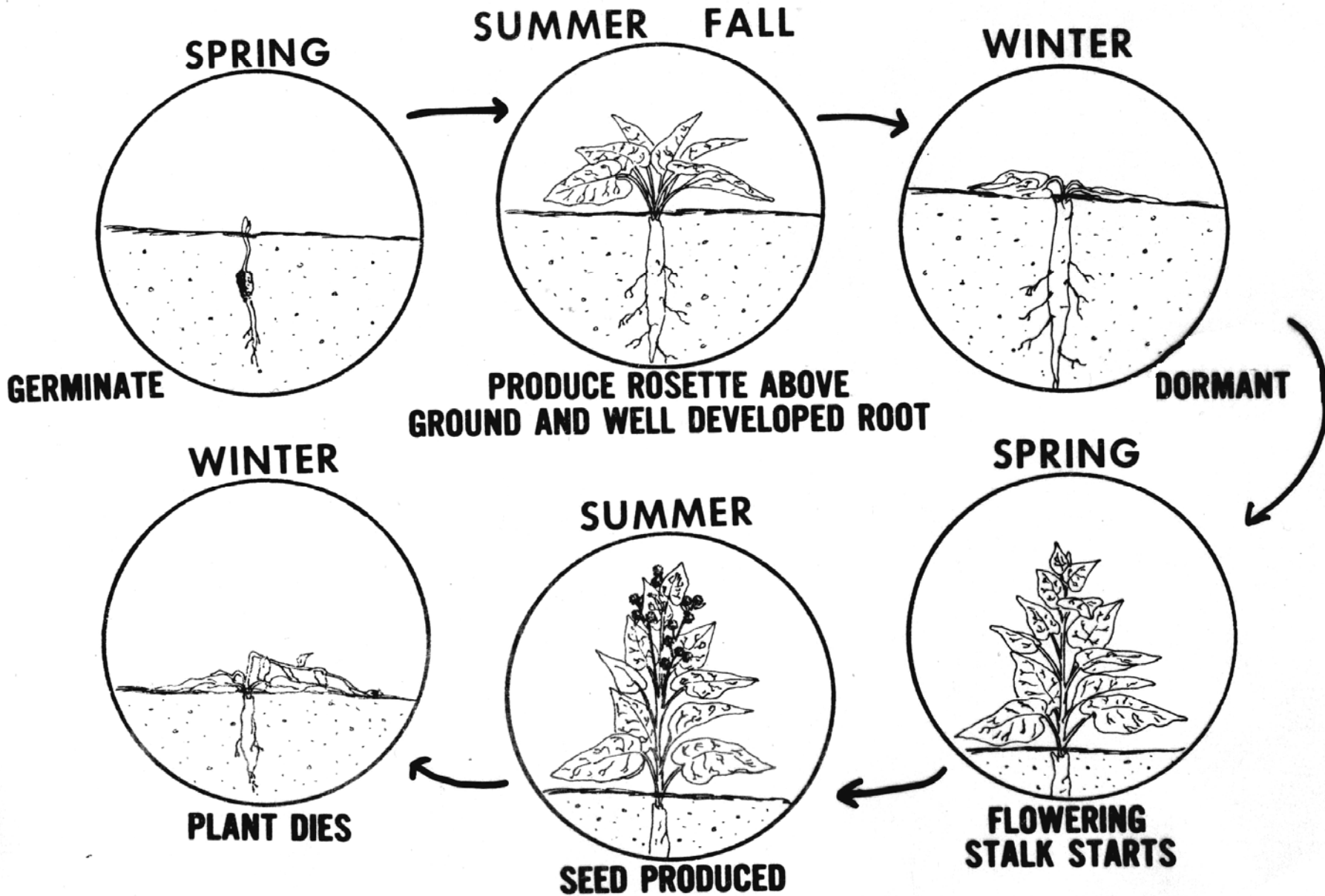


A close-up photograph of several green grass stalks, likely from a species of grass, with a semi-transparent text box overlaid. The text box contains the title and conference information. The background is a blurred green field of grass.

Controlling Biennials & Monocarpic Species

IPAW Invasive Plants of Grasslands
Conference

Biennial lifecycle



Common Biennials & Monocarpic Perennials

COMMON NAME	SCIENTIFIC NAME
bull thistle	<i>Cirsium vulgare</i>
burdock	<i>Arctium minus</i>
horseweed	<i>Conyza canadensis</i>
musk thistle	<i>Carduus nutans</i>
common/cutleaf teasel	<i>Dispsacus fullonum/laciniatus</i>
white/yellow sweetclover	<i>Melilotus alba/officinalis</i>
wild carrot/Queen Anne's lace	<i>Daucus carota L.</i>
common mullein	<i>Verbascum thapsus L.</i>
plumeless thistle	<i>Carduus acanthoides</i>
Garlic mustard	<i>Alliaria petiolata</i>

