

Finland contribution to the TOP Agri-Network final report

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1. How the report was built

The Finnish country synthesis was prepared through a combination of documented material, official statistics, project information and stakeholder consultation. The evidence base comprised the official agricultural pesticide-use statistics produced by the Natural Resources Institute Finland (Luke), annual pesticide-sales statistics and National Action Plan material produced by the Finnish Safety and Chemicals Agency (Tukes), CAP evaluation material, national policy documents and official project databases. The review focused on developments during approximately 2016–2026 and, in accordance with the assignment, gave priority to nationally funded projects rather than to a general inventory of EU projects.

A national-level online stakeholder consultation was held on 8 September 2026. The consultation was based on results from the earlier phases of the COST21134 project that included a workshop involving key stakeholders from the plant protection sector. The workshop identified several barriers to the implementation of sustainable plant protection practices in Finland, but no concrete solutions were proposed. A follow-up consultation was therefore organized to identify practical ways to address these barriers, with a particular focus on a key finding from the previous workshop: the lack of understanding of alternatives to plant protection products. The online event brought together an agricultural journalist, a government representative, and researchers.

2. Situation of crop protection and pesticide use in Finland

Finnish crop protection operates within the legal framework for integrated pest management (IPM), pesticide authorisation, safe professional use and the national implementation of the Sustainable Use Directive. Finland's third National Action Plan, NAP III 2023–2027, aims to reduce risks to human health and the environment, facilitate access to lower-risk products and strengthen IPM. Its measures include pest monitoring and forecasting, non-chemical weed control, system-level research, precision farming, biological products, crop-specific IPM guidance, training, advisory services and farmer-level innovation.

Luke statistics estimates pesticide products use in agriculture and outdoor horticulture during a specified growing year. Data are collected from agricultural and horticultural holdings through farm surveys and then estimated to national level. The latest published reference years are 2013, 2018 and 2024. In 2024, the statistics covered crop species accounting for 99% of the cultivated crop area and 88% of utilised agricultural area and were based on data from approximately 6,000 farms. Tukes's sales statistics record quantities of active substances placed on the Finnish market each year, as reported by authorisation holders.

The use of plant protection products has generally decreased since the beginning of the Luke statistics in 2013. However, the difference between 2018 and 2024 in the use of plant protection products is rather small.

The distribution of the use of preparations for different targets in 2024

- Of the total amount of plant protection products used, 81% were herbicides, 15% were fungicides, 1% were insecticides and 3% were growth regulators.
- Glyphosate products included in herbicides covered about half of the total use of plant protection products in agriculture.
- 17% of the use of glyphosate products occurred with crops.
- In relation to the crop area, plant protection products were most used with sugar beet, potatoes, open-field vegetables, strawberry and apple, which is related to the intensive cultivation of these plants (Figure 1).

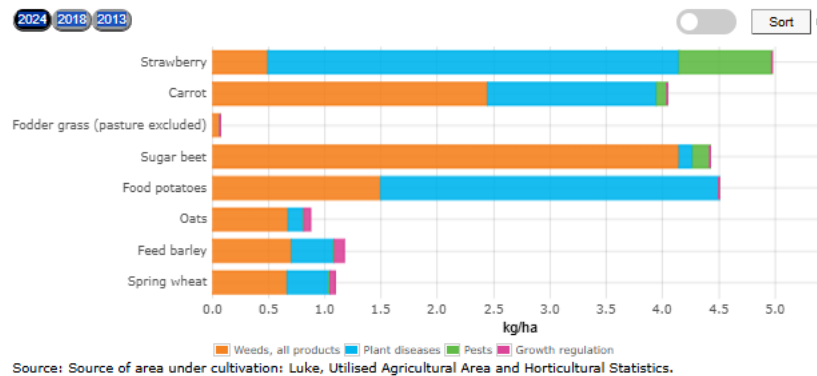


Figure 1. Use of pesticide products on the area under cultivation hectare (Luke).

