European Parliament

Occupational hazards: The hidden human costs of farming

SUMMARY

Farmers' health is inseparable from food security. However, occupational hazards, infectious diseases and psychosocial pressures reduce productivity, weaken farm viability and threaten the sustainability of the EU's rural communities and food systems.

Farmers face daily risks from accidents involving machinery and vehicles, falls from height, drowning, electrocution, and injuries related to livestock handling, alongside exposure to biological agents such as dust, fungi, ticks and zoonotic diseases. These threats are compounded by exposure to pesticide, associated with acute poisoning, cancers, neurological disorders, and mental health problems including depression and suicide.

Seasonal and migrant workers are especially vulnerable due to insufficient training, poor living conditions and restricted access to healthcare, while cultural stigma and isolation further limit access to mental health support.

EU institutions have recognised these challenges, with legislation, agency reports and European Parliament resolutions calling for stronger occupational safety protections, the recognition of occupational diseases, and the development of tailored mental health initiatives.

IN THIS BRIEFING

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Introduction

Across the EU, agricultural workers do far more than produce food. Their labour underpins the social fabric, economic strength and environmental balance of the countryside, making them essential to EU countries' long-term well-being and security. Farmers' health is inseparable from food security, as occupational diseases, pesticide exposure, climate change and zoonotic infections reduce productivity and weaken farm viability, while outbreaks and poor working conditions disrupt harvests and supply chains.

In 2021, agriculture accounted for 4.1 % of EU employment, corresponding to 8.6 million jobs, with significant regional variations. However, as many people help on farms without being formally employed, the EU's agricultural labour force was estimated at 17 million people.

Factors such as limited resources in rural areas, the need to travel long distances for reliable healthcare, lengthy waiting times, a tendency to delay or avoid addressing health concerns, communication challenges with healthcare providers (including language barriers), and stigma surrounding mental illness collectively contribute to significant barriers for farmers seeking professional healthcare.

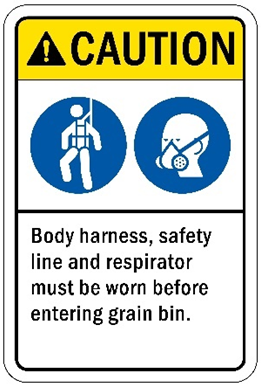
The European Agency for Safety and Health at Work recognises the following as major causes of fatal accidents in agriculture: transport and machinery accidents, falls from height, drowning and entrapment, electrocution, and handling livestock (including being attacked or crushed by animals, as well as exposure to zoonotic diseases).

Injuries

In 2021, Eurostat data showed that the agricultural sector across the EU recorded 4.5 fatal accidents per 100 000 workers, a rate that was 2.6 times higher than the average for all other sectors of the economy, which stood at 1.8 fatal accidents per 100 000 workers. However, the actual annual number of fatal accidents is estimated to be underreported by as much as 40 %.

Accidents on tractors and farm vehicles represent the leading cause of fatalities.

Figure 1 – Sign showing safety requirements for grain bin access



Source: Adobe Stock; photo credits: middlenoodle.

Falls, especially when getting on or off vehicles, as well as incidents involving overturning, crushing, being struck or pinned, or falling from vehicles, are often caused by poor visibility, rushed driving, neglect of maintenance or unsafe behaviours. Machinery-related risks, such as power take-off (PTO) entanglement, crush injuries, or equipment collapse, are equally severe, especially when operating agitators and slurry tankers, where PTO shafts remain active while machinery is stationary. Common injuries from operating farm equipment may include cuts or even amputations. Slurry work carries life-threatening hazards, such as drowning in tanks or asphyxiation from toxic gases. When safety measures are not followed, grain bins and silos become extremely hazardous environments for farm workers. Many fatal farm

accidents are indeed linked to suffocation in silos, including cases where farmworkers are trapped in flowing grain, inhale dust from grain particles, or suffer from lack of oxygen due to poor ventilation inside the silos.

