Integrated Weed Management

Annette Frahm
Sage Enviro
Green Gardening Program
What is a weed?

- An uninvited plant?
- A plant whose virtues have yet to be discovered?
- A flower in disguise?
- A plant out of place?
A weed is . . .

- “. . . merely a plant growing where we do not want it.”

- “. . . a plant that has mastered every survival skill except for learning how to grow in rows.”
  ~Doug Larson

- “. . . any plant that is objectionable or interferes with the activities or welfare of humans (economy, human health, and environment).”
  ~*Weed Science Society of America*, 1994
“Weeds” are human constructs

- Consider time, space, perspective
- Weeds are not weeds everywhere
- Some native plants spread easily

Dalmation toadflax, introduced in 1800s from Mediterranean. Large plants produce ½ million seeds.
Weeds have good & bad traits

- Food, shelter for birds & beneficial insects
- Host diseases and pests
- Very successful plants
Words for “Weed”

- **NATIVE**: a species present prior to settlement by non-indigenous peoples
- **ALIEN OR “NON-NATIVE”**: a species introduced to and occurring beyond its known historical range
More Words for “Weed”

- **INVASIVE**: a species that demonstrates rapid growth and spread, invades habitats and displaces other species.
- **NOXIOUS**: “organism of foreign origin . . . which can directly or indirectly harm human interests . . .”
Noxious Weeds

- Highly destructive & competitive
- Difficult to control or eliminate
- Threaten 2/3 of endangered species
Noxious Weeds

- Local, state, federal laws require control
- Class A, B, C weeds, depending on:
  - Distribution
  - Abundance
  - Level of threat
- Noxious Weed Control info & lists
  - King County: http://dnr.metrokc.gov/weeds
  - Washington: www.nwcb.wa.gov/index.htm
What is Integrated Weed Management?

- **Goal**
  - Maximize effective control
  - Minimize environmental, economic & social damage

- **Uses a combination of methods**
  - Cultural
  - Physical
  - Biological
  - Chemical

- More effective, less expensive
Steps in Integrated Weed Management

1. Identify weed species & biology
2. Set realistic goals
3. Prevent establishment of weeds
4. Manage weeds
5. Evaluate results
Step 1: Identify weeds

- Is its life cycle annual, biennial, or perennial?
- Does it spread aggressively?
- How best to manage this species?
Know your enemies!
Weed Life Cycle

- Best management strategy often depends on weed’s life cycle
  - Annual
    - Winter or Summer
  - Biennial
  - Perennial
    - Simple or Creeping
## Spreading Methods

<table>
<thead>
<tr>
<th>Weed type</th>
<th>Spreads by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual &amp; biennial</td>
<td>Seeds</td>
</tr>
<tr>
<td>Simple perennial</td>
<td>Seeds</td>
</tr>
<tr>
<td>Creeping perennial</td>
<td>Seeds, roots, rhizomes</td>
</tr>
</tbody>
</table>
Winter Annuals
(clockwise from upper right)

1. Common Groundsel*
2. Henbit
3. Little Bittercress
   (shotweed)
4. Common Chickweed

*On KC Noxious Weed List
Summer Annuals
(clockwise from upper right)

1. Common Lambsquarters
2. Barnyardgrass
3. Pigweed
4. Smartweed
**Biennials**
(clockwise from upper right)

1. Tansy Ragwort*
2. Bull Thistle*
3. Common Burdock
4. Common Mullein

*On KC Noxious Weed List*
Perennials (Simple)
(clockwise from upper right)

1. Scotch Broom*
2. Curly Dock
3. Plantains
4. English Lawn Daisy

*On KC Noxious Weed List
Perennials (Creeping)
(clockwise from upper right)

1. Stinging Nettle
2. Knotweed*
3. Canada Thistle*
4. Quackgrass

*On KC Noxious Weed List
Step 2: Set realistic goals

- What is a realistic goal?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% control (except for some noxious weeds)</td>
<td>Reduce number of weeds to acceptable level</td>
</tr>
</tbody>
</table>

- Gardener (or client) must set own threshold level
Step 3: Prevent weed establishment

- Regulatory
  - Noxious weed boards
  - Quarantine
- Sanitation
- Prevent seed production
Be careful what you choose

This is a groundcover (?!)

Step 4: Manage weeds

- Start with least-toxic methods
- Protect health & environment
  - 2,4-D linked to cancer & other health effects
  - Common herbicides found in every local stream tested
  - Herbicides may harm beneficial insects, non-target plants
Mechanical Control

- Hand weeding (early)
- Hoeing
- Cultivation (tillage)
- Mowing
- Mulch (thick layers)
- Flame/heat
Cultural Control

- Manage watering (drip)
- Fertilize selectively
- Keep plants healthy (competition)
- Choose planting dates
- Rotate crops
- Use cover crops
Biological Control

- Diseases
- Insects
- Predators, animals

Only a few so far...
cinnabar moth larvae on tansy ragwort
Chemical Control

- ID weeds first
- Read the label! Label is the law
- Select proper chemical
  - Contact or translocated
  - Selectivity
- Use proper timing (life cycle)
- Spray with care
Step 5: Evaluate Results

- Record weed infestations
- List strengths & weaknesses of each approach
- Modify approaches as necessary
“But make no mistake: the weeds will win; nature bats last.”

~Robert M. Pyle
Acknowledgments

Thanks to:

- Tim Miller, WSU Extension
- Hortsense, WSU Extension
- Clay Antieau, City of Seattle