Interreg North-West Europe
ReNu2Farm
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# Agronomical performance and ecological effects of recycling-derived nitrogen fertilisers

The more nutrient cycles are closed locally, the better for the climate. Recycling-derived fertilisers are a good example. They are produced locally by innovative technologies and often have a similar fertilising effect to mineral fertilisers.

This was validated in the Interreg NWE-project ReNu2Farm, where agronomical and ecological effects were tested in the lab, pot and field. The nitrogen fertilisers examined were ammonium sulphate from air scrubbers, ammonium nitrate and water from ammonia stripping, concentrate from evaporation and pig urine from source separated stable systems.

## Agronomical performance

Though results should be evaluated with caution due to extreme weather conditions, ammonium nitrate, sulphate and water showed a high potential for crop yields similar to conventional fertilisation (raw animal manure supplemented by mineral fertilisers). However, ammonium nitrate should be used carefully in sensitive crops. Pig urine performed well in spinach in 2020, while yields were poor in maize in 2019. Using these fertilisers in the field also taught us that ammonium nitrate, sulphate and pig urine have a more stable composition across different batches and storage time than e.g. pig slurry and digestate.

## Ecological impact

No differences in nitrate leaching was observed compared to conventional fertilisation. Either way, due to ammonia volatilisation, these fertilisers should be incorporated in the field immediately after application.
Concerning the impact on the soil environment – nematode, fungal and bacterial communities –, ammonium sulphate showed no impact on overall community structures at all, while more research is needed to give clear results on ammonium nitrate and pig urine.

## Conclusion

In summary, application of recycling-derived nitrogen fertilisers such as ammonium salts and pig urine – in compliance with legislation – in insensible crops should have no real impact on crop yield nor the environment.