



Get to know potassium nitrate in apple nutrient management

POTASSIUM NITRATE IN APPLE NUTRIENT MANAGEMENT

BETTER COLOR, TASTE AND SHELF LIFE

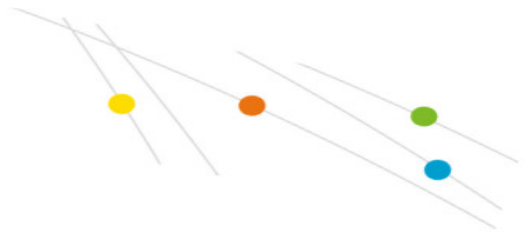
Research shows that the use of KNO_3 -based fertilizers leads to better color, taste (sugar content) and firmness. Like in many other crops, proper K nutrition also leads to better peel quality, with impact on storability and shelf life.

CONTROLLING FRUIT NUMBER AND SIZE

KNO_3 -based fertilizers outperform KCl and K_2SO_4 -based programs- providing faster, more balanced and more efficient nutrient uptake- making them an ideal source for split applications as a tool to manage the fruit size towards the most economical optimum classes. Research indicates that fruit tree nutrient reserve benefit from split and well-balanced nutrition based on KNO_3 , leading to a better number of flowers, improving yield in the subsequent season.

Research clearly indicates a benefit of using KNO_3 -based nutrition ($\text{NH}_4^+/\text{NO}_3^-$ ratio 0,2) as opposed to KCl or K_2SO_4 (both $\text{NH}_4^+/\text{NO}_3^-$ ratio 3,7) in supplying apple fruit trees with potassium.

S.A. Oosthuysen, D.R. Napier and H. T. Holwerda, 2013-2014, Effect of the potassium source, either KNO_3 , K_2SO_4 or KCl, in nutrient solutions on the growth of sand-potted peach or apple nursery trees, SA Fruit Journal 13(4): 49-52.



K Source	NH ₄ ⁺ /NO ₃ ⁻ ratio	New shoot length	Number of leaves	Fresh weight (g)	Dry weight (g)
KCl	3,7	35.1 ^a	27.2 ^a	6.8 ^a	2.0 ^a
K ₂ SO ₄	3,7	37.5 ^a	25.3 ^a	6.5 ^a	1.9 ^a
KNO ₃	0,2	48.6 ^a	33.1 ^b	9.9 ^a	2.7 ^b
Treat. Sig. Level		0.1333	0.0019	0.0055	0.0523

Experience with SQM nutrition programs based on KNO₃ in low yielding apple orchards in southern Kazakhstan demonstrated significant impact on number of fruits and apple size by the introduction of a KNO₃ based program compared to the local program based on urea and K₂SO₄ based NPK's.

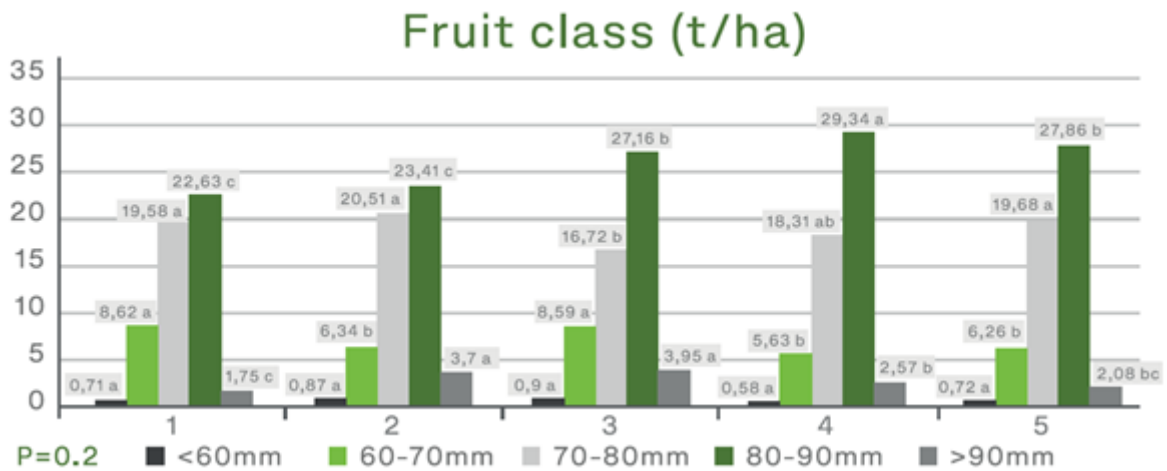
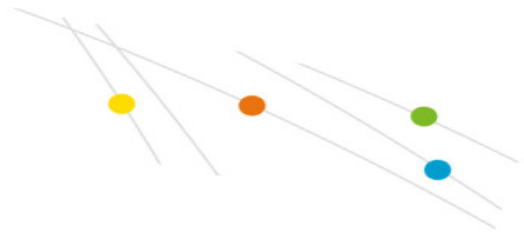
Reference: Observations made by SQM during a Kazach demo trial, 2018.

