Challenges in weed control in Germany

IIRB Seminar
‘Advances in combined weed control’
Erwin Ladewig, Eike-Hennig Vasel (IZ Göttingen)
13th May 2011 at Sancourt, Somme (F)

Difficult to control weeds in sugar beet, Germany 2006-2010

- Difficult to control weeds are characterized by an insufficient controllability with typical, locally applied herbicide strategies

<table>
<thead>
<tr>
<th>Weed</th>
<th>Unkraut</th>
<th>Bayer-Code</th>
<th>Total acreage [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knotweed</td>
<td>Knötericharten</td>
<td>POLSS</td>
<td>20.2, 24.4, 24.3</td>
</tr>
<tr>
<td>Annual mercury</td>
<td>Bingelkraut</td>
<td>MERAN</td>
<td>15.2, 14.6, 14.6</td>
</tr>
<tr>
<td>Goosefoot</td>
<td>Gärsefußgewächse</td>
<td>CHESS</td>
<td>12.2, 11.8, 15.3</td>
</tr>
<tr>
<td>Ransonet</td>
<td>Raps</td>
<td>BRANA</td>
<td>5.4, 10.2, 13.6</td>
</tr>
<tr>
<td>Foxt’s parsley</td>
<td>Hundspetersilie</td>
<td>AETCY</td>
<td>10.5, 10.0, 10.0</td>
</tr>
<tr>
<td>Weed beet</td>
<td>Unkrautblühren</td>
<td>BEEAP</td>
<td>8.2, 13.2, 9.5</td>
</tr>
<tr>
<td>Camomile</td>
<td>Kamillearten</td>
<td>MATSS</td>
<td>6.6, 6.9, 5.9</td>
</tr>
<tr>
<td>Cleaver</td>
<td>Klettenblätter</td>
<td>GALAP</td>
<td>8.2, 5.8, 5.5</td>
</tr>
<tr>
<td>Amaranth</td>
<td>Amananth</td>
<td>AMASS</td>
<td>6.7, 6.8, 5.4</td>
</tr>
<tr>
<td>Sorghum</td>
<td>Hirsearten</td>
<td>SORSS</td>
<td>1.2, 3.2, 5.0</td>
</tr>
<tr>
<td>Bindweed, field</td>
<td>Winde, Ackerei</td>
<td>CONAR</td>
<td>1.6, 1.7, 2.6</td>
</tr>
<tr>
<td>Thistle</td>
<td>Dasei</td>
<td>CIRAR</td>
<td>0.9, 1.9, 2.0</td>
</tr>
</tbody>
</table>

Difficult to control weeds are characterized by an insufficient controllability with typical, locally applied herbicide strategies.

NEPTUN: Network for the determination of the use of crop protection chemicals in different agricultural relevant natural habitats in Germany

- Surveyed, realistic, practical data of pesticide use in Germany
- Regionalised into different ERA’s 1001-1019
- 2005, 2007 and 2009
- Calculation of the Treatment Index [TI]

NEPTUN-Survey 15 regions about 500 farms

Weed control in sugar beet, Germany, 2009

Glyphosate use on 30-40 % of the area 80 % in spring 10 % in pre-emergence stage [PE]

Treatment frequency 3.7 First treatment after 15 days Application range 12 days 2.5 herbicides per treatment 4.1 active ingredients per treatment

TI<sub>1</sub>: 0.5  TI<sub>2</sub>: 0.7  TI<sub>3</sub>: 0.5  TI<sub>4</sub>: 2.3

TI<sub>Tot</sub>: 2.3

Glyphosate

PE

Autumn
Spring

Pre-sowing, pre-emergence
Sowing
Juvenile development
Canopy closure

Preceding crop

IIRB Seminar 2011
Weed control 2009, Schleswig-Holstein / northern Lower Saxony
ERA (1001)

- Glyphosate application on 40 – 50% of the area; focused on spring
- Treatment frequency 4.9
  - First treatment after 15 days
  - Application range 8 days
  - 2.9 herbicides per treatment
  - 3.4 active ingredients per treatment

Volunteer rape on 65% of the area

Previous crop: Autumn / Spring
Sowing: T1: 1.0, T2: 0.9, T3: 0.4
Juvenile development: T4: 0.9
Canopy closure: T5: 0.5

Glyphosate application on 40–50% of the area; focused on spring
First treatment after 15 days
Application range 8 days
2.9 herbicides per treatment
3.4 active ingredients per treatment

Glyphosate

NEPTUN Survey, Germany 2009

Weed control 2009, Niederrheinische Bucht / Köln-Aachener Bucht
ERA (1009)

- Glyphosate application on 10 – 40% of the area; 60 % in spring
- Treatment frequency 3.7
  - First treatment after 16 days
  - Application range 12 days
  - 3.7 herbicides per treatment
  - 4.9 active ingredients per treatment

Volunteer rape on 65% of the area

Previous crop: Autumn / Spring
Sowing: T1: 0.6
Juvenile development: T2: 0.6, T3: 0.8
Canopy closure: T4: 0.5

Glyphosate

Annual mercury on 50 % of the area

NEPTUN Survey, Germany 2009

Chemical and mechanical weed control in Germany, 1996-2010

- Hoeing machine
- Broadcast application
- Band spraying
- Combination band/broadcast
- Pre-sowing, pre-emergence
- Post-emergence
- Sugar Beet Cultivation Survey, Germany 1996-2010

New EU Legislation on PPP / outcome for Germany

Likely practical consequences for...

... sugar beet growing

- Availability of active substances (PPP) (-)
- Strategies of PPP use / IPM (EU) +/-
- Necessary minimum requirement (+)
- Improvement of knowledge +
- Crop specific guideline (voluntary) (+)
- Improvement of sprayers +/-

... cropping in general

- Biodiversity ?!
- Protection of waterbodies ?!

NEPTUN Survey, Germany 2009
Summary

- Shift of weed infestations across the years
- Two herbicide strategies with higher intensity were detected
  - Reason: Environments with different weed infestations of volunteer rapeseed (BRANA) and annual mercury (MERAN)
- Use of mechanical weed control and band spraying of herbicides is decreasing
- Mechanical weed control is used regionally only
- At present no significant challenges in weed control in Germany

Thank you for attention!
And thanks to all contributors, without their help the provision of the data would not have been possible!