2 AGRICULTURE

The links between agriculture and the environment are direct and complex. They are direct because agriculture is based on optimising, for productive purposes, processes which occur naturally in the functioning of terrestrial ecosystems. They are complex because, in addition to the damage it causes to the soil, water and biodiversity, agriculture plays an important role in the conservation of open environments and habitats necessary for the survival of many plant and animal species. Moreover, agriculture is not monolithic: although intensive production methods still dominate in Wallonia as in all industrialised countries, other forms of agriculture that have less impact on the environment are becoming increasingly popular. These can contribute more to non-productive functions such as carbon storage or preserving biodiversity. Taking up 44% of the Walloon territory, the agricultural sector, its production methods and their evolution have an important role to play in improving all the components of the environment.

The Walloon environment in 10 infographics

AGRICULTURE

AGRICULTURAL SECTOR AND PRODUCTIONS

733,715 ha (UAA)
44 % of the territory (2019)

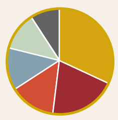
12,733
farms (2019)

22,473
jobs (2016)

medium farm

58 ha (2019)
139 cattle (if livestock farming) (2018)
1.75 persons (2016)

Orientations (%)



(2016)

- Field crops **32 %**
- Beef **20 %**
- Milk and beef **14 %**
- Milk **13 %**
- Field crops and herbivores **12 %**
- Other **9 %**

CAP subsidies (2014 - 2018)
126 % of farmers' income

Wealth production (2018)
0.6 % of Walloon GDP

Crop production (2019)

733,715 ha

42 % Permanent grasslands
14 % Other
58 % Arable crops :
- **17 %** Wheat
- **6 %** Potatoes
- **5 %** Sugar beets
- **4 %** Barley
- **7 %** Forage maize
- **5 %** Temporary grasslands

Cheptels (2018)

8.7 million animals

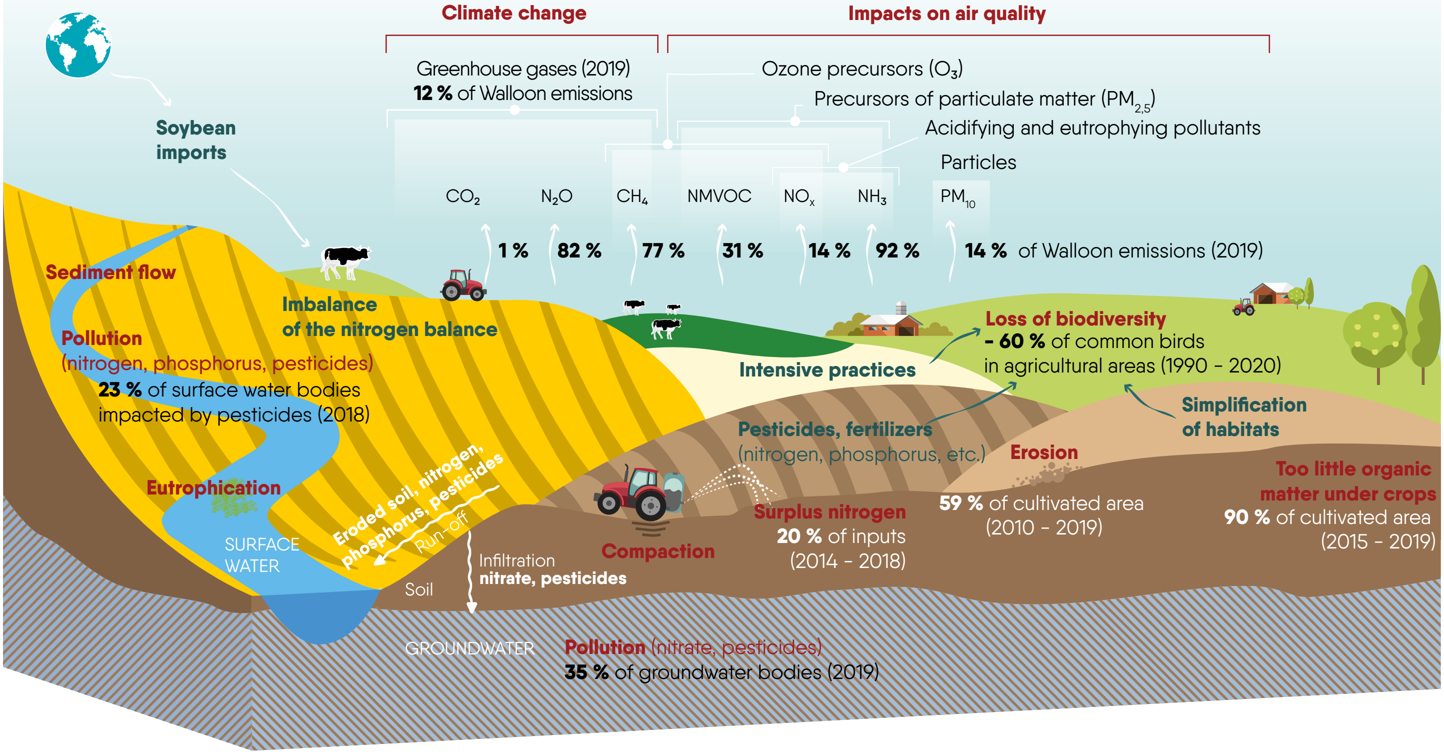
81 % Chickens and hens
13 % Cattle
4 % Pigs
2 % Other

Environmental pressures (2018)

1 million LU

6 % Chickens and hens
80 % Cattle
10 % Pigs
4 % Other

ENVIRONMENTAL PRESSURES AND IMPACTS



MEASURES MOST FAVOURABLE TO THE ENVIRONMENT

Organic farms (2020)
15 % of Walloon farms

Organic surface area (2020)
12 % of the Walloon UAA

AECCM (2020)
46 % of producers (at least 1 AECCM)