Idared	Standard		Standard		Goldern Delicious	Standard		Standard	
	Number of fruits per tree	%	Number of fruits per tree	%		Number of fruits per tree	%	Number of fruits per tree	%
Total	253		298		Total	175		184	
Large	101	40%	208	70%	Small		33%		<3%
Average	131	52%	81	27%					
Small	21	8%	9	3%					

Research in high yielding apple orchards in Poland additionally shows the possibility to manage fruit size with KNO₃ based fertilizers. Extended split application of KNO₃ - based fertilizers in apple.

Experience showed that split application management with KNO₃ based fertilizers allows to adapt the fertilizers schedule after unpredictable circumstances like drought, diseases or spring frost, leading to better control of the economical size of apples.

1: Control / 2: SOP based / 3-4: KNO₃-based / 5: KNO₃ based extended split

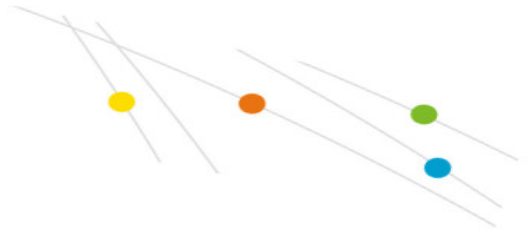


SQM research commissioned by Fertico Research Agency, 2018.

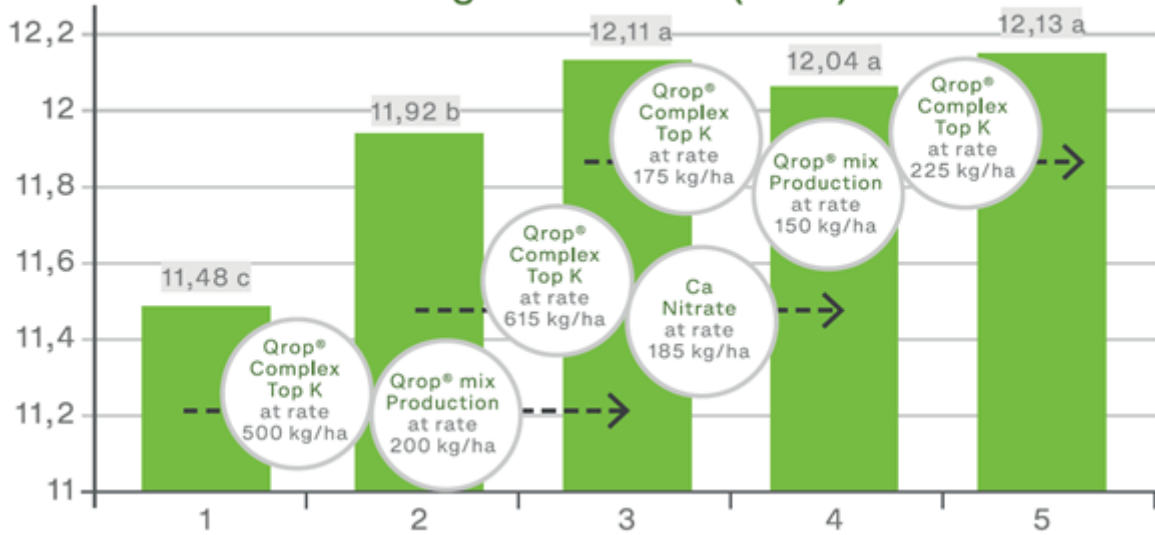
KNO₃ based programs show better color, sugar content and firmness in research trial in Polish high yielding apple orchards

Use of KNO₃ as a preferred potassium source results in a more efficient uptake of potassium leading to better sugar transport to the fruit, and anthocyanin synthesis improving fruit coloration. Increased firmness can probably be related to the synergetic uptake of nitrate with both potassium as calcium.

