



Home-made compost quality : methods of assessment and results

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Miniwaste project - Final conference

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affirmer
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le Cemagref
devient Irstea



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Methods

- **Sampling panel**

- 2 campaigns :

- November-december 2010 : 14 individual composts ; 5 collective composts
- May-July 2011 : 25 individual composts ; 15 collective composts

- Individual panel

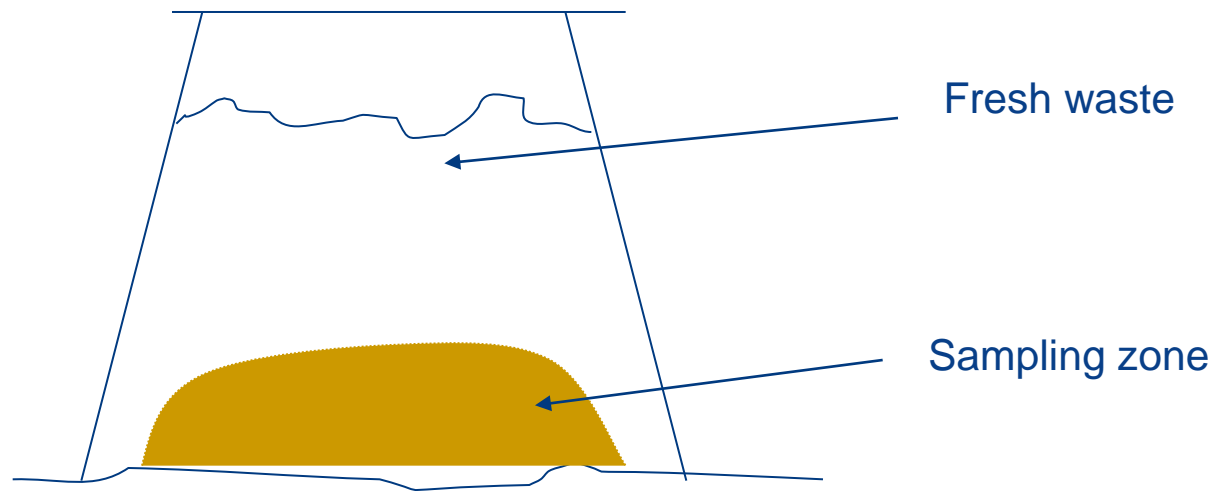
- From the Miniwaste quantity assessment protocol
- Volunteers after a call among Rennes-Metropole services

- Collective housing panel : chosen by Rennes Metropole and experts

Methods

•Sampling method

- Composting that have begun since at least 5 months
- Sampling of the most « finished » compost



Example of sampling zone in a composting bin



Methods

Sensory assessment

✓ Sensory indicators

- Presence of insects, earthworms, flies ...
- Colour
- Homogeneity
- Texture
- humidity :
- Temperature
- odors : type and degree

Physico-chemical analysis

- Physical parameters (dry matter, organic matter, carbon content, chemical oxygen demand, pH ...)
- Nutrients (NPK)
- Inerts and pollutants (heavy metals, PAH)
- Microbiological tests for pathogens (Helmiths eggs ; salmonella)
- Phytotoxicity tests (germination index)

Physico-chemical analysis

	French Standard	General Mean	Individual Mean	Winter individual Mean	Spring Individual Mean	Collective Mean	Winter collective Mean	Spring Collective Mean
Dry Matter (%)	>30 %DM	34,3	34,3	35,4	33,7	34,4	35,1	34,9
Organic Matter (%DM)		52,0	46,8	47,0	46,7	62,1	63,3	63,6
Organic Matter (%WM)	>20 % DM	16,0	15,0	15,5	14,7	21,4	22,1	22,4
COD total (mg O2/g DM)		754,9	666,9	671,1	664,6	926,7	942,6	967,0
Total carbon (mg/g DM)		290,9	264,8	262,3	266,1	341,9	346,7	352,2
Total nitrogen (mg/g DM)		21,4	20,2	18,4	21,2	23,8	24,0	23,6
C/N	>8	14,1	13,7	14,6	13,2	15,0	15,2	15,9

	French Standard	General Mean	Individual Mean	Winter individual Mean	Spring Individual Mean	Collective Mean	Winter collective Mean	Spring Collective Mean
Total Nitrogen (% WM)	< 3 % WM	0,7	0,6	0,6	0,7	0,8	0,8	0,8
Potassium (en K2O) (% MB)	< 3 % WM	0,8	0,7	0,7	0,7	0,9	0,9	0,9
Phosphorus (en P2O5) (% MB)	< 3 % WM	0,4	0,4	0,4	0,4	0,4	0,5	0,5
pH		8,1	8,1	7,9	8,2	8,1	8,1	8,2