Natura 2000 (2017)
5,5 % of the Walloon UAA

CHALLENGES TO OVERCOME

Transition to other modes of production
- Reduction of environmental pressures
- Adaptation to climate change

Recognition and strengthening of the non-productive functions of agriculture
- Carbon storage
- Restoration or maintenance of diverse agricultural habitats, species and landscapes

THE WALLOON AGRICULTURAL SECTOR IN A FEW KEY FIGURES

An evolution at the heart of socio-economic and environmental challenges

For several centuries, extensive agriculture has allowed the development of diversified rural environments and landscapes that are home to a specific fauna and flora. From the 1960s onwards, the intensification and specialisation of agricultural production led to a spectacular increase in productivity, with positive socio-economic consequences: better living conditions for farmers, a stabilisation of markets, and availability and affordability of food for consumers. This evolution, fostered by genetic selection, technological progress and the initial orientations of the Common Agricultural Policy (CAP) of the European Union, was nonetheless achieved at the cost of significant pressure on the environment. The gradual decline of traditional farms (polyculture and livestock) in favour of specialised farms, the simplification of crop rotations, the increase in the size of cultivated plots, the use of inputs (fertilizers, pesticides, imported feed for livestock) and the mechanisation of agricultural practices have resulted in problems of erosion, compaction and pollution of soil, water and air, fragmentation of habitats for wildlife and the disappearance of environments rich in biodiversity. From the 1990s, under the impetus of successive CAP reforms and the development of European environmental legislation, these pressures were gradually taken into account alongside the necessity of farms being economically profitable. Nevertheless, these pressures remain significant today, and the economic viability of farms is not always guaranteed (e.g. low labour income, high dependence on inputs). Added to this is the reality of climate change, to which the sector contributes (greenhouse gas emissions), needs to adapt to (seasonal droughts) and provides some solutions to (carbon storage, production of agrofuels).

A large part of the territory dedicated to agriculture

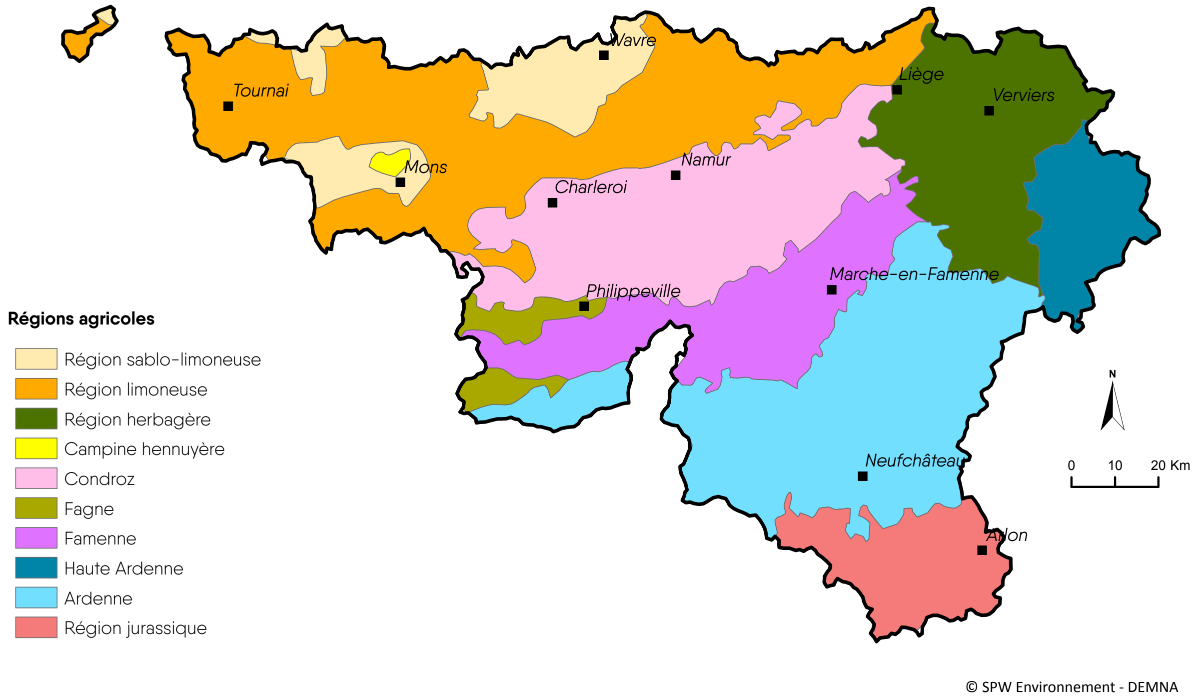
The utilised agricultural area (UAA), i.e. the sum of the areas assigned to professional agricultural production[1], amounted to 733,715 ha in Wallonia in 2019, or 44 % of the territory, making the agricultural sector a key player in the management of the countryside. The number of farms was 12,733 in the same year. The sector employed 22,473 people in 2016, the latest data available. Over the last 30 years, the evolution of the sector has been marked by:

- a sharp decline in the number of farms (- 56 % between 1990 and 2019);
- a sharp increase in the size of farms, with the average area per farm more than doubling (58 ha in 2019 compared to 26 ha in 1990), as did the number of head per cattle farm (139 head in 2018 compared to 66 head in 1990);
- a sharp decline in the number of workers (-51% between 1990 and 2016), while the number of workers per farm has increased slightly (1.75 persons per farm in 2016 compared to 1.58 persons per farm in 1990)

These developments are in line with the evolution of technologies and production methods mentioned above.

