POLICY BRIEF Nº5

NUTRI-CHECK NET
OPTIMISING CROP NUTRITION

Title:

Strengthening Sustainable Nutrient Management in Portugal to Increase Agricultural Efficiency and Reduce Environmental Impacts

Objective

This Policy Brief aims to summarize challenges, needs, and strategic recommendations to reinforce sustainable nutrient management in Portuguese agricultural holdings, in alignment with the PEPAC (Strategic Plan for the Common Agricultural Policy for Portugal) 2023–2027, the responsibilities of DGADR (Portuguese Directorate-General for Agriculture and Rural Development) and DGAV (Portuguese Directorate-General for Food and Veterinary Affairs), and national legislation such as *Portaria* Nº 259/2012 (Nitrates Directive Action Programme) and the Enhanced Conditionality regime of the CAP (Common Agriculture Policy).
Inefficient nutrient use can compromise agricultural productivity, raise production costs, and intensify environmental risks such as ammonia emissions, eutrophication, and groundwater contamination. Although Portugal has technical guidance and regulatory instruments in place, gaps persist in the consistent adoption of monitoring practices, nutrient balances, and systematic review of fertilisation strategies.

Methodology

The conclusions presented herein result from:

- A review of official technical guidance issued by DGADR, including the Manual of Good Fertilisation Practices, and PEPAC-integrated management guidelines, as they explain how farmers must manage and document fertilisation to meet eco-schemes, conditionality rules, and other CAP commitments.
- Analysis of DGAV requirements related to food safety, fertiliser residues, animal welfare, and the implications of livestock effluents on nutrient management.
- Assessment of applicable national legislation, including:
    - *Portaria* 259/2012 — Nitrates Directive Action Programme
    - *Portaria* 54-A/2022 — National rules for PEPAC
    - Standards for conditionality from *Portaria* n.º 54-Q/2023, 27th February 2023 and eco-schemes relating to fertilization, from *Portaria* N.º 54-E/2023, 27th February 2023
- Interviews and contributions from farmers, technicians, sectoral associations, and national experts regarding practical gaps and constraints to adopting decision-support tools.
- A survey of existing tools in Portugal (FertilCult, SIG Rural, Agroop, xFarm, Agroptima (soil/plant analysis platforms and/or farm-management software)).

Key Findings

1. **Tools for fertilisation planning exist but are underused**.
   Most farms rely on traditional practices with limited use of recommendation models, variability maps, or complete nutrient balance systems.
2. **Nutrient management is strongly conditioned by legislation**, but farmers report practical difficulties with interpretation, particularly concerning:
    - Nitrate Vulnerable Zones (NVZs)
    - Rules for storing and recording livestock effluents (relevant to DGAV)

- Eco-scheme requirements under PEPAC

3. **Systematic monitoring remains weak**. Many farms do not regularly perform:
    - soil analyses
    - parcel-level nutrient input/output records
    - annual efficiency assessments
4. **Increasing climate variability requires annual adjustments**.
   Droughts, extreme events, and shifts in rainfall patterns strongly affect nutrient mineralisation and availability, making annual planning reviews essential.
5. **Digital integration is lacking**. Farmers report difficulties with:
    - centralising fertilisation records
    - integrating lab analyses into digital platforms
    - communicating records to public authorities
6. **Fertiliser prices remain volatile**.
   Market instability reinforces the need to improve nutrient-use efficiency to maintain farm profitability.

Policy Implications & Recommendations

1. Strengthen DGADR technical guidance by including standardised annual fertilisation review methods
    - DGADR should update and consolidate national guidelines to include:
    - Standard post-harvest assessment routines
    - Criteria for interpreting soil and plant analyses and NPK balances
    - Minimum performance indicators per crop
    - Practical examples of how annual learnings should inform the next fertilisation cycle
2. Integrate nutrient management with sanitary and environmental requirements overseen by DGAV
    - Unified guidance linking livestock effluents, animal welfare, and fertilisation
    - Simplified rules for agronomic valorisation of effluents
    - Stronger DGADR–DGAV coordination to harmonise technical-sanitary requirements with agronomic practices
3. Adapt PEPAC measures to encourage parcel-level nutrient monitoring and annual nutrient balances
    - Reward farms that report annual nitrogen, phosphorus, and potassium balances
    - Support digital tools and precision-agriculture technologies
    - Require evidence of annual review as an eligibility criterion for enhanced eco-scheme payments
4. Create a national "Sustainable Nutrient Management Plan" model. A standardised, digital, official document:
    - Planned fertilisation
    - Operation records

- Monitoring indicators
    - Annual critical assessment
    - Integration of DGADR, DGAV, and PEPAC requirements

5. Expected Benefits
    - **Economic:**
        - Increased profitability through reduced under- and over-application
        - More resilient productivity under climate variability
        - Reduced dependence on imported fertilisers
    - **Environmental:**
        - Reduced leaching and eutrophication (NVZ compliance)
        - Lower ammonia emissions in line with national targets
        - Safer livestock effluent management
    - **Operational:**
        - Less bureaucracy through digitalisation
        - Clearer regulatory and technical guidance for farmers and advisors

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