WORLD RESOURCES FORUM

CLOSING LOOPS
TRANSITIONS AT WORK

FEB 2019
24-27
ANTWERP
BELGIUM

FLANDERS MEETING & CONVENTION CENTER ANTWERP

WWW.WRF-ANTWERP2019.BE
Interactive Workshop – OKAPI I

Marketing tailor made compost and digestate-based products

Date: 26 February 2019
Time: 9:50 am – 11:20 am

Quality criteria for compost and digestate for use in growing media
Research results on compost and digestate-based products
Challenges for the use of compost in growing media – Experiences of a growing media manufacturer

Interactive part:
5 Round table discussions on quality aspects, marketing purposes and consumer expectations
Marketing tailor made compost and digestate-based products

Agenda

- 9:50 h Welcome and opening
  Moderator: Stefanie Siebert, Executive Director of ECN
- 9:55 h ECN-QAS Guidelines for the specification of quality compost for use in growing media
  Adrie Veeken, ECN TG Chair ‘Growing media & Horticulture’
- 10:05 h Research is the foundation of product differentiation of compost and digestate in Flanders
  Elke Vandaele, Vlaco Division Quality and Certification
- 10:15 h Compost in growing media: do’s and don’ts
  Nele Ameloot, Greenyard
- 10:25 h Interactive brainstorm session within 5 interactive groups (45 minutes)
- 11:10 h Feedback from interactive session

#WRF19
European Compost Network

- ECN is the leading European membership organization promoting sustainable recycling practices in composting, anaerobic digestion and other biological treatment processes of organic resources.

- ECN represents 4,500 treatment plants (composting and anaerobic digestion) with more than 45 M tpa treatment capacities.

- Compost and digestate-based products 18-22 M tpa used as organic fertiliser, soil improver and mixing component in growing media.

<table>
<thead>
<tr>
<th>Biological treatment of municipal biowaste</th>
<th>Plants</th>
<th>Input [Mio t/a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composting</td>
<td>3,849</td>
<td>30.55</td>
</tr>
<tr>
<td>AD and combined AD &amp; composting</td>
<td>705</td>
<td>14.38</td>
</tr>
<tr>
<td>Total</td>
<td>4,554</td>
<td>44.93</td>
</tr>
</tbody>
</table>

Source: ISWA/ECN Survey 2018
European Compost Network

ECN’s Objectives

1. **Favourable legal framework**
   Achieve an EU legal framework that supports separate collection, biological treatment of organic residues and production and use of quality assured compost and digestate products.

2. **Market development**
   Achieve favourable market conditions across Europe for separate collection, biological treatment and use of compost & digestate products.

3. **Benchmarking harmonised quality standards for compost and digestate**
   - European Quality Assurance Scheme for Compost and Digestate
ECN-QAS Guidelines

Specification of quality compost for use in growing media

Adrie Veeken, ECN TG Chair ‘Growing media & Horticulture’
Markets for compost in EU

- Compost markets are country specific
- Growing Media market small

Total compost production 15 million ton/y
Market for growing media in EU

Why is not more compost used in growing media?

#WRF19
## Opportunities for compost in growing media

### SWOT *

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low costs</td>
<td>Public demand to replace peat</td>
</tr>
<tr>
<td>Disease suppressiveness</td>
<td>Societal needs for recycling organic waste</td>
</tr>
<tr>
<td>Nutritional contribution</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of uniformity</td>
<td>Human, zoonotic and plant pathogens</td>
</tr>
<tr>
<td>High salinity</td>
<td>Heavy metals</td>
</tr>
<tr>
<td>High pH</td>
<td></td>
</tr>
<tr>
<td>Inferior physical properties</td>
<td></td>
</tr>
<tr>
<td>Phytotoxicity</td>
<td></td>
</tr>
</tbody>
</table>

*Adapted from Aviv M. (2013): SWOT analysis of the use of compost as Growing Media Components.

- **Quality and consistency has to be improved**

#WRF19
Development of guidelines within ECN-QAS

- Taskgroup within ECN
- Consultation of external experts
- Reviewed by Growing Media Europe
- Publication of guidelines for the use of compost in growing media

#WRF19
ECN-QAS for compost and digestates

- Quality Assurance Scheme for Compost and Digestate

- Promote of recycling of organic wastes: ”from waste to product”

- Basis for End-of-Waste document and Fertiliser Regulation
Quality requirements for Compost and Digestate

- Suitable input material
- Operation quality (plant)
- Product quality (compost)
- Product use (good practice)

