Aim
- Testing the efficacy of herbicide treatments and application methods
- Determine the long-term effect of the control measures

Field trials
- Field trials were conducted on three sites Dresden, Chemnitz, and Leipzig using the natural populations of *Heracleum mantegazzianum*
- Investigations concerned areas, in which the regional agricultural and nature conservation authorities are trying to find an effective form of treatment
- Field trials were designed as randomized blocks with 2-4 replicates
- Size of a plot ranged from 15 to 20 m²

Herbicides
- In Germany, the use of triclopyr and glyphosate is authorized in the control of *H. mantegazzianum* on non-arable land
- It requires an official permit of the local agricultural authority
- In contrast to glyphosate-based herbicides, triclopyr has no effect on grass-species and only controls some broad-leaved species

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Conclusions
- Two-year treatments on the same areas demonstrated very good control
- No significant differences were noted between the spraying and wiping
- Wiping could be an alternative, especially in areas, where *H. mantegazzianum* grows in a community with sensitive non-target plants
- New seedling emergence of *H. mantegazzianum* may be very high
- Treatments over several years in the same areas are necessary in order to exhaust the seed bank

Herbicide efficacy (%)

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Active ingredient</th>
<th>Spraying*</th>
<th>Wiping*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garlon 2</td>
<td>Triclopyr 240 g/l</td>
<td>1 % **</td>
<td></td>
</tr>
<tr>
<td>Garlon 4</td>
<td>Triclopyr 480 g/l</td>
<td>0.5 % **</td>
<td>20 % **</td>
</tr>
<tr>
<td>Tested herbicide</td>
<td>Triclopyr 240 g/l + clopyralid 60 g/l</td>
<td>1 % **</td>
<td>33 % **</td>
</tr>
<tr>
<td>Roundup Ultra</td>
<td>Glyphosate 360 g/l</td>
<td>3 % **</td>
<td></td>
</tr>
<tr>
<td>Adjuvant Frigate</td>
<td>Ethoxylated tallow amine 822 g/l</td>
<td>2.5 ml/l **</td>
<td></td>
</tr>
</tbody>
</table>

* single plant application
** in aqueous solution + herbicide

Applications were carried out on single plants in the spring or summer of 2001, 2003 and 2004 on *H. mantegazzianum* at a height of 5 to 150 cm.

Gradual control of *H. mantegazzianum* after triclopyr application
Triclopyr is not phytotoxic to grass-species and to many broad-leaved species

Regeneration of *H. mantegazzianum* after mowing

Established alien species
- Till 1949
- 1950 - 1989
- 1990 - 1999
- not established alien species

Large-area population of *H. mantegazzianum* on a slope in Döbeln district in Saxony
The cost of treatment (herbicide and man-power) for this area of 1.9 ha amounted to 11 thousand euros in the years 2002-2004.
(Source: Lakuwa GmbH)