

Management and circularity of organic matter in Ariège, France

In Northern and Western Europe, farms are generally highly specialized, with little interaction between crop and livestock production. However, better integration, whether at the level of the farm or the territory, offers substantial potential for greater circularity of by-products (e.g. crop residues, compost, livestock manure and slurry, and biogas digestate) and soil carbon storage. In Ariège, France, such a strategy is being developed with stakeholders to jointly improve soils and to create added value for both suppliers and users of by-products as part of the MI BICYCLE project.

Ariège, nested between mountains and plains

Ariège is located between the Pyrenees and an arable production plain. By-products are currently under-valued while the prices of synthetic fertilizers are rising, as is the demand for organic fertilizers. As it becomes obvious that a territorial strategy for the use of by-products is needed, current by-product flows have been studied. They all built on improved collaborations between farmers.

Biogas plant

In northern Ariège, corn production uses 4,600 hectares. Male plants are used for biogas production. When a farmer gives 1 hectare of male plants (i.e. around 10 t of silage), he will get 20t of liquid digestate in return. A total of 56 farmers benefit from the digestate. They are located within a 15 km radius to limit and optimize logistic costs. This circularity is an asset for these farmers which allows them to be less dependent on external inputs while benefiting from a dual use of one of their main crops. This organization has been possible thanks to trust between farmers.

Composting platform

In southern Ariège, livestock farmers are also joining forces. A collaboration was born with recycling platforms and green waste collection platforms. The Chamber of Agriculture supports these stakeholders in the development of their own composting platform by recovering green waste from professionals (mostly landscapers) within a 10 km radius. Breeders get the woody parts for animal bedding and the other part is composted to be hygienised (eliminate the potential presence of weed seeds) and spread on meadows. This is another example of circularity that can be implemented at the territorial level.

Straw-manure exchange

Studies carried out on the different sources of organic fertilizers available in Ariège highlight a large disparity between supply and demand. The Pyrenees are full of manure, and the quantity is such that the surplus becomes a constraint for farmers who struggle to get rid of it. Conversely, in the arable plains, the demand for organic fertilizers is high but the supply is too low. The topography represents a major obstacle to transport between plains and mountains. However, these same studies identify scope for optimizing transport when possible (accessibility and with a distance of less than 25 km) by exchanging straw for manure. A tool has been developed to take this opportunity into account considering the type of straw and manure and the price of synthetic fertilizers as a reference as well as aspects of mechanization and labour.¹

¹ <https://paille-fumier.arvalis-infos.fr/>

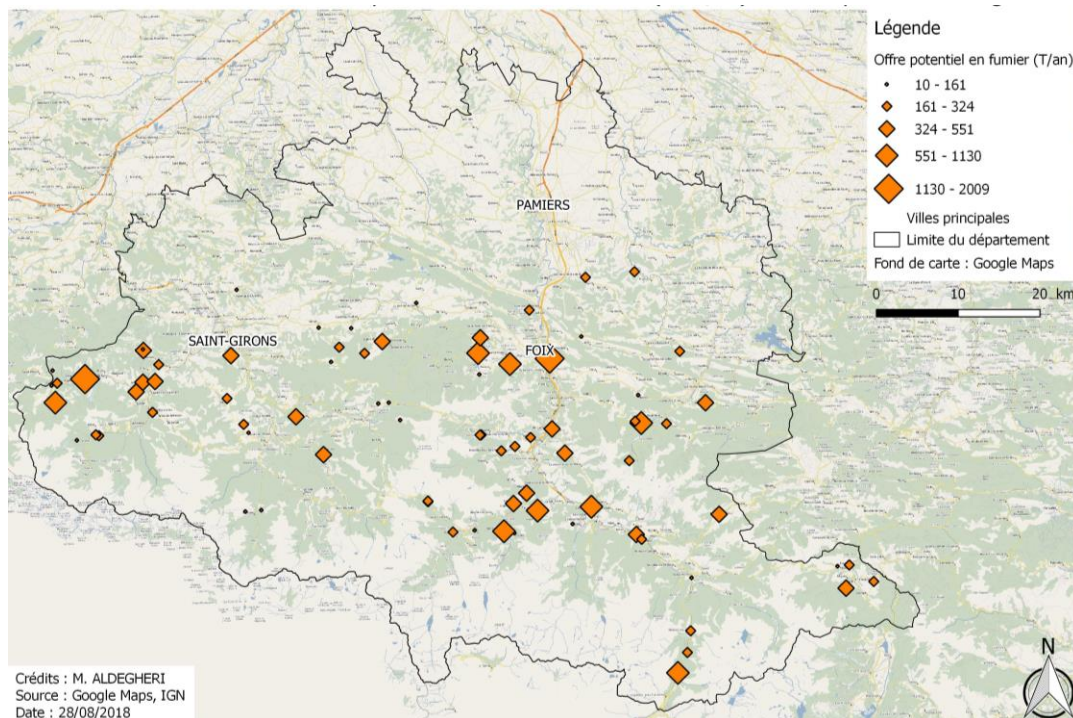


Figure 1 - Location and quantity of manure supply (in tonnes per year) in Ariège (ALDEGHERI, M., 2018)

Transhumance in the plains

Another collaboration is emerging between cereal growers and livestock farmers: a reverse transhumance. While traditional transhumance consists of moving livestock from the plains to the mountains in summer, the principle of this reverse transhumance is to move livestock from the mountains to the plains so that they can graze on meadows and cover crops during fall and winter. No contract is drawn up, but a discussion between the two farmers helps to define the terms of their collaboration, including grazing dates, cover crop established, management of fences, etc.

Conclusion

Achieving circularity at the territorial level calls for identifying the constraints and opportunities of the different actors involved and of acting, initially in small-scale projects, such as composting platforms, in order to assess the viability of the project and determine its reproducibility. Whatever the constraints of the territory, there are always solutions to develop circularity, but that also requires elementary knowledge of the effects of by-product applications on soils. This is why a network of 15 pilot fields is monitored to follow the evolution of soil carbon storage and organic matter.



Figure 2 – Biogas plant visited by MI BICYCLE participants.