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Skills Alliance for Sustainable Agriculture
Project Acronym
SAGRI

**Deliverable 3.7: SAGRI PROGRAMME
TRAINEE'S GUIDE**

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1. Description of SAGRI training courses and target

The SAGRI training courses will advance the skills of agricultural workers in the field of agricultural technology (agri-tech) with particular focus on:

- **Green skills.** Agriculture is central to discussions of sustainability given the sector’s impact on the environment. Therefore, skilled agricultural workers increasingly need to have a holistic awareness of sustainability (i.e. not just on their specific working environment and technical skills, but a wider awareness of environmental issues). This may relate to understanding of the warming climate, the reduction of carbon emissions, renewable energy, biofuels, management of water resources and ecosystem services. In addition, these workers need to keep abreast of new regulations and legislation linked to the sustainability agenda; as this can entail regular updating of skills and, importantly for this sector, the accreditation of those skills.
- **Skills on agricultural technologies (“agri-tech”).** A crucial challenge for the agricultural, fisheries and forestry sectors in the future relates to the increasing implementation of technology or ‘agri-tech’. Skilled agricultural workers will need to be able to understand and apply these technologies, including those related to: primary production for both food and non-food uses; soil science; crop and livestock genetics; agri-chemicals; and general purpose technologies such as remote sensors, satellites and robotics.

Certificates will be awarded to the trained agricultural workers, who will successfully pass the final exams. The candidates that failed to pass these exams, but attended the training courses, will be awarded a certificate of attendance by the VET partners.

This training aims in advancing the skills of European agricultural workers (mainly farmers) and agricultural extension staff through the development of new curricula and teaching programmes that integrate in a practical way the latest developments in agricultural applied research. The purpose is to provide farmers and agricultural stakeholders with knowledge, skills and competencies in the field of agro-environmental technology for sustainable agriculture, developing new innovative curricula that integrate the latest advancements of the “agri-tech” sector that can be immediately applied by agricultural workers for sustainable agriculture.

2. SAGRI Training course: modules

The training course is divided into six training modules, supported by relevant learning and assessment material. Each module is 50 hours long for a total of 300 hours of training and 2 additional hours for the final exam. A certificate will be provided to those who pass the exam. Each module is structured as follows:

- ✓ 2 hours of knowing the platform / module
- ✓ 6 hours of classroom lectures
- ✓ 18 hours of self study
- ✓ 13 hours of e-learning
- ✓ 2 hours of hands-on training
- ✓ 2 hours of self-assessment
- ✓ 6 hours of peer assessment
- ✓ 1 hour of feedback

The duration of the entire course is over a period of 2 months: during each week there will be 38 hours of course (divided into lectures, e-learning, hands on training, assessment, etc.), except the fourth and last week, which include 36 hours of course.

Brief description of the modules:

MODULE 1: PRECISION AGRICULTURE

AIM	To know how to manage differentially production factors in order to improve return of investment and reduce environmental impact.
LEARNING TOPICS	<ul style="list-style-type: none"> ✓ Notions on the concept and principles of Precision Agriculture and the potential benefits from its use. ✓ Notions on the criteria for PA adoption and implementation. ✓ Notions on the better techniques and technologies to evaluate field variability. ✓ Skills for implementation and/or use of precision agriculture technologies



DURATION	50 hrs
PREPARED BY	University of Évora, Portugal

MODULE 2: INTEGRATED PEST MANAGEMENT IN PLANT PROTECTION

AIM	To know how to solve pest problems in crops while minimizing risks to people and the environment. Using an integrated combination of techniques such as biological control, habitat manipulation, modification of cultural practices, use of resistant varieties and use of pesticides only when the monitorization indicates its needs.
LEARNING TOPICS	<ul style="list-style-type: none"> ✓ Disease definition. The disease components and the different ways of plant protection. ✓ The principles of integrated pest management (IPM). ✓ Legislation associated to the IPM application. ✓ Notions of techniques and strategies of IPM. ✓ Take the decision. What means and how can do that? ✓ Notions about the rules of the phytopharmaceutical products.
DURATION	50 hrs
PREPARED BY	University of Évora, Portugal

