

Advertisement for a post-doctoral position

Title

Evaluation of the sustainability of pig production systems relying on European local breeds

Keywords

Local breeds, extensive pig production systems, sustainability, Life Cycle Assessment.

Background

On one hand, conventional pig production systems have been largely developed in Europe since the last decades. They rely on genetic crossing from breeds selected on their growth potential, their body muscle percentage and also prolificacy of the sows. These evolutions have been accompanied by those of pig production systems. Simultaneously to the development of selected breeds, most of pig local breeds have been progressively abandoned. Few local breeds maintain large populations whereas some of them are endangered today (e.g. Turopolje in Croatia, Mora Romagnola in Italy). Most of them produce high quality products with high added economic value and some of these local breeds are associated to local production chains that are essential for the territory (e.g. Cinta Senese, Gascon, ...). Therefore pig production systems relying on local breeds face economic, environmental and societal challenges and their sustainability on these different dimensions may be very variable according to the production system and the breed considered.

The main objective of the European H2020 project TREASURE is to improve the knowledge, skills and competences necessary to develop existing and create new sustainable pork chains based on European local breeds, which correspond to the highest consumer demands for quality and healthiness of pork products, and to the societal demands regarding animal welfare, environment and rural development.

Within the TREASURE project, Task 2 of Work Package 2 (WP2) evaluates the sustainability of pig production systems with local breeds and the impact of innovative management strategies tested experimentally on the sustainability of these productions. On-farm surveys have been performed in 2016 in Gascon (FR), Krskopolje (SL), Mora Romagnola (IT) and Turopolje (CR) breeds and data from various experiments of the project have been collected, with the pre-developed tool from the Q-Pork Chains project (Bonneau et al., 2014; Dourmad et al., 2014; Ilari-Antoine et al., 2014). For the Gascon breed in the Noir de Bigorre (NDB) chain, a preliminary life cycle assessment, the economic evaluation and welfare scoring have been performed in 2016. It highlighted that climate change impact per kg live pig is high relatively to conventional systems and that acidification and eutrophication impacts are relatively lower than systems studied in the literature. The overall analysis of the results highlighted variability within the chain with economically weak breeders. These preliminary results question communication on these systems relatively to environmental labelling and give some insights for the forthcoming issues for the Gascon breed.

Objectives and program of the postdoctoral work

The objectives of the postdoctoral work will be to perform:

- Life Cycle Assessment (LCA) of the pig production systems for all the breeds surveyed in the TREASURE project as well as evaluation of the effect of the management strategies tested within the project on these results (e.g. hoop barns, immune-castration,...)
 - o When necessary life cycle inventories of the feed ingredients not available in existing databases
 - o Parameterisation of the LCA model developed for each system and farm surveyed.
- Overall scoring of all the systems / breeds on the various dimensions surveyed (economy, working conditions, animal welfare, animal health, meat quality, meat safety, breeding programmes).
- Publication of the results in peer-review international journals

The candidate

The candidate should have a PhD in animal sciences or related fields, with a special emphasis on the livestock farming system (LFS) and/or Life Cycle Assessment. Use of SimaPro software during the PhD. would be valuable.

Scientific supervision

The work will be conducted at the Research Unit PEGASE (Physiology, Environment, Genetics for the animal and the livestock system) <http://www6.rennes.inra.fr/pegase> of the INRA Centre of Rennes, and supervised by Dr. F. Garcia-Launay (modelling and production systems) (02 23 48 50 87, florence.garcia-launay@inra.fr) within the team SysPorc (The pig in livestock systems), with the support of Dr. Aurélie Wilfart (SAS Research Unit, Life Cycle Assessment), and with partners of the TREASURE project at University of Bologna, and at the Agricultural Institute of Slovenia (KIS). Both PEGASE and SAS research units have internationally recognized expertise in the fields of Life Cycle Assessment and modelling of pig production systems certified by their participation (or coordination) to various past or on-going European projects (H2020 Feed-A-Gene, FP7 Q-Pork Chains, FP7 Cantotogether,...).

Location and practical conditions

The postdoc position is a full-time 1-year round position opened for January, 2017, at INRA, 35590 Saint-Gilles, France. The INRA centre is accessible by bus from Rennes. Company restaurant at preferential rate. Monthly gross salary: from 2324 € /month to 2850 € /month depending on the professional experience after completion of the PhD.

Publications

Bonneau, M., Klauke, T.N., González, J., Rydhmer, L., Ilari-Antoine, E., Dourmad, J.Y., de Greef, K., Houwers, H.W.J., Cinar, M.U., Fàbrega, E., Zimmer, C., Hviid, M., van der Oever, B., Edwards, S.A., 2014. Evaluation of the sustainability of contrasted pig farming systems: integrated evaluation. *Animal* 8, 2058-2068.

Dourmad, J.Y., Ryschawy, J., Trousson, T., Bonneau, M., González, J., Houwers, H.W.J., Hviid, M., Zimmer, C., Nguyen, T.L.T., Morgensen, L., 2014. Evaluating environmental impacts of contrasting pig farming systems with life cycle assessment. *Animal* 8, 2027-2037.

Ilari-Antoine, E., Bonneau, M., Klauke, T.N., Gonzalez, J., Dourmad, J.Y., De Greef, K., Houwers, H.W.J., Fabrega, E., Zimmer, C., Hviid, M., Van der Oever, B., Edwards, S.A., 2014. Evaluation of the sustainability of contrasted pig farming systems: economy. *Animal* 8, 2047-2057.