

General overview of Biosolids In France

Leveraging traceability to promote agricultural use of wastewater treatment biosolids



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Biosolids in France

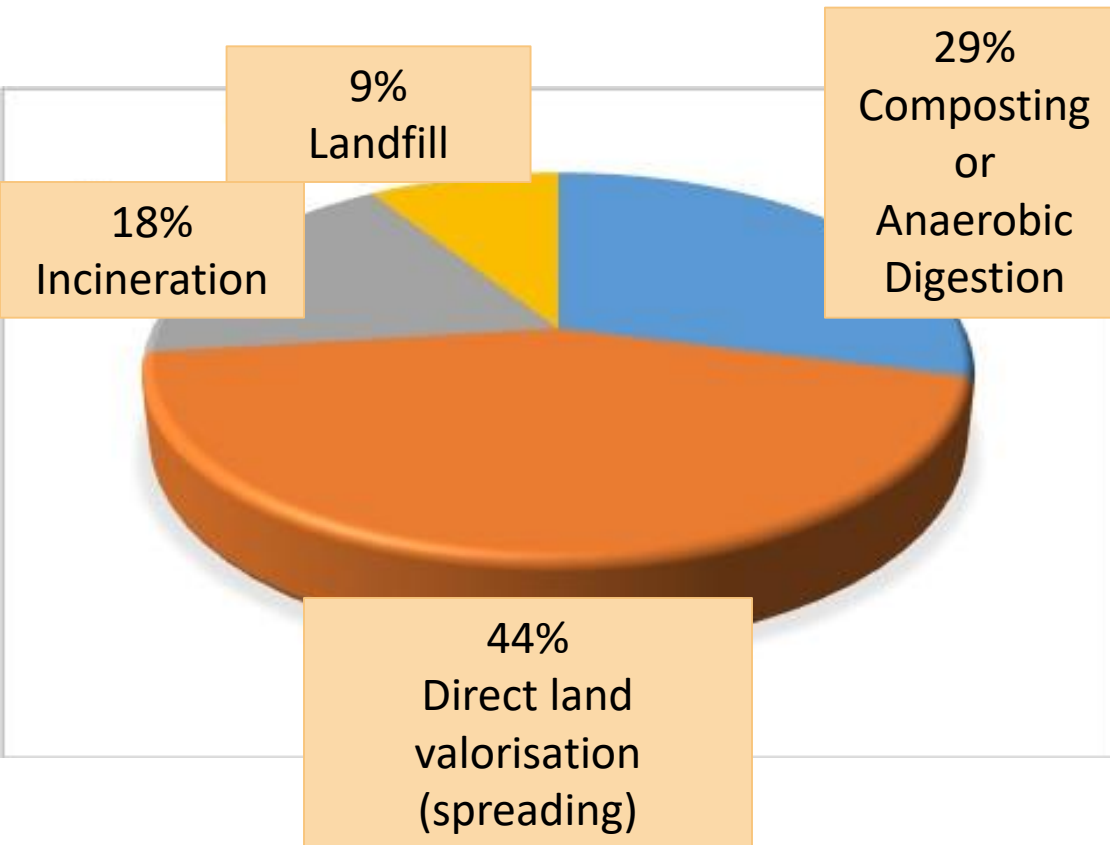
18 000 municipal WWTP
1 million biosolids (DM)



73% to Agriculture

In every case, the agricultural recycling of biosolids has to take place in a context of reasoned fertilization according to:

- The needs for plants,
- The expected yield
- The contents in nutriments of soils,
- Other contributions of fertiliser received by the soil



Direct Valorisation : land spreading

Status of biosolids: defined by the decree 97-1133 of December 8th, 1997

➡ can be spread on farmlands only if they present an interest for soils or for nutrition of the cultures.

