because pollination triggers natural plant hormones that help fruits grow properly. This means bees don't just increase yield, they improve quality, making them vital for many of the fruits and foods we eat.

Do you know?

Pollinators reduce hidden hunger

Hidden hunger is malnutrition caused by getting enough food but not enough essential vitamins and minerals for good health. While most of our calories come from wind-pollinated crops like maize and wheat, pollinators are behind much of the nutrition that keeps us healthy. Fruits, vegetables, nuts, and seeds that depend on bees and other pollinators provide:

Over 90% of our vitamin C

100% of lycopene (good for the heart)

Almost all vitamin A and key antioxidants

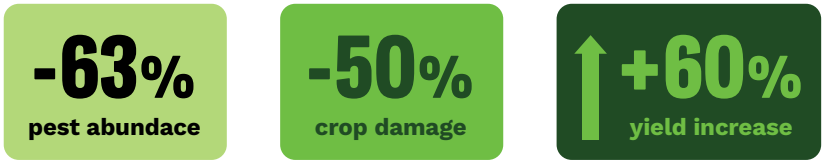
Most of our healthy fats

More than half of our calcium and folic acid

Without pollinators, we might still have enough calories but we'd face **"hidden hunger"**, a lack of vital nutrients our bodies need to stay strong and healthy.

Beneficial Insects

Beneficial insects and other natural allies are farmers' best pest managers. They suppress pest populations, reduce the need for chemical pesticides, and boost harvests. A large meta-analysis from sub-Saharan Africa (99 studies across 31 crops) found that biological control reduced pest abundance by **63%**, cut crop damage by more than **50%**, and increased yields by over **60%**. Who are these helpers? Predators such as ladybugs, spiders, and predatory beetles devour pests outright. Parasitoid wasps lay eggs inside pest insects, their larvae finish the job from within. And it's not just insects: **birds, bats, and even lizards** also play a crucial role in keeping pest populations down. Nature's pest control is powerful, free, and irreplaceable.

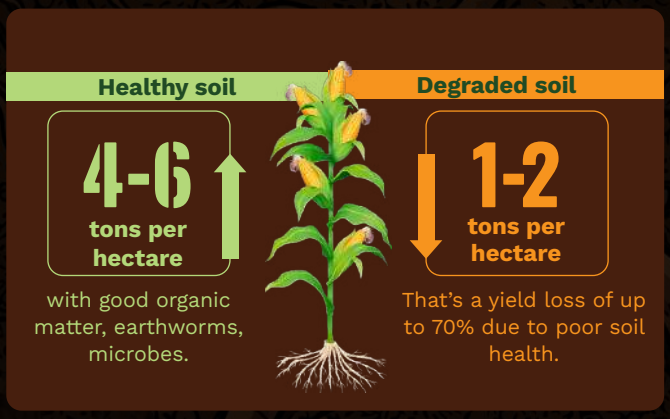


Soil life

Soil is the foundation of life. Globally, around 95% of the food we eat is produced on soils. It nourishes crops, filters water, stores carbon, and sustains biodiversity. Healthy soil hosts a diverse community of organisms including bacteria, fungi, earthworms, insects, microbes, and plant roots. They act as nature's engineers, keeping soils fertile, aerated, and nutrient-rich.

But pesticide heavy farming disrupts this balance. By killing beneficial organisms and breaking down soil structure, it weakens the living systems that allow soils to store carbon and regulate the climate. As microbial and fungal life declines, carbon escapes back into the atmosphere, eroding both soil fertility and resilience.Healthy, living soils can double or triple yields compared to degraded ones while reducing the need for chemical fertilizers and pesticides:

Example 1 – Maize yields in Kenya



Example 2: Legume field in West Africa

Maintaining healthy soils should be key to produce sustainable, more nutritious food, while protecting the environment. In Africa however, approximately 40% of agricultural land is already degraded, leading to nutrient losses and reduced agricultural productivity. This degradation threatens food security, particularly in regions heavily reliant on agriculture.

A Dangerous Trade-Off: Yields Now, Food Security Later?

Although pesticides are often presented as tools to stabilise yields in the short term, their long-term impacts can undermine the foundations of food security. Highly Hazardous Pesticides (HHPs) damage soil organisms, reduce pollinator populations, and weaken ecosystem resilience, leading over time to lower yields, declining soil fertility, and greater vulnerability to climate shocks.

This stands in stark contrast to global commitments under **SDG 2**, which calls for ending hunger and ensuring access to safe, nutritious, and sufficient food by 2030. Yet progress toward these goals remains too slow, and the continued reliance on harmful pesticides risks further reversing gains. In an era of rising food insecurity and climate. disruption, the short-term boost offered by HHPs comes at the cost of long-term, sustainable food production.

NO RIGHTS WITHOUT NATURE

Do you know?

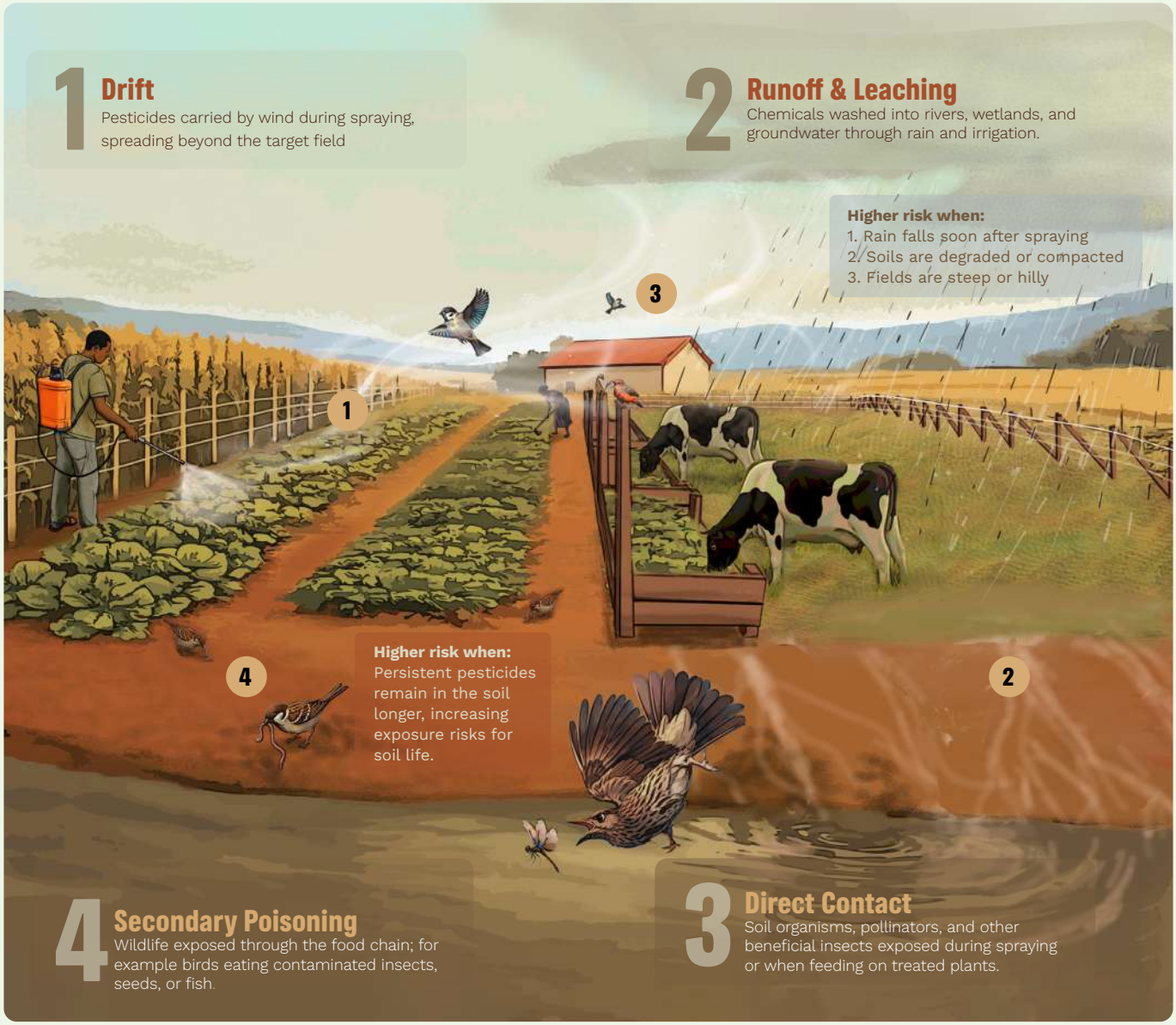
Access to a clean, healthy and sustainable environment and enough, adequate and safe, nutritious food is a fundamental human right. Clean air, fertile soils, unpolluted water, and thriving biodiversity are not luxuries; they are the foundation of food security and human well-being. In Africa, millions of smallholder farmers depend directly on nature for their livelihoods. Protecting soil health, water quality, pollinators, and beneficial organisms is therefore not just an environmental issue, it is a matter of justice, equity, and human dignity. Ensuring a safe and healthy environment empowers communities to produce and access nutritious food sustainably, securing their right to feed themselves today and for future generations.

PESTICIDES POISON NATURE AND OUR FUTURE FOOD

Pesticides, including Highly Hazardous Pesticides (HHPs), often framed as essential for boosting food production, yet their use carries serious and far-reaching consequences for the environment, human health, and long-term food security.

FROM FIELD TO NATURE: HOW PESTICIDES SPREAD

When applied, pesticides do not stay where they are sprayed. They drift through the air, wash into rivers and lakes, seep into soils, and accumulate in plants and animals, affecting entire ecosystems.



Do you know?