MODULE 3: AGRICULTURAL REUSE OF ORGANIC RESIDUALS

AIM	Is the training about possible reuse of agricultural co-products, by-products and wastes in the same agricultural sector or in different high-value chains, according to the best solution aimed to the valorization of the organic residuals (biomass). When this biomass is produced, the suitable way to reuse it in different application, recycling or recovering it
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LEARNING TOPICS	<p>before the disposal will be examined, as well as the possibility to use it in other industrial sectors (e.g., cosmetics, nutraceutical, etc.).</p> <ul style="list-style-type: none"> ✓ Definitions of available organic residuals and their potential uses. ✓ Definition of the characteristics of agricultural by-products, co-products and wastes. ✓ Notions on the legislation regarding the use of organic residuals. ✓ Notions on environmental and economic aspects of using organic residuals. ✓ Notions on organic residuals management, transport and treatment techniques that could be performed in the agricultural farm.
DURATION	50 hrs
PREPARED BY	University of Basilicata, Italy

MODULE 4: DRIP IRRIGATION AND WATER-CONSERVING TECHNOLOGIES

AIM	Is to train the agricultural workers and farmers on the use and benefits of drip irrigation systems. It will present the required skills for a better use of the drip irrigation techniques and water conserving technologies based on economic and environmental criteria.
LEARNING TOPICS	<ul style="list-style-type: none"> ✓ The use of drip irrigation in agriculture ✓ Drip system layout ✓ Drip irrigation systems ✓ Maintenance of irrigation systems
DURATION	50 hrs
PREPARED BY	Agricultural University of Athens, Greece



MODULE 5: RENEWABLE ENERGY AND ITS APPLICATION AS GREEN AGRICULTURAL ENERGY SOURCE

AIM	This module will provide a comprehensive overview of renewable energy to farmers, as a means to enable sustainable development by using renewable energy sources in agriculture. It will present the case for how renewable energy sources represent both an environmental necessity and an economic opportunity. This module aims to train and encourage agricultural workers and farmers on the use of renewable energy technology in agriculture.
LEARNING TOPICS	<ul style="list-style-type: none"> ✓ Elements of a Sustainable Energy Solutions ✓ Sustainable technologies ✓ Sustainable agriculture ✓ Selecting a Sustainable Energy Solution in agriculture sector
DURATION	50 hrs
PREPARED BY	Agricultural University of Athens, Greece

MODULE 6: BIOENERGY AND ENERGY CROPS

AIM	Is to introduce the concept of bioenergy as well as the main energy crops employed in southern Europe, their classification and selection based on technical and economic criteria and their environmental impact. Bioenergy is the energy derived from recently living material such as wood, crops, or animal waste. It can contribute to reduce the overall consumption of fossil fuels. Energy crops are defined as any vegetal material used to produce bioenergy. They have the capacity to produce large volume of biomass with high energy potential, and can be grown in marginal soils. The training of agricultural workers is finalized on the use and benefits of alternative solutions such as energy crops.
LEARNING TOPICS	<ul style="list-style-type: none"> ✓ Notions on the range of bioenergy resources, conversion