From the perspective of the type of farming, whereby farms are classed according to their main activities, Walloon farms mainly belonged to the following broad categories in 2016: field crops (32 %), beef (20%), milk and beef (14 %), milk (13 %), field crops and herbivores (12 %). The distribution of types of farming within the territory is related, among other things, to the agronomic suitability of the soils. Farms in the north of Wallonia (Loamy region, Sandy-loamy region and Condroz, see map below) are mainly oriented towards arable crops. In the north-east (Grassland and Upper Ardenne regions), the farms are specialised in dairy production.

[1] Agricultural activities considered as incidental, which involved about 2,500 producers and 32,000 ha in 2019, are therefore excluded from these statistics. As an indication, this threshold corresponds to 13.5 ha of wheat or 10 dairy cows.



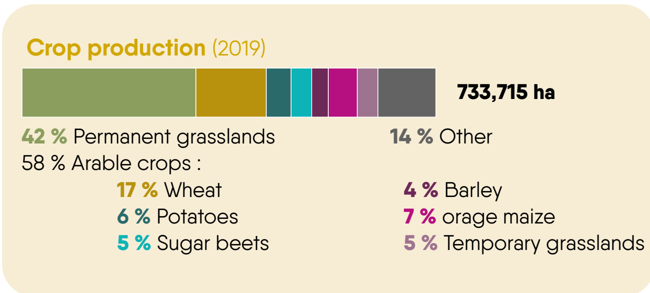
Agricultural regions in Wallonia

In the south (Famenne, Ardenne, Jurassic region), they are mainly oriented towards beef production. It should be noted that intensive pig and poultry farms are marginal compared to cattle farms in Wallonia. They accounted for 1 % of the types of farming for pigs and 1 % for poultry in 2016.

Crop and animal production: an overview of the specific features in Wallonia

In general, Walloon agriculture is characterised by the production of field crops, in particular grains (wheat, barley, etc.) and plants for industry (potatoes, sugar beets, rapeseed, flax, chicory, etc.), forage crops for animal feeding stuffs (forage corn, temporary grasslands[2], etc.), as well as animal production, mainly cattle (meat, milk), linked to the soil (feeding by grazing on permanent grasslands[3] and fodder crops).

In 2019, arable crops covered 58 % of the Walloon UAA and permanent grasslands 42 %, with other crops (orchards, nurseries, greenhouses, etc.) remaining marginal on the regional scale (< 1 %). Arable crops are mainly grown in the north of Wallonia, while permanent grasslands predominate in the south and east.



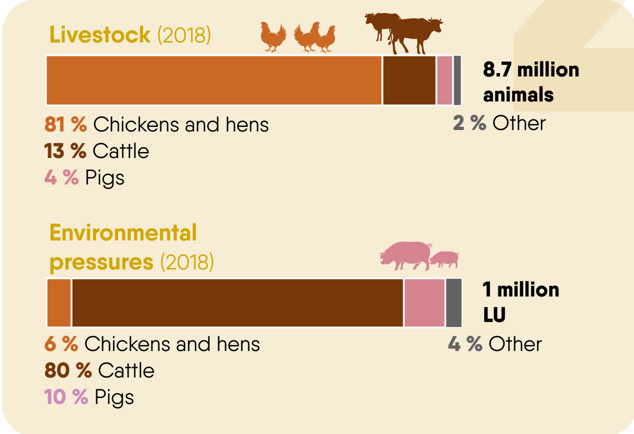
[2] Grassland in crop rotation, i.e., generally established for less than five years.
[3] Area left always as grass and characterised by the absence of tillage. .

Arable crops include:

- field crops, where wheat dominated in 2019 (17 % of the Walloon UAA), followed in fairly similar proportions by potatoes (6 %), sugar beets (5 %) and barley (4 %);
- fodder crops, mainly fodder corn (7 % of the Walloon UAA) and temporary grasslands (5 %).

The evolution over the period 1990 - 2019 in the surface area of the main crop productions is particularly noteworthy for (i) permanent grassland, for which the surface area decreased by 15 %, (ii) sugar beet, for which the surface area decreased by 44 %, (iii) potatoes, for which the surface area increased by 252 %. As for the production of outdoor vegetables in rotation (mainly peas, green beans, carrots, onions, chicory; 2.5 % of the UAA in 2019), the dedicated area doubled in less than ten years. More than 80 % of the surface area allocated to potatoes and outdoor vegetables is produced for the processing industry. All these trends are essentially linked to the evolution of demand and prices for agricultural products.

The proportions of UAA allocated to the different crops and their evolution over time have consequences from an environmental perspective, as the crops are not equal in terms of their potential impacts. These impacts, which vary according to various factors discussed below (risk of erosion, nitrogen leaching, pesticide inputs, etc.), increase overall in the following order: permanent grasslands, temporary grasslands, winter grains (winter wheat, barley, etc.), spring grains (spring barley, oats, etc.), beets, corn and potatoes. While it can be stated, for example, that the decrease in UAA for permanent grasslands and the increase in UAA for potatoes over the last 30 years are unfavourable from an environmental perspective, it is difficult to interpret the evolutions observed for all crops as a whole in terms of their impact.



As regards livestock, in 2018, 81 % of the animals counted in Wallonia were chickens and hens (7,100,000 animals), 11% were cattle excluding dairy cows (925,000 animals), 2 % were dairy cows (189,000 animals) and 4% were pigs (377,000 animals) (2018). The number of chickens and hens increased sixfold between 1990 and 2018. This is the result, on the one hand, of a drive to diversify on the part of Walloon producers and investments by Flemish farmers limited by the development of intensive rearing in Flanders (restrictions on manure spreading) and, on the other hand, of increased consumer demand for white meat. The cattle herd, meanwhile, declined by 26 % between 2001 and 2018 due to a variety of factors. For dairy cows, these include milk quotas, an increase in animal productivity and the uncertainties on the milk market, while for non-dairy cattle, we can highlight the mad cow disease crisis, which led to a shift from beef consumption to other production, and changing eating habits. Between 1990 and 2018, the swine herd increased overall (+ 24 %).

