

**Yara Africa Fertilizer (Pty) Ltd**

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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.



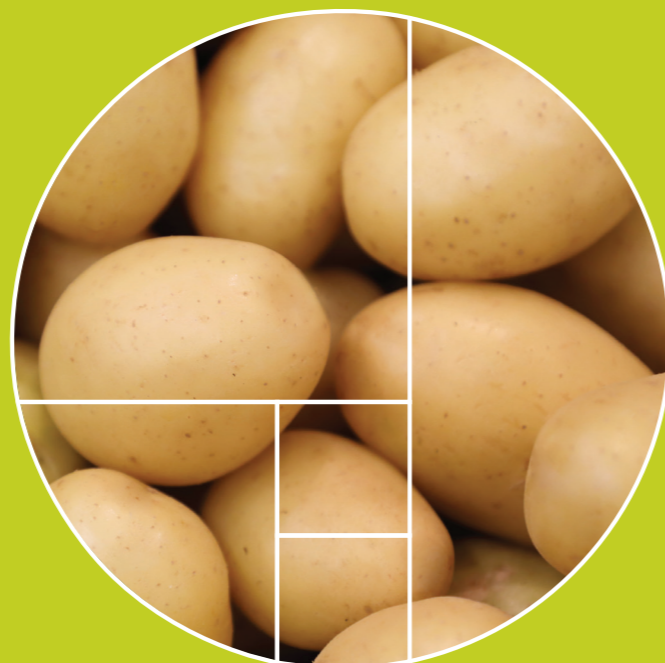
**Creating Impact**

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  
Potatoes

# Quality Potatoes



## Timing is everything

Yara works closely with researchers and Farmers all over the world gaining in valuable experience on how best to use our fertilizers.

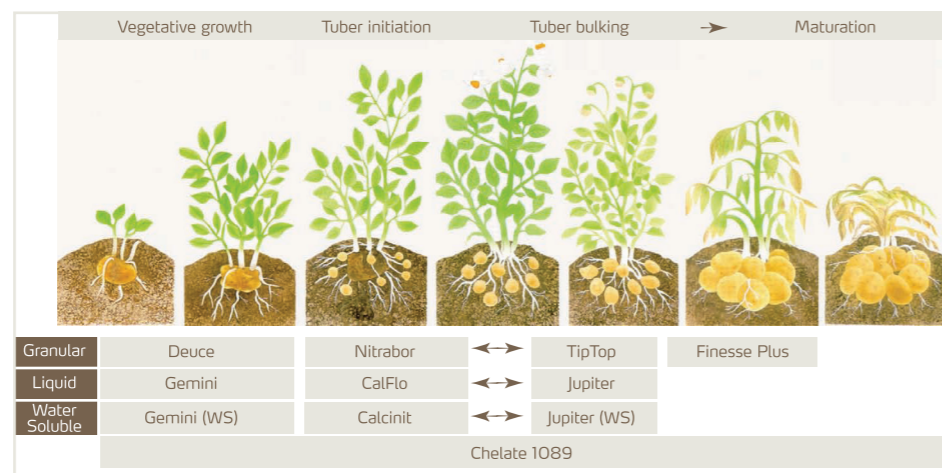
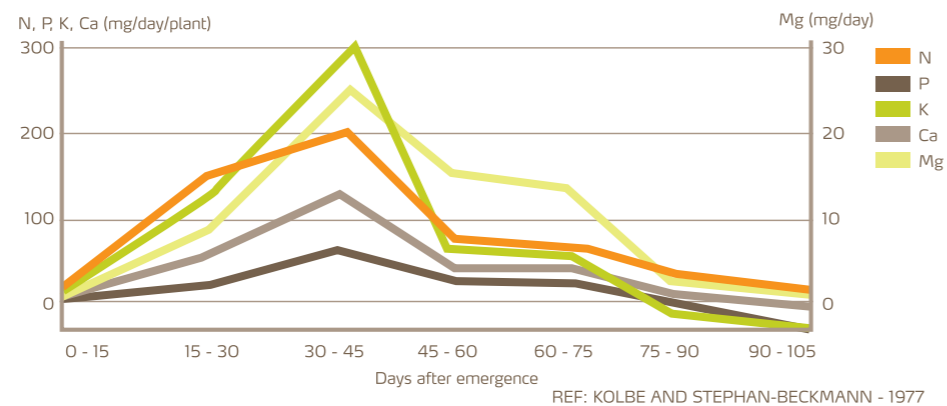
We know that rate and timing of nutrient application - taking in to account nutrient availability from the soil, crop residues and manures - are essential aspects to ensure growth and that crop quality is not compromised.

