PhD project : Supporting global quality in livestock farming systems.

Acquiring and assess a systemic approach by using serious games in local Geographical Indication dairy system in France and the UK.

Discipline: Zootechnics - Farming systems and agricultural extension

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2 – Joint Research Unit Territoires - GAMAE - Clermont Auvergne University (UCA), INRAE, VetAgro Sup & AgroParisTech– Clermont-Ferrand – France. This research unit will host in France the successful candidate.

3 – School of Sustainable Food and Farming, Harper Adams University - Edgmond, Newport – UK

Context:

Livestock farming is often identified as one of the main agricultural drivers of climate change. Therefore, when considering the value of livestock products in terms of their environmental impact, a holistic assessment is required using balanced metrics and avoiding tunnel vision. In addition to considering nutritional and co-product benefits, other natural capital and societal assets that result from well-managed farming enterprises need to be recognised (Manzano et al., 2023). However, this approach remains difficult because it is subject to divergent interpretations depending on the stakeholders involved.

Global quality is an emerging concept in agriculture, particularly in livestock production systems (Legrand et al., 2023). It goes beyond the sanitary, economic and organoleptic aspects of quality as understood in the production and processing industries (ie the intrinsic dimension of quality), and takes in ecological, social and cultural dimensions (ie the extrinsic dimension of quality). However, putting this concept into practice is difficult because it involves so many different actors (farmers, processors, advisors, vets, distributors, but also elected representatives, citizens, ecologist associations, etc.).

This thesis is based within the field of farming systems and agricultural extension and aims to address the scientific front of participatory support for global quality in livestock farming, as well as its practical application in the field, using a dual approach. On the one hand, theoretical work will aim to better define the concept of global quality in livestock farming, and on the other, empirical work will aim to test the practical application of this concept to support changes in livestock farming systems in the field.

For this second aspect, the PhD student will use innovative tools such as serious games, which are now at the heart of a revival of agricultural guidance in Europe. Serious games are now commonly used to address systemic issues in agricultural sectors, particularly under geographical indication (GI) (Dernat et al., 2022). Unlike traditional top-down advice, games can be used to address complex systems by making them accessible to as many people as possible through simple but not simplistic modelling and knowledge sharing.

Issue:

The problem this thesis will address is therefore at the crossroads of two scientific fronts: that of overall quality in livestock farming and that of support approaches to accompany systemic changes in agriculture. As a result, the question to be addressed by this thesis will be:

How can serious games be a means for integrating the global quality approach to move livestock systems through the agroecological transition?

Method:

The thesis will be based on two case studies in France and the UK within two local GI dairy production sectors. GI sectors are particularly sensitive to these systemic issues, as they combine the economic constraints of the sector with territorial strategies linked to local issues. The aim is to support these sectors using a global quality approach in order to optimise their strategies by involving all the stakeholders, both inside and outside the sector and the territory. There is a need for engineering to do this and the serious game as an engineering tool will make it possible to federate various stakeholders around a common vision of the global quality of local GI dairy system. A comparison between France and the UK will be interesting in terms of institutional (EU vs. non-EU), cultural and technical differences, which may help to better understand the importance of the concept of global quality and its local application.

To achieve this, the thesis will use serious games as part of an overall support process. Part of the work will involve identifying and adapting existing games or, failing that, creating a new game dedicated to global quality in livestock farming. This process will be tested in real conditions with stakeholders in the sectors, using the principle of action research as already tested on a PDO cheese (Dernat et al., 2022). The evaluation framework for step-by-step support developed by Etienne et al. (2023) or by Sneessens et al. (2019) could be used to measure and adjust the effects on the real practices of the operators involved.

Contribution of the thesis to science:

The thesis will be an opportunity to make an important theoretical contribution to livestock farming systems approach, mainly by addressing the concept of global quality. In this respect, the person recruited will be able to take part in EAAP (European Federation of Animal Science) and IFSA (International Farming Systems Association) scientific events. Empirical approaches may also be the subject of investment in the ESEE (European Seminar on agricultural Extension & Education).

Practical contribution of the thesis to livestock farming:

The aim of the thesis will be to provide useful and operational tools to help all stakeholders of a sector to asses and to achieve global quality. These tools can then be disseminated and mobilised by agricultural advisory services.

More broadly, the participatory proposal of the thesis opens up to a public that is partly outside the agricultural world (citizens, elected representatives, etc.). This highlights the practical challenge of putting into operation a process with this wider perimeter, which is socially interesting but not often addressed in the actual practice of field support (Coeugnet et al., 2023).

Minimum expected publications:

- An article on the concept of global quality in livestock farming

- An article on the results of the support provided to farming groups during the thesis, in particular a comparison between France and the UK.

Target journals: Animal, Agricultural systems, Agriculture for Sustainable Development.

Logistical aspects of the thesis:

The thesis will be hosted in Clermont Ferrand within INRAE. It will provide support for the overall work of the thesis and specifically for the French field. One of the supervisors is a research engineer, who has worked extensively on futures issues and adaptations of livestock and is a specialist in the livestock farming systems. The other French supervisor is a research engineer, whose research focuses on supporting transitions in farming communities. He is also responsible for the GAMAE platform, which specialises in serious agri-environmental games. The person recruited will also be able to benefit from the teaching staff of the Gloqual master's programme (Global quality in livestock farming), in which the French supervisors of this thesis are involved. More practically, the PhD student will be hosted by UMR Territoires, which will manage the budget in line with the projects in the French fields, and will also provide the ideal setting for developing serious games and evaluating them in a participatory process (creation workshop and digital tools of the GAMAE platform, unique in Europe).