➡ establish as fertilizing material but it does not give them a new status



An interest for soils or for the cultures



Nitrogen (N) plays a key role in the metabolism of plants as establishing major proteins, essential for the growth of plants

Phosphor (P) transports the energy in the plant. It favors the general growth of the plant, in particular the roots system and stalks. At the end of vegetation, it is stored in the organs of reserves to be of use to the development of the future shoots

Potassium (K) strengthens the resistance of the cultures in the diseases, in the drought and in the frost

Trace elements (Copper, Magnesium, Zinc) are useful in quantity reduced to realize all the chemical reactions which take place in the plant.



An interest for soils or for the cultures

NPK (Kg/t or m3 de wet matter)				
	OM (Kg/t Wet matter)	N	P or P2O5	K or K2O
Solid cow manure	187	5,5 à 6,3	2,4 à 3,7	7,2 à 10,1
Liqui cow manure	45	3,3 à 5	1,8 à 4	1,8 à 3
Biosolids	140	4 à 12,1	2 à 13	0,6 à 3,6
Biosolids compost	250	10	3,2	9,3
Mineral fertiliser		50 à 300	50 à 225	100 à 600



Direct Valorisation : land spreading

Organised in two stages

Stage I: preliminary study, conception of the organization of spreading

Stage II: implementation of spreading



Preliminary study : to assure that the agricultural recycling is made in the best conditions

- ✓ To define the principles of the organization and to commit a real partnership with the users,
- ✓ To determine near the place of production, zones favorable to the spreading,
- ✓ To characterize biosolids to be spread and to validate their ability in the spreading,
- ✓ To analyze soils to be spread,
- ✓ To fix the choice of equipments and material for the storage, the transport and the manuring.



Direct Valorisation : land spreading

Organised in two stages

Stage I: preliminary study: conception of the organization of spreading

Stage II: implementation of spreading



1 - Plan: the Projected Program of Spreading Every year, a projected program of spreading is established and passed on in competent authorities.

This document specifies: the list of the plots of land intended to be spread, their surface and the doses of contribution which are a function of cultures implanted after spreading, reserved periods of spreading; the results of analyses realized on biosolids which allowed to determine their agronomic value and to check their conformity with the statutory thresholds, the results of soil analyses, identification of the natural and legal persons in charge of the implementation and with the self-monitored spreading.



Direct Valorisation : land spreading

Organised in two stages

Stage I: preliminary study: conception of the organization of spreading

Stage II: implementation of spreading



2 - Follow and register the operations of spreading

The implementation of spreading is made in the defined conditions (date, quantity) by the preliminary study and the Projected Program of Spreading. The farmer must be able to follow and know the quantities and the quality of biosolids really spread on his plots of land.

For that purpose, all this information is recorded throughout spreading in the register of spreading. It also includes the analyses of soils having been the object of a spreading and the associated advice of fertilisation.



Direct Valorisation : land spreading

Organised in two stages

Stage I: preliminary study: conception of the organization of spreading

Stage II: implementation of spreading



3 - Communicate: the agronomic balance sheet and the synthesis of the register
At the end of period of spreading, the producer of biosolids has to draft an agronomic balance sheet which allows to raise a report of what was actually realized and to identify the difference (if existing) compared with the projected schedule.

This one is then completed by:

- Fragmented index cards which resume the quantities of fertilizing elements brought by biosolids on every plot of land,
- The balance sheets of fertilization realized on the reference plots of land,
- This balance sheet is sent to the authorities and at the same time a synthesis of the register of manuring is transmitted to the users.



Valorisation as a compost

Status of sewage sludge : defined by the decree 97-1133 of December 8th, 1997

- ➔ can be spread on farmlands only if they present an interest for soils or for nutrition of the cultures.
- ➔ establish as fertilizing material but it does not give them a new status for all that.

