Technical Bulletin:

Fertilizing Peanut with Polysulphate

POLYSULPHATE®

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FERTILIZING PEANUT WITH POLYSULPHATE®

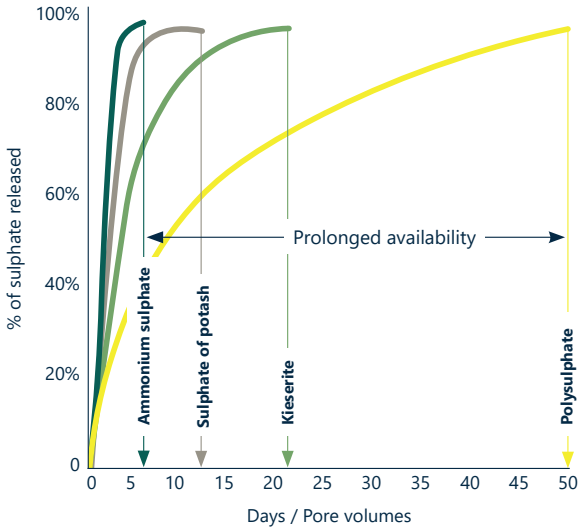
Granular Polysulphate® is a natural mineral from underneath the North Sea that contains four nutrients: sulfur (19.2%), potassium (14% K_2O), magnesium (3.6%), and calcium (12.2%). It is a single complex crystal that is mined, crushed, then ready to use on agricultural fields. This multi-nutrient mineral (polyhalite) is sold by ICL as Polysulphate and is OMRI certified, low in chloride and crop safe, suitable for use alone or in blends and compound fertilizers.

Peanuts, being deep-rooted legumes, naturally capture nitrogen and excel at gathering essential nutrients like phosphorus (P) and potassium (K). Yet, to enhance peanut yield, it's crucial for farmers to focus on maintaining the soil pH, preventing zinc toxicity, addressing manganese deficiency, and ensuring ample calcium for the crop. Polysulphate, a slow-release fertilizer packed with sulfur (S), potassium (K), magnesium (Mg), and calcium (Ca), has proven its effectiveness in research trials conducted in Georgia. It performs comparably to gypsum, providing a reliable strategy for maximizing peanut yield.

Features of Polysulphate Fertilizer

1. Slow-release mineral fertilizer that has the capability to provide a sufficient and continuous supply of S to satisfy all the needs of the growing peanut crop
2. Natural multi-nutrient mineral with every granule composed of sulfur-based potassium, magnesium and calcium that is low chloride, very low salt index, neutral pH, no acidifying effect and safe to apply
3. Excellent spread and blendability when applied via broadcast, precision application when used in a band, and superb blendability with other common fertilizers
4. Flexible application that can be applied as a pre-plant or at planting with proven results across a variety of crops and soil types
5. Natural mined mineral (polyhalite) approved for organic agriculture that helps to improve nutrient efficiency, soil structure, root development, water infiltration, and seed emergence

Gradual Sulfur and Potassium Release to Meet Peak Demand



Source: University of Nottingham, UK, 2016.

Function of S, K, Mg, and Ca in Peanut

- Sulfur (S) is an essential constituent of proteins: it is required for the synthesis of three of the amino acids which make up true proteins.
- Potassium (K) secures yield and quality, transport of sugars, stomatal control and is a co-factor of many enzymes. It reduces susceptibility to plant diseases and impact of drought and is essential for efficient use of nitrogen.
- Magnesium (Mg) is fundamental for photosynthesis, being a central part of chlorophyll molecule, and is important for carbohydrate transport to sink organs.
- Calcium (Ca) for strong and healthy crops; it is a major building block in cell walls and reduces susceptibility to diseases.

Practical guidelines for fertilizing peanut with Polysulphate

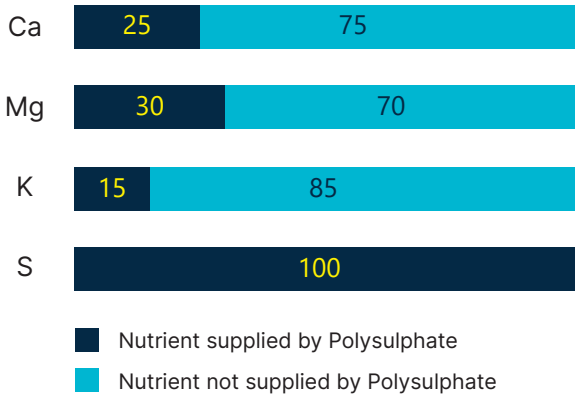
- Single Polysulphate application at pre-plant or planting is enough to fulfill all your peanut crop's sulfur requirements.
- Polysulphate can be applied alone or in a blend as part of a fertilizer program to meet the needs of your peanuts in terms of sulfur (S), calcium (Ca), potassium (K), and magnesium (Mg).
- To meet the nutritional needs of your crop, apply 200 lbs./A of Polysulphate. This will provide the Ca needed along with S, K, and Mg. It's worth noting that for seed peanuts, it may be required to apply additional Ca during early bloom for optimal results. Also, if your soil tests reveal at least 1000 ppm of Ca in the top 4 inches and K and Mg levels exceeding 100 ppm, Polysulphate applied at 200 lbs./A alone can sufficiently provide Ca, K, and Mg for your peanut crop.

