Agroforestry reduces the nitrogen footprint of organic livestock production

AARHUS UNIVERSITY
DEPARTMENT OF AGROECOLOGY

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KIRIL MANEVSKI
RESEARCHER/ASSISTANT PROFESSOR

MOTIVATION

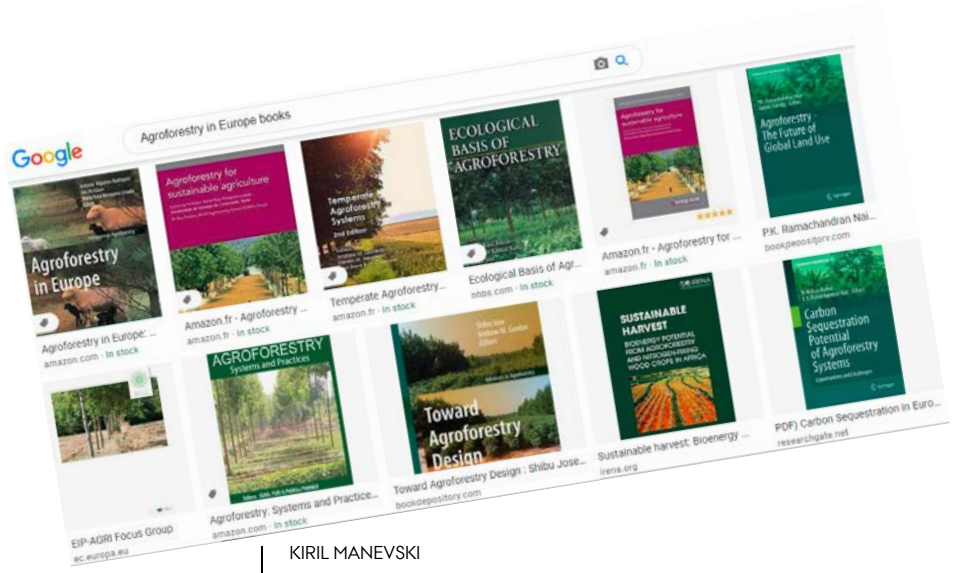
- ❑ Agroforestry - integration of trees with crop- and/or animal husbandry
- ❑ Multifacet nature-based solution by economic-ecological coordination
- ❑ Alter the complex water-, N and P cycles with unknown de-contamination potential

Herder et al., 2015;
AGFORWARD Milestone 1 report

OBJECTIVE

Quantify water and N flows in outdoor (organic) paddocks with grass-clover and

- ❑ hens grazing on loamy sand soil among willows (*Salix spp.*)
- ❑ Sows roaring on coarse sand soil among poplars (*Populus spp.*)



