HCERES

High Council for the Evaluation of Research and Higher Education

Department of Research Evaluation

# report on research unit:

## Fractionnement des AgroRessources et Environnement

## FARE

# under the supervision of the following institutions and research bodies:

## Université de Reims Champagne-Ardenne

## Institut National de la Recherche Agronomique - INRA

Evaluation Campaign 2016-2017 (Group C)

HCERES

High Council for the Evaluation of Research and Higher Education

Department of Research Evaluation

*In the name of HCERES,*[1]

Michel Cosnard, president

*In the name of the experts committee,*[2]

Simon McQueen-Mason, 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: | Fractionnement des AgroRessources et Environnement |
| Unit acronym: | FARE |
| Label requested: | Unité Mixte de Recherche |
| Current number: | UMR 614 |
| Name of Director (2016-2017): | Mr Bernard KUREK |
| Name of Project Leader (2018-2022): | Mr Bernard KUREK |

# Expert committee members

Chair: Mr Simon MCQUEEN-MASON, University of Oxford, UK

Experts: Mr Thierry BENEZECH, INRA, Lille

Mr Stefaan DE NEVE, Ghent University, Belgium

Mr Joseph GRIL, CNRS, Montpellier

Ms Kristina KRUUS, VTT Technical Research Centre of Finland, Finland

Mr Bernard OFFMANN, Université de Nantes (representative of the CNU)

Scientific delegate representing the HCERES:

Mr Steven BALL

Representatives of supervising institutions and bodies:

Mr Guillaume GELLE, Université de Reims Champagne-Ardenne

Ms Marie-Christine RALET, INRA, Département CEPIA

Mr Guy RICHARD, INRA, Département EA

Head of Doctoral School:

Ms Sandrine BOUQUILLON, Doctoral School n°358, “Sciences Technologie Santé”

# 1 • Introduction

## History and geographical location of the unit

FARE, in its current form was formed by the bringing together of the original FARE unit (formed in 2000) with a former INRA Agronomy group from Laon-Reims-Mons, specialising in soil science. This grouping has evolved to produce a unit that brings a unique interface in research regarding lignocellulose deconstruction with relevance to soil science and biotechnology. There are two main areas of work in FARE: the study of lignocellulose breakdown in the soil, and the study of lignocellulose deconstruction and use in biotechnological applications. The areas of research are thematically connected to one another through the development of a fundamental understanding of the processes of lignocellulose degradation by microbes and enzymes. This represents an effective use of core understanding and scientific approaches to underpin two important areas related to the bioeconomy and sustainability in the agricultural sector. The research themes of FARE align very well with the strategic plans of INRA, the university, and local region, who all see the contribution of FARE as important to their aims in this area.

## Management team

The head of the research unit was Mr Bernard KUREK assisted by two deputy directors Ms Caroline REMOND from URCA and Ms Sylvie RECOUS from INRA research department "Environment and Agronomy" for the past contract. Mr Bernard KUREK and Ms Caroline REMOND will be respectively director and deputy director for the next contract period.

## HCERES nomenclature

| | |
|---|---|
| Main: | ST4 Chimie. |
| Secondary: | ST5 Sciences pour l'ingénieur; |
| | SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale; |
| | SVE1 Agronomie, Biologie Végétale, Écologie, Environnement, Évolution. |

## Scientific domains

The scientific domain of the FARE unit is the degradation of lignocellulose naturally in soils (carbon cycling and implications for management) or artificially by mechanical and/or biochemical actions to obtain new materials (nanostructured, fiber composites, polymer blends) or new molecules for promising applications.

## Unit workforce

| Unit workforce | Number on 30/06/2016 | Number on 01/01/2018 |
|---|---|---|
| **N1**: Permanent professors and similar positions | 5 | 5 |
| **N2**: Permanent researchers from Institutions and similar positions | 6 | 5 |
| **N3**: Other permanent staff (technicians and administrative personnel) | 17 | 16 |
| **N4**: Other researchers (Postdoctoral students, visitors, etc.) | 2 | |
| **N5**: Emeritus | 2 | |
| **N6**: Other contractual staff (technicians and administrative personnel) | 2 | |
| **N7**: PhD students | 12 | |
| **TOTAL N1 to N7** | **46** | |
| **Qualified research supervisors (HDR) or similar positions** | 7 | |

| Unit record | From 01/01/2011 to 30/06/2016 |
|---|---|
| PhD theses defended | 23 |
| Postdoctoral scientists having spent at least 12 months in the unit | 8 |
| Number of Research Supervisor Qualifications (HDR) obtained during the period | 3 |

# 2 • Assessment of the unit

## Global assessment of the unit

The FARE unit is working in areas of strategic importance as our societies attempt to progress toward a sustainable and renewable industrial bioeconomy. The thematic areas of the work are well positioned to deliver valuable new information relevant to better understanding the role of lignocellulose degradation in soil biology and nutrient cycling, enzyme discovery, and understanding processes during lignocellulose degradation in an industrially relevant context. The work of the unit is of high quality and varies from excellent to very good. The soil science work is of particularly high quality and seen to be internationally competitive. The biorefinery related research has very good potential to generate impact, and the committee of experts encourages the team to increase the value of their work by making stronger connections with relevant sectors of industry. The close proximity and developing relationships with the Pomacle Bazancourt Biorefinery cluster is a great potential strength to the unit and we encourage them to bring this relationship to the fore. In particular, the Futurol pilot plant for cellulosic ethanol production provides a powerful context in which to embed the lignocellulose deconstruction work. The work on pentose valorisation would also benefit from being closely aligned with an industrial process such as that at Futurol. From discussion with the management team, such connections are in place, but this does not feature obviously in the report. In this context an on-going discussion with industry representatives through an advisory board might help to strengthen the industry alignment of the FARE unit. The committee of experts congratulates FARE on the progress that it has made and are impressed by the general vision that they have for the coming years. There are concerns around the critical mass of the unit and the potential loss of some areas of strength through staff retirement. The committee of experts also encourages the researchers to develop ambitious and clear goals that can result in high impact publications. The strategic importance of the region in the development of sustainable biorenewables industries, and sustainable agriculture is very high from a national perspective.