

Control Strategies and Plant Life Cycles

Kayla Malone

Chaffee County Noxious Weed Department

Objectives of Noxious Weed Management

- Protect ecosystem functions.
- Reduce the negative impacts of noxious weeds on natural, semi-natural, and human-manipulated lands.
- Match land-use goals with appropriate treatment efforts.
- Manage the risks associated with noxious weed infestations and treatments.

Control Strategies

Prevention – any action or activity that is used to stop the spread of weeds. This includes cleaning equipment; planting certified seed, or using certified hay; fertilization; appropriate pasture rotations; supporting healthy pasture functions; maintain weed-free edges, roadsides, walking paths and areas outside of pasture, range, right of ways and homes.



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Pros:

- Most cost-effective method of control.
- No negative ecological impacts either by the weed species or by treatment actions.

Cons:

- Requires diligent actions.
- Requires knowledge of weed threats in the area.



Control Strategies

Mechanical – any management strategy or techniques that uses management strategies physically kill existing plants. Hand pull; shovel; tilling; mowing; etc.



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Pros:

- Suitable for a range of infestation sizes.
- Can be effective at controlling some species.
- Quick effects.

Cons:

- Labor intensive.
- Generally needs to be repeated annually.
- Not feasible for large infestations.
- Can damage/kill non-targeted plants.
- Creates disturbances that can be reinvaded.
- Increases erosion and topsoil loss.

Control Strategies

Biological – Use of natural enemies such as predators, parasites, pathogens and competitors to control plants and their impacts.

Pros:

- Species specific control.
- Limited non-target damage.
- Once established, populations are self-perpetuating.
- Can be most cost-effective method at reducing the impacts of established populations.
- New species and techniques are constantly being researched.

Cons:

- Will not eliminate targeted species populations.
- Expensive to develop and approve for use.
- Not effective for small populations that are not well established regionally.
- High rate of failure.



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Control Strategies

Herbicide Controls – the use of crop-protecting chemicals used to kill weedy plants or interrupt normal plant growth.

Pros:

- Convenient.
- Cost-effective.
- Reduce tillage, soil disturbance, and soil erosion.
- Can be selective to limit off-target damage.
- Can be cost-effective on large and small infestations.

Cons:

- Risk to human, environment, and ecological health.
- Requires extensive knowledge to ensure efficacy.
- Many factors influence what herbicide should be used where, when and on what species.



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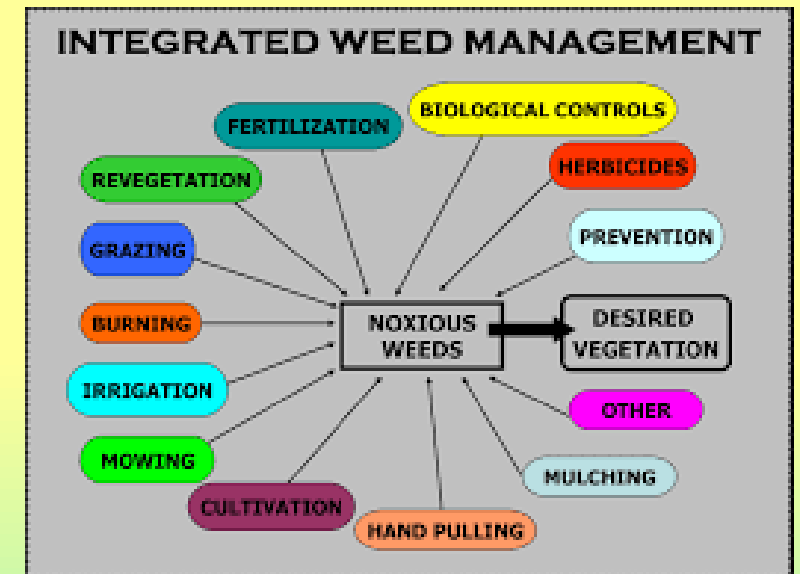


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Integrated Weed Management

The use cultural, mechanical, chemical, biological control, and preventative measures together to reduce pest survival, infestation, and reproduction.