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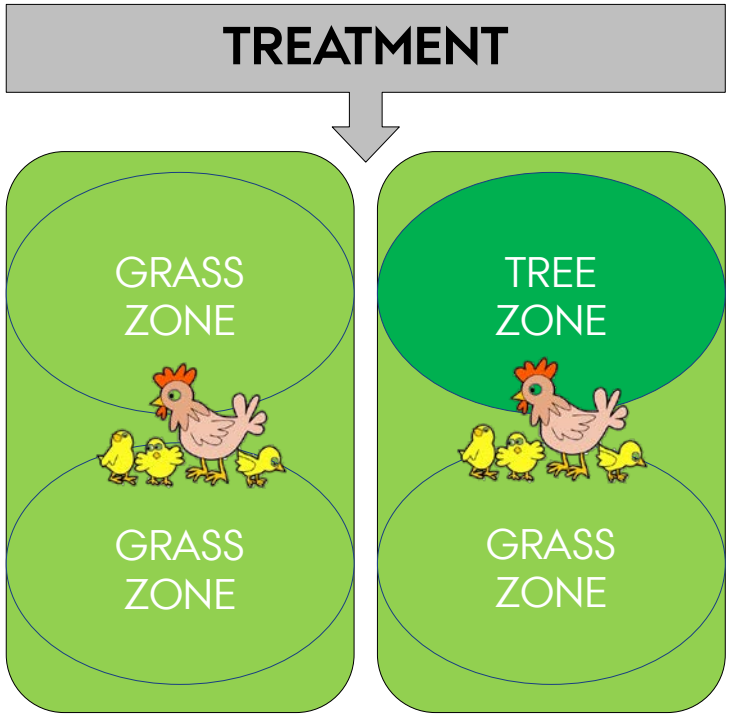
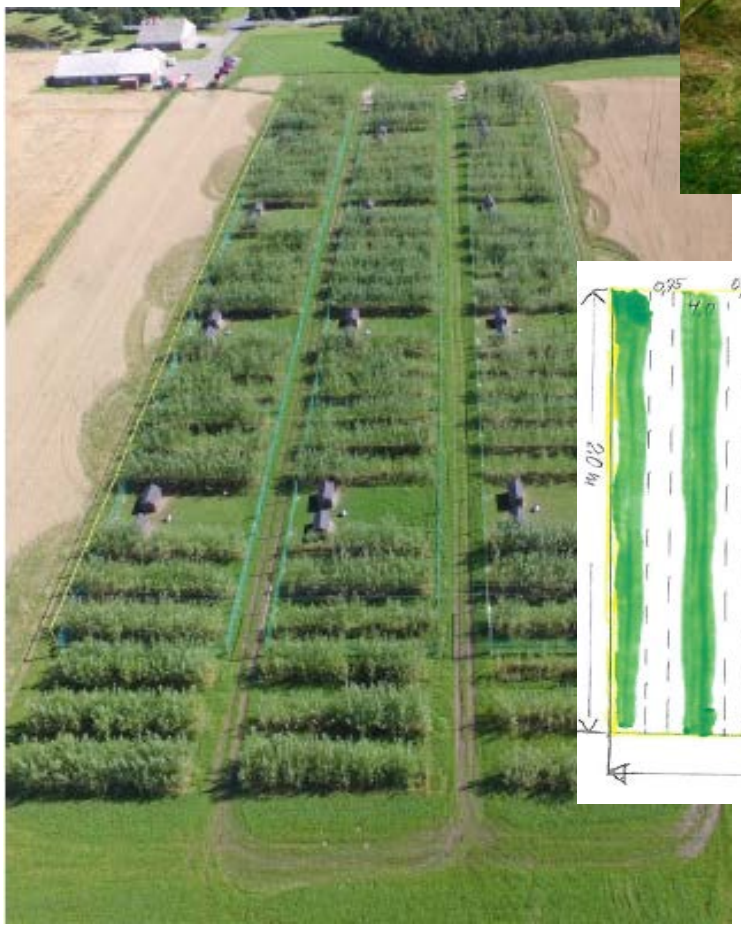
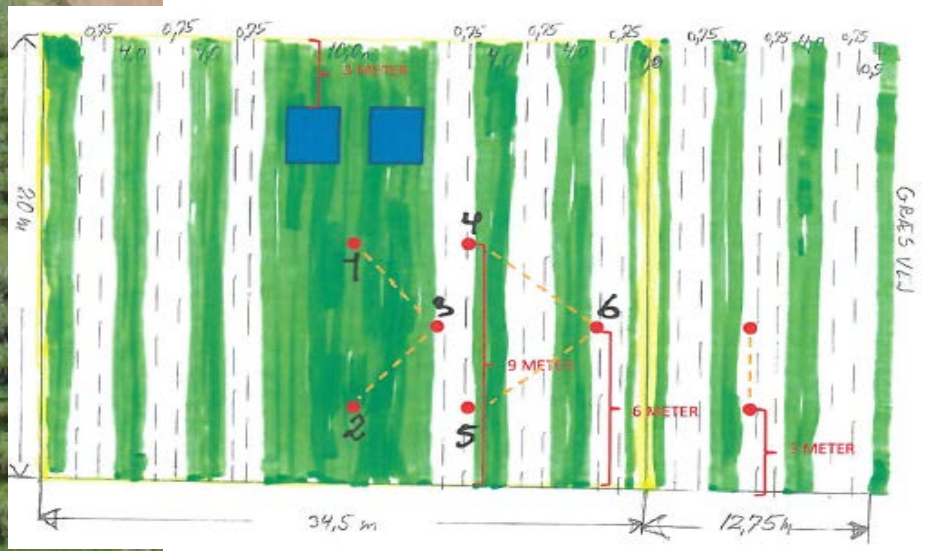
EXPERIMENTAL DESIGN







