Meeting the future requirements in sugar beet harvesting
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Harvest process quality

Focus of Holmer in 2009 and 2010!

Topping  Lifting  Cleaning

Quelle: Zeichnungsarchiv Landtechnik Weihenstephan
Different requirements different solutions

**Topping**
- Scalper knifes with automatic adjustment of cutting thickness
- Optimized for topping standard "Göttingen"

**Defoliation**
- Scalper knifes for minimized cutting thickness
- Rotating Rubber flails
- In test since 2006!
- Optimized to remove leaves and petioles.

**Topping and defoliation**

**A question of standards**

But...

[Diagram showing different topping and defoliation methods]

...what is the new optimum???
Problems of the standard lifter concepts

Undulating surface

- Increased soil intake and/or beet damages

Field border

Drive line

HR- Lifter concept

1. Single row adjustable working depth

- Minimum soil intake by optimal working depth in every row
- Reduced soil mass movement at the rollers and turbines
  => enhanced cleaning of adhering soil
  => this enables reduced speed at turbines to reduce root tip losses
HR- Lifter concept

2. Enhanced working share movement for improved beet lifting

- active driven vertical share movement
- active vertical beet lifting
- reduced root tip losses
- reduced surface damages

3. Optimized share geometry for lower soil intake & adherence

- reduced opening width at the share intake reduces soil intake
- more shallow share geometry reduces soil adherence at the beet
- this enables reduced speed at turbines to lower root tip losses
**T3\textsubscript{plus}:** An optimized harvester

- Front wheel size 900/60 R32
- Permanent dual wheels at the rear axle
  - => tire pressure less than 2 bar
  - => +36% footprint increase
- Automatic adjustment of track width and steering angle for road traffic

This harvester fits the requirements of the VDI guideline 6101 for in-field traffic!

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**Transport (Capacity) Capacity on demand**

*Problem:* Certain tank volume always fits to a certain field & yield situation

- working time analyses of a typical self-propelled tanker-harvesters shows up to 45% non-harvesting time (turning, transport to clamp, unloading,…)

- Capacity adaptable by flexible use of a transport unit
- necessary transport capacity is adaptable on field size & transport distance
(Transport) Capacity on demand

The effects of decoupling harvest and in field logistics:

<table>
<thead>
<tr>
<th></th>
<th>Tank harvester</th>
<th>Harvester with Transport unit</th>
<th>Rel. %</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>capacity</td>
<td>ha/h</td>
<td>0,88</td>
<td>1,41</td>
<td>+58</td>
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<tr>
<td>Fuel consumption</td>
<td>l/ha</td>
<td>41,2</td>
<td>34,3</td>
<td>-17</td>
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<tr>
<td>Distance (field)</td>
<td>km/ha</td>
<td>5,1</td>
<td>4,3</td>
<td>-16</td>
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<tr>
<td>unloading</td>
<td>h/ha</td>
<td>0,19</td>
<td>0,17</td>
<td>-11</td>
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<tr>
<td>Unoccupied cycle</td>
<td>h/ha</td>
<td>0,11</td>
<td>0,05</td>
<td>-55</td>
</tr>
</tbody>
</table>

Based on 100 data sets exemplary for Bavaria, Saxony and Lower Saxony

Thank you for your attention!