Western Corn Rootworm: Experiments on the Improvement of the Monitoring at low Population Densities

Project B-3

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- Alexandra Zintel
- Dr. Ullrich Benker

- 2009 - 2012
Experiments on the Improvement of the Monitoring at low Population Densities

Questions:

1. Currently used trap-type PAL - Do other types of traps catch better?

2. Yellow panel traps are much cheaper - How about the catchability?

3. Changed position of PAL traps in the field - More catches?

4. Stored PAL traps - How efficient in the following season?
Experiments on the Improvement of the Monitoring at low Population Densities

Large-scale field trials in:

- District Passau / Lower Bavaria
- District Perg / Upper Austria

Aerial view:

Tests in corn field:

- Trap type
- at least 30 meters distance between each trap

Data: © Bavarian State Office for Surveying and Geoinformation
Design: Bavarian State Research Center for Agriculture
1. Currently used trap-type PAL - Do other types of traps catch better?
Experiments on the Improvement of the Monitoring at low Population Densities

1. Currently used trap-type PAL - Do other types of traps catch better?

Results:

- Currently used trap-type PAL

PALx, Kfero, Kflor, PALs, Delta, Deltx, Uni, Yellow panels

PAL = 100%


Dr. Ullrich Benker, IPS 2d
1. Currently used trap-type PAL - Do other types of traps catch better?

**Results:**

- **Lower Bavaria 2009**
- **Lower Bavaria 2010**
- **Lower Bavaria 2011**
- **Upper Austria 2009**
- **Upper Austria 2011**

![Graph showing relative WCR catches for different PAL types and years.](image-url)

PAL = 100%

- **PALx**
- **Kfero**
- **Kflor**
- **PALs**
- **Delta**
- **Deltx**
- **Uni**
- **Yellow panels**

Dr. Ullrich Benker, IPS 2d
1. Currently used trap-type PAL - Do other types of traps catch better?

**Results:**

- Combination PALx catches more than PAL, but not significantly more
- Hat/funnel traps with pheromone caught significantly less than PAL
- Traps with floral bait
- Delta traps
- Yellow panel traps

**Dr. Ullrich Benker, IPS 2d**
Experiments on the Improvement of the Monitoring at low Population Densities

4 Recommendations for WCR monitoring at low population densities:

1. Recommended trap types: PAL or PALx
2. **Yellow panel traps are much cheaper - How about the catchability?**

### Question:

<table>
<thead>
<tr>
<th>Trap type</th>
<th>Bait</th>
<th>Piece price</th>
<th>Catchability</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAL</td>
<td>Pheromone</td>
<td>6,10 €</td>
<td>?</td>
</tr>
<tr>
<td>Pherocon AM</td>
<td>None</td>
<td>0,98 €</td>
<td>?</td>
</tr>
</tbody>
</table>

### Results from Lower Bavaria = very low infestation:

<table>
<thead>
<tr>
<th>Trap type</th>
<th>Traps in test</th>
<th>Traps with WCR</th>
<th>WCR catches</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAL</td>
<td>717</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>Pherocon AM</td>
<td>717</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Results from Upper Austria = low infestation:

<table>
<thead>
<tr>
<th>Trap type</th>
<th>Traps in test</th>
<th>Traps with WCR</th>
<th>WCR catches</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAL</td>
<td>360</td>
<td>168</td>
<td>1.739</td>
</tr>
<tr>
<td>Pherocon AM</td>
<td>360</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
4 Recommendations for WCR monitoring at low population densities:

1. Recommended trap types: PAL or PALx

2. Yellow panel traps without bait are not suitable
Experiments on the Improvement of the Monitoring at low Population Densities

3. Changed position of PAL traps in the field - More catches?

- At present in the monitoring the PAL-traps are fixed in corn row 5-8:

- Improvement of the monitoring without additional costs
- Tests on 95 corn fields in 2010 and 2011 in Lower Bavaria and Upper Austria
3. **Changed position of PAL traps in the field - More catches?**

- **Comparison of WCR catches in corn rows 1, 7 and 14:**

  - No significant differences of WCR catches in the PAL-trap
4 Recommendations for WCR monitoring at low population densities:

1. Recommended trap types: PAL or PALx

2. Yellow panel traps without bait are not suitable

3. PAL-traps can be fixed in corn rows 1-14
Experiments on the Improvement of the Monitoring at low Population Densities

4. **Stored PAL traps - How efficient in the following season?**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order</td>
<td>monitoring</td>
<td>new order</td>
</tr>
<tr>
<td>june</td>
<td>3.000 traps</td>
<td>2.500 traps</td>
</tr>
<tr>
<td>july-sept.</td>
<td>2.500 traps used</td>
<td>rest = 500 traps</td>
</tr>
<tr>
<td>oct.-june</td>
<td>store traps</td>
<td>2.500 traps</td>
</tr>
<tr>
<td>july</td>
<td>re-use</td>
<td>500 stored traps</td>
</tr>
</tbody>
</table>

**Storage conditions:**
- **sticky panels** stored in a cool dark place
- **pheromones** frozen at -18 degrees

**Tests on 50 corn fields in 2011:**
- in Lower Bavaria (**very low** population densities)
- in Upper Austria (**low** population densities)
4. **stored PAL traps - How efficient in the following season?**

<table>
<thead>
<tr>
<th>Area</th>
<th>Store status?</th>
<th>Traps in test</th>
<th>WCR catches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Bavaria</td>
<td>stored</td>
<td>372</td>
<td>22</td>
</tr>
<tr>
<td>(very low infestation)</td>
<td>fresh</td>
<td>372</td>
<td>20</td>
</tr>
<tr>
<td>Upper Austria</td>
<td>stored</td>
<td>351</td>
<td>8.701</td>
</tr>
<tr>
<td>(low infestation)</td>
<td>fresh</td>
<td>351</td>
<td>5.853</td>
</tr>
</tbody>
</table>

- More catches in stored PAL traps
- But no significant differences
- No changes in the pheromones but in the glue => ?
4 Recommendations for WCR monitoring at low population densities:

1. Recommended trap types: PAL or PALx

2. Yellow panel traps without bait are not suitable

3. PAL-traps can be fixed in corn rows 01-14

4. Stored PAL traps can be used in the next period
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Thank you for your kind attention!

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