Control of Invasive and Noxious Weeds Common to El Dorado County

Course Outline

I. Invasive Weeds of Concern in Eldorado County

II. Common Weeds of Concern in the Home Landscape and Garden
Common Herbicides

Below is a list of common herbicides that will be mentioned during the presentation. All are available over the counter, but Clopyralid (Transline) and Aminopyralid (Milestone) require an applicators license from the agriculture office to purchase.

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Active Ingredient</th>
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</thead>
<tbody>
<tr>
<td>Roundup, Alecto, other names</td>
<td>Glyphosate</td>
</tr>
<tr>
<td>Ortho Max Poison Ivy &amp; Brush Killer</td>
<td>Trychlopyr</td>
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<tr>
<td>Bayer Brush Killer</td>
<td>Trychlopyr</td>
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<tr>
<td>Bayer Weed Killer for Lawns</td>
<td>2,4-D Mecoprop Dicamba</td>
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<tr>
<td>Spectracide Weedstop for Lawns</td>
<td>2,4-D Quinclorae Dicamba Sulfentrazone</td>
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<tr>
<td>Ortho Weed-B-Gone</td>
<td>2,4-D Dicamba</td>
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<tr>
<td>Transline</td>
<td>Clopyralid</td>
</tr>
<tr>
<td>Milestone</td>
<td>Aminopyralid</td>
</tr>
</tbody>
</table>
Part I

Invasive Weeds of Concern in Eldorado County

- Why Do We Care
- Himalaya Blackberry
- Bull Thistle
- Dalmatian Toad Flax
- Diffuse Knapweed
- Oblong Spurge
- Perennial Pepperweed
- Purple Loose Strife
- Spotted Knapweed
- Tocalote, Malta Thistle
- Stinkwort
Weeds of Concern in Eldorado County

The El Dorado County Department of Agriculture would like you to report any area of these invasive weeds you might see!

Call Leeanne Mila
530-621-5520
Why Do We Care About Invasive Weeds?

- Highly aggressive – displace natives and desirable plants
- Decrease wildlife habitat – forming monocultures
- Reduce recreational values and uses
- Decrease land productivity and value
- Hard to control – takes diligence!
- Contribute to soil erosion and lake/stream sedimentation
- Noxious weeds rated in California
Weeds of Concern in Eldorado County

Himalaya Blackberry

- Native to Western Europe
- Introduced about 1885 as a cultivated crop
- Grows well in acidic and alkaline soils
- Single plant produces several thousand seeds
  - Seeds are dispersed by animals and birds
- Also reproduces by tip rooting
- Rapidly over tops understory
- Vegetation producing a dense thicket

*Rubus armeniacus*
Weeds of Concern in Eldorado County

Himalaya Blackberry

*Rubus armeniacus*

**Habitat**
- Prefers wet sites, stream and creek beds

**Control**
- Mechanical or Burning - Mature Plants
- Grazing to prevent regrowth
- Hand Pulling and Hoeing - Young Plants

**Herbicide**
- 2,4-D, Tyclopyr, Dicamba, Glyphosate
Weeds of Concern in Eldorado County

Bull Thistle

- Native to Europe and Asia
- Reproduces by seed
  - Seeds dispersed by animals and wind
- Biennial - Rosette first year, mature plant in second year
- Flowers: July - September
- Seed Germinates: fall and winter

*Cirsium vulgare*
Weeds of Concern in Eldorado County

Bull Thistle
*Cirsium vulgare*

**Habitat**
- Pastures, roadsides, anywhere soil has been disturbed

**Control**
- Hand Pulling and cutting off at soil surface

**Herbicide**
- 2,4-D, Triclopyr, Dicamba, Glyphosate, Transline or Milestone
Dalmatian Toadflax

- Native to the Mediterranean
- Came to U.S. in 1874 as an ornamental
- Yellow Toadflax is often sold as an ornamental “Butter and Eggs”
- Aggressive, highly competitive
- Produces 500,000 seeds a season
- Deep tap root can go 1 meter in soil
- Lateral roots “Bud”