Peanut Nutrient Uptake and Removal

Nutrient	Removal with Yield of 4000 lbs. (lbs./A)	Uptake in Vines per 5000 lbs (lbs./A)	Total Uptake lbs./A
N	140	100	240
P_2O_5	22	17	39
K_2O	35	150	185
Ca	6	88	94
Mg	4	20	24
S	10	11	21

Nutrient removal coefficient derived from Alabama Extension: ANR-0449 (2023). Nutrient removal values are expected to vary by geographic location and growing condition. These numbers should be use as a guide. Use locally available data whenever possible.

Nutrients supplied by Polysulphate at the recommended rate* (200 lbs/A) to peanut for a yield goal of 4000 lbs./A



* Recommendation is based on nutrient removal and should be adjusted based on soil test. These recommendation numbers are guidelines or starting point

POLYSULPHATE®

- Higher Yield & Quality
- Increase nitrogen use efficiency
- Improve soil health as it helps to maintain soil structure for air and water movement

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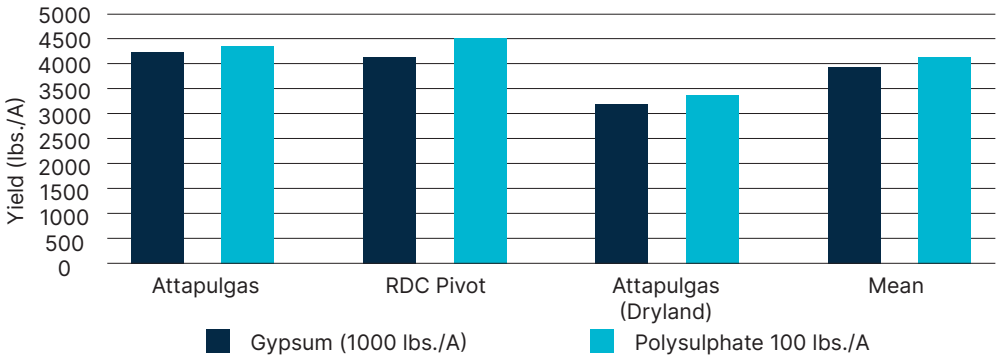
MULTI-LOCATION PEANUT TRIAL 2020

Polysulphate produced similar yields to a high amount of gypsum on peanuts.

- Four replications of each treatment.
- Gypsum was applied at 1000 lbs./A at early bloom
- Polysulphate was applied at 100 lbs./A at planting.
- Dryland and irrigated production systems

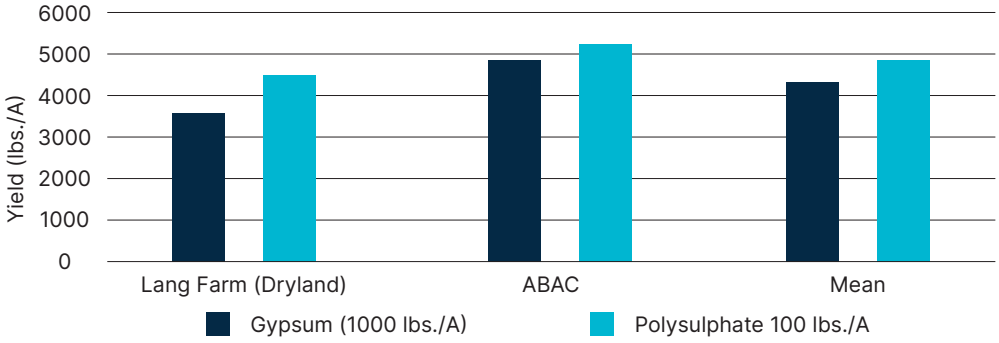


No statistical significance difference was observed between the treatments at each location. However, the yield of the dryland location at Attapulgas was significantly lower than the irrigated locations at P = 0.10.

MULTI-LOCATION PEANUT TRIAL 2021

Polysulphate produced similar yields to a high amount of gypsum on peanuts.

