FOLLOW THE INVESTORS – THIS IS HOW SWEDEN SHOULD INVEST IN PLANT-BASED FOODS

PLANT-FOOD SWEDEN'S INDUSTRY REPORT 2021

2021

CONTENT

VÄXTBASERAT SVERIGE

1. Summary: Continued high demand for plant-based foods attracts large investments

There is an ongoing shift in the food sector both nationally and globally, and the market for food products is developing rapidly with more and more consumers demanding food and drink from the plant kingdom. Only in Sweden is there double-digit annual growth figures for plant-based foods, but the development is similar globally. Knowledge of this rapid change is, to date, not particularly widespread, although the development is beginning to receive greater attention not least in investor circles.

This is Plant-food Sweden's second industry report, and we want it to describe and highlight both the potential of the plant-based transition as well as why Sweden should invest in becoming a world leader in plant-based food and drink. The report also highlights some of the challenges that currently exist and presents concrete proposals for viable solutions that can be easily transformed into an action plan for this or the next government.

Plant-food Sweden's members are seeing a marked increase in demand for plant-based foods which is continuing to accelerate, and this can also be seen in the sharp increase in investments in the sector. There are good reasons for promoting this development as it has the potential to contribute to boosting the strained Swedish food industry whilst strengthening Swedish agriculture and Swedish exports. However, there are a number of obstacles, both in the form of existing anti-competitive regulations as well as ongoing discussions on the introduction of additional rules which would distort the conditions between the plant-based sector and the traditional animal-based sector.

The proposals debated in the European Parliament on the so-called veggie burger ban and additional restrictions on the use of dairy denominations are two very illustrative examples which were voted down. Meanwhile, there are additional policies and regulatory developments ongoing in the food sector and it is important that decision-makers do not introduce additional regulatory barriers to this expanding sector.

To promote this positive development, we propose the following action plan for a strong Swedish plant-based food sector:

· Highlight food tech and the entire value chain of innovative, sustainable plant-based food as a strategically important area that research policy should contribute to strengthening. The goal should be for policy to contribute to increasing Swedish competitiveness, which in turn strengthens the attractiveness of the Swedish food sector.

· Implement powerful, focused investments in skills and infrastructure to support innovative startups in the food chain to scale up and start exporting, and invest in improving the opportunities to grow and refine crops in Sweden.

· Facilitate the transition to a resilient and sustainable agriculture sector by introducing new forms of transition support to farmers who want to change and diversify their businesses to produce plant-based foodstuffs but who cannot, or dare not, due to the short-term financial risks the transition may entail.

· Ensure that political objectives, regulations, and steering mechanisms do not prevent or act as a disadvantage to the expansion of plant-based foods. At present, there are measures in place, or under political discussion, that distort competition.

· Set concrete and measurable goals for reducing greenhouse gas emissions from the general public's food consumption and ensure broad educational efforts to increase the public's knowledge of sustainable eating.

Over the past year, the IPCC's latest report, the corona pandemic, and the work preceding the U.N. Food System Summit reinforced views regarding the need to change our food system. This must be done both for the climate and for the sake of public health. The plant-based transition has created a great potential for Sweden to become a leading country for the development, production, and export of plant-based foods.

This is Plant-food Sweden's second industry report, and we want it to describe and highlight both the potential of the plant-based transition as well as why Sweden should invest in becoming a world leader in plant-based food and drink. The report also highlights some of the challenges that currently exist and presents concrete proposals for viable solutions that can be easily transformed into an action plan for this or the next government.

Members of the industry organisation at the time of publication of this report:

2. Why Sweden should become a world leader in plant based foods

Plant-food Sweden's members see a continued high demand for plant-based foods in several different areas of product category ranging from vegetable proteins, both fresh and frozen, to plant-based alternatives to traditional animal-based dairy products, and this is something happening in Sweden and globally.

Increasing numbers of consumers, especially young people, are demanding food and drink from the plant kingdom[1], and it is clear that we are witnessing a clear shift in consumption habits[2]. To understand the driving forces behind this shift, it is important to understand food's connection to health and the climate.

Large sections of the Swedish population today eat too few vegetables and whole grains[3], and too little fruit and fibre. There is clear scientific evidence that fibre has a positive effect on diseases such as blood pressure, cardiovascular disease, type-2 diabetes, and certain forms of cancer[4]. With an increased consumption of foods based on high-fibre raw materials such as cereals, legumes and vegetables, plant-based foods can contribute to better public health.

At the same time, the food and agriculture sectors account for a significant share of greenhouse gas emissions - about a third. Many research reports[5,6] have highlighted the food sector as key to achieving the global climate goals. As recently as August 2021, the United Nations Panel on Climate Change (IPCC) stated that there is no doubt that human activity affects climate change. The IPCC notes that the extent of the changes to the climate system seen today are unparalleled in the last hundreds of thousands of years. It is an alarming report which states that, in recent years, extreme weather events would not have occurred were it not for human emissions[7]. The IPCC report "Special report on Climate and Change" presented in August 2019 reiterates the importance of a change in food systems if the UN's climate goals are to be achieved. This involves both changing production methods to become fossil-free and changing the foods we produce and eat. The production and consumption of food therefore have a major impact on the climate.[8]

Politicians and decision-makers now take these issues seriously, which can be seen in the EU's strategy From Farm to Fork that aims for a fairer, healthier, and more environmentally friendly food system as well as the fact that the UN organised a high-level meeting on sustainable food systems, the U.N. Food Systems Summit, in connection with the General Assembly's meeting in September 2021.

