FARMING BEYOND PESTICIDES

SUCCESS STORIES FROM THE FIELD

SUMMARY

All over Europe, farmers and municipalities are proving that food can be produced in a healthy, caring, fair and ecological way, without pesticides or with a minimal amount. Many farmers and towns across Europe have already managed to phase out pesticides or substantially reduce their use.

Unfortunately, these positive examples are not yet the norm. Driven by corporate interests, our current food system is still overreliant on pesticides, harming human health and destroying biodiversity. A growing body of scientific evidence links pesticide exposure to serious health problems, including respiratory conditions, neurological disorders, developmental delays and cognitive impairments, cancers, and decreased fertility/infertility[1]. Agricultural workers, their families, and communities living near farming areas are especially vulnerable to these diseases[2]. Pesticide residues are also found in the food we eat and the water we drink, affecting people far beyond agricultural areas[3].

The impacts on nature are alarming. In Europe, a more than 75% decline over 27 years (1989 - 2016) in total flying insect biomass in protected areas has been observed, while farmland bird populations have plummeted by 60% over the last 40 years, including vital pollinators and natural pest predators[4]. Pesticides are a major driver of this collapse, undermining ecosystem health and triggering cascading ecological effects that threaten the future of our food production.

The good news is that alternatives to pesticides exist. They need to be implemented and scaled-up systematically and ambitiously. With this report, we want to showcase examples, of farmers from around Europe who have ambitiously reduced their pesticide use, or who do not use pesticides. Farmers taking the lead in the transition away from pesticides, and prioritising the well-being of citizens, farmers and ecosystems, should inspire policy-makers to ensure the broad upscaling of these practices, and the full implementation of pesticide legislation.

“In Europe, a more than 75% decline over 27 years in total flying insect biomass in protected areas has been observed, while farmland bird populations have plummeted by 60% over the last 40 years, including vital pollinators and natural pest predators.”

1 Inserm (2021). Collective Expert Review on the Health Effects of Pesticides, EEA (2023). How pesticides impact human health and ecosystems in Europe, Silva et al.(2023). Pesticide residues with hazard classifications relevant to non-target species including humans are omnipresent in the environment and farmer residences, SPRINT-project

2 Doğanlar et al. (2018). Nonoccupational Exposure of Agricultural Area Residents to Pesticides: Pesticide Accumulation and Evaluation of Genotoxicity, Figueiredo et al. (2019). Spatio-temporal variation of outdoor and indoor pesticide air concentrations in homes near agricultural fields, Dereumeaux et al. (2020). Pesticide exposures for residents living close to agricultural lands: A review, Bretveld et al. (2006). Pesticide exposure: the hormonal function of the female reproductive system disrupted?, Farr et al. (2004). Pesticide use and menstrual cycle characteristics among premenopausal women in the Agricultural Health Study. Navarro et al. (2023). Occurrence of pesticide residues in indoor dust of farmworker households across Europe and Argentina

3 Silva et al.(2023). Pesticide residues with hazard classifications relevant to non-target species including humans are omnipresent in the environment and farmer residences, PAN Europe (2024). TFA: The Forever Chemical in the Water We Drink, PAN Europe (2024). European consumers still heavily exposed to pesticides, El-Hahhal (2021). Pesticide residues in drinking water, their potential risk to human health and removal options, Navarro et al. (2024). Assessing pesticide residues occurrence and risks in water systems: A Pan-European and Argentina perspective. Wan et al. (2025). Pesticides have negative effects on non-target organisms. Brühl & Zaller (2019). Biodiversity decline as a consequence of an inappropriate environmental risk assessment of pesticides. Gandara et al. (2024). Pervasive sublethal effects of agrochemicals on insects at environmentally relevant concentrations

4 Hallmann et al. (2017). More than 75 percent decline over 27 years in total flying insect biomass in protected areas, Seibold et al. (2019). Arthropod decline in grasslands and forests is associated with landscape-level drivers, Brühl et al. (2024). Widespread contamination of soils and vegetation with current use pesticide residues along altitudinal gradients in a European Alpine valley, Brühl et al. (2021). Direct pesticide exposure of insects in nature conservation areas in Germany, Honert, Mauser, Jäger, & Brühl (2025). Exposure of insects to current use pesticide residues in soil and vegetation along spatial and temporal distribution in agricultural sites, Mauser et al. (2025). Current-use pesticides in vegetation, topsoil and water reveal contaminated landscapes of the Upper Rhine Valley, Germany, Rigal et al. (2023). Farmland practices are driving bird population decline across Europe, Beaumelle et al. (2023). Pesticide effects on soil fauna communities - A meta-analysis, Gunstone et al. (2021). Pesticides and Soil Invertebrates: A Hazard Assessment

ALTERNATIVES TO PESTICIDE USE

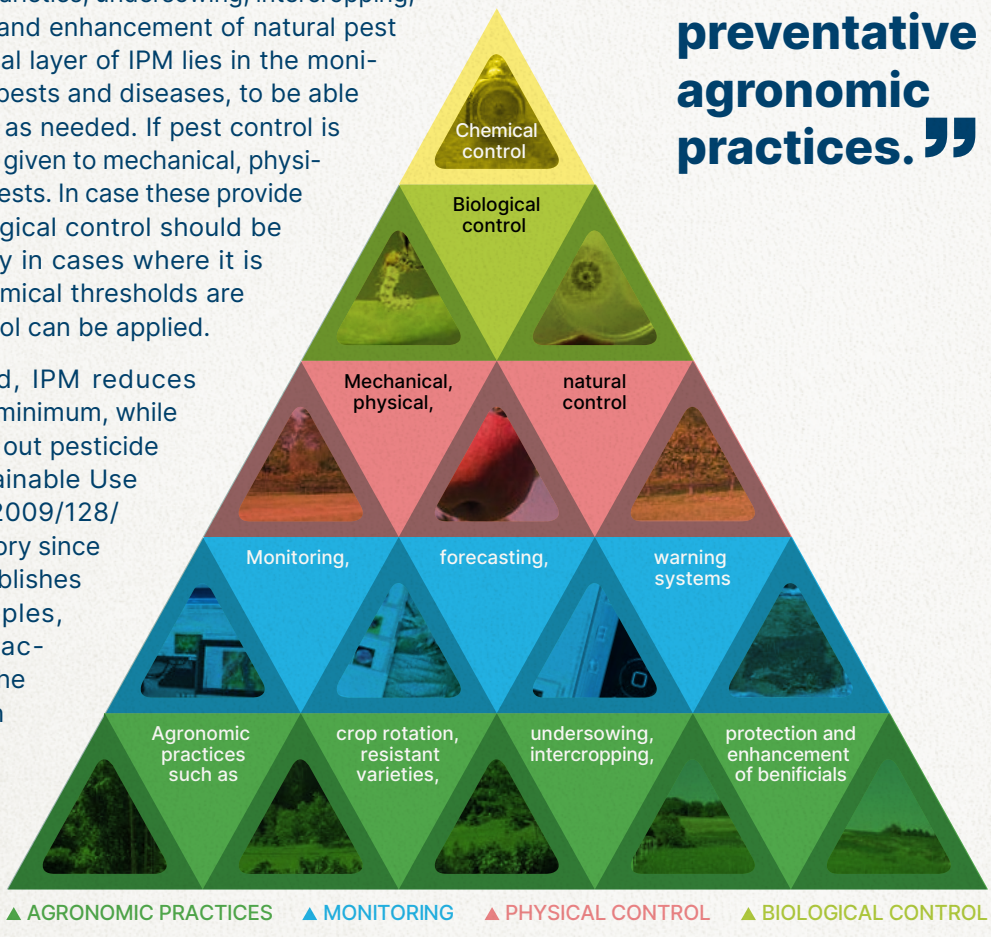
Integrated Pest Management and agroecological practices

Integrated pest management (IPM) is a practice where farmers implement a set of tools to substantially reduce, or phase out, the use of pesticides. IPM places preventative agronomic measures at the heart of pest control, with pesticides being used only as a very last resort[5].

