

## FINAL RESUME ON THE RESEARCH UNIT

BAGAP - Biodiversity, agroecology and landscape management

### UNDER THE SUPERVISION OF THE FOLLOWING INSTITUTIONS AND RESEARCH BODIES:

Institut national de recherche pour l'agriculture,  
l'alimentation et l'environnement - INRAE

Institut Agro - Agrocampus Ouest - École nationale des  
sciences agronomiques, agroalimentaires, horticoles et  
du paysage

Groupe ESA - École Supérieure d'Agricultures Angers  
Loire

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## **EVALUATION CAMPAIGN 2020-2021**

### **GROUP B**



In the name of Hcéres<sup>1</sup>:

Mr Thierry Coulhon, President

In the name of the experts committee<sup>2</sup>:

Ms Teresa Pinto-Correia, Chairwoman of the committee

Under the decree No.2014-1365 dated 14 November 2014,

<sup>1</sup> The president of Hcéres "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5);

<sup>2</sup> The evaluation reports "are signed by the chairman of the experts committee". (Article 11, paragraph 2).

Tables in this document were filled with certified data submitted by the supervising body on behalf of the unit.

## UNIT PRESENTATION

**Unit name:**

Biodiversity, agroecology and landscape management

**Unit acronym:**

BAGAP

**Current label and N°:**

UMR\_A 0980

**ID RNSR:**

201722613K

**Application type:**

Renewal

**Head of the unit (2020-2021):**

Mme Stéphanie Aviron

**Project leader (2021-2025):**

Ms Stéphanie Aviron

**Number of teams and/or themes:**

one

## EXPERTS COMMITTEE MEMBERS

**Chair:**

Ms Teresa Pinto-Correia, University of Evora, Portugal

**Experts:**

Ms Virginie Bourion, Inrae, Dijon (supporting personnel)

Ms Nathalie Frascaria-Lacoste, AgroParisTech, Orsay (representative of CNECA)

Mr Etienne Josien, VetAgro Sup, Lempdes (representative of CSS INRAE)

## HCÉRES REPRESENTATIVE

Mr Christopher Carcaillet

## REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Ms Hélène Lucas, INRAE

Mr Pierre Picouet, ESA

Mr Christophe Soulard, INRAE

Mr Dominique Vollet, IA-ACO

## INTRODUCTION

### HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The UMR BAGAP was created in 2017, from the merging of two units: "SAD-Paysage" located in the Rennes area (cities of Rennes and Le Rheu), from the SAD department (Sciences pour l'Action et le Développement) of INRA, and the unit "Paysage" located in Angers (two campuses) under the supervising institutions Agrocampus Ouest (ACO) and ESA. Today, BAGAP still has this three supervising bodies INRAE (new Department ACT, formerly SAD), and the two engineer universities, IA-ACO (formerly ACO) and ESA. BAGAP has now 27 permanent staff, distributed within four different sites at Rennes and Angers.

The merging units were both interdisciplinary, with ecology and landscape as core axes. The creation of BAGAP in 2017 has supported the reinforcement of the competences in landscape ecology, urban ecology, physical geography and the continued sharing of the interdisciplinarity approaches.

The founding units of BAGAP help understanding its profile today. One of them, with the highest number of people involved, is the unit SAD-Paysage. It has a profile within the scientific field of landscape ecology with a goal to identify and assess interactions between agriculture, landscape and biodiversity in order to reconcile agricultural activities with the ecological processes to support ecosystem services; this includes participative plant breeding developed by a team which previously merged within the SAD Paysage in 2005. The other one was the unit "Paysage" in Angers, composed of geographers and ecologists, which was focused on the processes, the dynamics and the representations of emerging landscapes, both changing urban and agricultural landscapes. Only the ecologists from "Paysage" merged in the BAGAP unit, whereas the geographers joined another unit. The supervising bodies, INRAE, IA-ACO and ESA have acknowledged the legitimacy of the unit on the basis of this merging.

### RESEARCH ECOSYSTEM

The scientific orientation in the last five years has been focused on an approach of landscape agroecology for action in favor of biodiversity and multifunctionality of both rural and urban landscapes. The unit is a composing member of institutional partnerships at local and regional level, such as OSUR (*Observatoire des Sciences de l'Univers de Rennes*), INRAE Bretagne-Normandie, IA-ACO and ESA, other regional research units from Rennes and from Angers (ECOBIO, SMART, ESO, LTEG, SAS, URSE), as well as INRAE at national level. Several researchers secure different roles in these institutions. The unit is also involved in teaching, namely at the Master level at the University of Rennes, and at the IA-ACO and the ESA in Angers. From the perspective of application of research outcomes and support to practice, the unit is involved in several networks (e.g.: *International Association for Landscape Ecology*, 'Réseau Européen des semences cultivées'), including meetings and events with farmers and local agents. This has made it possible to be an active part also in international networks and projects dealing with organic farming, local seeds and actions for farm biodiversity. Furthermore, there are close interactions with other units located in the same regional context, which support some of the research areas and practical interventions of the unit.

The 'Zone Atelier Armorique' (labelled LTSE for *Long-Term Socio-Ecosystem Research*) can be considered as the main experimental and observational platform for the study of socio-ecosystems performed by the unit. During the last six years, the unit has considerably invested in the creation of a new site of observation in the urban south of Rennes, in addition to the seminal site of Pleine Fougères (northern Ille-et-Vilaine). Otherwise, the unit is also involved in the 'Zone Atelier Loire' and has set up observatory areas in several places (i.e., La Sélune).