Livestock handling requires caution, as injuries often occur during herding, calving or loading. Stockmanship training is essential for effectively handling cattle during necessary interactions. However, as a stand-alone measure, it is inadequate for ensuring comprehensive safety, and there may be a need for proper facilities.

The SafeHabitus project

SafeHabitus is an EU project that brings together farmers, workers, organisations, policymakers and researchers to co-create solutions that improve health, safety and quality of life of those engaged in agriculture. Its goals are to raise awareness of occupational risks, explore innovations and develop policy recommendations for safer, more inclusive working environments, while also empowering farmers to share good practices and change dangerous habits.

Non-fatal accidents can result in a significant loss of working days and often cause substantial harm to the affected individuals and their families. These accidents may also have long-term consequences, such as permanent disabilities, leaving the labour market, or transition to alternative employment.

Many repetitive tasks involved in agricultural activities, such as operating machinery, planting or harvesting, can cause strain on muscles and joints over time, frequently resulting in a variety of health problems.

Hazardous ground conditions – such as muddy, slippery, uneven terrain, or obstacles like tools scattered around work areas or poorly constructed steps – are commonly responsible for slips and falls on farms. Injuries can range from simple sprains to more serious head injuries.

Contact with biological agents

Agricultural workers are often exposed to a variety of biological agents[1] and dust, which pose serious health risks. These agents can enter the body through different routes and lead to various health effects, such as infections (e.g. from bacteria, viruses, fungi, or parasites), allergic reactions (e.g. from mould or organic dust), or poisoning and toxic effects.

Dust and spores

Organic dust is particularly dangerous due to its diverse composition, which includes plant-derived materials, animal proteins, bacteria, moulds and their toxic by-products like mycotoxins. Exposure to these components can result in hypersensitivity reactions and the development of respiratory allergic reactions, allergic rhinitis, allergic conjunctivitis and dermatitis.

'Farmer's fever', also known as organic dust toxic syndrome (ODTS), is a non-allergic acute respiratory illness resulting from the inhalation of dust contaminated with moulds from decomposing plants. Symptoms include fever and flu-like effects (e.g. chills, muscle aches, fatigue) that typically appear 4 to 12 hours after exposure to the contaminated dust. Once exposure stops, symptoms usually resolve within 1 to 3 days. 'Farmer's lung' is a type of hypersensitivity pneumonitis caused by an allergic reaction to moulds found in spoiled grain or forage products. Like farmer's fever, it can cause flu-like symptoms, but repeated exposure to allergens in individuals prone to developing sensitivity can lead to a chronic lung inflammation with irreversible scarring.

Tick-borne diseases

Tick-borne diseases represent a critical health challenge, as they cause economically devastating illnesses that compromise animal health and agricultural productivity.

Species such as *Ixodes ricinus* have a wide geographical distribution, which allows this tick species to survive under various environmental conditions and to feed on both humans and animals. It employs an 'ambush strategy', positioning itself at the tips of vegetation to await the passage of a host. As a result, people in regular contact with nature, due to their work – such as farmers – or leisure activities, are more exposed to the risk of being bitten.

When carrying pathogenic microorganisms, *Ixodes ricinus* can transmit a variety of diseases to humans or animals. This is the case for Lyme disease, caused by the bacterium *Borrelia burgdorferi* and considered a dominant occupational disease among farmers, as well as for tick-borne encephalitis (TBE), caused by an RNA virus belonging to the genus *Flavivirus*.

Another example of tick-borne disease is tularaemia, caused by the bacterium *Francisella tularensis*. Tick bites are just one of the routes of transmission for *F. tularensis*: the bacterium can enter the human body through different routes such as the skin, eyes, mouth, or lungs.

Climate change has further amplified these risks by expanding the habitats of other ticks such as *Hyalomma*, which spreads Crimean-Congo haemorrhagic fever (CCHF), the most widespread tick-borne viral disease in humans, and which has recently expanded into southern Europe.

