# Abstract of the foodwatch report ‘Locked-in Pesticides’ 2022

## Introduction

The agricultural system of the European Union is dependent on the use of pesticides to a degree that is commonly described as “lock-in”. This term is derived from the neurological disorder “locked-in syndrome”, describing a paralysis of the body. Although the patient is conscious and their cognitive function is usually unaffected, they have no control over their body.

The analogy to “modern” agriculture is striking. Most of the agricultural produce is sold to a “handful” of corporations and large retailers who determine the price, varieties and quality. Many farmers do not even know the price their product(s) will bring until the harvest begins. “Locked-in” farmers can only make a profit by reducing costs per produced unit or producing more units at the same costs. This strategy is pursued by most farmers, leading to a permanent race to the bottom, along with the associated adverse external effects: rural exodus (migration and elimination of infrastructure especially related to processing), environmental destruction, overproduction and large subsidies. The external costs of the global food system are staggering. Pesticides are at the centre of this strategy.

Initially, pesticides seemed to be a useful tool for controlling pests and diseases, but that is a narrow-minded view. Soon after their introduction, pesticides became the key technology for generating and maintaining very simplified, and thus – in all aspects – fragile agricultural production systems. This fragility creates a self-reinforced dependency on pesticides, which has led to a “lock-in” where no escape seems possible.

## The path to pesticide dependency

Three main socio-economic drivers can be identified as crucial for agriculture to have start develop dependency on pesticide use: international trade, land grabbing and rural exodus (migration). These three drivers are closely interrelated and, over time, have made the large-scale use of pesticides unavoidable. The availability of certain pesticides (or use types) also presented a “first-mover advantage”, enabling farmers to either grow their crops more cost-effectively or produce crops that are more visually pleasing – forcing all competing farmers to follow suit.

Herbicides and plant growth regulators (PGRs) are two examples: Once introduced, their large-scale adoption was inevitable. The rapid acceptance of herbicides and PGRs was also a reaction to global overproduction in the 1960s. Many governments restricted production, usually via area contingencies. Low producer prices forced farmers to reduce labour costs, which led to herbicide use, while the use of PGRs allowed for higher nitrogen use and thus more production per permitted hectare. Since risk assessment prior to authorisation did not exist, pesticide dependencies were created without awareness or discussion.

Pesticide use has been criticised strongly at least since the 1960s, and the debate has been ongoing for about six decades. The European Union harmonised pesticide authorisation, and EU legislation was adopted to reduce pesticide use and/or risks.

In the European Union, overall, no reduction in pesticide use can be observed over the past few decades. Herbicide use has increased since the 1990s, and it is very likely that pesticide-use intensity (the number of doses per area) has also risen, because more low-dose pesticides are being used, while the total amounts sold have either remained stable or increased.

France, Germany and the Netherlands are the largest pesticide users in the European Union. These countries use various parameters for evaluating pesticide use. In France the Ecophyto plan to reduce pesticide use by 50% between 2008 and 2018 failed despite excellent research by governmental institutions (e.g. INRAE) and the existence of alternatives. In Germany and the Netherlands pesticide use has not declined in either quantity or toxicity, and intensity has increased (number of hectares treated).

Since the very beginning, various negative side effects of pesticide use have been observed. Pests quickly became resistant even against arsenic pesticides and hydrocyanic acid. The fact that pesticides eliminate beneficial organisms and may cause even higher pest pressure (resurgence) has been known since the 1950s. Both resistance and resurgence are leading to higher pesticide use (self-reinforced dependency).

Residues in food began worrying consumers as early as around 1900, and the first serious negative health effects were observed in the 1920s, when German winegrowers became seriously ill following heavy applications of calcium arsenate to combat the codling moth. Today, the same or similar negative effects of pesticide use can still be observed. In addition, pesticides (mostly herbicides) in groundwater are causing considerable economic harm.

The true price of pesticide use is high. Although little data is available, the annual external costs in the EU are estimated to be in the billions of euros rather than in the millions. At the same time very little is being spent on the avoidance and/or reduction of pesticide use.