### HCÉRES NOMENCLATURE AND THEMATICS OF THE UNIT

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### MANAGEMENT TEAM

The unit BAGAP is led by Ms Stéphanie Aviron since July 2019. She is helped by two adjuncts who are Mr Hervé Daniel (IA-ACO) and Mr Guillaume Pain (ESA). From its creation to December 2018, the unit was led by Mr Alexandre Joannon till end of December 2018 (2 years), followed by Mr Benoît Dedieu (head of the INRA SAD department) as temporary head until June 2019 (6 months).

## UNIT WORKFORCE

Active staff	Number 06/01/2020	Number 01/01/2022
Full professors and similar positions	0	0
Assistant professors and similar positions	6	6
Full time research directors (Directeurs de recherche) and similar positions	0	0
Full time research associates (Chargés de recherche) and similar positions	6	6
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	0	0
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	15	13
<b>Permanent staff</b>	<b>27</b>	<b>25</b>
Non-permanent professors and associate professors, including emeritus	0	
Non-permanent full-time scientists, including emeritus, post-docs (except PhD students)	3	
PhD Students	6	
Non-permanent supporting personnel	2	
<b>Non-permanent staff</b>	<b>11</b>	
<b>Total</b>	<b>38</b>	<b>25</b>

## GLOBAL ASSESSMENT OF THE UNIT

The unit develops interdisciplinary studies on a major societal issue, i.e., the management of biodiversity, in particular in rural landscapes, in relation to farming systems and practices, as well as in urban and peri-urban areas. This is very timely, relevant and in line with international commitments as the United Nations Sustainable Development Goals and the European Union Green Deal. Furthermore, the unit develops extensive studies helping farmers, advisers and local entities in western France to provide better farmland biodiversity, supporting ecosystem services according to society issues and public policies. The extensive and continued work on participative selection is a clear added value of BAGAP. A significant part of studies is based on permanent research systems for observation and experimentations, some of which have been in place for long time and are internationally labelled, enabling long-term data series, essential for the understanding of ecological dynamics. This strategy is an asset which is worth exploring more, also in the sense of relevant publications led by BAGAP people.

The BAGAP has a significant volume of peer-reviewed publications, 50 % as leading author, in a wide diversity of peer-reviewed journals in line with the unit's interdisciplinary research. Fifty % of these articles were published in well reputed or high-ranked disciplinary journals, in ecology (e.g., *Ecology Letters*; *Landscape Ecology* or *Ecological Indicators*), agronomy (e.g., *Agriculture, Ecosystems and Environment* or *European Journal of Agronomy*), environmental sciences (e.g., *Global Environmental Change* or *Journal of Environmental Management*), geomatics (e.g., *Remote Sensing*) and in a multidisciplinary top-ranked journal (PNAS). Compared to previous period, this scientific production has increased on average, in quantity and quality but the efforts to increase the number of publications in high-ranked journals should be reinforced.

The unit capacity of fund raising was attested by its involvement as leader in four international research programs (H2020, Feder, ERAnet BiodivERsA, FNR-Luxembourg) and in five national programs (MEDDE, MEDTL, Agences de l'eau), and as partner in ten others European (FEDER, H2020) and in national programs. These partnerships attest of the international reputation of BAGAP, which is also supported by the reward of a European prize ("Étoile de l'Europe") in 2019, the involvement of BAGAP people as associate editors of peer-

reviewed journals, the scientific organization of three national and three international conferences and by invitations for conferences in international symposiums in Europe and abroad in eastern and southeastern Asia, southern and central America. Surprisingly, this reputation contrasts with the low international attractiveness of the BAGAP illustrated by the absence of foreign post-doctoral fellows and the very modest number of foreign researchers hosted. The strong international positioning through research networks still remains concentrated on senior researchers.

Investment in training through research at Master degree is an important task of BAGAP, as well as doctoral and postdoctoral mentoring, resulting a good rate of international publications in well ranked journals led by PhD students.

The unit's commitment to monitoring long-term field projects and to work involving stakeholders, in dynamic interactions with practical applications is a strength, and can be further enhanced to become a specific added value. Knowledge and tools produced could be generalized to other contexts, for higher impact of applied science in the real world. Nevertheless, this close interaction with stakeholders may also be a threat if the unit confines itself to data collection, descriptive approaches and to the production of tools, which would not be tested in other contexts.

Increased investment in internationalization could be a way to realize this potential added value, by exchanges with other teams in France and abroad to develop complementary approaches in different environments, by interdisciplinary teams bridging over to transdisciplinary, linked to the sustainability of farming practices and of urban greens. Investment in international long-term collaborations is required for the scientific performance of BAGAP. Institutional commitment in international networks, linkages and consortia, facilitating research exchanges and shared outputs, would create opportunities for all, in particular for younger researchers. It would enhance the attractivity and the international visibility in the scientific arena. The record of publications is of very good quality, including some in highly ranked journals. While publishing in French remains relevant, continued investment in publishing in international peer-reviewed journals should be secured for the future.

The long distance between the groups of Rennes and Angers and their functional differences is a threat for BAGAP, augmented by different traditions and positions regarding research, mainly between the INRAE researchers (in Rennes) and the professorship staff (in Angers). This is well known and considered by all BAGAP people and by the management team. The resulting drawbacks should be overcome with a dedicated strategy, building on the already developed efforts to progress internally. A strategy is designed to overcome the limitations imposed by geographical and organization's dispersion. Cross-functional coordination mechanisms per site, and organizations with structured communication are set in place. The new unit's organization reveals an extensive process of dialogue and integration, which needs to be acknowledged because first results are promising. However, strong evidence of close collaboration and results from this collaboration are still few and attention should be dedicated now to make the structure function smoothly in practice and to promote integration in the everyday unit's life. The real participation and commitment of all BAGAP members, including young researchers and PhD students, in the activities undertaken needs to be paid attention too. This would strengthen the building up of a shared identity and vision, and the possibilities for adaptive management in a pathway to the future unit's consolidation.

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