The IPM triangle found below, schematically shows that the basis of IPM lies in preventative agronomic practices, such as the use of crop rotation, resistant varieties, undersowing, intercropping, as well as the protection and enhancement of natural pest control. A second essential layer of IPM lies in the monitoring and forecasting of pests and diseases, to be able to act only if and as soon as needed. If pest control is needed, priority should be given to mechanical, physical and natural control of pests. In case these provide insufficient control, biological control should be considered first, and only in cases where it is really needed, and economical thresholds are exceeded, chemical control can be applied.

When fully implemented, IPM reduces pesticide input to a strict minimum, while often completely phasing out pesticide use. The European Sustainable Use of Pesticides Directive 2009/128/EC has made IPM mandatory since 2014[6]. The Directive establishes 8 mandatory IPM principles, and states that the practices and products with the least possible disruption to agro-ecosystems, and the lowest risk for human health and the environment, always have to be used.

> **“The basis of IPM lies in preventative agronomic practices.”**



Triangle explaining the principles of Integrated Pest Management, as taken up in the “report Integrated Pest Management - Working with Nature” by PAN Europe, IBMA and IOBC-WPRS (2019)

5 See the paper by PAN Europe, IBMA and IOBC-WPRS “Integrated Pest Management: Working with nature”

6 Sustainable Use of Pesticides Directive 2009/128/EC

Many farmers and scientific studies have shown that when IPM is ambitiously implemented, pesticide use and risk are greatly reduced, or phased out. Unfortunately, IPM remains very poorly implemented in member states[7] and has therefore not resulted in remarkable pesticide reductions on national and EU levels. Sales of pesticides have remained relatively constant over the last 10 years[8].

IPM, if correctly applied, is an essential part of agroecological practices. Agroecological practices are based on the reduction of chemical inputs, prioritising local renewable resources, recycling and closing resource cycles, fostering soil health, biodiversity and synergies among the different elements of agroecosystems. Agroecological practices also go beyond simply reducing inputs or limiting harm - they aim to transform food systems so they are more equitable and rooted in local knowledge and biodiversity.

Common IPM and agroecological practices, among many others, include:

Crop diversification

Crop diversification, which includes practices like intercropping, strip cropping, crop rotation, undersowing and polycultures, effectively reduces pest pressure by disrupting pest habitats, life cycles, and promoting natural enemies. It involves increasing crop diversity within a field, both in space and across time.

A particularly effective technique within diversified systems is the use of green manure or cover crops, such as clover, vetch, or mustard, sown between rows of main crops or during fallow periods. These plants form a natural cover that simultaneously hinders weed growth by competing for light, space, and nutrients, and fertilises the soil by fixing nitrogen or adding organic matter; and protects it from erosion, moisture loss, and temperature extremes.

Many studies show that switching to diversified agricultural production can help in regulating crop pests while drastically reducing or eliminating pesticides, all without compromising yields[9]. This approach also increases resilience to environmental changes by diversifying income streams, restoring biodiversity and soil quality, and protecting crops against the effects of climate change.

Crop rotation

Crop rotation is an essential element of IPM. This technique involves not cultivating the same plant species on the same plot of land before a few years. The main benefit of crop rotation comes from the fact that pests and pathogens are host-specific, which means they rely on the presence of a particular crop or crop family to complete their life cycle. When that crop is grown repeatedly in the same location, pest populations can increase dramatically since the conditions for feeding and breeding remain stable. By rotating to a different crop that the pest cannot use as a food source, the cycle is disrupted. Over time, pest populations decline naturally due to the absence of suitable hosts.

Strategic crop selection

Strategic crop selection within the rotation involves choosing resistant/tolerant cultivars which are less vulnerable to pests and diseases, and/or can serve as an effective form of natural weed control, and is a key element of IPM. Some crops are for example better than others at competing with weeds due to their dense canopies, rapid early growth, or natural allelopathic properties (the ability to release substances which inhibit the growth of some weeds). By selecting competitive and more resistant crops in the rotation - such as rye, barley, or buckwheat - farmers can reduce pesticide use.

7 Implementation assessment on SUD by the European Parliamentary Research Service (2018)
Report on the SUD of the European Commission (2020)
Report on the SUD of the European Court of Auditors (2020)

8 eurostat - Agri-environmental indicator - sales of pesticides

9 See for example Tamburini et al. "Agricultural diversification promotes multiple ecosystem services without compromising yield." Science advances, 2020 and a recent study by INRAE "Protect crops by increasing plant diversity in agricultural areas, November 2022

Using cover crops

Using cover crops is another essential method for maintaining healthy soil and managing weeds. Using a living cover (such as clover, flax, mustard, oat,...), an organic mulch (leaves, wood chips, straw...) or an artificial cover, to cover the soil prevents weeds growing, preserves humidity and enriches soil life with nutrients and organic matter. These practices also protect the soil from erosion, improve its structure, and support the overall health of ecosystems.

Enhancement and conservation of natural enemies

Enhancement and conservation of natural enemies is another key component of integrated and agroecological pest management. Many insects, birds, and small mammals are natural enemies of crop pests, feeding on aphids, caterpillars, beetles, and other harmful organisms that can damage crops. By encouraging the presence and diversity of these beneficial species, farmers can harness biological control as a tool for pest management. To achieve this, farmers create or maintain habitats that support the life cycles of these natural enemies both within the field and in surrounding areas. These habitats for example include flower strips (providing food and nectar for pollinators and beneficial insects), hedgerows and wooded areas (providing shelter for natural enemies and can reduce wind damage), and perennial cover crops (providing diverse habitats for natural enemies and reducing weed growth).

Reducing or eliminating pesticide use is crucial for maintaining stable populations of natural enemies. Pesticides harm not only pests but also the beneficial organisms that control them. Habitat conservation and ecosystem management enable farmers to shift away from chemical dependence and allow nature to do the work of regulating pests.

Using natural preparations

Another agroecological method is to use natural preparations to strengthen plant health and reduce vulnerability to pests. These include compost teas, which are nutrient-rich liquid extracts made by steeping compost in water, sometimes with added microbial stimulants. Compost teas can be applied as foliar sprays or soil drenches to enhance microbial life, improve nutrient availability, and trigger natural plant defenses. Plant-based repellents are also widely used in agroecological systems. These substances can deter pests without harming the surrounding environment, and many have antimicrobial properties that help prevent disease. In opposition to synthetic pesticides, these natural treatments degrade quickly in the environment and therefore do not leave harmful residues on crops or in soil and water.

