Knowledge grows

Making every nutrient count

- the power of precision farming and digitalization

Precision farming and digital tools are crucial for enabling European farmers and the food chain to achieve profitable and sustainable food production in line with the European Green Deal and Farm to Fork (F2F) ambitions. Yara has been a pioneer in the development of precision farming in Europe with 25 years of knowledge in the area.

Precision farming and digital solutions improve the efficiency of fertilizer use by 10%

Precision farming: what are we talking about?

"Precision Agriculture is a management strategy that gathers, processes and analyzes temporal, spatial and individual data and combines it with other information to support management decisions according to estimated variability for improved resource use efficiency, productivity, quality, profitability and sustainability of agricultural production."

Source: International Society for Precision Agriculture (ISPA).

Throughout the season, farmers can optimize their crop nutrition plans to ensure high yields and crop quality, minimize the environmental impact and reduce the carbon footprint linked to mineral fertilization.

Step 1: Plan crop nutrition in a precise manner

Step 2: Monitor and adapt throughout the season

Step 3: Apply nutrients in the most sustainable way

This enables them to make every nutrient count in line with the F2F Strategy ambition to halve nutrient losses from organic and mineral sources by 2030.

With only seven growing seasons left until 2030, **European and national policy makers must ensure greater deployment of precision farming and digital tools, including in organic farming.** Therefore, **as part of the Common Agricultural Policy (CAP), EU member states should aim to:**

- Offer **eco-schemes that support farmers' efforts to transition towards a more sustainable way of farming by using precision farming tools** that can demonstrate the efficient management of natural resources, primarily water and nutrients, e.g. improvement in water use or nitrogen use efficiency.
- Support **productive investments** that could be undertaken by machinery rings or farm contractors. This scheme could be **used to offer precision farming tools and specialized equipment (like variable rate fertilization).**
- Offer farmers the **possibility of doing nutrient planning via the Farm Sustainability Tool for Nutrients (FaST) (or a similar tool)** to encourage a more efficient use of fertilizers.

Making every nutrient count

- the power of precision farming and digitalization

Step 1
Plan crop nutrition in a precise manner

The goal of farmers at the beginning of a new crop cycle is to optimize the amount and sources of nutrients they provide to their crops to sustain the long-term fertility of their soils. Precision farming tools, such as Yara's Atfarm, help to quickly define a tailor-made fertilization plan, building on organic nutrient sources available on farm or nearby. This ensures that the farmer only applies the plant nutrients that the crop requires.

The Danish project "Future cropping" shows that redistributing nitrogen (N) inputs within the field can reduce nitrogen leaching by 1 to 4 kg N per hectare while also ensuring a financial gain for the farmer.

Step 2
Monitor and adapt throughout the season

As weather conditions impact crop development, farmers must adjust their nutrient management plans throughout the season. Digital tools, such as Atfarm, which is based on satellite images, together with field measurement tools such as N-Tester, help farmers monitor crop growth in their fields and provide tailored notifications and warnings, allowing them to find out where the problem is and to fix it in the field. The Yara N-Tester is a handheld device, which determines nitrogen requirements in real-time by measuring the chlorophyll content of the leaf.

Based on 240 trials from 1994 to 2002 in France, the use of the N-Tester showed an average yield gain of 1.2 q/ha and an average protein gain of 0.3 points without an increase in total nitrogen use.*

**Compared to the Comifer balance method alone.*

Step 3
Apply nutrients in the most sustainable way

The development of a crop in a specific field is never homogeneous. The challenge for farmers is to optimize nutrient applications to match crop needs in different zones. This is where a tool such as Variable Rate Application, via Atfarm and Yara's N-Sensor, enables farmers to calibrate the fertilizer application based on the biomass variation across the whole field. The N-Sensor is mounted on the tractor roof and directly connected to the fertilizer spreader, it adjusts fertilization rates instantaneously as nitrogen needs vary significantly across individual fields. This has an additional benefit. It also enables farmers to track the carbon footprint of a crop and share this information further through the value chain.

Yara's N-Sensor helps farmers apply the exact amount of nitrogen where it's needed, improving yields by 3.6% for wheat and by 4.4% for oilseed rape in long-term trials. The use of N-Sensor has resulted in nitrogen savings of up to 14% and a 10-30% reduction in the carbon footprint due to increased nitrogen use efficiency.*

**Based on the trials experience in the North-West Europe.*

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.

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. **www.yara.com**

For further information, please contact:
Yara International ASA, Drammensveien 131,
P.O.Box 343, Skøyen N-0213 Oslo, Norway