- Works to identify weakness in pests' life cycle to ensure efficient, adequate control.
- The only way to eradicate established populations, and to prevent new species from establishing in through Integrated Weed Management.



Plant Life Cycles

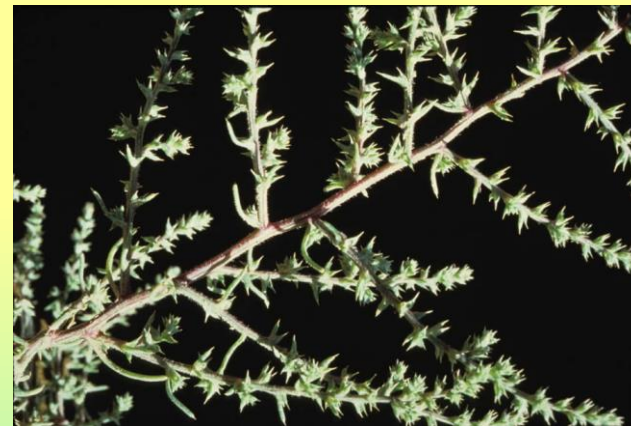
- Annual – Plant germinates, matures, flowers, and produces seed in a single year.
 - Summer Annuals germinate in the spring, mature, flower, produce seed, and dies by fall.
 - Winter annuals – germinate in the fall, overwinters, and then matures, flowers, produces seeds, and dies by early summer.



Horseweed



Puncturevine



Russian Thistle



Kochia

Plant Life Cycles

- Biennial – Plant germinates, grows for a year (generally in a rosette form), overwinters, then matures, flowers, and sets seeds in the second growing season, then dies.



Common Mullein



Houndstounges



Bull Thistle

Control of Annuals and Biennials

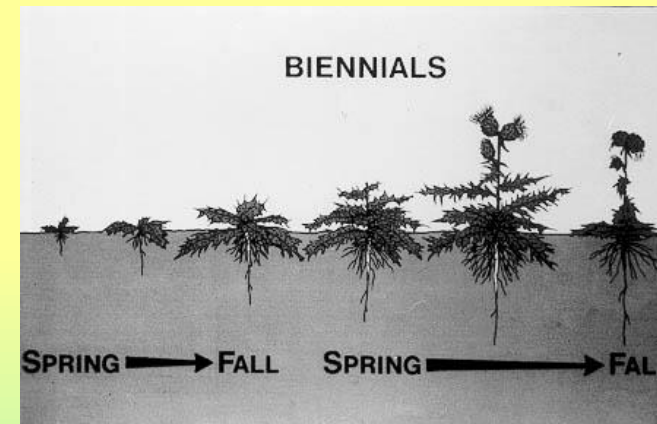
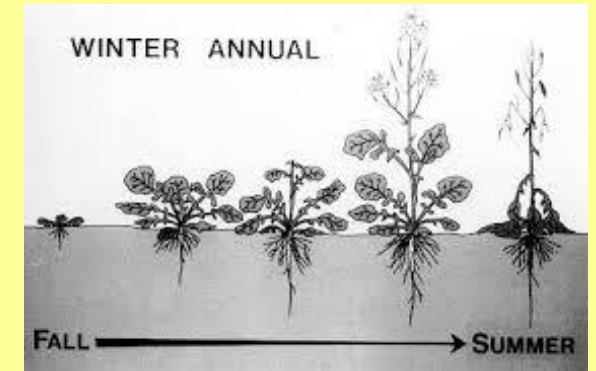
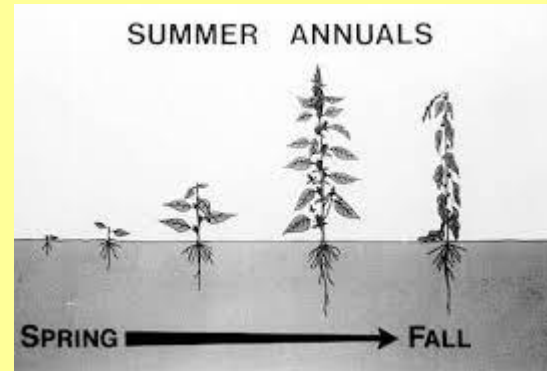
Relatively easy to control compared to creeping perennials; persistence pays off!!!