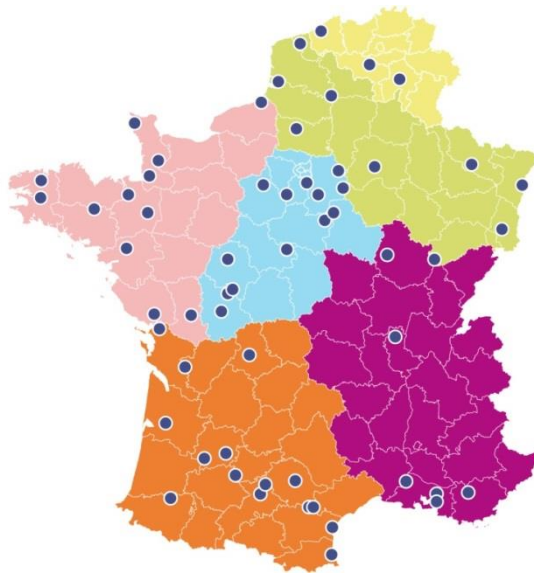
Only the ratification, or the conformity with the NF standard U44-095 of compulsory application can give the capability to be put on the market



Valorisation as a compost

- Biosolids,
- Green waste and biowaste,
- Wastewater biosolids from food, dairy, brewing industries,
- By-products from paper mills...

- SEDE is operating **35 composting sites** with a process capacity of **1 000,000 t** per year.
- SEDE markets and sells more than **600,000 t** of compost per year.



Composting plants



Artois compost :
55 000 t/an

Baie de Somme compost :
35 000 t/an



Oise compost :
28 000 t/an

Alsace compost :
44 300 t /an

Mobile dehydration

Decrease the volumes and widen the panel of the solutions of valuation of biosolids by applying them a preliminary dehydration.



