

Memo: Swedish agriculture and sustainability

Content

Content.....	1
1. Why is Swedish food a sustainable choice?	2
The facts in brief.....	2
Meat and milk.....	2
Greenhouse cultivation	2
Water.....	3
Why is Swedish food a sustainable choice? An in-depth analysis	3
Global facts / conditions.....	3
The situation in Sweden	3
Rewarding for both farmers and the climate.....	4
The goal: better than good.....	4
Here is what green industry does to increase sustainability:	5
Further reading:.....	5
2. Why is the profitability of agriculture important for biodiversity?	7
The facts in brief.....	7
Profitability.....	7
Why is the profitability of agriculture important for biodiversity? An in-depth analysis.....	7
Global facts / conditions.....	7
The situation in Sweden	8
Livestock farming – part of biodiversity.....	8
Profitability – part of the climate equation.....	8
Here is what green business is doing in this domain to increase sustainability.	8
Further reading.....	9
3. Why is important not to eliminate farmland?	10
The facts in brief.....	10
Why is important not to eliminate farmland? An in-depth analysis.....	10
The global perspective	10
The situation in Sweden	11
Other	12
Further reading.....	13

1. Why is Swedish food a sustainable choice?

The facts in brief

- About half of the food we eat is imported. Even so, imported food accounts of at least 60 per cent of emissions. If more people switched to choosing Swedish food, the global environmental and climate impact would be reduced.
- In recent years, Swedish farmers have boosted agricultural productivity without increasing our environmental impact. Swedish agriculture is now among the most climate smart and environmentally sound in the world.
- On average, every Swedish person gives rise to emissions amounting to about 2 tonnes of greenhouse gases in a single year on account of the food we eat, according to the Swedish Environmental Protection Agency (Naturvårdsverket). A trip to Thailand for one individual gives rise to emissions of about 2.5 tonnes of greenhouse gases, which is food for thought.
- In Sweden, we dispose of one in every five packed lunches. Global food waste accounts for 8 per cent of the world's greenhouse gas emissions.
- 80 per cent of Sweden's climate impact is caused by fossil carbon dioxide emissions. Among others, Chalmers University of Technology believes that these emissions must be brought down to zero, and that stable levels of methane are acceptable.

Meat and milk

- When the pressure on the world's resources increases, meat production needs to take place where it is sustainable. In Sweden, we have room for more animals. We have plenty of grazing land, favourable conditions for the production of feed, and a lot of water.
- An increasing number of farmers are converting manure into biogas. Besides providing renewable power for vehicles, this results in reduced methane leakage and as well as a nutritious, odourless biproduct that is perfect for use as fertilizer for crops. Animal manure plays a crucial role in adding fresh nutrients to the soil in a sustainable way. Without animal manure, it is not possible to grow food for human consumption in such a sustainable way.
- The level of emissions from Swedish beef production is about 60 percent lower than the world average. This is partly explained by the fact that the animals are happy and well fed.
- Swedish milk production causes 44 per cent less greenhouse gas emissions per kilogramme of milk than the world average.
- We need grazing animals. In Sweden, overgrown meadows and pastures are the greatest threat to biodiversity.
- Sweden is a leader both concerning very low use of antibiotics and high animal welfare standards. In the whole of the EU, Sweden has the lowest level of antibiotics. But being at the forefront has to pay; today it costs more to produce food in Sweden than overseas because of our strict requirements.

Greenhouse cultivation

- Energy consumption has been cut by more than half in greenhouse cultivation since the beginning of the 2000s, while the use of fossil fuels has decreased by more than 80 per cent – despite the increase in cultivation.

Water

- Agriculture accounts for just 3 per cent of total water use in Sweden. Internationally the figure stands at 70 per cent.
- In Sweden, households and industries account for 23 and 61 per cent of water use respectively.
- Rainwater accounts for 98 per cent of the 14,500 litres of water used to produce 1 kg of meat in Sweden.

Plant protection products

- We have a good climate for cultivation in Sweden, which means that we do not need to use as many plant protection products as a lot of other countries. We are among the countries in Europe that use the fewest plant protection substances per cultivated area of land. Compared with many other countries, including those in the EU, we also have far more stringent requirements in terms of the products that are allowed to be used.