Biological analysis

	French Standard	General Mean	Individual Mean	Winter individual Mean	Spring Individual Mean	Collective Mean	Winter collective Mean	Spring Collective Mean
Viable Helminth eggs /1,5 g DM	absence	4/59	3/39	1/14	2/25	1/20	1/5	0/15
Salmonella	absence	1/59	1/39	1/14	0	0/20	0	0

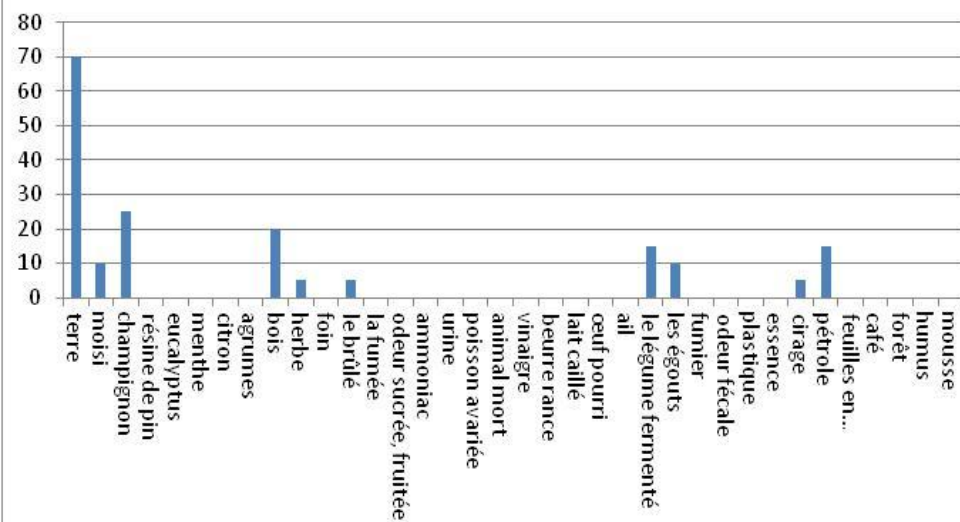
No real problem with home-made composts:

- Less than 10 % of presence for parasites – not linked with the use of animal litter as substrate
- One exception for salmonella: may be a contamination of the sample

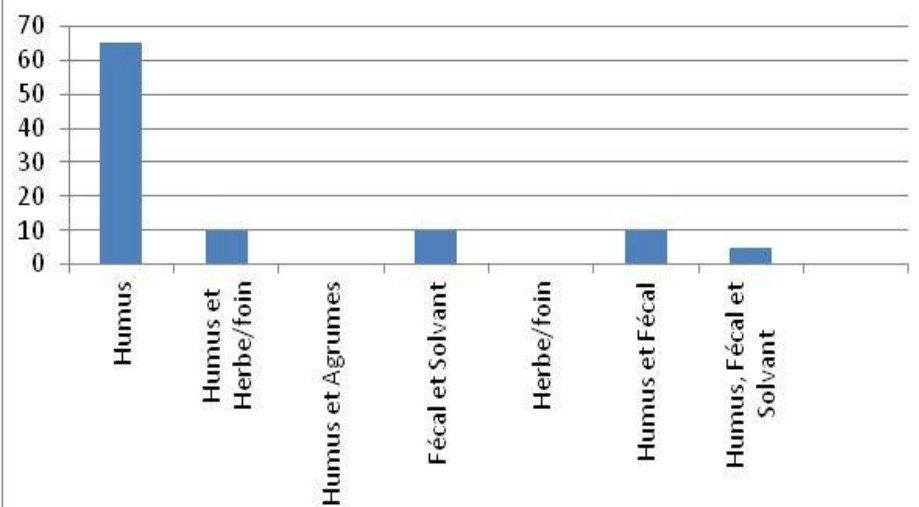
Example of results for sensory assessment

