

Slurry acidification effect on soil

WP2.4

Baltic Slurry Acidification Project

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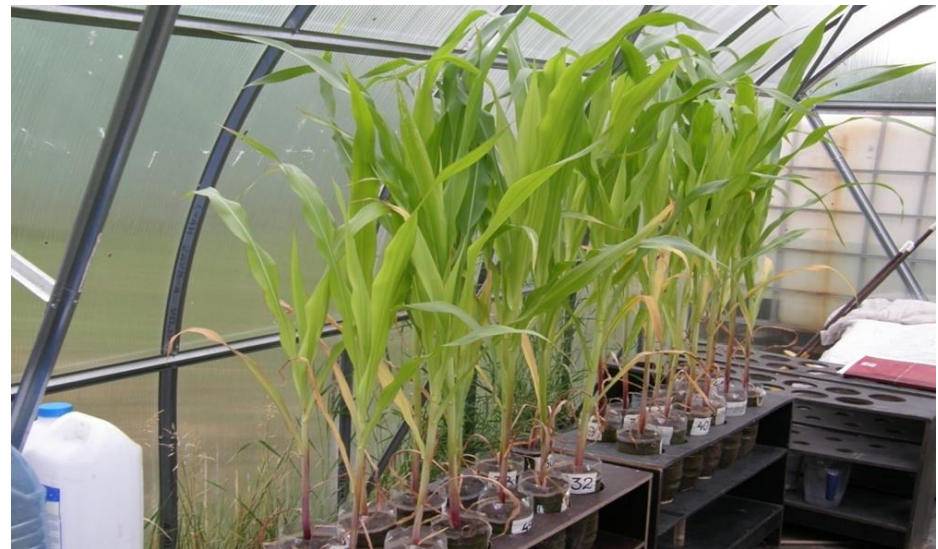
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The lysimetric test



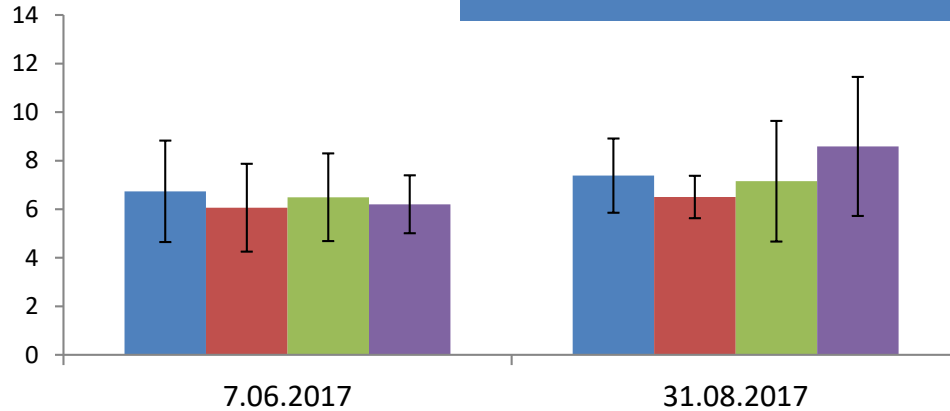
Conclusions from leaching trial

- Leaching of most of the measured elements (Ca, Mg, S and N) was most intense during the first 12 days.
- Compared to untreated slurry the use of acidified slurry increased Ca and Mg leaching . However, leaching of N_{tot} and $\text{NO}_3\text{-N}$ was the lowest.
- $15 \text{ m}^3 \text{ ha}^{-1}$ of acidified slurry had no significant effect on soil pH.
 $45 \text{ m}^3 \text{ ha}^{-1}$ of acidified slurry decreased the soil pH 0.1 units .
- To minimise S leaching, the slurry amount should be calculated by crop S need and results of leaching trial show that $15 \text{ m}^3 \text{ ha}^{-1}$ acidified slurry is safe, to not exceed 50 kg S ha^{-1} required by high-S-demand crops like winter oilseed rape.