Monitoring

An essential component of IPM is the close monitoring of crops, pests and diseases, which can be carried out by field observations, supported by scientifically sound warning, forecasting and early diagnosis systems, and/or through the advice of independent advisers. Monitoring should be combined with robust threshold values, which allow to decide when and which actions might be needed. Monitoring is key to ensure that potential problems are detected early, and to ensure pest control measures are only used if needed.

Mechanical weeding and pest control

Mechanical weed control, combined with or in addition to the practices described above, is a key tool for reducing or phasing out herbicide use. In-crop weeders, electrothermal weeders and thermal weeders can be used. A variety of different machineries are available, depending on the cropping system. Recent systems allow for minimal tillage and disturbance of the soil. Robotic, light machineries allow for very precise weed management at plant level, while keeping soil disturbance minimal due to their light weight[10]. Also in view of contributing to the toolbox of alternatives for insecticides, mechanical systems have been and are being developed, such as for example the Colorado Beetle Catcher, which catches the beetles in a selective manner[11].

As these technologies evolve, particularly in robotics and digital tools, it is important that farmers can truly benefit from them. In a previous report by Friends of the Earth Europe, the risks posed by power imbalances that can tie farmers into exploitative contracts with large agritech corporations were described[12]. Safeguards must be put in place, ensuring that the adoption of digital tools supports rather than undermines their autonomy. Digital weeding tools like robots should also be further developed for small and medium scale farming, meaning affordable and small enough to be transported from one field to the other.

Biocontrol

Biocontrol comprises pest management practices based on substances or organisms originating from nature. Biocontrol includes macrobials, microbials, natural substances and semiochemicals. For biocontrol to be fully effective, it has to be applied within the framework of other IPM and agroecological practices, fostering overall resilience of the agroecosystem.

“Practices must be adapted to fit the specific needs and resources of each farm.”

It is important to note that there is no one-size-fits-all solution, and practices must be adapted to the specific context. The approaches described above - and others not mentioned here - form cornerstones of Integrated Pest Management and agroecological practices. Their most effective application depends on local factors such as pest pressure, climate, soil type, and crop species. For example, which natural enemies to encourage or which crops to grow together will vary depending on the farm’s conditions. In line with the Sustainable Use Directive (SUD), it is essential that the practices chosen are always those that pose the lowest risk to human health and the environment.

10 PAN Europe (2023). Weed management: Alternatives to the use of Glyphosate

11 Colorado Beetle Catcher: Sustainable Machine Pest Control

12 Friends of the Earth Europe (2024). The Future of Farming: from Data Giants to Farmer Power

Farmers leading by example across Europe

The next part of this report elaborates on the strategies of six farms across Europe, who have been ambitiously reducing pesticides, or do not use pesticides. The farmers featured apply or combine organic, IPM, agroecological and regenerative practices.

It is important to note that the term 'regenerative farming' has also been frequently used by the agro-chemical industry and others for greenwashing purposes, to promote systems characterised by intense pesticide use, and in particular glyphosate[13]. In this report however, the term is used in view of practices which minimise pesticides, or do not use pesticides. While the term regenerative practices has been defined in different ways, the farmers in this report use this term to refer to practices and principles that include optimising soil health and ecosystem processes, looking at the farming system as a continuously developing system, and truly regenerating and restoring systems without pesticides, rather than limiting to 'no harm'.

13 Friends of the Earth US (2025). The toxic impact of conventional no-till agriculture on soil, biodiversity, and human health

BELGIUM

LOCATION	**Farm PHAE, Hansbeke, Eastern Flanders**
FARM SIZE	**60 hectares**
CROPS	**Wheat, spelt, buckwheat, malting barley, chick peas, white clover, grassland, maize, beans, peas**

Felix de Bousies

“Healthy soils and ecosystems are the basis to ensure resilient food production.”

For eight years, Felix de Bousies has been organically managing 60 hectares of land in Hansbeke, in Eastern Flanders. His farm (Project Hansbeke Agroecologie - PHAE) also works as a research platform for the large-scale testing of agro-ecological practices. Through this ‘Proefplatform Agro-ecologie Hansbeke’, Felix works closely together with the Flanders Research Institute for Agriculture, Fisheries and Food (ILVO) and agricultural researcher and advisor Alain Peeters (RHEA). In Hansbeke, essential traditional knowledge and practices meet with sustainable new technological developments. “*Working with nature is essential, combining traditional knowledge and technology of today*,” says Felix, “*healthy soils and ecosystems are the basis to ensure resilient food production*”.

Felix grows a variety of cultivars, including old grain varieties, such as the Spelt variety ‘Oberkulmer Rotkorn’, and the wheat varieties ‘Vilmorin’ and ‘Rode Chidham’, which are more robust, root deeper and have a higher nutrient uptake. The local bakery’s clients noticed among their clients a sensation of better digestion of bread produced with these old varieties. Moreover, the farm experiments with less-grown crops such as buckwheat and chickpeas, important sources of plant-based proteins, to optimise their cultivation. The farm intensively uses intercropping and stripcropping. For example,

grains are combined with leguminous plants like beans, with the latter fixing nitrogen from the air via symbiosis with the Rhizobium bacteria, making it available to the grains. They also use intercropping of malting barley and peas, and apply silage maize and beans. A recent test included strip cropping with small strips of different bean varieties and peas sowed next to durum wheat, bread wheat and malting barley. ILVO assesses positively the impact of the diversity in varieties and strip cropping on the presence of diseases and pests. Strip cropping has a lot of advantages, for example, natural enemies of aphids can be found in grains, while flowering legumes attract more pollinators to neighbouring fields.

Soil health is the foundation of the work in Hansbeke. A key principle is to keep the soil covered as much as possible. One of the more recent projects on the farm includes grain cultivation in permaculture, following the principles of the 'Bonfils-fukuoka method'. Grain fields are covered with a permanent soil cover, for example with white clover. "*It is key to keep soil covered to continuously support soil life and processes, to avoid weeds, and therefore herbicides, and to maintain soil moisture - as they say in French: Sol nu, sol foutu (naked soil, ruined soil)*", says Felix. In conventional wheat cultivation, soils are frequently bare, with cover crops often sowed in too late. At Felix's farm, the winter wheat is sowed about one and a half months before the harvest of the summer wheat. This gives the winter wheat a head start, due to the extra period of sun and soil activity. The winter wheat is then sowed using a spreader attached to a wide agricultural sprayer, which allows for a very wide coverage of the field. This minimises the area disturbed by the wheels of the machine. Also a variety of landscape features and woody edges, such as ponds and hedgerows, have been incorporated in the farm, to foster biodiversity and optimise water and erosion management.

At the farm, the goal is to minimise soil disturbance and pesticide use. For example, a weeding robot which removes weeds with full autonomy, and a specialised harrow which only disturbs the soil very superficially, are used and demonstrated at the farm. Moreover, experiments have been conducted with a drone to seed winter rye. These innovations not only reduce the pressure on the soil, but also reduce the period of bare soil, hence reducing weeds and eliminating the use of herbicides. At the yearly demo days organised by ILVO and PHAE, different agroecological practices and innovations can be observed in practice.