PREVENT SEED PRODUCTION

- Remove plants before allowing to go to seed.

DEplete THE SEEDBED

- Create ideal conditions for germination and control plants before they set seed.



Training Manual
for Right-of-Way
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Control of Annuals and Biennials

Preventing seed production:

- Hand-pulling.
- Mowing (not effective for low-growing species).
- Pre-emergent herbicides.
- Post-emergent herbicides.

Depleting the seedbed – only recommended after serious infestations.

- Tilling with follow-up seed production control.
- Hoeing with follow-up seed production control.



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Plant Life Cycles

- Perennials – Plant germinates and grows. Individual plants may or may not set seed during first year of growth. Does not die back after maturing, flowering, and producing seeds.



Field Bindweed



Diffuse Knapweed



Yellow
Toadflax



Hoary Cress

Perennial Life Cycles

- Simple Perennials – reproduces and spreads by seed only. Most have taproots.



Spotted
Knapweed



Dandelion



Broadleaf
Plantain

- Creeping perennials – reproduce from root fragments, runners, rhizomes, or stolon as well as by seeds.



Canada
Thistle



Dalmatian
Toadflax



Leafy Spurge

Control of Simple Perennials

Similar to annual and biennial control.

PREVENT SEED PRODUCTION

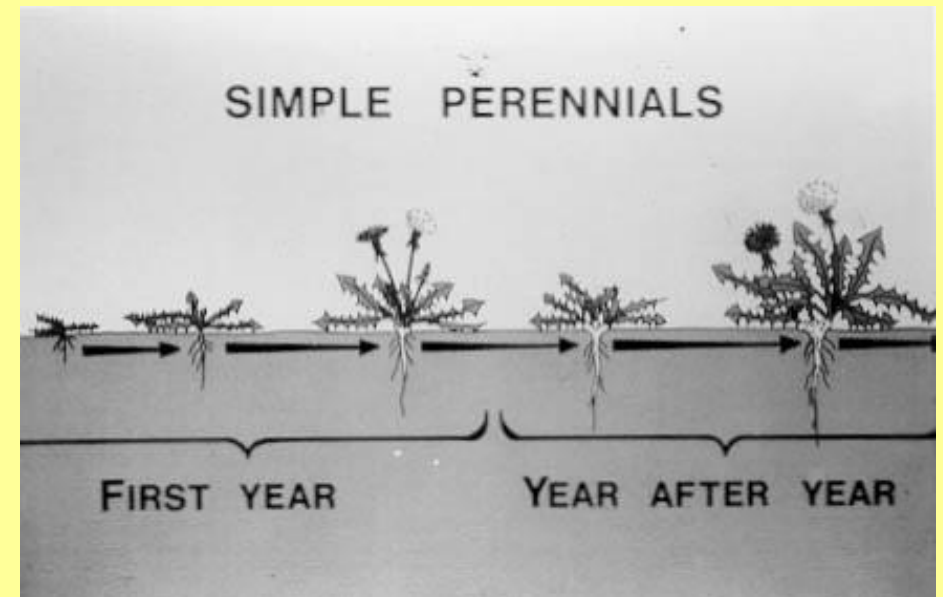
- Key to preventing new plants

KILL EXISTING PLANTS

- Necessary to prevent future seed production.

DEplete THE SEEDBED:

- Create ideal conditions for germination and control plants before they set seed.
- Repeat control methods for expected seedbank life.



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Control of Simple Perennials

Prevent Seed Production:

- Mowing
- Hand-pulling above ground material

Kill Existing Plants:

- Sever the taproot
- Dig out root.
- Appropriate herbicide application.

