

# Planning Phase: Nitrogen Fertilization with Prev’N-Labeled Tools

## Problem

In France, farmers operating in Nitrate Vulnerable Zones (ZV) must comply with strict fertilization rules under the EU Nitrates Directive (91/676/CEE). These zones are designated where water bodies are at risk of nitrate pollution. Farmers must follow eight measures, including the balance for nitrogen fertilization. Several commercial and free tools exist to help farmer estimate the equilibrium. However, the diversity of tools and methods can lead to inconsistencies, errors, or non-compliance. There is a need for standardized, transparent, and validated tools to ensure agronomic relevance and regulatory conformity.

## Solution

The 'Planning' stage begins with the “Plan Prévisionnel de Fumure” (PPF). The term "Plan Prévisionnel de Fumure" translates to "Fertilization Forecast Plan" or "Fertilization Planning Document" in English. This document is vital as it calculates the total amount of nitrogen for crops.

Developed before the season’s first nitrogen application, the PPF ensures we’re not only meeting crop needs but also complying with environmental regulations. This early stage planning is crucial for setting the foundation for a sustainable growing season. The guidelines by the Prev’N Label help structure this plan by considering factors like soil fertility and crop requirements, enabling us to set a realistic, science-based nitrogen target. The Prev’N label, created by COMIFER in partnership with the RMT Bouclage and supported by the French Ministries of Agriculture and Environment, certifies tools that comply with the COMIFER nitrogen balance method, the national reference for nitrogen planning in France. This method is based on more than 50 years of agronomic research and field validation. Moreover, it covers most major crops (wheat, maize, barley, rapeseed, vegetables, etc.). It is recognized by public authorities and integrated into nitrate action programs, regionally adaptable via expert groups (GREN). The COMIFER nitrogen balance method ensures that nitrogen dose calculations are based on a methodology that is scientifically validated, transparent, regionally validated and consistent with regulatory frameworks.

## Outcome

- Farmers receive reliable, traceable nitrogen recommendations.
- Advisors can support compliance and performance.
- Regional authorities can monitor and validate fertilization practices.
- The agricultural sector benefits from harmonized, scalable planning tools.
- Tool developers can compare their outputs and ensure consistency across nitrogen recommendations.
- This process also helps COMIFER and the RMT Bouclage identify knowledge gaps and initiate targeted R&D actions to improve the accuracy of nitrogen forecasting during the planning phase

## Applicability box

### Geographical coverage

France (Regional validation by GREN)

### Application period

Pre-season  
(winter/spring)

### Required time

30–60 minutes per crop

### Period of impact

One cropping season

### Equipment

Computer/tablet, soil test data, crop and farmer management practices information

## Practical

Main recommendation:

The COMIFER method calculates nitrogen dose as:

Dose to apply = Crop Need – (Soil Supply + Organic Inputs)

Prev'N-labeled tools must:

- Lock calculation parameters.
- Display version and input values.
- Be tested on regional case studies.
- Participate in inter-tool comparison and continuous improvement.
- Each developer receive a report with chart and statistics comparing his results and the average of all other tools and the GREN references over 60 case studies (Figure 1 and Table 1).



Added value for the end-user:

- Regulatory security: Avoid penalties by using tools recognized by authorities.
- Economic benefit: Reduce unnecessary nitrogen inputs, saving costs.
- Agronomic reliability: Base decisions on 50+ years of research and field trials.
- Operational clarity: Transparent calculation logic and traceable documentation.
- Regional relevance: Tools are adapted to local soil, climate, and cropping systems.

How to use the results:

- Input crop type, expected yield, soil test results, and organic amendments.
- Generate a nitrogen dose recommendation compliant with the COMIFER method.
- Export or print the fertilization plan for record-keeping and advisory support.
- Use the output to guide purchases.

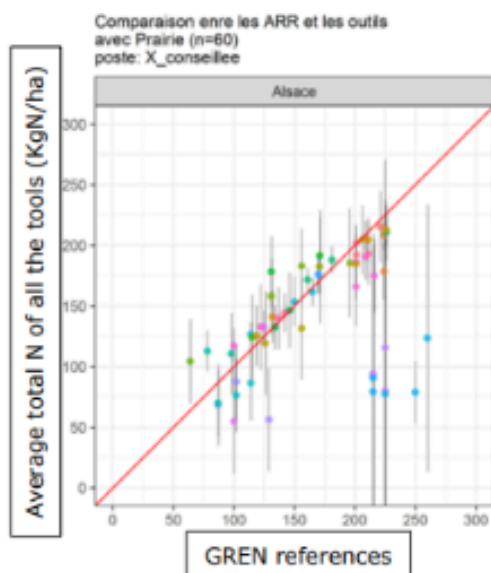


Figure 1 Colored dots represent the average nitrogen doses calculated for each reference case.

Table 1 Descriptive Statistics of Nitrogen Dose Distribution

| Stats             | GREN  | Tous         |
|-------------------|-------|--------------|
| <b>Moyenne</b>    | 167.1 | <b>143.7</b> |
| <b>Médiane</b>    | 170.0 | <b>156.5</b> |
| <b>Minimum</b>    | 64.0  | <b>0.0</b>   |
| <b>Maximum</b>    | 260.0 | <b>280.0</b> |
| <b>Écart-type</b> | 50.2  | <b>62.4</b>  |

## Further information

- The label is voluntary, valid for 3 years, and granted per region and per tool version.
- It is managed by COMIFER, with support from the RMT Bouclage and regional nitrate expert groups (GREN).
- It is referenced in regional nitrate action programs (PAR) and national guidelines.
- This approach is integrated into the The HVE label, or Haute Valeur Environnementale, is a French certification that promotes agricultural practices with a high level of environmental performance. It was created by the French Ministry of Agriculture and is awarded to farms that demonstrate reduced environmental impact and sustainable resource management.

## About this factsheet

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NUTRI-CHECK NET is a Horizon Europe multi-actor project establishing a self-sustaining, multi-actor, Thematic Network called “NUTRI-CHECK NET” that builds farm-level adoption of best field-specific

nutrient management practices across Europe. In nine countries, farmers’ Crop Nutrition Clubs will identify and share the nature of their uncertainties about crop nutrition, their challenges and barriers to change. Decision systems and nutrition tools (including commercial products, services, and recent research outputs) will be assembled by national experts across Europe, including leading farmers, into a common online NUTRI-CHECK NET platform.

Check the project website: <https://nutri-checknet.eu>