"The special report on climate change and land by the Intergovernmental Panel on Climate Change (IPCC) describes plant-based diets as a major opportunity for mitigating and adapting to climate change."

The scientific journal Nature reports on the IPCC report. 8 August, 2019

In the **Farm to Fork strategy**, the European Commission emphasises that a fundamental change to the food system is crucial to tackling the challenges related to public health, sustainability, resilience, and competitive strength. The strategy is a cornerstone of the EU's Green Deal and is also a central pillar in the European Commission's plan to achieve the UN's goals for sustainable development. The European Commission notes that a transition to a more plant-based diet, with less red and processed meat and more fruit and vegetables, will not only reduce the risk[9] of life-threatening diseases, but also the environmental impact of the food system.

Unlike the Swedish food strategy, the Farm to Fork strategy tackles the issue of creating sustainable food systems from a systemic perspective and takes into account the complex relationships between individual health, healthy societies, and a healthy planet.

"The Climate Policy Council's previous recommendation remains: the need for a clear plan and initiatives from the government that clearly address the obstacles to agricultural climate change "

From the Climate Policy Council's report, 2021

In the Climate Policy Council's report for 2021, the conclusion is again reached that the climate goals will not be achieved under current policies. The Climate Policy Council also states in the report that agriculture is a sector where the government appears more defensive than the industry itself, and that not one of the government's budget measures directly contributes to reducing agriculture's impact on the climate.[10]

There is, therefore, an urgent need for a comprehensive systemic change to the agriculture and food sectors, and to our food consumption patterns. This is important not only from a climate perspective, but also from a public health perspective. Research clearly shows that climate policy must include the agriculture and the food sectors, something that becomes even clearer with the latest IPCC report.[11]

This change also has the advantage of contributing to a stronger Swedish food sector and increasing Swedish food exports to the rest of the world. Based on these facts, we are calling for political action and leadership in Sweden to urgently promote this necessary transition.

3. Growth in the plant-based sector – Sweden

For Plant-food Sweden's member companies, the average annual sales growth for plant-based foods has been between 15 and 30 per cent over the past five years. This is an exceptional development and points to the enormous potential for the plant-based food range.

The Swedish market for plant-based foods is currently worth around SEK 2 billion - and is growing fast. The category vegetable proteins, i.e. alternatives to meat products, has grown by around 15 per cent in recent years, while plant-based alternatives to traditional animal-based dairy products have grown by an average of 17 per cent annually.[12, 13]

In 2020 the growth for plant-based beverages was 26.9 per cent compared with 2019.[14]

Like producers, food retailers are noticing the sharp increase in demand. At some of the country's largest grocery retailers, such as Ica, Coop, Lidl and Axfood, the average sales of frozen vegetarian products increased by more than 15 per cent in 2020 compared with the previous year. The largest growth was in the fresh alternatives category, which increased by some 40 per cent in 2020 compared to 2019.[15]

ICA has previously stated that their sales figures indicate that vegetarian alternatives to meat will be as large as the chicken segment in five years' time, and that the vegetarian segment will reach the same level as meat in ten years.[16] Younger generations are driving this development, especially Generation Z.

The above figures include plant-based equivalents to meat, such as meat-like burgers, fillets or various types of plant-based minced meat and plant-based alternatives to traditional animal-based dairy products. In other words, products that are bought fresh or frozen and are ready to cook or consume.

Plant-food Sweden's view is that the strong development in Sweden in recent years will continue in the future – not least as this growth is based on a structural change in people's consumption habits which is also happening globally. This conclusion seems to be shared by other actors, with many examples of traditional animal producers, both from the protein and the dairy segments, choosing to invest in plant-based products.

4.GROWTH FORECAST: STRONG GROWTH AND INCREASING GLOBAL DEMAND

A number of banks and investment institutions are in agreement that demand for plant-based foods will continue to grow at a very fast pace in the coming years and will become an increasing part of the total global food market.

Studies from a variety of research houses suggest that the global market will grow annually by 11 to 15 per cent, which is confirmed by historical data. There will, additionally, be examples of much higher growth than this. This can be compared with the growth rate for the food industry as a whole, which is usually around 2 per cent. The interest in investing in plants is growing as awareness spreads. Several private investors are now turning to this sector.