Collective composts

Recognised odors



Type of odors

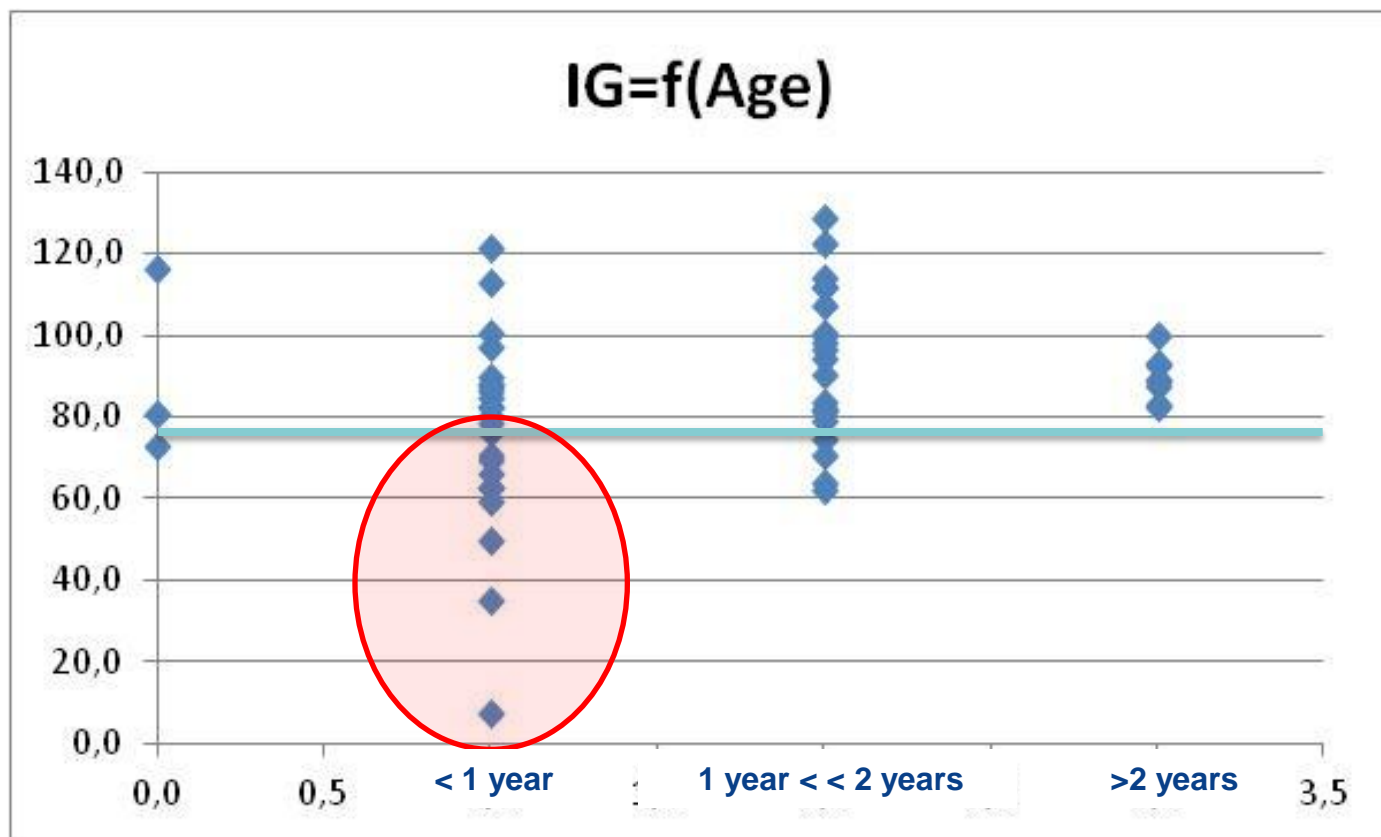




Synthesis of sensory assessment

- **Best discriminant indicators (statistical analysis) between composts are**
 - **Living forms**
 - **Odours**
- **Colour is considered as a good quality indicator but actually it doesn't discriminate composts**
- **Heterogeneity/Homogeneity and texture are difficult to appreciate by users**
- **Visual rate of decomposition is often cited by users to assess their composts**

Link between compost quality and composting practice





Conclusion

What need the user in terms of quality assessment?

Is my compost good ?

=

Can I use my compost ? And How can I use it ?

- 1. Reassure on the fact that home-made composts can be use safely**
- 2. Advise their own assessment (promotion of good and pleasant conditions):**
 - Indices of good evolution of the biodegradation
 - Presence and diversity of living organisms
 - Increase of the humus odor predominance
 - Decrease of the odor degree
 - Moisture by fist testing (slight excess)
- 3. A usable compost must:**
 - be dark (brown or black)
 - present the less recognizable waste as possible
 - Be older than one year (to be sure of no germination problem)