POLICY BRIEF NO.6

NUTRI-CHECK NET
OPTIMISING CROP NUTRITION

Title:

From Manure Pressure to Nutrient Precision

Objective

Efficient nutrient use is central to EU and Dutch agricultural policy, supporting the Nitrates Directive, the Water Framework Directive, and the conditionalities of the Common Agricultural Policy. In the Netherlands, however, the economic and regulatory environment surrounding livestock manure creates a structural barrier to nutrient optimisation. Arable farmers are incentivised by a negative manure price to accept large quantities of manure early in the season. Legal manure limits, which are stricter than mineral fertiliser limits, further encourage farmers to apply manure at the start of the season while leaving limited room for in-season adjustments.

Because crude manure mineralises slowly and unpredictably, its early application often results in low nutrient-use efficiency. Therefore, arable farmers report difficulty meeting crop nutrient requirements within legal limits. The limited availability of plant-available nitrogen later in the season also reduces the relevance and cost-effectiveness of Checking and Adjusting tools that support in-season optimisation.

The Nutri-Check Net Cost–Benefit Analysis shows that planning tools provide clear economic value, while in-season optimisation tools often do not because their recommendations cannot be acted upon within the current system. This policy brief explores how Dutch policy can better align incentives with nutrient efficiency goals, enable the use of processed manure products such as RENURE, and support the practical integration of CNM tools in Dutch arable farming.

Methodology

A 9-nation Thematic Network called Nutri-Check Net was formed from 2023 to 2025. It included 26 Crop Nutrition Clubs (CNCs) of farmers and advisors and 9 National Expert Groups. Stakeholders were surveyed and interviewed to understand attitudes, needs, gaps, and barriers to improving nutrient management and adopting crop nutrition management tools.

Crop nutrient management guidelines and tools were identified and categorised into the three stages of the Nutri-Check Net framework: Planning, Checking and Adjusting, and Reviewing. Evidence was collected on whether farmers review nutrient management performance and on how decision support tools are used in practice.

A comprehensive Cost–Benefit Analysis (CBA) assessed more than 80 nutrient management tools based on 295 farmer and advisor evaluations across nine countries, including the Netherlands. The CBA quantified economic costs and benefits and captured perceptions of tool usability, trustworthiness, and technical requirements. Dutch results were examined separately to identify barriers linked to manure markets, labour constraints, tighter manure limits, and regulatory frameworks.

Insights from Dutch CNCs and the National Expert Group helped interpret the CBA findings in the context of Dutch nutrient policies and environmental objectives. This combined evidence base informs the policy implications and recommendations in this brief.

Key Findings

1. Farmers seem to prioritise Planning tools because labour pressure is highest

during the growing season.
Planning tools such as soil analysis and nutrient planning software fit well with winter work patterns and therefore deliver clear economic value.

2. The negative manure price and strict manure limits incentivise heavy early-season manure use.
Reduced derogation has increased manure surplus pressure and lowered manure prices. Arable farmers therefore maximise manure uptake early in the season, reinforcing front-loaded nutrient application and limiting flexibility later.

3. Crude manure's low and unpredictable nutrient availability makes it poorly suited for in-season optimisation.
Because manure mineralisation is slow, farmers often reach their legal manure limit without meeting the crop's nutrient needs. They describe difficulty achieving optimal crop performance while staying within legal limits. The early nutrient load leaves little scope for adjustments guided by Checking and Adjusting tools.

4. Processed manure products could enhance nutrient-use efficiency but require supportive policy.
Processed manure with predictable nutrient content can be used for mid-season adjustments and could partially replace mineral fertiliser. This would enhance the relevance and cost-effectiveness of in-season optimisation tools. Regulatory clarity and recognition of processed manure under fertiliser rules are needed.

5. System-level incentives, not technology performance, are the primary barrier to optimisation.
Farmers perceive many in-season tools as reliable, but the current manure-driven system limits their impact. Without changes to economic and regulatory incentives, CNM tools cannot reach their intended environmental or agronomic potential.

Policy Implications & Recommendations

1. Align incentives with nutrient-use efficiency and environmental objectives.
The Dutch nutrient system rewards spring manure application while EU objectives require efficiency and synchronisation. Policy should promote practices that apply only crop requirements at the start of the season and leave room for in-season adjustments guided by CNM tools. Incentives should recognise functional nutrient availability rather than only total applied nitrogen.

2. Accelerate regulatory pathways for processed manure products such as RENURE.
Processed manure can support precise mid-season nutrient applications. Clear product standards, approval pathways, and recognition under fertiliser regulations are needed to enable their use. This will allow farmers to follow recommendations from Checking and Adjusting tools.

3. Support the economic adoption of in-season optimisation tools.
When suitable nutrient products are available, CNM tools will become more cost-effective. Policy can assist adoption through investment support, training, and integration of CNM tools

into nutrient planning practices.

4. Reduce dependence on early, crude manure applications.

Policies should encourage a gradual shift from crude manure to precision nutrient sources. This would improve nutrient-use efficiency, increase compliance with environmental directives, and unlock the potential of the full Planning–Checking–Reviewing cycle.

5. Manage systemic risks related to manure processing and livestock intensity.

Improving manure product value may reduce pressure to lower livestock numbers. This has implications for ammonia emissions, manure surpluses, and global feed dependency. Policy should support manure processing while maintaining clear long-term signals on livestock reduction to meet climate, ammonia, and water objectives.

6. Integrate CNM tools within broader circular nutrient and sustainability strategies.

Optimising nutrient use requires coordination between manure processing innovation, soil health initiatives, CAP conditionalities, and emission reduction policies. A coherent strategy ensures that CNM tools contribute effectively to nutrient efficiency and environmental performance.

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