



AgroStrat

Sustainable Strategies for the improvement of seriously degraded agricultural areas:
The example of *Pistachia vera* L.

The beneficiaries of AgroStrat wish you happiness, peace and hope for the New Year 2015



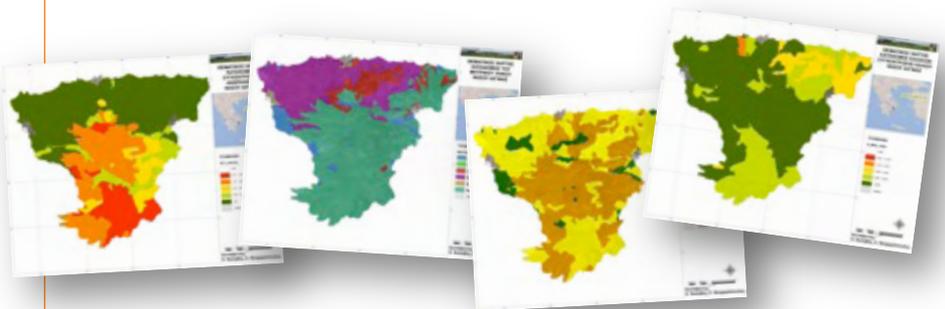
4th Newsletter

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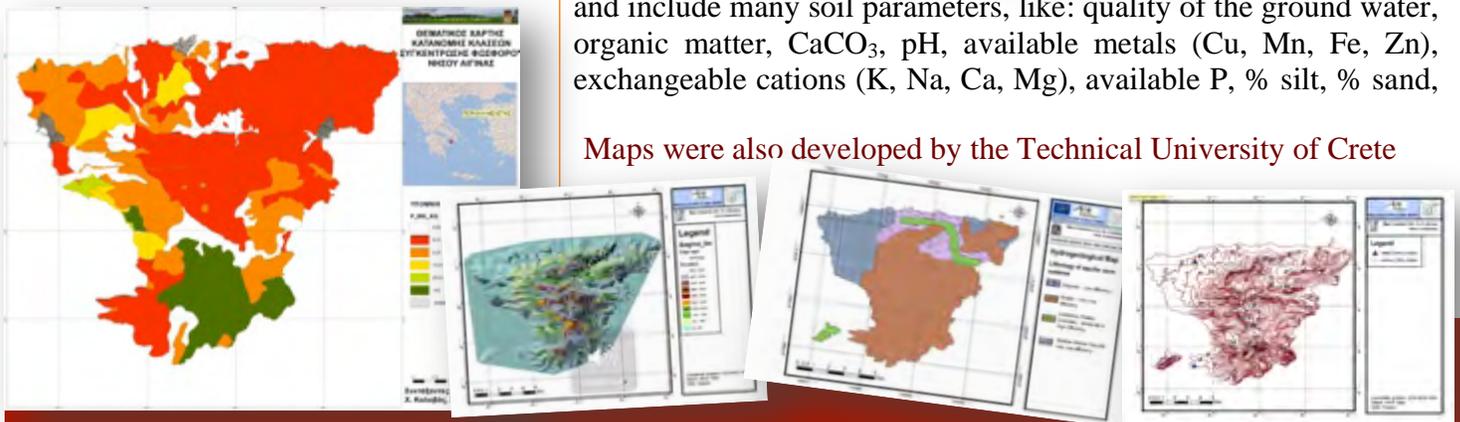
Soil Thematic Maps

For the development of Cultivation Management Software a series of Soil Thematic Maps for the pilot area of the project (Aegina island, Greece) were developed.