Soil microbial activity in field trials

2017

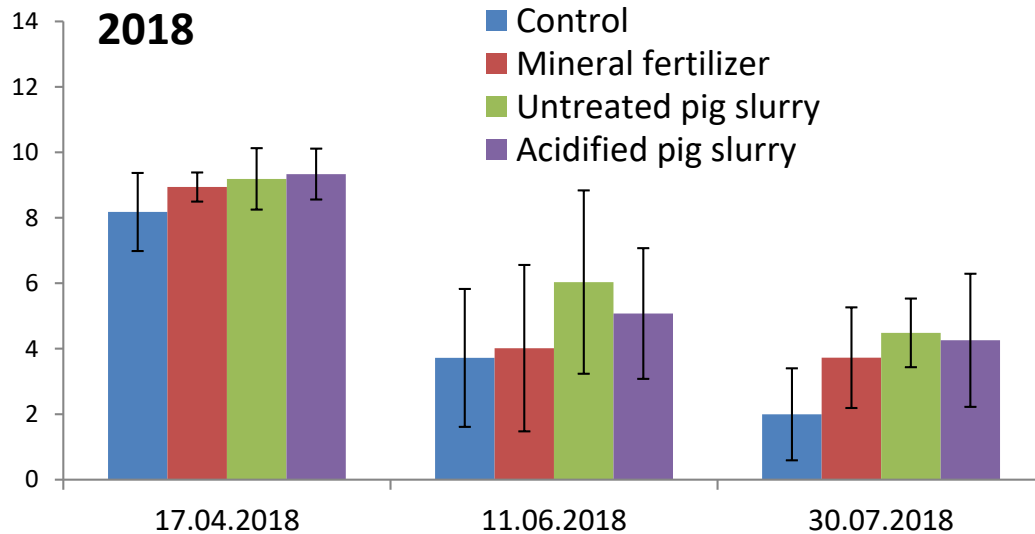
Winter wheat field trial



Photos: Tiina Talve and Taavi Võsa

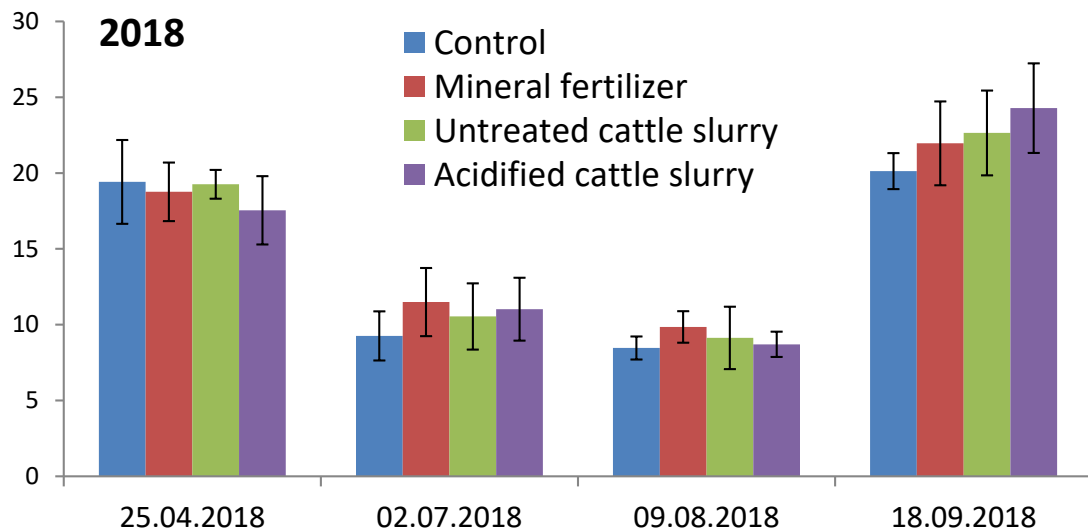
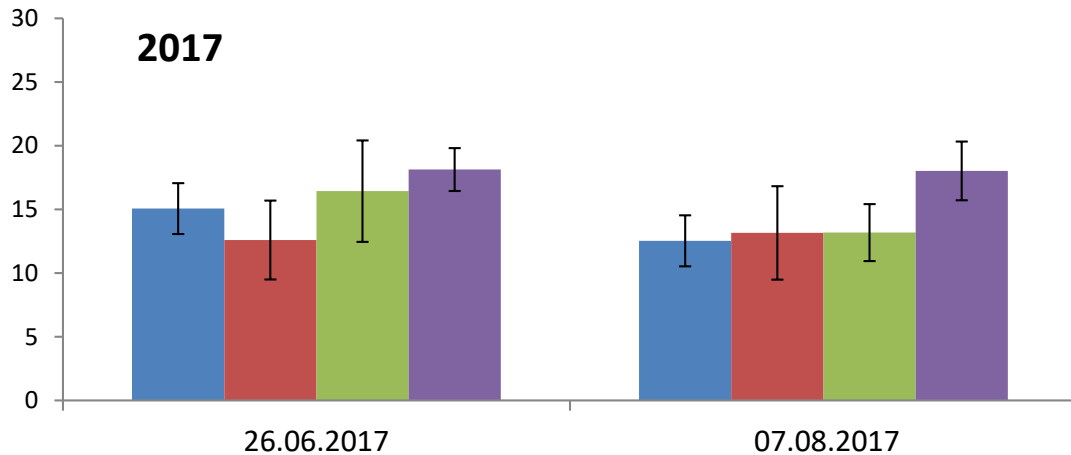
2018

■ Control
■ Mineral fertilizer
■ Untreated pig slurry
■ Acidified pig slurry



Soil dehydrogenase activity ($\mu\text{g TPF g}^{-1} \text{ soil h}^{-1}$) 0–20 cm, 2017 and 2018.

Grassland field trial



Photos: Tiina Talve and Taavi Võsa

Soil dehydrogenase activity ($\mu\text{g TPF g}^{-1} \text{ soil h}^{-1}$) 0–20 cm, 2017 and 2018.

Conclusions

- Two year (2017 and 2018) results show that the acidified slurry compared to untreated slurry had no effect on the soil dehydrogenase activity and thus the microbiological activity of soil.
- One year (2018) results show that the acidified slurry had no significant impact to soil microbial group's composition (PLFA). Still, the results of PLFAs are based on one year experiment and more study is needed for final conclusions.