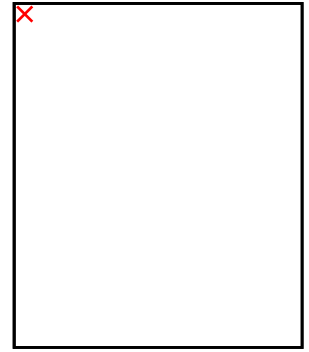




SAGE10 - Establishment of Impact Assessment Procedure as a tool for the sustainability of agroecosystem: the case of mediterranean olives

LIFE09 ENV/GR/000302



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Contact details:

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Project description:

Background

Olive groves have been the backbone of the rural economy and ecology in Greece for thousands of years. However, farmers are increasingly abandoning olive groves because of declining income from olive products, particularly olive oil. The abandonment of extensive olive groves has negative impacts on local ecosystems, fauna, soil quality, water balance, and biomass formation. Furthermore, unattended land in Greece is more susceptible to summer fires similar to the 2007 fires that devastated large areas of the Peloponnese. Such land also becomes a target for unsustainable development, for example, in the south-west Peloponnese where ancient olive groves have been replaced by water-thirsty golf courses. The lack of a systematic and focused advisory service is a contributory factor to both the continuation of unsustainable farming practices and land abandonment, with their associated environmental problems.

Objectives

The main objective of the SAGE10 project was to develop an environmental impact assessment tool to guide Greek farmers towards the most efficient use of their resources. It thus aimed to promote the long-term sustainability of both agro-ecosystems and the economy. Specifically, the project aimed to develop an innovative Impact Assessment Procedure (IAP) for objectively evaluating the potential environment consequences of proposed agricultural practices. The IAP tool will prioritise activities and help achieve ISO14001/EMAS accreditation on farms. A pilot scheme for the IAP was planned on 600 olive grove land parcels in

three different areas of Greece, where monitoring of environmental impacts and crop yields will enable standardisation of the IAP and a validation of the sustainability and cost-efficiency of its implementation. The project also planned to propose 50 farm-level Environmental Performance Indicators (EPIs) and to make the optimised IAP available in software and paper versions, with support for users.

Results

The SAGE10 project developed an environmental impact assessment tool to promote the long-term sustainability of agro-ecosystems and the rural economy in Greece, based on a novel Impact Assessment Procedure (IAP). Its main innovation was the incorporation of biodiversity parameters into environmental impact assessment procedures and environmental performance indicators.

The project team described 43 triplets (i.e. combinations of aspects, impacts, and compartments) and their associated parameters regarding farmer activities during olive cultivation, and formulated their potential impacts on the environment. The project focused in particular on the parameters that had the greatest impact of the examined farming activities, which included fertilisation, plant protection, weed management, irrigation, harvesting, and pruning. Data on soil quality, water and biodiversity for participating farms were collected before, during and after the 3-year pilot implementation to establish the baseline situation, the IAP structure, performance indicator values, and to assess the impact of the method's implementation on the environment.

A list of 68 Agro-Environmental Performance Indicators (AGREPIs) was defined, to assess the IAP implementation. Environmental profiles of all participating farms were assessed for three consecutive years (2011-2013), with activities and parameters with the worst environmental impact being identified. Recommendations to farmers and agronomists for improving the environmental performance of agricultural practices were issued accordingly. The project team trained the supervising agronomists and the participating farmers in data collection and implementation of the method. They also issued a series of general and specific best practice guidelines for olive farming. As a result of extensive consultations with experts and stakeholders, values and weights of the chosen parameters were established and fine-tuned, and the whole method and its application validated. All three participating farmers' organisations prepared statements for the EU Eco-Management and Audit Scheme (EMAS) using the results of the IAP environmental profiles. These EMAS statements, together with a document that describes the SAGE10 IAP, were submitted to the Greek Ministry of Environment, Energy and Climate Change for evaluation and approval as an official component of EMAS in olive cultivation.

The project methodology has a range of direct environmental benefits. Changes in farming activities could enhance biodiversity in olive grove agro-ecosystem, reduce residues of organic pollutants in soil, and improve values for agro-environmental indicators. The pilot area studies are helping to develop solutions for rational irrigation, plant protection and fertilisation management. In the long term, the rational management of soil and water resources can lead to an increase in the quality and quantity of available groundwater, increased soil fertility, reduced soil erosion, and reductions in agrochemical and energy use.

Furthermore, improved farming practices (e.g. decreased burning of waste, soil enrichment with higher organic matter and minimised soil treatment) can reduce greenhouse gas emissions. Ultimately, farming parameters should become coupled with olive oil quality.

The SAGE10 IAP promotes the use of EMAS in agriculture, enabling farmers to identify farming methods that are best for the environment. Farmers could use it within the framework of the new Common Agricultural Policy (CAP) as a tool for receiving funding for "greening" actions. The method contributes to other EU legislation, such as the Water Framework Directive and its Groundwater Daughter Directive, the Soil Thematic Strategy, the Directive for the protection of waters against pollution caused by nitrates from agricultural sources, and the EU Biodiversity Strategy 2020 (targets 2 and 3). It also contributes to the implementation of the Greek law for the "Conservation of Biodiversity and other provisions" and the "National Biodiversity Strategy 2014-2029".

Developing a "green farmer profile" may benefit the trading/marketing of olive oil through the traceability of the production process, health claims on the product's label, and the correlation of production and environmental parameters with olive oil quality.

Further information on the project can be found in the project's layman report and After-LIFE Communication Plan (included in the Final technical report) (see "Read more" section).