Why is Swedish food a sustainable choice? An in-depth analysis

Today, 60 per cent of Sweden's food-related greenhouse gas emissions are produced overseas. Farming in Sweden is world-class when it comes to environmental and climate efficiency. If more people consumed Swedish raw materials, it would make a difference. By increasing local production, we also increase the opportunities to reduce emissions globally.

Global facts / conditions

In its Climate Change and Land¹ report, the Intergovernmental Panel on Climate Change (IPCC) describes the role of agriculture and forestry as crucial to curbing climate change. A switch to more climate-smart agricultural methods will make it possible to keep more carbon dioxide in the soil, thereby providing part of the solution to the challenges of the future.

All of the UN's Sustainable Development Goals² are connected to agriculture. Reduced poverty leads to reduced hunger, and reduced hunger is in turn the key to the fulfilment of other goals. In most countries in the world, poverty reduction is about achieving positive development in terms of agriculture and forestry.

The situation in Sweden

In recent years, we have increased agricultural productivity without increasing the impact on the environment. Swedish agriculture is now among the most climate- and eco-efficient in the world. But today, at least 60 per cent of the greenhouse gas emissions caused by Swedish food consumption occur overseas^{3,4}. If more people switched to consuming Swedish-produced foods, the global environmental and climate impact would be reduced. This is clearly stated in the Swedish Environmental Protection Agency's PRINCE⁵ report.

Between 2011 and 2016, profitability and competitiveness declined in the food chain – mainly within primary production and the food industry. The Swedish Board of Agriculture stated this in its 2019 evaluation of the food strategy⁶. Despite rising prices, the farmer does not benefit. An increase in

productivity and added value is necessary in order for competitiveness to increase. In order to achieve this, investment in knowledge and innovation is required.

In recent years, environmental and sustainability issues have gradually gained a more prominent role in the debate. Besides giving rise to new trends and habits, the growing interest in and understanding of the seriousness of the climate question is creating the right conditions for a change to more sustainable consumption and production based on green industries.

1 https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf

2 <https://www.globalamalen.se>

3 https://www2.jordbruksverket.se/download/18.37ee335016a437eec95d2df4/1556109780429/ra19_9v2.pdf 4 <http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6842-4.pdf?pid=23308>

5 <http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6842-4.pdf?pid=23308>

6 https://www2.jordbruksverket.se/download/18.37ee335016a437eec95d2df4/1556109780429/ra19_9v2.pdf

Rewarding for both farmers and the climate

Swedish agriculture has been pioneering both in terms of the use of antibiotics⁷ and animal protection. While Sweden should feel proud of our success, it is also important to ensure that it actually pays to be at the cutting edge.

The transformation into a climate-smart society generates new business with the demand for new, more local and specialised products. In the agricultural sector, there is both commitment to and knowledge of the sustainable use and management of our natural capital, which is crucial for future welfare. The climate question boosts the demand for locally produced food with a low climate impact. This creates a whole range of opportunities within Swedish agriculture. However, we will also face certain challenges in adapting to a changing climate.

The fact that green industries have come a long way in Sweden in terms of environmentally and climate-efficient production creates enormous potential for companies to create various kinds of sustainable added value that consumers are willing to pay for on both a national and international basis. The countryside's strength in terms of nature-related experiences also creates opportunities for development in this sector.

The transition to a climate-smart and sustainable society must go hand in hand with increased profitability for those who use the land. This is an absolute prerequisite to the realisation of that transition. That is why the prerequisites for product and company development must be prioritised, and the right conditions established, regardless of which part of the country you operate in. We all benefit from the kind of countryside that is more vibrant.

The goal: better than good

Greenhouse gas emissions are a huge problem, but a large part of the potential solution may lie in agriculture and forestry. That is why we regard linking our capacity to produce food in a profitable way to our role as a pioneer in international environmental and climate efforts as a key question.