In order to compare different types of livestock in terms of certain environmental pressures (resource consumption, nitrogen generation from manure), the concept of livestock units (LU) can be used. LUs are calculated by multiplying the number of animals per herd by a coefficient specific to the type of animal. In Wallonia, in 2018, the cattle herd exerted the most significant environmental pressure, totalling 80 % of the LUs of all livestock counted. This was followed by pigs, with 10 % of LUs, and chickens with 6 % of LUs.

Limited economic weight, significant state aid

On the macro-economic level, the agriculture sector contributed 0.6 % of Walloon GDP in 2018. This contribution reached 2.6 % if we take into account the agri-food sector, which is often not very dependent on local production.

The sector receives significant amounts of state aid, mainly through the CAP. Historically, this aid first supported production and prices, then farmers' income. Over the period 2014 - 2018, CAP subsidies (1st and 2nd pillars, see below) represented on average 126 % of the labour income expressed per work unit (work performed by a person employed full time on a farm). This means that, on average over this period, CAP subsidies covered all of the farmer's income (100 % of labour income per work unit) but also part of the expenses (equivalent to 26 % of labour income per work unit), since the sale of the farm's products alone does not cover these two items.

BRIEF OVERVIEW OF THE PRESSURES AND IMPACTS OF AGRICULTURE ON THE ENVIRONMENT

Primarily intensive agriculture

The pressures of agriculture on the environment depend on the modes of production, in particular on their more or less intensive nature: the pressure is even more intense when productivity is maximised by selecting high-yielding varieties or species, by simplifying practices (short crop rotations, monocultures, high-density industrial breeding of genetically close animals) and by increasing the use of certain inputs (fertilizers and pesticides in plant production, antibiotics in animal production, for example). From this perspective, the modes of production can be classified by increasing levels of pressure: extensive, organic, intensive organic, conventional and intensive conventional agriculture. Even if the situation is gradually evolving, thanks in particular to various legislative tools and the development of organic farming, Walloon agriculture remains largely conventional and intensive. As an illustration, consumption of mineral nitrogen fertilizers in 2017 amounted to 96.4 kg N/ha of UAA in Wallonia, versus 64.9 kg N/ha of UAA for the EU-28. As regards pesticides, with 4.5 kg of active substances per hectare of UAA in 2019, Belgium[4] was among the European countries with the highest sales of pesticides per hectare of UAA.

Consumption of resources

As a primary sector activity, agriculture consumes natural resources such as soil, water, solar energy for photosynthesis, etc., or lightly processed resources such as soil improvers and fertilizers, animal feeding stuffs, to name the most essential. Only in certain specific cases, such as phosphates from mining deposits (phosphate fertilizers), whose exploitable world reserves are limited, does this consumption put quantitative pressure on resources as non-renewable stocks.

In the case of water, problems could arise in the future if the frequency and severity of seasonal droughts increase, but today the resources are not quantitatively impacted by agriculture.

It should be noted that the energy consumption of agriculture is low compared to that of other sectors (1,259 GWh in 2018, or about 1 % of final energy consumption in Wallonia), even if we take into account the consumption of methane for the production of nitrogen fertilizers (about 1,000 GWh/year). Agriculture is also a producer of energy sources (agrofuels in particular)

High emissions of ammonia

In 2019, agriculture accounted for 12 % of Wallonia's greenhouse gas emissions, which are responsible for climate change. This contribution is mainly due to nitrous oxide (N_2O) and methane (CH_4) emissions, of which 82 % and 77 % respectively of Walloon emissions are attributable to agriculture. The sector's contribution to carbon dioxide (CO_2) emissions is only 1 %. N_2O, CH_4 and CO_2 are not equivalent in terms of their effects on the climate: the global warming potential of 1 kg of N_2O is 298 times larger than that of 1 kg of CO_2, while the global warming potential of 1 kg of CH_4 is 25 times larger than that of 1 kg of CO_2. These differences are taken into account by converting the quantities emitted of each gas into "CO_2 equivalent". Agricultural N_2O emissions occur directly after the spreading of nitrogen fertilizers (mineral fertilizers, livestock manure also called farmyard manure) or from nitrification/denitrification phenomena by micro-organisms in cultivated soils, denitrification being preferred in compact or water-saturated soils with low oxygen content. CH_4 emissions are mainly related to livestock production (enteric fermentation and manure management). CO_2 emissions are mainly due to the consumption of fossil fuels for agricultural machinery and buildings. Over the period 1990 - 2019, greenhouse gas emissions from the agricultural sector decreased by 16 %, mainly due to a decline in the number of cattle[5] and, to a lesser extent, better management of livestock manure.

[4] Walloon data currently being calculated. The figure quoted should be viewed with caution: (1) it includes consumption by non-professional users, (2) Flanders is a larger consumer than Wallonia and (3) Belgium declares a larger number of active substances to Europe than other European countries.

[5] It should be noted that the decrease in pressure is not necessarily proportional to the decrease in cattle numbers. The pressures of a cow producing 10,000 l of milk per year are higher than those of a cow producing 4,000 l/year.

