



Fertilizing oil palm with Polysulphate

ICL Fertilizers

Polysulphate 

Main features of Polysulphate fertilizer

- Ideal sulphur fertilizer with 48% SO₃ and additional benefit of potassium (K), magnesium (Mg) and calcium (Ca), all in sulphate form.
- Prolonged nutrient release pattern reduces sulphate leaching risk.
- Fully soluble, with all nutrients available for plant uptake during the growth period.
- Excellent spreading characteristics; spreads evenly and accurately up to 36 m.
- Low chloride, very low salinity index, neutral pH, no acidifying effect.
- Natural mined mineral (polyhalite) approved for organic agriculture.
- UK produced fertilizer with a low carbon footprint.

Functions of S, K, Mg and Ca in oil palm

- Sulphur is an essential constituent of proteins: it is required for the synthesis of three of the amino acids which make up true proteins. Sulphur is involved in oil synthesis and increases the oil production.
- Potassium secures yield and quality, transport of sugars, stomatal control and is a co-factor of many enzymes. It reduces susceptibility to plant diseases and the impact of drought, and is essential for efficient use of nitrogen. Potassium increases the weight of bunches, decreases cluster failure and increases crop growth indicators.
- Magnesium is fundamental for photosynthesis, being a central part of the chlorophyll molecule. It is key to grain filling and leaf quality, and increases oil biosynthesis.
- Calcium for strong and healthy crops: it is a major building block in cell walls and reduces susceptibility to diseases. Calcium decreases respiration and increases both photosynthesis and the uptake and use of N and K. It helps in mitigating the impact of palm diseases.

Practical guidelines for fertilizing oil palm with Polysulphate

- Polysulphate is a soluble source of sulphur, potassium, magnesium and calcium, all in sulphate form and with low chloride content. Polysulphate in appropriate doses supplies all the S, Ca and Mg needed for the crop and replaces a significant proportion of the potassium removed at harvest without affecting the pH of the soil.
- Oil palm culture removes a large amount of potassium at harvest and the proportion not supplied by Polysulphate can be applied with husks, pruned leaves or with potassium chloride (KCl). It is recommended to apply Polysulphate during the wet season to allow for the gradual release of nutrients and a continuous supply of S, K, Mg and Ca during a longer period of crop growth, increasing their assimilation potential.
- Generally, 500-700 kg/ha of Polysulphate is an appropriate dose for palm as a fertilizer that contains a balance of all the nutrients required.
- This dose contributes all the S and Ca required to achieve a greater crop yield and can be applied superficially in the drip (the roots zone below the leaves) of the plant mixed with various NPK sources, three or four times a year.

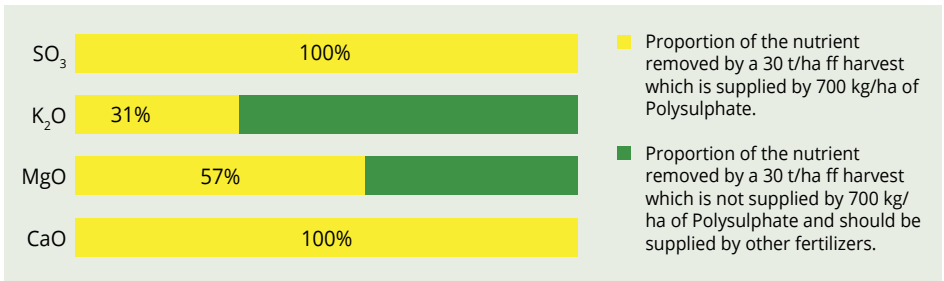


Nutrient offtake (removal) by oil palm

Nutrient	Offtake (kg/t fresh fruit - ff)	Offtakes (kg/ha)	
		20 t ff	30 t ff
N	4.85	97.0	145.5
P ₂ O ₅	1.88	37.6	56.4
K ₂ O	10.50	210.0	315.0
CaO	1.96	39.2	58.8
MgO	2.44	48.8	73.2
SO ₃	1.16	23.3	34.9

Source: Goh et al., 1999

Nutrients supplied by an application of 700 kg/ha of Polysulphate for a 30 t/ha harvest of fresh oil palm fruits



Expected benefits

- Higher yields
- Greater size and weight of the fruits
- Increased oil extraction
- More balanced nutrition
- Increased nitrogen use efficiency
- Enhanced crop health



48% SO_3
(19.2% S)



14% K_2O
(11.6% K)







6% MgO
(3.6% Mg)



17% CaO
(12.2% Ca)

Mined in the UK, ICL is the first - and only - producer in the world to mine polyhalite, marketed as Polysulphate.

Polysulphate 

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