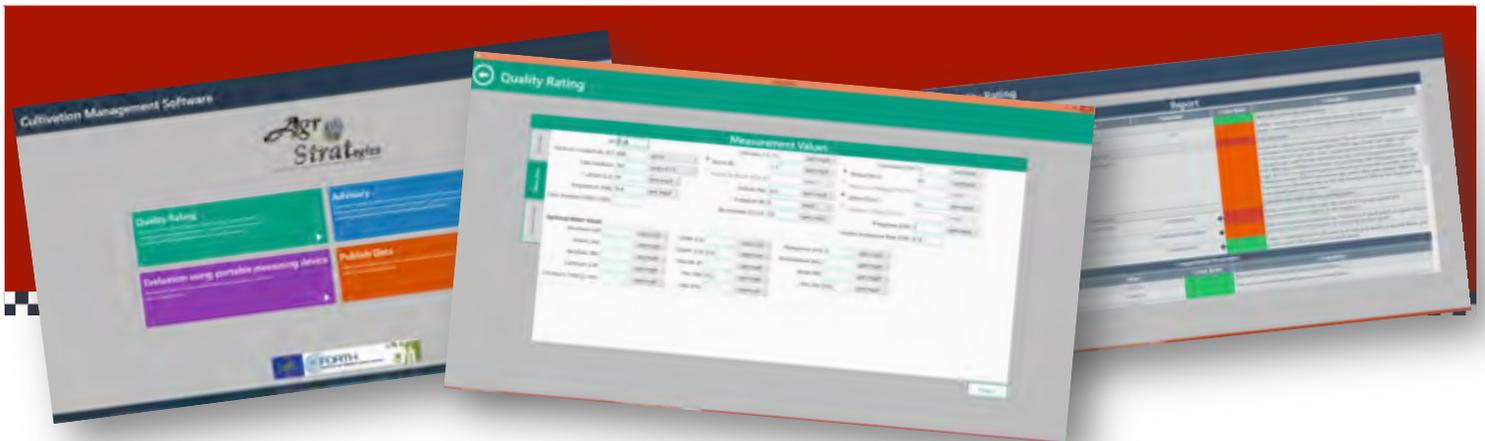


The maps were developed by the Soil Science Institute of Athens and include many soil parameters, like: quality of the ground water, organic matter, CaCO₃, pH, available metals (Cu, Mn, Fe, Zn), exchangeable cations (K, Na, Ca, Mg), available P, % silt, % sand,

Maps were also developed by the Technical University of Crete



Maps are available on the web site of AgroStrat
<http://www.agrostrat.gr/?q=en/node/6>



Cultivation Management Software

Consultancy on

- soil, irrigation water, compost, waste quality
- fertilization practices
- use of composts and wastes for fertilization
- use of composts for soil improvement

The Cultivation Management Software developed by the Institute of Mediterranean Studies (IMS-FORTH) in cooperation with the Soil Science Institute of Athens, provides its users with three main features:

Evaluation

By inserting results of the chemical analysis, the software provides a fast evaluation of the quality of soil, irrigation water, composts or organic wastes.

Consultancy

The end-user indicates the exact position of his/her cultivated field by inserting field coordinates or by indicating the field's position on the integrated thematic maps.

In the case of Aegina Island, the software considers the results of the chemical analysis of soil, water and composts provided by the user and in case of missing soil properties, data from the integrated thematic maps could be inserted. Fertilization consultancy and sustainable use of composts and organic waste are also provided. For other areas, the software considers the results of the chemical analysis only.

The 1st demo version will be available on-line by the end of January 2015.



