



Improved Nutrient and Energy Management  
through Anaerobic Digestion



## WORKING PAPER 18 :

# Digestate and Organic Fertilizers Certification in Europe: a plea for a common system

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### ABSTRACT :

*The purpose of the INEMAD project is to look at management strategies to improve the utilisation of nutrients from manure or digestates in agriculture in Europe. This paper looks at the CERTIFICATION in selected areas in order to propose certification to improve exchanges or local use of digestates or organic fertilizers. High livestock intensity is found in the Flemish region in Belgium, many parts of The Netherlands and parts of France (Britany). 2-3 millions of organic fertilizers or raw materials are imported in France or Germany from Belgium and Netherland. This quantity is increasing each year.*

*For this imports or use in France and Germany, actually, sellers have to follow the French and German laws and regulations as the Agriculture and Market control, Environment, French Standards, European regulation for animal by products and European regulation for diseases control (bovine tuberculosis and paratuberculosis).*

*This paper compares and comments the different trans border regulations.*

**Keywords:** Regulation, fertilizers, soils improvers, control, safety, environmental impact, circular economy, certification, wastes, raw materials, microbiological parameters, chemical parameters.

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## 1 Introduction

Food, Wood or even technology systems – these are things, people associate when they think about certification systems. Nonetheless, certification of digestate is also possible and established in Europe.

Certification itself provides independent, respectable and honest information about a product or a service. It should guarantee quality assurance and security. The certification of waste streams like compost has only recently been developed, for digestates or organic fertilizers it is still at the beginning. Over the last decade, manure and digestate have been seen as waste products. However, nowadays producers as well as consumers recognise the value of the nutrient rich substance. The certification of digestate, organic fertilizers, raw materials can contribute to bring producers and users together and to create saleable products.

*The benefits of this market are:*

- *export and sell of excess of manures from Italy, Britany, Flanders, Netherland to Center and North of France or Germany*
- *lower import of mineral fertilizers in Europe*
- *Nutrient circular economy in this areas*
- *improve value of Organic Matter of Digestates, Organic Fertilizers*

*The limits of this market are :*

- *Traceability : just 70 % of this products are correct for labelling and French laws*
- *Safety diseases for animals are increasing in North Western Europe (bovine tuberculosis, bovine paratuberculosis)*
- *Prices, volume : Offer is increasing in France and BNL, prices go down*

## 2 LAWS, CONTROL AND CERTIFICATION

### 2.1 Related EU Legislation

Manure and digestate frame under different legislations. Next to the waste legislation and the veterinary legislation, the fertilizer regulation and in some cases even the energy legislation must be taken into account. However, not only the European legislation has a determining influence, but also national (detail) regulation will be necessary to accommodate.

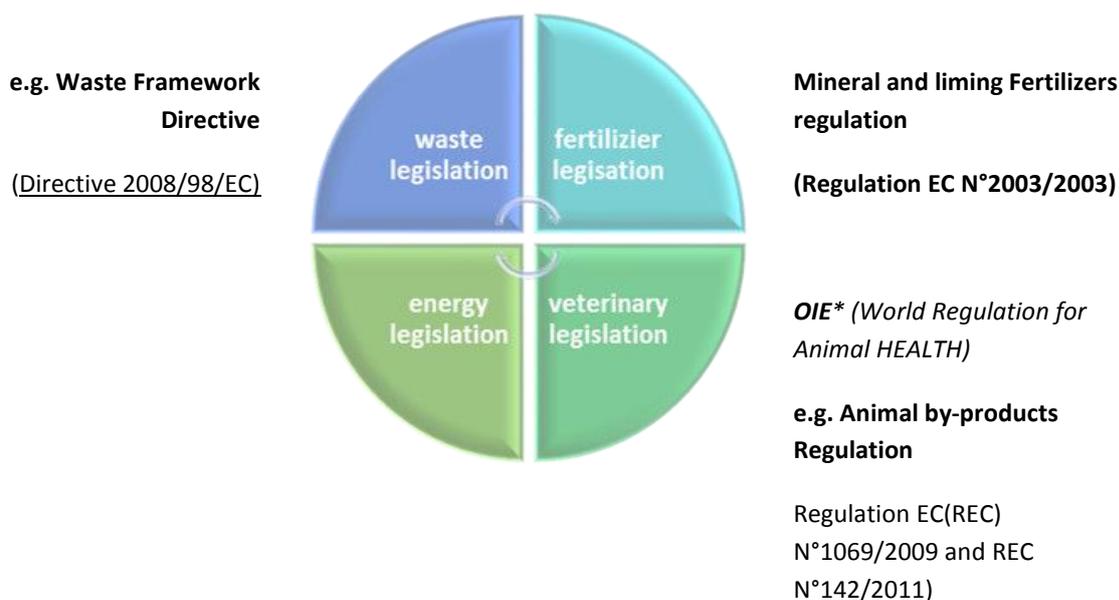


Figure 1: Involved legislations for digestate (or soil improvers made with digestate) certification

On European level, the Directive 2008/98/EC on waste (Waste Framework Directive) provides a general framework of waste management and sets the definitions. According to this, the waste hierarchy is prevention, preparing for re-use, recycling, recovery and at least disposal.