"*The fact that I do not use artificial fertilizers and pesticides reduces my costs significantly, which leads to increased profits while improving soil health and fertility, and fostering long-term, robust production*", says Felix.

For more information on the work and research carried out by the farm PHAE, ILVO and RHEA, you can visit the websites:
https://www.ppaehansbeke.be/nl/
https://ilvo.vlaanderen.be/nl/agenda/demodag-agro-ecologie-2025

GREECE

LOCATION	**South Peloponnese, Laconia**
FARM SIZE	**5 hectares**
CROPS	**Olives, Lemons, Oranges, Limes, mulberries, figs, Pomegranates**

Sheila Darmos

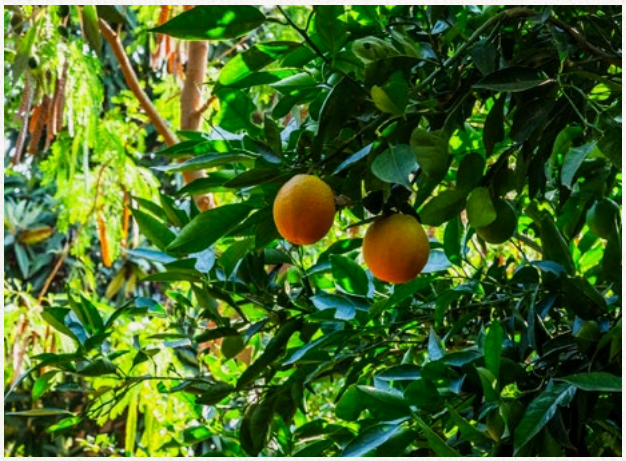
“At our farm, we combine food production with ecosystem restoration.”

Sheila Darmos is a farmer in the region of Laconia, in Greece. Her father was one of the first organic farmers in Greece, focusing on olives and citrus fruits. Sheila reinvented the family business, and engaged in several agri-food and social initiatives. With her non-profit organisation The Southern Lights, her farm also serves as an educational and experimental site, where people from within and outside of Greece come to learn. One of the most important projects Sheila founded is the “Regenerative Farming Greece” initiative, which is fostering regenerative farming in Greece by creating peer-to-peer learning networks for farmers, developing and translating educational materials and other supportive means. She is a founding member of the European Alliance for Regenerative Agriculture (EARA), a Mission Soil Ambassador, and member of the Greek Agroecology Network, while establishing bridges among these different networks.

Sheila produces her crops organically, agroecologically and regeneratively. “*At our farm, we combine food production with ecosystem restoration. What we create here is a food forest, with a layered composition of a variety of plants and animals*”, Sheila says. In the farming operation, no organic pesticides are used and tillage is also not being used. Soil health and biodiversity is

at the centre of the system. Mulching and cover crops are essential practices at the farm to foster soil life and functioning. The mycelium, the root network of fungi, is a key indicator of soil health.

In between the olive and citrus tree lines, native grasses grow freely. The productive crops are combined with multiple other species that not only bring in biodiversity, but also provide numerous ecosystem services, such as pest control, pollinator habitats, organic matter production, etc. The dense and biodiverse vegetation, cover crops and mulching practices are key to preventing erosion, which usually affects farmers widely in the region.



Next to erosion, the increasing frequency of wildfires and droughts poses an ever-growing threat to farmers, who already face a very precarious situation. Regenerative farming practices, such as those implemented and visible at Sheila's farm, contribute immensely to the resilience of the farming operation, ensuring that the annual financial goals are met.

But what started the transition of the farm from a 30 year-old organic farm, to a much more complex agroforestry system, in many places resembling a dense food forest? "*My farm actually started to transition by itself. After grafting almost all of our citrus trees, the soil was exposed to a lot of sunlight, and fig and mulberry trees started growing everywhere. It was then that I started wondering why is it that all these trees grow in my farm, but farmers passing by and agronomists all tell me I should cut the trees. How are we going so much against nature in our farming operations and on what logic is this based?*" In her inquiries for answers, she came across Dimitri Tsitos and Giuseppe Sannicandro and discovered food forests, agroforestry, and regenerative agriculture, and everything started to make sense again. Contrary to conventional systems, which often rely on systems of extraction, the farm aims at imitating a circular ecosystem. When the trees are pruned, the branches are left behind, to provide habitats for a variety of above- and below-ground organisms. Leaving the organic material behind is essential to fostering soil health and fertility.

The European Alliance for Regenerative Agriculture (EARA) recently published a report featuring the results of their ongoing farmer-led research programme, by assessing both agronomic and ecological performance through a Regenerating Full Productivity (RFP) index. The results, featuring case studies located in 14 countries in the period 2021-2023, among which Sheila's farm, shows that the study sites reached on average a 33% higher Full Productivity, gained a variety of agroecological advantages (higher photosynthesis, soil cover, plant diversity), and highly reduced synthetic nitrogen and pesticide uses, while maintaining robust yields and increasing gross margins.

You can read more about Sheila's work, the Southern Lights initiative and the EARA network, through the following links:

https://thesouthernlights.org/sheila/
https://regenerativefarminggreece.org/
https://silver-leaf.de/
https://eara.farm/
https://thelos.gr/

FRANCE

LOCATION	**Coudres, Plateau of Saint André de l'Eure**
FARM SIZE	**80 hectares**
CROPS	**Wheat, barley, sorghum, maize, legumes, rapeseed, linseed, sunflower, protein peas, field bean and lentils**

Jean-Bernard Lozier

"Rather than solely focusing on yields, Jean Bernard established social, economic, and environmental objectives."

In 1990, at age 33, Jean-Bernard made a decisive shift in his career. He handed over his poultry farm, which he had been managing with direct-to-consumer sales, to his niece. In return, he took over the family grain farm located in Coudres, on the Plateau of Saint André de l'Eure. Despite management advisers expressing concerns about the farm's economic viability, Jean-Bernard saw an opportunity for transformation. Motivated by environmental values and a personal interest in agronomy, he committed to restructuring the farm with a strong focus on agroecological principles.

Upon taking over, Jean-Bernard expanded the farm to 80 ha. Rather than solely focusing on yields, he established social, economic, and environmental objectives. This meant a focus on reducing dependence on inputs, enhancing soil and water quality, all while maintaining or improving economic margins. His transition began with experimentation. Over the years, he continued to adjust his system, experimenting with different weed control approaches, from no till to minimal tillage. From 2013 onward, he entered several environmental contracts, which helped formalise and support his transition efforts.

Today, Jean-Bernard operates a diverse cropping system with 10 to 11 different crops spread over a 9–10 year rotation. He

alternates spring and winter crops and balances crop families (legumes, cereals, brassicas, etc...). His practices include delayed sowing, mixed wheat varieties, and nitrogen management based on plant needs. Jean-Bernard also uses cover crops extensively, not just for compliance or erosion control but as a core part of the cropping system. He has also planted 4 km of hedgerows and maintains 3 ha of melliferous (nectar and pollen producing) plants. To preserve soil structure, he avoids tilling deeper than 15 cm for cover crop seeding, and is looking into avoiding ploughing as much as possible.