The PhD student will also be hosted by Harper Adams University in England to enrich the approach and carry out experiments in the English field. The presence in UK is expected to be ca. 1 year of study. In particular, the School of Sustainable Food and Farming will be contributing its expertise in supporting agricultural sectors throughout the value chain (from producer to distributor). The English supervisor will bring his knowledge of local farming systems and quality issues in the livestock sector. It will also enable the person recruited to be integrated into the various scientific communities involved in livestock farming in UK and in the Morrisons Sustainable Farm Network project.

Case studies:

In UK, to support the thesis work, resources will be mobilised in conjunction with the Morrisons Sustainable Farm Network project via the Saputo Dairy. Saputo produces the GPI cheese Wensleydale, an English cheese that originated in Wensleydale, England. Saputo is ranked within the top 10 global dairy processors, with leading market positions in Canada, the USA, Australia, Argentina, and UK.

In France, the thesis will be supported by the RMT (Réseau mixte technologique) Fromages de Terroir to work with a PDO/GPI cheese close to Wensleydale (in organoleptic and production terms, to have this same basis to compare) on the global quality. It will also benefit from the work of the ANR Gingko project and/or European GI-Smart project to carry out fieldwork.

Over the three years, case studies will also benefit from the support of the Gloqual Master's students as part of their annual group project. Students will go to France and/or UK to help the PhD student to prepare the field actions and assess the impact of the support.

Budget:

- Salary: remuneration by the UCA (one of the "tutelle" of the lead research unit, UMR Territoires) for three years of thesis (€2,885 monthly cost, i.e. €34,620 annual cost)
- Mission expenses for the case study in France: supported by the ANR Gingko project or the European Smart-GI project (depending on the needs), managed by INRAE for UMR Territoires.
- Mission expenses for the case study in the UK: supported by the Morrisons Sustainable Farm Network project, managed by Harper Adams University.
- Operating costs for international co-supervision (doctoral student and supervisor mission expenses): €15k managed by the UCA.

Requirements:

Required Education Level

- Agricultural Sciences > Master degree or equivalent (engineer diploma)
- Economics > Agricultural economics > Master degree or equivalent

Skills/Qualifications

- Mastery of the systems approach to livestock production
- Ability to conduct and analyse interviews
- proficiency in bibliographical analysis
- Ability to run workshops with professional stakeholders in agricultural sectors
- Ability to write

Specific Requirements

- English > Excellent
- French > Good
- 1 to 6 months training in a research laboratory will be a plus.
- An experience in a participatory project will be a plus.

Selection process:

Clermont Auvergne University, Clermont-Ferrand, France and its Clermont Auvergne Project Graduate School (CAP GS) programme offer a PhD opportunity that will be conducted in partnership between Clermont Auvergne University and a foreign research Institution. The associated Changing Environments Graduate Track presents three PhD proposals published on EURAXESS, of which one only will be funded. The selection process will take all applications into consideration. The best fitting candidate will be invited to an audition between end of June and mid-July 2024.

Applicants who have earned their higher educational qualifications outside Europe or in Greece must attach to their application a certificate of equivalence of the diploma (Master degree). The certificate can be obtained following the procedure indicated here: https://phoenix.ciep.fr/inscriptions/

Application deadline: Friday May the 10th, 5 pm Paris time, 2024. Applications arriving after the application deadline will not be taken into consideration.

Applications should include a cover letter indicating your motivation and relevant research experience, a detailed curriculum vitae, academic transcripts and contact information for at least two referees. Please send the application via Email to: sylvain.dernat@inrae.fr, stephane.ingrand@inrae.fr and MRFLee@harper-adams.ac.uk

PhD studies will start in November 2024. A salary will be paid for 3 years (36 months).

References:

Dernat, S., Rigolot, C., Vollet, D., Cayre, P., & Dumont, B. (2022). Knowledge sharing in practice: a game-based methodology to increase farmers' engagement in a common vision for a cheese PDO union. *The Journal of Agricultural Education and Extension*, *28*(2), 141-162.

Coeugnet, P., Labatut, J., Duval, J., & Vourc'h, G. (2023). Including citizens through co-design in a participatory research project to explore innovative agro-food systems: the case of future dairy livestock systems. *Frontiers in Sustainable Food Systems*, 7, 1098295.

Etienne, R., **Dernat, S.**, Rigolot, C., **Ingrand, S**. (in press). Évaluation et ajustement chemin faisant de la mobilisation de jeux sérieux afin d'accompagner les éleveurs dans leurs changements de pratiques. *Nature Science Société*.

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Manzano, P., Rowntree, J., Thompson, L., del Prado, A., Ederer, P., Windisch, W., & **Lee, M.** (2023). Challenges for the balanced attribution of livestock's environmental impacts: the art of conveying simple messages around complex realities. *Animal frontiers*, 13(2), 35-44.

Sneessens, I., Sauvée, L., Randrianasolo-Rakotobe, H., & **Ingrand, S**. (2019). A framework to assess the economic vulnerability of farming systems: application to mixed crop-livestock systems. *Agricultural Systems*, 176, 102658.