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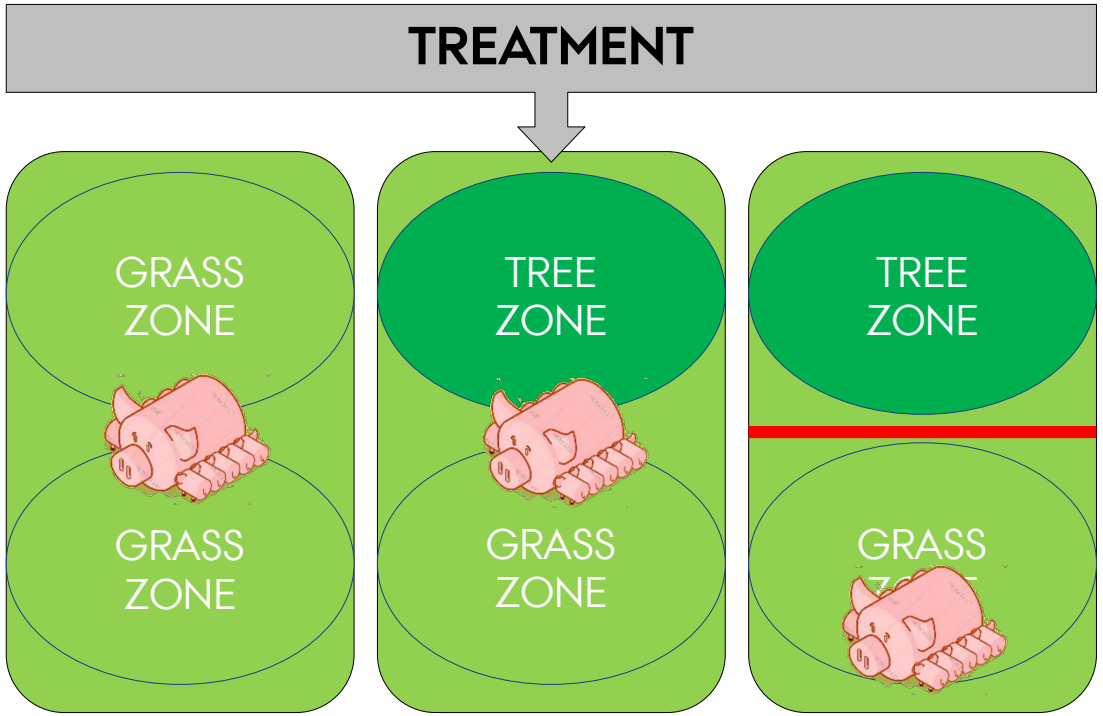