Reducing synthetic inputs is central to his philosophy, and he has managed to reduce his pesticide use by 80 percent. Jean-Bernard sets a nitrogen surplus target of less than 60 kg/ha at the start of the winter, avoids unnecessary applications of pesticides, and has eliminated insecticide use entirely. He has not used any fungicides for five years and applies herbicides only when he finds it absolutely necessary: "*I don't practice organic farming because I don't rule out using chemical weeding if necessary, but I strive to understand the natural interactions of the soil.*"

His approach to agroecology is deeply systemic. He constantly experiments with planting densities and dates, and crop varieties. For instance, he replaced maize with more drought-resistant sorghum. Jean-Bernard walks his fields frequently to visually assess crop and weed dynamics and is willing to tolerate some "weeds" as part of an integral living and functioning ecosystem. As Jean-Bernard puts it: "*The very nature of our profession is to work with nature. We have to be humble in the face of the climate. It's up to us to adapt and find solutions to these events. Everything is a matter of compromise—trying to have as little negative impact on nature as possible.*"

> ***"It's up to us to adapt and find solutions to these events. Everything is a matter of compromise trying to have as little negative impact on nature as possible."***

Environmentally, his farm has improved water and soil quality, increased biodiversity, and reduced greenhouse gas emissions. Diesel use is as low as 60 L per hectare, and synthetic nitrogen use has been halved. Economically, Jean-Bernard maintains very good margins - not by maximizing yields but by evaluating the profitability of the entire farming system.

His work has also had strong social and cultural impacts, and an important improvement in his own quality of life. For Jean-Bernard, reducing pesticide use requires collaboration among farmers, strong technical support, and, above all, a clear understanding of the purpose behind the change. His involvement in groups like the DEPHY network and the Chamber of Agriculture of Normandy allows him to influence regional practices and policies, acting as a bridge between innovation and practical implementation. Culturally, he has helped shift local perceptions of what it means to be a successful farmer. His willingness to experiment, accept uncertainty and learn from failures sets an example that challenges conventional norms.

SPAIN

LOCATION	Níjar, Almería
FARM SIZE	3 hectares
CROPS	Tomatoes, peppers, and melons

Esther Molina

> ***“I’ve always believed in working with nature, not against it.”***

Esther Molina, based in Molina, Níjar, Almería (Spain), is engaged in the European network of demo farms ‘IPMWORKS’. Walking through the greenhouse farm of Esther, one might expect the usual hum of machinery. Instead, the air is filled with the delicate fragrance of flowering plants, and the only hum is that of pollinators buzzing between crops. Esther has made it her mission to farm differently, without pesticides. Her journey, one of trial, error, and ultimate success, is an inspiring testament to how a farm can flourish using nature’s own mechanisms to combat pests. Esther’s 3-ha farm primarily produces tomatoes, peppers, and melons. Instead of turning to chemical solutions, she began implementing a holistic Integrated Pest Management (IPM) system.

Initially reliant on conventional chemical pesticides, Esther began to observe diminishing returns: “*For years, I used pesticides just like everyone else, but I started noticing that the more I sprayed, the more I needed to spray. Both the crops and the soil were getting weaker, and the pests seemed to be getting stronger.*” Recognizing this vicious cycle, she committed to eliminating insecticides entirely and drastically reducing fungicide use. It wasn’t an easy decision - switching to biological control meant learning new techniques, observing her crops more closely, and, in many ways, becoming more in tune with the ecosystem of her greenhouses. “*I’ve always believed in working with nature, not against it.*”, she says.

Key to her transition was the introduction of beneficial insects, such as *Nesidiocoris tenuis* for tomatoes and *Amblyseius* and *Aphidius* species to manage thrips and aphids in peppers and melons. She also focused on fostering a healthier environment for these natural predators by planting floral strips and cereals inside the greenhouses. These plants serve as refuges, providing food and shelter for beneficial insects, ensuring they remain in the greenhouse ecosystem year-round.

But she did not stop there. Soil health also became a major focus. Understanding that healthier soil leads to healthier plants, she incorporated organic amendments (manure and compost) every two to three years to enhance fertility. This practice not only strengthened the plants' natural defenses but also improved water retention and overall soil structure.

The transition was not without its challenges. "*The first season was nerve-wracking, there were moments when I worried the biological control wouldn't be enough, but after a while, I started seeing the results.*" By the second year, pest pressures had declined, and biological controls began to establish themselves more autonomously. Pheromone-based mating disruption techniques, particularly against *Tuta absoluta* in tomatoes, further reduced the need for insecticides.

> **"It's incredible, The ecosystem balances itself when you give it the right conditions."**

By relying on plant health and biofungicides only when strictly necessary, Esther now operates a nearly insecticide-free greenhouse. Contrary to common fears, her costs remained comparable to traditional farming. "*I used to spend a lot on pesticides, and now I invest in biological control agents and plants for biodiversity. The difference is that my soil is healthier, and my yields are more stable. I don't have to worry about pest resistance anymore*".

Beyond financial savings, Esther has noticed a significant change in the biodiversity of her farm. More birds, reptiles, pollinators, and even beneficial spiders have made her greenhouse their home. "It's incredible," she says. "The ecosystem balances itself when you give it the right conditions."

Esther emphasizes the need for systemic support to make such transitions more accessible. "*We need more funding for research and farmer training,*" she says. "*It took me years to get to this point, and I had to learn a lot on my own. If farmers had access to better information and support, more of us would make the switch.*" She also believes that financial incentives could encourage more widespread adoption. "*Right now, a lot of the burden falls on farmers to prove that biological control works. If governments rewarded us for reducing pesticide use instead of just subsidizing chemical agriculture, we'd see a huge shift.*"

Esther Molina's experience offers a powerful example of ecological farming in action. Her success demonstrates that farming without pesticides is not only viable but also economically sustainable. Her farm stands as a beacon of what is possible when nature is given the space to function as it was intended. With patience, knowledge, and institutional support, many more farmers across Europe could replicate her journey and contribute to a healthier, more resilient agricultural future. "*I want people to know that it's possible, It takes patience and commitment, but in the end, it's worth it. My farm is thriving, and I wouldn't go back to the old way even if I could.*"

“ It takes patience and commitment, but in the end, it’s worth it. My farm is thriving, and I wouldn’t go back to the old way even if I could.”

The farm of Esther Molina is part of COEXPHAL, the Association of Fruit and Vegetable Producers’ Organisations in the province of Almeria, Spain. Eduardo Crisol from COEXPHAL in Almeria, participated in the IPMWORKS project and contributed to this case study.

IPMWORKS is an H2020 project that brings together 31 partners from 16 countries, coordinated by the French National Research Institute for Agriculture, Food and the Environment (INRAE). The project has established an EU-wide network of farmers, demonstrating and promoting cost-effective IPM strategies, with the objective of achieving significant pesticide reduction. Hub advisors, who coordinate local hubs of typically 10-15 farmers, provide intensive, expert advice on IPM, facilitate knowledge sharing and coaching, and organise local demonstration activities. The farmers involved progressively adopt a holistic approach to IPM, and, through peer-to-peer learning and joint efforts, demonstrate to other farmers that IPM ‘works’: it leads to lower pesticide use, reduced costs and enhanced profitability. IPMWORKS both coordinates existing networks promoting IPM and launched new hubs of farms where a relevant network was not yet available. The project also promotes access to the ‘IPM Decisions’ platform, and focuses on the wide dissemination of the collected data and results to reach farmers and advisory networks beyond the current IPMWORKS network.