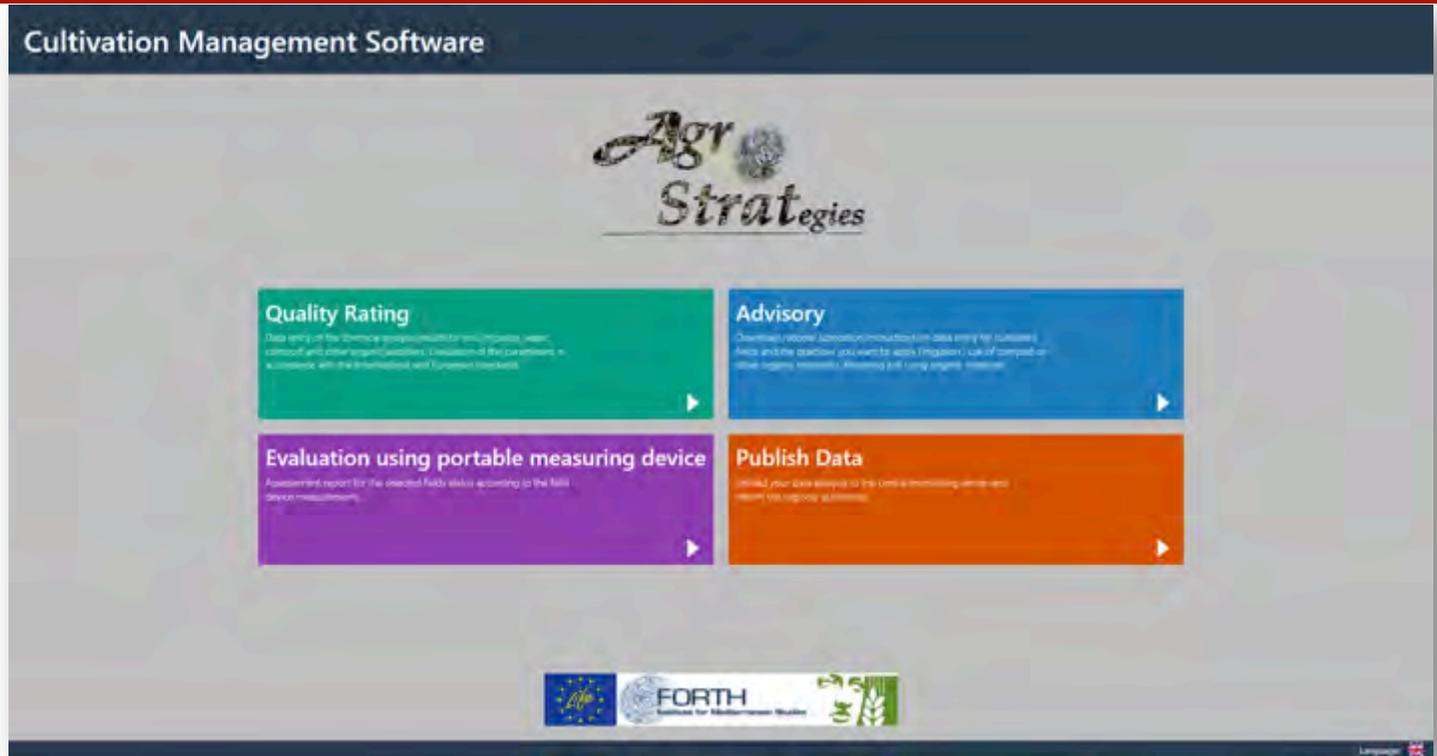
Connection with Regional Authority

This unique software feature provides the option for the farmers to inform the Regional Authority for their field status by uploading the analysis to a Central Monitoring Server that will be soon available. The farmers may receive additional consultancy afterwards by the scientists of the Authority.

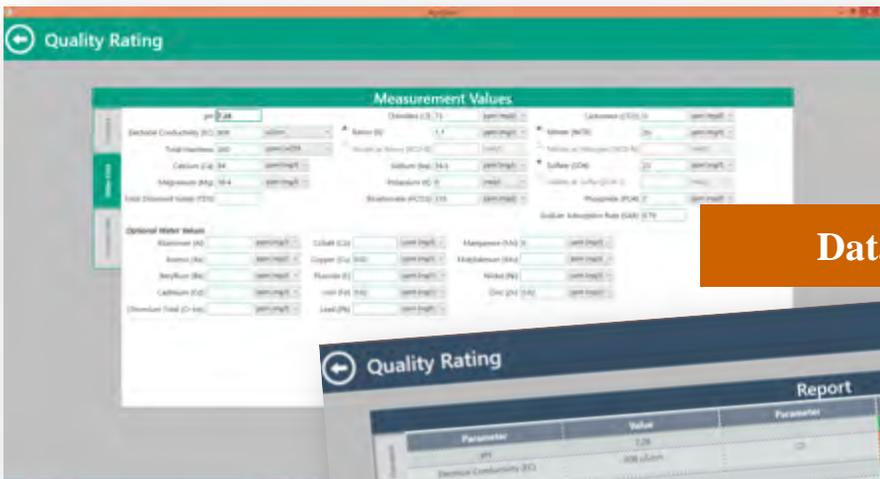
Visit the website of AgroStrat for more details

