Food loss rates at the food retail in Austria

Felicitas Schneider

Food Waste research since 2001
Outline

- Introduction
- Methodology of retail food losses survey
- Results of two Austrian studies
  - losses
  - influencing factors
- Conclusions
Introduction

- Austrian Federal Waste Management Plan includes Food Waste Prevention bundle since 2011

- several food waste prevention studies conducted by BOKU University along food supply chain
  - mostly F. Schneider and S. Lebersorger

- cooperation with one of the Austrian leading retailers in detailed loss study in 2013

- Efficient Consumer Response (ECR) working group „Waste Prevention“ discusses Food Waste issues in 2014
Study „Food losses in retail“

- aim to calculate food losses from retail for Austria
- powered by ECR working group „waste management“
- data from data warehouse related to one year, all outlets, 12 ECR-product groups
- participating companies (83 % market share covered):
  - extrapolation to national retail sector
## Austrian retail food loss rates

The loss rate is calculated as:

\[
\text{loss rate} = \frac{\text{depreciation + breakage}}{\text{sales}} \quad \text{€ & tons} \div \text{€ & tons}
\]

### Loss, Donation & Returns Rate

<table>
<thead>
<tr>
<th></th>
<th>mio. €/yr</th>
<th>t/yr</th>
<th>% sales food + nonfood (value)</th>
<th>% sales food value</th>
<th>% sales food mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>depreciation and breakage</td>
<td>255.3</td>
<td>74,099</td>
<td>1.41</td>
<td>1.51</td>
<td>1.36</td>
</tr>
<tr>
<td>donation</td>
<td>29.1</td>
<td>6,629</td>
<td>0.16</td>
<td>0.17</td>
<td>0.12</td>
</tr>
<tr>
<td>returns</td>
<td>111.7</td>
<td>35,607</td>
<td>0.62</td>
<td>0.66</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Lebersorger & Schneider, 2014b
Study „Food losses, influencing factors & reasons“

- aim to collect information on food losses, influencing factors and reasons
- one participating company
  - all 700 outlets for one complete year (2011/12) on single product basis
- main contributing food loss product groups
  - bread and pastry
  - fruits and vegetables
  - dairy products
- correlation food loss rates and outlet characteristics
Influencing factors - results

- very low correlation between loss rates and outlets characteristics
- loss rates decline with increasing sales area, number of purchases per year and sales
- regression models explain between 18 (FFV, b&p) and 33 % (dairy) of the variances of food loss rates per assortment or 31 % for overall loss rates
- sales had highest influence on food loss rates but in general low coefficients of determination
- high food loss rate of one assortment does not indicate high loss rate of another assortment group
- significant higher loss rates for dairy and b&p in rural area but lower returns rates
mean food loss rates of retail outlets in rural and urban areas and significance levels of t-test

<table>
<thead>
<tr>
<th></th>
<th>food loss rates (means)</th>
<th></th>
<th></th>
<th></th>
<th>Returned bread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fruit &amp; vegetables</td>
<td>dairy products</td>
<td>bread &amp; pastry</td>
<td>Sum fruit &amp; veg., dairy, bread &amp; pastry</td>
<td></td>
</tr>
<tr>
<td>n (number of retail outlets)</td>
<td>449</td>
<td>4.6%</td>
<td>1.6%</td>
<td>3.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td>rural</td>
<td>4.6%</td>
<td>1.4%</td>
<td>2.7%</td>
<td>2.7%</td>
<td>12.5%</td>
</tr>
<tr>
<td>urban</td>
<td>163</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance (p)</td>
<td>0.782 ns</td>
<td>0.004*</td>
<td>0.000*</td>
<td>0.079 ns</td>
<td>0.000*</td>
</tr>
<tr>
<td>ns... not significant, * significant (p &lt; 0.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lebersorger & Schneider, 2014a
Conclusions

- Loss rates in retail about 1.5% in total, large differences for assortment groups.
- Food loss rates show large variations between outlets of same type – prevention potential.
- Structural characteristics of outlets do not sufficiently explain loss rate differences between outlets.
- Indicates that other influences as different work routines or planning and ordering approaches are relevant.
- Learning within the company – assistance from experienced staff members.
- Staff education and authorized alternative handling options.
Felicitas Schneider

✓ founder and member IWWG task group „Prevention of Food Waste“
  http://www.tuhh.de/iue/iwwg/task-groups/food-waste.html

✓ board member First Zero Waste & Organic Cycle Organization
  http://eu100ngo.net/about-us/

✓ founder of german speaking network on Prevention of Food Waste

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Austrian Federal Waste Management Plan in english:
www.bundesabfallwirtschaftsplan.at/dms/bawp/BAWP_Band_1_EN.pdf
www.bundesabfallwirtschaftsplan.at/dms/bawp/BAWP_Band_2_EN.pdf