Livestock Treatments and HHPs

Not only crops but also livestock are treated with Highly Hazardous Pesticides (HHPs), creating another pathway for toxic pesticides to enter the environment and contaminate soil, water and food chains.

- Livestock are often sprayed with acaricides (e.g. amitraz, pyrethroids, organophosphates) to control ticks and other pests.
- Many of these products are Highly Hazardous Pesticides (HHPs).
- They can wash off into soil and water, contaminating pastures, rivers, and groundwater.
- Improper use and disposal (e.g. mixing products, discarding containers) increase risks for biodiversity, livestock, and human health.
- Studies from Kenya show widespread misuse, raising both environmental contamination and resistance risks.

HOW PESTICIDES HARM NATURE

Pesticides are made to kill, but once they're released into the environment, they rarely stop at their target. Wherever pesticides go, into the air, water, or soil, they can affect living organisms, depending on how often and how much is used. Today, around 64% of the world's farmland, nearly 25 million square kilometers is at risk of pesticide pollution, and almost a third is at high risk. Alarmingly, many of these high-risk areas overlap with regions rich in biodiversity: One-third of them lie in the planet's most biodiverse zones, and nearly one-fifth are in low- and lower-middle-income countries. These are often places where people depend most directly on nature for food and income, making the loss of biodiversity a serious threat to both ecosystems and livelihoods.

Highly Hazardous Pesticides (HHPs) are extremely harmful to human health, pollinators, fish, and other wildlife. They can persist in the environment and accumulate in living organisms over time. Many of these pesticides are already banned in Europe because of their unacceptable risks. Where they are still allowed in Europe, their use is strictly controlled, requiring professional application, protective equipment, buffer zones near water, and strict limits on timing and frequency. In Africa, however, many of these same HHPs are used with little or no regulation, putting people, wildlife, and ecosystems at serious risk.

What are Highly Hazardous Pesticides?

Highly Hazardous Pesticides (HHPs) are pesticides that pose particularly high risks to human health and the environment. According to the FAO and WHO, HHPs include pesticides with severe acute or chronic toxicity: such as those that can cause death, cancer, genetic damage, impaired fertility, or harm to unborn children. There is no official global list of all HHPs, which complicates efforts to replace them with safer alternatives. To address this, Pesticide Action Network International (PAN) maintains an independently updated list using extended criteria, such as environmental toxicity and irreversible effects under the condition of use.[40]
In 2023, the UN's Global Framework on Chemicals launched the Global Alliance on Highly Hazardous Pesticides, a voluntary initiative aimed at reducing global risks from HHPs.

Water

Freshwater is one of our most precious resources. Rivers, lakes, and groundwater provide us with drinking water, irrigation water, food, and a home for fish, birds, and countless other species. Protecting these waters from pollution is essential for life, yet pesticides are increasingly contaminating them. Once pesticides are washed or drifted into the water, they can harm fish, frogs, insects, and other aquatic life as well as the people and livestock who depend on these waters.

Scientific studies from around the world show that pesticide pollution of freshwater has become one of the most serious environmental challenges of our time. In a **global** review of over 11,000 water samples, more than 50% contain pesticides levels that are harmful to life in the water. In **Europe**, 12% of water samples contain pesticide residues above legal safety limits, and even some groundwater, our main source of drinking water, is contaminated mainly with high atrazine and glyphosate levels. For

Africa, the scale of the problem remains largely unknown. A few hotspots have been studied, but systematic monitoring data are still missing. What is evident, however, is that soil erosion, a major challenge in many African countries transport pesticide residues into rivers and lakes.

The consequences go far beyond pollution. When aquatic life declines, the balance of entire

ecosystems is disrupted. Fish populations drop, insects that help to clean the water or feed birds disappear, and water quality worsens. For farmers, using contaminated water for irrigation can harm crops and reduce yields. For communities, it can threaten both health and food security. Their effects depend on how toxic they are, how long they stay in the environment, how often and when they are used, and how much rainfall or irrigation water carries them away.

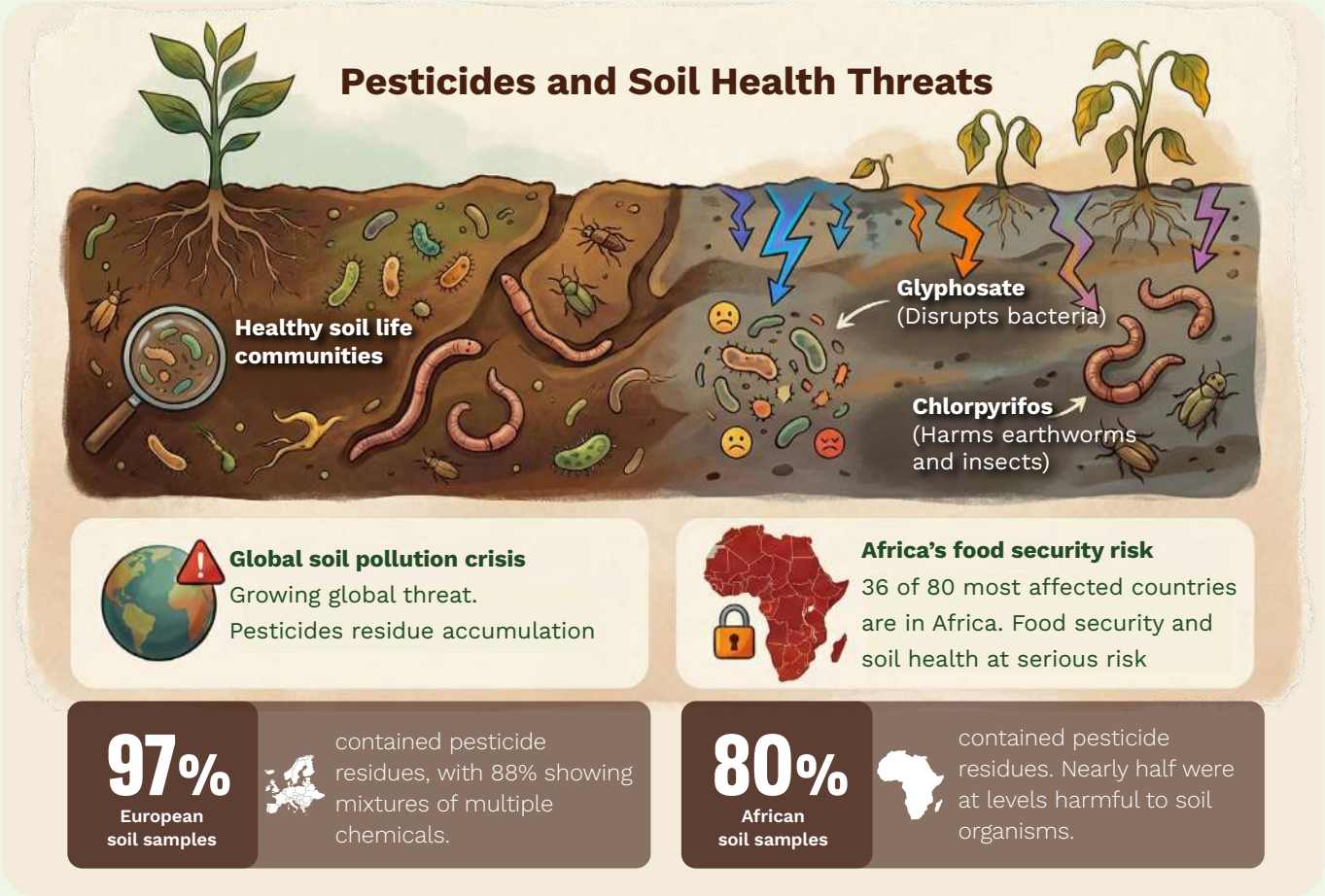
Protecting freshwater ecosystems from pesticide pollution is not just about nature, it's about people. Clean water means healthy food, thriving fish, and resilient communities.

Do you know?

Neonicotinoids are more toxic in subtropical and tropical regions compared to temperate regions in Europe? This means that aquatic species in various African countries are at higher risk when exposed to imidacloprid. Imidacloprid is already banned in Europe.

Soil

Pesticides don't just affect the crops they're sprayed on, they also enter the soil, where they can persist for weeks, months, or even years, depending on their chemical properties. Soil is alive, full of earthworms, insects, bacteria, fungi, and other microorganisms that recycle nutrients, support plant growth, and maintain soil structure. Pesticide-heavy farming disrupts this balance: by killing beneficial organisms and breaking down soil structure, it weakens the living systems that allow soils to store carbon and regulate the climate. As microbial and fungal life declines, carbon that would otherwise be held in the soil is released back into the atmosphere, eroding soil fertility, undermining climate resilience, and compromising long-term food security.



Data on pesticide pollution in soils are still scarce. Most government soil monitoring programs focus on physical and chemical properties, not on pesticide residues. Even new initiatives such as Soils4Africa, which aim to build soil data systems across the continent, rarely include comprehensive pesticide testing. Yet the data that do exist globally paint a worrying picture: At the global level, pesticide residues have been found in soils from 34 countries, contaminated by one or more of 387 different active ingredients.

Compounds like mevinphos, esfenvalerate, cyfluthrin, diuron, atrazine, and AMPA (a breakdown product of glyphosate) were among the most frequently detected, all of them categorised as Highly Hazardous Pesticides.

In Europe, a large-scale study revealed pesticide residues in 97% of soil samples, with 88% containing mixtures of at least two substances, and up to 21 different pesticides detected in a single field.

In a pilot study of the Soils4Africa program, soil samples from 29 African countries were analysed for pesticides.

