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National soil data in EU countries, where do we stand?

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At the European scale, soil characteristics are needed to evaluate soil quality, soil health and soil-based ecosystem services in the context of the European Green Deal. While some soil databases exist at the European scale, a much larger wealth of data is present in individual European countries, allowing a more detailed soil assessment. There is thus an urgent and crucial need to combine these

data at the European scale. In the frame of a large European Joint Programme on agricultural soils launched by the European Commission, a survey was conducted in the spring of 2020, in the 24 European participating countries to assess the existing soil data sources, focusing on agricultural soils. The survey will become a contribution to the European Soil Observatory, launched in December 2020, which aims to collect metadata of soil databases related to all kind of land uses, including forest and urban soils. Based upon a comprehensive questionnaire, 170 soil databases were identified at local, regional and national scales. Soil parameters were divided into five groups: (1) main soil parameters according to the Global Soil Map specifications; (2) other soil chemical parameters; (3) other physical parameters; (4) other pedological parameters; and (5) soil biological features. A classification based on the environmental zones of Europe was used to distinguish the climatic zones. This survey shows that while most of the main pedological and chemical parameters are included in more than 70% of the country soil databases, water content, contamination with organic pollutants, and biological parameters are the least frequently reported parameters. Such differences will have consequences when developing an EU policy on soil health as proposed under the EU soil strategy for 2023 and using the data to derive soil health indicators. Many differences in the methods used in collecting, preparing, and analysing the soils were found, thus requiring harmonization procedures and more cooperation among countries and with the EU to use the data at the European scale. In addition, choosing harmonized and useful interpretation and threshold values for EU soil indicators may be challenging due to the different methods used and the wide variety of soil land-use and climate combinations influencing possible thresholds. The temporal scale of the soil databases reported is also extremely wide, starting from the '20s of the 20th century.

Keywords: survey; soil, data, indicator