The climate goal for Sweden is zero net greenhouse gas emissions by 2045⁸. Of all sectors of society, there is just one that will be permitted net emissions, and that is the agricultural sector. This is because of the challenges posed by greenhouse gases other than carbon dioxide; especially the issues of methane from livestock and nitrous oxide from manure management, which are difficult to

fix. All other sectors will need to achieve zero emissions in accordance with climate legislation and climate policy frameworks.

The question of choline storage will become increasingly significant. The IPCC has highlighted the potential of agriculture and forestry to bind carbon dioxide from the atmosphere. We have already demonstrated that we can be among those at the top.

7 https://www.sva.se/globalassets/redesign2011/pdf/om_sva/publikationer/antibiotika-och-djur-i-eu.pdf
8 <https://www.regeringen.se/artiklar/2017/06/det-klimatpolitiska-ramverket/>

Federation of Swedish Farmers (LRF). Tel: 0771-573 573. www.lrf.se
Week 47. We don't have just one solution – we have thousands. LRF talks to political leaders about the climate and sustainability.

Here is what green industry does to increase sustainability:

- Focus on Nutrients (“Greppa näringen”): Many farmers are affiliated with the advisory project Focus on Nutrients. Here, the focus is on the measures for the storage and distribution of manure. The aim is to reduce greenhouse gas emissions and the eutrophication of lakes and waterways, and to ensure the safe use of plant protection products. It might be necessary to spread manure at the right time, at a suitable distance from waterways, for example.
- Efforts to increase choline storage: By choosing the right crops according to soil conditions, growing catch crops, and employing the right strategy when using stable manure and leaving straw behind, the mulch content increases, and in turn, the choline storage grows.
- Building wetlands: Wetlands are built in order to retain water on land. In this way, nutrient leakage from agricultural land can be absorbed by vegetation instead of being carried off to oceans and lakes. An increased amount of water in the landscape also increases biodiversity.
- Solar cells: With solar panelling on the roof, companies can be energy self-sufficient.
- Biofuels: Diesel is being replaced in many places with HVO and other types of fossil-free fuel.
- The reduced use of manure and plant protection products: The amount of fertiliser and plant protection substances is adjusted using sensors and so on, and optimised based on location and needs.
- Low-water technology: Ponds, dams and so on – to enable watering and to develop new biotopes.

Further reading:

About the environmental impact of agriculture: <https://www.landlantbruk.se/lantbruk/matimport-bakom-stor-del-av-sveriges-miljopaverkan/>

About antibiotics:

https://www.sva.se/globalassets/redesign2011/pdf/om_sva/publikationer/antibiotika-och-djur-i-eu.pdf or <https://www.sverigesbonder.se/antibiotikan-och-djuren/>

About the importance of profitable agriculture:

https://www2.jordbruksverket.se/download/18.37ee335016a437eec95d2df4/1556109780429/ra19_9v2.pdf

About profitable farming measures:

<http://www.jordbruksverket.se/download/18.18346daa16b7dd89195cad40/1561369212857/Slutrapport%20%C3%A5tg%C3%A4rder%20handlingsplan%20f%C3%B6r%20livsmedelsstrategin%202020-2022.pdf>

About sustainable agriculture in Sweden: <https://www.sverigesbonder.se>

About meat and the climate: <https://www.lrf.se/mitt-lrf/engagera-dig-och-paverka/tank-om/opinionssatsning/bra-argument-for-att-valja-svenskt/40-fragor-och-svar-om-mat-och-klimat/>

About the Swedish Environmental Protection Agency's PRINCE report:

<https://www.landlantbruk.se/lantbruk/matimport-bakom-stor-del-av-sveriges-miljopaverkan/>

2. Why is the profitability of agriculture important for biodiversity?

The facts in brief

- Global biodiversity is in a critical state. Biodiversity is necessary for human survival, but its current state is declining around the world.
- Globally, deforestation and increased land use cause the greatest threat to biodiversity. In Sweden, overgrown meadows and pastures are the biggest threat.
- Grazing animals are a prerequisite for preserving species-rich pastures.
- A grazed pasture can contain as many as 40 different species per square metre: a level of diversity equal to that of the rainforest.
- Many flowers and herbs that are important to pollinating insects are completely reliant on open natural pastures. This is conducive to ecosystem services such as soil formation, pollination, food production, as well as recreation, outdoor life and experiences.
- One of Sweden's 16 environmental objectives is to create a varied agricultural landscape. According to the Swedish Environmental Protection Agency, in order to fulfil that objective, the most important thing is country-wide active, profitable agriculture.

