

Test and validation

2025WP3_N2a_001

Status: Completed



Technical functionality

Problem Owner:
N2 Agri / N2 Applied

Involved:
Wageningen Research
VD Borne campus

Open Field
Cultivation



NEO as a sustainable alternative to mineral fertiliser

An exploratory trial using pig manure enriched through plasma technology (NEO) as an alternative to mineral nitrogen fertiliser for supplementary fertilisation in potatoes.



Broad knowledge question

The central question in this study was how plasma technology, used to produce NEO fertilisers (Nitrogen Enriched Organic fertiliser), can contribute to more sustainable and effective nitrogen fertilisation, with less reliance on mineral fertilisers and lower emissions. The study focused on supplementary fertilisation in ware potatoes, with particular attention to the use of NEO fertilisers.

Approach

At the VD Borne Campus in Reusel, pig manure was treated using plasma technology. Samples were taken before and after treatment to determine the increase in nitrogen content. Supplementary fertilisation with NEO fertiliser was then compared with mineral fertiliser in field-grown potatoes at the WUR experimental farm in Vredepeel and at the VD Borne Campus in Reusel. At Vredepeel, the field trial was conducted with four replicates, while at Reusel a non-replicated strip trial was carried out.

Objective

The objectives of the study were:

- To demonstrate that treating pig manure with plasma technology enriches the manure with nitrate nitrogen.
- To demonstrate that supplementary fertilisation with NEO fertiliser produced using plasma technology is comparable to supplementary fertilisation with mineral fertiliser.

Results and reflection

Measurements showed that plasma technology led to a clear increase in nitrogen content, through additional nitrate, and a marked decrease in the pH of the manure. The trials showed no difference in tuber yield or nitrogen uptake between supplementary fertilisation with NEO fertiliser and mineral fertiliser. It should be noted, however, that the response to nitrogen was weak at both locations, making it difficult to demonstrate any differences between the fertilisers.

The link to the evaluation report will become active after publication:

<https://doi.org/10.18174/722244>

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