Linaria dalmatica
Weeds of Concern in Eldorado County

Dalmatian Toadflax

*Linaria dalmatica*

**Habitat**
- Dry course soils in fields, pastures, roadsides, and croplands

**Control**
- For the home owner the best control is through herbicides

**Herbicide**
- 2,4-D Tryclopyr
- Dicamba
- Glyphosate
Weeds of Concern in Eldorado County

Knapweeds

- Spotted knapweed – A rated *Centaurea maculosa*
- Diffuse knapweed – A rated *Centaurea diffusa*
- Squarrose knapweed – A rated *Centaurea squarrosa*
Weeds of Concern in Eldorado County

Knapweeds

Aggressive Reproduction

- Spotted Knapweed
  400,000 seeds per plant
  Lateral roots reproduce
- Diffuse knapweed
  Stems break off and
  plants tumble dispersing
  seeds
- Squarrose knapweed
  Seed heads
Weeds of Concern in Eldorado County

Knapweeds

- Spotted and Diffuse are biennials.
- Squarrose is a perennial.
Spotted knapweed arrived on the west coast in 1893. By 1920, it had established itself in 24 counties in 3 states. Now, spotted knapweed has established itself in almost every county in the western U.S. In Montana alone, 5 million acres have been invaded.
Weeds of Concern in Eldorado County

Diffuse Knapweed

Habitat
- Disturbed areas, roadsides, fields, does not like shade

Control
- Hand pulling 2-4 times per year
- Mowing not effective, rosette too low???

Herbicide
- Herbicide if applied at seedling stage

Centaurea diffusa
Spotted Knapweed

**Habitat**
- Disturbed areas, roadsides, fields, does not like shade

**Control**
- Hand pulling and mowing are effective
- No tilling

**Herbicide**
- Herbicide if applied on newly sprouted plants.
- Biological is being used to reduce populations

*Centaurea maculosa*
Weeds of Concern in Eldorado County

**Spurge**

- Oblong spurge – B rated *Euphorbia oblongata*
- Leafy spurge – A rated *Euphorbia esula*
  - Infests more than 5 million acres in 35 States
Weeds of Concern in Eldorado County

Spurge

- Extremely aggressive
- Extensive creeping roots

- Latex sap is toxic to many animals and humans
Weeds of Concern in Eldorado County

Oblong Spurge in Camino
Weeds of Concern in Eldorado County

Oblong Spurge
_Euphorbia oblongata_

**Habitat**
- Roadsides, Fields and Pastures

**Control**
- Manually remove plants before seed production

**Herbicides**
Weeds of Concern in Eldorado County

**Perennial Pepperweed**

- Native to Southern Europe and Western Asia
- Out-competes native vegetation and row crops
- Forms dense weedy plots
- Produces by seed but seed not long lived in soil
- Also reproduces by underground rhizomes in early spring

*Lepidium latifolium*
Weeds of Concern in Eldorado County

Perennial Pepperweed
*Lepidium latifolium*

**Habitat**
- Wet areas on roadside and waterways, dry areas such as road cuts and fills

**Control**
- Mechanical control can actually spread the plant, burning not effective due to underground rhizomes. Mowing combined with herbicide treatment is most effective.

**Herbicide**
- Herbicide is most effective combined with mowing
Weeds of Concern in Eldorado County

Purple Loosestrife

*Lythrum salicaria*

- Introduced mid 1800
- Used as an ornamental
- Established in 40 states
- Costs approximately $45 million/year in control
Weeds of Concern in Eldorado County

Purple Loosestrife

Aggressive reproduction
Weeds of Concern in Eldorado County

Purple Loosestrife
Lythrum salicaria

- Reproduces from Seeds, shoots, and roots

- Produces up to 300,000 seeds per plant, per year
Weeds of Concern in Eldorado County

**Purple Loosestrife**
*Lythrum salicaria*

**Habitat**
- Moist or marshy sites, ponds, meadows, streams, and ditches

**Control**
- Biological agents have been used effectively – weevils (2) and beetles.
- Hand removal effective
- Cutting and burning may increase infestation