- Four replications of each treatment.
- Gypsum was applied at 1000 lbs./A at early bloom
- Polysulphate was applied at 100 lbs./A at planting.
- Dryland and irrigated production systems

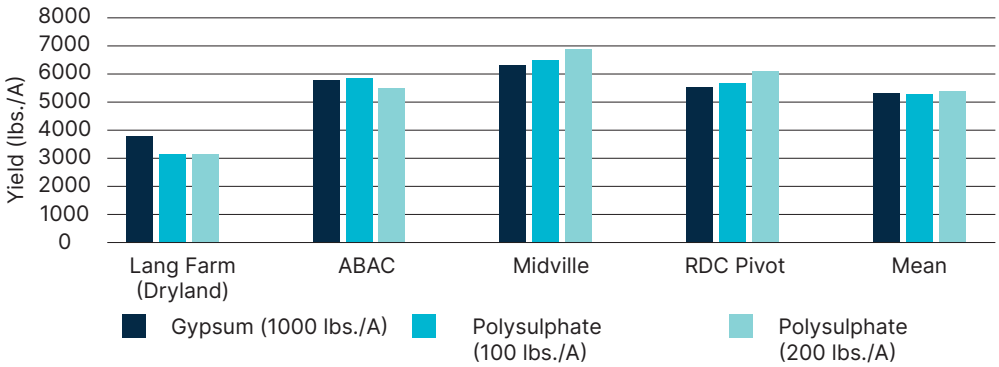


No statistical significance difference was observed between the treatments at each location. However, the dryland location at Lang Farm was significantly lower yielding than the irrigated location at ABAC at P = 0.05.

MULTI-LOCATION PEANUT TRIAL 2022

Polysulphate produced similar yields to a high amount of gypsum on peanuts.

- Four replications of each treatment.
- Gypsum was applied at 1000 lbs./A at early bloom
- Polysulphate was applied at 100 and 200 lbs./A at planting.
- Dryland and irrigated production systems

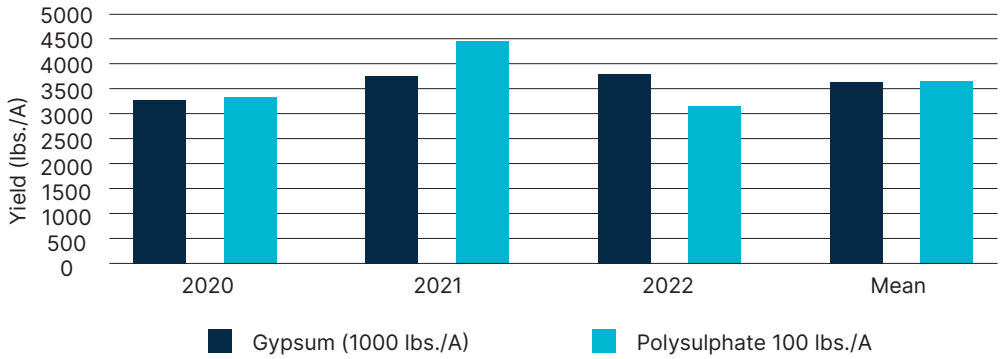


No statistical significance difference was observed between the treatments at each location. However, the dryland location (Lang Farm) yield was significantly lower than the irrigated locations at P = 0.05 and among the irrigated sites Midville was significantly higher than both RDC Pivot and ABAC at P=0.05.

MULTI-YEAR SUMMARY OF POLYSULPHATE ON IRRIGATED PEANUT

Polysulphate produce similar yields to a high amount of gypsum on peanuts.

- Data was summarized across six locations from 2020 to 2022.
- Gypsum was applied at 1000 lbs./A at early bloom
- Polysulphate was applied at 100 lbs./A.
- Polysulphate was applied at planting in 2020 and at early bloom in 2021 and 2022.

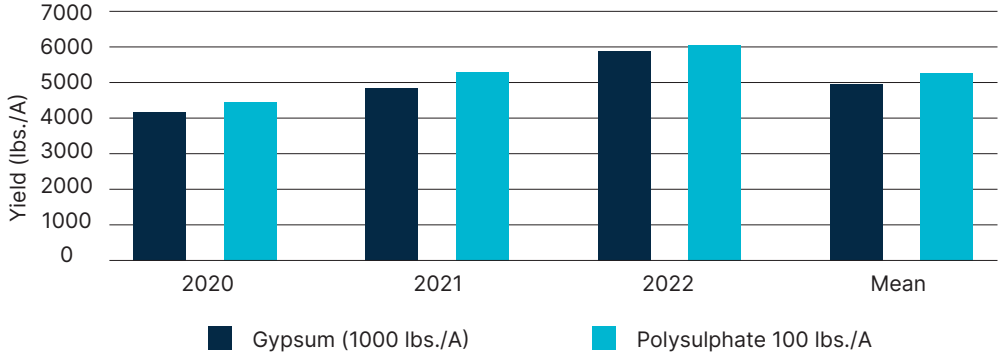


No statistical significance difference was observed between the treatments in each growing season. However, peanut yield was significantly higher in 2021 compared to 2020 and 2022.

MULTI-YEAR SUMMARY OF POLYSULPHATE ON DRYLAND PEANUT

Polysulphate produce similar yields to a high amount of gypsum on peanuts.

- Data was summarized across three locations from 2020 to 2022.
- Gypsum was applied at 1000 lbs./A at early bloom
- Polysulphate was applied at 100 lbs./A.
- Polysulphate was applied at planting in 2020 and at early bloom in 2021 and 2022.



No statistical significance difference was observed between the treatments in each growing season. However, peanut yield was significantly higher in 2022 compared to 2020 and 2021.

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