



The 6 main benefits of Potassium Nitrate

## POTASSIUM NITRATE

**Sustainably boosting profitable crop yields, efficiently combating environmental stresses.**



**Nutrition**



**Yield**



**Salinity**



**Quality**



**Efficient water use**



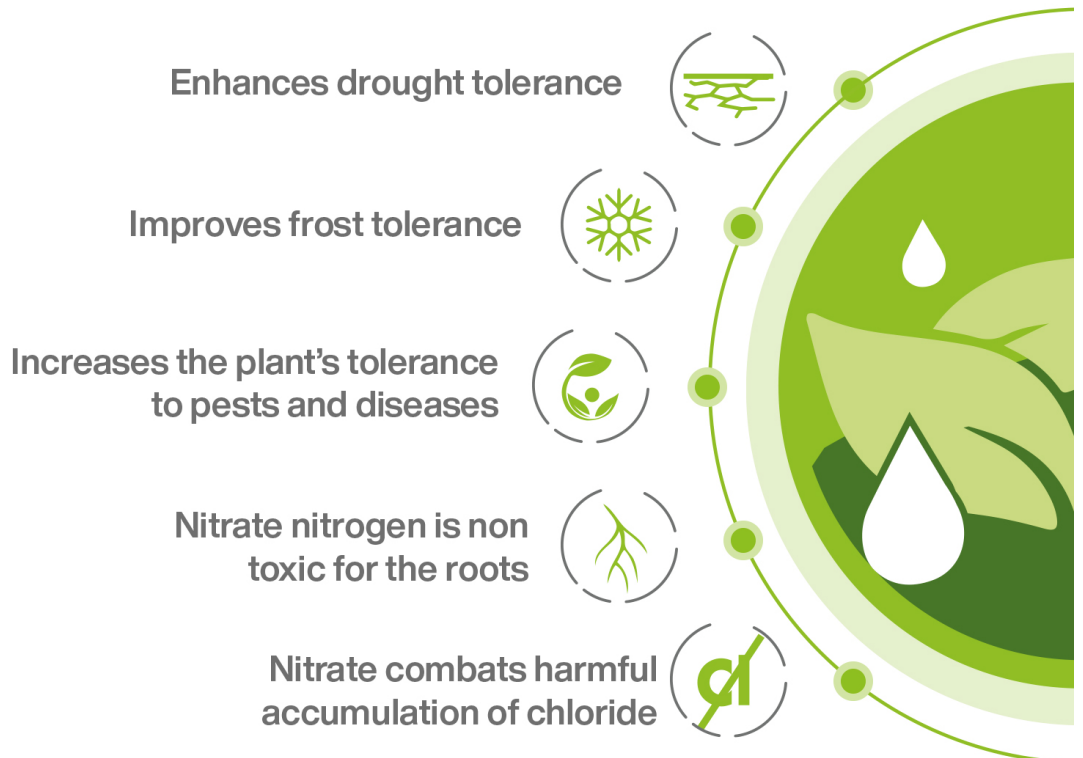
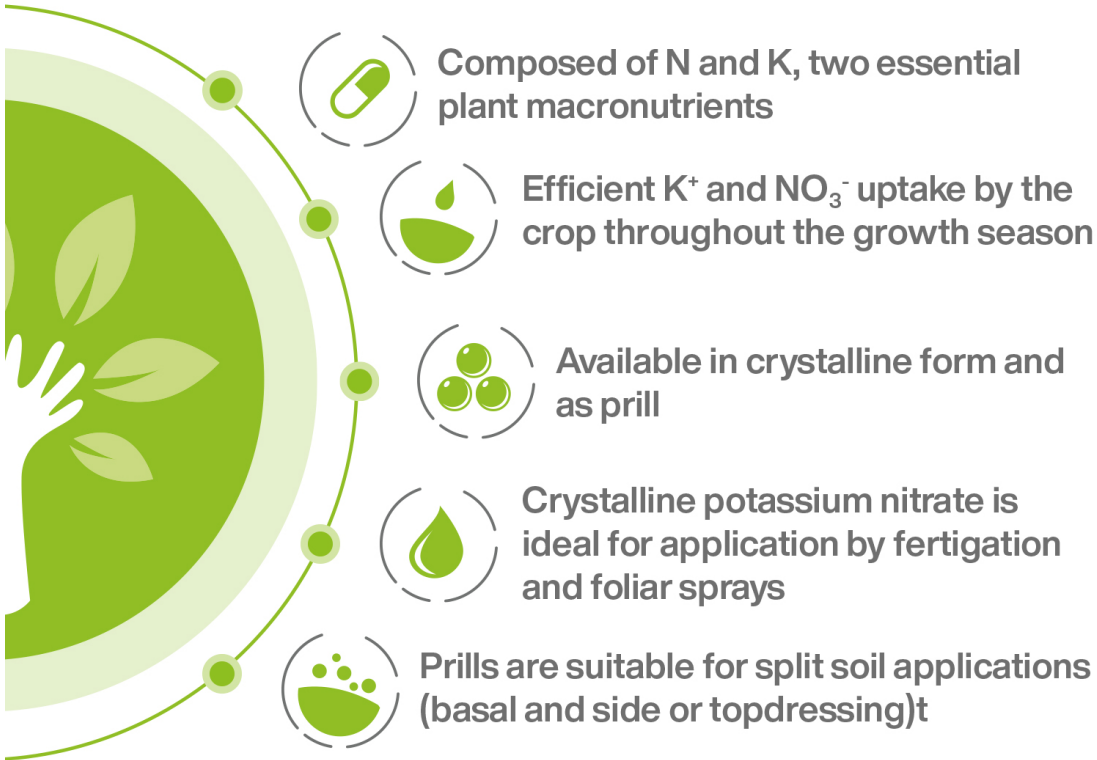
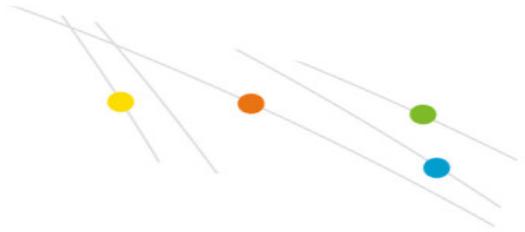
**Sustainability**