Positive-list
Check-list
Product control
Application recommendation

National-QAS (Quality label)
- plant certificate
- product certificate
- annual quality report

and

ECN-QAS
- certification of conformity
- conformity label

#WRF19
## General precautionary quality criteria

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hygiene</strong></td>
<td>Absent in 25 g dry matter</td>
</tr>
<tr>
<td>Salmonellae spp.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical contaminants* (Undesired ingredients and properties)</th>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impurities (glass, metal &amp; plastics) &gt;2 mm*</td>
<td>≤ 0,25 % dry matter</td>
</tr>
<tr>
<td>Stones &gt;5 mm</td>
<td>&lt; 4% dry matter</td>
</tr>
<tr>
<td>Weed seeds</td>
<td>≤ 1 seeds per litre</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inorganic pollutants (Potentially toxic elements)</th>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (Pb)</td>
<td>130 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>1.3 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>60 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Copper (Cu)**</td>
<td>300 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>40 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>0.45 mg kg⁻¹ dry matter</td>
</tr>
<tr>
<td>Zinc (Zn)**</td>
<td>600 mg kg⁻¹ dry matter</td>
</tr>
</tbody>
</table>

* Limit levels for physical contaminants differ from those specified in the ECN-QAS Part C I.

** Copper (Cu) and Zinc (Zn) are also considered as trace elements. Values exceeding 110 mg Cu kg⁻¹ dry matter and 400 mg Zn kg⁻¹ dry matter must be declared.
## Comparison of compost criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Parameter</th>
<th>Regular</th>
<th>Growing media</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil improvement</strong></td>
<td>Organic matter</td>
<td>&gt;15%</td>
<td>&gt;15%</td>
</tr>
<tr>
<td><strong>Hygienic aspects</strong></td>
<td>Salmonellae</td>
<td>Absent in 25 g</td>
<td>Absent in 25 g</td>
</tr>
<tr>
<td><strong>Physical contaminants</strong></td>
<td>Impurities &gt; 2 mm</td>
<td>&lt;0.5%</td>
<td>&lt;0.25%</td>
</tr>
<tr>
<td></td>
<td>Stones &gt;5 mm</td>
<td>-</td>
<td>&lt;4% dm</td>
</tr>
<tr>
<td></td>
<td>Weed seeds</td>
<td>&lt;2 seeds per liter</td>
<td>&lt;1 seeds per liter</td>
</tr>
<tr>
<td><strong>Salinity</strong></td>
<td>Na+</td>
<td>-</td>
<td>&lt;250 mg/l</td>
</tr>
<tr>
<td></td>
<td>Cl-</td>
<td>-</td>
<td>&lt;750 mg/l</td>
</tr>
<tr>
<td></td>
<td>Electrical conductivity</td>
<td>-</td>
<td>&lt;190 mS/m</td>
</tr>
<tr>
<td><strong>Material properties</strong></td>
<td>Organic matter</td>
<td>&gt;15%</td>
<td>&gt;15%</td>
</tr>
<tr>
<td></td>
<td>Stability</td>
<td>-</td>
<td>&lt;15 mmol O2/kg OM/h</td>
</tr>
<tr>
<td><strong>Plant response (cress test)</strong></td>
<td>Germination rate</td>
<td>-</td>
<td>&gt;80%</td>
</tr>
<tr>
<td></td>
<td>Root length index</td>
<td>-</td>
<td>&gt;80%</td>
</tr>
</tbody>
</table>
Research is the foundation of product differentiation of compost and digestate in Flanders

Elke Vandaele – Vlaco npo

#WRF19
Who is Vlaco npo?

- **Vlaco npo = established 1992**
  - More than 100 members, with activities related to organic waste management
    - Prevention
    - Collection
    - Waste treatment
  - Mission
MARKET for COMPOST and DIGESTATE

430.000 tonnes compost

1.200.000 tonnes digestate

2017
✓ ‘Good practice’
✓ Based on self control
  by treatment plant
    • Internal quality system
    • Protocol of acceptance for input
    • Process control
    • Quality control of the end-products
    • Reasoned use of the end-products

✓ Independent control
  by VLACO npo on the self control of the company
    • Sample taking
    • Analysis
    • Audits + admin. controls

 VLACO-certificate

• Agricultural value
• Input requirements (standard)
• No dilution
• Registration and traceability
• Risk Assessment through sampling + analysis protocol (recognised labs)
• Screening of suppliers of biowaste

• Optimising of the process
• Minimal process time, tracing
• Critical process factors
• Monitoring and steering
• Recognised labs (external control)

• Product information document
• Composition + application
Marketingstrategy → PRODUCT DIFFERENTIATION

- One size fits all?? NO every domain = own specifics
- Need for tailor-made products
- Define opportunities by analysis of needs and matchmaking
RESEARCH by FIELD TRIALS

Long term and short term field trials with compost- and digestate-products

- In cooperation with research institutes
  - To prove positive effect on crops (yield, quality, disease resistance, ...)
  - To measure effect on soil (physical, chemical and biological)

![Graph showing organic matter content over time for different applications.