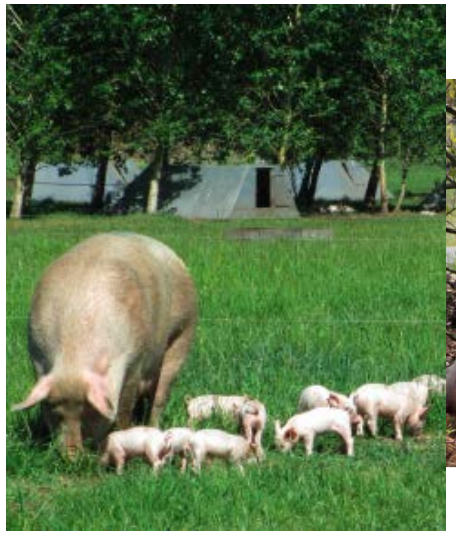
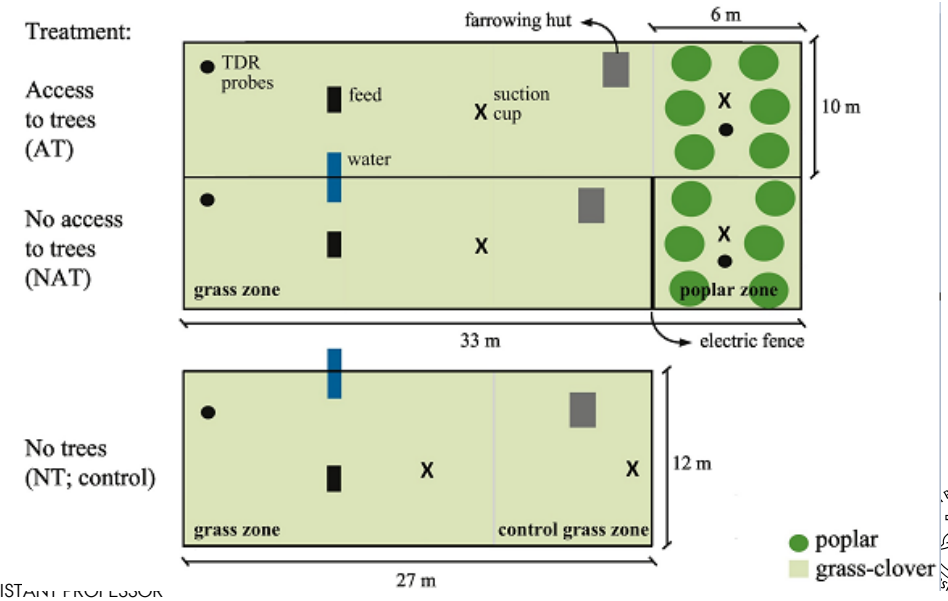
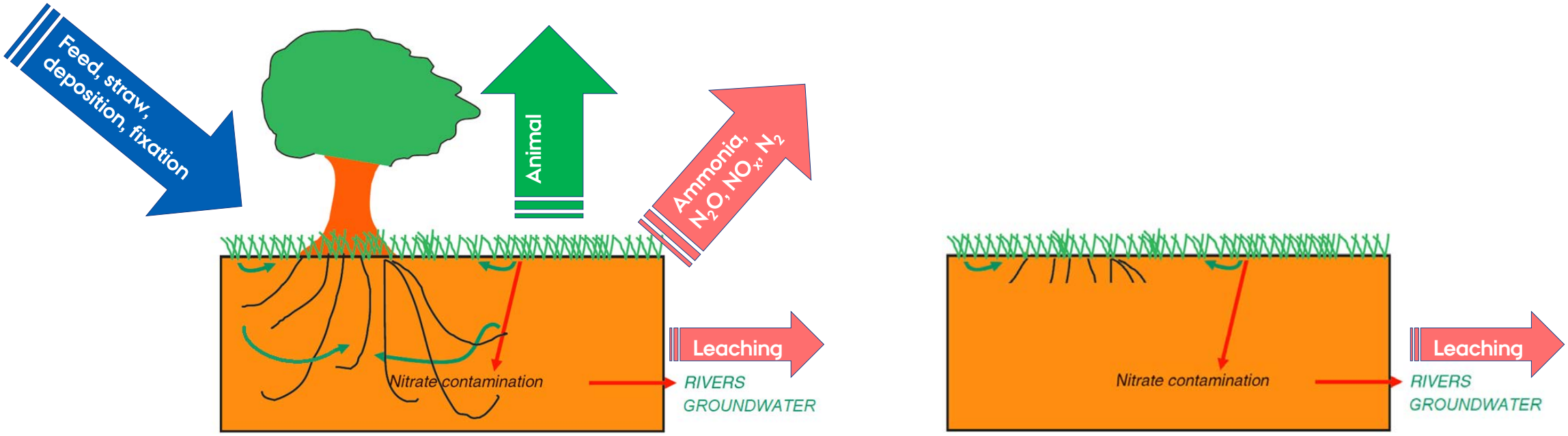