Tukes reports that, excluding the large volume of urea used mainly against root rot in forestry, sales for agricultural and horticultural purposes have recently been slightly above 1,300 tonnes of active substance per year. Five-year average sales were approximately 1,114 tonnes for herbicides, 127 tonnes for fungicides, 43 tonnes for growth regulators and 23 tonnes for insecticides. Glyphosate sales have recently been roughly 700 tonnes annually. Earlier official figures show that agricultural and horticultural active-substance sales declined from 1,731 tonnes in 2015 to 1,256 tonnes in 2018, but the current five-year averages suggest caution against describing the whole 2016–2024 period as a continuous decline (Figure 2).

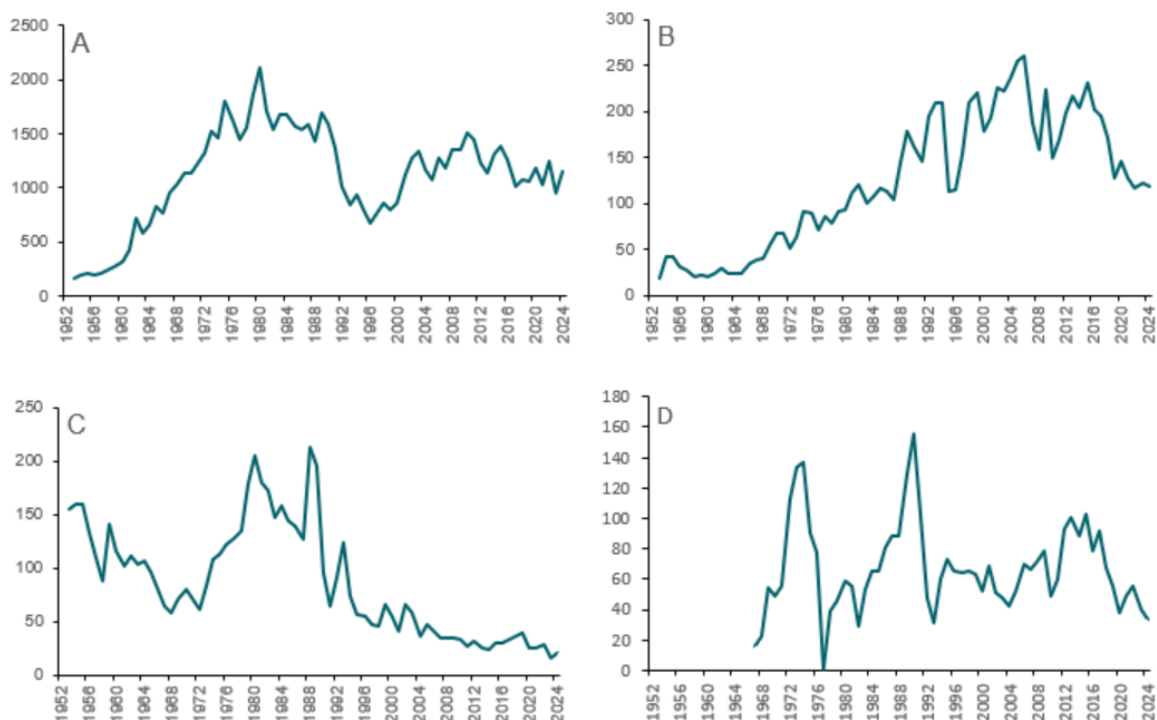


Figure 2. Sales volumes of herbicides (A), fungicides (B), pesticides (C) and growth regulators (D) in 1953–2024. The data are presented in tonnes of active substance (Tukes).

The 2025 interim KUORMITUS evaluation provides an independent assessment of CAP implementation. It found no significant improvement in the pesticide risk indicator compared with the preceding CAP period. The effect of information-based steering remained unclear, although training was perceived to improve risk awareness, particularly in relation to pollinators. The CAP measure supporting pest-monitoring and identification applications had been used on approximately 30% of farms. The evaluation recommended stronger economic incentives for pesticide-risk reduction and uptake of alternative methods. These findings should not be presented as direct measurements of reduced pesticide use: they concern policy performance, uptake and perceived effects.