Around 80% of the samples showed residues of 63 different pesticides, many of them HHPs. Substances such as chlorpyrifos and imidacloprid, the fungicide tebuconazole, and AMPA were found most frequently, and in some areas at levels of concern. Almost half of the measured concentrations were so high that they can harm soil life.

Although overall pesticide use in Africa is lower than in Europe, contamination is already widespread and increasing.

This matters because pesticides in the soil can linger for years, harming the living organisms that recycle nutrients, support plant growth, and make soils resilient. Studies show, for example, that glyphosate can disrupt soil bacterial communities, while chlorpyrifos harms earthworms and beneficial insects, the quiet workers that sustain food production.

Do you know?

Soil pollution from pesticides is a growing global threat, and with 36 of the 80 most affected countries in Africa, the continent's food security and soil health are at serious risk. Protecting soil life means protecting the foundation of life itself.

Pollinators

Around the world, bees, butterflies, and other pollinators are disappearing fast. Scientists estimate that up to 40% of all insect pollinators are at risk of extinction, including many wild bee species. In Europe, long-term studies have shown steep declines in both wild bees and managed honeybee colonies, closely linked to pesticide use, habitat loss, and climate change. Pesticides also harm other beneficial insects, such as predatory beetles, ladybugs, spiders, and parasitoid wasps, which naturally control pests and support healthy crops. In Africa, the situation is less well-documented, but studies suggest declines in pollinator diversity and abundance, driven by pesticide use, monocropping, and habitat loss.

Especially farmers and bee experts raising their voice to point out the problem of pollinator loss. Among the biggest culprits are insecticides such as neonicotinoids (like imidacloprid and thiamethoxam) but also others like chlorpyrifos or bifenthrin. These chemicals can kill pollinators outright or weaken them by damaging their immune systems, navigation, or ability to reproduce. Even at low concentrations, they can reduce bees' ability to find flowers, care for their larvae, or survive the winter. Herbicides (such as glyphosate) add to the problem by destroying wildflowers and nesting habitats, leaving pollinators with less food and shelter.

Do you know?

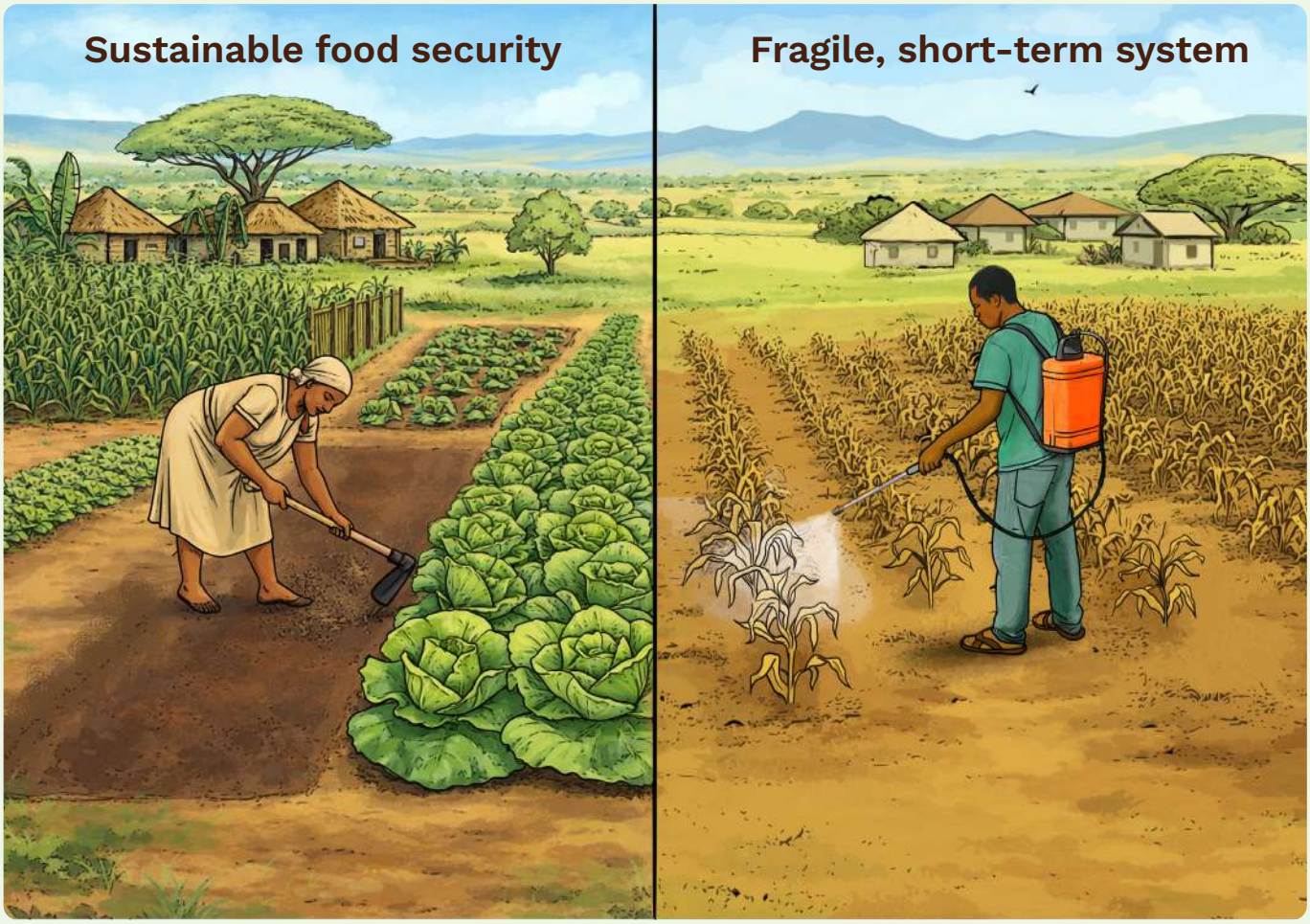
Varroa mites are tiny external parasites that attach to honey bees, feeding on their body fat and spreading deadly viruses. In many parts of the world, they weaken bees, reduce colony size, and cause massive die-offs. In Kenya, Varroa mites are found almost everywhere except the far north.
However, Kenyan bees appear more resilient, colonies stay healthy despite infestation. Scientists believe the mites and related viruses are recent arrivals and haven't yet caused major harm, but continued monitoring is vital to protect bee health.

Do you know?

Different crops rely on many different pollinators, not just one type of bee. This includes honeybees, stingless bees, carpenter bees, and other insects, all of which are essential for producing fruits, vegetables, and oilseeds. Some African species are even more sensitive to pesticides than European bees. Yet, pesticide safety tests only use European bees, and no local tests are done before a pesticide is approved in Africa.

Food security

Pesticides may kill pests in the short term, but by harming soils, pollinators, and other beneficial insects, they undermine the very systems that produce our food. Without healthy soil, resilient crops, and diverse pollinators, yields drop, crop quality declines, and ecosystems become fragile, unable to withstand droughts, pests, or disease. Far from ensuring food security, widespread use of HHPs creates a fragile, short-term system that threatens the food, nutrition, and livelihoods of communities across Africa. Protecting soil life, clean water, and pollinators is not just good for nature, it is the foundation of long-term, sustainable food security.



Short note on wildlife & protected areas

Pesticides can also harm wildlife, even in protected areas like the Maasai Mara. Rivers like the Mara, which animals rely on for drinking water, can carry pesticide residues from upstream farms. Birds, bats, and other wildlife can be poisoned by drinking contaminated water or eating affected prey. There are also various cases, pesticides are used intentionally as poison to kill wildlife or birds. In Africa, spillovers into national parks are a real concern, especially where farms along park boundaries use highly HHPs with little control. Over time, this can damage entire food webs and threaten wildlife populations.

Human Health

Pesticides and Your Health

Pesticides don't just kill pests, they can harm people too. Coming into contact with pesticides can happen during spraying, by being near treated fields, or through eating contaminated food.

Health effects of Highly Harzardous Pesticides

Exposure affects the human body in both the short and long term

ACUTE: SHORT - TERM EFFECTS

EFFECT 01 **Headaches & nausea** Headaches, dizziness, nausea, and vomiting following exposure	EFFECT 02 **Skin and Eye Irritation** Direct contact causes irritation to skin and eyes	EFFECT 03 **Breathing Problems** Coughing, chest tightness, and difficulty breathing

CHRONIC: SHORT - TERM EFFECTS

EFFECT 01 **Cancer** Linked to leukemia, lymphoma, and other cancers	EFFECT 02 **Hormone Problems** Affecting growth, fertility, and development	EFFECT 03 **Nervous System Issues** Memory loss, tremors, high risk of Parkinson's
EFFECT 04 **Reproductive Harm** Lower sperm quality, menstrual problems, miscarriages, and birth defects,	EFFECT 05 **Weakened Immunity** Making the body more vulnerable to infections	EFFECT 06 **Organ Damage** Liver, kidneys, or lungs can be affected

Even low-level or repeated exposure can build up in the body over time. Protecting our environment, soil, water and pollinators also protects human health.

SMALL WINGS, BIG IMPACT

FOOD SECURITY
Pollinators support the production of diverse fruits, vegetables, nuts, and seeds that form the foundation of nutritious diets, improving food quality and increasing crop yields.

BIODIVERSITY SUPPORT
Pollinators enable plant reproduction, supporting diverse plant species that sustain entire ecosystems by providing food and habitat for birds, insects, and wildlife.

NUTRIENT CYCLING
By enabling plant growth and reproduction, pollinators help sustain the natural cycles that return nutrients to the soil, supporting microorganisms and keeping ecosystems fertile and productive.

