Periodical Report
24 Months of project implementation

New Curricula in Precision Agriculture Using GIS Technologies and Sensing Data

CUPAGIS

DJILLALI LIABES UNIVERSITY
SIDI BEL-ABBES

Co-funded by the Erasmus+ Programme of the European Union

Joint Project: Capacity Building in the Field of Higher Education ERASMUS+ 2018

KADOUN Abd-Ed-Daïm, Prof. , Vice-rector
DJELLOULI Riad, Teacher

Periodic Report 24M
on implementation of the project CUPAGIS
within the first 24 months
till 15.11.2020

Table 1.1. ACTIVITIES IMPLEMENTED		
	Question	**Answer**
1	**Please, name activities and short description of their deliverables your university implemented so far according to the project work plan.** **Please, describe activities and their results specifically for each of the Work Packages (WP1-WP5)**	**The university has implemented the following activities (+ short description of their deliverables) from 16.05.2020 till 15.11.2020 according to the work plan:** **WP1: preparation** Modifications and review in the programs of courses have been made according to the recommendations of European experts. In the following units ; o Agression et santé des plantes cultivées o Basics of the Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources (B.P.A.C.T.E). o Soil properties and its measurement o Mechanization in precision farming 5-A course of rural economy has been added as proposed by the experts. **WP2: development** **WP2.1** The workgroup with the agronomic department staff had: o The teachers concerned by the review of their courses program, have been informed to draft the suggested modifications of European experts. o the canvas, has been reviewed by an internal expert o a new course of rural economy has been added, by English language according to Bologna process. o The developed program of PA master still not approved by our ministry due to pandemic and required time to review the whole courses by European experts. **WP2.2** o the laboratories and classrooms (PAGIS and VCR) have been equipped and furnished to receive the Cupagis project materials that will be received later. o The location of the Pasenso office has been chosen o the list of equipment h as been discussed many times with Algerian partners in local meetings. **WP2.3** the two internships were not done because of covid, but they were informed of webinars in their fields.

WP3. Quality Plan

- Dr. N. Talha, UDL teacher, accompanies the working group and the Master team to ensure a good quality in the realization of the project. Therefore, she has continuously collected data to ensure that the required actions are properly and effectively implemented; and ensured the quality of the data collected.

At all times, activities related to meetings like, deadlines, schedules, etc. are supervised by Dr. Talha,

WP4. Dissemination and Exploitation

a videoconference was given in ERASMUS Day's on October 17, 2020 by Mr. Djellouli on precision agriculture in Algeria within the framework of the Cupagis project.
https://www.facebook.com/cupagis/photos/a.342110973130111/630963884244817
Information on the project is regularly posted on the university website
https://www.univ-sba.dz/index.php/fr/
Moreover, a section in the university's website has been dedicated to disseminate project information
https://www.univ-sba.dz/index.php/fr/81-categorie-fr-fr/actu-fr-fr/340-projet-cupagis-fr
A Facebook page is dedicated to the dissemination of project activities https://www.facebook.com/cupagis/?view_public_for=306669686674240

WP5. Management

Continuous content monitoring of different project tasks, continuous detection of positive and negative points with the different workgroup members to discuss and analyse them, for the upgrading of the project workflow: Many meetings were held to discuss both curricula and precision agriculture equipment:
With European and Algerian partners
Between only Algerian partners
Local meetings gathering the workgroup members. Sometimes extended to non-members teachers involved in the conception of curricula.
CUPAGIS Monitoring led by the Erasmus+ National Office on 20/10/2020
We did a banch of meeings:

26/03/2020 – Meeting of all partners : Future activities, in working conditions of COVID'19 and cancellation of scheduled trainings at AU Plovdiv and CZU Prague.
06/04/2020 - National meeting: discussion of sensors, first list sent to the EU coordinator.
19/04/2020 - National meeting: To approve the list sent by Pr Soomere.
19/06/2020 - Meeting of all partners: Quality report of the external expert Dr. Girenko and future tasks concerning the project.

