

Yara Africa Fertilizer (Pty) Ltd

Lambrecht Street, Huguenot
Paarl, South Africa

+27 21 877 5300

infos@yara.com

www.yara.co.za



Knowledge grows



Operations in
more than
50
countries



Sales to
more than
150
countries

Yara's market presence includes a global network of sales offices in more than 50 countries and sale to more than 150. The company has a strong production and marketing base in Europe and has greatly extended its presence in North and South America, not least taking a strong position in Brazil, as well as in Australia, while expanding in Africa and Asia.

Market Knowledge

Yara delivers a wide range of solutions for the world's farmers and industrial users, leveraging its experience and knowledge to tailor solutions to local needs. With regard to Agricultural Solutions, Yara offers the market's most complete portfolio of mineral fertilizers and solutions for sustainable agriculture – covering all necessary nutrients for most crops.



Creating Impact

Yara commits to a sustainable future. Creating impact is our blueprint to create business value in the way we respond to human challenges. Yara creates value by delivering profitable, sustainable growth benefitting customers and shareholders – as well as society at large. By creating value Yara is positioned to create impact, to make a difference. Successful alignment of the company's current and future core business with global challenges will strengthen the company's position and develop a sustainable competitive edge. Yara creates impact by engaging in three focal areas where it is able to make a profound contribution: food security, resource management, and environmental issues. The three areas are intrinsically linked, and Yara is uniquely positioned to develop viable business solutions that address related global challenges.



Quality Maize

Maize nutrition

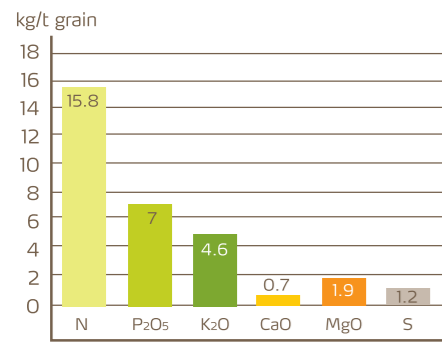


As a major provider of specialist crop nutrition guidance and fertiliser globally, Yara is committed to continuously deliver farmers with the latest scientific information. Combining this commitment with the practical experience of our field agronomists results in sustainable on-farm solutions across diverse farming systems and environmental conditions.

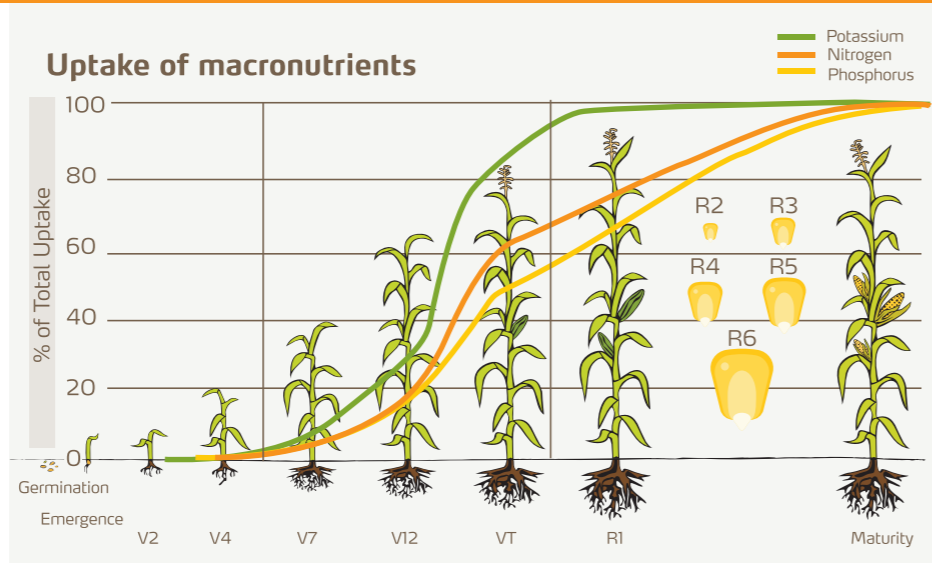
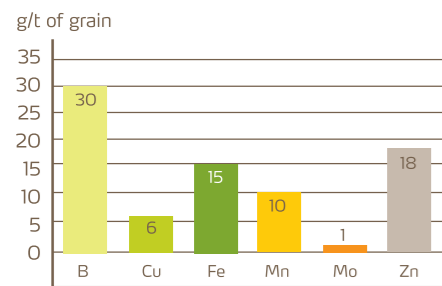
Yara works closely with researchers and farmers to gain valuable experience in order to optimise product use on farms. Due to several high-quality Yara product ranges available, each farmer's needs can be satisfied to help produce the best crop in terms of yield and plant health.

Knowledge of nutrient uptake and removal in maize crops will help you to determine the best nutrition program for your maize crop.

