Excellent response in citrus with potassium nitrate

Citrus trees are high feeders of both nitrogen (N) and potassium (K), with K being taken up in the largest quantity. What citrus growers strive to achieve are yield increases from more fruit weight per ha, more fruits per tree and larger fruits; quality improvement by increased brix, TSS, acidity, vitamin C, less peel defects, increased peel thickness, reduced granulation and better colour and by reducing crop losses by increasing disease resistance. Potassium nitrate (Ultrasol K Plus[1] and Ultrasol K Plus Acid[2]) has been shown to improve all the above-mentioned parameters.

Fertigation programs including potassium nitrate

It has been well documented in many crops and many soil conditions that the combination of a positive potassium cation (K^+) with the negative anion of nitrate (NO_3^-) act synergistically in the uptake of each. This charge combination maintains the electrochemical balance within the roots and the plant. Since both the elements of N and K are used by citrus in the greatest quantities, this combination is highly beneficial in fertigation programs. The presence of nitrates in a nutrient solution also directly proportionately limits the uptake of excess chlorides.

Other important aspects of maximizing nitrate-nitrogen, as opposed to the positive cation of ammonium-nitrogen (NH_4^+) or urea nutrition (converts to ammonium), are maintaining an optimal pH close to the roots as well as reducing the antagonistic uptake between the positive charge of ammonium and the other positive charge cations such as Ca_2^+ and Mg_2^+ too. Therefore, using potassium nitrate to maximize the supply of negatively charged nitrates is the ideal way of optimizing K^+ uptake, N

uptake as well as the uptake of the other cations, Ca_2^+ and Mg_2^+, into the trees. Greater plant dry weight reflected in the wood and the fruit (yield and quality) is always the result.

Foliar applications with potassium nitrate alone or in combination[3]

Foliar applications are required in conditions where there is a recognized need. This could be in times of peak demand and/or poor rooting conditions resulting from nutrient imbalances, nutrient fixing, salinity, cold, waterlogging, drought, incorrect fertilizer applications and root diseases.

Fruit set, or prevention of fruit drop, is the greatest factor influencing yield. Flowering and fruit set are periods of high nutrient demand and often fruit set occurs when soil temperatures are low. Foliar potassium nitrate applications in combination with auxins in Nova, Valencia and Shamouti have been shown to improve fruit set and soluble solids, increase fruit size, weight, yield and decrease split fruit. In Nules and in Valencias, potassium nitrate applications have shown increased fruit set, increased TSS, increased fruit yield and gross income.

Potassium nitrate has been shown to increase a citrus tree’s disease resistance. Attack severity is reduced by restricting the pathogen’s food supply and by promoting the formation of disease inhibitory compounds such as phenols, phytoalexins, and auxins. This limits pathogen establishment and spreading within a plant.

Potassium nitrate is the preferred N and K source in citrus nutrition often resulting in optimum K and N uptake, stronger healthier plants, better set and fruit yields,

increased fruit size, less rind issues, better colour intensity, increased disease resistance and enhanced stress tolerance such as drought, frost and salinity. For both fertigation and foliar applications, consult your agronomist regarding rates and timing of applications.

[1] Reg No K5020 Act 36/1947. Registration holder Sociedad Quimica y Minera (Africa)(Pty)Ltd

[2] Reg No K6489 Act 36/1947. Registration holder Sociedad Quimica y Minera(Africa)(Pty)Ltd

[3] All claims in this article can be substantiated with references which can be made available on request.

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