



POLY4
A SIRIUS MINERALS PRODUCT

RESPONDING TO THE NEEDS OF EUROPEAN AGRICULTURE



poly4.com

Sustaining the future.

SIRIUS
MINERALS PLC



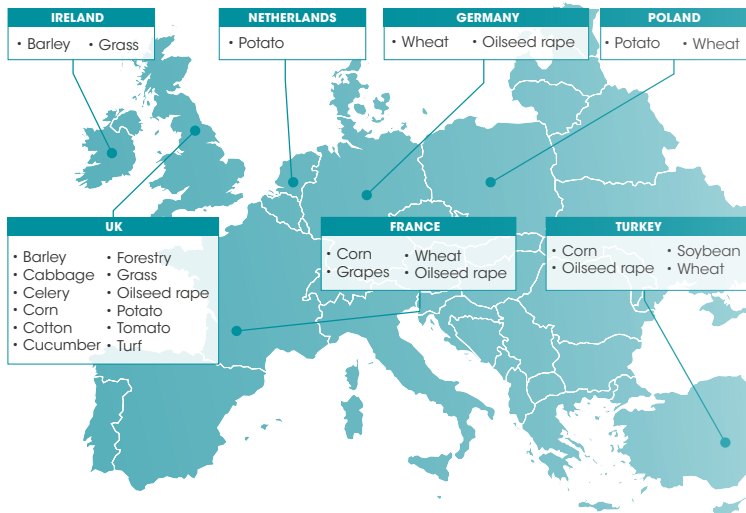
BRINGING SCIENCE TO THE FIELD

POLY4 is the trademark name of Sirius Minerals' flagship polyhalite product. POLY4 is a naturally-occurring, low-chloride, multi-nutrient fertilizer suitable for organic farming. It contains a wide spectrum of macro and micro nutrients required for plant growth.

Sirius Minerals will deliver a new fertilizer product, POLY4, to the market. Company's research and development programme aims to fully and comprehensively understand how POLY4 works on given crops, how it can enhance typical fertilizer plans and, at the same time, reduce environmental impact. Our global agronomic trial programme operates on five continents and brings science to the field.

In Europe alone, Sirius Minerals conducted trials to date in France, Germany, Ireland, the Netherlands, Poland, Turkey and the UK on sixteen crops including wheat, barley and oilseed rape.

POLY4 EUROPEAN AGRONOMY TRIAL PROGRAMME



CHOOSING THE RIGHT SOURCE

European farming knowledge and practises are advanced.
And so European farmers now focus on:



Yield
reliability



Crop
quality



Carbon
footprint



Water/soil
pollution



Organic
production

In essence, European agriculture is seeking to maintain crop production while operating a sustainable system that provides environmental protection.

Fertilizers are essential in today's farming practices. It is recognised that 50 per cent of the crop yield gap is supported by fertilizer

applications. Fertilizers are responsible for more than half of the world's food production and, due to the increased food demand, additional fertilizer resources are needed. Agronomic advice is shifting, and fertilizer practice now seeks to apply a wider nutrient spectrum in order to achieve higher yields and better quality of crops. As a consequence, basic NPKs are superseded by NPK +S, NPKS +Mg and/or +micro nutrients, and so the value of multi-nutrient resources such as POLY4 is recognised.

"Fertilizers are responsible for more than half of the world's food production"

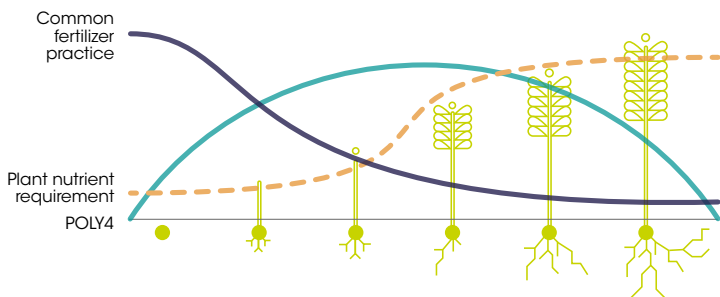
Adopting naturally-occurring and organically-certified POLY4 into the fertilizer plans offers farmers an effective, yet responsible, fertilizer solution.

ADDRESSING MULTI-NUTRIENT DELIVERY

Although yield is the key criteria farmers use when choosing fertilizer, the choice is also important as it provides the right mix of nutrients to improve the quality of crops and ensure the plants are strong and less susceptible to disease. POLY4 has been proven to improve both yield and quality of a wide spectrum of broad-acre and high-value crops.

Through the analysis of the extensive trial data, Sirius Minerals' global agronomy programme has clearly demonstrated the advantages that a multi-nutrient approach brings to farmers. POLY4 makes nutrients available to crops over an extended timeline while naturally drip-feeding them to more closely match the crop's uptake requirements.

POLY4 NUTRIENT RELEASE PROFILE COMPARED TO COMMON PRACTICE



MAINTAINING A HEALTHY SOIL SYSTEM

Growing healthy plants and sustaining crop yield and quality begins with nutrient-rich soil. Soil erosion is the biggest threat to soil fertility and productivity, as it removes organic matter and important nutrients.

In general, EU soils are of a good nutrient status. However, the 12 million hectares of arable land in the EU that suffer from severe erosion are estimated to lose around 0.43% of their crop productivity annually. The demise of a healthy soil system causes losses of nutrients as well as the reduction of potential crop land.

