

# Less P discharge by gypsum

1 Water infiltration from soils without gypsum (left) and with gypsum (right)

Gypsum in soils reduced dissolved P leaching to a half and NTU/particulate P to one fifth while soil ECs substantially increased.

Gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) spread on fields has shown significant decrease in particle phosphorus discharge<sup>1)</sup>. This paper focus on dissolved reactive P in percolate waters from soils having similar cropping history, texture and pH but varying soil P-indices.

## Materials and Methods

Soil P-indices close to 5, 10, 15, 20, 40 mg/l soil were analyzed by acid ammonium acetate (AAC), indicating medium soil P status for 10-15 mg/l and high status for 20-40 mg/l. The soils were treated by mixing 2 g gypsum (moisture 18% v/v) per ½ liter soil and kept close to saturation in plastic pots of 10 cm height, perforated at bottom. Soils were watered by 150 ml 2 or 5 days after incubation in room temperature (Figure 1). Both watering gave similar results on dissolved reactive P (DRP), turbidity (NTU) and electrical conductivity (EC) of percolated waters. Results in Figures 2-4 represent the 2nd watering.

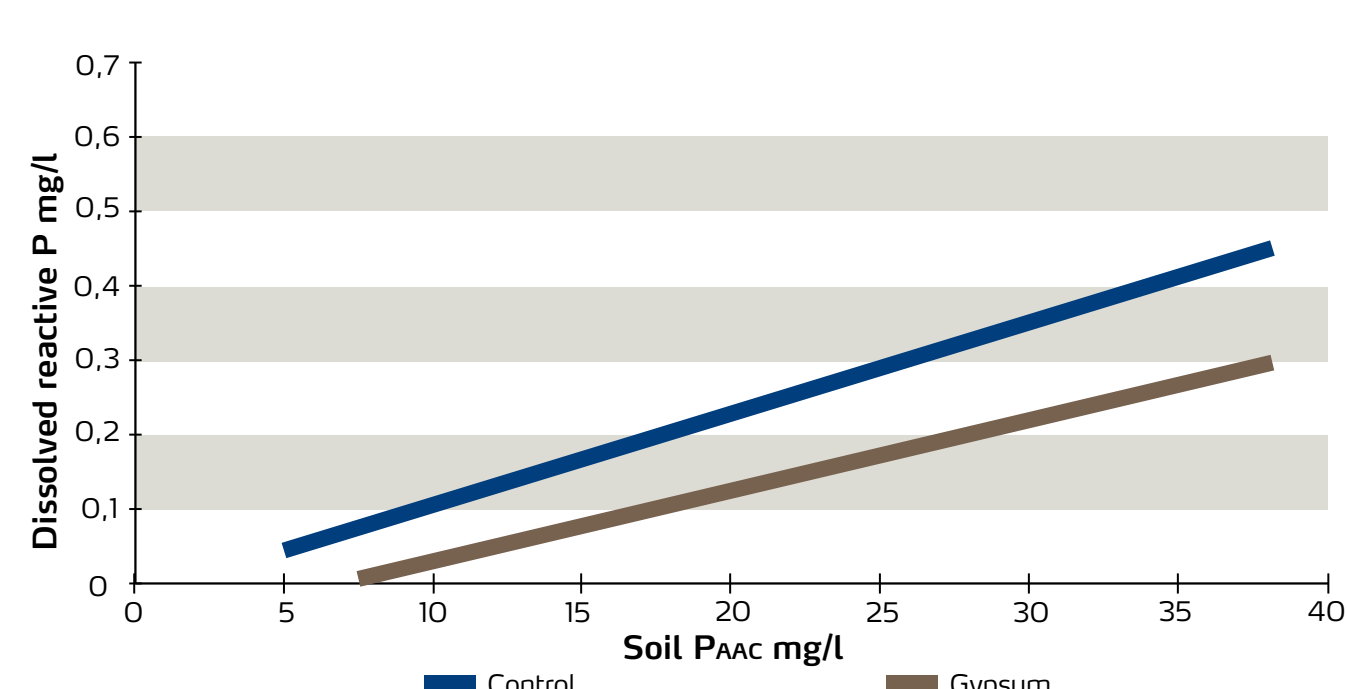
## Results

Without gypsum, DRP mg/l (y) depended on soil  $P_{AAC}$  mg/l (x) by  $y=0.0127x-0.0232$  ( $R^2$  0.85)