**Herbicide**
- Herbicides are effective but since plant grows in wetlands, care must be taken
Weeds of Concern in Eldorado County

**Tocolate**
**Malta Napa Maltese Thistle**
*Centaurea melitensis*

- Native to Southern Europe
- Introduced in the late 1700s
- 1 to 60 seeds per head.
- 1 to 100 heads per plant
- Annual or biennial
- Reproduces by seed
- Most seeds germinated after the first fall rain
Weeds of Concern in Eldorado County

**Tocolate**

**Habitat**
- Open and disturbed areas, rangeland, cultivated fields

**Control**
- Cultural strategies used to control yellow star thistle (YST) are likely to control this thistle as well. Timing of control methods, as with YST, is important to success. Control current population, suppress seed production and establish competitive vegetation

**Herbicide**
- Clopyralid or Aminopyralid

*Centaurea melitensis*
Weeds of Concern in Eldorado County

Stinkwort *Dittrichia graveolens*

- Native to North Africa and Mid East
- Introduced about 1984
- Grows to about 3 feet
- Annual
- Rapidly invading
- Seeds spread by wind, water, animals and machinery

- Sticky hairy foliage
- Aromatic
- Touching it can cause dermatitis, itching, and blisters
- Renders land unsuitable for grazing, hiking or other activities
- Each plant can produce 25,000 to 35,000 seeds
Weeds of Concern in Eldorado County

Stinkwort

_Dittrichia graveolens_

- Can taint milk and meat of livestock
- Seedheads can get imbedded in the intestinal wall of livestock causing kidney disease or sudden death!
Weeds of Concern in Eldorado County

Stinkwort

*Dittrichia graveolens*

**Habitat**
- Disturbed areas, roadsides, fields, woodlands

**Control**
- Hand pull prior to flowering in September to December be sure to wear gloves!
- Cutting and burning may increase infestation

**Herbicide**
- Herbicides have limited effect due to oily/waxy coating on leaves that inhibits absorption
- Best time to apply herbicides is on young plants. It is less effective on older plants where it can stimulate seed production
Part II

Common Weeds of Concern in the Home Landscape and Garden

- Cheeseweed
- Field Bindweed
- Tar Weed
- Puncture Vine
- Spotted Spurge
- Purslane
- Bermuda Grass
- Crab Grass
- Fox Tail
- Nut Sedge
- Yellow Woodsorrel
Common Weeds of Concern in the Home Landscape and Garden

**Cheeseweed**
- Germinate first fall rains
- Deep tap root, difficult to remove
- Reproduce by seed
- Seed long lived in soil
- Can host whiteflies and thrips
- Can vector viruses into garden plants
  - Tomato yellow leaf curl
  - Tomato spotted wilt

**Common Mallow**
*Malva neglecta*

**Little Mallow**
*Malva parviflora*
Common Weeds of Concern in the Home Landscape and Garden

Cheeseweed

**Control**
- Moving not effective
- Hand pull young plants with four or fewer leaves
- Mulch at least 3” deep
- Must maintain mulch depth

**Herbicide**
- Not effective; including Glyphosate
- 2,4 – D may provide limited control if applied on very young plants
Field Bindweed

Convolvulus arvensis

- Native to Eurasia
- Introduced to California 1884
- Perennial spread from root or seed
- Has both deep and shallow roots
- 70% of roots in top 2 feet
- Deep roots can reach 20 feet or more
Field Bindweed

*Convolvulus arvensis*

- Root and Rhizome mass up to 2 ½ - 5 tons per acre
- Roots can bud from as deep as 14 feet
- Root and Rhizome fragments produce new plants, lateral stems can root
- Average plant produces 550 seeds
- Seeds viable as long as 60 years
Common Weeds of Concern in the Home Landscape and Garden

Field Bindweed

Control
- Cultivation and hoeing effective but only 3 – 4 weeks after germination
- Heavy plastic mulch can suppress

Herbicide
- Effective but repeated applications necessary
- Pre-emergents also effective