## The lock-in syndrome: why we don't succeed in escaping

Although pesticides cause considerable harm and can be seen as the catalysts of a damaging and costly agricultural system, almost every attempt to reduce pesticide use on a large scale has failed. There are several reasons for this situation. Pesticides are often viewed as farming tools that simply need to be substituted by less harmful tools. This narrow-minded approach is destined to fail.

Although non-chemical control, especially the biological control of arthropod pests, is usually more efficient than the use of insecticides/acaricides, there are social and some economic constraints. Substitution fails when it comes to herbicide and fungicide use. The current agricultural system has been centred around their use for decades. It is of utmost importance to understand the socio-economic drivers that are "imprisoning" growers and forcing them to use pesticides.

The socio-economic drivers of pesticide lock-in can be grouped into two categories: One reduces diversity (genetic diversity, crop diversity), and the other forces rationalisation (cost reduction) and reduces biodiversity. These drivers are intertwined and interrelated.

The global competition among (still) millions of farmers and the strong consolidation on both the supply side (farm inputs) and the demand side (buyers of produce) are the two key drivers, leading to a race to the bottom. It seems this race to the bottom has created an eternal lose-lose-lose situation for farmers, the environment and the rest of society – except for the consolidated businesses on the supply (pesticides, fertiliser, seed, feed stock) and demand side.

Industrial agriculture, including pesticides, is often perceived as the "necessary evil" for producing large amounts of affordable food "for a growing population". However, when looking at input versus output, African and Asian farmers produce food much more efficiently than European farmers; smaller farms are generally more profitable than larger farms. Diverse farms outperform monocultures when it comes to yield and profitability. Large farms depend more on subsidies than smaller farms. Only a fraction of the European agricultural land is currently used for producing the types of food that people should eat to maintain a healthy (and climate- friendly) diet. Large amounts of land and other resources are used for producing animal feed for meat and dairy production. EU agriculture feeds 7 billion farm animals a year and about 0.45 billion people. Millions of tonnes of

food are wasted. The total external costs of the food system are soaring. The claim that industrial agriculture produces affordable food seems to be in stark contrast to reality. Essentially, the proponents of "modern" agriculture have a contrafactual understanding of achievement.

Often, politicians do not address challenges until grave issues have become urgent. Over the past few decades, industrial agriculture has created many environmental and social issues, resulting in a large patchwork of ad-hoc legislation and policies. Since each problem is addressed separately, there is no coherence, and some policies are even contradictory. However, many agricultural issues, such as pesticide use, are closely related to other issues, and future agriculture must be envisioned and planned comprehensively. The mitigation of anthropogenic climate change is a chance to transform a "locked-in" system and create positive synergies. Many agronomic measures for preventing pesticide use also solve or reduce other pressing challenges, and a reallocation of funds towards the increased economic independence of farmers will solve social issues. An innovative approach to problem-solving is necessary.

Because the farming system is in an economic pesticide lock-in, policy changes need to primarily address economics. The changes must serve several objectives:

1. increase the costs of current, unsustainable and externally costly agricultural practices;
2. increase farm income from diversified, pesticide-free production;
3. make non-chemical alternatives more feasible;
4. strictly regulate the current, unsustainable agricultural practices;
5. protect sustainable production from competition by unsustainable production.

## Chances to escape the pesticide lock-in

The human food production system currently faces several serious threats: climate change, loss of (bio)diversity and rural exodus (migration plus elimination of rural infrastructure). "Modern" agriculture is a main cause of these threats. Any initiative aiming at a large-scale phase out of pesticide use needs to look at agriculture, human nutrition and the current global threats in a holistic manner.

The "good news" is that the European Union (and all industrialised countries) have an overproduction problem rather than a food shortage. In addition, a large amount of funding is available, which can be reallocated. This situation should be viewed as a comfortable starting position, in which a win-win-win

situation can be created as soon as society can come to an agreement in a transparent, democratic and open dialogue.