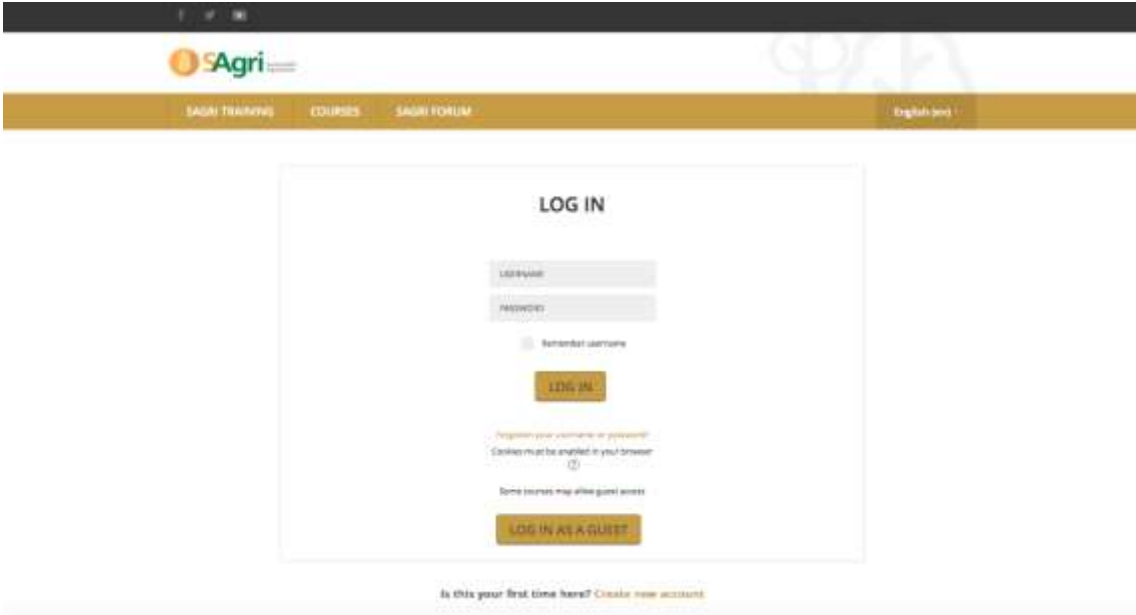


	<p>technologies and markets.</p> <ul style="list-style-type: none">✓ Notions on how to evaluate energy crops as a farm business opportunity.✓ Classifications of Energy Crops.✓ Criteria of selection of most suitable energy crops.✓ Description of more diffused energy crops in southern Europe.✓ Types and methods of energy extraction from energy crops.
DURATION	50 hrs
PREPARED BY	Agricultural University of Athens and University of Basilicata

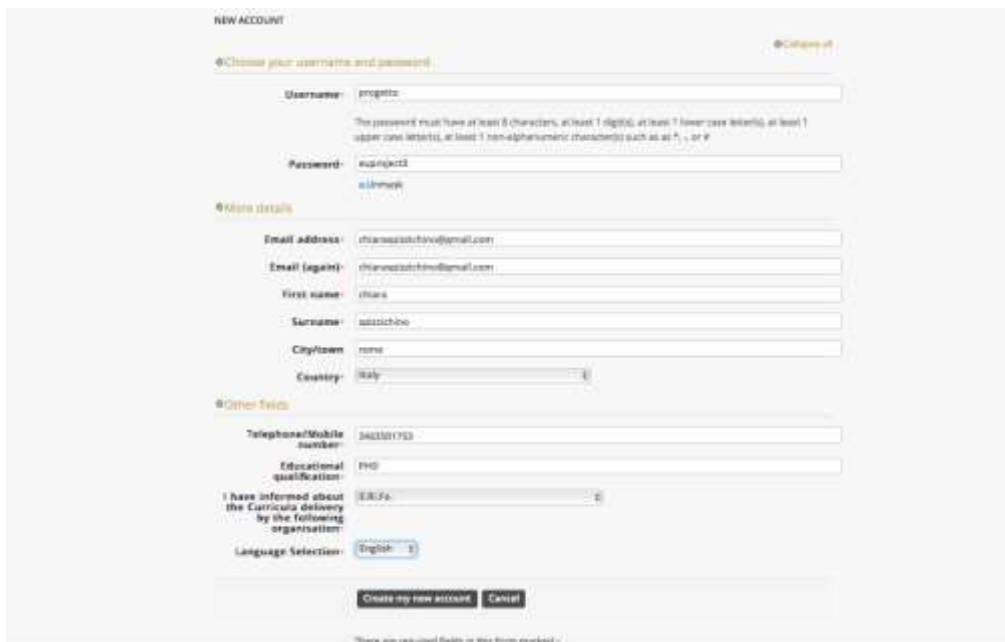


3. How to access SAGRI’s online platform

Click on the following link: <https://sagri-vet.eu/login/signup.php?> to access SAGRI’s online platform and register as a guest.