Convolvulus arvensis
Tarweed/ Spikeweed

*Hemizonia pungens*

- California native
- Annual grows to 1 ½ - 3 feet tall
- Spread by seed
- Flowers late June through summer
- Exudes a strong scented resin
- Live stock avoid it
- Young plants soft
- Mature plants stiff and spikey
Common Weeds of Concern in the Home Landscape and Garden

**Tarweed/Spikeweed**

*Hemizonia pungens*

**Habitat**
- Dry grasslands, roadsides, rangeland, fields, and seasonal wetlands

**Control**
- Hand pulling small populations, when plants is young and soft

**Herbicides**
- 2,4-D, Dicamba, Trychlopyr, Glyphosate
Native to Southern Europe
- Summer annual
- Thrives in hot, dry conditions
- Good soil, moisture and warmth necessary for germination
- Deep tap root
- Typical plant produces 200 to 5000 seeds viable up to 5 years
- Toxic to sheep
- Not recommended for other grazing livestock
Common Weeds of Concern in the Home Landscape and Garden

**Puncturevine**
*Tri**b**ulus terrestris*

**Habitat**
- Orchards, pastures, ditches and fields

**Control**
- Hand pulling and hoeing effective
- Two weevil species introduced providing some control
- Mulches 3” deep
- Remove seeds that fall from plant by raking or patting ground with old piece of carpet
- Check shoes, tires, etc

**Herbicides**
- 2,4-D, Dicamba, Glyphosate
Common Weeds of Concern in the Home Landscape and Garden

Spotted Spurge
_Euphorbia maculata_

- Native Eastern United States
- Annual
- Spreads by seeds
- Can produce seed 5 weeks after germination
- Plant can produce several thousand seeds
- Tap root can extend 24” deep
- Sap is an eye and skin irritant
- Poisonous to sheep
Common Weeds of Concern in the Home Landscape and Garden

**Spotted Spurge**  
*Euphorbia maculata*

**Control**
- Primary control is preventative
- Once present control is difficult
- Hand pulling
- Mulches 3” deep
- Solarization 4 to 6 weeks

**Herbicides**
- Pre-emergent if applied before soil temp 55-60°F at 1” depth
- Post-emergent: 2,4-D, Triclopyr, Glyphosate,
- 2, 4-D Less effective on mature plants
Common Purslane

*Portulaca oleracea*

- Edible, excellent and crunchy in salads
- Dense matting
- Prolific seed producer up to 240,000 seeds/plant
- Seeds viable 5 to 40 years
- Seed germinate when soil temperature is 60°F
- Seeds can ripen up to one week after plant is pulled

- First seen in the US in Massachusetts in 1672
- Summer annual
Common Purslane

*Portulaca oleracea*

- Germinated plants produce seed within a few weeks
- Fleshy stems remain viable a few days after cultivation and can re-root if moisture is available
Common Weeds of Concern in the Home Landscape and Garden

Common Purslane
*Portulaca oleracea*

**Control**
- Best control is prevention
- Once present control is difficult
- Destroy young plants by pulling, hoeing, cultivate before seed production
- Mulch 3” thick
- Solarization 4 to 6 weeks

**Herbicides**
- 2,4-D, Dicamba, Glyphosate
Common Weeds of Concern in the Home Landscape and Garden

**Bermudagrass**
*Cynodon dactylon*

- Native to Africa
- Introduced about 1751
- Reproduces via seed, stolons, and rhizomes
- Seeds remain viable for about 2 years
- Rhizomes usually in the top 1-6” of soil
- Cut and left to lie on moist soil, both rhizomes and stolons can root
Common Weeds of Concern in the Home Landscape and Garden

Bermudagrass
*Cynodon dactylon*

**Control**
- With hold water, not completely drought tolerant
- Cultivation to 6” and leave rhizomes to dry out (no moisture as they will re-root)
- Black plastic to exclude all light
- Solarization 6 weeks in July and August
- Mulch alone not effective