CARBON SEQUESTRATION
Pollinator-supported vegetation helps ecosystems absorb and store carbon in plants and soils, contributing to climate regulation and more resilient landscapes.

SOIL HEALTH
Pollinated plants contribute to richer soils by increasing root diversity and organic matter, improving soil structure, fertility, and the microorganisms that sustain long-term agricultural productivity.

Sources: references 98–104. See full reference list.

RECREATION & CULTURAL VALUE
Pollinator-rich landscapes sustain biodiversity, tourism, and cultural traditions, with many communities holding deep spiritual and medicinal connections to healthy ecosystems.

RAW MATERIAL PRODUCTION
Many crops used for fibres (like cotton), oils, medicines, spices, and other natural products rely on pollination, supporting not only food systems but also livelihoods, traditional medicine, and rural economies

RESOURCES FOR WILDLIFE
Pollinated plants produce fruits, seeds, and nectar that feed birds, mammals, and other insects.Without pollinators, entire food webs weaken, affecting biodiversity far beyond farms.

WATER FILTRATION
Pollinator-supported vegetation acts as a natural filter, trapping pollutants, improving water quality, and protecting rivers, wetlands, and groundwater systems.

EROSION CONTROL
Pollinators support diverse plant cover whose roots hold soil in place, reducing erosion from wind and rain and protecting farmland and landscapes.

TOXIC TRUTHS: EVIDENCE FROM KENYA, GHANA AND SOUTH AFRICA

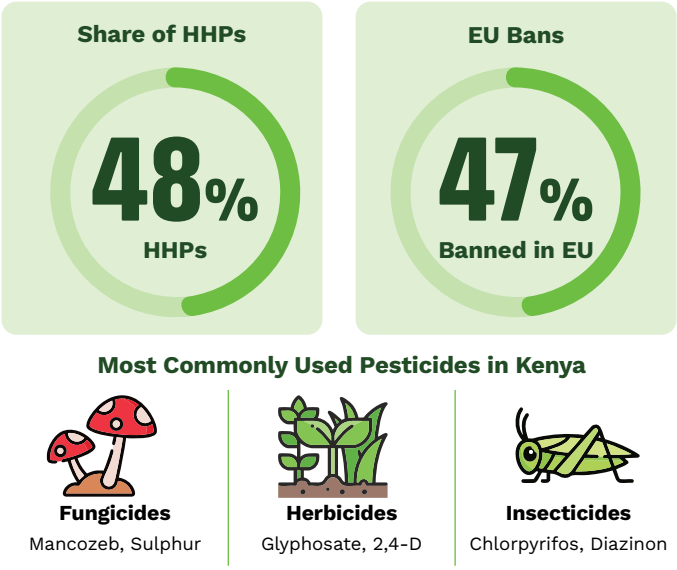
REGISTERED AND USE OF HHPS

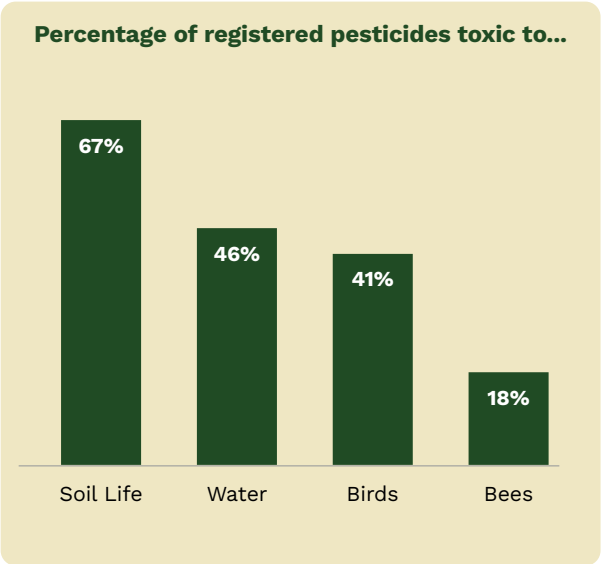
Highly Hazardous Pesticides dominate the pesticide markets across Africa, while safer alternatives like biopesticides are still very limited. This pattern is consistent in selected countries across East, West, and Southern Africa:

Kenya

Out of 141 registered pesticide active ingredients in 2025, 67 (48%) were classified as Highly Hazardous Pesticides (HHPs). At the same time, 66 ingredients (47%) were already banned in Europe because of their severe environmental and health risks.

Of these, 18% are toxic to bees, 46% are toxic to water organisms, 67% show some toxicity to soil life, 41% to birds.





Kenya's recent ban on 77 Highly Hazardous Pesticides (HHPs) marks a major step toward safeguarding human health and the environment. Many of these pesticides, including chlorpyrifos, are already banned in Europe and the United States, yet remain widely detected in Kenyan soils, water, and bee products.

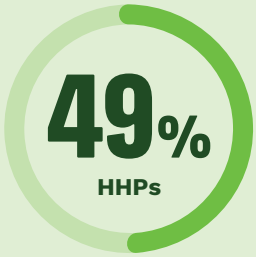
However, serious challenges remain. Chlorpyrifos and dimethoate are still permitted for termite control, and imidacloprid remains allowed in greenhouses, creating loopholes that allow continued use in agriculture with limited oversight. Many other toxic pesticides remain legal, posing ongoing risks to ecosystems, pollinators, soil health, and food security. The ban is a crucial step forward, but its success depends on effective enforcement, regular monitoring, and strong farmer support to transition to safer alternatives.

Ghana

Out of 141 registered pesticide active ingredients in 2023, 69 (49%) were classified as Highly Hazardous Pesticides (HHPs). At the same time, 75 ingredients (54%) were already banned in Europe because of their severe environmental and health risks.

Of these, 28% are toxic to bees, 56% are toxic to water organisms, 65% showing some toxicity to soil life , 42% to birds.

Share of HHPs

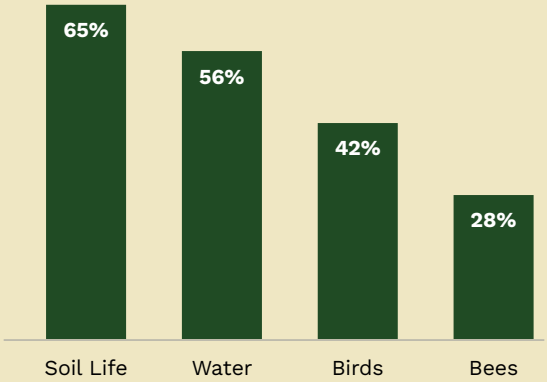


EU Bans

As one of the world's largest cocoa producers, Ghana relies heavily on HHPs, including:

- Imidacloprid
- Chlorpyrifos
- Bifenthrin
- Diazinon
- Lambda-cyhalothrin

Percentage of registered pesticides toxic to...

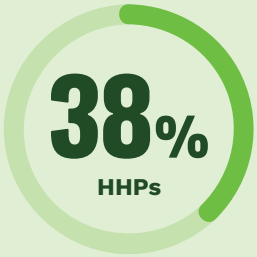


South Africa

Out of approximately 500 registered pesticide active ingredients, 192 (38%) currently used pesticides are classified as Highly Hazardous Pesticides (HHPs). At the same time, 56 ingredients (30%) were already banned in Europe because of their severe environmental and health risks.

Of these HHPS 92% are toxic to aquatic life, 62% to bees and 66% show some toxicity to soil life.

Share of HHPs



EU Bans

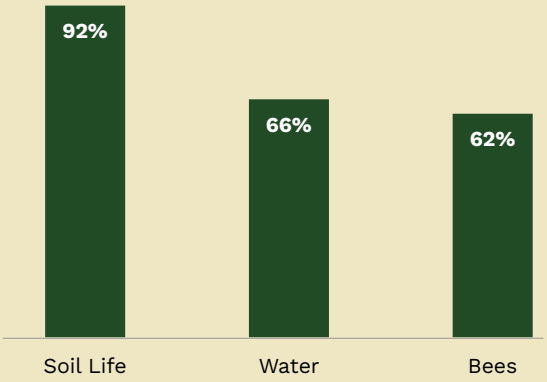
Most Commonly Used Pesticides in South Africa

Fungicides
Mancozeb, Sulphur

Herbicides
Glyphosate, 2,4-D

Insecticides
Chlorpyrifos, Diazinon

Percentage of registered pesticides toxic to...



Calculations are made in relation to HHPS, as type of registered pesticides in total is not available.

In South Africa, information on registered pesticides is not freely accessible. Instead, CropLife South Africa, an industry association representing pesticide manufacturers and distributors, provides access to this information through its Agri-Intel platform. However, full access to Agri-Intel requires a paid subscription, making it less accessible to the general public. This limited transparency hinders comprehensive understanding and monitoring of pesticide use in the country. A survey by the UN Poison Network compiled a list of 192 Highly Hazardous Pesticides (HHPs) registered and in use in South Africa. However, the total number of registered pesticides remains unclear due to the lack of open access to the full registration database.

Do you know?

In South Africa, most maize (about 85–90%) is genetically modified (GMO) to resist herbicides, mainly glyphosate. This lets farmers spray entire fields with glyphosate to kill weeds without harming the crop. However, because glyphosate is used so frequently, some weeds have become resistant and can survive doses that used to kill them. So far, at least five weed species in South Africa are confirmed to be glyphosate-resistant.This resistance leads to farmers using more herbicides, which costs more and can harm the environment, making farming less sustainable.

HHPS ARE EVERYWHERE

HHPs are found in soil, water and pollinators. The full scale of contamination is unknown because monitoring is limited, but existing studies show alarming levels and widespread presence, a clear threat to both the environment and human health.

Do you know?