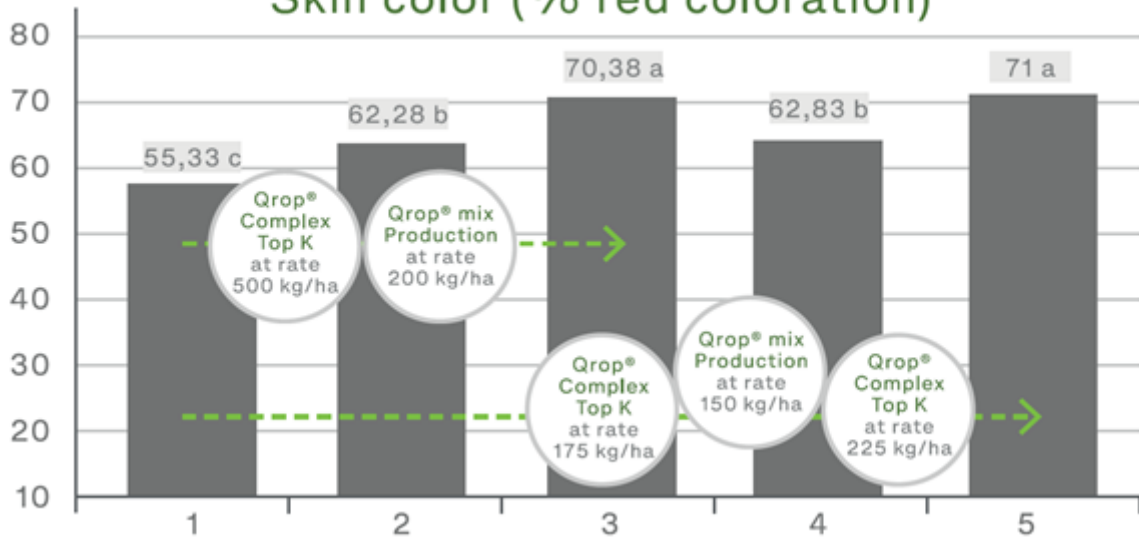
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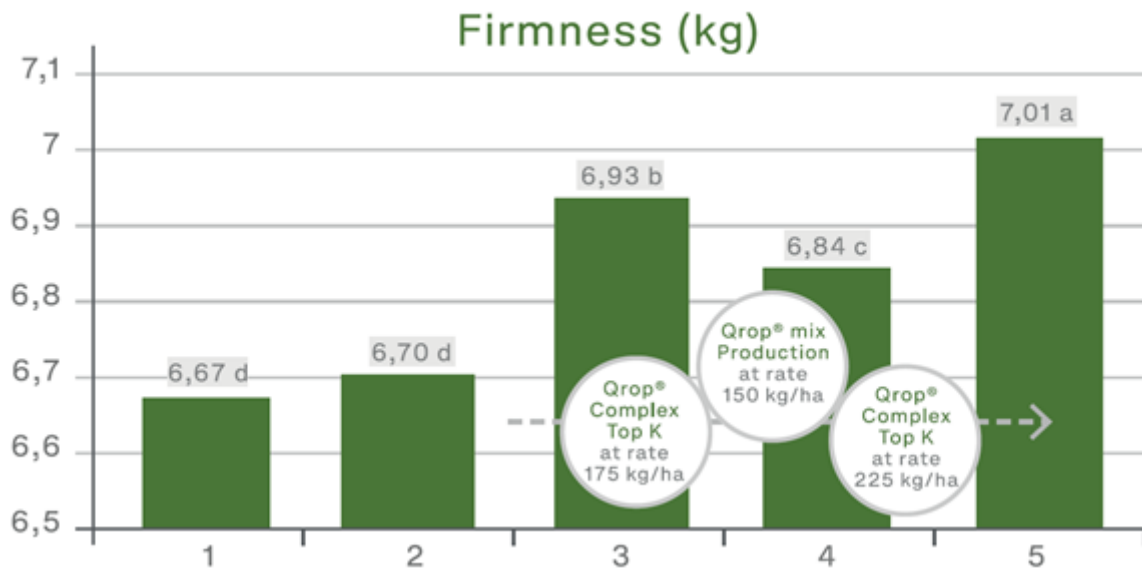
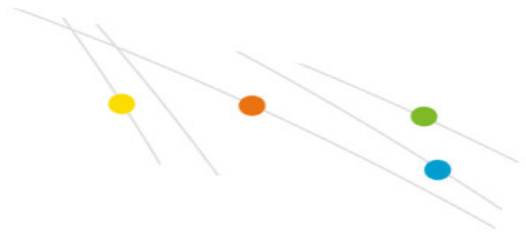


Sugar content (Brix)



Skin color (% red coloration)





SQM research commissioned by Fertico Research Agency, 2018.