<http://www.agrostrat.gr/?q=en/node/9>

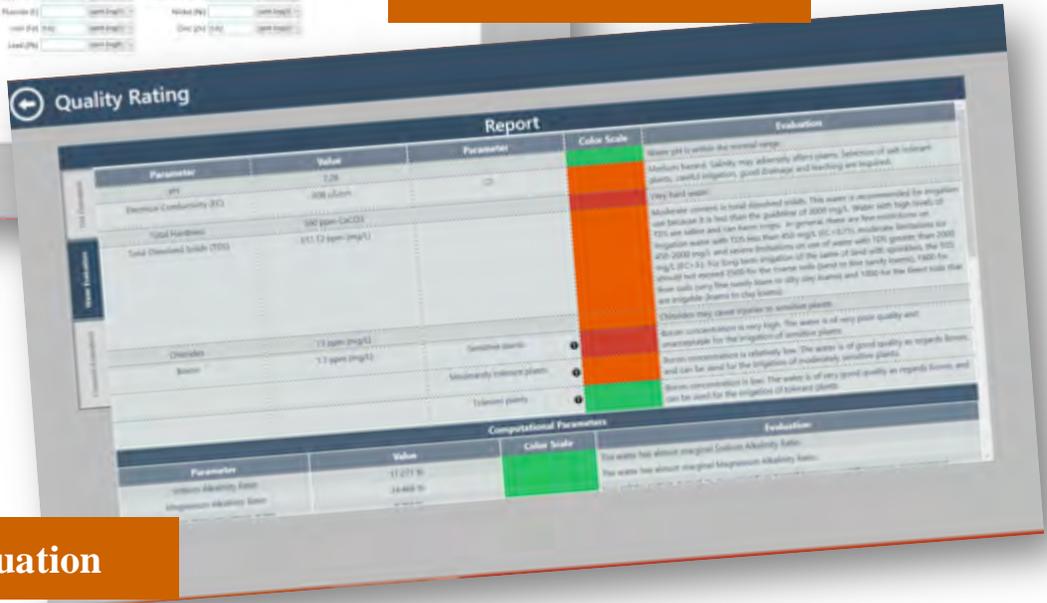
The Cultivation Management Software of AgroStrat



Visit the web site of AgroStrat and download the 1st demo version of the software



Data insert

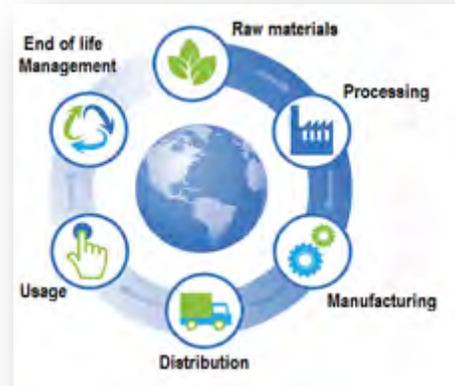


Data evaluation

Life Cycle Analysis (LCA)

Technical University of Crete

What is Life Cycle Analysis?



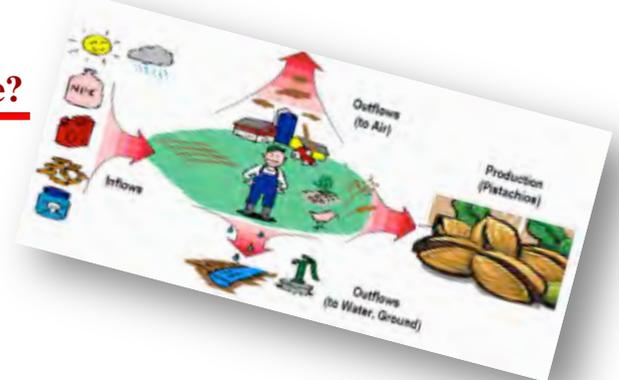
Life cycle assessment (LCA) is a methodological framework for assessing the environmental impacts associated with the complete life cycle of a product.

It is an environmental management and decision making tool used to record, quantify and compare the environmental impacts associated with a product, process or service.

The basic principle behind LCA is the identification and description of all the individual stages that are involved in the complete life cycle of products, from the extraction and pre-treatment of the raw materials, the production, transfer, distribution and use of the final product until the possible reuse, recycle or disposal of all the wastes produced.

What is achieved with respect to LCA in agriculture?

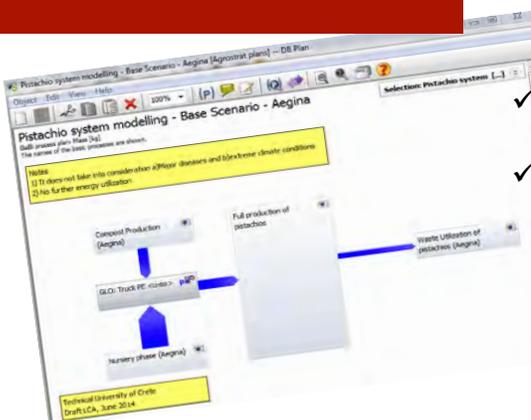
- ✓ Improved quality of agricultural products
- ✓ Mitigation of environmental impacts from agricultural activities (lower environmental footprint) – assessment of alternative practices
- ✓ Rational use of raw materials and energy
- ✓ Strategic planning and environmental policy