With its multi-nutrient properties, including calcium that helps to increase the resilience of soil to compaction, erosion and runoff, POLY4 can help to mitigate soil degradation and maintain a healthy soil system. POLY4 has an excellent environmental profile and can support EU's agricultural and environmental policies.



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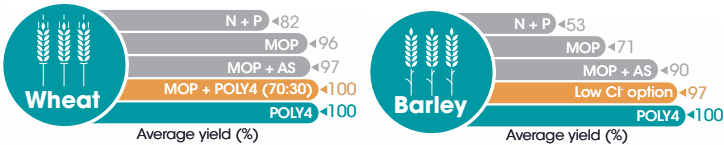
POLY4
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POLY4 can help to maintain a healthy soil system

BEYOND THE NUTRIENT VALUE

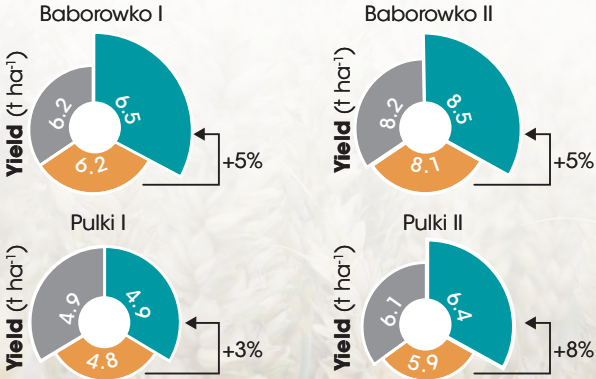
Global trial results showed that small grains such as wheat and barley had greater yields when POLY4 was applied as a K source on sulphur-deficient soils: yield was improved on average by 4% for wheat and 58% for barley over MOP.

AVERAGE POLY4 PERFORMANCE AGAINST OTHER K SOURCES



The European trial on winter wheat in Poland was conducted at four locations in partnership with the Institute of Soil Science and Plant Cultivation. It evaluated the effect of POLY4 on yield and quality compared to the alternative K and S fertilizers. The POLY4 fertilizer programme delivered greater yields at all four sites with an average increase of 5% compared to MOP + AS.

■ MOP ■ MOP + AS ■ POLY4



Sirius Minerals' R&D programme compared how nutrient sources affected uptake and partitioning within crop tissues over time.

Studies showed that when a plant suffered from time-based nutrient shortages, it relocated nutrients within its tissues to support grain production. In contrast, when plants could

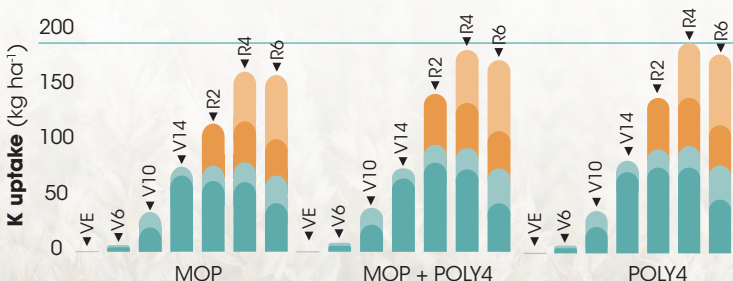
access nutrients from the soil at the right time, relocation from their own tissues was reduced, leading to healthier crops.

Potassium (K) is a key nutrient and has important cell and cold tolerance functions. K plays a major role in yield and quality improvement, and impacts shelf life, especially for vegetable products. The POLY4 study on corn compared different K sources and showed that different fertilizer plans result in different K uptake. With the use of POLY4, K peaks appear later indicating that the plant can access potassium from the soil at the right time in support of yield.

“With the use of POLY4, the plant can access nutrients at the right time in support of yield”

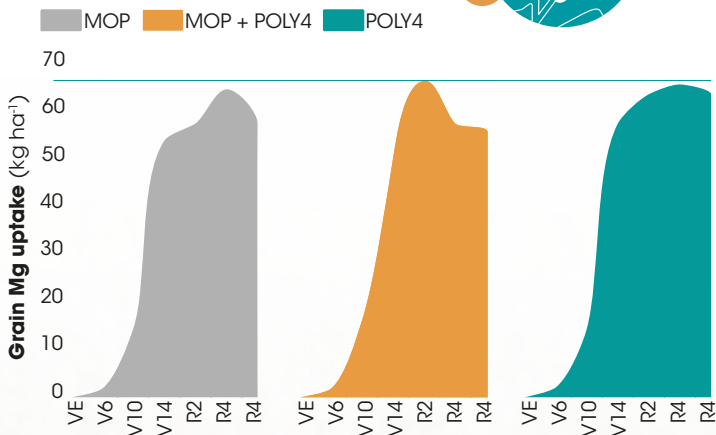
POTASSIUM UPTAKE BY CORN IN POLY4 TRIAL

Leaf Stalk Reproductive Grain



The same trial also assessed magnesium (Mg) supply. NPK was compared with an NPK +Mg which used the natural POLY4 source. The crop valued magnesium that was available at late growth stages. This late nutrient supply was improved by POLY4.

MAGNESIUM UPTAKE BY CORN GRAIN IN POLY4 TRIAL



Fertilizer use efficiency (FUE) takes into account mass balance calculations and looks at changes in soil nutrients status pre- and post-cropping, input from fertilizer, offtake as yield, and the nutrients that are released from the unharvested biomass. Any farmer implementing a multi nutrient fertilizer programme should use products with a high FUE in order to maximise crop yield, quality and minimise nutrient wastage.

“POLY4’s high FUE can minimise nutrient wastage”