Most political, economic "tools" for transforming agriculture and eliminating pesticide use already exist. They just need to be implemented and/or strongly improved. Furthermore, there are already substantial public funds (CAP3 subsidies) for financing a transformation, and more funds will be made available when the pesticide levy/tax is implemented and a sufficiently high carbon price (via taxation or emission trade) is set for all external farm inputs, including imported feed stock and fertiliser. However, a reallocation of the CAP subsidies is urgently needed. CAP needs to support farm labour (not land possession), direct marketing and regional value chains

The EU pesticide policy has major flaws and is – like much of the agricultural/environmental policy in the EU – not coherent and not aligned with overarching political objectives. Above all, national authorisation must be strictly aligned with the objectives of the "Sustainable Pesticide Use Directive/Regulation". Registrations for all users that are not compliant with integrated pest management or biological control, or are solely for cosmetic purposes, have to be withdrawn. A cumulative maximum residue level of 0.01 mg/kg must be gradually introduced to support the transition to pesticide-free farming. Furthermore, consideration should be given to the banning of advertisements for pesticides. To avoid "leakage" effects, border adjustment agreements like the recently proposed "Carbon Border Adjustment" must be implemented for agricultural trade.

Very recently, all OECD members agreed on a minimum tax for companies, and the UN Human Rights Council recognised access to a clean environment as a fundamental right. These major achievements show that worldwide action is possible. A global dialogue on agricultural production and trade is also urgently needed. The current food production system has a negative economic balance in most countries when all external costs are accounted for. Most countries are facing the same costly challenges. Considering the unavoidable acceleration of climate change and the continued loss of biodiversity, the current political stagnation in agricultural policy is irresponsible. Global co-operation is imperative.

## Action plan for a pesticide-free EU

Foodwatch presents an innovative approach for a pesticide-free EU. Numerous policy changes are needed to encourage the implementation of agronomic measures to prevent pesticide use:

1. start taxing pesticides with external costs;
2. increase fees for authorization and legislation of pesticides with external costs;

3. implement carbon pricing;
4. financially support direct marketing;
5. financially support local and regional value chains;
6. reform the EU Common Agricultural Policy (CAP) with pesticide reduction objectives and (re-) consider the following measures:
    a. direct and indirect subsidies for meat and dairy production must be abolished;
    b. basic payments for rural labour and allocation towards the production of climate-friendly, healthy human food;
    c. much more strongly support of direct marketing and local food processing;
    d. only grant subsidies on specific conditions, including annual and/or perennial flower strips, habitat restoration and creation of new habitats (e.g. hedges), managed fallow, obligatory intercropping between each arable crop (conditionally), permanent maintenance of a green cover between the rows in perennial crops (conditionally) and crop rotation (conditionally).
7. adjust depreciation;
8. improve domestic (EU) and international trade rules to a legal framework with rules on mandatory human rights and environmental due diligence;
9. create coherence in EU pesticide legislation by
    a. developing strong national, legally binding IPM rules for each crop, including “crop rotation laws”, and gradually withdrawing all treatments/indications of chemical pesticides that would lead to violation of these rules;
    b. revising all authorised indications
10. withdraw approval for highly vulnerable varieties;
11. include the topic of applied agricultural entomology in the education of growers and farm technicians;
12. invest in research to close various knowledge gaps.

This approach is translated into a pesticide-reduction plan with crop objectives (SEE MODEL BELOW). Crop by crop, the potential future is outlined, key agronomic measures towards pesticide-free farming are listed, and the supporting policy is described. When broken down in this way, the path towards freeing the EU from pesticides appears very manageable. All instruments are available, and a production decline is not to be feared.

It should be clear that agricultural production will change tremendously in the coming decades: All farm inputs based on fossil fuels must be strongly reduced or replaced, and water shortages will require a rethinking of water use in agriculture. Some of the best soils in Europe are currently being

utilized for growing non-food silage maize, feed cereals and sugar beet – a discussion on resource allocation and energy efficiency is urgently needed. In general, society needs to decide if a continuation of “policy design by chaos” is preferable to a “design by choice”.

Figure 26:
**MODEL OF A PESTICIDE-REDUCTION PLAN WITH CROP OBJECTIVES**