As regards air pollutants that may directly or indirectly impact health, in 2019 agriculture was the source of:

- 92 % of Walloon emissions of ammonia (NH_3), a precursor of particulate matter ($PM_{2.5}$) and an acidifying and eutrophying pollutant, i.e. damaging by excessive contribution of nutrients which is particularly harmful to poor environments (moors, peat bogs, etc.) and to the flora and fauna specific to these environments. NH_3 evaporates from animal manure and when handled/used (from livestock buildings to spreading). It comes from mineral fertilization to a lesser extent;
- 31 % of Walloon emissions of non-methane volatile organic compounds (NMVOCs), precursors of particulate matter ($PM_{2.5}$) and ozone. These emissions mainly come from the management of livestock manure and to a lesser extent from crops and grasslands (substances emitted by plants such as terpenes) and from the microbial activity of soils (e.g. methanol) which is exacerbated by fertilization under certain conditions;
- 14 % of Walloon emissions of nitrogen oxides (NO_X, i.e. NO and NO_2), eutrophying pollutants, precursors of particulate matter ($PM_{2.5}$) and ozone. NO_X from agricultural sources comes from nitrogen-enriched soils (mineral fertilizers, farmyard manure) and from the consumption of fossil fuels by farm machinery and buildings;
- 14 % of Walloon emissions of particulate matter (PM_{10}). These particles come from crops (tillage, harvesting, crop residue management) and livestock buildings.

Emissions of these pollutants from the agricultural sector have remained relatively stable since 1990. It should be noted that pesticide emissions are not quantified. Nevertheless, their presence in the air has been proven in Wallonia as in other European countries.

Fertilizers and pesticides that impact water

Agricultural activities also exert pressure on surface water and groundwater, which can affect their quality. These pressures are primarily related to:

- the input of pesticides and fertilizers (mineral fertilizers, farmyard manure) to the soil, some of which reaches surface water via run-off and/or eroded soil particles, and groundwater via water that infiltrates the soil. It should be noted that the consumption of pesticides and fertilizers over the last ten years does not show a downward trend;
- soil erosion by rainwater, which leads to an increase in suspended solids in waterways, with negative consequences for aquatic life: cloudy water, loss of habitats for fauna and flora through sediment deposition, fertilizer flow (eutrophication) and pesticides associated with soil particles.

In surface waters, these phenomena led to the contribution of 0.26 t/(ha per year) of sediment over the period 2013 - 2017 (11% of the quantities of eroded soil, the balance being redeposited before reaching the waterways), as well as 11,568 t per year of nitrogen and 1,355 t per year of phosphorus over the period 2016 - 2018. Excessive inputs of nutrients (nitrogen, phosphorus) can lead to eutrophication of waters, resulting in significant algal growth and oxygen depletion, which is critical for some aquatic organisms. This phenomenon, to which other pollution sources (urban and industrial wastewater discharges)[6] contribute, affected 39 % of the 335 water quality monitoring sites in Wallonia over the period 2016 - 2018. Pesticides were responsible or co-responsible for the poor status of 23 % of the 352 Walloon surface water bodies in 2018.

In groundwater, nitrate (from nitrogen fertilizers) and/or pesticides were responsible for the poor chemical status of 35 % of 34 Walloon water bodies in 2019. Nitrate was solely responsible for 5 water bodies, pesticides were solely responsible for 1 water body and nitrate and pesticides were co-responsible for 6 water bodies.

Imported proteins disrupt the nitrogen balance

The nitrogen balance plays a special role in the relationship between agriculture and environment:

- To minimize the impact on water, nitrogen fertilization (mineral fertilizers and farmyard manure) must

[6] According to simulations carried out on 2015 data, more than 61% of the total inputs of carbon, nitrogen and phosphorus to the Walloon river system came from diffuse inputs through run-off into soils (agricultural and non-agricultural), while 27% came from urban wastewater discharge and 8% from industrial discharges.

meet the needs of the crops as closely as possible, without excess. Over the period 2014 - 2018, the surplus nitrogen still present in agricultural soils after the main crop (i.e., nearly 40 kg N/ha UAA) accounted for 20 % of total annual nitrogen fertilizer inputs;
- To minimize the impact on the air, it is necessary to reduce emissions by paying particular attention to the storage and spreading of nitrogen fertilizers and the treatment of the air in livestock buildings.

The balance between livestock inputs (farmyard manure) and crop needs has been challenged by the evolution of cattle feeding, which has seen the share of soybeans, a cheap source of protein imported mainly from South America, increase significantly over the past several decades compared to grass. These imports increase nitrogen inputs to the whole agro-ecosystem, which has limited capacity for absorption (spreading without risk for water). They are also responsible for other offshored pressures (deforestation, use of pesticides on resistant GMO crops, transport emissions).

Soils at risk of degradation

Agriculture entails risks of soil degradation, which vary according to production and agricultural practices. For example, the development of root vegetable crops (potatoes, carrots, etc.) has a strong environmental impact: degradation of soil structure and loss of organic matter due to intensive tillage, significant loss of soil at each harvest (around 6 t per ha), and compaction problems caused by combine harvesters.

Among the risks of soil degradation, the decline in organic matter content has major consequences on soil structure and, consequently, on aeration, resistance to erosion, sealing[7] and compaction, and water infiltration and retention.

An estimated 90 % of the cultivated area in Wallonia has organic matter levels that are too low to guarantee good soil structure (2015 - 2019). With regard to erosion, soil losses exceed 5 t per (ha per year) on 59 % of the land area under crops (nearly 240,000 ha), and 10 t per (ha per year) on 23 % of it (nearly 92,000 ha) (2010 - 2019)[8]. However, losses above 5 t per (ha per year) are considered incompatible with maintaining all soil functions in the long term (e.g. carbon storage and biodiversity preservation). With regard to the risk of compaction, there are sensitivity maps, but these do not give an estimate of the areas actually affected by the problem. Agricultural soils are also affected by accumulations of undesirable elements in fertilizers or improvers, which can become a source of diffuse pollution. This is the case for cadmium accumulations via phosphate fertilizers, or copper, nickel and zinc accumulations via farmyard manure, or other metallic trace elements via the sludge of collective wastewater treatment plants ($WWTP_S$) used in agriculture.