Total market

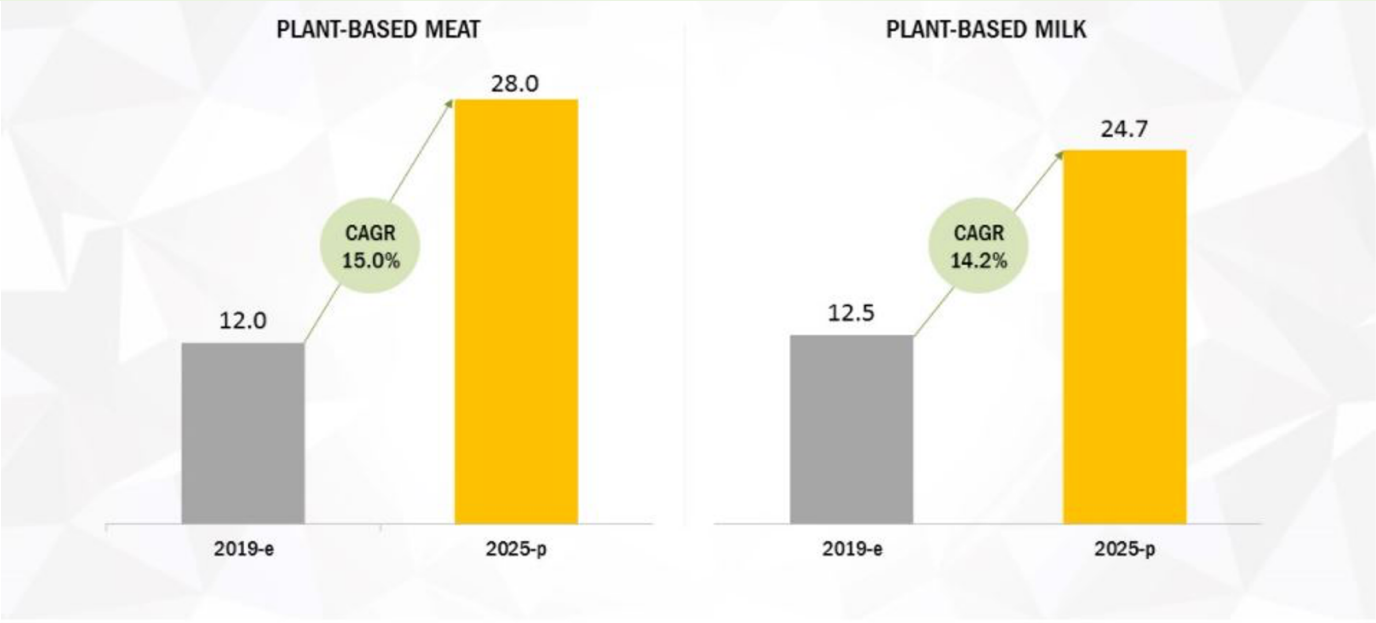
- **According to Gullspång Re: Foods report Food Is Solvable, demand for plant-based food and beverages grew in the United States by 29 per cent between 2017 and 2019.[17] This increase exceeds the growth in the traditional sector by five times (in terms of dollar sales) where sales of plant-based drinks account for almost 40 per cent of total sales in the plant-based segment.**
- **The investment bank UBS[18] predicts that the market will be worth $50 billion by 2025 and will grow by 28 per cent annually to reach $85 billion by 2030.**
- **BIS Research[19] believes that the total plant-based market will have sales close to $500 billion by 2024.**
- **MarketsandMarkets Analysis'[20] assessment of the market development in different continents also shows a strong increase, taking place mainly in Europe and North America.**

Plant-based alternatives to traditional animal-based dairy products

- The market for plant-based dairy products is expected to explode.[21] There are forecasts suggesting an even stronger growth rate for plant-based dairy products than for plant-based meat alternatives because the growth is driven additionally by the widespread allergy/intolerance to milk.
- Figures from the USA show, for example, that sales of oat drinks increased by almost 700 per cent between 2018 and 2019.[22]

Plant-based protein/meat substitutes

- Barclays estimates[23] that the global market for alternative meat products will grow by close to 1000 per cent and be worth 140 billion dollars a year within a decade.
- The market for plant-based meat in the United States is still in its infancy and consists of only 1.4 per cent of total meat sales. One forecast, however, suggests that if everyone who buys plant-based drinks today switches to plant-based meats, the market in the United States alone would amount to $12 billion.[24]



5. THE GROWTH POTENTIAL ATTRACTS MORE INVESTMENTS

At the beginning of 2021, Gullspång Invest started the investment company Gullspång Re: food Invest, which focuses on companies with innovative solutions for tomorrow's food ecosystems and food tech.[25] Further examples include the investment company Nicoya AB which, inter alia, invests in companies with new solutions beneficial for both the planet and health,[26] and Live Kindly which invests in plant-based brands leading the plant-based lifestyle change to make it “the new normal”.[27]

Countries that succeed in converting their agriculture to increase the production of suitable crops for human consumption, and which in parallel succeed in supporting the emergence of efficient processing and manufacturing methods, have much to gain in terms of jobs and tax revenues as the global market grows. People who can ensure a good investment climate, where the return on invested capital becomes clear as new plant-based foods reach the market, have the potential to attract large investments. Plant-food Sweden believes that Sweden should actively position itself as an attractive environment where expanding food companies can invest in.