		27/06/2020 - National meeting: Discussion of the proposal curricula peer-reviews. 29/06/2020 - Meeting of all partners: to discuss the academic content of the courses. 07/07/2020 – National meeting: Erasmus monitoring. 29/07/2020 - UDL local meeting: we discussed different points of project progress, like equipment list. And modification of canevas, materials room. 03/08/2020 – All partners meeting: teaching materials, additional equipment sent by Berlin partner. 05/08/2020 – National meeting: Equipment, peer-reviews, national coordinator with Oran 1 university had addressed a letter to our ministry of higher education to get the permission for drones acquisition 10/08/2020 – All partners meeting: Discuss peer-reviews with European partners (Plovdiv, CUL). 19/08/2020 – Meeting of all partners: discussion on the approval of the equipment list. 22/09/2020 - National meeting to formalise national coordination to Prof. Kadoun and Discuss the list of sensors. 20/10/2020 – National meeting: Erasmus monitoring. 27/10/2020 – National meeting: Discuss the difficulties to get the drones. 05/11/2020 – National meeting: Set the equipment list without drones acquisition. 11/11/2020 – All partners meeting: Set the equipment list without drones acquisition
2	Describe positive changes/benefits in your university as the result of <u>each</u> of the implemented activities of the project	During the dissemination of Cupagis project activities, a large group of faculty members became aware of the role of new technologies and their contribution in the field of agriculture. Students have become increasingly interested in training in precision agriculture, as they have seen how technology can improve such a field, and they have also noticed that the program has been greatly improved as a result of the exchange of curricula through the Cupagis project.
3	Describe any problems/difficulties encountered while implementing the activities and the measures taken to solve them	The only slight problem is some zoom meetings with European partners that are in a close appointment. We wish to be informed a little beforehand.

Table 2.1.1. UPDATED COURSES						
Course №	**Title of the course and in which program it is taught (Bachelor, Master)**	**Its volume (in ECTS)**	**Number of students participating in the course**	**Name new elements in the course and estimate the percentage they represent in relation to the preexisting course**	**Link to the course on the university page**	**Accreditation and recognition: Specify the date when the course was accredited in the curriculum and when the pilot teaching started**
Course 1	Agression et santé des plantes cultivées	4	20			
Course 2	Basics of the Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources (B.P.A.C.T.E).	4	20			
Course 3	Soil properties and its measurement	6	20			
Course 4	Mechanization in precision farming	6	20			

∑(Total number of updated courses) = 4

∑(Total number of ECTS) = 20

Table 2.2.2.NEW COURSES					
Course №	**Title of the course and in which program it is taught (Bachelor, Master)**	**Its volume (in ECTS)**	**Number of students participating in the course**	**Link to the course on the university page**	**Accreditation and recognition: Specify the date when the course was accredited in the curriculum and when the pilot teaching started**
Course 1	Rural economy	1			

∑(Total number of new courses) = 1
∑(Total number of ECTS) = 1

Quality assurance

❖ The quality assurance plan aims at:

- Collecting data to ensure that required actions are correctly/efficiently implemented;

- Ensuring the quality of the data collected.

❖ The following activities should be included:

- Mention frequency of meetings including participants, agenda, future actions, reports...;
- Provide and specify a list of all documents referenced in the partner's tasks;
- Detail the project minor and major milestones including reviews;
- Check that the deadlines and schedule are observed;
- List the specific individuals implied in each of the identified activities/tasks;

❖ Plan process review: targets, expected outcomes, impact...

- Targets set previously will be reviewed;
- Strategies and techniques implemented to ensure progress towards the targets should be clearly identified.

❖ Assess periodically the state of progress of the following tasks, progress should be quantifiable:

- Purchase and install the equipment;
- Gather documentation for PAGIS and VCR;
- Prepare a set of documentation for PASENSO.

❖ A specific attention will be drawn on communication and coordination efficiency.

- Depending on the data generated, corrective actions will be performed to solve potential problems.
- A quality assurance checklist has been designed including/taking into account various parameters of the project.
- Prepare evaluation questionnaires

Methodology of internal evaluation

- Internal evaluation is based on qualitative and quantitative tools.
- **The qualitative survey**:

Organize the distribution of satisfaction questionnaires following each activity. These aim to qualify the group dynamics as well as to assess the quality of the organization of events and activities.

Dispatching of questionnaires on the quality of deliverables. At this stage, it will be for each participant engaged in the work to assess the deliverable on the completeness of the content, the operational nature of the recommendations

- Activity evaluation grid

The proposed evaluation grid includes the indicators and instruments described in the matrix of the project's logical framework. The internal process evaluation grid indicates the internal activities / processes to be evaluated; the target of the evaluation, that is to say the persons or groups of persons to whom the questionnaires will be addressed; the evaluation object, is what we want to evaluate and finally the instruments and tools to use during the evaluation

Activity	Target	Area of evaluation	Instrument	when
Event evolution	- Participants - others, …	- Communication (come together virtually and work is developed mainly by email and zoom.) - Level of commitment - Level of active participation	Questionnaire at the end of the event	
Dissemination	- Beneficiaries - Stakeholders - Networks - Representatives of other institutions - Others …	-Level of dissemination at the local level - Level of national and international dissemination	Reports, analyses, other instruments (questionnaire)	

