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"APIVALE" an experimental platform for an integrated approach of organic effluent recycling and valorization

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Challenges and strategy

- **Societal challenge** : Agriculture is at the heart of organic waste recycling and valorization (organic matter, energy, nutrients...). This challenge requires the production of scientific knowledge, the development of technical or organizational innovations and a more holistic approach to better consider the possible synergies on the territories.
- **Scientific Challenge** : Organic effluents are subjected to numerous biological, chemical and physical processes that modify their composition, generate emissions to the environment and finally affect the availability of nutrient to plants and soil fertility. An improved knowledge of these different processes is required to quantify more precisely the emissions (for evaluation) as well as for their reduction (for mitigation).
- **Strategy** : Different public research institutes located in Western France including Irstea, Inra, Anses and South Brittany University, have decided to share their experimental facilities, equipment and competencies in a multimodal platform named "APIVALE" in order to develop an integrated approach of organic effluent recycling and valorization. This platform will be opened internationally within research projects to other research institutes, to applied research and to the industry.



Description of the platform

- **The platform will provide skills and facilities** to perform integrated studies over the whole chain of production and valorization of animal waste, possibly in combination with other sources of organic waste (**Figure 1**). It will include :
 - ✓ an experimental feed mill and equipment for the production of forages, and access to pasture, in a precisely controlled way
 - ✓ experimental facilities for the raising and the collection of fresh excreta from animals of different species (pigs, dairy cows and heifers, dairy goats, poultry)
 - ✓ equipment and facilities, including a dedicated bioclimatic hall named "Megeve" and respiratory chambers for the measurement of gaseous emissions from manure samples at the laboratory, on individual animals or small groups,
 - ✓ lab-scale and medium scale facilities for studies on a large variety of treatment technologies (liquid and solid), including aerobic and anaerobic digestion, composting, phase separation, extraction of nutrient, production of algae...
 - ✓ facilities for the evaluation of the fertilization value of the organic products issued from different technologies,
 - ✓ a large variety of laboratory equipment for the preparation of samples and the characterization of the organic products, including their micro-organism contents, and
 - ✓ tools for the multi-criteria evaluation of the different chains of organic matter valorization.

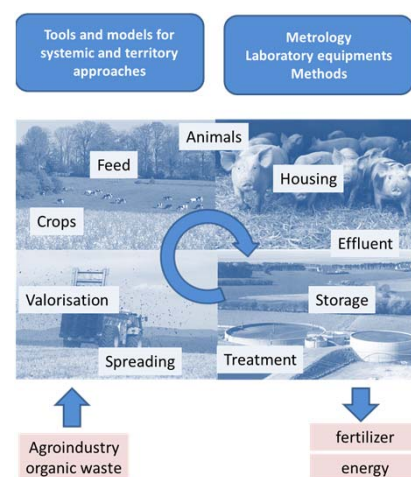


Figure 1 . A shared infrastructure for the integrated approach of organic effluent recycling and valorization

Implementation

Many of the equipment and infrastructure at lab scale are already available by the partners. They will be completed with new equipment at intermediate scale, funded within the 2015-2020 Government-Brittany Region contract. This platform will be opened nationally to applied research and industry, and internationally to other research institutes within research projects.