UCCE Master Gardeners of El Dorado County Present

HEALTHY ENVIRONMENTS

University of California
Agriculture and Natural Resources

Making a Difference for California

Control of Invasive and Noxious Weeds Common to El Dorado County

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HEALTHY ENVIRONMENTS

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El Dorado County

Making a Difference for California

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.

Brand Name	***Active Ingredient***
Roundup, Alecto, other names	Glyphosate
Ortho Max Poison Ivy & Brush Killer	Trychlopyr
Bayer Brush Killer	Trychlopyr
Bayer Weed Killer for Lawns	2,4-D Mecoprop Dicamba
Spectracide Weedstop for Lawns	2,4-D Quinclorae Dicamba Sulfentrazone
Ortho Weed-B-Gone	2,4-D Dicamba
Transline	Clopyralid
Milestone	Aminopyralid

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

HEALTHY ENVIRONMENTS

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Making a Difference for California

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

Rubus armeniacus

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

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

Cirsium vulgare

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

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

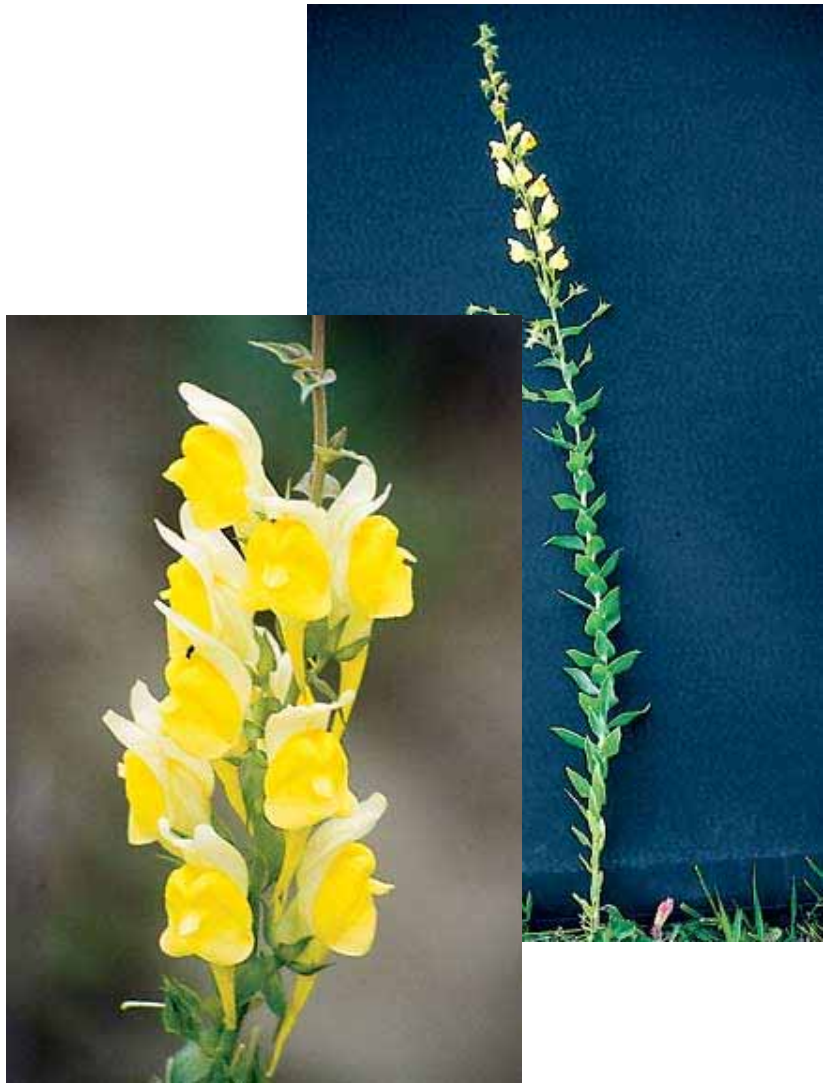
Herbicide

- 2,4 –D, Tryclopyr, Dicamba, Glyphosate, Transline or Milestone

Weeds of Concern in Eldorado County

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

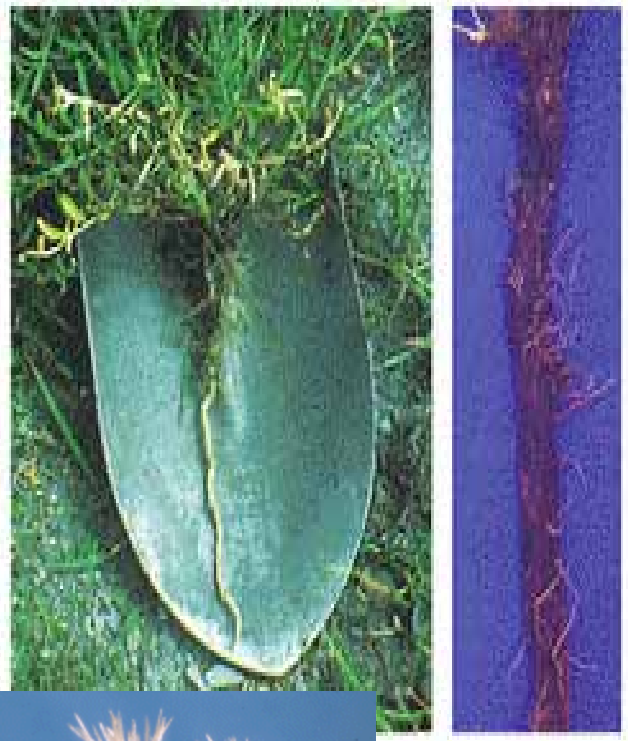
- Spotted knapweed – A rated
  Centaurea maculosa
- Diffuse knapweed – A rated
  Centaurea diffusa
- Squarrose knapweed – A rated
  Centaurea squarrosa

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.