Other biological agents

The European Union One Health 2024 Zoonoses report, published by the European Food Safety Authority (EFSA) in 2025, confirms that farmers, livestock breeders, butchers, slaughterhouse workers and veterinarians face an increased risk of contracting brucellosis in endemic countries. Brucellosis is one of the most common zoonotic diseases worldwide, caused by different species of the *Brucella* bacteria, which primarily affect cattle, swine, goats, sheep and dogs. People usually contract the illness through direct contact with infected animals, through consuming contaminated animal products, or by inhaling airborne particles. Symptoms in humans include intermittent fever, headaches, weakness, heavy sweating, chills, weight loss and general body aches. In more severe cases, the infection may spread to organs such as the liver and spleen. Together with brucellosis, tuberculosis (TB) continues to be one of the most significant occupational diseases worldwide, with farm workers facing particularly high risks. Transmission in farming contexts occurs through close contact with infected animals in farms, markets or slaughterhouses, as well as through the consumption of unpasteurised milk or raw meat and the inhalation of contaminated droplets.

Livestock farmers may also be at higher risk of contracting Q fever, a widespread zoonotic disease caused by *Coxiella burnetii*. Sheep, goats and cattle are the main sources of human infection, as the bacteria multiply in the uterus and udder and can contaminate milk, birth fluids and farm environments. *Coxiella burnetii* survives for months in dust and farm products, such as wool or hay; therefore, infection may also occur by inhaling contaminated dust or aerosols. After the incubation period, symptoms may range from none at all to sudden high fever, severe headache, respiratory or eye infections, and, in some cases, chronic complications such as hepatitis or endocarditis. While acute illness responds to antibiotics, chronic cases may require surgery.

Tetanus is a severe, non-contagious infection caused by the *Clostridium tetani* bacterium, which continues to pose a global health threat despite the existence of an effective vaccine. The bacterium is widespread in soil, dust and animal waste, and its resilient spores can survive for long periods, easily contaminating wounds sustained in outdoor or agricultural settings. Once inside the body, the bacteria release a powerful neurotoxin that disrupts nerve signals, leading to painful muscle spasms, stiffness, and, if untreated, potentially death. Agricultural workers are particularly vulnerable due to their daily contact with soil, manure and livestock, combined with the fact that they frequently sustain minor injuries from tools and machinery. This risk is compounded by significant gaps in vaccination coverage. An Italian study highlights that only 23 % of workers coming from non-European countries are immunised, compared to 89 % of European workers. Seasonal work patterns and limited access to healthcare further hinder consistent immunisation, making vaccination campaigns essential for protecting those most exposed.

Despite the limited epidemiological data on fungal skin diseases among farmers, studies from Poland indicate that mycoses are the most common skin conditions in this group, affecting more than 20 % of the farming population studied. Farm working conditions, such as prolonged exposure to humidity and the frequent use of rubber boots, as well as exposure to zoophilic and geophilic fungi, contribute significantly to the development of these infections.

Certain fungi are responsible for producing mycotoxins linked to health concerns (i.a. aflatoxin B_1, DON, or fumonisin $B_{1)}$, and these fungi can be found in wheat, maize and other cereals in temperate regions. Farmers are considered a vulnerable group as they may be exposed in occupational settings to mycotoxins in contaminated dust, both through inhalation and the skin, resulting in acute exposure. Exposure to aflatoxins is deemed to increase the risk of developing liver cancer. Poultry farmers may also be at risk of histoplasmosis, an infection caused by the inhalation of spores of the *Histoplasma* fungus, which causes non-specific symptoms, such as cough, fever, or shortness of breath, often clinically indistinguishable from other respiratory illnesses, thereby leading to diagnostic delays or ineffective treatment.

