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Skills Alliance for Sustainable Agriculture

Project Acronym

SAGRI

**Deliverable 3.6: SAGRI PROGRAMME
TRAINERS' GUIDE**

Prepared by: ERIFO

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1. Welcome to the SAGRI Programme trainers’ guide

1.1. Introduction

This guide will be a trainer’s compendium to the course. It will include practical information about the modules, how they relate to the learning outcomes and how trainers can make the most out of the teaching material.

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. Description of SAGRI Training Modules

The SAGRI project will generate innovative curriculum that responds to specific education needs of agricultural workers. The programme will abide by the European Qualifications Framework for lifelong learning (EQF) and the European Credit System for Vocational Education and Training (ECVET) standards.

Six training modules will be developed, supported by relevant learning and assessment material:

- Module 1: PRECISION AGRICULTURE
- Module 2: INTEGRATED PEST MANAGEMENT IN PLANT PROTECTION
- Module 3: AGRICULTURAL REUSE OF ORGANIC RESIDUALS
- Module 4: DRIP IRRIGATION AND WATER-CONSERVING TECHNOLOGIES
- Module 5: RENEWABLE ENERGY AND ITS APPLICATION AS GREEN AGRICULTURAL ENERGY SOURCE
- Module 6: BIOENERGY AND ENERGY CROPS

To design the different modules, a training need analysis was carried out (SEE ANNEX I)

Below is a brief description of each module:

MODULE 1: PRECISION AGRICULTURE

SCOPE: to know how to manage differentially production factors in order to improve return of investment and reduce environmental impact.

LEARNING TOPICS:

- ✓ 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.

MODULE 2: INTEGRATED PEST MANAGEMENT IN PLANT PROTECTION

SCOPE: 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:

- ✓ 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.

MODULE 3: AGRICULTURAL REUSE OF ORGANIC RESIDUALS

SCOPE: 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 before the disposal will be examined, as well as the possibility to use it in other industrial sectors (e.g., cosmetics, nutraceutical, etc.).

LEARNING TOPICS:

- ✓ 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.

MODULE 4: DRIP IRRIGATION AND WATER-CONSERVING TECHNOLOGIES

SCOPE: 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:

- ✓ The use of drip irrigation in agriculture
- ✓ Drip system layout
- ✓ Drip irrigation systems

- ✓ Maintenance of irrigation systems

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

SCOPE: 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:

- ✓ Elements of a Sustainable Energy Solutions
- ✓ Sustainable technologies
- ✓ Sustainable agriculture
- ✓ Selecting a Sustainable Energy Solution in agriculture sector

MODULE 6: BIOENERGY AND ENERGY CROPS

SCOPE: 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:

- ✓ Notions on the range of bioenergy resources, conversion technologies and markets.
- ✓ 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.



3. How training is delivered

The training course is organized in 6 modules: 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 table below shows the subdivision over a period of 2 months (expected duration for the entire course) and the weekly organization of the teaching methodology envisaged.

	Week	Module	Knowing the Platform / Module	In class lectures	Self study	Online platform	Hands on training	Self assessment	Peer assessment	Feedback	Final test	Total Per Week	
Month 1	1	M1	2	6	15	10		1	4			38	
	Total per week - Week 1											38	
	2	M2	2	6	15	10		1	4			38	
	Total per week - Week 2											38	
	3	M3	2	6	15	10		1	4			38	
	Total per week - Week 3											38	
	4	M1			3	3	2	1	2	1			12
		M2			3	3	2	1	2	1			12
		M3			3	3	2	1	2	1			12
	Total per week - Week 4											36	

	5	M4	2	6	15	10		1	4			38
	Total per week - Week 5											38
	6	M5	2	6	15	10		1	4			38
	Total per week - Week 6											38
	7	M6	2	6	15	10		1	4			38
	Total per week - Week 7											38
	8	M4			3	3	2	1	2	1		12
		M5			3	3	2	1	2	1		12
		M6			3	3	2	1	2	1		12
	Total per week - Week 8											36
Month 2	Certification Exam										2	
	Total		12	36	108	78	12	12	36	6	2	302

4. The SAGRI Training platform

The aim of the SAGRI OER platform (<http://www.sagri-vet.eu>) is to offer an interactive resource for virtual learning, making all training resources widely available as Open Educational Resources.

The SAGRI OER platform creates an accessible Massive Online Open Course (MOOC) that contains the teaching and assessment material.

