Knowledge grows

Our Position on Organic Farming

April 2022

Executive summary

Yara supports all farmers in implementing efficient, sustainable agricultural practices, regardless of the farming system. Given today's climate and resource challenges, Yara believes it is important to take a holistic approach to meet the specific needs of farmers and crops by providing a complete offering of tailored solutions.

Yara's core competence lies in managing nutrients in the most sustainable and efficient way. Organic fertilizers have significant synergies with the mineral fertilizers Yara provides, and they are a strategic priority for us in the coming years.

Organic farming has unique benefits as well as specific challenges. It aims to enhance biodiversity, reuse recovered nutrients and improve soil health. However, organic farming continues to face challenges related to lower yield performance and a lack of high-quality organic fertilizing material.

Leveraging decades of crop nutrition knowledge and capitalizing on our innovative mindset, Yara can help improve nutrient use efficiency in the organic sector and provide quality assurance around crop nutrition solutions. However, to improve the productivity and efficiency the organic farming sector, policies that support the circular economy and the inclusion of new raw material sources for organic fertilizers are also needed.

Regardless of the farming method, Yara believes it is crucial to take a science-based and comprehensive approach to cropland management and sustainability. As there is not enough highly performing organic fertilizing material available to cover the nutrient demand of crops for all farms, both mineral and organic nutrients, as well as a combination of different farming systems, are needed to feed the world's growing population with healthy and affordable food and to preserve ecosystems for future generations.

Current situation in organic farming

Definition of organic farming

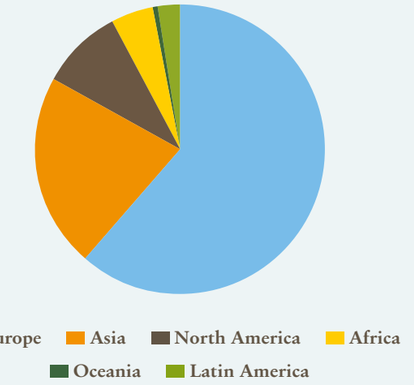
There are various definitions of organic farming. The Food and Agriculture Organization (FAO) of the United Nations refers to it as "a system that relies on ecosystem management rather than external agricultural inputs"[1], while the U.S. Department of Agriculture gives the definition "application of a set of cultural, biological, and mechanical practices that support the cycling of on-farm resources, promote ecological balance, and conserve biodiversity."[2] According to the European Commission, organic farming aims to "produce food using natural substances and processes."[3]

Governments, certification bodies or associations set the rules and regulations for the production, distribution and marketing of organic products. The rules vary in different geographies. The European Union (EU) sets out the principles for its member states and passed a new Organic Farming Regulation in 2018 to provide an effective legal framework for the sector. It restricts the use of plant protection products, encourages high standards of animal welfare, and places a strong focus on biodiversity.[3,4] Although mineral fertilizers only consist of naturally occurring nutrients, organic farming rules restrict the use of most mineral fertilizers in the EU. Some mineral fertilizers, such as micronutrients, are allowed if the farmer can prove that there is a nutrient deficiency.[3] In the United States, USDA defines consistent national standards for organic products through its National Organic Program (NOP) and applies the USDA Organic Seal to products that contain at least 95 percent organically produced ingredients.[5]

FACT BOX 1: Organic farming at a glance

- Around 1.6% of the world's agricultural land, or 74.9 million hectares, is organically managed.[7]
- In the EU, the total organic area rose to 14.7 million hectares in 2020 from 9.5 million hectares in 2012, an increase of 56%.[8]

Distribution of organic arable cropland by region 2020



Source: FIBL 2022, The World of Organic Agriculture

Developments in the European Union

In 2019, the European Commission launched the European Green Deal, which sets out policy initiatives to make Europe the first climate-neutral continent by 2050. The Green Deal includes the Farm to Fork Strategy to make food systems in Europe more sustainable. One objective is to have at least 25 percent of the EU's agricultural land under organic farming by 2030, up from the current 9.1 percent.[8] Although not legally binding, this objective sends a strong political signal. In line with the objective, the Commission presented in 2021 an Action Plan on organic farming to help member states to stimulate both supply and demand for organic products and also declared September 23 as EU Organic Day. The Action Plan outlined the need to explore new and improved ways for organic farming to reduce its environmental impact and improve the sector's contribution to sustainability and environmental challenges through actions focused on traceability, inputs and resource efficiency. The EU's new Common Agricultural Policy (CAP), a system of agricultural subsidies and other programmes, and related national strategic plans will be mobilized to further support the implementation of this action plan.[9, 10]

Key factors related to sustainable agriculture and organic farming

Productivity levels and their climate effects

Organic farming continues to face challenges related to lower yield performance[11,12,13] and a lack of high-quality organic fertilizing material.[14] According to European market research, annual crop yields on organic farms are around 15 to 60 percent lower than conventional farming yields depending on crop and country.[12] An overview of global meta-analyses suggests the mean yield gaps of organic farming to be in the magnitude of 19 to 25 percent.[15] While these are on average, some professional organic farmers are able to get yields closer to the average of conventional farms.

