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Supporting regions to assess farm sustainability (SOSTARE)

Type of support / service available

The SOSTARE model (Analysis of farm technical efficiency and impacts on environmental and economic sustainability) is a diagnostic tool to assess the general performance of a farm, explore in detail any perceived weaknesses in farm management and investigate the impact of changes that might improve efficiency.

It has been developed by JRC for the Administration of Lombardy Region, in partnership with Parco Ticino, the Universities of Milan, Turin, Pavia and Agricola2000.

The model is in the implementation phase on SisCo, the web platform of Regione Lombardia¹.

Relevance for regional authorities

The SOSTARE diagnostic system describes the performance of a farm from the point of view of agronomic efficiency, economic results, ecological performance. When run on a yearly basis, it allows for monitoring the farm performance and assessing it in relation to policy targets (i.e. increase sustainable use of energy, decrease the impact of agrochemicals, increase farm viability, enhancement of biodiversity etc.).

By highlighting areas where farm management should be improved in order to meet sustainability target (which may be individual targets such as reaching a better household income), it also gives information on the impact on public goods supply (biodiversity, impacts on soil and water quality etc.).

The results provided by SOSTARE and organised per farm typology (i.e. cereal, livestock, conventional, organic etc.) can be easily aggregated. This provides the Regional Administration with important information about the overall performance of agriculture in the Region, whether sustainability targets are met, and where it is necessary to focus efforts to reach them.

Policy context

Farmland represents almost half of land use in the European Union, and the Common Agricultural Policy (CAP)² is the policy that receives the highest share of the EU budget. Currently, the CAP has to face the challenges of simplification and modernisation. Moreover, it has to maximise its contribution to the European Commission's ten priorities³ and to the Sustainable Development Goals (SDGs)⁴.

The public consultation launched by the European Commission on "Modernising and Simplifying the Common Agricultural Policy"⁵ has shown that a fair standard of living for farmers and the pressures on the environment are among the most pressing challenges that EU agriculture has to face.

How to use

The model is in the implementation phase on SisCo, the web platform of Regione Lombardia. It is composed by a main database for CAP application, and other integrated operational tools for specific tasks (i.e. plant protection products management, wine sector management etc.). Each farm in Lombardy has access to it and can edit its own data on the regional portal for agriculture and will have access to SOSTARE diagnostic system⁶. Entry pages are personalised for each farm (figure opening next page).

1. <https://agricoltura.servizirl.it/PortaleSisco/>

2. https://ec.europa.eu/agriculture/cap-overview_en

3. https://ec.europa.eu/commission/priorities_en

4. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

5. <https://ec.europa.eu/agriculture/sites/agriculture/files/consultations/cap-modernising/highlights-public-consul.pdf>

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Entry page of SOSTARE system for a sample farm. Parcel data are automatically retrieved from the IACS database.

The SOSTARE diagnostic system is based on composite indicators, derived from data describing farm activities, land cover and ecological value. The assessment is made through measurable values, which, consequently, allow the comparison of different management schemes⁷.

Composite indicators allow rating the performance of the farm in terms of cropping system; management of fertilizers, energy, water and agrochemicals; value of production; value added; farm household income; independence from CAP subsidies; farm business diversification; quantity and quality of natural and seminatural vegetation.

Results are displayed as radar (first figure below) or bar diagrams. Radar diagrams provide the overview of the performance of a farm. Results can be easily aggregated (i.e. by farming system, by subregion) (second figure below) and show whether policy measures are needed (i.e. to reduce agrochemicals impact, to improve rotations or water management etc.)



Radar diagram showing the performance of a farm, in terms of agronomic efficiency, economic results, and ecological performance.

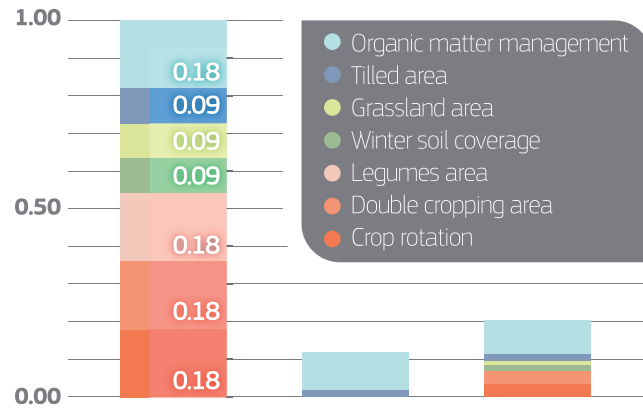


Radar diagram showing the performance of two groups of farms (cereal vs livestock).

7. <https://doi.org/10.1016/j.agry.2014.10.004>

Bar diagrams allow benchmarking farm performances with reference to an ideal situation of high sustainability, and to understand in more detail what are the variables driving the overall performance i.e. of the cropping system (see the graph on benchmarking).

Data needed to run the model are largely available in existing databases (i.e. IACS, Nitrate Directive, agrochemicals use, wine registry, Natura 2000 databases) and can eventually be retrieved to diminish the data accrual load (figure below). Such databases are mostly available in EU Regions, providing the basic information on which the diagnostic system is based.



Farm benchmarking.

Impact

The SOSTARE diagnostic system provides technical assistance in supporting crop choices, highlighting agronomic issues (to improve both quality and quantity). It provides a platform for economic data collection and management (accountancy not compulsory), it highlights agri-environmental and ecological issues. From the point of view of decision-making and farm management support, it shows the benefits of the choice of farming type, crops mix, introducing products processing, direct sale versus join farmers market and starting an agritourism activity.