❖ Risk prevention for the conduct of the CUPAGIS project: to evaluate project risk

Identifying the risks potentially weighing on the conduct of the project and on the quality of its deliverables is one of the tasks of the Quality Committee. In other words, the aim is to

· identify risks that might potentially disrupt the project/the team,
· analyse these risks - qualitative and quantitative analysis - to determine how it might influence the project:

- activity duration,

- schedule,
- cost,
- performance/quality…

· and manage them in order to minimize their impact on the project life: be proactive to prevent the potential impacts and elaborate remedial responses.
· **The peer reviewers are:**
· Assist Pro Dr Krum Hristov, Plodiv University, Bulgaria.
· Assoc. Prof. Dr. Zhulieta Arnaudova Plodiv University, Bulgaria
· Dr Jan Chyba, Czech University of life Sciences Prague, Faculty of engineering.
· the peer review has been conducted on 20/08/2020, and the experts sent in their reports on 04/09/2020.

information regarding peer reviews:

name of reviewer	University of reviewer	Observation	Conclusion
Dr Krum Hristov	Plodiv University, Bulgaria.	All teaching modules are important and related to the objectives of the program. They will give the students the necessary base of knowledge, theoretical and practical skills in Precision agriThe curriculum is very well structured. It covers important agronomic and technical matters related to learning important principles of the biological production process and the technology of precision agriculture. Some of the courses, however, seem too closely specialized (Soil properties and its measurement; Attacks and health of cultivated plants). In my opinion, the names of the culture.	The Precision Agriculture" master's program at UDI- is well developed and has great potential. The overall concept is professional. The curriculum follows a clear academic logic. Completion of this course will allow students to improve their opportunities for professional realization and would contribute to the modernization of both Algerian and world agriculture

		courses and their content need to be better specified. Given that GNSS is an integral part of precision agriculture, it is necessary to include a GNSS course in the curriculum. In this way, students will learn about the strengths and limitations of the applied technologies.	
Dr. Zhulieta Arnaudova	Plodiv University, Bulgaria.	The proposed teaching modules are well structured and provide fundamental and interdisciplinary professional focus on precision agriculture and GIS.The teaching modules: Remote sensing and application of earth and environment related to precision agriculture - The basics of remote sensing which is a key tool in learning precision farming. In addition to the theoretical concepts taught in the courses, the student will become familiar with and be introduced to several software for processing satellite imagery through scheduled practical sessions. Comment: This module introduces students remote sensing data, methods, and tools used for the study of global environmental change. Develop some practical, hands-on skills for processing, analysis, display, and discussion of remote sensing data. GIS for Precision Agriculture is give a basic knowledge -introduction to GIS, Coordinate systems and projections, vector and raster, attribute data, thematic maps analysis. Description in French Advanced GIS Techniques for Precision Agriculture introduce raster analysis, methods for spatial analysis. Description in French It is not clear what kind of GIS software will be used in the practical seminars.	An education and formation system should be the mean through which tradition and technological advancement are successfully combined and transferred with a double direction interaction between knowledge creation centers experts, advisors, etc. and farming communities. The master's course «Precision Agriculture" developed by UDL covers basic disciplines in the field of precision agriculture. The aim is to train specialists to manage modern agricultural farms. I recommend to include subjects in the field of information and IoT technology

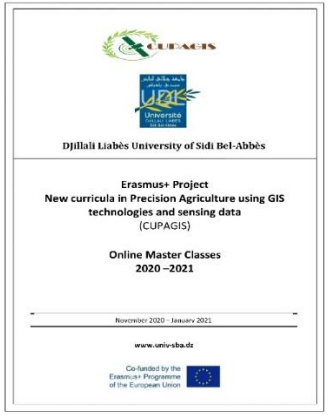
		analysis. Description in French Advanced GIS Techniques for Precision Agriculture introduce raster analysis, methods for spatial analysis. Description in French **It is not clear what kind of GIS software will be used in the practical seminars**	
Dr Jan Chyba	Czech University of life Sciences Prague	In generally, I found relatively old compulsory literature. Please, try it to update. I appreciate the inclusion of the chapter Legislation and regulation. - Soil properties and its measurement I would prefer to use in prerequisites subjects such as pedology, chemistry etc. - Basics of the Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources	

Laboratories and equipment

the practical work of remote sensing and GIS such as image processing, image classification, estimation of biotic factors, geographical modelling, bioclimatic synthesis, agroecosystem monitoring, will be carried out in the PAGIS laboratory using computers and image processing software, and data collected in the field by sensors, will be combined with satellite and geographic data too.