A screenshot of the SAGRI online platform's login and registration page. The page has a dark header with the SAGRI logo and navigation links for 'SAGRI TRAINING', 'COURSES', and 'SAGRI FORUM'. Below the header is a 'LOG IN' section with input fields for 'EMAIL' and 'PASSWORD', a 'Remember username' checkbox, and a 'LOG IN' button. Below this is a section for creating a new account, with a 'LOG IN AS A GUEST' button. At the bottom, there is a link for 'Create new account'.

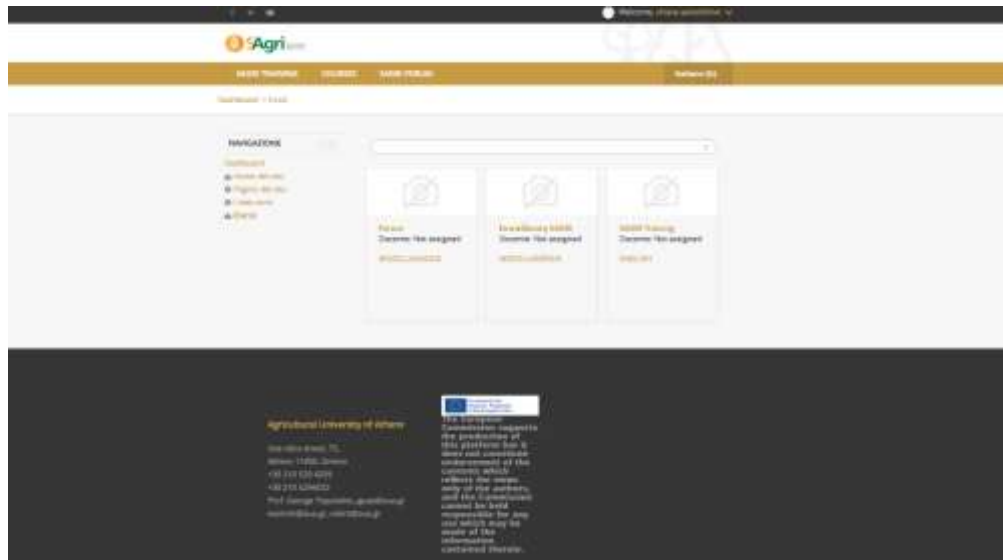
Fill in the registration form with your personal data and click on “Create my new account”. You will receive a confirmation mail.



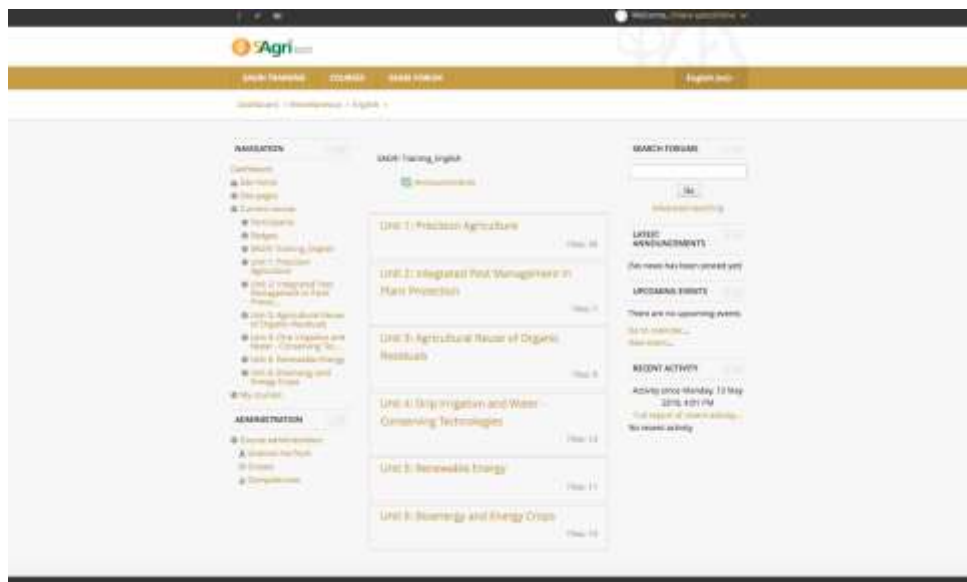
Click on the link you received by e-mail and this time Log In using your username and password.



