HCERES

High Council for the Evaluation of Research and Higher Education

Research units

HCERES report on research unit:

Agroécologie

Under the supervision of the following institutions and research bodies:

Institut National de la Recherche Agronomique - INRA

AGROSUP DIJON - Institut National Superieur des Sciences Agronomiques de l'Alimentation et de l'Environnement

Université de Bourgogne - UB

Evaluation Campaign 2015-2016 (Group B)

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In the name of HCERES,[1]

Michel Cosnard, president

In the name of the experts committee,[2]

Jean-Luc Chotte, chairman of the committee

Under the decree N°.2014-1365 dated 14 november 2014,

[1] The president of HCERES "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5)

[2] The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2)

Evaluation report

This report is the sole result of evaluation by the expert committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

Unit name:	Agroécologie
Unit acronym:	
Label requested:	UMR
Current number:	1347
Name of Director (2015-2016):	Mr Philippe LEMANCEAU
Name of Project Leader (2017-2021):	Mr Philippe LEMANCEAU

Expert committee members

Chair:	Mr Jean-Luc CHOTTE, IRD, Montpellier
Experts:	Mr Denis ANGERS, Agriculture and Agri-Food Canada, Canada
	Mr Lammert BASTIAANS, Wageningen University, the Netherlands
	Mr Emmanuel BAUDOUIN, Université Pierre et Marie Curie, Paris
	Ms Evelyne COSTES, Inra, Montpellier (representative of CSS Inra)
	Mr Alain GHESQUIERE, IRD, Montpellier
	Mr Patrick LAUFS, Inra, Versailles (representative of CoNRS)
	Ms Anissa LOUNES-HADJ SAHRAOUI, Université du Littoral Côte d'Opale, Calais (representative of CNU)
	Mr Jon MARSHALL, Agroecology Ltd, UK
	Ms Claire NEEMA, Montpellier SupAgro (representative of CNECA)
	Mr Ole NYBROE, University of Copenhagen, Denmark
	Mr Sebastien STAERCK, CNRS, Strasbourg (representative of the ingeniors and technicians)
Scientific delegate representing the HCERES:	
	Mr Philippe MEROT

Representatives of supervising institutions and bodies:

Mr Alain BONIN, université de Bourgogne

Ms Carole CARANTA, Inra, BAP

Mr Christian LANNOU, Inra, SPE

Ms Catherine RECHENMANN, CNRS INSB

Mr Guy RICHARD, Inra, EA

Mr François ROCHE-BRUYN, Agrosup Dijon

Head of Doctoral School:

Mr Thierry RIGAUD, Doctoral School n° 554 “Environnement-Santé”

1 • Introduction

History and geographical location of the unit

The Agroecology Joint Research Unit was officially created in 2012 and was the result of a long process, which started in 2006, at the request of Inra. Inra provided invaluable support by setting up the Structuring Operation "Agroecology of the cultivated plot" to facilitate and support the creation of the Agroecology TGU ("Très Grande Unité") Unit. During its first mandate (2012-2016) the Agroecology Joint Research Unit was responsible to AgroSup Dijon, Inra (Environment and Agronomy, Biology and Plant Breeding, and Plant Health departments) and Burgundy University. The Burgundy Dijon University Hospital was associated with the project and IPM, one of the four teams of the Agroecology unit, is associated with the CNRS (ERL-CNRS 6300 research unit).

The Joint Research Unit is located mainly at the Inra centre in Dijon Bourgogne Franche-Comté but there are some personnel who work in Agrosup Dijon and in the Burgundy University Hospital.

Management team

Director (TGU): M. Philippe LEMANCEAU (DR Inra).

Management College (CoDir): M. Alain HARTMANN (DR Inra), M. Sylvain JEANDROZ (Pr Agrospup Dijon), M. Laurent PHILIPPOT (DR Inra), M. Christophe SALON (DR Inra), M. Daniel WIPF (Pr UB).

HCERES nomenclature

Principal:	SVE Sciences du vivant et environnement
Secondaires:	SVE2_LS8 Évolution, Écologie, Biologie de l'environnement
	SVE2_LS9 Sciences et technologies du vivant, Biotechnologie
	SVE2_LS3 Biologie cellulaire, Biologie du développement végétal
	SVE1_LS1 Biologie moléculaire, Biologie structurale, Biochimie

Scientific domains

Agro-écologie; agronomie; biochimie; biologie cellulaire; biologie de l'environnement; biologie du developpement végétal; biologie moleculaire; biotechnologies; écologie; écologie microbienne du sol; génétique; génomique; physiologie végétale; phytopathologie.

Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	54	46
N2: Permanent researchers from Institutions and similar positions	43	41
N3: Other permanent staff (technicians and administrative personnel)	135	133
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	1	
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	14	
N6: Other contractual staff (technicians and administrative personnel)	24	
N7: PhD students	39	
TOTAL N1 to N7	**310**	
Qualified research supervisors (HDR) or similar positions	49	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	38
Postdoctoral scientists having spent at least 12 months in the unit	19
Number of Research Supervisor Qualifications (HDR) obtained during the period	5

2 • Overall assessment of the unit

Introduction

The TGU Agroecology focuses on improving basic knowledge of the biodiversity and biotic interactions in agroecosystems, and on the application and enhancement of this knowledge in the conception of innovative agroecological farming systems. The objectives of the project are to i) analyse, understand and act on biodiversity and interactions within communities at different spatial and temporal scales; ii) propose innovative cropping systems, which ensure agricultural production of high quality and in sufficient quantities, while respecting the quality of the environment. The Agroecology TGU develops organizational approaches from gene to agroecosystems and covers temporal and spatial scales from plant to landscape. The unit encompasses disciplinary excellence in soil microbial ecology, ecology and agronomy of weeds, genetics and ecophysiology of legumes, and plant-microorganism interactions, including arbuscular mycorrhizae. Several biological systems are studied: plants, soil microbial populations, plant-microorganism interactions (beneficial and pathogens).

Global assessment of the unit

The TGU Agroecology has become a key player at the national and international levels in agroecology, a field that is strongly supported by national and international policies. During its first mandate, the unit developed a successful balance and good interconnections between pure research, finalized research and transfer to development. Moreover the unit made excellent contributions to the diffusion of knowledge to the scientific community, final users, decision-makers (expertise) and the general public (extension). An extensive effort has been devoted to the development of technical platforms enabling the realisation of the scientific project of the unit and adding a very high value to the unit.

Strengths and opportunities in the context

Strengths:

- scientific excellence of the different research teams in their respective fields;

- pluridisciplinary expertise: all the expertise to provide an integrated approach for agroecology (soil, microorganisms, weeds, legumes, farming practices, …) are present within the unit;

- the capacity and the expertise to develop multi-approach levels, at different temporal and spatial scales to provide a comprehensive view from gene to agroecosystem;

- international and national recognition;

- impressive network of international collaborations;

- very high involvement of the UMR personnel in teaching and training activities;

- good communication on the UMR research activities with socio-economic-cultural world via large outreach actions (public debate, TV, Radio programs, …);

- good success level in the call for proposals from the UE and from ANR (e.g. 17 and 30% respectively in 2014);

- close interaction with the regional socio-economic-cultural world, strong regional support in particular for grapevine and legumes.

Opportunities:

- agroecology topics: current priority themes at the national and international levels;

- part of the I Site-BFC that will reinforce connections with social sciences, which will help transfer and acceptance of innovative cropping systems by farmers;

- availability and proximity of several well equipped technical platforms (GenoSol, Mycroscopy, Serres-PPHD) and Biological Resource Center;

- accessibility to Experimental Unit (EU) at Epoisses and adjacent areas to develop research activities in agroecology under field conditions at large spatial scales;

- initiation of a Provisional Management of Employment and Skills Scheme in collaboration with the institutions (Inra, uB, AgroSup) in order to anticipate the departures due to retirement and the consequent loss of important skills.

Weaknesses and threats in the context

- agroecology encompasses many expectations and might be differently understood by the different stakeholders;

- not yet complete appropriation of the Agroecology challenges by each team in the scope of the global objective of the unit;

- lack of capacity to promote, stimulate, and encourage the different groups/teams of the unit to develop collaborations, which may weaken the whole unit;

- many committees (CoDir, ARPPE- assembly of the team, platforms and groups-, scientific committee, Scientific animation group, unit committee) and cells proposed by the governance chart, whose roles and compositions are not always clearly defined and seem sometimes redundant;

- uncertainty of replacement of all retirements before the end of the mandate and thereby losses of skills;

- risk of unbalance between research activities, training and administrative time-consuming tasks for many teaching researchers;

- risks of dispersion due to the multiple opportunities;

- risk of unbalance between basic and applied research due to the decrease of financing resources for basic research. A shared strategy within the unit to deal with these threats should be defined to keep the unit in the same dynamic as that of its first mandate.

Recommendations

To reinforce added value from being in a TGU, the recommendations are:

On scientific issues:

- strengthen interactions between different teams by clearly defining cross-cutting projects on common models with common resources (e.g. theses in co-direction on common projects between two main themes…);

- ensure that the activities related to the design of innovative cropping systems are really cross-cutting and take into account inputs from soil microbiology, legume genetics, plant-microbe interactions, in addition to weed science;

- develop scientific collaborations with colleagues from Human and Social Sciences (economy, sociology) in the frame of the unit's excellent interaction with its socio-economic environment;

- promote synergies between all expertise available in the unit (soil microbiology, legumes in addition to weed science) to address the scientific challenge of the 5-year project, especially with regard to the development of innovative cropping systems.

On unit organization issues:

- clarify the organization and life at the unit and team levels;

- increase communication, at different horizontal levels (at the team level and between different categories (researchers/teachers, technicians/engineers), and at the vertical level (bottom-up and top-down);

- clarify the role of the theme-based-scientific workshops, as a vector for a more integrative approach, in the organization, decision and scientific policy of the unit;

- on human resources management issues;

- promote the involvement of young researchers in the life of the unit;

- set up, for the next mandate, specific actions to follow the professional status of doctoral students following their PhD: the unit is very attractive for PhD student but no information is given on their follow-up of.