DATA COLLECTION AND ANALYSES

Mass balance (kg N ha^{-1} $year^{-1}$) on paddock scale



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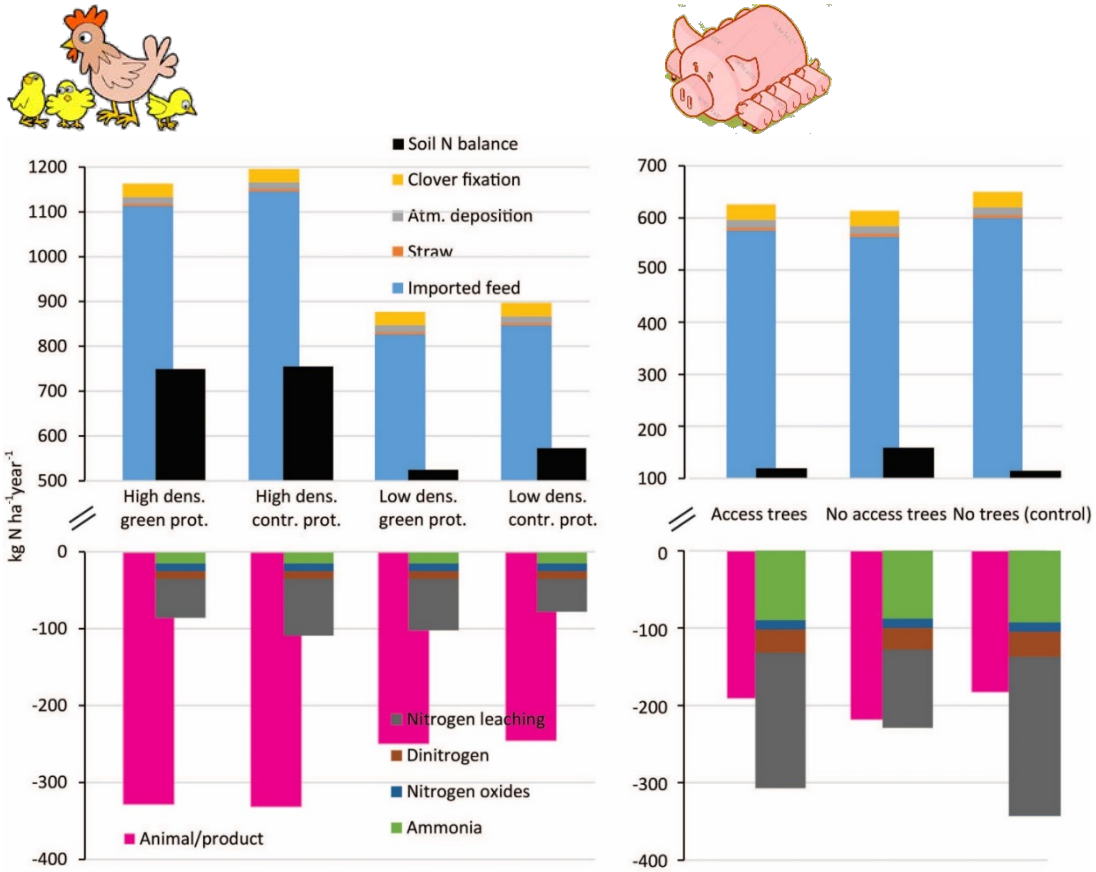
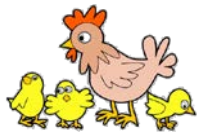
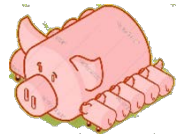
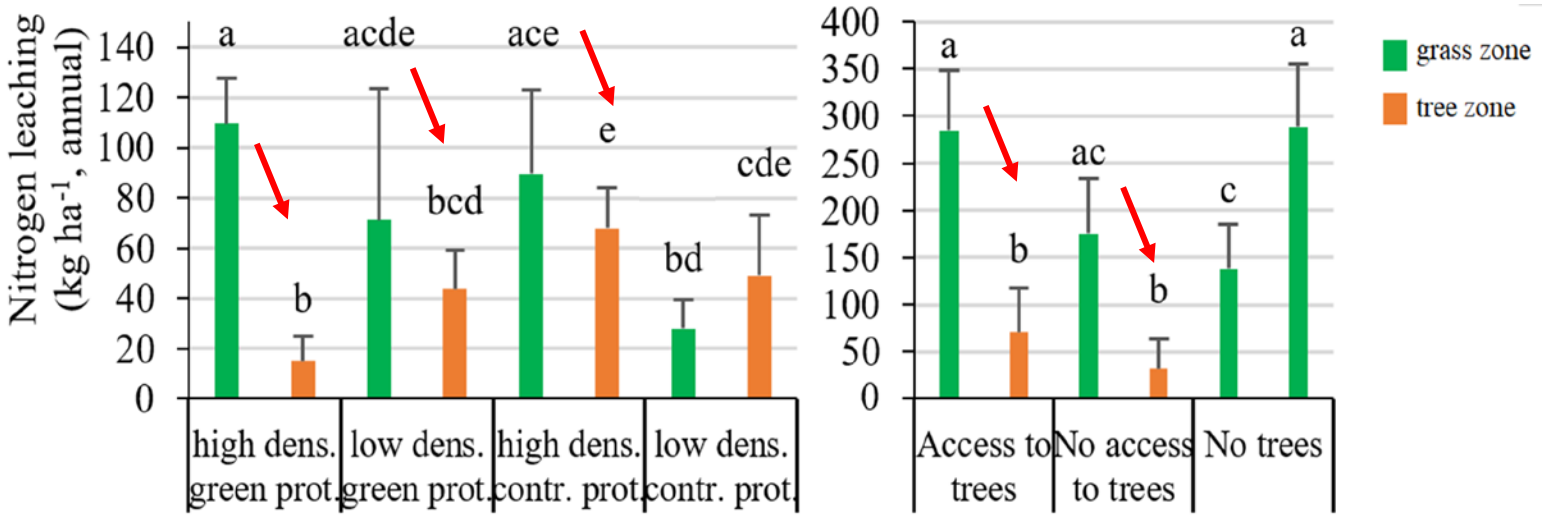
MAIN FINDINGS



MAIN FINDINGS AND CONCLUSIONS







PERSPECTIVE

- First N balance data for agroforestry systems with poultry and pig production in northern Europe
- Prominent role of willow and poplar trees to offset N leaching from paddocks on sandy soils
- Surplus of soil N - especially in outdoor poultry - must be managed

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