Exposure to pesticides

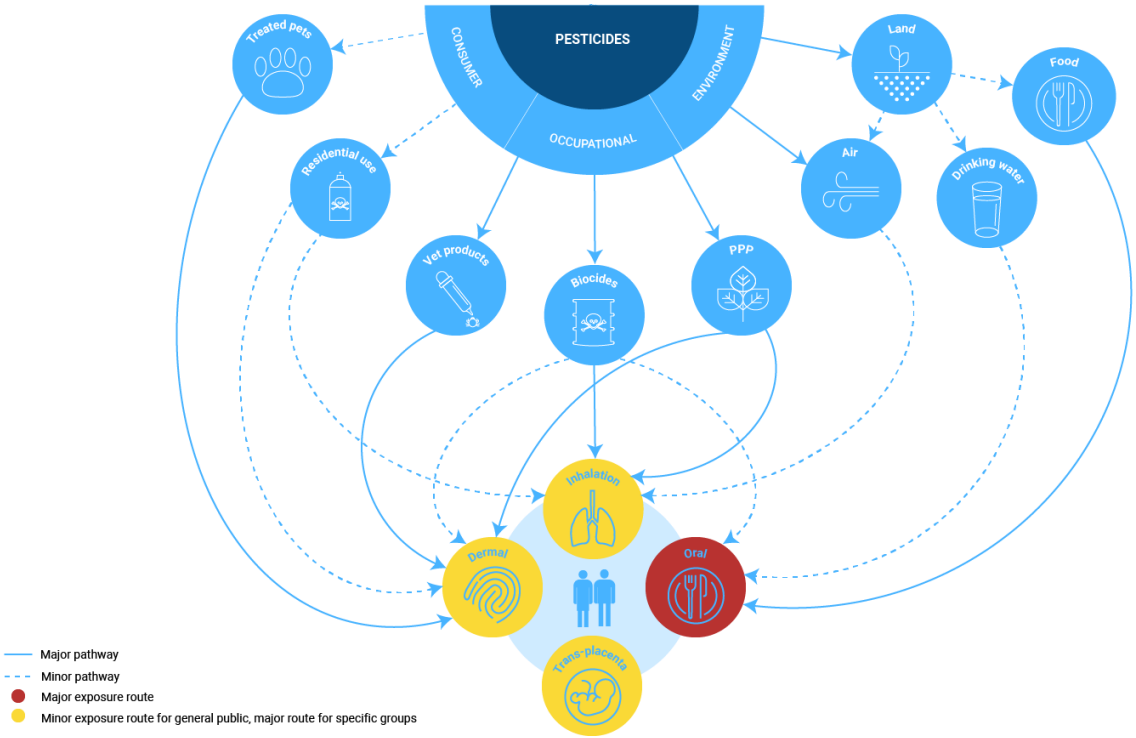
Pesticides are used to boost crop yields and reduce agricultural losses, but they pose significant health risks for farmers. Occupational exposure occurs during pesticide application, machinery maintenance or when handling treated materials. Moreover, many farmers delay washing or changing clothes until after completing their tasks, thus prolonging exposure and increasing the likelihood of adverse effects, including irritation and allergic reactions – especially on the skin, due to direct contact – and potential carcinogenic risks. Additionally, pesticides can be carried home on contaminated clothing or dispersed into surrounding areas, exposing families and endangering nearby communities. Studies consistently highlight the elevated health risks associated with such exposure, underscoring the need for improved safety practices.

Improper handling of some pesticides may result in acute poisoning. Symptoms become evident within 48 hours of exposure. Depending on the main routes of pesticide entry in the human body (contact, ingestion or inhalation), the level of exposure, and the specific molecule involved, symptoms may vary and can include respiratory tract irritation, eye and skin irritation, nausea, vomiting, diarrhoea, headache, loss of consciousness, extreme weakness, seizures and/or death.

While the exact mechanisms are not completely understood, farming populations chronically exposed to pesticides face heightened risks of depressive symptoms, clinical depression and suicide

(including ideation, attempts and mortality), possibly linked to harmful effects of these chemicals on the brain and nervous system. Exposure to pesticides at different life stages is strongly linked to cognitive impairments and decline. Prenatal exposure to insecticides has been tied to attention deficits (e.g. ADHD symptoms), intellectual disability, autism spectrum disorder, motor delays, attention problems and birth defects. Children and adolescents living near pesticide application areas or whose parents work in agriculture show reduced learning and memory performance. In adults, occupational pesticide exposure is similarly associated with diminished memory and learning abilities.