Profitability

- Profitability is required for investment in sustainable solutions.
- Investing in the future of agriculture is not just about fulfilling the environmental and climate goals. It's basically about our food security and about safeguarding a financially stable agricultural sector.
- If profitability is low, an entrepreneur must prioritise measures to increase production instead of investing in biodiversity.
- A changing climate also calls for investment in order to adapt agriculture to more unpredictable weather conditions, including more heat and periods of drought or heavier precipitation.

Why is the profitability of agriculture important for biodiversity? An in-depth analysis

All those who use the land are responsible for creating the necessary conditions for biodiversity, which is of vital importance. Sweden's farmers want to take that responsibility. But society needs to ensure that sustainable food production is profitable; only then can agriculture play an even better part in making this transition.

Global facts / conditions

The world's biodiversity is in a critical state. That is what was reported in the first international global analysis issued in the spring of 2019, IPBES³. Biodiversity is necessary for human survival, but its

current state is declining around the world. At the same time, most ecosystem services are being undermined. The direct and indirect driving forces behind the loss of biodiversity have increased over the past 50 years. In the report released by IPBES, it is clearly stated that nature, biodiversity and ecosystem services can be preserved, restored and used in a sustainable way, while other societal goals can be fulfilled simultaneously, if measures are taken swiftly and coordinated.

The situation in Sweden

Livestock farming – part of biodiversity

In the debate concerning the significant role agriculture has to play for the country and in the shift towards increased sustainability, it is almost exclusively only the negative aspects of livestock farming that are highlighted. But the fact is that livestock farming has an important role to play in Sweden's agricultural landscape, especially with regard to biodiversity. Grazing animals are a prerequisite for the preservation of species-rich pastures. A grazed pasture can contain as many as 40 different species per square metre. Many flowers and herbs that are important to pollinating insects are completely reliant on open natural pastures. This is conducive to ecosystem services such as food soil formation, pollination, food production, as well as recreation, outdoor life and experiences – services that we might have taken for granted, but which we definitely neither can, nor wish to, do without.

One of Sweden's 16 environmental objectives² is to create a varied agricultural landscape. According to the Swedish Environmental Protection Agency, in order to fulfil that objective, the most important thing is country-wide active, profitable agriculture. This is easy to forget when engaging in the debate. The ability to have a balanced, fact-based discussion about livestock farming is crucial if we are to develop the strategies required for the future.

¹ <https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>

² <http://www.sverigesmiljomal.se/miljomalen/>

Profitability – part of the climate equation

Those of us who own and use the land obviously have a responsibility, whether it is to create the conditions required by pollinators, or to reduce our own emissions. But society also needs to take responsibility, and to create the conditions required to ensure that placing an increased focus on sustainable production becomes profitable and thereby sustainable from an economic perspective. Investing in the future of agriculture is therefore not just about fulfilling environmental and climate goals. It's basically about our food security and about safeguarding a financially stable agricultural sector. If profitability is low, an entrepreneur must prioritise measures to increase production instead of investing in biodiversity.

The ability to adapt agriculture to a changing climate is just as important as it is to reduce emissions – which, in the case of Sweden, might mean a longer growing season and more unpredictable weather, including more heat and periods of more intense drought or heavier precipitation. Adapting agriculture in order to cope with climate change also creates a basis for increased production.

Here is what green business is doing in this domain to increase sustainability.

- Peripheral zones / conservation areas / buffer zones / wetlands: In order to reduce the leakage of nutrients and plant protection products, and to reduce the risk of erosion and phosphate loss, zones

are established along ditches, borders and waterways. At the same time, these zones foster biodiversity.

