Managing creeping perennial weeds

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Why are creeping perennial weeds difficult to control?

• Have stored energy available for:
  – Faster growth compared to crop
  – Earlier emergence
  – Tolerance to management methods

• Perennial structures can result in vegetative spread
Why you don’t want to let perennials go unmanaged

- Canada thistle (creeping perennial)
- 1 root fragment planted in a soil box and let grow for a little over one year
Shoot and root growth next year
644 ft of roots and 336 ft of shoots
SIZE MATTERS

• Which would you rather manage?
Building Blocks for Perennial Weed Management

Scout Routinely
– Accurate weed id
– Early detection
– Timely treatment
– Follow-up scouting

THIS WILL PREVENT PERENNIALS FROM STORING ENERGY MAKING MANAGEMENT MORE DIFFICULT
Management options for perennials

• Many tools are available, often integrating tools works best
  – Tillage
    • Spreads creeping perennials
  – Mowing/grazing,
    • can suppress if timed correctly
  – Competition
  – Herbicides
  – Biological control

• Timing is the key
Field estimates of translocation

Figure 3-3. Food reserves of a perennial unmowed plant compared with reserves of a repeatedly mowed plant.

Herbicide applications

- Timing of application *is critical*
- One application will rarely eradicate a population,
- Use systemic herbicides: Flowerbud stage or fall regrowth

Bob Hartzler, ISU
Male

Female
Canada thistle seed biology

Seed (achenes) characteristics

- 1 to 104 seed per head
- 50% of flowers bore seed
- 50% avg. germ., 10 to 70% range
- Seed germination varied
  - Some seed germinated in fall
    - Able to survive winter, bloom next season
  - Some germinate the next spring
    - These bloom the following year
- 80% of seed falls within 5 ft of mother plant
  - Seed moves direction of prevailing wind
Canada thistle root biology

• Perennial roots
  – Produced plants from 1/8” to 1/4” fragments
  – Shoots from 1/2” lengths and 1/8” dia. likely to survive winter

• Two types
  – Lateral roots
    • Buds can develop along entire length
  – Vertical descending roots
    • Buds can develop along entire length
    • (6 to 9 ft, 18 ft reported)
    • Few to no fibrous secondary roots
Control Options For Canada Thistle

- Mechanical
- Biological
- Cultural
- Chemical
Insects for Biological Control

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada Thistle Stem Gall Fly <em>Urophora cardui</em></td>
<td>105</td>
<td>$100.00</td>
</tr>
<tr>
<td>Canada Thistle Stem Mining Weevil <em>Ceutorhynchus litura</em></td>
<td>105</td>
<td>$150.00</td>
</tr>
<tr>
<td>Thistle Defoliating Beetle <em>Cassida rubiginosa</em></td>
<td>105</td>
<td>$90.00</td>
</tr>
</tbody>
</table>

1. Several native *Cirsium* spp. may also be injured by these agents
2. Suppression has been minimal in controlled studies

Bob Hartzler, ISU
Bacteria for biocontrol?  
*Pseudomonas syringae*

Check (top left) plus 4 degrees of control

Jurg Hiltbrunner
Grazing options

**CANADA THISTLE**

- Specific to the animal species and method it was raised
- Extremely low palatability to many animals
- Best results have been grazing plants early just after emergence
  - Reduces growth
  - Promotes grass growth
Mechanical removal/mowing

- 3-4 cuttings per year for 3 yrs eliminated stands
- Integrating 2 cuttings per year for 3 years along with competitive perennial grasses controlled >90%
- Some studies have indicated just a lack of expansion of populations from repeated cuttings
<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Cost</th>
<th>Selectivity</th>
<th>Soil activity</th>
<th>control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banvel/Clarity</td>
<td>$$</td>
<td>Many broadleafs</td>
<td>Several weeks</td>
<td>Fair</td>
</tr>
<tr>
<td>2,4-D</td>
<td>$</td>
<td>Many broadleafs</td>
<td>Week(s)</td>
<td>Fair</td>
</tr>
<tr>
<td>Forefront</td>
<td>$$</td>
<td>Many broadleafs</td>
<td>Several months – year(s)</td>
<td>Good-Excellent</td>
</tr>
<tr>
<td>glyphosate</td>
<td>$$-$-$</td>
<td>Not selective</td>
<td>None</td>
<td>Good-Excellent</td>
</tr>
<tr>
<td>Milestone</td>
<td>$$</td>
<td>Some broadleafs</td>
<td>Several months – year(s)</td>
<td>Excellent</td>
</tr>
<tr>
<td>Stinger/Transline</td>
<td>$$$</td>
<td>Some broadleafs</td>
<td>Several months – year(s)</td>
<td>Good-Excellent</td>
</tr>
</tbody>
</table>
Canada Thistle Management DEMO Trial
Spring vs. Fall, Waseca MN  2004 - 2006

Rated June 6, 2006
Fall ~ 26 MAT
Spring ~ 18 MAT
Control of Canada Thistle with Milestone (Aminopyralid) Pre-bud Applications Evaluated 1 Year After Treatment

Average of 36 trials (CO, MN, MT, ND, SD, NE, OR, VA, SD, OR, WA, and WY)

* Trademark of Dow AgroSciences  ^Trademark of Micro Flo Company LLC
Resistant plant communities

Results from MN studies

• Establishment of native and CT varied dramatically due to environmental conditions

• Plantings with diverse functional groups helped!
  – Warm season grass only plots were worst
  – Best was mix of warm and cool season grasses

• Early detection of CT plants established was best BMP
Summary

• Prevention and early detection/ rapid response are best tools for managing Creeping perennials like Canada thistle
• Many management tools available, but consider injury to desirable plants before implementing
• Plan to manage for several years to gain control