3. Levers and barriers for more use of agroecology and preventive approach in crop protection

In earlier phases of the COST21134 project, a workshop was organized that brought together a wide range of stakeholders from the plant protection sector. The aim of the workshop was to identify the main barriers that hinder the implementation of sustainable plant protection practices in Finland. Although several important challenges were identified, no concrete solutions were developed at that stage.

To support the next phase of the work, a follow-up consultation was organized to identify practical solutions to the barriers that had been recognized earlier. Before the consultation, the moderator reviewed the results of the previous workshop and identified one key finding: there is still a lack of understanding in Finland about alternatives to plant protection products. For this reason, the discussion in the new consultation focused specifically on identifying solutions that could help address this knowledge and skills gap.

The consultation brought together an agricultural journalist, a government representative, a researcher specializing in farmers' decision-making, and a researcher specializing in integrated pest management (IPM) and knowledge transfer. The discussion was moderated by Lotta Kaila, a researcher at the Natural Resources Institute Finland (Luke).

Outcome of the consultation

At the beginning of the consultation, participants noted that the lack of expertise is not limited to farmers. It also concerns officials working in key authorities and students graduating from agricultural educational institutions. For this reason, the discussion was expanded to cover not only farmers but also authorities and educational institutions.

1) Training farmers on sustainable plant protection

Participants felt that the current plant protection products certificate for professional users, maintained by Tukes, and the related training are outdated in structure and do not adequately address the challenges of modern crop production. Many farmers complete the certificate primarily because it is a legal requirement for professional users of plant protection products, rather than because it provides significant new knowledge or skills. According to the workshop participants, the certificate and associated training currently provide limited support for practical decision-making related to sustainable plant protection.

The development of professional users' expertise in plant protection should be reconsidered in Finland. The training system should be designed based on the knowledge that today's farmers need to support sustainable and effective plant protection. It should also be more clearly defined through which channels farmers can access the most up-to-date and practically relevant information.

In addition, participants criticized the quality requirements set by Tukes for farmer training and the expertise of trainers to educate today's farmers effectively. Attention should be given to how the best experts could be engaged as trainers. These experts should have the ability to provide up-to-date training, advice, and practical support to farmers in the current operating environment. The workshop also highlighted the need to identify which organizations and actors are best placed to provide training, advisory services, and practical support to today's farmers.

2) Plant protection study modules in universities, universities of applied sciences, and vocational institutions

The workshop found that plant protection often plays only a minor role in agricultural and horticultural education. In some study programs, the topic is covered only briefly as part of other courses, while in others it is not covered at all. As a result, many graduates lack a solid understanding of the fundamentals of sustainable plant protection.

Participants emphasized that plant protection should have a much stronger role in education, ideally as dedicated study modules rather than as small parts of broader courses. These modules should cover the sustainable use of plant protection products, Integrated Pest Management (IPM), and alternative pest management methods. Strengthening plant protection education would help future farmers and horticultural professionals make better decisions and adopt more sustainable plant protection practices.

3) Training of agricultural administration officials

The workshop noted that many officials working in agricultural administration have only limited expertise in agriculture and plant protection. This may make it difficult for them to understand the practical realities of farming and the challenges underlying plant protection decisions.

Participants emphasized the need to strengthen agricultural and plant protection knowledge among officials involved in policy preparation, regulation, and implementation. A better understanding of farming systems and the sustainable use of plant protection products could improve interaction between authorities and farmers and support solutions that are more practical and workable in real-world conditions.

4) Increasing ambition and passion in the agricultural sector

The workshop emphasized that promoting sustainable plant protection is not only a question of knowledge and skills. It also requires strong motivation, commitment, and ambition throughout the sector. This applies to farmers, educational institutions, and authorities alike. Participants highlighted the need to strengthen a culture in which new solutions can be tested and both successful and unsuccessful practices can be shared openly.