- Orange dots: mineral fertilizer
- Red dots: 15 tonnes vfg yearly
- Green dots: 30 tonnes vfg yearly
- Black dots: 45 tonnes vfg yearly

Time (months) vs. Organic Matter Content (%)
RESEARCH by DEMONSTRATIONS

Demonstration of use of new products

- In cooperation with communities, agricultural schools, ...
- E.g. communities tested potting soil based on compost -> new recipe with more fertilizing nutrients and water holding additives
- E.g. communities and community gardens tested pellets of digestate

#WRF19
RESEARCH by cooperation across EUROPE

- Other EU countries has same challenge
- Reflection and cooperation with members of ECN
- Vlaco npo cooperate in European projects
  - Nutriman: horizon 2020 project
    - Technical knowledge transfer by demonstration practices to convince farmers to use recycling products
  - Soilcom: Interreg project
    - Development of compost for horticulture and ornamental cropping

#WRF19
SUMMARY

FIELD TRIALS

PRODUCT DIFFERENTIATION

QUALITY

SUBSTRATE
The do’s and the don’t of compost in growing media

Industry perspective

dr. Nele Ameloot – Greenyard Horticulture
What’s in a name?

COMPOST = COMPOST??
What’s in a name?

COMPOST = COMPOST??
What’s in a name?

COMPOST = COMPOST??
What’s in a name?

COMPOST = COMPOST??
Pros of compost in growing media

Circular and local raw material

Rich microbial life
- Easy mineralization of organic N in fertilisers
- Some composts can make substrates more resilient to soil-borne diseases
Cons of compost in growing media

- High pH
- High EC values
- Can be high in chlorides
- Unstable compost can lead to N immobilization
- Heavy product
- Low air volume
- Dries out much quicker on the surface
- Weed pressure

Potential raw material, under the condition that you select and use it wise!
Wise use of compost in growing media

Effect of 9 compost types in 20% addition on fresh weight of *salvia nemorosa*

→ Not all composts are the same, **select carefully**
Wise use of compost in growing media

Effect of 9 compost types in 20% addition on fresh weight of *Chrysanthemum sp. Tardero*

→ Not all comports are the same, **select carefully**
Wise use of compost in growing media

Dosage of compost incorporation on fresh weight of *Chrysanthemum sp. Tardero*

→ Determine **optimum percentage** for each type of compost individually

![Graph showing average weight (kg) for different compost percentages](image)
Wise use of compost in growing media

Dosage of compost incorporation on the growth of *Viola carrera*
Use of compost in growing media

- Belgian Potting soil Federation (BPF) market research

- Use of compost in growing media is increasing
  - 2013: 3.3%
  - 2017: 6.2%
In spring 2019, Greenyard Horticulture will announce its new company name.

Sshhh ... our new company identity is growing.

Launching Spring 2019
Marketing tailor made compost and digestate-based products

Interactive session (5 groups) 10:25 -11:00 h

1. Which compost/digestate-based product has opportunities for creating new markets? For landscaping, agriculture, horticulture - what are the quality criteria for those product applications?

2. Are quality assurance (QA) and labelling important links in product differentiation and marketing?

3. What is the best way to market compost/digestate-based products? (directly, indirectly, garden center, recycling park, etc.)

4. What is your interest for buying or using compost/digestate-based products?

5. What are the expectations of the consumers? (hobby gardener, professional gardener, growing media producer, landscaper, farmer)

6. How to create added value for compost/digestate-based products? (Adding probiotica to compost or digestate is interesting to create added value)
Marketing tailor made compost and digestate-based products

Conclusions

- Only high quality compost and digestate-based products from separate collected biowaste can be successfully placed on the market!
- Quality assurance and control is a precondition for the use of compost and digestate-based products in growing media!
- There is a need to improve further the quality and consistency of compost and digestate-based products for the use in growing media, horticulture and agriculture!
- Markets need tailor made compost and digestate-based products!
- Compost enriches the microbiological life in growing media and has a high resilience on soil-borne diseases!
- There is a high interest in local produced circular materials.
- Recycled organic materials, as compost and digestate, improve soil organic matter and replace primary nutrients!
- Compost and digestate have a high potential to save greenhousegas emissions!