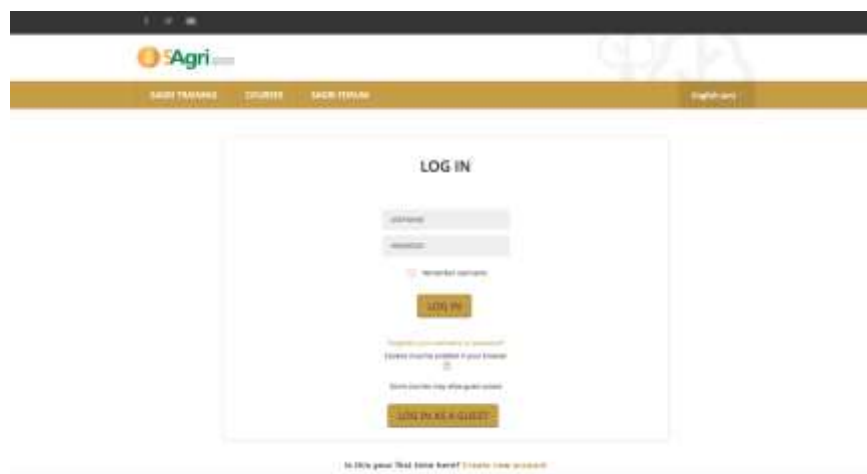
Trainees have access to a 'practice area' in the SAGRI MOOC where they are able to share their accessible learning designs.

In the Virtual Community (SAGRI FORUM) the users can meet, exchange experiences, and participate in-group activities. The SAGRI Virtual Community brings together agricultural workers, agricultural extension staff, VET providers, and education professionals from all education levels, policy-makers and agricultural researchers.

The SAGRI platform, available in English, Greek, Portuguese and Italian, provides access to an organized collection of all currently available technology tools for sustainable agriculture: the users can exchange experiences and follow virtual lessons.

4.1 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.



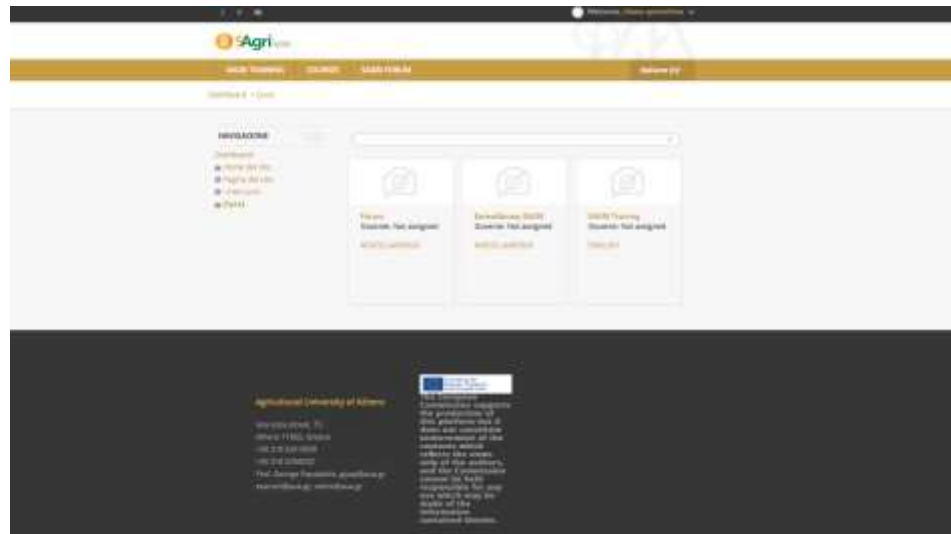
Fill in the registration form with your personal data and click on “Create my new account”. You will receive a confirmation mail.



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.



5. Assessment criteria

Assessment will be consistent with the learning objectives and based on weekly self and peer assessment, to prepare the trainees for the final exam, which will ultimately determine if the trainee is going to obtain the certificate. Detailed rubrics will 'grade' both the quantity and quality of participation. Aligning assessment with intended learning outcomes is crucial. One self-assessment and four peer assessments (group assignments) will be developed for each module, except for the weeks 4 and 8, where one self-assessment and two peer assessments will be developed for the module 1,2 and 3 (weeks 4) and for the module 4,5 and 6 for the weeks 8. A final exam will assess the overall knowledge, skills and competences of the participants.

To create the tests for the assessments different techniques have been used:

- Multiple choices: the trainees have to choose the correct word to complete the sentence.
- Embedded Answers (Gap Filling): the trainees fill the gap to complete the sentence
- Matching: with this question type, the trainees must link items from the first column to items in the second.
- True / False: the trainees must decide if a statement is true or false
- Short Answers: the trainees must answer the questions in a synthetic way
- Numerical: the trainees must answer the questions with numbers / percentages

To create the tests for the final exams the techniques that will be used are:

- True / False and Multiple choice techniques for the written exams
- Short questions and case studies for the oral exams



6. How to get the 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.

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.



ANNEX I: Training Needs Analysis Tool

This Tool was designed as a first step of the training course, in order to collect relevant information on participants background and needs. The overall objective is to fine-tune the training contents and delivery to better fit participants expectations and providing support to trainers. The forms should be filled by participants at the beginning of the training with the support of the trainer.

<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Precision Agriculture			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Integrated pest management in plant protection			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Agricultural reuse of organic residuals			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Drip irrigation and water-conserving technologies			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Renewable energy and its application as green agricultural energy source			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Major tasks of position</u>	<u>Training/skills development required</u>		
	Yes	To some extent	No
Bioenergy and energy crops			
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