More information on IPMWORKS and the results of the project can be found at https://ipmworks.net/

HUNGARY

LOCATION	**Tiszaszentimre, Great Hungarian Plain**
FARM SIZE	**~500 hectares**
CROPS	**Arable (wheat, pea, rye, barley) and livestock (cattle) farming**

Mátyás Bekecs

> **“Instead of the former monocultures, he now cultivates diverse polycultures such as wheat-pea, rye-vetch, and barley-vetch mixtures.”**

Mátyás Bekecs, a 40-year-old farmer from Hungary, has been applying regenerative practices without pesticides or synthetic fertilizers since 2022. He manages his family’s 500-ha farm in Tiszaszentimre, a village of 1,800 people on the Great Hungarian Plain.

Since the late 1990s, the farm had traditionally grown hybrid maize, sunflower, and barley using intensive methods. After taking over the management of the farm in 2016, Mátyás began questioning the dependence of conventional farming on external inputs. This led him to explore more regenerative ways of farming - by depending on natural ecological processes rather than chemical interventions.

Since 2022, Mátyás has completely eliminated tillage from his farming practices and uses no chemicals at all, including pesticides or synthetic fertilizers. About half of the land is now used for grazing 200–250 Hungarian Variegated Cattle, while the other half is used to grow cash crops. Instead of the former monocultures, he now cultivates diverse polycultures such as wheat-pea, rye-vetch, and barley-vetch mixtures.

> **“The benefits of this transition are numerous and his approach is economically viable.”**

At the heart of Mátyás’s system are five core principles. First and foremost is minimizing soil disturbance. He practices zero-tillage and does not use any pesticides, not even those allowed in organic farming. For Mátyás, the ultimate goal is to cultivate healthy soil in order to grow healthy crops, which in turn can nourish animals and humans safely. The second key element is mulching. By keeping the soil covered with organic matter, he protects it from erosion, retains moisture, and suppresses weed growth.

Third, he employs diverse cover cropping, often using up to 12 species in a single season to feed the soil’s biology and support ecological resilience. This ties closely with his fourth principle - embracing biodiversity. Rather than relying on monocultures, he grows polycultures that mimic natural ecosystems and enhance system stability.

And finally, Mátyás integrates livestock and beneficial insects into his farming system to manage weeds and foster ecological balance. He often asks the question “what is weed?” invoking Hungarian ecologist Dr. Gyulai’s insight: “*What an animal can eat is not a weed but forage*”. Rather than eliminating all unwanted plants, he encourages grazing animals and builds habitats for insects and birds. He is also experimenting with agroforestry, planting trees and shrubs to create a more diverse and resilient farm landscape.

For Mátyás, the profitability of his farm is more important than the yield. The benefits of this transition are numerous and include: fewer inputs and lower costs, reduced bureaucracy and stress, greater independence from banks and subsidies, and - importantly - he does not get exposed to toxic chemicals. Above all, his approach is economically viable.

He advocates for reorienting EU agricultural subsidies toward soil regeneration, warning that current funding models often incentivize practices that degrade soils. He encourages other farmers to use EU agricultural subsidies to regenerate their soils, and in this way ensure their farms remain viable even if subsidies were to disappear.

BULGARIA

LOCATION	**Aytos**
FARM SIZE	**600 hectares**
CROPS	**Wheat, barley, sunflower, rapeseed, organic apples, peas, fava beans, oats, flax, coriander**

Aleksandar Sotirov

“For nearly five years now, we’ve been implementing conservation agriculture methods and practices that reduce pesticide and chemical fertilizer usage.”

Aleksandar Sotirov is a 30-year-old farmer from the town of Aytos, Bulgaria, where he manages a 600 ha family farm. The land extends across neighbouring villages and comprises a diversity of crops that include wheat, sunflower, barley, rapeseed, and organic apples. In recent years, the farm has diversified further with crops such as peas, fava beans, oats, flax, and coriander. The farm was founded by his father in 2003. Aleksandar began participating actively as a child, and started taking management roles from 2015.

For many years, the farm followed conventional production methods. However, during the 2019–2020 growing season, a prolonged drought and early dry winds caused a complete crop failure. This put the farm in severe economic distress and at a crossroads: either shut down or embrace new practices, technologies and innovations tailored to the climate and biodiversity crises: “*For a young and motivated farmer, supported by my family, the choice was clear. For nearly five years now, we’ve been implementing conservation agriculture methods and practices that reduce pesticide and chemical fertilizer usage*”, says Aleksandar.

The transition was not without its challenges. There was little information about conservation agriculture in Bulgaria at the time, let alone practical experience. Fortunately, Aleksandar received

critical support from a trusted advisor and a fellow farmer, both of whom introduced him to the principles and techniques of conservation agriculture.

Even with this support, the lack of practical experience presented difficulties. One of the biggest early challenges was the emergence of severe weed infestations, especially with the recent restrictions on glyphosate. The most significant challenge was the high cost of acquiring specialised equipment, especially for a farm already in economic distress. Although European rural development programmes are promoted as supportive of young and innovative farmers, Aleksandar found that his efforts were not prioritised. Fortunately he was able to secure favorable bank loans, which allowed him to update and replace part of his equipment.

Another challenge was the lack of awareness about technologies, such as specialised machinery and forecasting systems, that reduce pesticide and fertiliser use. These tools, as Aleksandar later discovered, are affordable, accessible, and highly beneficial - saving both money and resources: "*I'm puzzled as to why we didn't adopt them earlier*".

The first innovation adopted on the farm was a pest and disease forecasting system based on data from a weather station and integrated software.This was first implemented in the apple orchards. Conventionally, apples are treated preventively with chemicals 20-25 times a season to combat diseases and pests, leading to excessive chemical use and high costs from buying pesticides. The new system allowed Aleksandar and his family to pinpoint sensitive periods and only treat the apples when necessary. This opened their eyes to the adoption of integrated pest management. Equipped with this knowledge Aleksandar realised that fewer applications of synthetic pesticides at the right time and space, and the use of biological products could yield better results: "*Over the years, this led to the creation of an organic apple orchard with significantly lower costs and equally good yields, if not better quality, compared to conventional orchards*".

"Over the years, this led to the creation of an organic apple orchard with significantly lower costs and equally good yields, if not better quality, compared to conventional orchards."

Another significant change has been the adoption of practices from conservation agriculture. For five years now, the farm has eliminated or minimised soil tillage, resorting to shallow interventions (up to 5 cm depth) only when absolutely necessary. Cover crops have been introduced to retain soil moisture, restore soil potential, and lower their carbon footprint. While this approach has brought some challenges, it has also significantly reduced costs associated with soil preparation and laid the groundwork for more sustainable production.