With increasing consumer demand, there exist strong driving forces for companies to meet this development, which means that more and more players are establishing themselves on the market whilst existing players are broadening their product ranges. Plant-food Sweden's members work continuously to develop new products. The increase in both supply and variation in the range of plant-based products creates a reinforcing effect, meaning demand is likely to increase further as more and more taste preferences can be catered for and availability improves. The development in the plant-based food sector provides for an investment opportunity that is receiving ever greater attention, for example from Danske Bank. Between 2018 and 2020, EUR 231 million, corresponding to SEK 2.3 billion, was invested in Swedish food tech companies.[28] According to DigitalFoodLab, investments of EUR 264 million were made in Swedish food tech companies alone in 2020, which made Sweden the fourth leading investment destination in Europe, after the U.K., France, and Germany.[29]

It is clear investors, banks and other institutions have seen the potential in the plant-based transition: **In 2020, $26 billion was invested in ag tech and food tech companies worldwide.**[30]

“The Swedish food tech sector is doing really well, we are a leader in the Nordics. According to our report 'State of Nordic Impact Startups 2021', between 2018 and 2020 more than twice as much was invested in Swedish food tech companies compared to all the other Nordic countries together.”

Stefan Granlund,[31]
responsible for 'Growth and Impact' at Danske Bank in Sweden.

DANSKE BANK STARTS NEW FOOD TECH ACCELERATOR

To increase the growth rate in the Swedish food tech sector, Danske Bank has launched, together with the supermarket chains ICA Sweden, Coop Sweden, Lidl Sweden and Reitan Convenience Sweden, an accelerator programme named + impact. The accelerator programme, which is operated together with WeWork Labs, Rise, and Sweden Foodtech, was carried out during the period 8 March - 5 April 2021. Of the 130 applications, 16 Nordic startups have been selected to participate in the programme.[32]

Among Plant-food Sweden's members, the following examples of investments in Sweden are mentioned:

- In 2021 Alpro, which is owned by Danone, expanded the plant-based production at its factory in Lunnarp in Österlen, Skåne as part of an investment of SEK 140 million.

- In 2021, Food for Progress made its largest investment to date and acquired a state-of-the-art factory from Paulig located outside Gothenburg, to move production to the 100 per cent plant-based factory Food for Progress Mölnlycke during Q1 2022. This investment, together with investments in new and updated production lines, means an increase in production as it will have the capacity to produce approximately 20,000 tonnes per year enabling the company to be at the forefront in meeting the growing demand for plant-based production and innovation on the European market. Food for Progress has made investments to introduce plant-based ice cream at its factory Food for Progress Trollhättan and is thus beginning a conversion from animal-based to plant-based production at the factory. In 2021, Food for Progress also acquired a restaurant in Stockholm that is being converted into Food for Progress Studio Stockholm. This centre for co-creation, product development, sales and innovation will operate as a mini-version of its factories where Food for Progress invites you to work with customers, startups and partners on tomorrow's plant-based products and innovations.

- Livekindly Collective, which acquired Swedish company Oumph, has raised a total of 535 million dollars (approximately 4.6 billion euros) in investment rounds over 12 months. "We are creating a global company wholly focused on plant-based food, which we are convinced is the future," says Roger Lienhard, founder and chairman of the board of Blue Horizon Group and founder of Livekindly Collective.[33]

- Oatly was listed on the Nasdaq on 19 April 2021 and has a valuation of $10 billion. During the autumn 2021, Oatly additionally announced that it will open a research and innovation centre in Lund, where some thirty researchers will be recruited as a first step and, in the long term, another 70 researchers will be connected to the business. The centre will research the issues of oat biochemistry, biophysics, microstructures, and nutritional properties.[34][35]

- Orkla is investing SEK 70 million in its plant in Eslöv and increasing its capacity to produce plant-based foods for Anamma, Frankful and Naturlí. Orkla has had a fantastic development since 2015 when it started producing plant-based foods in Eslöv, and its production volume has increased seven-fold in five years. Through Anamma, Orkla launched ten new plant-based products during September 2021. Anamma has broadened its range with frozen plant-based one-person dishes, pies, and the market's first vegan pie. The carbon footprint of Anamma's products is about 40-90 per cent lower than corresponding alternatives with meat and dairy raw materials.[36]

- Stockeld Dreamery carried out a new financing round of EUR 16.5 million in 2021, corresponding to over SEK 168 million today. According to Sorosh Tavakoli, CEO and founder, it was the largest A round made in Europe for plant-based foods.

AG TECH

Technology and new science are being used to find new, sustainable, and smart ways to produce agricultural products and raw materials. This can be done, for example, by using 5G and drone technology in cultivation to find smarter methods of irrigation.

FOOD TECH

Technology and new science are being used to develop innovative, sustainable foods and means of delivering what we eat and drink. Examples are companies developing new foods by using crops in new ways and companies developing methods to reduce the climate impact or waste in the food chain.

6. Sweden has a great opportunity to become a world leader in the plant-based food sector

The recent, rapid development makes it easy to conclude that the market functions and that politically interference is unnecessary. However, there are a number of areas wherein Sweden, as a country, can act to stimulate and benefit this development. The policy goal should be for Sweden to become a world leader in the cultivation, innovation, processing, commercialisation, and export of plant-based foods.

Sweden has the potential to position itself strongly in the market by increasing the production of crops that are well-suited for cultivation at our latitudes, and thus strengthen both the primary production of crops and companies with production in Sweden or companies who want to use locally grown Swedish crops in their future production. A large selection of high-quality, sustainably grown crops can attract investments and new facilities to Sweden.