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Environmental issues addressed:

Themes

Environmental management - Certification
Industry-Production - Agriculture - Forestry

Keywords

organic farming, vegetable oil, agricultural method, EC regulation on eco-management and audit, environmental assessment

Target EU Legislation

- Environmental management & assessment
- "Regulation 1221/2009 - Voluntary participation by organisations in a Community eco-management an ...

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	Benaki Phytopathological Institute
Type of organisation	Research institution
Description	The laboratory of toxicology at the Benaki Phytopathological Institute (BPI) is a public, non-profit research institute, specialising in plant disease and pesticides.
Partners	Agricultural University of Athens Land Reclamation Institute of the Hellenic Agricultural Organisation Demeter, Greece Greek Biotope/Wetland Centre, Greece RodaxAgro Ltd, Greece Benaki Phytopathological Organisation, Greece

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Administrative data:

Project reference	LIFE09 ENV/GR/000302
Duration	01-OCT-2010 to 30-JUN -2014
Total budget	2,109,442.00 €
EU contribution	1,052,221.00 €
Project location	Peloponnisos(Ellas) Kriti(Ellas)

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Leaflet	Title: "ΑΝΑΠΤΥΞΗ ΚΑΙ ΕΦΑΡΜΟΓΗ ΜΕΘΟΔΟΥ ΠΡΟΣΔΙΟΡΙΣΜΟΥ ΤΟΥ ΠΕΡΙΒΑΛΛΟΝΤΙΚΟΥ ΑΠΟΤΥΠΩΜΑΤΟΣ ΓΙΑ ΛΕΙΦΟΡΑ ΑΓΡΟ-ΟΙΚΟΣΥΣΤΗΜΑΤΑ: Η ΠΕΡΙΠΤΩΣΗ ΤΟΥ ΜΕΣΟΓΕΙΑΚΟΥ ΕΛΑΙΩΝΑ: SAGE10: Ζιζάνια & Ελαιοκαλλιέργεια" (510 KB) Editor: SAGE10 No of pages: 1
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Project web site	Project's website
Publication	Title: "Οδηγίες δειγματοληψιασ και υροκατεργ ασιασ εδαφουσ" (1.09 MB) Author: Ευαγγελος Χατζηγιαννακης,... [et al] Year: 2012 Editor: Ινστιτουτο Εγγειων Βελτιωσεων No of pages: 17
Publication	Title: Project's Final technical report (Greek version, with abstract in English) Year: 2014 Editor: SAGE10 No of pages: 122
Publication	Title: Layman report Editor: LIFE SAGE10 project No of pages: 9
Publication	Title: "Βασικες αρχες ασφαλους χρησησ γεωργικων φαρμακων" (889 KB) Author: K. Μαχαιρα, A. Χαριστου, ... [et al] Year: 2013 Editor: SAGE10 No of pages: 12
Publication	Title: "Αξιολογηση καταληλλοτητας εδαφων για ελαιοκαλλιεργεια: τεχνικη Εκθεση για τις ανάγκες του Εργου SAGE10" (11.8 MB) Year: 2013 No of pages: 104
Publication	Title: "Θεματικος οδηγος για την ορθολογικη διαχειριση των αρδευτικων νερων" (6.34 MB) Editor: Ινστιτουτο Εγγειων Βελτιωσεων No of pages: 23
Publication: Case study	Title: "Establishment of Impact Assessment Procedure as a tool for the sustainability of agro-ecosystem: the case of Mediterranean olives" (506 KB) Year: 2011 Editor: Ινστιτουτο Εγγειων Βελτιωσεων No of pages: 17
Publication: Guidelines-Manual	Title: "Οδηγίες καλης πρακτικησ για τη διατηρηση της βιοποικιλοτητας και τη βελτιστη χρηση των πορων που σχετιζονται με τη βιοποικιλοτητα των ελαιωνων" (13.8 MB) Author: Hadjicharalambous Helena, Maria Dimaki, ... [et al] Year: 2014 Editor: SAGE10, Greek Biotope/Wetland Centre No of pages: 38

- Publication: Guidelines-Manual Title: "Θεματικός οδηγός για την θρέψη της ελιάς" (1.22 MB) Author: Ευάγγελος Χατζηγιαννακής, ... [et al] Year: 2012 Editor: Ινστιτούτο Εγγειών Βελτιώσεων No of pages: 44
- Publication: Guidelines-Manual Title: "Οδηγίες καλής πρακτικής για τη βέλτιστη χρήση των πόρων που σχετίζονται με τη βιοποικιλότητα της χλωρίδας" (3.24 MB) Author: Αγγελική Στεφοπούλου, ... [et al] Year: 2014 Editor: Γεωπονικό Πανεπιστήμιο Αθηνών No of pages: 10
- Publication: Technical report Title: "Εξειδικευμένες στα προβλήματα των πιλοτικών περιοχών του προγράμματος: Οδηγίες φυτοπροστασίας" (6.50 MB) Editor: SAGE10 No of pages: 53
- Publication: Technical report Title: "Βελτίωση υφισταμένων πρακτικών κλαδεματος με στόχο την ελαχιστοποίηση οργανικών υπολειμμάτων στο περιβάλλον" (7.49 MB) Author: Ν. Βολακάκης Editor: SAGE10 No of pages: 75
- Slides Presentation Title: "Παράρτημα: ορθολογική διαχείριση ασθενειών της ελιάς & νέες απειλές προ των πυλών της χώρας" (3.38 MB) Author: Ειρήνη Βλουτόγλου Year: 2014 Editor: SAGE10 No of pages: 19

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