Signs of ecological improvement are already visible even though the overall progress takes time. "*For now, I can't claim a significant positive environmental impact, as we've only been implementing these practices for a few years*," Aleksandar explains. "*Soil restoration, ecosystem recovery, and detoxification from chemicals are long-term processes. However, analyses show increased organic matter in the soil, more beneficial microorganisms, and the reappearance of earthworms and various animals in our fields. While recovery is slow, I believe we are on the right path.*"

The financial impact has also been encouraging. "*Regarding reduced pesticide and fertilizer use, costs have dropped by over 20%, with no noticeable decline in yields. Overall, farm expenses have decreased while yields remain stable, resulting in profit with a smaller environmental impact.*"

One of the ongoing difficulties remains the market. Grain prices remain unchanged regardless of production methods. Prices remain alarmingly low, often forcing the farm to sell at a loss. For apples sold directly to consumers, the feedback is excellent, with customers praising the taste and health benefits. Even so, wholesale markets for organic produce also face price limitations, sometimes failing to cover even harvesting costs.

Looking ahead, Aleksandar urges fellow farmers to take proactive steps "*rather than waiting for disaster to strike before taking action*," and believes that good yields can be achieved without harming the environment. "*Ultimately, my goal is to become an example of good farming practices - one that others will follow.*"

PESTICIDE-FREE PUBLIC SPACES

In recent years, several European Union countries and cities have taken steps that limit or ban the use of pesticide use in public spaces, like parks, playgrounds, roads, and other communal areas. These include France, Belgium, Germany, Luxembourg, Denmark, the Netherlands, and Italy. It is essential that all EU countries ban the use of pesticides in public spaces.

France

Since January 2017, the use of pesticides has been prohibited in public green spaces, such as parks and gardens. This ban was extended in July 2022 to include private areas frequently accessed by the public, including residential properties, hotels, cemeteries, and sports facilities. Exceptions are made only for low-risk pesticides and specific situations where no alternative exists.

Belgium

Belgium has adopted a regional approach:
Flanders: Implemented a ban on pesticide use in public spaces starting January 2015.
Wallonia: Enforced a similar ban from June 2019, following a five-year transition period.
Brussels Capital Region: Restricted pesticide use in public areas from June 2013, with a full ban effective from January 2019. In 2024 Brussels announced the ban on the use of pesticides also in agricultural areas from 2030.

Germany

Germany prohibits pesticide use on non-agricultural land unless an exception is granted. Over 550 municipalities have adopted measures to reduce or eliminate pesticide use in public spaces.

Luxembourg

Luxembourg introduced a comprehensive ban on pesticide use in public spaces in January 2016. The country has also prohibited the use of glyphosate in agriculture since 2021, though the decision was challenged by the industry.

Denmark

Denmark began phasing out pesticide use in public areas in 1998, achieving a significant reduction by 2007.

The Netherlands

The Netherlands banned pesticide use on pavements from March 2016, extending the ban to other green areas by the end of 2017. Certain exemptions apply, but the country has made substantial progress in reducing pesticide use in urban environments.

Italy

Italy banned the use of glyphosate in public areas in 2016. Local guidelines and national action plans support the sustainable use of plant protection products, encouraging municipalities to adopt pesticide-free practices.

Below we highlight **two successful initiatives** that show that it is possible to manage urban nature without resorting to pesticides.These measures aim to protect human health, preserve biodiversity, and promote sustainable urban environments.

Pesticide-Free Practices in Paris

"Nature Urbaine" farm atop the Paris Expo Porte de Versailles.

The city of Paris is a great example of how big cities can transition toward greener, more caring and responsible land management practices. Recognising the environmental and health risks associated with synthetic pesticides, Paris has completely phased out their use across its public spaces. Through a combination of innovative maintenance techniques, and support for local, pesticide-free agriculture, Paris shows that cities can coexist with nature, while empowering its inhabitants to actively care for their environment.

Mechanical and manual methods have replaced chemical herbicides; for example, municipal workers use hoes, thermal weeders, and mechanical brushes to control weed growth on sidewalks and public paths. Instead of eradicating every plant considered a "weed", the city chose a more natural aesthetic: spontaneous vegetation. Not only does this support urban biodiversity but it also requires less intervention. Ground cover plants such as thyme or clover are used strategically to suppress weeds while improving the soil's health.

Mulching is another widely adopted method, serving multiple purposes: it retains soil moisture, suppresses weed growth, and provides organic matter as it decomposes. Wood chips and straw are common mulch materials in playgrounds and tree pits. Perennials are favored over annuals due to their ability to cover the soil continuously, which reduces maintenance needs and prevents the formation of weeds. The city also plants native and resilient species that are well-adapted to local climate conditions, reducing the need for watering, fertilising, or pest control. For instance, species like lavender, sedum, and various grasses have been introduced in traffic islands and roadside plantings.

Beyond these techniques, Paris engages its citizens through participatory greening projects. The "Permis de végétaliser" initiative grants residents the right to green small public spaces such as the base of trees or building facades. Participants receive gardening kits and guidance, and their contributions help further reduce the need for chemical interventions by encouraging ground-level biodiversity and public stewardship.

In parallel, Paris supports pesticide-free agriculture both within the city and in its surrounding region. Farmers practicing organic and agroecological farming are key partners in the city's broader food sustainability vision. In addition, urban agriculture is promoted under the "Parisculteurs" program, which transforms rooftops, abandoned lots, and vertical walls into gardens using organic principles. Notable examples include the "Nature Urbaine" farm atop the Paris Expo Porte de Versailles, one of the largest rooftop farms in Europe.

Economic viability is ensured through short supply chains and direct-to-consumer models. Community-supported agriculture (CSA), farmers' markets, and farm-to-table cooperatives connect consumers directly with local producers, reinforcing trust and financial support for sustainable practices. The City of Paris provides logistical and technical support to these initiatives, helping farmers transition away from synthetic chemicals while promoting environmental stewardship and access to sustainable, locally produced food.

Pesticide-free maintenance of public spaces in Zagreb

King Tomislav Park, in front of the Art Pavilion in Zagreb.

In February 2018, The City of Zagreb joined the European Pesticide Free Towns Network, phasing out synthetic pesticides from use in public urban spaces, becoming the first in the Region to take this step. The city actively encourages the return of nature to the heart of the city, with a special focus on planting and preserving native species that are better adapted to the local environment. Mowing is carried out thoughtfully to allow certain grassy areas to grow longer during key periods to support local biodiversity. These practices help create habitats for pollinators such as butterflies and bees.

Zagreb established in 2013 city-owned urban gardens across ten locations, providing residents, especially those without private land, the opportunity to cultivate their own organic produce. These gardens support healthy eating habits and foster community interaction and environmental awareness. To promote organic practices, the City of Zagreb has developed, in collaboration with the Faculty of Agriculture, University of Zagreb, a manual titled "Urban Organic Gardens". It contains practical advice for growing a large number of vegetable crops, describing the way to protect the crops by biological methods, and methods for composting.

The project "Ecological Map of the City of Zagreb" regularly monitors the air quality, and soil and water pollution on children's playgrounds, in the City Gardens and some other places. The soil in the gardens is regularly tested for pesticides residues, to maintain the quality and public trust. All data are publicly available on the city's webpage.

Zagreb has also been involved in projects like pro-Glreg, which focuses on transforming post-industrial areas into green spaces. In the Sesvete district, a therapeutic garden has been developed, offering a space for gardening, relaxation, and social interaction, particularly benefiting individuals with disabilities. This initiative includes accessible garden beds and a multi-sensory park, promoting inclusivity and well-being.