Pesticides are accumulating in soil, air, and water across all ecosystems at a rate faster than we can monitor or manage, contributing to global pollution. The 2025 EAT-Lancet report incorporates these findings for the first time. This updated report outlines a “Planetary Health Diet” aimed at feeding a growing global population while remaining within environmental boundaries..

Pesticides in water

Kenya

Kenya's waterways are being poisoned by a toxic cocktail of pesticides, threatening ecosystems, food safety, and the communities who depend on them:
A study around **Kisumu (Western Kenya)** found pesticide contamination in all samples from five rivers, detecting seven different pesticides, almost all of them HHPs. Substances such as diazinon, imidacloprid, acetamiprid and atrazine were frequently present, often at concentrations high enough to pose serious risks to aquatic life. Even higher levels were found in snails, which accumulate these chemicals over time; the same pesticides were present in over 80% of all snail samples, indicating widespread and persistent contamination in the ecosystem.
Another study in the same area found 19 different pesticides in nine rivers with chlorpyrifos dominating nearly every sample at levels toxic to fish and aquatic life. Other HHPs such as permethrin, fenvalerate, bifenthrin, and cyfluthrin were also common, while simazine, which is banned in Kenya, appeared in almost every site tested.

01 Rivers around Kisumu

Lake Victoria Basin,Western Kenya

RIVERS SAMPLED

9

rivers and water bodies tested in and around Kisumu

PESTICIDES FOUND

19

distinct pesticide compounds detected across samples

KEY PESTICIDE

Chlorpyrifos

Dominated nearly every sample at levels toxic to aquatic life

Banned in the EU

- Neurotoxic - harmful to fish and invertebrates

02 Narok water sampling sites

Rift Valley, Central Kenya

CONTAMINATION RATE

70%

of all water samples tested returned positive for carbendazim - making the water unsafe for babies to drink

RISK GROUP

Infants & Children

Carbendazim levels found are unsafe for young children to consume

ECOSYSTEM IMPACT

Multiple pesticides detected at levels that can kill fish and other aquatic life.

PESTICIDES DETECTED

- **Carbendazim** - dominant compound
- Tebuconazole
- Azoxystrobin
- Imidacloprid
- Atrazine
- 2,4-D
- Chlorpyrifos
- Pyrethroids

Carbendazim - Banned in the EU

- Endocrine disruptor - reproductive harm

03 Lake Naivasha

Rift Valley - major horticulture production zone

CONCENTRATION VS EU LIMIT

Exceeds

Chlorpyrifos concentrations surpass EU drinking water safety threshold - a pesticide banned across the European Union

Banned in the EU

ECOSYSTEM IMPACT

Aquatic collapse risk

Levels sufficient to wipe out fish and diverse aquatic life - threatening both lake's ecosystem and communities that depend on it for water and food

- Toxic to aquatic species * exceeds safe levels

Do you know?

Pesticides Fuel Bilharzia

Bilharzia is a serious disease caused by parasitic worms. People become infected when they come into contact with freshwater like rivers or lakes, that contain tiny snails carrying the parasite. Studies show that pesticides like imidacloprid and diazinon are making the problem worse. These chemicals kill many aquatic insects but not the snails; in fact, the snails survive and multiply because their natural predators die off. As a result, pesticide polluted waters have more snails, more parasites, and a higher risk of disease for people nearby.

Communities against pesticides: How *Citizen Science* tracks pesticide pollution

A citizen science project with local communities tested water around Lake Naivasha. Of the 46 frequently detected pesticides currently in use, 40% are HHPs and over half are not approved anymore in the EU, including chlorpyrifos, atrazine, and diazinon with high levels of prochloraz and atrazine. Simazine was again detected at high concentrations, suggesting possible illegal use, as it is not registered in Kenya.
Why it matters: Citizen science tracks pollution, supports official monitoring, and empowers communities to protect their water and health.

Ghana

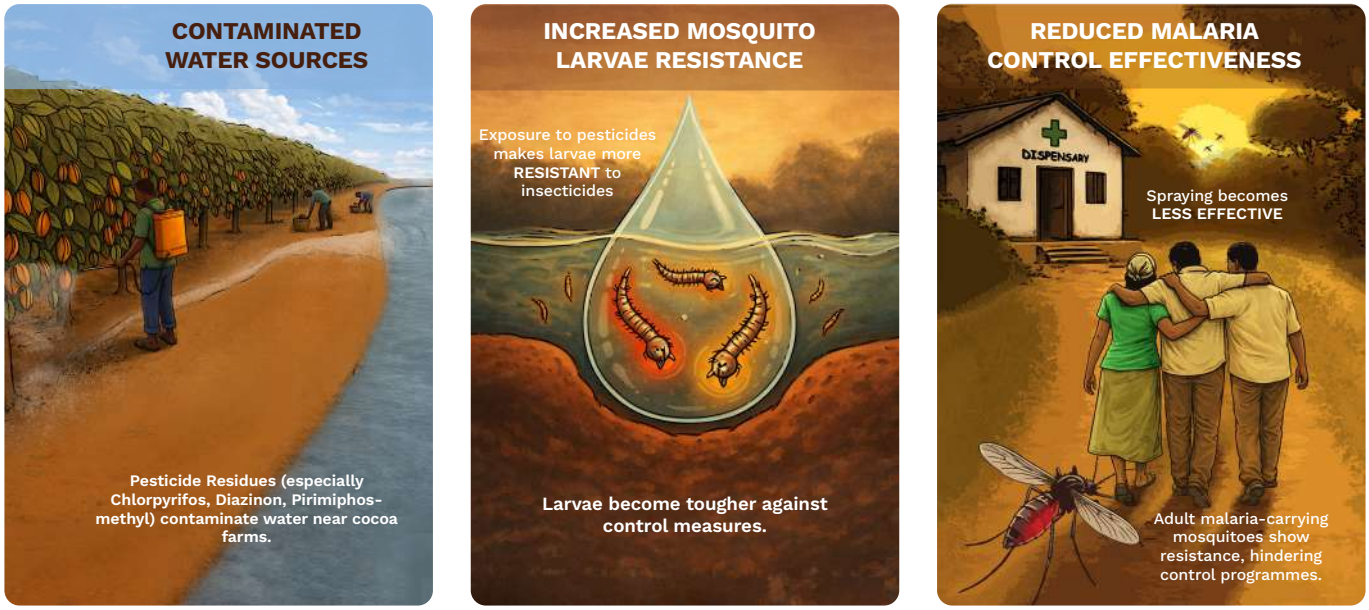
Information on pesticide residues in the environment (water, soil and food) is very limited, even though pesticide use is increasing and farmers often apply far more than recommended, in Ghana, up to 13 times the advised dose. Most residue data in the water refer to pesticides that are no longer used and are based on assumptions rather than real measurements. This lack of knowledge puts both people and the environment at risk.

Information about registered pesticides show that many pesticides have the potential to threaten rivers, lakes, and soil life. Substances like chlorpyrifos, cypermethrin, dimethoate, and mancozeb are highly toxic to fish and other aquatic animals. The HHPs chlorpyrifos, diazinon and pirimiphos-methyl were present in many water samples across cocoa farms in Ghana.

Pesticide pollution can increase the threat of malaria.

When pesticides such as clothianidin, imidacloprid, metalaxyl, and atrazine contaminate water, they can make mosquito larvae more resistant to insecticides. This means that spraying to control malaria becomes less effective. Resistance to commonly used insecticides like pirimiphos-methyl and permethrin in malaria-carrying mosquitoes is already a major challenge for malaria control programmes. Only closed to cocoa producing farms pesticide residues were sampled:The HHPs chlorpyrifos, diazinon and pirimiphos-methyl were present in many water samples.

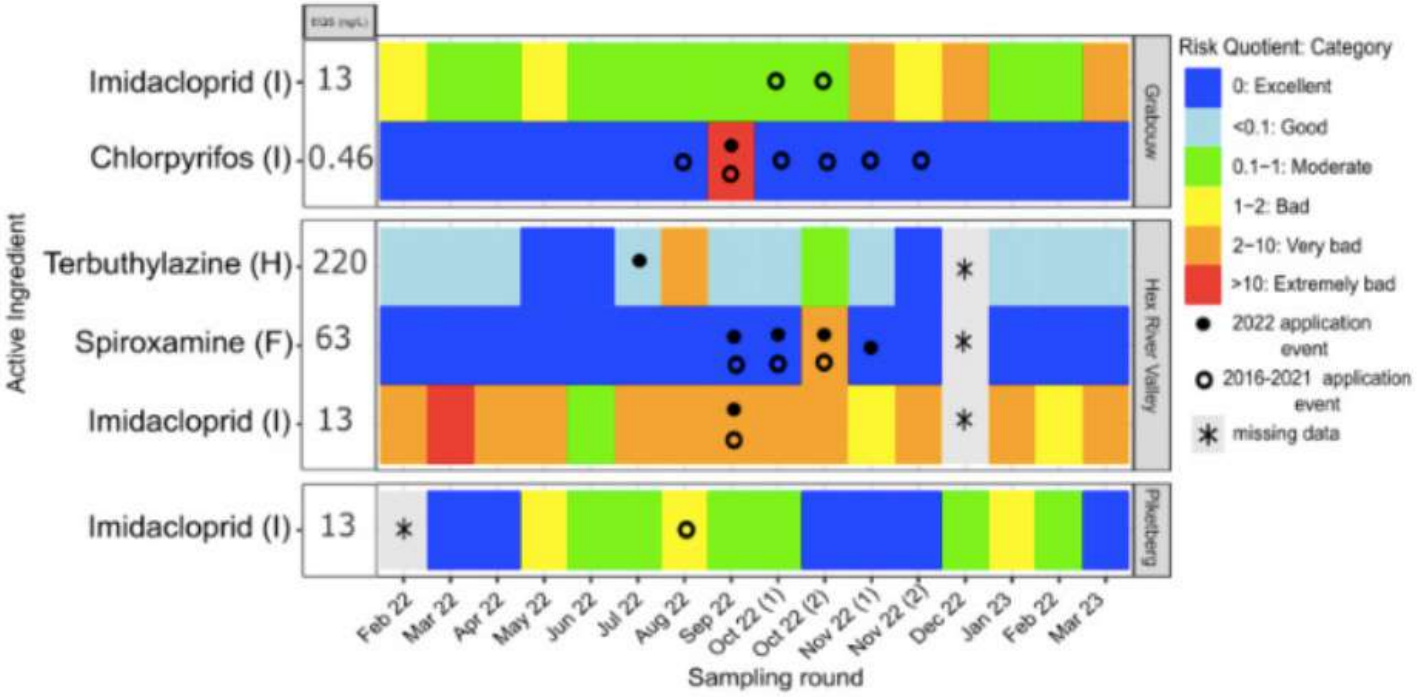
PESTICIDE POLLUTION & MALARIA THREAT: A Vicious Cycle

