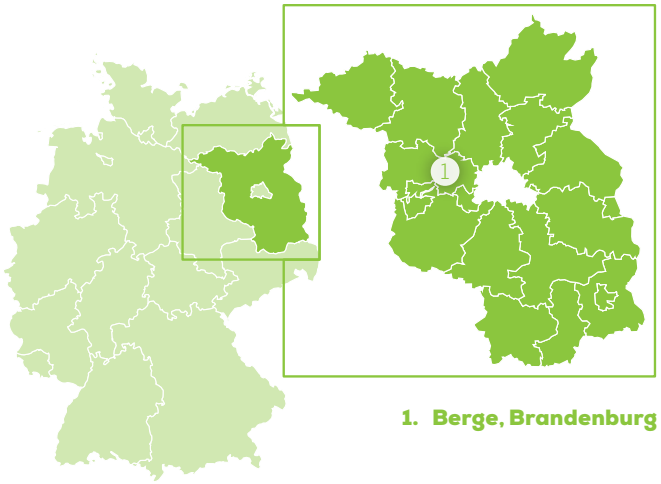
Challenge



1. Berge, Brandenburg

DESCRIPTION

- Sandy soils
- Annual precipitation of 500 mm
- 9.6° C mean temperature with long dry summer periods
- Crops grown include cereals, oil seed rape, maize, potatoes, fodder crops, grass

CHARACTERISTICS

- Intensive farming and nature conservation areas next to one another
- Large farm sizes with high local concentration of livestock
- High public awareness of soil, water, and air pollutants

CHALLENGES

- Reduction of nitrogen (N) surplus in nutrient balance
- Reduction of N emissions
- Improving N efficiency in food and feed production

SELECTED PRACTICES

- Testing organic N-fertiliser application strategies for minimising yield-scaled emissions
- Studying genotypic differences in mechanisms contributing to N-efficiency of plants
- Management of treated residues application, application strategies and potentials of recovered mineral fertilisers from digestates
- Experiment with 5 different biogas digestates, applied twice a year since 2011

Participating partners

Case study leader :

Institute for Agricultural and Urban Ecological Projects at the Humboldt University zu Berlin (IASP)
Philippstraße 13 / Haus 16
10115 Berlin, Germany

IASP

Partners :

KOMPETENZZENTRUM WasserBerlin

PONDUS Verfahrenstechnik GmbH

SOEPENBERG since 1954

Contact

Programme coordinator :

IRTA – Institute of Agri-food Research and Technology
Torre Marimon
08140 Caldes de Montbui
Barcelona, Spain
mail@irta.cat

Follow Circular Agronomics online

www.circularagronomics.eu

bit.ly/CircAgNews

@CircularAgro

Circular agronomics receives funding from the European Union´s Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement nº. 773649

Circular Agronomics

Circular solutions for carbon and nutrient management

Case study
Brandenburg, Germany



Case study
Brandenburg, Germany

What ? Improving organic fertiliser use, nutrient efficiency of wheat

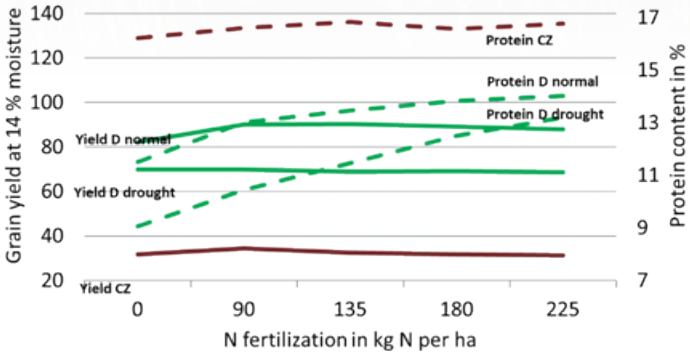
How ? Application technologies, vacuum degasification, selection of genotypes

Circular Agronomics

Genotypic differences in N-efficiency of winter wheat – when N supply is reduced

Improving nutrient balances by reducing N supplies with the right genotype for specific growth conditions

- ✓ 12 genotypes from different quality groups and breeders
- ✓ 5 different amounts of N supply
- ✓ 3 different environmental conditions every year
- ✓ 3 years
- ✓ Parameters: yield, N-content, bread making quality



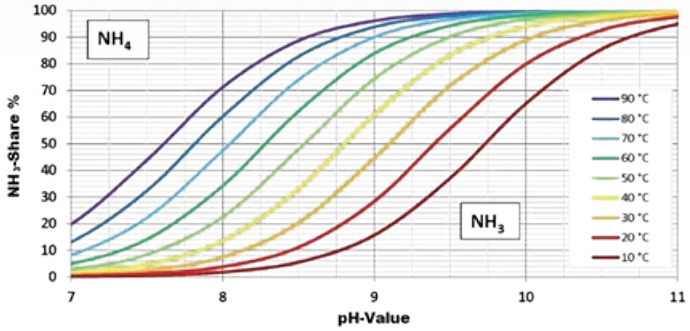




Vacuum degasification of liquid biogas digestates and/or slurry

Improving nitrogen use efficiency by extraction of mineral nitrogen from organic fertilisers

- ✓ Extraction of ammonium by means of vacuum gasification
- ✓ Use of an acid to produce a liquid mineral nitrogen fertiliser
- ✓ Set up of a laboratory scale degasification unit that can process 50 l per hour
- ✓ Different fertilisers are produced if different acids are used for capturing the nitrogen







Slurry application techniques for reduction of gas emissions and improvement of N balances

Reducing nitrogen losses by choosing the right time, technology, and nitrification inhibitor when applying slurry and liquid digestates





- ✓ Randomised field experiment with biogas digestate and silage maize
- ✓ Measurement of yield, N uptake and gas emissions

Long-term effects of biogas digestate application on soil carbon contents and distribution

- ✓ Long-term field experiment since 2011
- ✓ Digestates form 4 different biogas plants + cattle slurry + FYM
- ✓ Investigations of soil carbon form and distribution