Deplete the seedbed:

- Tilling with follow-up control.
- Appropriate pre-emergent herbicide.
- Repeat methods of control for expected seedbed life.



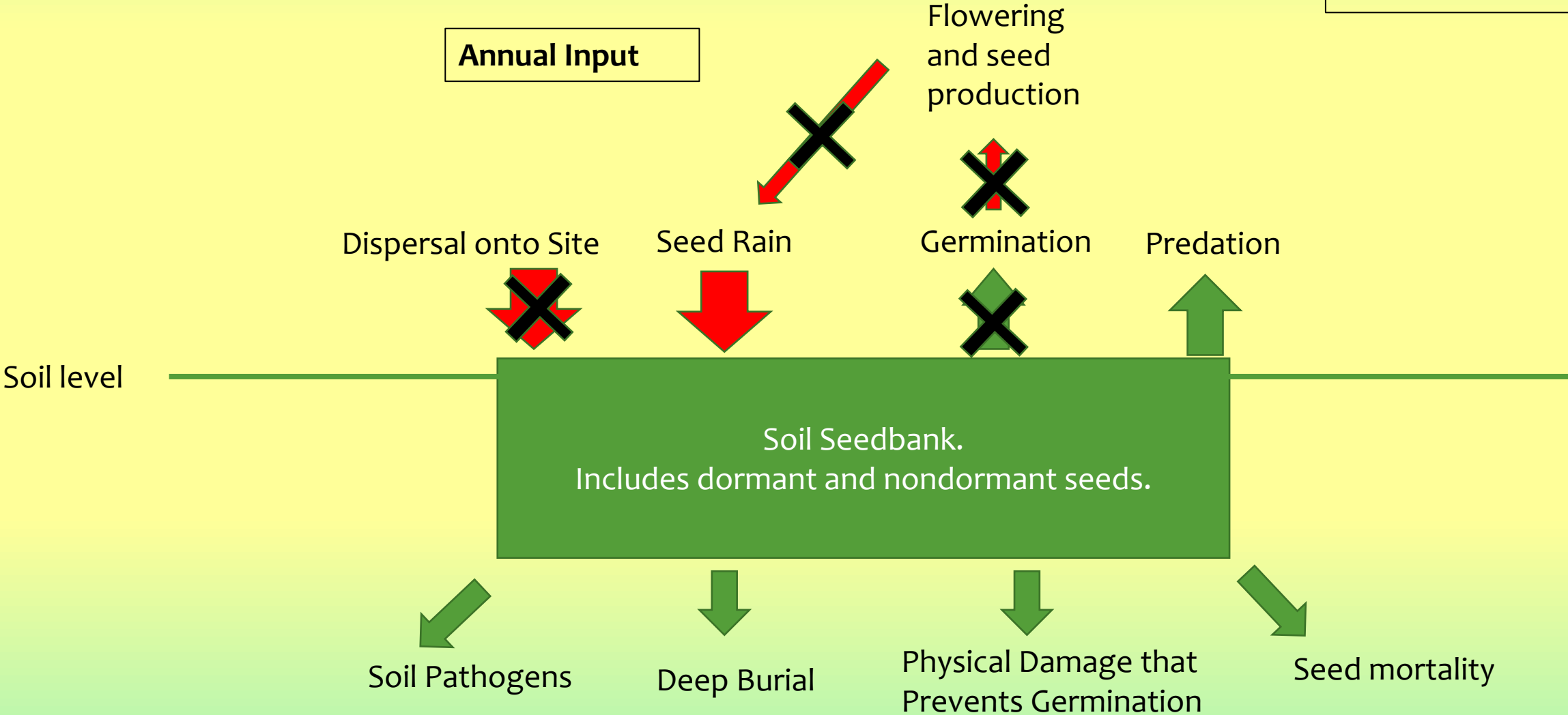
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Adapted from "The Noxious Weed Seedbank: Out of Sight, Out of Mind and Eventually Out of Control"
University of Nevada
Extension Fact Sheet 12-01

Understanding the Seedbed



Control of Creeping Perennials

- Most difficult types of plants to control.
- Can regrow from tiny root fragments left in the soil.
- Early detection and rapid responses are most cost-effective.
- Well established populations will require intensive controls to mitigate the infestation.



