

Manure treatment technologies: On farm versus centralized strategies. NE. Spain case study

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Organic wastes which composition allow their valorisation as fertilizers or organic amendments must be considered as resources to be managed adequately, instead of pollutants to be removed. The optimal use of manure as a fertilizer depends on local conditionals: availability of accessible soils and crops to be fertilized, nutritional requirements and productivity of these crops, presence of other competitive organic fertilizers in the area, climate factors, density and intensity of farming, property structure of farms and agricultural lands, distances and transport costs, energy prices,...

Manure processing should be considered in the framework of a Nutrient Management Plan (NMP) designed under local conditions and considering cultivable soils as the end-users of this resource. A NMP can be defined as a set of actions conducted in order to adequate manure production to the demand as quality products. This set of actions must include: minimization of flow rates and their content on limiting components (e.g. water, nutrients and heavy metals); fertilization plan; economical costs analysis and, finally, analysis of feasible treatments to be applied in order to improve the management capability.

These treatments can vary from simple (adequate storage, mixing system and spreading method) to complex (i.e. considering a biogas plant and a nutrient recovery treatment) (Bonmatí A., Flotats X. (2003^{a,b}) but always tending to increase the management capability and the product value, and to decrease the global management cost. When, in a given geographical area, the offer of nutrients is higher than the demand the complexity of the system requires a higher level of management, and then a collective management could be favourable. This difference, individual or collective management planning, is thought to be the key factor for implementing individual -farm scale- or collective -large scale- facilities. In this sense, scale and technological complexity must be the result of a management planning and not an objective by itself.

Catalonia, NE of Spain, has a high livestock farm concentration with more than six million pigs, 0.65 million cows and 38 million poultry (DAR, 2008). The high density of livestock in some areas linked to the insufficient accessible arable land, drive to a number of environment side effects. Nowadays in Catalonia there are operating 42 collective Nutrient Management Plans, joining 2594 farms and managing 21,879,631 kg N/year (DAR, 2008). More than 100 farms have installed some kind of manure treatment system, and exists more than 6 centralized treatment plants. Main factors explaining successful experiences in Catalonia are the involvement of farmers, contractors, technology suppliers and authorities, prices of energy and mineral fertilizers and the existence of a NMP as a global framework for actuations, either at individual or collective level (Flotats *et al.* 2009).

References

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