**Herbicides**
- Grass selective use Ornamec or Grass-be-Gone
- Non selective use of Glyphosate
- Tryclopyr merely suppresses it
Common Weeds of Concern in the Home Landscape and Garden

Crabgrass

- Introduced from Eurasia
- Annual grass
- Germinates from seed
- Seed germinates early to mid-March, soil temp 50-55 °F for 3 consecutive days
- Seed viable at least 3 years
- Smooth crabgrass usually found in lawns
- Hairy crabgrass does not tolerate mowing
- Frequent, shallow watering encourages crabgrass as lawn will be weak and sparse

Digitaria ischaemum
smooth crabgrass

Digitaria sanguinalis
hairy crabgrass
Common Weeds of Concern in the Home Landscape and Garden

**Crabgrass**

**Control**
- Keep lawn thick
- Mow to proper height
  - Kentucky blue 1.5” – 2.5”
  - Tall fescue 2” – 3”

**Herbicide**
- Use pre-emergent herbicide before germination
- Use post-emergent herbicide while plants are small, 1-3 leaf stage
- Grass-B-Gone and Glyphosate

[Image of Crabgrass]
Common Weeds of Concern in the Home Landscape and Garden

**Foxtail**

- Originated in Europe
- Green foxtail is most common here
- Summer annual grass
- Reproduces by seed
- Seed viable 1 to 2 years
- Matures within 40 days of germination
- Germination best from shallow depths of ½ - 1”
- Grows in both moist and dry conditions
- Germinates throughout summer
- Dangerous for pets – in eyes, noes, mouth

*Setaria pumila*  
yellow foxtail

*Setaria viridis*  
green foxtail
Common Weeds of Concern in the Home Landscape and Garden

**Foxtail**

**Habitat**
- Gardens, roadsides, pastures, croplands, and disturbed areas

**Control**
- Hand pulling

**Herbicides**
- Glyphosate, may require several applications
- Pre-emergents but must be re-applied

*Setaria viridis*  
green foxtail

*Setaria pumila*  
yellow foxtail
Common Weeds of Concern in the Home Landscape and Garden

Yellow Nutsedge

*Cyperus esculentus*

- Perennial – dies back in winter
- Starts in waterlogged soil caused by poor drainage, frequent irrigation, or leaky sprinklers
- Once established tolerates drought

- Reproduces by seed or more commonly by tubers on underground rhizomes
  - Tubers are sometimes referred to as “nuts”
  - Rhizomes about 8 -14” deep
  - Buds on tubers sprout to form new plants
Common Weeds of Concern in the Home Landscape and Garden

Yellow Nutsedge
*Cyperus esculentus*

**Control**
- Best control is prevention
  - Eliminate causes
  - Remove small plants before they form tubers
- Once established, hard to control

**Herbicide**
- Glyphosate: applied to young plants
Common Weeds of Concern in the Home Landscape and Garden

Yellow Woodsorrel

*Oxalis stricta*

- Native to North America
- Usually herbaceous perennial
- Spreads by seeds and rhizomes
- Seed pods explode at the slightest touch when ripe
- Seeds are thrown up to 8 - 10 feet
- Forms colonies
- Most plants green, some purple cast
Common Weeds of Concern in the Home Landscape and Garden

**Yellow Woodsorrel**
*Oxallis stricta*

**Habitat**
- Thin lawns, playfields, open areas, especially if lightly shaded and moist, woods

**Control**
- Prevention is best
- Not easy to control once established
- Hand pulling often leaves behind parts of roots/rhizomes which re-roots

**Herbicides**
- Pre-emergent can be effective – Scotts Turf Builder with Halts, Surflan, Ronstar
- Post-emergent- Glyphosate (E), Dicamba (G), 2,4,D (F) Tryclopyr (F) Clopyralid (F-G)
- Usually must re-spray 5 – 6 times
Web Sites

California Invasive Plant Council
http://www.cal-ipc.org/

CDFA – Encycloweedia
http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm

UC Davis Weed Research and Information Center
http://wric.ucdavis.edu/index.htm

Google the weed you are interested in.
THANK YOU!