Other important framework regulations are the Regulation (EC) N°1069/2009+REC N°142/2011 (Animal by-products Regulation) and the Regulation (EC) No 1907/2006 (REACH). The Animal by-product regulation distinguishes between the different input material categories<sup>1</sup> and defines the exporting requirements for manure or digestate to other countries<sup>2</sup>. The REACH regulation applies

<sup>1</sup> Category 1: highest risk (e.g. entire bodies and all body parts that is considered a TSE risk); Category 2: high risk (fallen stock, manure and digestive tract, either category 1 or 3); Category 3: low risk (carcasses and parts of animals slaughtered, blood, placenta, wool, feathers, hair, horns, hoof cuts and raw milk, etc.)

<sup>2</sup> from an approved country; from an approved/registered plant; accompanied by an animal health certificate

only for materials other than waste<sup>3</sup>. The big question remains, is digestate waste or a product? Until now, the question is still not answered properly.

The existing EC FERTILIZERS Regulation (EC) 2003/2003 brings quality standards and standard analysis methods for mineral fertilizers or liming materials, and a basic control system. EC DG ENTREPRISE together with some member states are trying to expand this EC 2003/2003 regulation and bring in organic fertilizers, organo-minerals and growing media.

By 2018-2020, this harmonization should then result in a positive list of raw materials (safe digestate, manure, animal byproducts, some agro-food byproducts and some sewage sludges) and a negative list of raw materials (some sewage sludges, some non-safe animal byproducts).

These European regulations were transferred into national legislation and built the basis for the national certification systems. Every member state however implemented these regulation somewhat different.

## **2.2 Comparison certification systems between Belgium, France and Germany**

Certification systems for compost or organic soil improvers exist in nearly every European country; certification systems or quality assurance systems for digestate only exist in Belgium, Germany, England and Sweden. We compare the systems from Belgium (Flanders) France and Germany in the next table.

In France quality assurance systems included digestate as raw material for national standards NF U 42 001 (organic fertilizers) or NF U 44-051 (organic soils improvers). Some labs can bring certification for Sampling and analysis, standards conformity.

In the Flemish region two certification systems exist. One is a federal based applied in the whole of Belgium, the other one (Vlaco) is only regional applied in Flanders. Vlaco is a private non-profit organization for supporting and implementing the policy of biowaste in Flanders.

In Germany, two certificates exist “RAL GZ 245 for digestion products” and “RAL GZ 246 for digestion products produced from renewable energy materials”. The RAL (German Institute for Quality Assurance and Certification) awarded these certificates. This is a private institution for the organisation of handling, monitoring and controlling the quality of compost, digestate and humus products of sewage sludge.

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<sup>3</sup> waste is exempted from REACH regulation (Article 2(2))

## Digestate and Organic Fertilizers Certification in Europe: a plea for a common system

*Table 1: Overview of the certification systems and relevant parameters in Belgium and Germany*