The discussion also stressed the importance of pioneers in driving change. The adoption of new approaches requires courage at the farm level, as well as encouraging examples from other actors. Better support from authorities is also needed to enable such boldness. The role of authorities is not only to implement legislation but also to participate actively and ambitiously in its development in ways that support farmers' transition towards more sustainable plant protection solutions.

The sector needs strong and long-term political support to encourage more ambitious development and innovation.

4. Nationally funded projects 2016–2026

During 2016–2026, nationally funded crop-protection research in Finland was supported mainly through public applied research funding. The most important channel has been MAKERA, the Development Fund for Agriculture and Forestry, administered by the Ministry of Agriculture and Forestry. Other domestic funding sources include the Research Council of Finland, Finnish foundations, the Ministry of the Environment, Tukes, Luke's institutional funding, regional development authorities and agricultural companies or industry organizations.

The projects cover several complementary areas of crop protection. Long-standing themes include the epidemiology and management of crop-specific diseases and pests, pest surveillance and forecasting, decision-support tools, and breeding for resistance to diseases such as Fusarium head blight. Earlier projects already combined resistant cultivars, biological control, diagnostics, digital pest monitoring and practical IPM approaches in cereals, horticultural crops and greenhouse production. More recent work has expanded these themes to include non-chemical weed and insect management, alternatives to glyphosate, biological control agents, biopesticides and biostimulants, nature-based plant-health solutions, and the biological and economic performance of IPM methods under farm conditions.

A further strand of research addresses the environmental and food-safety dimensions of crop protection. This includes pesticide residues in agricultural soils and recycled growing media, possible

links between residues and soil biodiversity, effects on pollinators and other non-target organisms, and mycotoxin risks in cereals and stored vegetables. Luke's institutional funding has also supported nationwide pest monitoring, pesticide-residue research and other activities that provide a continuing national knowledge base beyond fixed-term competitive projects. Research Council and foundation funding has contributed especially to more focused scientific questions, including pathogen biology, host resistance, microbial control, crop mixtures and new physical or biological treatment methods.

The main change over the decade appears to be a broadening and integration of research priorities rather than a complete change of direction. In 2016–2020, research already addressed preventive crop protection through resistance breeding, pest monitoring, biological control and crop-specific IPM. Since approximately 2021, projects have more often framed these approaches explicitly in terms of reducing dependence on chemical pesticides, combining preventive and direct IPM measures, using biological and nature-based solutions, assessing pesticide residues and biodiversity effects, and developing solutions together with farmers and advisers. Digital monitoring, precision application and robotics have also become more visible, while climate resilience, emerging pests and security of supply increasingly provide the wider context for crop-protection research.

5. National initiatives for interaction with farmers and policy makers

Finland has several established channels for interaction between farmers, advisers, researchers, authorities, industry and policy makers on crop protection. At farm level, digital pest-monitoring and early-warning services, such as LukeKasKas, provide up-to-date information on diseases, pests and weeds and support need-based crop-protection decisions. Research and development projects also increasingly use on-farm trials, demonstrations and producer platforms, where farmers, advisers and researchers jointly test preventive and direct IPM methods. Results and practical guidance are further disseminated through advisory services, AgriHubi, the Rural Network and professional events.

Training is another important interaction channel. Professional pesticide users are required to maintain a valid qualification, and pesticide training provides a regular opportunity to communicate information on safe use, risk reduction, IPM and alternative crop-protection methods. Professional networks, particularly the Finnish Plant Protection Society, bring together researchers, advisers, authorities, farmers, producer organizations and industry representatives to discuss emerging crop-protection problems and new solutions.

At policy level, stakeholder interaction is integrated into the implementation of Finland's National Action Plan on the Sustainable Use of Plant Protection Products (NAP III). Tukes coordinates the process with a multi-actor steering group, supported by training, guidance and thematic discussions on IPM and pesticide-risk reduction. The Plant Protection Advisory Board, coordinated by the Ministry of Agriculture and Forestry, provides a formal forum for research, administration, producers, advisory organizations and industry to contribute to national plant-health and pesticide policy.