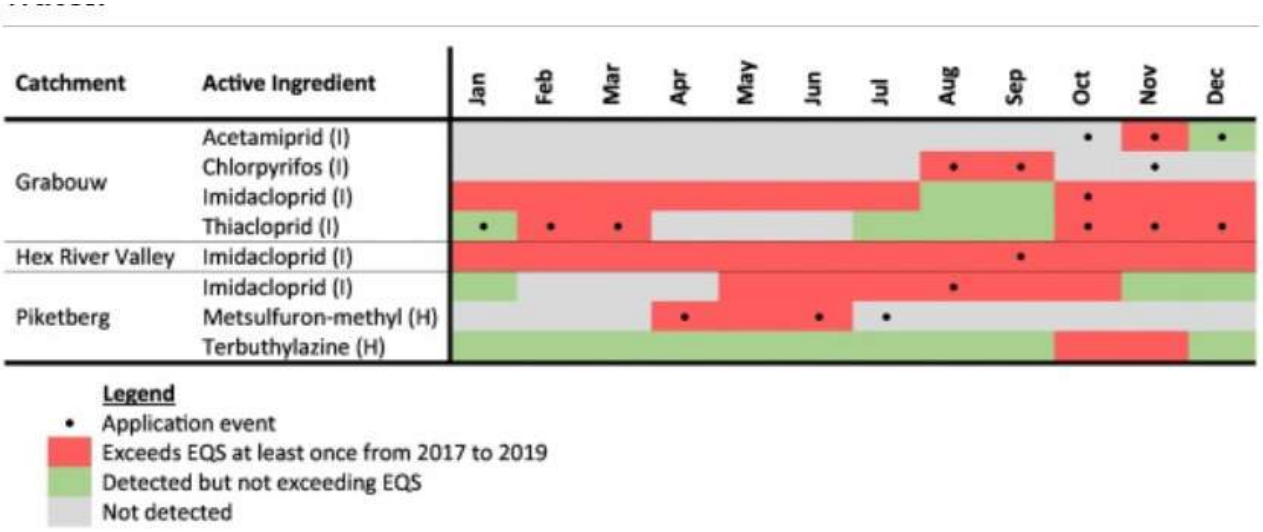


South Africa

In the Western Cape, pesticides are poisoning rivers as well: 78% of samples contained at least three chemicals, with 44 different pesticides detected. The insecticides imidacloprid and chlorpyrifos, the herbicide terbuthylazine, and the fungicide spiroxamine all exceeded safe limits for aquatic life. Imidacloprid alone threatens aquatic organisms year-round.

Across three major catchments, researchers detected 60 pesticide compounds, with terbuthylazine, imidacloprid, and metsulfuron-methyl dominating the contamination load, a clear signal that South Africa's waterways are under relentless chemical assault.



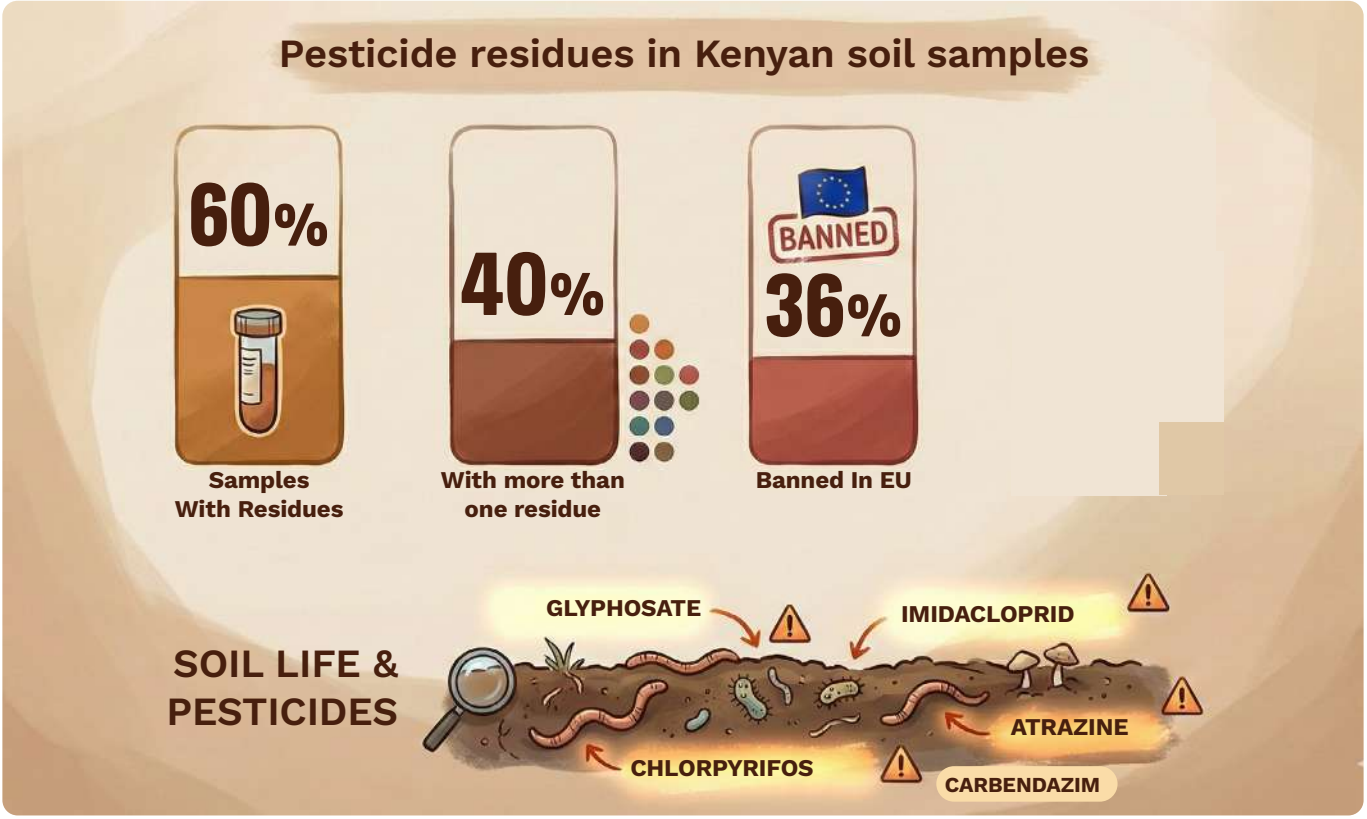


Pesticides in soil

The Soils4Africa Programme found widespread pesticide contamination in African soils. *(South Africa was not part of the pesticide analysis within the Soil4Africa Programme).*

Kenya

Across the 47 samples analyzed in Kenya, 60% contained pesticide residues , and 40% had more than one, with some showing over 10 different pesticides. In total, 33 pesticide residues were detected, 36% of which are already banned in the EU. About half of all concentrations were high enough to harm soil life (high levels of acetamiprid, chlorpyrifos, Imidacloprid). The most common pesticides included chlorpyrifos, AMPA (a breakdown product of glyphosate), imidacloprid, glyphosate, carbendazim, and atrazine, all HHPs and known to threaten the living organisms essential for healthy, fertile soils. Highest levels found were glyphosate and AMPA (the breakdown product of glyphosate).



Ghana

Pesticide pollution in Ghana's soils is widespread. In one study of 18 soil samples, all contained pesticide residues, and 90% had more than one. In total, 20 different pesticides were detected, 40% of them banned in the EU. Nearly 90% of concentrations were high enough to harm soil organisms. Pesticides of concern were similar to those found in Kenya, with additional detections of permethrin and bifenthrin. Chlorpyrifos alone posed risks to soil life in 83% of the samples.

Another analysis of 52 soil samples from cocoa farms found imidacloprid and clothianidin to be the most prevalent neonicotinoid, detected in over half the samples. Also chlorpyrifos, profenofos and pirimiphos-methyl were frequently detected on various cocoa farms' soil.

Do you know?

Some important pollinators are nesting in the soil and can be impacted by pesticides.

South Africa

Very limited information on pesticide residues in soil is available for South Africa, but those studies that exist show: Agricultural soils in South Africa are far from clean. Studies from the Western Cape, Mpumalanga, and Northern Cape reveal widespread contamination by multiple pesticides, including several HHPs. South Africa was not part of the pesticide analysis within the Soil4Africa Programme.