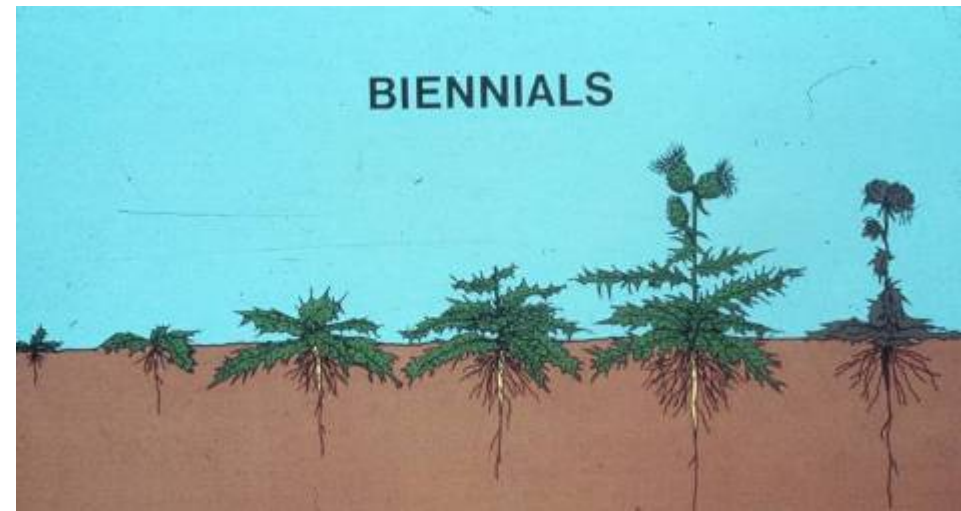
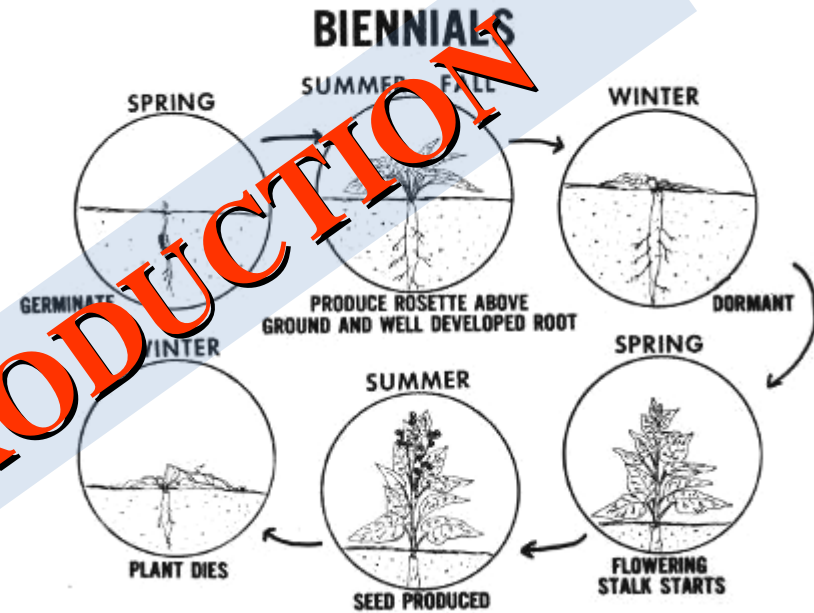
Management methods

- Prevention
- Physical/Mechanical
- Fire
- Biological
- Herbicides



Develop a plan that integrates biennial weed biology and conservation goals

- What stage is plant most sensitive to management options you use?
- What are the goals of the land?
- Integrate these into long-term plan



PREVENT SEED PRODUCTION

Target management

- Seedlings
- 1st year plants (rosettes)
- 2nd year plants (rosettes – flowerbud stage)





Understand weeds germinate and flower: **WEEDOMETER**

- <http://weedometer.net>
 - Plots time of emergence & flowering
 - Estimates for difference locations
- PROVIDES INFORMATION WHEN PLANTS GERMINATE AND FLOWER



Arlington
Research Station

The Weedometer

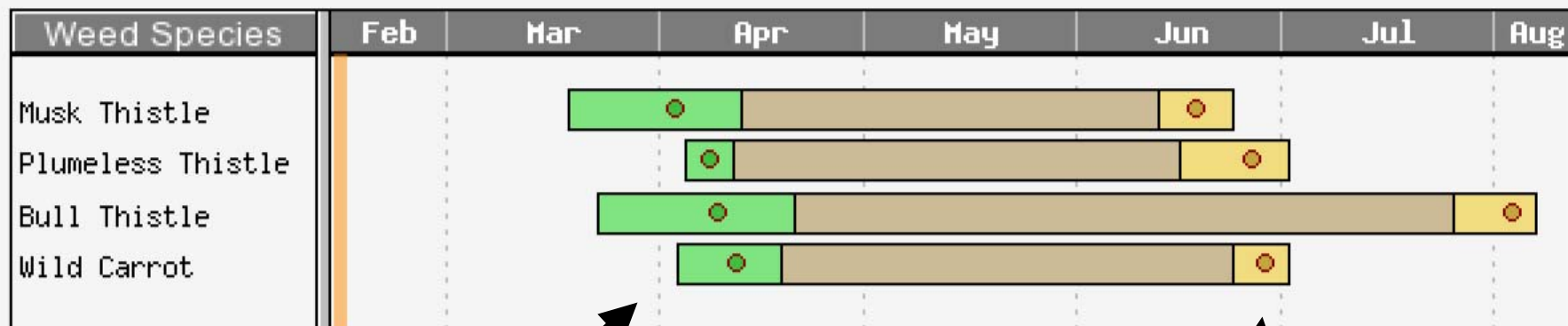
Speedometer

Location

Multispecies Chart

Weedometer

Weed Life Cycle Event Timing, Multi-Species Gantt Chart
Extrapolated to Arlington, WI, using Hopkins' Law



Green is average 1st emergence range;
dot is average

Yellow is initiating of flowering range,
dot is average