Figure 2 – Overview of human exposure routes and pathways for pesticides



Source: European Environment Agency, 2023.

In 2022, Santé Publique France, the French National Agency for Public Health, concluded that occupational exposure to pesticides is associated with the risk of developing Parkinson's disease, although it is not clear whether particular pesticide products are involved. Since 2012, France has recognised Parkinson's disease caused by pesticides as an occupational disease for farmers.

A 2024 Spanish study examined whether individuals routinely exposed to pesticides in the environment exhibit elevated prevalence and risk of Alzheimer's disease. The findings revealed a significant positive correlation between pesticide exposure and increased susceptibility to the disease among populations in southern Spain.

Pesticides-related cancers

Pesticide exposure has also been associated with an increased risk of developing some cancers.

A 2007 case-control study in southwestern France concluded that high occupational exposure to pesticides may be linked to an increased risk of brain tumours, particularly gliomas. A 2008 systematic review of case-control studies of multiple myeloma (a cancer of the blood that affects plasma cells, a type of white blood cells found in the bone marrow) published from 1970 to October

2007 reported an association between farm work and multiple myeloma, showing a 46 % higher risk of disease for individuals who had been exposed to pesticides. An increase in prostate cancer risk has been reported in a 2021 study among workers who apply pesticides such as organochlorines and certain organophosphates. The same study also highlights an increased risk of skin melanoma in female crop farmers and farm workers, partly explained by tasks commonly performed outdoors by women, which increase their exposure to ultraviolet radiation and pesticides. A connection between environmental pesticide exposure and non-Hodgkin lymphoma has also been established.

Mental health

Financial and regulatory uncertainty, weather conditions, market fluctuations and the physically demanding nature of the work, characterised by high workloads and long hours regularly exceeding 48 hours per week, along with social isolation, are some of the reasons why farming is considered a high-stress profession. These factors, combined with isolation in rural areas and reluctance to seek help, increase stress and psychosocial risks, making mental health a critical concern for the agricultural workforce. In addition, rooted notions of masculinity in agriculture, represented by perseverance and self-sacrifice, may hinder male farmers from seeking help for their mental health.

According to the European Agency for Safety and Health at Work (EU-OSHA), seasonal and migrant workers are particularly vulnerable. They often fill labour gaps but face legal, language and qualification challenges, experiencing discrimination, isolation and barriers to healthcare, all of which worsens their vulnerability. Most are employed in low-paid, insecure roles with poor working conditions and weak union representation.

The 2023 Commission communication on a comprehensive approach to mental health highlights that, in certain Member States, suicide rates among farmers are 20 % higher than the national average.

Support for mental health

The Thematic Group on Supporting the Mental Health of Farmers and Farming Communities was created within the framework of the EU CAP Network and began its work in early 2024. Since then, it has developed 15 action-oriented recommendations to enhance mental health support for farmers, spanning education, policy, support services, research and collaboration. The group's briefing, entitled Key Ingredients to Support the Mental Health of Farmers and Farming Communities, outlines 12 actionable components categorised under four areas of action: awareness-raising, support at the individual farmer level, community-level initiatives, and institutional or policy measures. The briefing also showcases examples from EU Member States, such as peer support networks, advisor training, national strategies, and social protection integration.

The FARMRes project

The FARMRes project seeks to enhance farmers' understanding of mental health challenges and assist them in managing their daily routines, professional settings and personal lives. The initiative centres on promoting awareness and prevention alongside early identification and immediate support, by engaging farmers, their families and agricultural advisors.

Additionally, the briefing entitled Good initiatives and elements of replicability to support the mental health of farmers and farming communities highlights four successful EU-wide and national initiatives from

Ireland, Finland and France. These initiatives aim to address farmers' mental health and emphasise replicable practices and policy considerations for future efforts.