Potatoes receive relatively large soil applications of fertilizer. However during periods of rapid growth, under certain conditions, the root system is unable to take up sufficient nutrients from the soil to meet the very high demands of potato plants. Careful focus on the management of nutrient inputs is essential, but success depends on the timely application of foliar sprays based on an understanding of the role and requirement.

## YaraVita™ products

YaraVita™ products are not simply nutrients. They are finished products designed from the start with crop nutrition in mind. When you choose YaraVita™, you can be sure that what you apply will be easy and convenient to use and effective and safe for the crop.

## Nutrient Application Timing Chart for Potatoes



## YaraVita™ foliar sprays play an important role in nutrition

	One week after emergence	Tuber initiation	Tuber Bulking	
Foliar YaraVita™	Bortrac 150	Mancozin	Mancozin	This is a complete timing chart, showing all possible sprays. For a custom made foliar spray program, consult your local agronomist.
	Magtrac 300	Seniphos	Seniphos	
	Follimag 300		Magtrac	
	Chelate 1089			

## Important Nutrients

**Calcium (Ca)** is a key component of cell walls, helping to build a strong structure and ensuring cell stability. Calcium enriched cell walls are more resistant to bacterial or fungal attack. Calcium is critical during cell division and expansion and is therefore essential prior to, and during the rapid growth phase of tubers. A regular supply of calcium is critical to ensure stress-free leaf growth. Relatively high rates of calcium fertilizer are needed to achieve the small amounts in the tuber that are critical for crop quality.

**Boron (B)** influences root and shoot adsorption and transportation. Boron also effects calcium absorption. Adequate supply of this nutrient is therefore important to ensure balanced nutrition. Boron is an important element of the cell wall. Here it acts as cement between pectin, providing cohesive strength for cell tissues; hence boron affects tuber storage quality characteristics.

**Potassium (K)** is the element most intensively utilised by the potato crop. While removal differs from field to field and depends on yield, potato crops could utilize up to 50% more potassium than nitrogen. Both potassium and nitrogen are needed throughout vegetative growth, tuber formation and bulking. Potassium is important for high yields but also for maintaining tuber integrity.

**Nitrogen (N)** is important for leaf and tuber growth. Like potassium, a substantial amount of nitrogen is recycled from the leaf to the tuber during bulking.

**Phosphate (P)** is needed in relatively large quantities, particularly during early growth, to encourage rooting and tuber set, but also during the late season for bulking.

**Magnesium (Mg)** is more important at later stages of growth, particularly during bulking, where it has a major role to play in maintaining tuber quality.

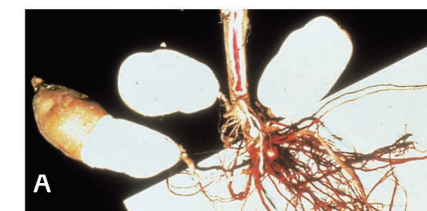
**Sulphur (S)** is needed for all growth stages and is important in reducing common scab.

## Calcium Movement

Once in the leaf, calcium is immobile and doesn't move to the other leaves or down to the tubers at a later stage. Calcium movement into the tubers is via the stolon, tuber root hairs, and through the tuber skin.

A large number of research papers show that readily available calcium supplied in the soil close to the stolons and tubers is the most effective way to increase tuber calcium levels. This can be best achieved by top-dressing with YaraLiva™ Nitrabor™ at tuber initiation.

Where levels of calcium in the leaf are low, foliar applications will quickly increase supply, improving the plant tolerance to stress such as heat and frost, but will have no effect of the amount of Ca in the tuber.



Calcium (stained red) moves from the roots up the stem, but not into the tuber (pic A).



Calcium movement into the tuber is only via the stolon (pic B and C).  
Photographs courtesy of University of Wisconsin