For practical work in soil physics, soil sensors will be used, e.g. for the measurement of soil temperature, soil moisture and conductivity. And for the electronic circuits, they will be used in the sensor module.

as for the rest of the theoretical courses, they will use the VCR.



Dissemination and Sustainability

Disseminaion and Sustainability	
Question	**Answer**
How many and which of dissemination materials were produced (leaflets, brochures, flyers, publications etc). Please, provide designs (scans) in the presentation.	02 postings: - The first one concerns a webinar on precision agriculture in the framework of the Cupagis project (Erasmus Days). - The second one concerns the big data courses given by the Technical University of Berlin (Master classes)

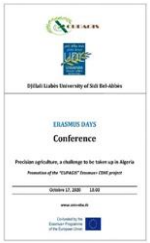
		 
2	**Provide a link to the Internet sources where publications about the project/dissemination materials were posted**	1. https://www.facebook.com/cupagis/?view_public_for=306669686674240 2 https://www.univ-sba.dz/index.php/fr/81-categorie-fr-fr/actu-fr-fr/340-projet-cupagis-fr
3	**How many non-consortium organizations (for examadministrative staff of universities) have been informed about the project?** **ple, universities/teachers, students,**	**all teachers, students and even administrative staff have been informed several times, through posters, discussions and direct contact regarding project activities**

Table 5.1.2. DISSEMINATION EVENTS					
No	**Date**	**Title**	**Target Audience**	**Number of participants**	**Is there a press-release of the event (YES/NO). If YES, provide it.**
1	**17/10/2020**	**ERASMUS Days; a challenge to be taken up in Algeria** **Promotion of Cupagis Projet CBHE ERASMUS+ project**	**Lecturers, local partners, students**	**20**	No

∑(Total number of dissemination events) = 3

Regional Cooperation

1. due to the restrictions imposed by the covid control measures, no meetings have been held in the last 6 months.
2. two agreements have been signed with non-university institutes, and a potential agreement may be signed in the near future with a company specialized in the field of agriculture.
3. for the moment no agreement has been signed between our university and the consortium members.

Table 5.2. INDUSTRIAL PARTNERS	
Please, provide a list of new industrial partners, with which you maintain communication within the last 6 project months, and which could be interested in hiring your graduates	List of industrial partners: 1. SODEA Hasnaoui

Table 2.4. PASENSO Service Office		
№	**Question**	**Answer**
1	Name of the person(s) responsible for PASENSO operation in your university	This step of project is not yet achieved
2	Provide scan of PASENSO regulations approved at institutional level	  
3	Provide scan of PASENSO work plan approved at institutional level	This step of project is not yet achieved
44	Indicate activities, that was already been implemented according to PASENSO work plan (title of activity, date, link to agenda, number of persons involved)	This step of project is not yet achieved
5	Provide link to the PASENSO web page at the university website / FB page or any other digital source of PASENSO	This step of project is not yet achieved
6	How many CUPAGIS+ agreements were signed so far?	Two bilateral agreements were signed. The first agreement is between UDL university and the non-academic partner “Institut Technique des Grandes Cultures (ITGC)”. The second one is also signed with a non-academic partner: “Institut National de la Recherche Agronomique d'Algérie (INRA)”.

SOCIAL AND GENDER INCLUSION

Table 4.1. SOCIAL INCLUSION		
№	**Question**	**Answer**
1	Please, report on the Involvement of people with fewer opportunities (examples are provided below) in % of the students involved in the curricula developed in the framework of the CUPAGIS project	To unify the understanding, the European Commission has recognized the following types of the most common obstacles: **Algeria offers free access to higher education for both sexes, whether for the handicapped and poor people who come from far away or from rural areas, by offering them free education, accommodation and food and also transport. and all this within a framework of national policy aimed at eradicating discrimination.**
2	Please report on the gender balance in % of the students involved in the curricula developed in the framework of the CUPAGIS project	The gender balance of students in our department is 70 percent female and 30 percent male.

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COMMUNICATION PROCESS, ADDITIONAL INFORMATION

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№	**Question**	**Answer**
1	Please, report on the communication process between your University and other PC Universities, EU partners, the Coordinator, and other project participants	the most common means of communication is the zoom application, both with European and local partners. e-mails are also widely used to exchange information. cell phones and the WhatsApp application are also used with local partners. but the problem that hindered communication was the short time allocated to the free version of the zoom application.
2	Additional information	the only problem encountered is the acquisition of certain essential training Lab equipment

Thank you for you attention!

KADOUN Abd-Ed-Daïm, Prof. , Vice-rector, akadoun@yahoo.com
DJELLOULI Riad, djellouli_riad@yahoo.fr

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