Western Cape: Chlorpyrifos was found in all samples along with frequent detections of carbaryl, diazinon, primicarb, simazine, tebuconazole and atrazine.[74]

Mpumalanga and the Northern Cape (South Africa's major maize-growing regions): Nearly 80% of agricultural soils contained residues of atrazine, dicamba, and 2,4-D, along with frequent detections of imidacloprid.[75]

Do you know?

Toxic Trail: From Contaminated Soil to Indoor Dust

Pesticides don't just stay on the farm, they move through soil, air, and dust, eventually reaching homes and schools. A study analysing indoor dust from 38 households and two schools in South Africa found 10 different pesticides contaminating indoor environments. Chlorpyrifos was found in almost all samples. It is neurotoxic, disrupts child development, and has been linked to reproductive harm. Other HHPs, including carbaryl, diazinon, and carbendazim, were also detected frequently.

These findings show that pesticide pollution travels far beyond the fields; from contaminated soil to household dust and silently exposing families, children, and communities to dangerous chemicals long after spraying has ended.

Pesticides in bee products

Kenya

Pesticides are also widely found in pollen and nectar across Kenya, contaminating the very resources bees rely on.

In Murang'a County 11 different pesticides were detected in bee products

- 70% were Highly Hazardous Pesticides (HHPs).
- 80% are already banned in the EU.
- More than half are very toxic to bees.
- Chlorpyrifos was the most frequently detected pesticide, exceeding safe limits in several months, while other bee-toxic chemicals such as imidacloprid and thiamethoxam were also commonly found.

In Kiambu and Nairobi counties, pollen from beehives also showed high pesticide contamination. Thiamethoxam levels were more than four times higher than the EU standard of 10 ppb for bee products.

Beeswax from various sites in Ghana showed mostly concentrations of amitraz, chlorpyrifos and fluvalinate. About 81% of cocoa farmers use pesticides that are toxic to pollinators. This has caused a decline in key pollinators, such as the cocoa midge, which is essential for pollinating cocoa flowers.

Cocoa Farming in Ghana: The Irony of Hand Pollination

The Ghana Cocoa Board promotes hand pollination to boost cocoa yields to overcome the challenge of reduced pollinator abundance. But hand pollination is labor-intensive, especially for elderly farmers, creating equity and livelihood challenges. Ironically, the more pesticides are used, the more hand pollination becomes necessary. Phasing out HHPs and adopting sustainable pest management would protect pollinators, reduce labor burdens, and make cocoa farming safer and more equitable.

Pesticides in Food

Kenya

Even everyday foods in Kenya contain residues of HHPs. Samples of kale and tomatoes from various markets contained chemicals like acephate, imidacloprid, carbendazim, and acetamiprid, with some exceeding safe limits.

A 2021 study by the National Pesticide Residue Monitoring Programme (NPRMP) in Kenya found pesticide residues in nearly half of 1,139 crop samples collected from farms across the country. About 10% of these samples exceeded European safety limits. The most contaminated crops were kales, capsicum, and peas, with hazardous pesticides such as chlorpyrifos, acephate, and profenofos frequently detected, in some cases at levels posing potential health risks, especially for children, but also imidacloprid.

Ghana

Leafy vegetables (e.g. salad, cabbage) have been found with high pesticide residues, including cypermethrin, cyfluthrin, chlorpyrifos, diazinon, and others, with some levels 20 times above the EU's safety limit. Cocoa beans also contain significant residues of chlorpyrifos, ametryn, metalaxyl, pyrethroids, and organophosphorus compounds (up to 200 µg/kg). These findings highlight the risk of pesticide build-up in commonly consumed crops.

South Africa ; A blind spot in pesticide safety

Although South Africa is the largest user of pesticides in Africa, there is very little publicly available information on pesticide residues in food sold on the local market. Only exported produce is routinely tested for pesticide residues. Monitoring data from 2009–2014 showed that pesticides were found in 56% of exported samples. The most frequently detected pesticides that exceeded safety limits included: Imazalil , Iprodione (both HHPs) and Prochloraz. Most exceedances occurred in oranges (43%), avocados (28%), grapefruits (7%), and lemons (7%).

This means that while export crops are tested, South Africans have no clear picture of pesticide residues in their own food, a serious gap in protecting public health, food safety, and the right to a clean environment.

TOXIC PATTERNS ACROSS AFRICA

The impacts of pesticides on soil life, water quality, and pollinators are a global problem, but the risks are even greater in regions where HHPs are still widely used with little control or oversight. In Africa, many of these chemicals remain legal and poorly regulated, even though they are banned or strictly limited elsewhere. This puts farmers, consumers, and ecosystems at higher risk. By degrading soils, poisoning freshwater, and decimating pollinators, these pesticides undermine the natural foundations of food production and poison African food and water. Far from guaranteeing food security, their continued use creates a fragile and unsustainable system. Protecting soil life, clean water, and pollinators is essential, not only for nature, but for the long-term food security and resilience of communities across Africa and beyond.

HIGHLY HAZARDOUS PESTICIDES ACROSS BORDERS

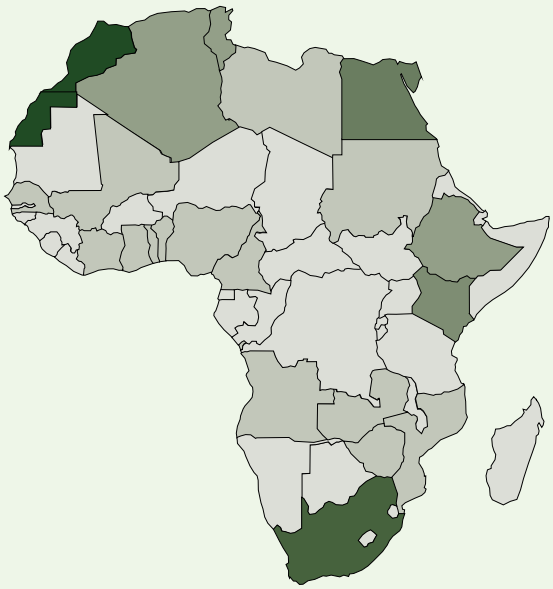
Highly Hazardous Pesticides (HHPs) accounting for nearly half of all registered pesticides across all three countries. A high proportion of these products are already banned in the European Union due to their health and environmental risks. In Ghana, for example, more than half of the registered pesticides fall into this category. Although data are limited, existing studies indicate that waterways, soils, and bee products across Africa are chronically contaminated with complex pesticide mixtures, threatening sustainable agriculture, safe food, and human health, and underscoring the urgent need to monitor and phase out HHPs.

	N# of active ingredients	N# (+%) HHPs	N# +(%) banned in Europe	Pesticides of concern (frequently detected or high levels)
Ghana	**141**	**69 (49%)**	**75 (54%)**	Insecticides: **Chlorpyrifos, diazinon, imidacloprid, cypermethrin,dimethoate, cyfluthrin,** amitraz, Herbicides: **Glyphosate,** atrazine, **simazine,** ametryn Fungicides: Metalaxyl
Kenya	**141**	**67 (48%)**	**66 (47%)**	Insecticides: **Chlorpyrifos, diazinon, imidacloprid, permethrin, fenvalerate, bifenthrin, and cyfluthrin, acephate, profenofos, thiamethoxam,** acetamiprid Herbicides: **Glyphosate** (+breakdown product AMPA), atrazine, **simazine, 2,4-D** Fungicides: **Carbendazim, tebuconazole,** azoxystrobin
South Africa	**500**	**192 (38%)**	**56 (30%)**	Insecticides: **Chlorpyrifos, diazinon, imidacloprid, carbaryl, pirimicarb,** Herbicides:**Glyphosate, atrazine, simazine, dicamba, 2,4-D,** terbuthylazine, metsulfuron-methyl Fungicides: **Carbendazim, tebuconazole,** spiroxamine,

* the pesticide in bold are of concern in all three countries

This situation is not unique to the three countries, recent export notifications data* from Europe to Africa (obtained in a joint investigation by Unearthed, Greenpeace UK's investigative journalism unit, and the Swiss NGO Public Eye) reveal that large volumes of HHPs continue to be exported from Europe to numerous African countries, despite their prohibition within the EU itself - South Africa and Kenya are under the top five. This calls for an urgent import ban to prevent the continued use and trade of these highly toxic chemicals that pose serious risks to both the environment and human health.

Export of pesticides banned in Europe - from Europe to Africa 2024



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**Export notifications are documents companies must send to importing countries to request permission to export a chemical that is banned or restricted in the EU. The quantities listed are only estimates of what they expect to ship in a year, so the figures indicate potential export volumes, but do not necessarily reflect the exact amounts ultimately exported.*

ℹ Almost half of all registered pesticides in Kenya, Ghana, and South Africa are classified as Highly Hazardous Pesticides (HHPs), already a high proportion. The situation becomes even more concerning when considering actual usage: HHPs are applied at much higher volumes than non-HHPs, making up 76% of all pesticides applied on Kenyan farms. This amplifies their risks to health, food safety, and ecosystems.

In South Africa and Kenya experts have begun identifying pesticides of environmental concern as part of efforts to prioritise monitoring and eventual phase-out. The following substances are top priorities and have been flagged based on their toxicity and high usage.

Priority	South Africa (monitoring)	Kenya (phase out)
1	**Atrazine**	Chlorpyrifos
2	**Mancozeb**	**Mancozeb**
3	Acetochlor	**Glyphosate**
4	Ethylen-dibomide	**Atrazine**
5	Terbuthylazine	Copper Oxide
6	**Glyphosate**	2,4-D
7	**Sulphur**	**Sulphur**
8	Copper Oxychloride	MCPA
9	**Imidacloprid**	**Imidacloprid**
10	Metolachlor	Tebuconazole

More pesticides of concern can be found in the relevant reports (see references above)

Herbicides like atrazine and glyphosate, fungicides like mancozeb and insecticides like imidacloprid are a concern in both countries. Further work is needed to ensure that all HHPs are included and that clear phase-out/ plans/ban are adopted.

