

Title of Policy Brief

Strengthening nutrient planning in Greek agriculture

Objective

- Greece has been urged to change its fertilizer management approach to adhere to the requirements set in the new CAP and specifically reduce its dependence on synthetic fertilizers¹.
- Despite this, Greece has struggled to uptake these approaches, as exhibited in the inability to implement initiatives such as the Nitrates Directive², resulting in severe pollution of soil and waters due to nitrate fertilizer misuse.
- 52% of Greek cereal farmers follow traditional and empirical fertilization methods, without keeping track of fertilization applications, or regularly testing their soil³, finding these practices cumbersome or not cost-effective to apply.
- Given these, it is evident that ameliorating crop nutrient management practices is imperative to balance optimal crop yields and minimize soil and water pollution.

Methodology

- A thorough review of Greek and EU legislation (CAP 2023-27, EU Nitrates Directive, GAEC requirements, reports from the Greek Ministry of Agriculture) was conducted.
- Moreover, key academic research articles, highlighting important aspects of crop nutrient management, and the uptake of recommendation systems were reviewed.

Key Findings

- Farmers do not rely on nationally approved recommendation systems (i.e., the FaST system⁴ ⁵) to adjust their fertilization applications, while digital tools (e.g., for soil health optimization⁶) are similarly viewed as difficult to use or not cost-effective.
- Greek arable farms mostly employ synthetic NPK fertilizers, mostly forgoing

¹ https://agriculture.ec.europa.eu/system/files/2024-01/csp-at-a-glance-greece_en.pdf#:~:text=Plans%20offer%20opportunities%3A%20e,capacity%20in%20line%20with%20more

² https://ec.europa.eu/commission/presscorner/detail/en/ip_13_576

³ <https://www.cambridge.org/core/journals/experimental-agriculture/article/fertilizer-use-in-conventional-cereal-production-in-northern-greece-mapping-gaps-for-improving-sustainability/18F0F74BA2AAEDDFBAEA43B9CD409424>

⁴ https://platform.nutri-checknet.eu/recommendation_systems/9/fast

⁵ <https://www.opekepe.gr/opekepe-organisation-gr/opekepe-news-articles-gr/epikaira-nea/4508-paragwgiki-leitourgia-efarmogis-fast>

⁶ <https://www.mdpi.com/2071-1050/16/8/3478#:~:text=,health%20and%20quality%20of%20soil>

organic fertilizers, manure or compost⁷. These fertilizers are applied through habit or advice from local advisors, and do not follow a uniform plan. Despite the commonly perceived drawbacks of these practices, including large amounts of nitrogen and phosphorus leaching⁸, farmers are resistant to changing their fertilizer applications.

- The EU nitrates directive and CAP requirements mandate more responsible fertilizer use. Despite this, Greek agriculture has been resistant to applying these requirements, as evidenced by the 3.5M Euro fine imposed by the EU Court of Justice⁹, with the EC noting Greece's insufficient application of integrated nutrient management to combat bodies of surface water and groundwater which were affected by concentrations of nitrates above 50 milligrams per liter and/or by the phenomenon of eutrophication.

Policy Implications & Recommendations

- Recommendation tools and digital services should be subsidized and encouraged for widespread use, where farmers can easily log and keep track of their applications, and adjust next applications accordingly.
- Advisory and extension services delivered by trained advisors with understanding of these tools should facilitate the uptake of said tools and better application of crop nutrient and fertilization strategies, based on national guidelines.
- Farmers should be incentivized to carefully monitor their fertilization plans, including keeping track of fertilizer applications, and performing analyses of soil nutrient status. Building and expanding farmer capacities to better understand and incorporate these practices is important for more sustainable fertilization management.
- GAEC measures, such as the GAEC4 towards the restriction of fertilizer use at least 3 meters along water courses¹⁰, should be monitored more strictly. Farms in vulnerable zones should also be monitored for their adherence to context specific policies and regulations (e.g., crop-specific nitrogen limits, application timings)¹¹.

Key References

1. Greece's CAP Strategic Plan: https://agriculture.ec.europa.eu/system/files/2024-01/csp-at-a-glance-greece_en.pdf#:~:text=Plans%20offer%20opportunities%3A%20e,capacity%20in%20line%20with%20more
2. Environment: Commission takes Greece to Court over nitrate pollution:

⁷ <https://www.cambridge.org/core/journals/experimental-agriculture/article/fertilizer-use-in-conventional-cereal-production-in-northern-greece-mapping-gaps-for-improving-sustainability/18F0F74BA2AAEDDFBAEA43B9CD409424>

⁸ https://easac.eu/fileadmin/PDF_s/reports_statements/Greece_Groundwater_country_report.pdf

⁹ https://ec.europa.eu/commission/presscorner/detail/en/ip_13_576

¹⁰ https://cdn.table.media/assets/wp-content/uploads/2024/07/15143810/EPRS_BRI2024762360_EN.pdf#:~:text=%EF%83%98%20GAEC%204%3A%20Establishment%20of,This%20requirement%20existed%20in

¹¹ https://wfdver.ypeka.gr/wp-content/uploads/2017/08/EL09_1REV_P13_Prosxedia_LAP_v02.pdf

3. Vindena V, Toubou E, Koutroubas SD, Damalas CA. Fertilizer use in conventional cereal production in northern Greece: Mapping gaps for improving sustainability. *Experimental Agriculture*. 2023;59:e16. doi:10.1017/S0014479723000133:
<https://www.cambridge.org/core/journals/experimental-agriculture/article/fertilizer-use-in-conventional-cereal-production-in-northern-greece-mapping-gaps-for-improving-sustainability/18F0F74BA2AAEDDFBAEA43B9CD409424>
4. FaST recommendation system: [https://platform.nutri-checknet.eu/recommendation systems/9/fast](https://platform.nutri-checknet.eu/recommendation_systems/9/fast)
5. <https://www.opekepe.gr/opekepe-organisation-gr/opekepe-news-articles-gr/epikaira-nea/4508-paragwgiki-leitourgia-efarmogis-fast>
6. Kalantzopoulos, G.; Paraskevopoulos, P.; Domalis, G.; Liopa-Tsakalidi, A.; Tsesmelis, D.E.; Barouchas, P.E. The Western Greece Soil Information System (WESIS)—A Soil Health Design Supported by the Internet of Things, Soil Databases, and Artificial Intelligence Technologies in Western Greece. *Sustainability* 2024, 16, 3478. <https://doi.org/10.3390/su16083478>:
<https://www.mdpi.com/2071-1050/16/8/3478#:~:text=,health%20and%20quality%20of%20soil>,
7. Groundwater in the Southern Member States of the European Union: an assessment of current knowledge and future prospects, country report for Greece:
https://easac.eu/fileadmin/PDF_s/reports_statements/Greece_Groundwater_country_report.pdf
8. Environment and the common agricultural policy: https://cdn.table.media/assets/wp-content/uploads/2024/07/15143810/EPRS_BRI2024762360_EN.pdf#:~:text=%EF%83%98%20GAEC%204%3A%20Establishment%20of,This%20requirement%20existed%20in
9. 1st REVISION OF THE MANAGEMENT PLAN FOR THE RIVER BASINS OF THE WESTERN MACEDONIA WATER DISTRICT (EL09): https://wfdver.ypeka.gr/wp-content/uploads/2017/08/EL09_1REV_P13_Prosxedia_LAP_v02.pdf