*Potassium nitrate (KNO<sub>3</sub>):*

### Efficient plant nutrition

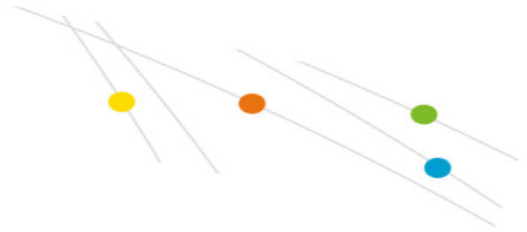
#### Stronger and healthier crop

Apply KNO<sub>3</sub> to improve crop development and to increase tolerance to adverse abiotic or biotic stress



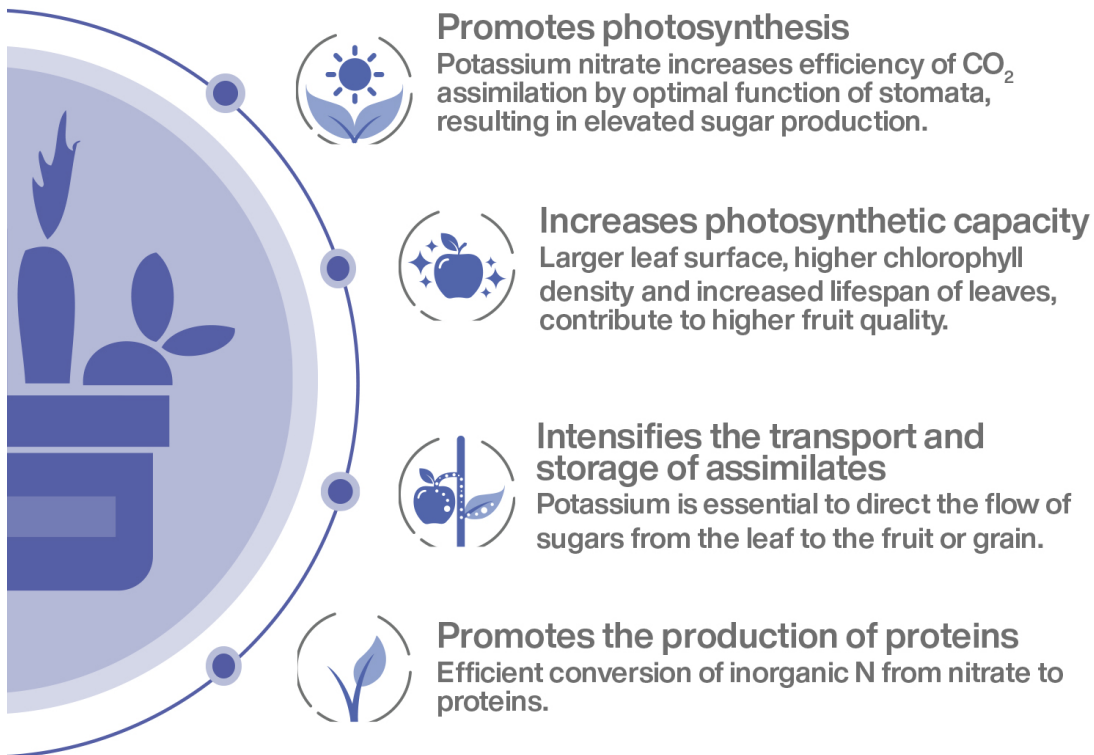
*Potassium nitrate ( $KNO_3$ ):*

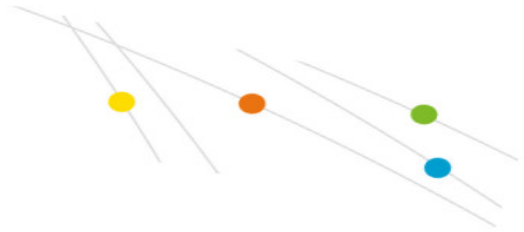
**Increases crop yield**



## **KNO<sub>3</sub> increases the profitability of the farmer's investment in optimal plant nutrition**

Deliver high quality products while increasing profitability and harvest security





### Supports tolerance to pests and diseases

Potassium nitrate strengthens the cell wall barrier and stimulates cell metabolism, with fast turnover of intermediate metabolites, reducing available substrate for pathogens.



### Improves water use efficiency

Less water is needed per kilogram by crop production.



### Improves fertilizer use efficiency

Potassium nitrate is indispensable for any sustainable fertilizer program. Balanced nutrient management reduces the amount of fertilizer applied per unit surface and per unit of yield, increasing the farmer's revenue.



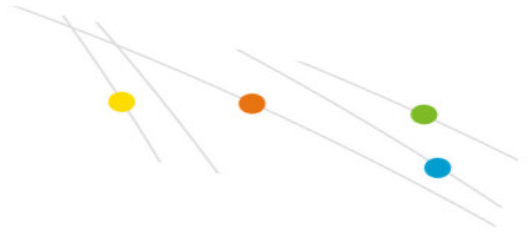
*Potassium nitrate (KNO<sub>3</sub>):*

## Prevents soil salinization

**K<sup>+</sup> and NO<sub>3</sub><sup>-</sup> are fully absorbed by the plant, following crop demand**

Prevent excessive supply of K<sub>2</sub>SO<sub>4</sub> or KCl as the main K-source to avoid sulphate and chloride accumulation in the

soil and to prevent soil salinity



### Completely absorbed by the plant

The synergistic relation between potassium and nitrate promotes rapid absorption of both ions by the roots from the soil. Dominant presence of N as  $\text{NO}_3^-$  in the root zone stimulates K uptake by the roots, and in turn, K stimulates  $\text{NO}_3^-$  absorption.



### Reduces need for additional irrigation

Reduced salinity build-up eliminates the need for additional irrigation to remove salts from the soil.