Country	Belgium I	Belgium II	France	Germany
Title	Vlaco-label	FOD-declaration	LDAR	RAL-label
Type of Certification	Private but entitled by Flemish government	Public	Private	Private
System	Obligatory	Obligatory	Obligatory for standard conformity, voluntary for certification	Voluntary
Volume		<ul style="list-style-type: none"> <li>around 2.4 million tons digestate mixed.</li> <li>about 160,000 ton manure digestate</li> </ul>	<ul style="list-style-type: none"> <li>around 100-200 producers/LDAR</li> <li>20-30 for CAS</li> <li>Idem AFNOR</li> </ul>	<ul style="list-style-type: none"> <li>around 100 members</li> <li>around 2.6 million tons</li> </ul>
Producer	Standard for all biogas plants	Derogation (mandatory if material is used in Belgium, not for export)	Belgium/Netherland/France/Italy Producers, sellers and farmers	mainly <ul style="list-style-type: none"> <li>big biogas plans (&gt;2MW)</li> <li>biowaste plants</li> </ul>
Consumer	Standard	Mandatory for use in Belgium	Standards NF U French and Belgium Registration	Mainly <ul style="list-style-type: none"> <li>Agricultural fertilizer</li> <li>Special application (e.g. rose fertilizer)</li> </ul>
Control system:	<ul style="list-style-type: none"> <li>acknowledgement procedure</li> <li>In-plant and third-party monitoring with sampling</li> <li>Yearly controls</li> </ul>	<ul style="list-style-type: none"> <li>Environment inspection, manure authority, waste authority, food agency</li> <li>Output: 4/year analyzed on bacteria, 2/year on contaminants, 4/year on nutrients</li> <li>Inputs: 2/year on heavy metals, nutrients, PAK's, mineral oil</li> </ul>	<ul style="list-style-type: none"> <li>Audit, third party monitoring</li> <li>Output: 4/year on microbiological parameters, 2/year on contaminants, 4/year on nutrients</li> <li>Over control and sampling</li> <li>N and /C EFFICIENCY</li> </ul>	<ul style="list-style-type: none"> <li>acknowledgement procedure</li> <li>In-plant and third-party monitoring with sampling</li> </ul>
Sampling	Intern and external sampling	Intern and external sampling	Intern (ISO EN 17 025 accreditation) for analysis and sampling	Intern and external sampling
Legal background	Flemish Waste Regulation	Federal regulation on chemical and organic fertilizers	RCE 2003/2003 French standards and regulation on organic fertilizers and soils improvers or growing media, registration, RCE 142/2011 LAP Local Application Plan	German fertilizer legislation
Certificate includes:	Documentation <ul style="list-style-type: none"> <li>on bacteria</li> <li>on contaminants</li> </ul>	Documentation <ul style="list-style-type: none"> <li>on nutrients</li> <li>process</li> <li>on bacteria</li> <li>on contaminants</li> </ul>	Documentation ON <ul style="list-style-type: none"> <li>SAMPLING</li> <li>nutrients</li> <li>chemical and microbiological contaminants</li> </ul>	Documentation <ul style="list-style-type: none"> <li>on nutrient content,</li> <li>declaration of the product and</li> <li>application guidelines</li> </ul>
Certificate can include	Quality manual and traceability		N efficiency +C qualities Odors comments, Impurities	Advices for farmers (N efficiency, Organic matter)...

Even if these systems have comparable control procedures and many identical parameters, they are not accepted in the other country. The main difference is the status of obligation or commitment. In Belgium the certification systems are obligatory; in Germany and France it is a voluntary system. In addition, the limit values differ from system to system. These differences are due to the legislation on which the systems are based. The FOD system is based on the federal regulation on fertilizers; the Vlaco-label on the contrary is based on the (Flemish) waste regulation. The German system is based on the (federal) fertilizer legislation. French system is based on national regulation (registration, standards, Local Application Plan LAP). Therefore, a comparison between certificated raw digestate from Belgium, France or Germany is not possible, except RCE 142/2011 with microbiological parameters as *E. coli*, *Enterococcus faecalis*, *Salmonella*.

This is the main reason why trading digestate over the border is difficult or not feasible, except some French standards for treated manures or digestates (imports in France from Italy, Germany, Spain, Belgium and Netherland with some standards, are around 2-3 millions tons).

*Table 2: microbiological parameters in Europ for digestates and compost RCE 142/2011 control*

Methods	<b>Salmonella</b>	<b>Enterococcus</b>	<b><i>E. coli</i></b>	<b>sampling</b>
standards/ F. methods	N EN ISO 6579 NF V 08-052	EN ISO 7899-1 Pr BEA-ENTEROCOQUES	EN ISO 16 649	EN 12579 NF U 42-160
limits	0	1 000-5 000	1 000-5 000	-

### 3 RECOMMANDATIONS

A European-wide certification system of treated or raw digestate imposes itself because on the one hand this will give more confidence for users and indicates the value digestate has. On the other hand an European wide certification system can guarantee the transport across border as :

- raw material
- organic fertilizers
- soils improvers
- growing media

Therefore an efficient quality system for EC 2003/2003 Harmonization needs to include:

1. Guidelines for organic soils improvers, organic fertilizers, growing media and raw material regulation
2. European Analysis standards for microbiological, chemicals, physical efficiency, homogeneity, stability and safety parameters
3. A microbiological quality system with different grades for cross-border or local exchange with a specific labelling for raw materials (digestates, manures, agro food, sewage sludges)
4. Admissible deviation list for some labelling parameters (nitrogen, phosphorus, potassium, sulphur, magnesium, homogeneity, particles sizes...)
5. Accredited labs for sampling, analysis with ISO EN 17 025 label
6. Accredited organism for LAB accreditation (BELAC COFRAC /...)

Therefore an efficient quality system for EC 2003/2003 Harmonization can include:

7. Accreditation for all process producers, transformers and logistics sellers
8. N and Organic matter efficiency, type of spreading and use for farmers (information)

The market can need smaller areas for an efficient digestate certification project:

- Local area (producers),
- Cross border or transnational areas with first and second control (first for producers, second for customers) .

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