- Grazing: Pasture lands are claimed through meat and/or milk production, and then continue to be used, which is a prerequisite for the great numbers of species found there.
- Cultivation: With economically viable companies operating throughout the country, the soil is used so the agricultural landscape is kept open, creating the conditions necessary for half of the species in Sweden to remain in their natural habitats.
- Preserving native breeds: The situation regarding native breeds is considered acceptable thanks to the engagement of the farmers and associations that strive for the preservation of native breeds and cultivated plants.
- Managing cultural sites: There are many cultural sites in the agricultural landscape, such as stone walls and fences. These cultural sites are unique in terms of their biodiversity, which is promoted through their management.
- Knowledge development: Knowledge of sustainable methods such as safe plant protection is shared through advice, study groups, courses and other ways of exchanging experience.
- Organic production: Organic production fosters biodiversity, especially in flatland areas.
- Shaping opinion: It pursues political issues in order to highlight matters such as profitability and the design of environmental compensation.
- Quality assurance: it uses certification systems such as Swedish Seal (Sigill) and KRAV, which involve a commitment to promoting biodiversity.

Further reading

About security of supply: <https://www.lrf.se/mitt-lrf/nyheter/riks/2017/12/det-har-behovs-for-en-bättre-krisberedskap/>

3. Why is important not to eliminate farmland?

An image from the European Environment Agency which illustrates how climate change could affect the value of agricultural land in Europe.

The facts in brief

- Agricultural land can neither be created by artificial means nor by moving soil. Land destroyed by construction, for example, cannot be rendered usable again.
- The proportion of arable land decreases globally every year. In Europe, 24 square metres of agricultural land is destroyed every second.
- In Sweden, about 600 hectares of agricultural land are exploited every year, mainly for construction purposes, but also to make way for roads and railways.
- Much of the world's agricultural land will be lost on account of climate change.
- Even those of us in the North and our cultivation conditions will be affected by climate change, but conditions are not expected to deteriorate here as much as in the rest of Europe. It is therefore important to safeguard Swedish agricultural land; it will be required for food production to an even greater extent than today. We will need to take greater global responsibility for food security.
- When cities and other forms of infrastructure are due to be expanded, we should therefore first look at options other than building on productive agricultural land that can be used for the supply of food.
- Municipalities should feel the need to protect agricultural land, and should feel it is possible to plan in a smarter way than using it for property development.

Why is important not to eliminate farmland? An in-depth analysis

Agricultural land can neither be created by artificial means nor by moving soil. Land that has been destroyed by construction development, for example, cannot be rendered usable again. This is why we have to be careful about the way we use the valuable land that we will also need to be able to use in the future for food production.

The global perspective

The proportion of arable land throughout the world decreases every year. In Europe, 24 square metres of agricultural land is destroyed every second¹. It is built on, salinized, polluted, compacted or eroded by water and wind. Farmland that is lost in these ways can never be restored. Desertification, unsustainable farming methods and extreme weather conditions are just some of the reasons why it is no longer possible to grow food in many places in the world, and why people have to move and become increasingly dependent on imported food. All this while food production is expected to need to double in less than 50 years in order to support the world's population.

Even those of us in the North and our cultivation conditions will be affected by climate change, but here, conditions are not expected to deteriorate but rather to improve. That is why it is important to safeguard Swedish agricultural land; it will be needed for food production to an even greater extent than today. There is more to read about how cultivation conditions are affected by climate change in a report by the EU's European Environment Agency (EEA)².

In light of this, it is reasonable to believe that land and water resources can be expected to become of increasing strategic importance as the global competition for them intensifies. The battle over land and water resources will certainly push ahead developments towards increased efficiency and affect geopolitics in various ways at the same time. China and various countries in the Middle East are already investing in land and water resources outside their own borders in order to secure future access to arable land.

Today, groundwater is relied upon for 40 per cent of the global food supply. In many countries, the use of water exceeds the supply, which has led to the depletion of water resources and a fall in groundwater levels. Sweden is among the EU countries that put the least strain on groundwater – which brings added value to Swedish crop cultivation.

¹ <https://esdac.jrc.ec.europa.eu/content/soil-threats-europe-status-methods-drivers-and-effects-ecosystem-services>

² Climate change adaptation in the agriculture sector in Europe, EEA report (European Environment Agency), No 04/2019, <https://www.eea.europa.eu/publications/cc-adaptation-agriculture>

The situation in Sweden

In Sweden about 600 hectares of agricultural land are exploited every year – mainly for construction development but also to make way for roads and railways. This trend has been constant over the past few decades³.