The increase in demand for plant-based foods represents an opportunity for Swedish farmers to broaden and diversify their businesses and reach new markets. In this respect, inspiration can be taken from Denmark, where the majority of parliamentary parties have entered into a climate agreement on agriculture. The Danish organisation for plant-based food and drink, Plantebranchen, has worked closely with green organisations to include plant-based foods in the agreement. Central to the agreement is the establishment of a national action plan and the establishment of a plant-based food fund. The total budget is DKK 1.2 billion. The parties to the agreement have agreed to switch to more plant-based production as a key to the green transition.[37]

In addition, Sweden has the opportunity to strengthen existing companies and facilitate the establishment of more companies that work with the additional processing and production of plant-based foods. By building on the tradition of effective collaboration between the private and public sectors as well as academia, and by creating, in various ways, a support infrastructure for companies in an expansion phase, additional gains can be achieved. The growing and subsequent processing of crops for plant-based foods can contribute to increased profitability, whilst the food production itself is more climate efficient.

There is a great interest in finding new raw materials and ingredients to use in the production of plant-based food. In this respect, Sweden, as a knowledge-intensive country, can play an important role.

7. The plant-based transition can benefit Sweden in several ways

1. **Primary production in Sweden**
The increased consumption of plant-based food products necessitates an increased production and reprioritisation within agriculture of crops for human consumption that can be further refined. If the plant-based transition is taken advantage of, Sweden can position itself well-ahead of others in the primary production of protein crops and cereals processed for human consumption, and thus strengthen Swedish agriculture overall.

2. **Processing and production in Sweden**
The increased consumption of plant-based food products requires evermore processing of the inputs and raw materials that go into the products This is not infrequently a knowledge-intensive process. Sweden can become a centre for skills and know-how in food processing, and thereby attract business startups and the establishment of more new businesses. Similarly, a thriving plant-based food industry can pave the way for increased production in Sweden, which is positive from a labour market perspective.

3. **Exports from Sweden**
By enabling more primary producers to meet the need for crops in the food industry, in parallel with measures enabling the further growth of the plant-based food sector, Swedish exports of plant-based foods to the growing global market can increase. In addition, the knowledge and skills accumulated within the sector mean that patents and ideas can be developed for export.

4. Sweden as a knowledge and research centre

Sweden can become a centre for plant breeding, commercialisation, and know-how on how the plant-based transition can be optimised. Many global Swedish export companies make significant investments in research and development in Sweden due to the good conditions that exist here regarding the possibilities for collaboration, technical knowledge, and innovation skills. In the long term, this can also happen in the plant-based sector.

5. Increased resilience in Swedish agriculture

In connection with the ongoing corona pandemic, the issues of self-sufficiency, vulnerability and resilience in Swedish agriculture are relevant. A report from SLU[38] published in 2018 examined the vulnerabilities and solutions that can make the agriculture sector more resilient. According to the report, investment in plant cultivation for human consumption is a central part of the solution.

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8. Obstacles to taking advantage of the global increase in demand

Overall, the developments on the market have created an opportunity to achieve the objectives of the Food Strategy as decided by the government and parliament. Opportunities will also arise for a forward-looking Swedish stance within the framework of EU cooperation when work on the EU Commission's flagship projects, the Green Deal and the Farm to Fork strategy, will be finalised and implemented. It should be noted, however, that even with the many opportunities available, a number of obstacles and challenges do remain. Plant-food Sweden has listed some of them:

- Investments in research are often focused on traditional food production and consumption, not least in nutrition research.

- There is a lack of knowledge and skills concerning how crops are processed and developed into (new) foods, and how to extract high-quality proteins from crops as well as a lack of skills and relevant support infrastructure in the processing stage.

- Small startup companies lack support in the form of access to test facilities and lack, for example, knowledge of the upscaling of production that exists and is encouraged in other industries, and which is often necessary at an early stage of a company's development.

- There is a lack of vegetable proteins. Today, Swedish food producers are forced to import certain crops which, instead, could be grown in Sweden by Swedish farmers. This is despite there being crops in Sweden well-suited for cultivation.

- Many farmers experience difficulties in both generational succession and getting young people into the industry. The financial risk, and the threshold for the individual producer to switch their business to more plant-based production, is seen as too high in relation to the potential long-term gains.

- Today, there exist a number of anti-competitive goals and mechanisms that reward animal-based foods over plant-based, which need to change. There needs to be a clearly formulated goal that, at the very least, there should be a neutral regulatory framework for food, regardless of the raw materials, so as not to impede innovation, growth, and competitiveness. Examples of anti-competitive regulations are the EU’s school milk support and rules for the naming of foods, both of which are regulated within the framework of the EU Common Agricultural Policy and the regulatory basis for organic labelling. The proposals negotiated in the European Parliament on the so-called the vegan burger ban and additional restrictions on the use of dairy names are two very illustrative examples that were fortunately voted down.

Unfortunately, various EU regulations have been established which create obstacles for plant-based products. For example, there are circumstances where plant-based products are not allowed to be enriched with vitamins and minerals. Many plant-based products are enriched with, inter alia, calcium, vitamins and other substances which have a positive nutritional and physiological effect, for example omega 3, as the products do not always naturally contain these substances in comparison to, for example, animal-based products that absorb these substances from enriched animal feed. The EU directive on organic food production does not allow consumer products to be enriched.