[7] Degradation of the soil structure by the effect of raindrops, leading to the formation of a surface crust that prevents infiltration.
[8] These estimates do not include acute linear erosion (gully erosion) or mass erosion (mudflows).

Biodiversity impacted

The environmental pressures of agriculture on biodiversity need to be assessed at several levels: biodiversity in soils (soil fauna and microflora), biodiversity in agricultural environments (species and habitats of agricultural environments) and agrobiodiversity (cultivated plant species and animal breeds). It should be noted that agriculture, like other sectors, also impacts biodiversity in watercourses.

Biodiversity in soils is extensive, and more studies need to be conducted in this area. Studies show that biodiversity is affected by agricultural practices (pesticides, tillage, loss of organic matter). In Wallonia, four indicators of soil biological quality showed contrasting responses under grassland and under crops, indicating overall a lower activity of the soil microbial fauna in the second case[a].

For biodiversity in agricultural environments, the evolution of bird populations is a good indicator owing to their high position in food chains, their wide variety of ecological requirements and relatively rapid response time to environmental changes. The numbers of common bird species[9] strictly associated with agricultural environments have been in continuous decline since 1990. These species lost 60 % of their numbers at an average rate of 3 % per year between 1990 and 2020. By way of comparison, the numbers of common bird species strictly associated with forest environments showed an overall decline of 22 % over the same period. This evolution of agricultural birds is explained by (i) the loss of food resources (grains, insects, small mammals, etc.) due to the use of pesticides and the absence of plants that go to seed, (ii) the loss of structuring elements in the landscape (hedges, groves), sources of food and nesting sites, (iii) the increase in the frequency of mowing grasslands (production of fodder) and the speed of harvesting, which is problematic in particular for species that nest on the ground (direct mortality) and leads to a scarcity of insects that serve as prey for birds.

As regards agrobiodiversity, erosion among cattle breeds has been particularly significant. In the space of a few decades, the local breeds with a mixed character have given way to two hyperspecialised breeds: the Holstein Pie-Noire (milk) and the Belgian Blue (meat). However, data on the evolution of the number of breeders[10] over the period 2015-2020 seem to indicate growing interest in alternative, more rustic breeds, to the detriment of the dominant breeds.

[9] Common bird species are the most common breeding bird species. These species are monitored annually.

[10] It should be noted that livestock data by breed are no longer collected via Statbel since 2012 (end of agricultural censuses).

MEASURES FOR MORE ENVIRONMENTALLY-FRIENDLY AGRICULTURE

A European framework

Under the impulse of the European Union, various legislative tools have been put in place to limit the pressures and impacts of agriculture on the environment. In the area of water protection, this includes, for example, the "Nitrate" directive, implemented in Wallonia by the Sustainable Management Programme for Nitrogen in Agriculture (PGDA), or the Water Framework Directive, implemented by the River Basin Management Plans (RBMP/PGDH), which include, among other things, measures to combat erosion. In the area of air quality, the "NEC" directive setting emission ceilings for NH_3 and $NMVOC_S$ in particular is implemented by the Air Climate Energy Plans. The Air Climate Energy Plan 2030 (ACEP 2030), currently being drafted, will include more stringent measures to tackle NH_3 emissions from agriculture. As regards pesticides, this includes the Pesticides Framework Directive, which targets pesticide use which is compatible with sustainable development by reducing the risks and effects on health and the environment, which gave rise to the Walloon Pesticides Reduction Program (PWRP 2018 - 2022).

Moreover, as already mentioned, the CAP has evolved by gradually incorporating various environmental concerns. All financial aid granted to farmers under the CAP (1st and 2nd pillar aid)[11] is conditional on compliance with rules aimed at protecting the environment, public, animal and plant health and animal welfare, a principle known as "cross-compliance". One of the 1st pillar aid schemes, the "green payment", has additional conditions: maintaining a certain ratio of permanent grassland, crop diversification and the presence of "ecologically significant areas" on 5 % of arable land ("greening")[12].

Finally, 2nd pillar aid (applied in Wallonia through the Walloon Rural Development Program (PwDR)) include support for organic farming, agri-environmental and climate payments (AECM)[13] and Natura 2000[14], all of which have environmental objectives.

[11] The 1st pillar aid aims to support farmers' incomes ("basic payment", "green payment" and "young farmer's payment") and to stabilise the markets of certain agricultural products by preventing their prices from falling too low. They are entirely funded by the European Union. The 2nd pillar aid concern the European Union's rural development policy. They are co-funded by Wallonia and the European Union.

[12] The standards of this green payment should be integrated into the cross-compliance applicable to all in the post 2020 CAP.

[13] The agri-environmental and climatic methods (AECM) aim to encourage the implementation by farmers of practices that promote the conservation and improvement of the environment (planting of hedges, high biological value grasslands, feed autonomy, etc.), beyond what is required by legislation. These practices, which are subject to a voluntary commitment for 5 years, give rise to remuneration to cover the loss of revenue and the costs associated with implementing them.

[14] A farmer who exploits an agricultural plot of land in a Natura 2000 site may be subject to certain constraints: certain activities (ploughing, drainage, application of fertilizers and pesticides, etc.) are subject to notification, authorisation or are prohibited (excluding derogations). A financial compensation scheme is envisaged.