Centrifuge



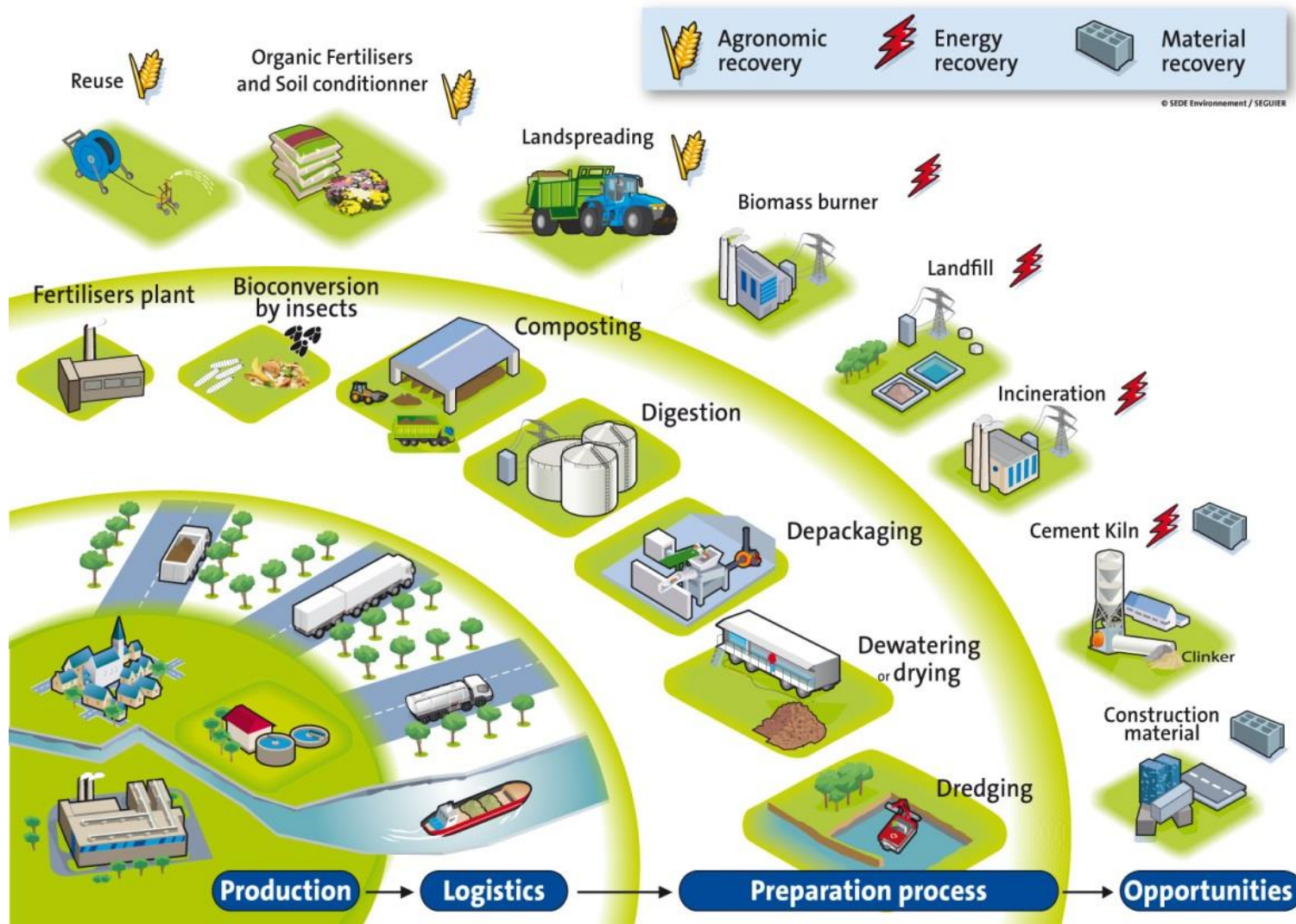
Press Filter



Band filter



Multi outlet solution



Traceability is key




Suivra



Traceability of biosolids land application

Objectives :

- To monitor any type of by-products (biosolids, treated wastewater, etc...), on both quantitative and qualitative basis, over a period of several years.
- To enable users to check the regulatory compliance status of by-products at any time,
- To display the plots used for land application on a map base (thanks to a geographical information system)
- **To guarantee the traceability of the land application operations**

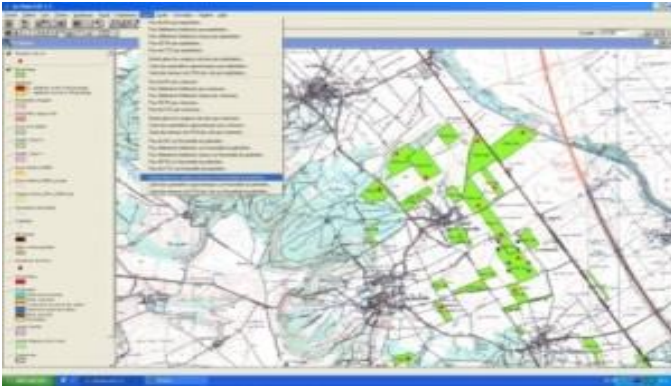


SUIVRA : a tool to plan and record



- Provides farmers, waste producer and local authorities with a comprehensive record of the land spreading campaign, with various reports.
- Establish the nutrient management plans.
 - *Analyses are performed on soils and biosolids or treated waste water to determine the optimized nutrient balance and the results are automatically imported into SUIVRA.*
 - *This land-plot management system is used to establish the spreading schedule : the quantities of biosolids required to fertilize the crops are determined for each plot of land. Where necessary, the balance of nutrients to be supplied in chemical form following land spreading is also calculated.*

Making it happen



Today, SUIVRA data base integrates :

- 3 millions tonnes of solid urban and industrial by-products
- 5 millions m³ of food industries and urban effluents processed
- 10 000 farmers over 1 000 000 ha of landbank



Applied in France, Belgium, United-Kingdom and in the Republic of Ireland.

The software is conducive for use by regulatory agencies in every country.

Conclusion & Perspectives

Software applications such as SUIVRA allow land use application of biosolids to be done in a traceable and verifiable manner. Traceability helps alleviate concern over misuse and pollution impacts.

➡ sustainable use of a waste product can be more widespread.



Thank you for your attention!

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SEDE  **VEOLIA**


Suivra