Organic products may only be enriched if there exist mandatory enrichment requirements for the product group to which the products belong. The consequence is that sustainable and healthy plant-based foods that have been fortified with essential vitamins or minerals cannot then be classified as organic, and the companies in the plant-based sector must then choose between changing the nutritional content or offering organic products.

9. Action plan for a strong Swedish plant-based sector

01.

Highlight food tech and the entire value-chain within innovative, sustainable plant-based foods as a strategically important area that research policy should contribute to strengthening. As a goal, policies should contribute to increasing Swedish competitiveness and strengthening the attractiveness of the Swedish food sector.

02.

Implement powerful, focused investments and infrastructures to support innovative startups within the food chain to scale up and start exporting, as well as invest in improving the opportunities to grow and refine crops in Sweden.

03.

Facilitate the transition to a resilient and sustainable agriculture industry by introducing new forms of conversion support to farmers who want to transition and diversify their businesses to produce plant-based products but cannot, or dare not, due to the short-term financial risks that the transition may entail.

04.

Ensure that policy objectives, regulations and policy instruments do not prevent or disadvantage plant-based expansion. There exist, or are under discussion, policies that distort competition.

05.

Set concrete, measurable goals for reducing greenhouse gas emissions from public sector meals and ensure broad educational efforts to increase the general public's knowledge of sustainable eating.

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1. Research and innovation

Investments in future research in the food and climate sectors should be aimed at increasing the production, processing, and consumption of plant-based foods. The investments must be seen as a part of an integrated public health, climate, and business policy. Investments in research and development with the aim of enabling the Swedish food industry and primary production to increase its production of relevant crops to meet the'accelerating demand for plant-based foods are necessary. Investments are also needed in research on nutrition regarding new foods and vegan diets. Consumers are currently changing their diets and extensive investments are needed in clinical studies to measure the effects of this consumer-driven transition from a public health perspective.

Sustainable food tech should be highlighted as a strategically important area for Swedish food research and food exports:

Highlight food tech and the entire value-chain in innovative, sustainable foods as strategically important areas that research policy, for example, should contribute to strengthening. The goal should be for policy to contribute to increasing Swedish competitiveness and strengthening the attractiveness of the Swedish food sector for both investors and future employees. This strengthens the attractiveness, competitiveness and growth in a sector that will be increasingly relevant and central to society.

Research and development are needed to meet consumer demand:
Research and development in the processing stage must contribute to food being nutritious, healthy, good, and available to consumers to meet the demand for, and facilitate the shift to, environmentally friendly, healthy, and sustainable food consumption. Investments in research and innovation are needed to ensure an abundant supply of raw materials, crops, and vegetable proteins at the production stage. At present, there is a shortage of Swedish-grown inputs and raw materials for the processing of plant-based foods for human consumption, which means that companies operating in Sweden largely import these products to keep up with the pace of production and deliver the processed products to the market in line with the increasing demand.

There is currently an additional lack of knowledge and skills in Sweden regarding the cultivation of crops for plant-based products and the extraction of high-quality protein from the crops. As the sector is growing strongly, and will continue to grow in the future, investments are needed in research focused on both the increased cultivation and the processing of crops in order to be able to develop new plant-based foods.

A significant part of the challenge is the lack of vegetable proteins. There are currently too few Swedish-grown protein crops that can be used in the processing stage. Therefore, research policy should highlight the need for research in the cultivation of new types of crops that can be used for this purpose as well as the need for increasing knowledge concerning how vegetables can be processed and developed into new foods. There also needs to be research aimed at finding models for how the cultivation of varieties processed today can be increased. There is also a need for long-term investments in existing research facilities and projects focusing on this.

For example, there is currently a lack of infrastructure, as well as knowledge and capacity, for the additional processing and refining of processed raw materials into intermediate raw materials and final raw materials. Potatoes are an example of this, as there is a good availability of potatoes and potato starch in Sweden. However, today there is a lack of capacity to extract sufficient amounts of potato protein to be able to meet the demand, which means several of Plant-food Sweden's member companies are currently forced import this protein.

Increasing resilience is a prioritised research area
An important objective within food research should be to increase the resilience in Swedish agriculture linked to, for example, changes in the average temperature, droughts and other situations that risk affecting the food chain. New ways of growing food need to be developed to increase the resistance to weeds and drought, and a clearer focus is required on the need for research on resilience in food production. Differentiation in agriculture is an important aspect of this as it ensures that climate and extreme environmental situations do not affect large parts of the food production in Sweden. It became clear from the extreme drought of 2018 that farmers' large dependence on feed for animal produce created an unsustainable situation. Research to develop more resistant crops that are suitable for cultivation for plant-based food is therefore important in further spreading the risks within the Swedish food chain. This is also related to the issue of the limited availability of protein crops (for further processing into plant-based foods), which needs to increase. This is particularly relevant in connection with the need for increased production of crops intended for processing for plant-based human consumption.