Weeds of Concern in Eldorado County

Spotted Knapweed

- Spotted knapweed arrived on the west coast in 1893.
- By 1920, 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

Weeds of Concern in Eldorado County

Spotted Knapweed

Habitat

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

Control

- Hand pulling and mowing are effective
- No tilling

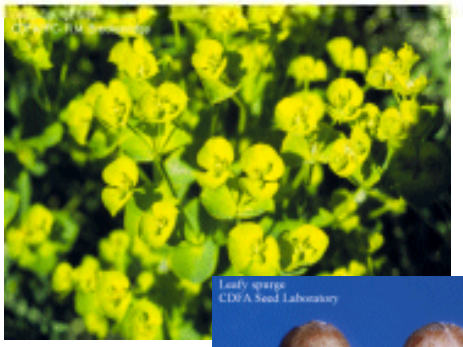
Herbicide

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

Centaurea maculosa

Weeds of Concern in Eldorado County

Spurge



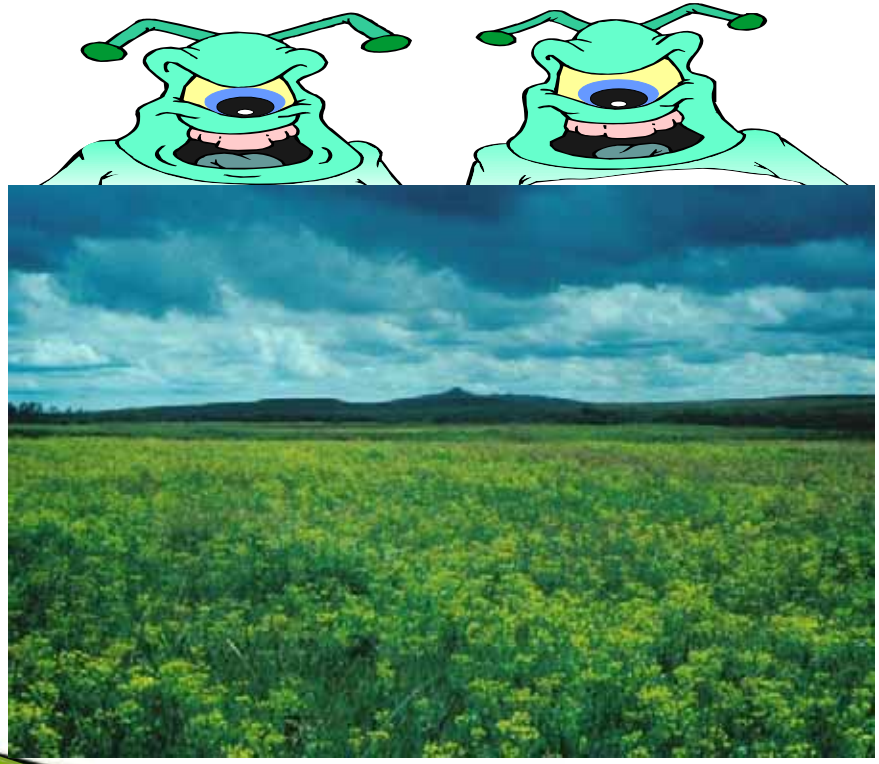
- Oblong spurge – B rated
  Euphorbia oblongata
- Leafy spurge – A rated
  Euphorbia esula

  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

Centaurea melitensis

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

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

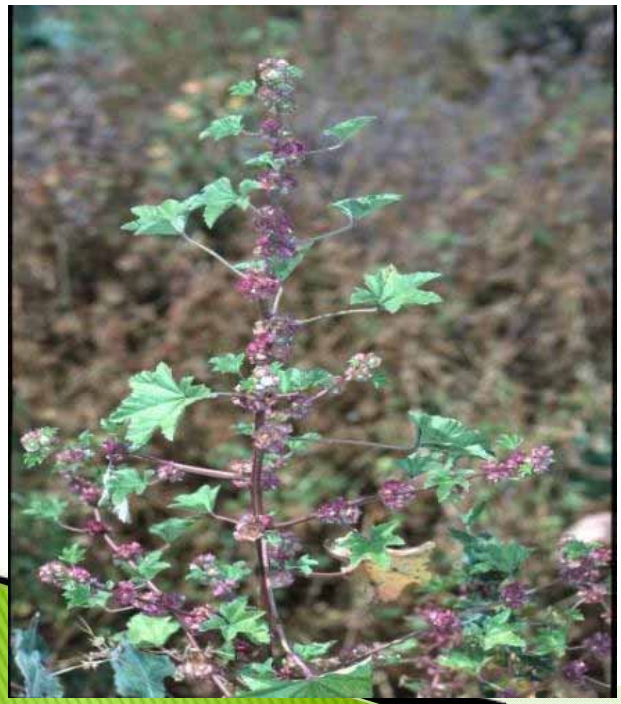
Common Mallow

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

Common Weeds of Concern in the Home Landscape and Garden

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

Common Weeds of Concern in the Home Landscape and Garden

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

Common Weeds of Concern in the Home Landscape and Garden

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

Common Weeds of Concern in the Home Landscape and Garden

Puncturevine

Tribulus terrestris

- 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

Tribulus 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 Weeds of Concern in the Home Landscape and Garden

Common Purslane

Portulaca oleracea

- First seen in the US in Massachusettes in 1672
- Summer annual

- 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 temerature is 60 F
- Seeds can ripen up to one week after plant is pulled

Common Weeds of Concern in the Home Landscape and Garden

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

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

Oxallis 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!