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trans4num in the Netherlands

Plant-based nutrients for a circular farming future in the Netherlands

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1. THE CHALLENGE

Dutch arable farming is among the most productive in Europe, but also one of the most nutrient-intensive.

Excess nitrogen and phosphorus threaten soil health, water quality, and biodiversity, especially in regions bordering the Wadden Sea and Lauwersmeer Natura 2000 areas. Farmers face pressure to reduce inputs while maintaining yields and economic viability.

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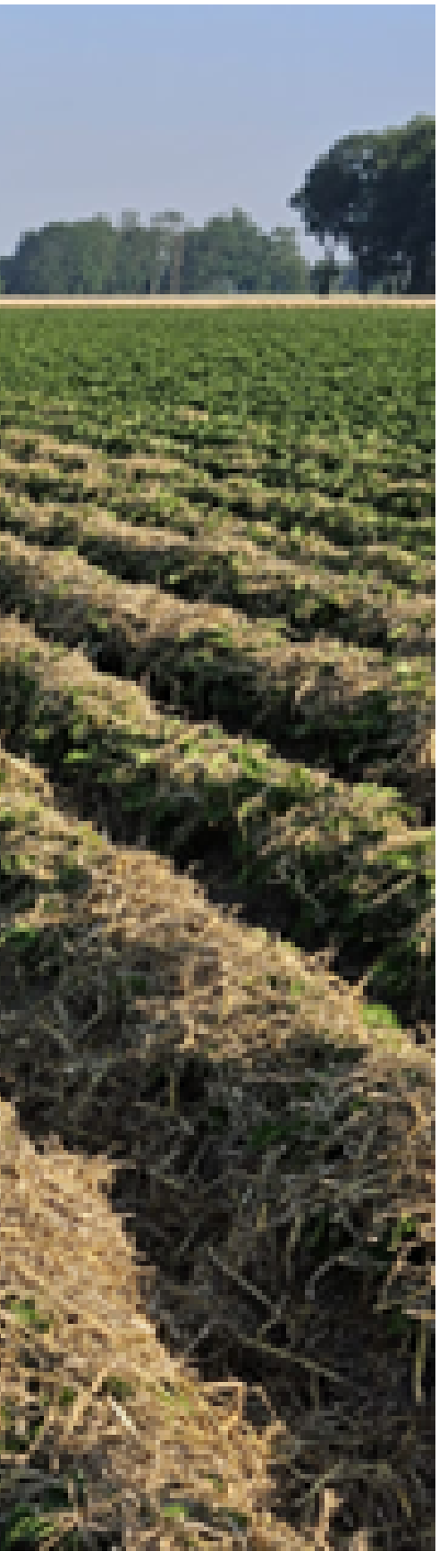

2. WHAT ARE WE TESTING?

trans4num is testing plant-based fertilisation systems as alternatives to synthetic or animal-based fertilisers.

At the SPNA sites, researchers are:

- Comparing cover crops, grass-clover mixtures, and green manures,
- Using alfalfa and grass pellets as biofertilisers,
- Testing cut-and-carry compost systems in organic and conventional rotations,
- Using the NDICEA model to track nitrogen balances and timing of nutrient release.
- Farmers and advisors are directly involved through field visits and winter workshops.

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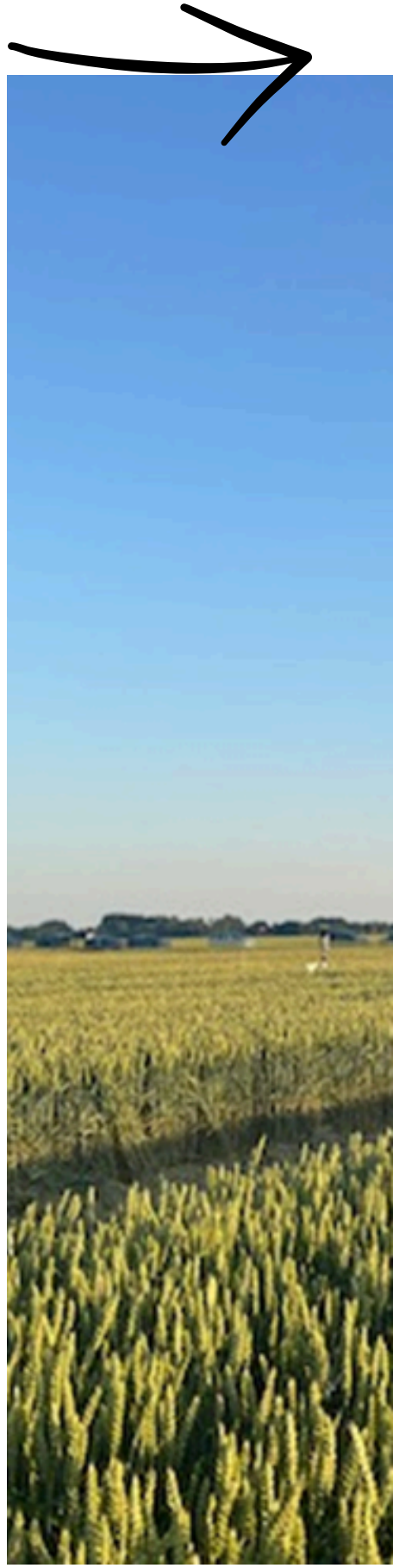
3. YEAR 2 INSIGHTS

- Plant-based fertilisation shows promising effects on soil health and microbial diversity, particularly in organic systems.
- Timing remains a key challenge: spring nitrogen availability lags behind crop demand.
- Farmer engagement is strong: workshops and open days attracted dozens of local producers seeking practical insights.
- Data from the NDICEA model help visualise nitrogen flows and identify optimisation points.



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4. WHAT IS NEXT?

- Continue long-term trials on winter wheat and seed potatoes to compare yields and nutrient dynamics.
- Assess combined use of cover crops and plant-based fertilisers for better synchrony with crop needs.
- Prepare factsheets and decision aids for advisors and farmers to guide wider adoption.
- Share lessons with Danish and UK teams through cross-site modelling workshops.

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5. WHY IT MATTERS?

The Dutch site demonstrates how plant-based nutrient cycles can make arable farming more circular and climate-friendly.

By closing loops between crops and soils, and reducing dependence on livestock manure and mineral fertilisers, these innovations pave the way toward future-proof, low-impact agriculture, aligned with Europe's Farm to Fork and Green Deal goals.

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