Invest in public health and nutrition research linked to plant-based diets:
A larger, holistic approach is needed whereby research into nutrition and sustainability is merged. We need more research into what diets with a larger proportion of plant-based foods should consist of in order to improve both public health and the environment. We are calling for a broad research initiative that increases knowledge of everything from plant-based foods' properties (such as the bioavailability of various nutrients) and how we can optimise the raw material properties of the finished product to looking at the health benefits of increasing the proportion of plant-based food in a person's diet as well as behavioural studies on how we can achieve healthy and sustainable changes in the population's dietary habits.

We therefore need to increase our knowledge concerning the relationship between public health and plant-based diets through mechanistic studies, where foods or components of foods are studied, such as with clinical trials in which groups who eat wholly or partly plant-based are followed. Examples could be a cohort study, see below, which follows a large population over a long period of time and examines the relationship between plant-based diets and health consequences, and what plant-based diets contain which can be preventive for diseases. It is important to investigate the nutrients that plant-based foods traditionally lack. In this respect, research and product development are needed to see how, for example, plant-based foods can help improve iron values within individuals who, today, have a low iron intake and values.

2. Skills, support and infrastructure

An obstacle that most startup food companies eventually face are difficulties in scaling up their production to meet increasing demand. Investing in a production facility is costly and time consuming, and most companies lack the financial muscle and necessary time. Many companies additionally lack knowledge concerning how this is optimally carried out.

Therefore, investments in both new test facilities and incubator environments, as well as better coordination and utilisation of existing facilities, are needed, whereby small, growing companies can access a research and innovation environment which increases their opportunities for scaling up their businesses. In addition to this, there is a need for increased knowledge concerning how upscaling can be achieved and which skills companies need to succeed in their expansion. The focused investment in the Food Innovation Hub in southern Sweden, where primary producers, cultivators, innovators, large companies as well as researchers and academia can meet, is one concrete example of such an investment.

Create good conditions for primary producers to transition from animal-based to plant-based production:

An important policy area should be to develop measures aimed at making it easier for primary producers and the food industry as a whole to transition to more plant-based production. The plant-based sector is growing steadily, and food companies in the sector have demonstrated good profitability and strong growth. In this context, it is additionally important to see that the change in consumption habits occurs internationally which, in turn, means a growing global market.

The potential for Sweden to become a world leader in the cultivation, processing, commercialisation, and export of plant-based foods cannot be emphasised enough.

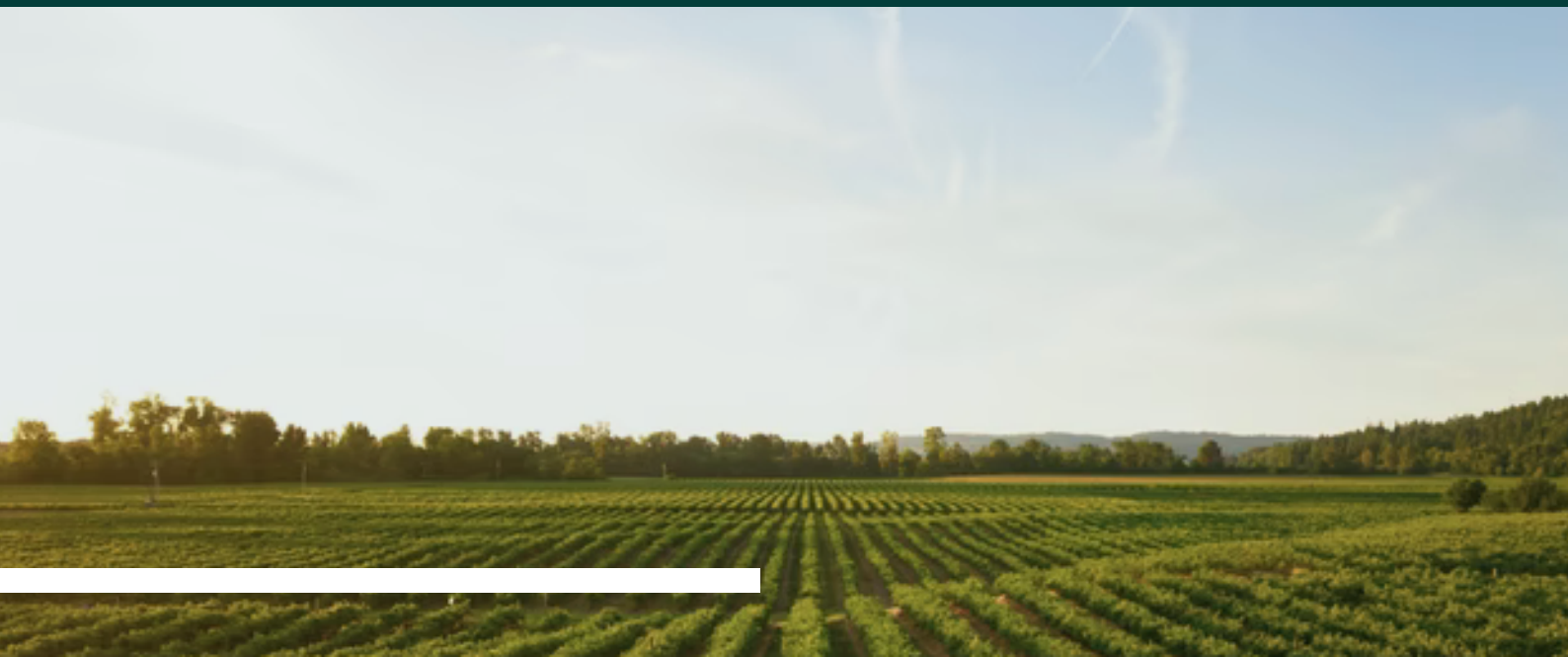
3. Transition to a resilient and sustainable agriculture

As previously stated, we view the ongoing transition in agriculture as an important area for research purposes. We are also of the opinion that the Swedish government should actively support the agriculture sector in the transition to more plant-based products. This concerns investments in both knowledge and education as well as in infrastructure and financial risk management.

