



## CFPN trial

# The effect of Polyhalite on biomass production and uptake of Ca, Mg, K and S in wheat



When

Experiment 1: June - August 2015  
Experiment 2: January - March 2016



Crop

Wheat (*Triticum aestivum*)



Soil type

Dune sand soil



Where

ARO Gilat Research Center, Israel



Measurements

Dry matter production  
Nutrients uptake

## Objective

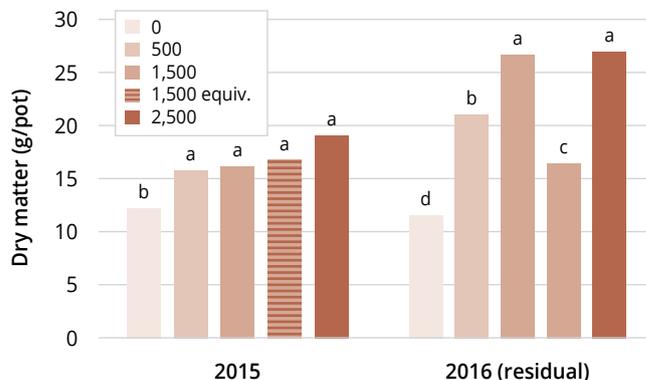
To investigate the efficiency of polyhalite to supply K, Ca, Mg and S compared with equivalent nutrition from soluble salts and to study the residual effect of polyhalite by measuring plant dry matter production and nutrient uptake of the first and second planting of wheat in same pots of soil.

## Treatments

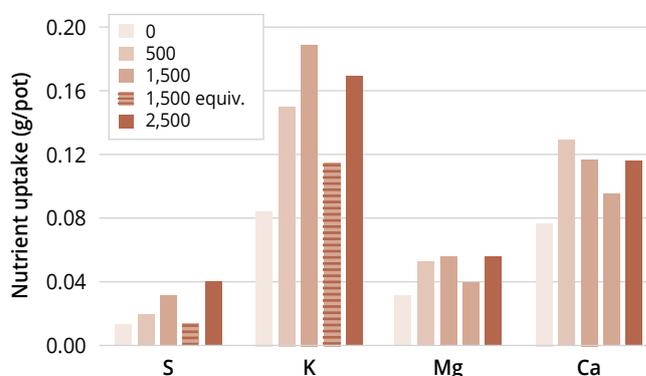
The two pot experiments used 20 L pots filled with dune sand. In the first, the pots planted with wheat had five treatments: polyhalite at rates of 0, 500, 1,500 or 2,500 kg/ha or a dose of Ca, Mg and K sulphate salts (equivalent to 1,500 kg/ha polyhalite). To measure residual nutrition, in the second trial the same pots of soil were planted with wheat but given no fertilizer treatments.

## Results

- Dry matter production was significantly higher under all polyhalite doses than under no polyhalite in both experiments (Fig. 1).
- In the second experiment, dry matter production of wheat in pots previously applied with equivalent fertilizer was significantly lower than that of wheat applied with polyhalite. This shows the beneficial residual effect of polyhalite to a following crop.
- In second experiment, the nutrient availability and uptake by second planting of wheat is better after polyhalite than from equivalent fertilizer (Fig. 2).



**Fig. 1.** Dry Matter (DM) production of wheat plants from different application rates of polyhalite or the fertilizer equivalent to 1,500 kg/ha polyhalite. Different letters indicate significant differences between treatments in each experiment,  $p < 0.05$ .



**Fig. 2.** Nutrient uptake of wheat plants at different application levels of polyhalite or the fertilizer equivalent to 1,500 kg/ha polyhalite in the second experiment (residual effect).

## Further reading

Yermiyahu U., Zipori I., Faingold I., Yusopov L., Faust N., Bar-Tal A. 2017. Polyhalite as a multi nutrient fertilizer – potassium, magnesium, calcium and sulfate. *Israel Journal of Plant Sciences*, 64: 145-156.

## Wheat plant growth response to residual nutrients in Experiment 2