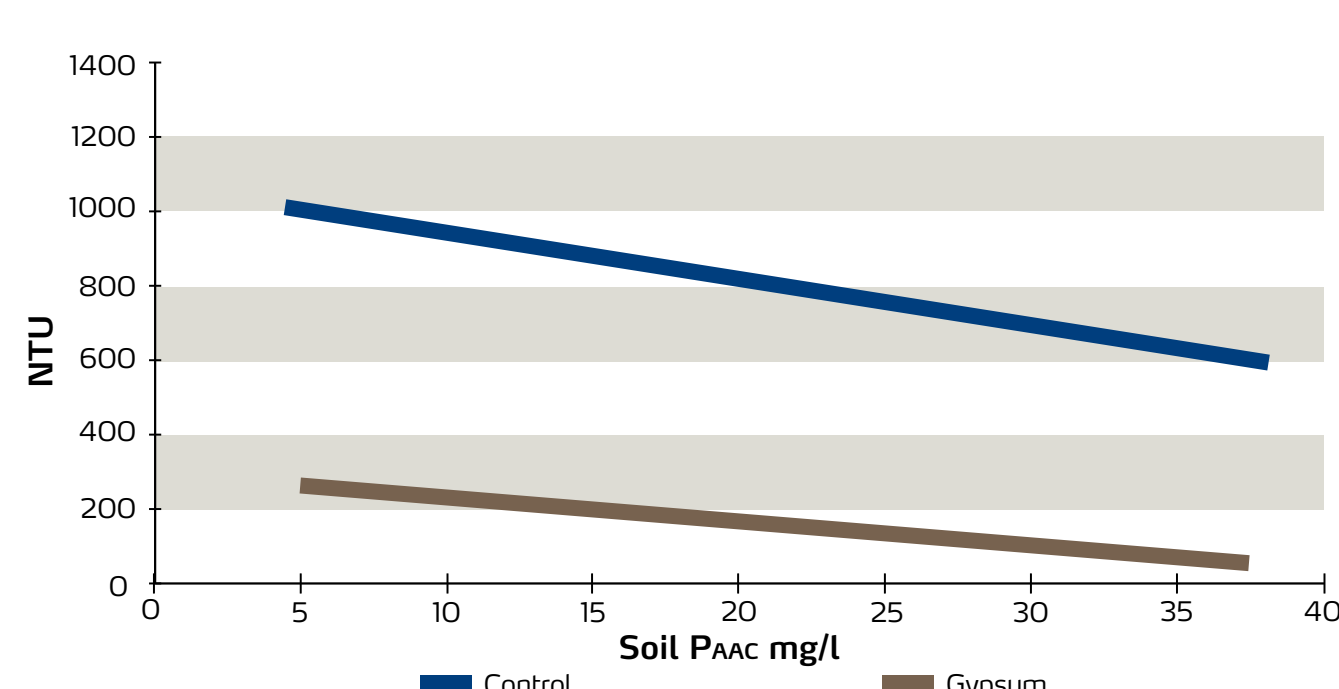
The gypsum treatment corresponding 4 ton/ha, however, changed this relationship to  $y=0.0084x-0.583$  ( $R^2$  0.90)

These results indicate significant change in DRP at high soil P-status. Also NTU was remarkable decreased by gypsum but less dependent on soil P. At the same time, gypsum increased EC. Accordingly, the gypsum application have potential to control P leaching from soils of high P status in the intermediate period when high soil P-indices are being driven lower.

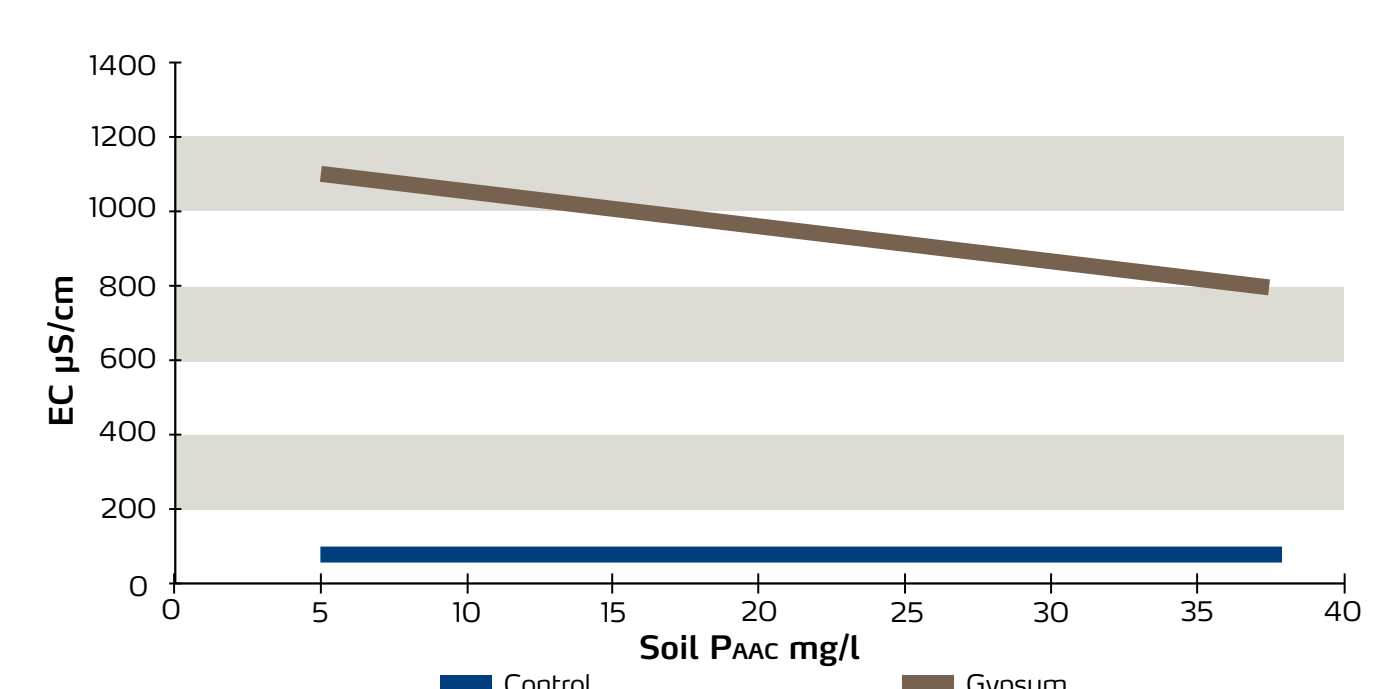
2 Gypsum effects on DRP of percolated water at different soil P level



3 Gypsum effects on NTU of percolated water at different soil P level



4 Gypsum effects on EC of percolated water at different soil P level



<sup>1)</sup> [www.yara.com/sustainability/sustainable\\_agriculture/Baltic Sea - how to reduce phosphorus](http://www.yara.com/sustainability/sustainable_agriculture/Baltic_Sea_-_how_to_reduce_phosphorus)