Monitoring pH and P K MG levels in French soils between 2003 and 2020 using the French soil analysis database (base de données des analyses de terre)

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ID ABS WEB: 137726

4. Soil health in achieving the Sustainable Development Goals
4.27 133609 - How will we monitor soils in the coming century?

MONITORING PH AND P K MG LEVELS IN FRENCH SOILS BETWEEN 2003 AND 2020 USING THE FRENCH SOIL ANALYSIS DATABASE (BASE DE DONNÉES DES ANALYSES DE TERRE)

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The continuing rise in energy prices is affecting fertilizer prices, and is accompanied by a general reduction in phospho-potassium fertilization of agricultural plots nationwide. In France, since 1990, the Base de Données des Analyses de Terre (BDAT INFOSOL INRAE Orléans) has brought together the results of soil tests of cultivated topsoil carried out throughout mainland France, at the request of farmers, by laboratories approved by the Ministry of Agriculture. This database contains over 3 million phosphorus (P) determinations and an equivalent number of exchangeable potassium (K) and magnesium (Mg) determinations. These data were mobilized as part of a spatio-temporal diagnosis to provide information on the spatio temporal trends of these three fertility parameters over the period 1990-2020, and to identify the consequences on the availability of these elements for crops.
General trends in the evolution of agricultural soils in mainland France show an increase in pH and Mg content, and a decrease in K, but especially P, content. The spatial distribution of exchangeable P Olsen, K and Mg contents in soils seems to depend mainly on soil characteristics (texture, mineralogical nature of parent materials). The temporal trends observed for Olsen P and exchangeable K, on the other hand, seem to depend on economic factors (rising energy and fertilizer prices), the presence or absence of livestock farming, and recommendations for lower dose calculations as part of a rational fertilization approach.
This work demonstrates the importance of collecting and collating this information, produced in an individual context for plot management, in order to reuse it in a general context and produce results on the statistical distributions of agricultural soil fertility indicators. However, these preliminary results should be treated with caution and should not be used for the fertilization of agricultural plots.

Keywords: Soil tests,spatio temporal monitoring,pH,phophorus,france