Once you have entered the website, click on “Courses” on the top menu. Then click on the link “SAGRI Training” in the middle of the page (NOT in the top menu).



Click on “Enrol me” to open the Course page with all the training units. By clicking on each Unit you will have access to the training material.



4. Certification

Certificates will be awarded to the participants that successfully conclude the training seminars. An escalated model will be followed for the certification:

- Level 1: Certificate of successful attendance
- Level 2: Certificate of “sustainable farmers” according to the standards of ISO 17024 which is the international standard for personnel certification.



5. Presentation of the involved Universities

AGRICULTURAL UNIVERSITY OF ATHENS

The Agricultural University of Athens (AUA) is the 3rd oldest university in Greece. Since 1920, contributes consistently and continuously to Greek and European primary sector development, by conducting basic and applied research in agricultural related sciences. AUA conducts the 1/3 of the agricultural research in Greece. AUA campus is a complex of 16 buildings comprising of auditoriums, 41 fully equipped laboratories, a modern library, computer clusters, extensive agricultural facilities (an arboretum, vineyard, experimental fields, flower garden, greenhouses, cowshed, sheep pen, chicken coop, dairy installations, aquaculture tanks). AUA counts 178 academic staff, 300 supportive staff, 3,000 students, 450 MSc students and 250 PhD students. AUA research funding schemes come from the private sector as well EU and Greek research projects (i.e. AUA the last 4 years has participated, as a leader or partner in 53 EU projects). AUA contributions address a wide range of issues related to food safety and environmental protection significantly affecting the daily lives of Greek and Europeans citizens: food quality and safety, water resource conservation, organic farming, alternative energy sources, biotechnological applications in agriculture, information and communications technology.

The team has recently been involved as partner in the Project entitled “Solar Energy System Design using Advanced Learning Aids” (SOLEDA) with contract number 530296-TEMPUS-1-2012-1-ES-TEMPUS-JPHES. Members of the team have been participated in several National and International R&D programs on the application of modern teaching techniques on a lifelong learning basis.

The Agricultural University of Athens is a University where education remains the significant pillar of its existence and its faculty together with the research and teacher associates provide high quality competent educational material and classes to either undergraduate and postgraduate students or professional that require knowledge on specific subjects.

AUA for over 30 years provide training seminars for professionals (farmers, agronomists, agricultural engineers, citizens with interest on related fields) on all scientific subjects that this University covers. The major subjects provided include Plant Science (Agronomy, Agricultural Zoology and Entomology, Ecology and Environment, Floriculture and Landscape Architecture, Agricultural Meteorology, Agricultural Microbiology, Pesticides, Phytopathology, Plant Breeding and Biometry, Plant Physiology and Morphology, Pomology, Botany, Sericulture and Apiculture, Vegetable Production, Viticulture), Animal Science (Anatomy and Physiology of Farm Animals, Animal Breeding and Husbandry, Nutritional Physiology and Feeding), Aquaculture (Applied

Hydrobiology), Food Science (Dairy, Enology, Food Chemistry, Food Microbiology and Biotechnology, Food Process Engineering, Food Quality Control and Hygiene), Biotechnology (Genetics, Enzyme Technology, Molecular Biology, Physics), Natural Resources (Soil and Water Resources Management), Agricultural Engineering (Agricultural Constructions and Engineering) and Agricultural Economics and Rural Development (Rural Economic Development, Rural Policy and Cooperatives, Agricultural Extension, Agricultural Systems, Rural Sociology, Agribusiness Management, Informatics).

UNIVERSITY OF ÉVORA

The University of Évora is organized in 4 Schools: Arts, Sciences and Technology, Social Sciences and Nursing and offers 41 undergraduate and 120 postgraduate degrees. Research and Development (R&D) covers scientific areas through a network of 14 Research Units, all of them submitted to international evaluation, under the coordination of the Institute for Research and Advanced Studies. Furthermore, the University of Évora established three Chairs in areas of excellence: Biodiversity, Renewable Energies and Heritage, which are sponsored by private capital holders. Over the last years, the University has fostered a close link with the community. Such interaction has been possible through the creation of working networks and dissemination of knowledge such as the participation in the Science and Technology Park as well as through the establishment of protocols and contracts for the supply of services in partnerships with Companies, Universities, Associations and Institutes. The main R&D areas are: Agronomy and Biodiversity; Geophysics, Environment and Landscaping; Materials and Surface Science; Economics and Business Studies; Computer Sciences and Software Interoperability; Social and Political Sciences, History, History of Art, Science and Cultures; Applied Mathematics; Education; Linguistics and Literature; Elderly Healthcare. The 150 running R&D projects are developed through national and international partnerships, funded by the FP7, FCT as well as by private sponsorship.