### Counteracts negative effects of sodium

Therefore, potassium nitrate is highly recommended for salt-sensitive crops, and when growing crops under saline soil and irrigation water conditions.



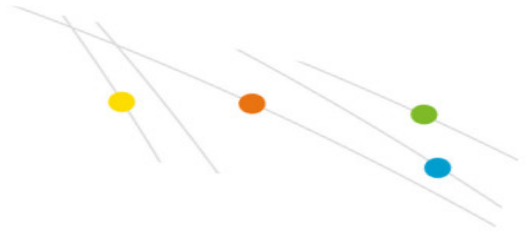
**Minimizes chloride uptake**  
Increasing levels of  $\text{NO}_3^-$  in the root zone limit uptake of Cl.



**Improves the availability of phosphorus and micronutrients**  
The nitrate in potassium nitrate enhances the formation of organic acids (carboxylates) and their exudation into the growing media. This facilitates the release of phosphate and micronutrients from soil particles to the soil solution.

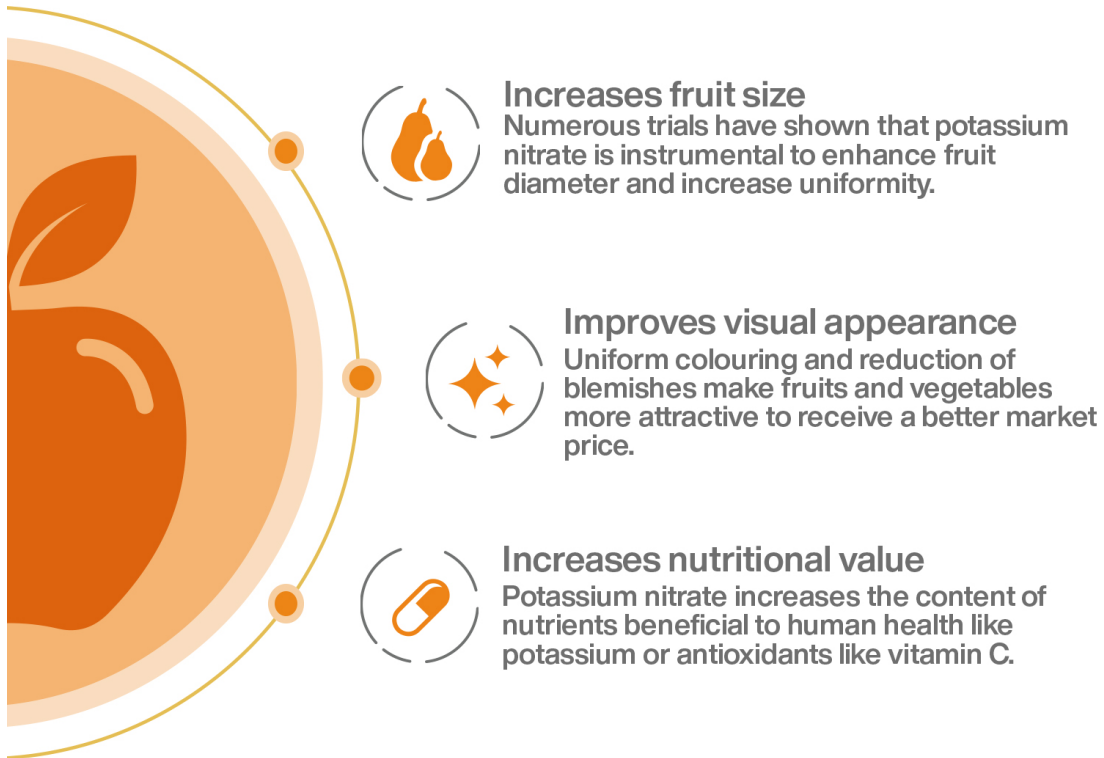


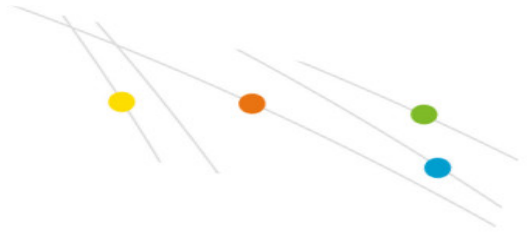
*Potassium nitrate ( $\text{KNO}_3$ ):*



## **KNO<sub>3</sub> increases the quality of the harvested produce**

Increase profitability by delivering higher priced quality class produce





**Improves organoleptic features**  
Potassium nitrate stimulates the ripening process, improving the taste of fruits based on aromatic compounds and soluble sugar contents.