In connection with the ongoing corona pandemic, the issues of self-sufficiency, vulnerability and resilience in Swedish agriculture are highly current and relevant. A report from SLU and MSB,[39] which was published in 2018, examines these vulnerabilities as well as possible solutions that can make agriculture more resilient. According to the report, investment in plant cultivation for human consumption is a central tenet of the solution. The report, based on interviews with farmers, also addresses the issue of a transition to fossil-free agriculture, whereby fossil-based inputs are replaced by domestically produced alternatives.

A current obstacle is that initiating the transition may be associated with a risk for primary producers. Research projects are currently ongoing where the process of switching from animal-based production to increase the production of crops for human consumption is under evaluation, not least from a profitability perspective.[40] One such example is a research study of Jannelund's farm (run by the farmer Adam Arnesson), which is diversifying its production from a sustainability and livelihood perspective. Within the framework of the EU-funded research project UNISECO,[41] a study of the adjustment and diversification is being carried out of more animal-producing farms. The interest in participating in the research project was overwhelming, with around 110 applications from animal-producing farmers. In these research projects, the individual companies take a large part of the financial risk by guaranteeing the purchase of future crops. To accommodate the change in demand, reduce the climate impact of the food sector and enable increased Swedish food production and exports, other structures that spread the risks are required. These structures can facilitate and stimulate the necessary systemic transition.

Therefore, the policy should, as a part of the agricultural and business policies, ensure that concepts and models are developed which increase the possibility for primary producers to adjust their production, for example through increased risk diversification or risk guarantees.



4. Goals and legal instruments

There is an urgent need for a thorough review and update of the relevant laws, regulations, and policy instruments to ensure that the transition to sustainable plant-based food production and its healthy consumption is promoted. Today, there are unfortunately examples of regulations and initiatives that restrict and/or distort competition to the disadvantage of plant-based foods. Sweden needs to invest in developing an efficient and attractive regulatory package that captures the momentum and utilises the potential for strong Swedish growth and competitiveness.

Examples of anti-competitive regulations are the EU school milk subsidies and rules of designation which are regulated within the framework of the EU Common Agricultural Policy and the acquis on organic labelling.

We are also of the view that Sweden needs to take a renewed and united approach, and integrate different policy areas (sustainability and climate, public health, agriculture, and nutrition) to promote a shift to sustainable, more plant-based food systems in line with broader objectives as well as scientific studies. National goals should be set for a sustainable food sector and efforts need to be made to make it easier for consumers to make choices with regard to sustainability (such as investments in education and food packaging clearly stating the climate impact of products).

Challenges exist when citizens' consumption habits and preferences change, however the current rules and frameworks that govern businesses in the sector have not kept up with these changes. We believe that greater emphasis can be placed on how public procurement, as a tool, can be used to encourage a more plant-based diet.

5. Public meals

In knowing the importance of what is served on the plate and in the glass for the health of the individual as well as the planet, Plant-food Sweden believes that public meals should guide the necessary transition in the food sector.

In June 2020, the Swedish University of Agricultural Sciences, SLU, released a report[42] on how policies can be used to create sustainable food consumption in Sweden. Intensifying the work within the public sector is one of three main proposals in the report. A report produced by Imperial College London[43] underlines the importance of public dining to the transition and, how it can contribute to both a lower climate footprint as well as to major health benefits and lower costs for society. This also plays a large role for children and young people's ability to eat healthy food, which is especially important for socio-economically weak groups where you see the greatest health problems linked to eating habits.[44]

Concrete and measurable targets should be set for reducing emissions of greenhouse gases from public meals. The climate footprint of a meal should be clearly stated on all public meal servings to increase awareness and strengthen consumer influence. This is already done at several forward-thinking schools and universities.

Studies show that it is possible to reduce greenhouse gas emissions from public meals whilst maintaining sufficient nutrition levels without any increase in cost.[45] Broad educational efforts should be made to increase knowledge concerning sustainable eating. Chefs need to be trained in good and nutritious plant-based cooking.

ABOUT PLANT-FOOD SWEDEN

VÄXTBASERAT SVERIGE

Plant-food Sweden is an industry organisation whose goal and purpose is to promote increased production and consumption of plant-based foods. Our members include both small startup companies and large international companies.

CONTACT

Plant-food Sweden is aimed at companies that operate in the food market that support the organisation's goal of promoting a transition to plant-based production and consumption of food. Private individuals, interest groups and other actors can become support members.

Feel free to contact us if your company wants to become a member of Plant-food Sweden, or if you have questions about our business:

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