El Paso County



Utah State University

Control of Creeping Perennials

PREVENT SEED PRODUCTION:

- Key to preventing new plants

KILL EXISTING PLANTS:

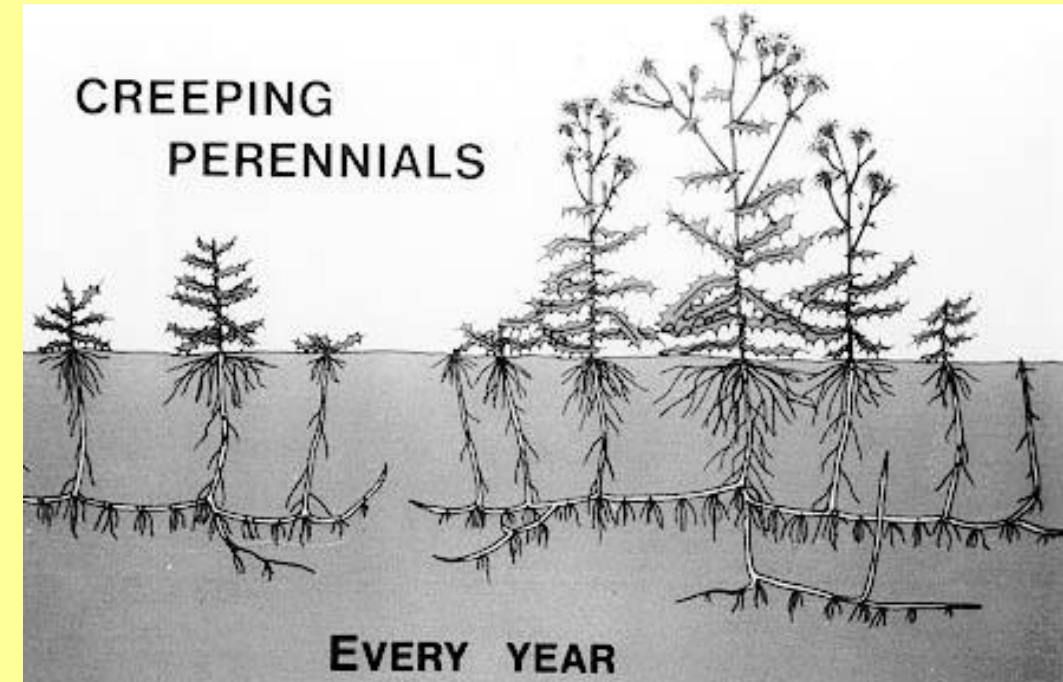
- Necessary to prevent future seed production

DEplete THE ROOT SYSTEM:

- Necessary to kill existing plants.

DEplete THE SEED BED

- Repeat control methods for the expected seedbank life.



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Control of Creeping Perennials

Prevent Seed Production:

- Mowing
- Hand-pull above ground materials

Kill existing plants:

- Appropriate selective herbicide application.
- Tilling, hand-pulling, or other mechanical method with appropriate selective herbicide for follow-up.

Deplete the root system:

- Frequently treat shoot re-growth with appropriate selective herbicide.

Deplete the seed bed:

- Tilling, discing, hand pulling with follow-up post-emergent herbicides.
- Pre-emergent herbicides.

Tips for Noxious Weed Control

- Conduct mechanical treatments before flowers and seeds develop.
- If seeds are present from the previous year, remove these before conducting mechanical treatment.
- Do not compost seeds, flowers or root materials (check species specific information).
- Bag up, and place in your refuse container for landfill disposal.



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Questions? Comments?

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