Through these comprehensive strategies, Zagreb not only improves urban resilience but also nurtures a deeper connection between people and nature.

CONCLUSION

> ***"It is key that IPM, mandatory in the EU since 2014, is truly implemented on all farms. Strong political support is urgently needed to ensure implementation of the Sustainable Use of Pesticides Directive."***

The examples highlighted in this report demonstrate that minimising and even eliminating pesticide use is not a distant goal but is already being undertaken by farmers all across Europe, as well as by many public authorities. These stories represent just a small sample of the many studies, projects, and farmers that have shown it is possible to greatly reduce or eliminate pesticide use while maintaining strong yields, and often even increasing profit margins[14].

Through Integrated Pest Management (IPM) and agroecological approaches, such as crop rotation and diversification, soil restoration and habitat creation farmers are proving that it is possible to farm, even at a large scale, without heavy reliance on toxic chemicals. Cities too are playing a growing role in this transition, by managing public spaces without the use of pesticides, while supporting local biodiversity and protecting the health of inhabitants.

However, while this transition is underway in many areas, it is key that IPM, mandatory in the EU since 2014, is truly implemented on all farms. Strong political support is urgently needed to ensure implementation of the Sustainable Use of Pesticides Directive.

Currently, the dominant European agricultural model is one that encourages the overuse of pesticides, prioritising monocultures, competition and short-term productivity over diversification, long-term resilience and food quality. The main instrument to support farmers - the Common Agricultural Policy (CAP) - accounts for one-third of the EU budget, totaling almost €390 billion between 2021 and 2027. Yet this funding largely supports practices that harm farmers and nature, rather than protects them. Instead of rewarding environmentally-friendly farming, the CAP has been allocating payments primarily based on land size. As a result, 80% of subsidies go to just 20% of farmers, favouring industrial exploitation over rewarding farmers who effectively provide public goods, such as the restoration of soil health and biodiversity.

To make matters worse, we are witnessing a growing backlash against environmental policies, often framed as a response to farmers' struggles. The proposal to introduce binding targets for pesticide reduction has been abandoned[15], the few green requirements in the CAP dismantled and the interests of the agroindustry continue to dominate the political agenda. Rather than addressing the root causes of the crisis in agriculture - such as the biodiversity, environment and climate crises, and unfair market dynamics - governments and EU institutions are using these challenges as justification to roll back environmental commitments.

This sidetracking not only undermines the EU's biodiversity and climate objectives, but also does a disservice to the growing number of farmers who are already working toward more sustainable food systems. Without consistent political will, clear regulatory frameworks, and a better distribution of public funds, a real transition away from pesticides will remain out of reach - despite the urgency of the environmental and health crises we currently face.

14 United Nations (2017). Report of the Special Rapporteur on the right to food - UN experts denounce 'myth' pesticides are necessary to feed the world, IPMWORKS project. Reducing pesticide use is a must for the future, Lechenet et al. (2017). Reducing pesticide use while preserving crop productivity and profitability on arable farms, Pecenka et al. (2021). IPM reduces insecticide applications by 95% while maintaining or enhancing crop yields through wild pollinator conservation, INRAE (2022). Protect crops by increasing plant diversity in agricultural areas, Magrach et al. (2022). Increasing crop richness and reducing field sizes provide higher yields to pollinator-dependent crops, Rodríguez et al. (2022). Aphid suppression by natural enemies in hedgerows surrounding greenhouses in southern Spain, Nandillon (2024). Pesticide use reduction : evolution of practices and technico-economic performances within farms of the DEPHY network, Wäckers, From Pesticide Addiction to Ecological Integrated Pest Management . EARA (2025). Farmer-led Research on Europe's Full Productivity

15 CEO (2023). Sabotaging EU Pesticide Reduction Law (SUR), CEO (2022). A loud lobby for a silent spring, FoEE (2023). How the agroindustry brought down the EU pesticide law, PAN Europe (2023). Black Day for Health and Biodiversity: EU Commission withdraws proposal for Pesticide Reduction

Together with over 90 organisations, we have developed a Roadmap for a Pesticide Phase-Out[16] which outlines key demands to make pesticide reduction a reality.

These include:

- **Redirecting Common Agricultural Policy funding:** EU public funding should help farmers reduce pesticide use by supporting nature-friendly methods such as agroecology. Public money should reward farmers for protecting nature and fostering ecosystem functioning, not for applying harmful practices[17]. The future CAP must move away from simply paying based on land size, and instead support result-based practices that benefit ecosystems and rural communities. Funding should go to farmers who care for nature and who need it most.
- **Ensure full implementation of the existing directive on the sustainable use of pesticides (dir. 2009/128/EC), including the implementation of Integrated Pest Management:** The current directive has made IPM mandatory since 2014, demanding pesticide-free zones and zones in which only natural low-risk pesticides are allowed, in order to protect areas used by the public, water bodies and nature areas. However these rules are not being implemented. It is urgent that countries fully apply and enforce the current directive.
- **Expanding independent advisory systems:** Many farmers get advice from companies that profit from selling pesticides. This creates a conflict of interest and keeps farmers relying on chemical solutions. Independent advisory systems, supported by sufficient public funding, with high expertise on IPM, agroecological and organic practices are essential for helping farmers adopt alternatives to pesticides.
- **Ensuring fair prices and good working conditions:** The EU must ensure a fair economic environment so that farmers can receive fair prices, have a decent standard of living, and face fewer barriers in transitioning to more sustainable production systems.
- **Adopting a redistributive pesticide levy:** A pesticide levy is a first step to internalising the actual cost of the use of pesticides. The money could then be used to cover some of the environmental costs, indemnifying those who suffer health consequences and support farmers in the transition to sustainable practices[18]. While individual countries can introduce this tax, having a common system across the EU would ensure a level playing field and have a more significant impact.

It is time for the EU to stand with farmers, citizens and ecosystems, and support a genuine transition toward toxic-free food systems. We owe it to farmers, to communities, and to future generations to break free from a model built on harmful chemicals, which undermines the natural systems we completely depend upon. The knowledge, tools, and real-world examples are already here. Now we need the political will to make this transition the new norm across Europe.

16 PAN Europe and FoEE (2025) The time for delay is over: EU must phase out pesticides and build sustainable food systems and Roadmap for Pesticide Phase-Out

17 PAN Europe (2025). CAP post 2027 - an opportunity to answer citizens' demands and support farming beyond pesticides. Birdlife, EEB, Greenpeace and WWF (2025). Time for farmers and nature to thrive

18 Möckel, Stefan, et al. (2021). Pesticide tax in the EU: Various levy concepts and their impact on pesticide reduction

PAN Europe strives to eliminate hazardous pesticides in Europe, and replace pesticides by ecologically sound alternatives. PAN Europe is an expertise-based organisation, relying on science and engaging with national member and EU organisations, scientists, policy-makers, farmers and other stakeholders.

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Friends of the Earth Europe campaigns for environmentally sustainable and socially just societies, unites more than 30 national organisations with thousands of local groups, and is part of the world's largest grassroots environmental network, Friends of the Earth International.

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