More stringent measures are expected in the context of the "post 2020 CAP", which will apply from 2023. These measures will have to integrate the objectives of the Farm to Fork Strategy and the European Union Biodiversity Strategy for 2030, developed in the framework of the European Green Deal. These include, by 2030, reducing the use and risks of chemical pesticides and the use of the most dangerous pesticides by 50 %, reducing the use of fertilizers by at least 20 %, reducing sales of antimicrobials for farm animals and aquaculture by 50 %, and encouraging the development of organic farming in the European Union to increase its share to 25 % of the UAA (this proportion was 8.5 % in 2019) The new CAP will also introduce a new, more decentralised system of governance, with each Member State required to present a national strategic plan setting out how the CAP instruments will be used, with the aim of achieving the objectives of the CAP as well as those of the Green Pact for Europe. In Belgium, by way of derogation, there should be two plans, one for Flanders, the other for Wallonia.

Measures to be taken or reinforced

Most of the pressures and impacts of agriculture on the environment are reversible. For example, studies carried out in Wallonia show the positive effects of AECM on local biodiversity in agricultural areas. A larger proportion of farmland under AECM would be required to achieve measurable effects on a regional scale.

The following table provides an overview of the main concrete measures that enable or could enable improvements, with reference to legislative tools that contribute to them. Various factors can influence the effectiveness of these tools: whether it is a voluntary or mandatory regime, whether there are financial incentives or not, controls, sanctions, etc. Moreover, the absence of legislative tools does not mean that the measures are not applied. Therefore, this table cannot be interpreted in terms of completeness of measures or achievement of objectives..

Measures to be taken or reinforced	Tools that contribute to this
Tackling the simplification of habitats	
Ecological network (hedges, trees, copses, ponds, etc.), natural grasslands, high biological value grasslands, crop diversification, assortments of plant species (e.g. agroforestry[15]), etc.	AECM, Natura 2000, Cross-compliance of CAP aid, Green payments of the CAP
Reduce pressures from fertilizers	
Reduced accumulations (balance of N, P and K fertilizer accumulations in all forms, sustainable fertilization, precision agriculture, vegetables in rotation or interculture, organic farming, etc.)	PwDR (organic farming), Strategic plan for the development of organic farming in Wallonia by 2030.
Production (farmyard manure), storage (farmyard manure) and spreading (mineral fertilizers and farmyard manure) reducing the risk of volatilisation and transfer to surface water and groundwater	PGDA, Cross-compliance of CAP aid, PACE 2030
Intermediate crops for nitrate traps	PGDA
Buffer zones (grassed headlands, managed plots and strips, etc.)	PGDA, Cross-compliance of CAP aid, AECM
(Farmyard manure) Biomethanisation (production of methane and organic fertilizers while reducing greenhouse gas emissions)	CAP (investment aid), Green Certificates, PACE 2030
(Farmyard manure) Less use of imported proteins (soybeans)	/
(Farmyard manure) Feed autonomy (low livestock numbers)	AECM
Reduce pressures from pesticides	
Reduced inputs (development of robotic mechanical weeding in market gardening and vegetable crops, etc.) or eliminated inputs (organic farming for synthetic pesticides, etc.)	PwDR (organic farming), PWRP
Types and methods of treatment that reduce the risk of volatilisation and transfer to surface water and groundwater	PWRP, Cross-compliance of CAP aid (control of sprayers)
Buffer zones (grassed headlands, managed plots and strips, etc.)	AECM, PWRP
Reduce pressures due to imported feed for livestock	
Development of better food autonomy at farm and territory level (exchanges between farms), better valorisation of self-produced fodder, development of locally produced protein sources (protein crops, rapeseed meal, spent grain, etc.)	AECM
Tackle the loss of organic matter in soils	
Maintain existing carbon stocks (permanent grasslands)	Green payments of the CAP
Denser and more perennial vegetation cover (intermediate crops, temporary grasslands, perennial crops, agroforestry, restoration of permanent grasslands, etc.)	AECM
Return to the soil of crop residues or co-products, inputs of organic matter (farmyard manure, composts, digestates, reusable sludge from WWTP)	/
Crop diversification, lengthening of rotations, techniques that promote good soil structure and low erosion (e.g. limited tillage)	/
Closer monitoring of carbon dynamics in soils by specific indicators (e.g. coarse and fine carbon fractions) for rapid corrective measures	/
Tackle erosion	
Cover crops, techniques to reduce erosion (e.g. limited tillage), rotation management, sufficient organic matter content, anti-erosion adaptations (grass strips, hedges, etc.), agroforestry	Agriculture Code, PGDH, PGRI[16], AECM
Reduce the risk of compaction	
Sufficient organic matter content, organisation of agricultural work (load, number of tractor movements, etc.) taking into account soil conditions (texture, humidity), adjustment of techniques (tires, inflation pressure, etc.) and methods (type of ploughing, limited tillage, etc.)	/

[15] A combination of trees and crops or animals on the same parcel

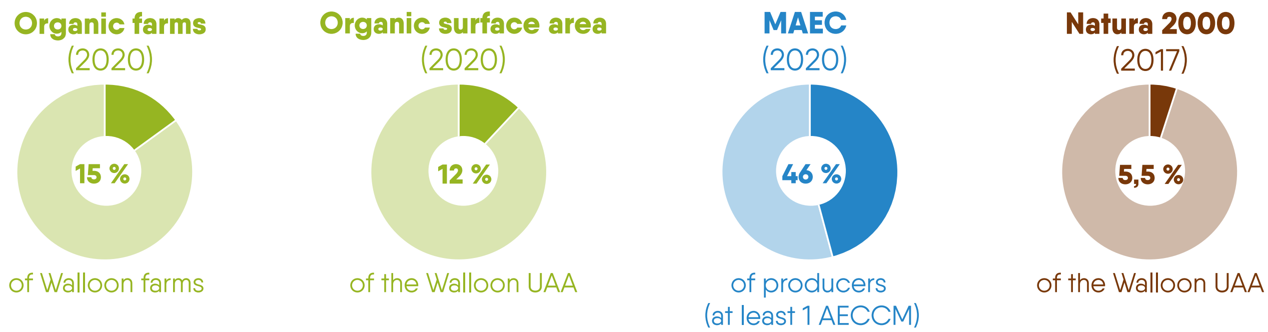
[16] Flood Risk Management Plans

Of the tools in the table above, the PwDR tools with the highest environmental impact have the following implementation indicators:

- In 2020, 15 % of Walloon farms were organic farms, and these covered 12 % of Walloon UAA, of which 74% were permanent and temporary grasslands and 22 % were field crops. The organic UAA doubled between 2010 and 2020. As for livestock, the organic share in 2020 reached 52 % for chickens and laying hens, 10 % for cattle and 3 % for pigs. The organic chicken and laying hen flock grew by a factor of 3.8 between 2010 and 2020 and the organic cattle herd by a factor of 1.7, with the organic pig herd showing no clear trend over 10 years. However, not all of the objectives of the Strategic plan for the development of organic farming in Wallonia by 2020 were achieved. New objectives are laid down in the Strategic plan for the development of organic farming in Wallonia by 2030, including organic production on 30 % of the Walloon UAA.
- The participation rate in at least one AECM reached 46 % of producers in 2020, or 5 948 producers. The achievement rates for the objectives varied (from 5 % to over 100 % depending on the AECM in 2020).
- The share of UAA managed concurrently with nature conservation in the context of Natura 2000 amounted to 5.5 % in 2017.

It should be noted that, according to a study[(b)] based on reference literature for ecological contexts similar to Wallonia's, the area supporting biodiversity[17] (to which a share of the areas under AECM and Natura 2000 contributes) should reach a minimum of 10 % of the areas under crops and 15 % of the areas under permanent grassland to ensure the conservation of species and natural habitats and to provide support for the agro-ecological balances that favour agricultural production. In 2020, these minimum requirements were not met as the estimated area supporting biodiversity was 1.5-2 % of the area under crops and nearly 11 % of the area under permanent grassland. In addition to this quantitative criterion, there is a distribution criterion: it is essential that the components of the area supporting biodiversity form a network throughout the territory.

MEASURES MOST FAVOURABLE TO THE ENVIRONMENT



[17] The area supporting biodiversity is made up of surfaces for which the best scientific knowledge allows us to conclude that they ensure, in our regional context, a decisive contribution to the maintenance and development of patrimonial biodiversity (protected and threatened species, protected habitats) and so-called ordinary biodiversity (according to Walot, 2020[(a)]).

CHALLENGES FOR THE FUTURE

The development of more environmentally-friendly agriculture should be based on two fundamental strands: a transition to other modes of production and a recognition and reinforcement of the non-productive functions of agriculture that provide services to society.

The transition to other modes of production includes developing or strengthening practices that can lead to a reduction in environmental pressures, summarised in the table above: feed autonomy, low-input agriculture, practices that preserve the structure and biological quality of soils, anti-erosion practices, control of air emissions, improvement of the ecological network, etc. The evolution of modes of production should also aim at adapting the sector to climate change, in particular through the choice of more resistant or better adapted varieties, as well as through the search for alternatives for the supply of water during seasonal drought.

Currently, the non-productive functions of agriculture, which are provided to a variable extent depending on the degree of intensity of agricultural practices, are only remunerated to a limited extent. The substantial support for the sector via state aid could valorise these functions further by remunerating the farmers for the services provided. These services include carbon storage and the restoration or maintenance of diverse habitats, species, and landscapes in agricultural environments. They require maintaining rural employment as a reservoir of skills and know-how for the management of rural areas. In the new post-2020 CAP, in addition to more powerful tools in the 2nd pillar (organic farming, AECM), the cross-compliance of the 1st pillar aid has become more stringent, and eco-regimes have been implemented, which are direct payments to farmers that will be linked to more environmentally friendly practices. The main innovation is that these eco-regimes have a significant potential to meet these challenges. Will these resources be sufficient to meet the objectives of the Green Pact for Europe? That will depend to a large extent on the national strategic plans that will be negotiated between each Member State and the European Commission.

The Walloon Recovery Plan emphasises that agriculture must be part of the solutions for the recovery and re-orientation of Wallonia in a context of transition, particularly on account of its cross-cutting aspect and the fact that it will prompt action that generates a triple dividend (economic, social and environmental). It includes various measures, including support for the environmental transition of agriculture.

References

[a] Krüger I, Chartin C, van Wesemael B, Carnol C, 2018. Defining a reference system for biological indicators of agricultural soil quality in Wallonia, Belgium. Ecological Indicators, 95, 568-578. Online. https://doi.org/10.1016/j.ecolind.2018.08.010

[b] Walot T, 2020. Quelles superficies pour soutenir la biodiversité dans la surface agricole ? Note de travail dans le cadre du projet de Plan Stratégique Post 2020 UCL - ELIA - EVAGRI. Online. https://www.graew.be

Main data sources

Aves-Natagora ; Biowallonie ; CORDER asbl ; Eurostat ; GRAEW ; SPW - AwAC ; SPW Énergie - DEBD ; SPW Environnement - DEE ; SPW Environnement - DEMNA ; Statbel (SPF Économie - DG Statistique) ; UCLouvain - ELI - TECLIM & REQUASUD (licence A09/2016) ; UCLouvain - ELI - ELIB ; ULiège-GxABT - Unité BIOSE (model EPICgrid)

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