Here too, the soil is a basic prerequisite to the growth required to meet the food and energy needs of today and tomorrow.

Looking ahead to 2030 and 2050, we recognise that food supply challenges are likely to become a hot topic in the years to come – even here in Sweden. When cities and other forms of infrastructure are due for expansion, we should therefore first consider other alternatives to building on productive agricultural land that can be used to supply food.

According to LRF, municipalities need to be more proactive in protecting agricultural land and in exploring opportunities to boost food production. Increased protection of agricultural land neither undermines the municipal planning monopoly nor self-government, but rather increases the importance of agricultural land. It is important for municipalities to feel that they wish to protect agricultural land, and that they can plan in a smarter way than using it for building development.

The state also needs to provide more input on the rate at which agricultural land is being exploited.

The rural entrepreneur's perspective should be taken into account to a greater extent. Municipalities are responsible for applying the provisions of the Swedish Environmental Code to protect agricultural land. In recent years, the Land and Environment Court has said no to construction work that farmers wish to carry out (for multigenerational housing, allowing for the maintenance and expansion of operations, for example), but has granted municipalities more exploitation rights because they are thought to represent matters of substantial public interest. If production is meant to be safeguarded and allowed to increase, this is an unfortunate development.

Other

According to LRF, the idea is not for good land management (which generally speaking means maintaining and developing food production, for example) to be hindered by the management provisions of the Swedish Environmental Code. The entrepreneur's building plans for the maintenance or expansion of production and operations should therefore not be hindered by regulations relating to the protection of agricultural land.

Excerpt from the 2019 general assembly's general meeting report (pp. 149-150) in which LRF's National Board of Directors develops its views on the issue:

The rules of the Swedish Environmental Code for the protection of agricultural land According to the Environmental Code, arable land may only be used for building development if it is essential for the public good, and if the need for it cannot be met in a generally satisfactory way through the use of other land. This regulation appears in chapter 3, part 4 of the Environmental Code.

Chapter 3, part 1 of the Environmental Code contains an introductory clause stating that areas of land and water should be used for the purpose(s) to which they are most suited in light of their particular character and location as well as any existing needs. According to that clause, priority shall be given to any form of use that entails effective management from a general point of view.

The board may ascertain that the regulations in the Environmental Code concerning the protection of arable land are not being applied in a way that its members expect. LRF has long been critical of the fact that many of the country's municipalities fail sufficiently to take agricultural land into account when drawing up their plans. Recently, the policy of the Land and Environment Court has led to undesirable usage. In many cases the court has ruled that valuable agricultural land may be used for sizeable establishments, since these are often considered by the court to meet the substantial public interest. However, landowners' plans to build multigenerational housing, for example, have been hindered by the court with reference to the regulation stipulated in chapter 3, part 4 of the Swedish Environmental Code.

The board considers such a development unacceptable. Construction work that the landowner wishes to carry out is often a prerequisite to the continuation and development of an operation on the property. Permission should therefore be granted for the establishment of buildings and facilities designed to help maintain and develop a business – especially in light of the terms outlined in chapter 3, part 1, which state that priority should be given to land use that entails effective management from a general point of view, such as food production.

In light of developments in the guiding practices and principles of the Land and Environment Court, the board considers it necessary to change the regulations on the protection of arable land, so that buildings and facilities intended for the maintenance and development of a business run on the property are not prevented from being established as a rule. The idea is not for good land management – which generally speaking means maintaining and developing food production, for example – to be hindered by regulations on the protection of agricultural land. The board therefore proposes that the general meeting commissions the board to investigate the changes in the Environmental Code that would be necessary in order for developments to be altered, and to then work on their implementation. One possibility that should be investigated, for example, is whether such changes can be taken into account when reviewing the requirements for planning permission for property used for various types of operations in accordance with the January Agreement.

Further reading

About valuable arable land: <https://www.sverigesbondar.se/sa-tar-vi-vara-pa-jorden/>

About land and climate change: https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf (P. 16, part A5.4)