Macronutrient removal



Micronutrient removal



| | Soil applied product | Foliar applied product |
|-----------------------|----------------------|------------------------|
| Product range | Planting | 2-4 leaf stage |
| YaraMila™ | Lunar | |
| | Actyva | |
| | Complex | |
| YaraTera™ | Croplift | |
| YaraVita™ | Procote BMZ | |
| | Procote Zn | |
| YaraVita™ | | Crop Boost |
| | | Maize Pholate |
| YaraTera™ | 1089 Chelate | 1089 Chelate |
| | 1090 Chelate | 1090 Chelate |
| Amiplus Blends | | Amiplus |
| | | Topstar Plus |
| | | Topstar Plus S |
| | | Graintop Plus S |
| YaraBela™ | | CAN |
| YaraRega™ | | Aquaflex |
| | | Aquaflex |

Macronutrients

Nitrogen (N)

Nitrogen is the one of the main building blocks of proteins and sustains healthy growth. Being essential for optimal photosynthesis, nitrogen is needed to produce high quality grain and dry matter yields during the reproductive growth stages such as kernel filling. Green leafy and stem growth during the vegetative growth stages is important to sustain effective carbon assimilation – the process during photosynthesis in which carbon dioxide is absorbed by the leaves and utilised to form carbohydrates. The YaraMila™ compound products are specifically formulated with a balanced ammonium and nitrate nitrogen ratio, ensuring maize plants have a sustained source of nitrogen throughout the entire growing season.

Phosphorus (P)

Phosphorus is integral to the structure of nucleic acids (DNA and RNA) and is essential for cell division and energy transfer within maize plants. Phosphorus stimulates both primary and secondary root growth and development, hence promoting nutrient uptake throughout the growing season. As phosphorus movement is extremely limited in soils, placing phosphorus where potential root growth will take place is critical to promote utilisation by maize plants.

Potassium (K)

Potassium strengthens plant fibres and aids photosynthesis during the vegetative growth stages. Stronger stems ensure decreased lodging losses especially during wetter seasons with high yields. In addition, potassium regulates stomatal movement, thereby limiting water losses out of leafy growth when dry conditions occur to optimise water use efficiency. Potassium further aids in the movement of nutrients and carbohydrates within the maize plant.

Sulphur (S)

Sulphur assist in the conversion of nitrate to ammonium during amino acid production for protein synthesis. Hence, sulphur is important to achieve maximum nitrogen use efficiency. Additionally, sulphur is a component of enzymes and vitamins.

Magnesium (Mg)

As a central part of the chlorophyll molecule, magnesium is essential for photosynthesis and carbon assimilation. Insufficient magnesium levels in the plant leads to poor growth and reduced yields.

Micronutrient

Zinc (Zn)

Zinc helps regulate maize plant's growth rate and is involved in chlorophyll formation. Zinc is also essential for the formation of auxins, which regulate internode elongation.

Boron (B)

Boron has a direct effect on cell membrane integrity to maintain strong cell wall structure. Boron is essential to produce fertile pollen and promote healthy pollen tube formation.

Manganese (Mn)

Manganese is involved in chlorophyll production, photosynthesis, and acts as catalyst in several plant growth processes including protein synthesis. Manganese also assists molybdenum in nitrate reductase activity.

Iron (Fe)

Iron is mainly found in plant cell chloroplasts where it forms an important link during photosynthesis. Iron is therefore essential for the maintenance of chloroplast structure and function to ensure sufficient photosynthesis.

Sustainability and efficiency

Focussing on the sustainability of the farmer and environment is central to Yara's mission and vision. To responsibly feed the world and protect the planet defines Yara's purpose and role in the world. Due to the many environmental challenges faced across the South African maize production region, such as droughts, floods, and nutrient poor soils, it is Yara's mission to aid farmers in producing financially stable yields while maintaining a healthy soil-crop relationship over the long-term.

Yara is a committed partner of the 4R Nutrient Stewardship, thereby promoting the use of fertiliser through the framework of the right source, right rate, right time, and right place.

4R Nutrient Stewardship provides a framework to achieve cropping system goals, such as increased production, increased farmer profitability, enhanced environmental protection and sustainability. This is particularly important for maize production systems in South Africa.

To achieve those goals, the 4R concept incorporates the:

- Right fertiliser source at the
- Right rate, at the
- Right time and in the
- Right place

Properly managed fertilisers support maize production systems that provide economic, social and environmental benefits. On the other hand, poorly managed nutrient applications can result in decreased profitability and increase nutrient losses, potentially degrading soils, water bodies and air.

4R Nutrient Stewardship requires the implementation of best management practices (BMPs) that optimise the efficiency of fertiliser use. The goal of fertiliser BMPs is to match nutrient supply with crop

requirements and to minimise nutrient losses from maize fields. Selection of BMPs varies by location, and those chosen for a given farm are dependent on local soil and climatic conditions, agronomic management practices and other site-specific factors.

Other agronomic and conservation practices, such as no-tillage and the use of cover crops, play a valuable role in supporting 4R Nutrient Stewardship. As a result, fertiliser BMPs are most effective when applied with other agronomic and conservation practices.

What are the 4Rs

| | | | |
|---|---|--|--|
| | | | |
| RIGHT SOURCE Matches fertilizer type to crop needs. | RIGHT RATE Matches amount of fertilizer type to crop needs. | RIGHT TIME Makes nutrients available when crops need them. | RIGHT PLACE Keep nutrients where crops can use them. |

REF: NUTRIENT STEWARDSHIP FERTILIZER INSTITUTE