ICAAM (Institute of Mediterranean Agricultural and Environmental Sciences) is the largest University of Évora R&D Unit. The mission of ICAAM is to develop top-level research on the sustainability of Mediterranean agriculture and related ecosystems. ICAAM's research focuses in 3 thematic lines: Efficiency in the use of production factors; Agri-food products quality and added-value; Ecosystems integrity and landscapes multifunctionality. In 2013, ICAAM's researchers published 132 papers in international journals; presented 250 communications in international scientific meetings and participated in 64 research projects.

Sustainable farming is a concern presented in the 1^o, 2^o and 3^o Cycles in agriculture sciences and environment offered in the University of Évora. There is a straight connection between departments of agriculture and animal production, rural engineering, landscape and environmental sciences which together collaborate in the different degrees. One example is the 3^o Cycle (PhD programme) in Agriculture and Environmental Sciences, being the main goal to promote the conciliation of the agriculture production with the environmental quality. This 3^o Cycle shows a scientific-pedagogic interface between the agriculture and the environmental sciences, contributing for the creation of more sustainable production systems. Besides the degree courses, UEVORA offers Vocational training courses to agricultural workers with the goal of deepen the knowledge in specific areas of sustainable farming.

UNIVERSITY OF BASILICATA

The University of Basilicata is a public State University. It was founded in 1981 and started its academic activities in 1982. It is located in Potenza and in Matera, inside a region of Southern Italy - the Basilicata Region - well known for its agricultural, cultural and touristic vocation.

One of the Departments of the University of Basilicata is the SAFE School of Agricultural, Forestry, Food and Environmental Sciences, whose mission is focused on every aspect connected with agriculture, forestry, food technology and environmental management. Both didactic and research activities within these sectors are performed. Several Erasmus bilateral agreements are managed by the SAFE School.

An International Master Course named: "Sustainable Management of Food Quality – EDAMUS", financed by the Erasmus-Mundus Programme, is currently running at the SAFE School. Within this International Master Course, leaded by the University UM1 of Montpellier (France), the SAFE School of the University of Basilicata is one of the Partner institutions awarding the final multiple degree having legal value. During the first two academic years, more than 15 international students got their multiple degree.

The SAFE School has also participated into several national and international projects, e.g. AgroChePack (financed by the ETC MED Programme), ARUPA (LIFE+ Programme), KATUN (HERIC Programme), "Strain improvement in wine yeasts by hybridisation and segregation" (Hungary-Italian Bilateral Programme).

The following vocational training VET courses are currently offered – in english English language – at the SAFE School of the University of Basilicata:

- Machines and plants for the Mediterranean high quality agro-food industry productions – 6 ECTS. This course analyses the machines and plants used for the production, processing, and storage in the major Mediterranean agro-food industries.
- Economics of quality for sustainable development – 6 ECTS. This course aims to give concepts related to the economics of quality in the Mediterranean agribusiness industries, applied into a framework of sustainable development, to understand the best practises within an international economical context.
- Food product development – 6 ECTS. This course is finalized to the knowledge of the main characteristics of the various food matrices and of the interactions between the production processes and the food characteristic, in order to adequately plan the production processes with respect to overall quality, safety, preservation and shelf-life.
- Microbiology of fermented Mediterranean foods – 9 ECTS. Main topics of this course are: Principles of food fermentation. Characteristics and role of microorganisms involved during different phases of fermented food production. Microbiology of Mediterranean fermented foods.
- Technical planning of rural land – 3 ECTS. Main aim of this course is the training about ICT tools (GPS, GIS, etc.) for the sustainable management of agriculture and food productions.