EU policy

The EU does not have sector-specific occupational health and safety legislation for agricultural workers.

Council Directive 89/391/EEC, the EU's occupational safety and health (OSH) framework directive establishes measures that promote continuous improvements in the safety and health of workers across all sectors, both public and private, with the exception of certain public services such as the army or police. The directive sets out the fundamental principles for preventing and protecting workers against accidents and occupational diseases, serving as the basis for a series of more specific or stringent provisions contained in individual directives. However, it does not cover the self-employed.

Commission recommendation (EU) 2022/2337 suggests, among other things, that Member States incorporate into their national laws scientifically recognised occupational diseases eligible for compensation and subject to preventive measures as listed in Annex I. If a disease is not listed in Annex I, it should still be considered occupational if its origin and nature can be proven.

Council recommendation of 18 February 2003 on improving health and safety protection for self-employed workers calls on Member States to promote the safety and well-being of self-employed workers. This includes considering the specific risks of each sector and the particular nature of the relationship between contracting undertakings and self-employed individuals.

During the meeting between Parliament's Committee on Agriculture and Rural Development (AGRI) and representatives of the Commission on the future CAP in July 2025, the Commission representatives highlighted the importance of advisory services in raising awareness about mental health issues. The need for a work-life balance for farmers was also recognised, including the introduction of farm relief services to support farmers during sickness, childbirth, or holidays, as well as their participation in training. This support would be limited to covering the remuneration costs of workers replacing the farm holder during leave.

European Parliament

During its current mandate, the European Parliament has not yet expressed an opinion on occupational hazards in farming. This topic was addressed under Parliament's previous mandate.

The European Parliament resolution of 13 December 2023 on non-communicable diseases (NCDs) highlighted the strong connection between environmental factors and NCDs. It stressed the importance of protecting people from pollution and hazardous substances in both daily life and workplaces through a streamlined 'One Health' approach. The resolution also underscored the need to ensure occupational health for all workers in the EU.

In its resolution of 12 December 2023 on mental health, Parliament brought attention to the growing evidence of psychosocial challenges and mental health issues faced by farmers. The resolution supported the Commission's proposal to focus on people living in rural or remote areas, such as farmers, by tailoring funding to meet their specific needs and calling for concrete measures to be implemented. It also highlighted the susceptibility of outermost regions to healthcare disruptions

and recommended using programmes like the Mental Health Gap Action Programme (mhGAP), which train general health workers in providing basic mental health care. This would facilitate easier access to help for farmers and rural communities.

In its resolution of 10 March 2022 on a new EU strategic framework for health and safety at work post-2020 (including better protection of workers from exposure to harmful substances, stress at work and repetitive motion injuries), Parliament emphasised that farmers and agricultural workers are among the vulnerable groups in the EU workforce. Parliament called on the Commission to provide stronger protection for this group by revising current legislation and developing proposals for new legislation.

Parliament's resolution of 16 February 2022 on strengthening Europe in the fight against cancer – towards a comprehensive and coordinated strategy, emphasises that workers suffering from occupational cancer must have access to proper compensation claims. Parliament urges Member States to fully implement the 2003 Commission recommendation on occupational diseases. Additionally, it calls on the Commission, among other things, to establish a minimum EU-wide list of occupational diseases with harmonised recognition criteria to ensure equal protection across all Member States. Parliament also calls for the common agricultural policy to assist farmers in reducing the use of pesticides.

MAIN REFERENCES

European Centre for Disease Prevention and Control, website.

European Agency for Safety and Health at Work, website.

Farmers Assistance Resources for Mental Resilience, FARMRES website.

Vinci, C., Improving EU farmers' and agricultural workers' working conditions and mental well-being, EPRS, European Parliament, December 2024.

ENDNOTES

[1] Defined by Directive 2000/54/EC as 'micro-organisms, including those which have been genetically modified, cell cultures and human endoparasites, which may be able to provoke any infection, allergy or toxicity'.

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