New method for evaluation of impurities in compost

CODIS 2008

in Solothurn
29.02.2008

Dipl.-Ing. Agr. Maria Thelen-Jüngling
Bundesgütegemeinschaft Kompost e.V.
D-51149 Köln
Impurities in compost are:

undesirable ingredients like

- glass,
- plastics,
- rubber,
- metal etc.
Quality characteristics for compost

Points of declaration

- stability, maturity
- grain size
- volume weight
- pH-value, salt content
- plant nutrients
- alkaline effective material
- organic matter

Precautionary requirements

- hygienic harmlessness
- germinable seeds
- pollutants
- weight of impurities (% dry matter)

additional:

- visible impurities (surface area cm²/l FM)
Methods

- drying of the fresh compost (105°C),
- sieving with 2 mm,
- sorting out the impurities
- determination of the proportional weight
### Impurities in compost

<table>
<thead>
<tr>
<th>Fraction</th>
<th>weight-% DM</th>
<th>Surface area [cm²/l]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impurities &gt; 2 mm [total] in 1 litre</td>
<td>0.47</td>
<td>8.60</td>
</tr>
<tr>
<td>light fraction [plastics] on the left</td>
<td>0.03</td>
<td>5.51</td>
</tr>
<tr>
<td>heavy fraction [glas, metal] on the right</td>
<td>0.44</td>
<td>3.09</td>
</tr>
</tbody>
</table>
## Impurities in compost

<table>
<thead>
<tr>
<th>Fraction</th>
<th>weight-% DM</th>
<th>surface area [cm²/l]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impurities &gt; 2 mm [total] in 1 litre</td>
<td>0.17</td>
<td>68.91</td>
</tr>
<tr>
<td>light fraction [plastics] on the left</td>
<td>0.13</td>
<td>67.53</td>
</tr>
<tr>
<td>heavy fraction [glas, metal] on the right</td>
<td>0.04</td>
<td>1.38</td>
</tr>
</tbody>
</table>
Methods

- visual grading and
- division into classes
<table>
<thead>
<tr>
<th>Grading point</th>
<th>Degree of Impurity</th>
<th>Scale</th>
<th>Characteristic</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MINOR</td>
<td>1 a</td>
<td>Free of impurities, neither conspicuous nor inconspicuous foreign materials, no impurities identifiable, appearance not impaired</td>
<td>not contaminated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 b</td>
<td>Mostly free of impurities, a few inconspicuous foreign materials, optically not disturbing, appearance slightly impaired</td>
<td>slightly contaminated</td>
</tr>
<tr>
<td>2</td>
<td>NOTICEABLE</td>
<td>2a</td>
<td>Noticeable content of impurities, several inconspicuous, a few conspicuous foreign materials, optically disturbing, appearance noticeably impaired</td>
<td>noticeably contaminated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2b</td>
<td>Many impurities, a lot of inconspicuous, many conspicuous foreign materials, decidedly disturbing optically, appearance considerably impaired</td>
<td>considerably contaminated</td>
</tr>
<tr>
<td>3</td>
<td>STRONG</td>
<td>3a</td>
<td>A lot of impurities noticeable, many inconspicuous, many conspicuous, optically disturbing, appearance strongly impaired</td>
<td>strong contamination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3b</td>
<td>A high content of impurities, a large number of inconspicuous and conspicuous, extremely disturbing optically, appearance very strongly impaired</td>
<td>very strong contamination</td>
</tr>
</tbody>
</table>
Method: Surface area

- spreading the impurities out on a white surface (15 cm x 20 cm)
- usually after gravimetric determination with drying and sorting out of impurities
- digital photography and determination of surface area
Results: Visual grading

Impurities (% wt DM)

Grade 1: 0.5
Grade 2: 1.0
Grade 3: 3.0
Results: Visual grading

- Grade 1: Impurities in cm²/IFM
- Grade 2: Impurities in cm²/IFM
- Grade 3: Impurities in cm²/IFM

Graph showing the impurities in different grades.
Results of the projects

determination of the surface area of the impurities as suitable method

especially for the determination of light fractions like plastics
Evaluation of impurities in compost

determination by proportional weight

and in addition: determination of the surface area of impurities
Results of the project

% of samples

Surface area of impurities

Bundesgütegemeinschaft Kompost e.V.
Results: Compost 2007
New method for evaluation of impurities in compost

Thank you for your attention!

Bundesgütegemeinschaft Kompost e.V.

www.kompost.de