A carbon dioxide equivalent (CO₂e) considers all six of the Kyoto Protocol greenhouse gases [Carbon dioxide (CO₂), Methane (CH₄), Nitrogen oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF₆)

First Results

- ✓ Environmental footprint: one kg of pistachio produced in Aegina results in the generation of approximately 2.23 kg CO₂eq emissions per year considering that the average lifetime of an orchard is 60 years
- ✓ Comparison with two other agricultural products: the production of 1 kg of apples results in the generation of 0,2 kg CO₂e, while the production of 1 kg tomatoes 1,4 kg CO₂e per year, respectively
- ✓ The energy footprint of a pistachio cultivation is 43,724 MJ/(0.1ha.year), representing an annual energy consumption of 12,243 kWh/(0.1ha.year)
- ✓ Total direct and indirect energy cost: 1260€/(0.1ha.year) (by taking into account the net price of kWh in 2014 in Greece)
- ✓ Energy use pattern analysis of the pistachio production in Aegina:
 - Nutrient management - Fertilisers (34%),
 - Irrigation (28%),
 - Agricultural machinery and related practices (12%),
 - Use of Agrochemicals (10%)
 - Harvesting and storage (8%)
 - Other farm operations (8%)



Field Equipment

Institute for Mediterranean Studies (IMS)

Four field equipment devices were constructed by IMS

The measuring equipment is part of the soil monitoring system that will be implemented by the project at 3 pilot fields in Greece.

The portable devices are

- ✓ ease to use
- ✓ of low cost
- ✓ accurate

Measuring three soil parameters in two depths (0-30 and 30-60 cm)

- ✓ pH
- ✓ moisture
- ✓ electrical conductivity



The field equipment is designed to be used by farmers in order to easily measure soil pH, moisture and electrical conductivity. Thus, the farmer may use the equipment to measure the soil parameters' values between different dates or before/after applying specific practices. Evaluation of the soil parameters is easy and understandable due to a specific software application.

A complete user Manual can be found on the AgroStrat web site <http://www.agrostrat.gr/?q=en/node/8>

The Field Equipment is part of the Cultivation Management Software

The measurement values along with GPS coordinates are stored in a SD card and can be inserted in the Cultivation Management Software and assigned to a specific field. The software then compares the inserted values with the stored ones for the specific field and notifies the user in case of radical changes of the soil properties that may result in potential problems.

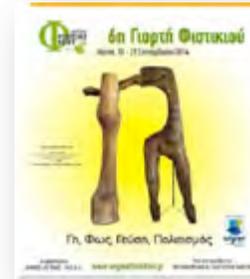


Workshops in Aegina Island, Greece

In the framework of the
6th Fistikiki Fest in Aegina



20 September 2014



The presentations



Dr. K. Chartzoulakis explains irrigation systems and soil salinity problems due to the high electrical conductivity of irrigation water



Mr. N. Alyfantis
President of the
Agricultural Association
of Aegina

An informative workshop was organized in Aegina, during which the beneficiaries and also an invited speaker presented the results and the assessment of the soil and water samplings, which took place in Aegina for the last 1.5 years.

Other issues that concern pistachio cultivation were presented as well (cultivation practices, irrigation, irrigation water quality, soil degradation, fertilization, soil protection, waste management, composting pistachio wastes).

The workshop was recorded and broadcasted live through the web TV of Aegina portal.

“Aegina’s soils and their degradation processes”

Dr. S. Theocharopoulos

“Irrigation of pistachio trees-Design in relation to water quality”

Dr. K. Chartzoulakis

Modern tools for environmental and energy consumption evaluation: The example of pistachio cultivation”

Prof. K. Komnitsas

“Pistachio trees fertilization”

Dr. V. Kavvadias

Composting pistachio wastes-
Cultivation Management Software

Dr. M. Doula

The presentations and the video in Greek are available on-line
<http://www.agrostrat.gr/?q=el/node/438>

The videos of the two workshops are available from the WEB
TV of Aegina Portal

21 September 2014

The Beneficiaries presented and explained the results obtained from the pilot composting that took place in Aegina between November 2013 and March 2014 and resulted in the production of high quality compost from pistachio wastes.

During the composting workshop, the farmers and also local people were trained in producing high quality compost from pistachio wastes and other available feedstock.



Training on Composting
Local farmers and citizens
participate in compost
preparation

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