Similarly, the nutrient content of organic fertilizers is lower compared with mineral fertilizers and most of the nutrients are not directly available for plant uptake. This is one of the main explanations for why organic farming systems experience lower productivity per hectare compared to conventional systems, where nutrient release due to the use of mineral fertilizers is more predictable. This is why Yara believes the best approach is to use both organic and mineral fertilizers, which are complementary.

Due to its lower productivity, organic farming faces two major challenges. First, it requires more land to produce the same amount of crop compared with conventional farming. Research suggests that average yield gaps of 30 to 40 percent would already require 43 to 67 percent more land to reach the full yield potential with organic farming methods. A large-scale transition to organic farming could, therefore, lead to cropland expansion.[15] This could in turn result in a net increase in greenhouse gas emissions as nearly half of all agricultural emissions comes from the conversion of natural land into farmland.[16] Second, expanding cropland areas would reduce areas of untouched nature, threatening biodiversity.

To responsibly feed the world and protect the planet, we need to produce more food on the same amount of land with less environmental impact. Therefore, it is important to optimize the productivity of all farming methods, including organic, by ensuring that the best crop nutrient management practices as well as digital and decision-support tools for precision farming are available for farmers. For organic farming specifically, improvements can be also achieved by identifying and developing new sources of organic fertilizers and improving processing and nutrient separation techniques. Quality guarantees are also important to ensure that organic fertilizer products are safe for crop nutrition and free from contaminants.

Other environmental effects and resource-use efficiency

Agriculture has other environmental effects in addition to contributing to greenhouse gas emissions and land use change. Adding more nutrients than the crops require, either from mineral or organic fertilizers, can cause leaching. If excessive nutrients reach water, algae bloom (eutrophication) can occur. Good farm management practices and a strict focus on nutrient-use efficiency to make every nutrient count can help mitigate this problem and are therefore of key importance, regardless of the farming method.

Resource-use efficiency is also necessary to contribute to a zero-waste society. In farming, that means using both the nutrients already available on the farm as fertilizers, such as manure and crop residues, and safely bringing recycled nutrients from other sources, such as wastewater sludge or agri-food residues, back into the loop as fertilizing products. Furthermore, organic fertilizers can bring additional benefits, such as improvements in soil health and increased plant resilience to biotic and abiotic stress, which is important for a changing climate.[17]

FACT BOX 2: Nutritious and healthy food

It is important to acknowledge that there is no difference in nutritional quality between organically and conventionally produced food, as shown in a systematic review of numerous studies.[22] In terms of nutritional content, food safety and taste, the variance between farms, seasons, soils and the lengths of the supply chains (i.e., the time it takes before farm produce reaches the market) accounts for most of the variances observed in food quality.

Responsibly feeding the world

While eliminating or reducing food waste can improve the efficiency of current food systems[18], conventional agriculture will be needed also in the future to feed the world's population, which is expected to reach nearly 10 billion in 2050. That is because, at present, about half of all crops are produced thanks to the use of mineral fertilizers. Income growth in low- and middle-income countries is expected to increase the consumption of resource-intensive foods, boosting pressure to cultivate more crops for animal feed as well.[19, 20] These trends are expected to lead to an over 50 percent increase in crop production by 2050.[21]

Since there is not enough high-performing organic material available to cover the nutrient demand of the crops of all farms[14], both mineral and organic nutrients, as well as a combination of different farming systems, are needed to feed the world's growing population with healthy and affordable food and to preserve ecosystems for future generations.

Yara's position

Yara is a partner for all farmers

Yara's solutions and knowledge of the best nutrient management practices and how to produce more on the same amount of land with lower emissions are relevant for all farming systems, including organic. Yara wants to be a long-term partner for all farmers, regardless of which agricultural method they use.

With our ambition of growing a nature-positive food future, we are spearheading the transition to sustainable and efficient agri-food systems. Yara contributes to meeting some of the challenges in organic farming by supporting organic farmers with our crop nutrition solutions and precision farming tools, which are crop- and site-specific.