**Crop loss reduction**  
Well balanced specialty plant nutrition programmes which include  $\text{KNO}_3$ , increase tolerance to biotic and abiotic stresses during the crop cycle, resulting in reduced crop losses.



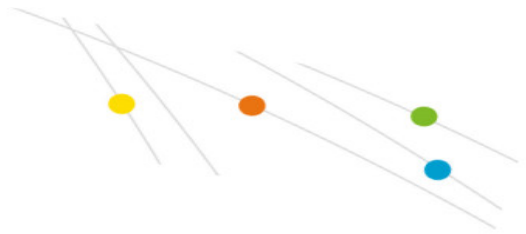
**Reduces loss and waste in the product value chain**  
Enhanced content of antioxidants, disease tolerance, and optimal dry matter content and moisture control improve storage quality of produce, lengthening its shelf life.



*Potassium nitrate ( $\text{KNO}_3$ ):*

**Saves water**

**Improved water use efficiency**



Decrease water requirement of the crop through better water management



### Improves the plant's water management

Nitrate-fed plants utilize water twice as efficient as ammonium-fed plants.



### Prevents water loss

Potassium is responsible for opening and closing of stomata. Adequate potassium supply optimizes plant transpiration and reduces its water requirement.

**Increases water uptake efficiency**  
Adequate potassium nutrition of the plant enhances its water sourcing efficiency from the soil.

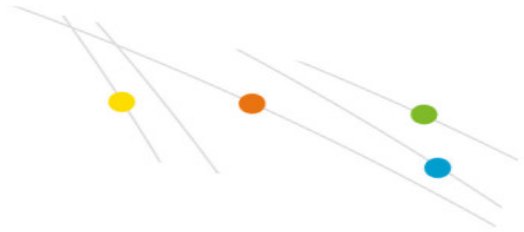


**Prevents undesirable salinization of the root zone**  
Application of potassium nitrate as main K-source eliminates the need for additional irrigation to remove undesirable salts from the root zone.



Potassium nitrate ( $\text{KNO}_3$ ): **Sustainable production processes**





## SQM is strongly committed to sustainable development

SQM carries out its operations in harmony with the environment, minimizing the impact of its  $\text{KNO}_3$  production processes



### Efficient water management in the production processes

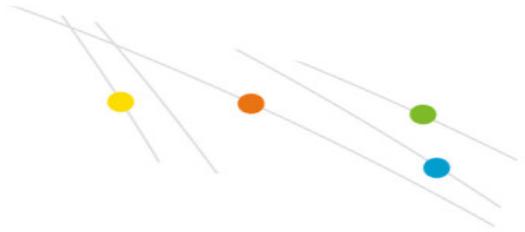
SQM re-utilizes in its production processes all water, after purification in SQM's own waste-water treatment plants.



### The potassium nitrate with the lowest $\text{CO}_2$ footprint

40% less greenhouse gas (GHG) emissions which would be equivalent to removing up to 155.000 mid-size vehicles from the highways each year compared to synthetic ammonia-derived  $\text{KNO}_3$ .\*

\*Source: Arthur D. Little BENELUX, 2014



**SQM's energy requirement is supplied by the sun**  
SQM owns over 3.000 hectares of solar evaporation ponds, saving fossil sourced energy equivalent to 91% of all company's energy requirements.



**Solid knowledge to protect ecosystems**  
SQM invests in the development of solid know-how of ecosystems surrounding the production facilities. This helps to protect the environment by implementation of programs for prevention, mitigation, monitoring and control.



\*Source: Arthur D. Little BENELUX, 2014