Weed control with tight limitations and the way forward

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Weeds

- Broadleaf: POL spec. CHEAL, MAT spec. GALAP, GER spec. SOLNI, AETCY, CIRAR, BRANA, Bolters
- Grass weed minor importance: Poa annua, Elymus Repens

Weed control:

- Post emergence > 98%
- Over all spray applications > 98%
- Number of applications: 3-4 > 90%
- Mechanical - row cleaning before row closure 30% - ?
- Difficult years, spraying finish to early then ? >50%
Application technique:

- Nozzles: Flat fan or low drift
- Liquid: 100 ltr – 150 ltr/hectare
- Speed: 6 – 8 km/h
- Improvements: to reduce drift

Sprayers

- Lift mounted or Trailers 12 - 36 m
- Few Air assisted <10%
- Improvements made on:
  - Capacity and boom stability
  - Liquid system
  - Intelligence systems

Filling and cleaning equipment mandatory – (filling and cleaning in the field or concrete places with collection tanks wastewater sprayed in the field or collected) (DK)

So far, we are very much alike other countries

Herbicide Regulation

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Annual application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenmedipham</td>
<td>6 ltr</td>
</tr>
<tr>
<td>Phen+Des</td>
<td>1,8 ltr 0,6 ltr</td>
</tr>
<tr>
<td>Metamitron</td>
<td>3 ltr 1 ltr</td>
</tr>
<tr>
<td>Safari</td>
<td>20-30 g 10-15 g</td>
</tr>
<tr>
<td>Ethofumesate</td>
<td>0,142 ltr</td>
</tr>
<tr>
<td>Clopyralid</td>
<td>0,25 ltr 4th year</td>
</tr>
</tbody>
</table>
### Herbicide Regulation

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Annual application</th>
<th>Spot treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenmedipham</td>
<td>Bandspray only</td>
<td></td>
</tr>
<tr>
<td>Phen+Des</td>
<td>1.8 ltr 0.6 ltr</td>
<td></td>
</tr>
<tr>
<td>Metamitron</td>
<td>6 ltr 3 ltr</td>
<td></td>
</tr>
<tr>
<td>Safari</td>
<td>120 g 30 g</td>
<td></td>
</tr>
<tr>
<td>Cloridazon</td>
<td>7 kg 4 kg</td>
<td></td>
</tr>
<tr>
<td>Clopyralid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Herbicide Regulation

- **What we have not shown**
- **We do not have access to**
- **Differences**
  - e.g. approach to water environment
  - Natural conditions sets the agenda

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### Picture of tomorrow

- **Short term 3-5 years**
  - Other active ingredients: No
  - New advanced formulations: Option
  - Herbicides + Mechanical solutions: Option

- **Weed control..... the way forward**

- **Picture of tomorrow**
**Middle term 5-10 years**
- Sensor technique - Intelligent systems!
- Advancements in application technique!
- New herbicide options?
- Biological systems – growing technique?

**Long term 10?-50 years**
- Individual target systems
- Intelligent boom systems
- New herbicide options
- Advancements on autonomic systems
- Ground vehicles managed by helicopters

**Demand**
- Support highest possible productivity
- Cost effective in all conditions
- High efficiency in all weather conditions
- High capacity and precision
- Compatibility with other row crops

**Integrated weed control**
September

Catch crop may reduce weeds next year

Next Spring

Zero tillage
Strip tillage / Beets

And then we have
Clean beet field
Very simple
We know!

How to go?

Normal way

We don’t know yet?

How to go?

Green way

How to go?

Green way

Glyphosate application in early spring

a) Overall spray with reduced dosages
b) Band spray in row – new technique + band spray inter row
c) Band spray in row – new technique + mechanical weeding – new technique

Picture of tomorrow

Adaptive Surveying and Early Treatment of Crops with a Team of Autonomous Vehicles
Picture of tomorrow

Thank you for your attention

Pictures: Hardi International, Frank Poulsen Aps, ASETA, NBR