In addition to our broad portfolio of mineral fertilizers, Yara provides micronutrient products and biostimulants across several markets and supplies organic fertilizers in several European countries. The organic fertilizer market and the expansion of our organic-based portfolio are clear strategic priorities for Yara in the coming years. In addition to Europe, we are also looking at potential opportunities in the Americas, Africa and Asia.

The organic and organo-mineral fertilizers that we are adding into our portfolio have significant synergies with our other products and solutions. They follow Yara's global quality standards and rigorous production processes and are made from various raw materials in a controlled production environment.

FACT BOX 3: Yara's first acquisition to expand our organic fertilizer business

Yara's first acquisition in the organic segment was announced in September 2021. The acquisition reflects our commitment to play a bigger role in the organic farming sector and in contributing to the circular economy. Finland-based Yara Eco utilizes industrial side streams to produce high quality fertilizers for agriculture and forestry. The acquisition strengthens Yara's knowledge and expertise so we can further develop recycled fertilizers.

A strong focus on resource and nutrient use efficiency

Yara promotes nutrient- and water-use efficiency and balanced crop nutrition, including the use of available on-farm nutrients, such as manure and crop residues. We believe it is important for society to continue to reduce food loss and waste and to provide farmers with better tools to lower in-field crop nutrient losses. Yara is committed to contributing to the circular economy and, through our strategic partnerships, we are working to find the best ways to close nutrient loops.

For decades, Yara has invested in digital technologies that help farmers to define and meet the precise nutritional needs of their crops. Farm operations can be optimized through these precision farming technologies, which are currently fairly immature in organic farming systems compared to the wider agricultural sector. This is another area where Yara can use its expertise to improve organic farming.

FACT BOX 4: Upcycling cities' food waste into nutrients for farms

Through our strategic partnerships with waste management and food companies, and by leveraging our crop nutrition knowledge, we are working to find optimal ways to recycle nutrients that would otherwise end up as waste and then processing these to produce organic compound fertilizers.

A practical example of that is the Nutrient Upcycling Alliance, a circular food economy initiative started in January 2019 by Yara and Veolia, a global leader in waste management and resource recovery. The Alliance has a pilot project in London that aims to demonstrate that food waste collected from the city can supply local farms with organic-based fertilizer, shifting farmers towards regenerative agriculture techniques. The objectives of the pilot project are to help increase organic waste collection and upcycling from 2% at present to 25% by 2030, establish a proof of concept for an organic-based fertilizer made from city food waste and to serve farms with tailored solutions around London, representing 350,000 hectares of farmland.

Yara's position

A science-based, transparent and comprehensive approach to sustainability is needed

Science and knowledge are at the core of Yara's business. Science must be the basis for environmental impact studies and should be used to monitor and improve the sustainability of all farming methods, both organic and conventional. In addition, transparency and traceability regarding sustainability are also important to enable consumers to make informed choices for both organic and non-organic produce.

Crop productivity is an important factor that should be monitored as part of this process. The best way to compare productivity of farming systems is to assess the average production of many farms over large areas and several years because the measure also needs to include years with low or no productivity.

Productivity per hectare as an average of a whole crop rotation should, therefore, be used as a measure when comparing organic and conventional farming systems.

Finally, a scientifically sound and holistic approach is also needed when it comes to the introduction of different policies and measures. More research as well as new suitable nutrient sources for organic farming are needed for the future of organic farming. Policy developments in the support of circular economy and the use of recycled inputs in organic farming are also key. Yara actively works on recovering nutrients from waste streams and bringing them back into agricultural production, helping contribute to a circular economy and reducing nutrient losses.

About Yara

Yara grows knowledge to responsibly feed the world and protect the planet. Supporting our vision of a world without hunger and a planet respected, we pursue a strategy of sustainable value growth, promoting climate-friendly crop nutrition and zero-emission energy solutions. Yara's ambition is focused on growing a nature-positive food future that creates value for our customers, shareholders and society at large and delivers a more sustainable food value chain.

To achieve our ambition, we have taken the lead in developing digital farming tools for precision farming and work closely with partners throughout the food value chain to improve the efficiency and sustainability of food production. Through our focus on clean ammonia production, we aim to enable the hydrogen economy, driving a green transition of shipping, fertilizer production and other energy intensive industries.

Founded in 1905 to solve the emerging famine in Europe, Yara has established a unique position as the industry's only global crop nutrition company. We operate an integrated business model with around 17,000 employees and operations in over 60 countries, with a proven track record of strong returns. In 2021, Yara reported revenues of USD 16.6 billion.

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