Plant origin food packaging priority end-of-life treatment: most efficient integration into circular economy

BACKGROUND

Food and beverage product groups held a majority in fast-moving consumer goods (FMCG). Most of it is packed in different types and material packaging. The most efficient packaging integration into circular economy could be achieved if right packaging materials and priority choice of resources (waste) management hierarchy are applied.

OBJECTIVES

- Review of existing plant-origin material applications in food sector;
- Highlight priority end-of-life treatment scenarios based on circular economy and resource management priorities.

METHOD

Literature review, focused only on primary recyclable and/or compostable food packaging made of plant based raw materials (paper and plant-origin plastic).

RESULTS

Packaging made of plant-origin plastics and paper covers all food and beverage product groups. All of existing bio-origin materials (if designed properly) can, and are already integrated into mechanical and/or biological waste management systems.

<table>
<thead>
<tr>
<th>Material applications and properties</th>
<th>Fossil based plastic and drop-ins</th>
<th>Novel bio origin plastic</th>
<th>Paper coated with bio-origin coating</th>
<th>Uncoated paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>barrier properties</td>
<td>very good</td>
<td>good</td>
<td>medium</td>
<td>poor</td>
</tr>
<tr>
<td>shelf life</td>
<td>long</td>
<td>long/medium</td>
<td>medium /short</td>
<td>short</td>
</tr>
<tr>
<td>application</td>
<td>beverages and wet/ fresh food with high barrier requirements</td>
<td>beverages and wet/fresh food with high/medium barrier requirements</td>
<td>fast food, fresh dry food, grains and bakery, groceries</td>
<td>grains and dry food / fresh bakery, groceries</td>
</tr>
<tr>
<td>recycling</td>
<td>mechanical</td>
<td>mechanical / biological</td>
<td>mechanical / biological</td>
<td>mechanical / biological</td>
</tr>
<tr>
<td>end-of-life priorities</td>
<td>re-use, recycling</td>
<td>re-use, recycling, biological treatment</td>
<td>recycling, biological treatment</td>
<td>recycling, biological treatment</td>
</tr>
</tbody>
</table>

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