Phase-Out vs. Full Ban: Why It Matters

The Kenyan government recently announced to withdraw 77 pesticide products containing some HHPs, such as chlorpyrifos and imidacloprid. While this marks important progress, many of these substances are still permitted for other uses; for example, chlorpyrifos is no longer allowed in crop production but is still approved for termite control, imidacloprid is still allowed to use in greenhouses. This reflects a wider pattern across the continent: governments often choose a gradual phase-out instead of a full ban. A phase-out can help farmers and suppliers adapt, but if it is not backed by clear timelines, monitoring, and support for alternatives, it can stall meaningful change.

Without strong enforcement, phase-outs risk becoming "business as usual":

- HHPs continue to circulate in the market
- Farmers and consumers remain exposed
- Safer and more sustainable solutions are delayed

A full ban, paired with training, access to alternatives, and farmer support, ensures that dangerous pesticides are truly removed from agricultural systems, supporting long-term soil health, biodiversity, and food security.

MIXTURE TOXICITY: THE OVERLOOKED COCKTAIL EFFECT

In reality, neither nature nor people are exposed to a single pesticide at a time. Farmers often use pesticide mixtures (tank mixes), and residues from different products accumulate in soils, rivers, food, and even the air. This creates a "cocktail effect" where multiple pesticides interact, amplifying risks to biodiversity, ecosystems, and human health.

Current regulations only assess pesticides one by one. Each substance has its own threshold value for water, food, or soil , but the combined effects of multiple pesticides are not considered. This means that even if individual residues stay below their limits, the overall mixture can still harm pollinators, soil organisms, fish, or human health.

Evidence from different countries show

- **Soil:** Kenyan soils had the highest number of different pesticides , with up to 14 residues in a single sample. Soils in Ghana showed almost all more than one pesticide residue change to: almost all sampled soils in Ghana showed more than one pesticide residue.
- **Water:** Various studies in Kenya, Ghana and South Africa have detected multiple pesticide residues in rivers and lakes, soils and food. Looking at Europe: 11% of European water samples had more than 10 different residues and 83% of European soil contained more than pesticide residue.
- **Food:** Fruits, vegetables, and grains in Europe often contain residues of more than one pesticide. The extent of African local food is unknown. This raises concerns for consumers, as mixture effects are largely unstudied.

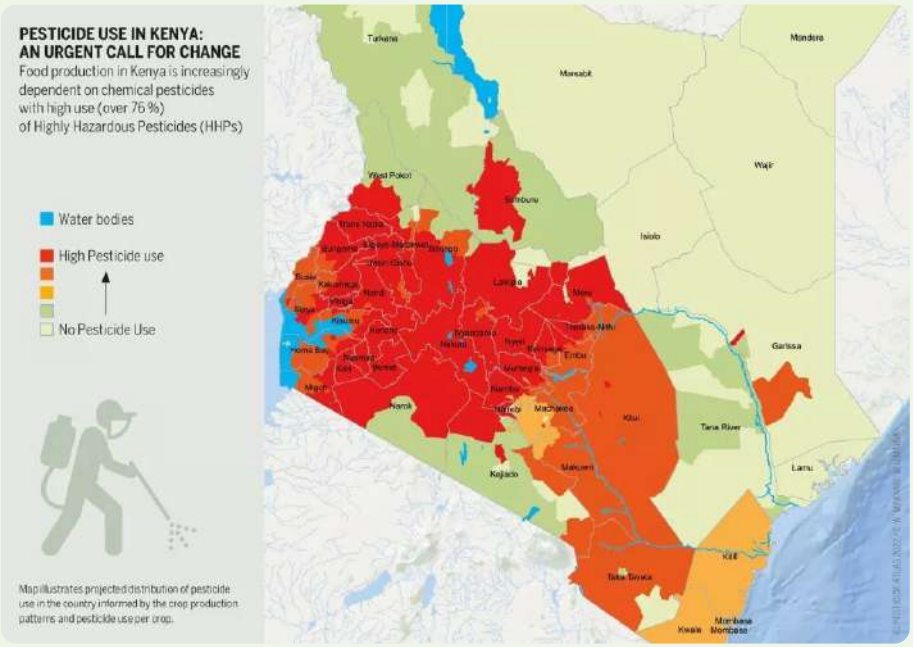
This regulatory blind spot means that the true risks of pesticides are underestimated, especially of HHPs that are particularly toxic. Addressing mixture toxicity requires stricter regulation, integrated monitoring, and a precautionary approach, especially in Africa, where environmental monitoring is limited and smallholder farmers often use multiple products without guidance.

LACK OF MONITORING

- **Water:** Pesticide pollution in water often goes unnoticed because government monitoring programs rarely test for pesticide residues. When they exist, they track only general parameters like pH or nitrates. Citizen science initiatives do collect data, but seldom include pesticide testing due to lack of resources and lab access.
- **Soil:** Few countries have soil mapping programs meant to track changes in soil quality, but these focus mainly on basic parameters like nutrients, organic matter, or heavy metals. Pesticide residues and soil biodiversity are rarely measured. Even new initiatives such as the Africa4Soil Program exclude pesticide monitoring. Governments must take responsibility to include pesticide testing in soil mapping to protect ecosystems and public health.
- **Biodiversity:** Across Africa, not only is pesticide monitoring insufficient, but there is also a serious lack of data on biodiversity, including soil life, wild pollinators, or other key species that sustain food production. While scattered studies in Kenya and other regions show the importance of native bees, hawk moths, and soil organisms for crop productivity, the true scale of biodiversity loss remains unknown. Without urgent monitoring, vital ecosystems may collapse unnoticed.

To establish meaningful monitoring programs, pesticide use data and crop mapping can be combined to identify priority pesticides and high-risk regions. This approach helps target monitoring where contamination and biodiversity loss are most likely. In Kenya, first initiatives already mapped areas of intensive agriculture and high pesticide use, providing a foundation for more systematic monitoring and regulation.

Without systematic, transparent monitoring, the scale of pesticide contamination and its threat to food security and public health remain largely invisible. Yet such monitoring is costly, and many African governments lack the resources to fund it. These expenses represent part of the hidden costs of pesticide use diverting money from health, education, and rural development. Meanwhile, the pesticide industry continues to profit, particularly from HHPs. If these companies contribute to pollution, they should also contribute to monitoring and remediation.



Copyright sign Heinrich Böll Foundation (2022). Pesticide Atlas, Kenya. https://ke.boell.org/sites/default/files/2022-11/pesticideatlas2022_kenya.pdf

RECOMMENDATIONS

Pesticide use is rising across many African countries, including extensive use of Highly Hazardous Pesticides (HHPs) already banned in other regions. These chemicals contaminate water (including drinking water), soil (and household dust), pollen and nectar , and even contribute indirectly to the spread of diseases such as malaria and bilharzia. Food often contains multiple residues and harms. Yet despite their widespread presence, there is very limited knowledge of their long-term impacts on biodiversity, soil life, and food security.

The indirect environmental costs, and the threats to food sovereignty, are far too high for African countries to bear, especially when monitoring and controlling these pesticides are unaffordable for many governments. To protect human health, ecosystems, and the foundations of long-term sustainable agriculture, phasing out these pesticides is an urgent priority.

Understand and Map the Problem

1. Identify high-risk areas based on pesticide use, crop types, and ecological sensitivity.
2. Establish Africa-wide monitoring programmes for soil, water, and biodiversity, with a focus on HHP residues and their impacts on pollinators and soil life.
3. Collect contextual evidence to understand pesticide-soil-pollinator interactions across different regions and farming systems.

Prioritize Pesticides for Action

1. Create a priority list of pesticides based on use, occurrence, toxicity, and environmental impact, using monitoring data to guide interventions.

End the Double Standard and Phase out HHPs

1. Call for a ban on the export of pesticides from the EU and other regions where their use is prohibited to African countries. Allowing these exports perpetuates toxic double standards, shifting environmental and health risks to the Global South while companies profit. All people deserve equal protection from hazardous chemicals regardless of where they live.
2. Ban the import to Africa and phase out HHPs that harm pollinators, beneficial insects, soil health, and water systems, especially those already widespread in African environments. But a phase-out only works if it is strict and time-bound, supported by:
   - Clear timelines and targets
   - Legal enforcement
   - Farmer transition support and access to alternatives
   - A roadmap to scale up agroecology and biopesticides
   - Polluter accountability and transparent communication

Protect Pollinators and Soil Life through Agroecology

1. Integrate pollinator-friendly and soil-conserving practices into national agricultural strategies and land-use planning.
2. Support habitat preservation for wild pollinators, including native bees, hawk moths, and other beneficial insects.

Empower Farmers and Communities

1. Support transitions to agroecology, including training, incentives, and access to safer alternatives.
2. Mobilize communities to demand healthy, pesticide-free food systems.
3. Raise awareness of the human right to clean environment and safe food, emphasizing that biodiversity protection is critical for climate resilience, sustainable yields, and food security.

Policy and Governance

1. Strengthen coordination between agriculture, environment, and biodiversity sectors.
2. Align national policies with international biodiversity frameworks (CBD, SDG 2, 13, 15) and climate adaptation goals.
3. Ensure enforcement of pesticide regulations, monitoring of residues, and transparent reporting to communities.

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FOOD OR POISON?

The Cost of Highly Hazardous Pesticides to Africa's Food Security

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