



# Use of Herbicides to Control Woody Weeds

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Photo by:  
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# Herbicides used for woody weed control in CA

- Glyphosate
- Triclopyr
- Imazapyr

# Glyphosate

- Post emergent
  - Only kills emergent plants
- Non selective
- Most effective when applied to live tissue
- Available in many concentrations to homeowners

# Glyphosate

- Products Available Over-the-Counter
  - Roundup, Roundup Pro, Roundup Concentrate
  - Honcho, Gly Star, Gly Pro





# Triclopyr

- Post emergent
  - Only kills emergent plants
- Selective (Broadleaf)
- Formulations
  - Amine
    - Water soluble
    - Most effective when applied to live tissue
  - Ester
    - Oil soluble
- Limited availability to homeowners



# Triclopyr



- Products Available Over-the-Counter
  - Ortho Brush B Gon Poison Ivy Killer Concentrate
  - EasyGone Brush Killer
  - Roundup Poison Ivy & Tough Brush Killer Plus (glyphosate and triclopyr)
- Products Available by Permit  
(Operator Identification Number) Available through Ag Dept
  - Garlon 3A, 4, 4 Ultra
  - Pathfinder



61% ai



44% ai



# Imazapyr

- Post & Pre emergent
  - Kills emergent plants and prevents seed germination
- Non-Selective
- Limited availability to homeowners



# Imazapyr



- Products Available Over-the-Counter
  - Ortho GroundClear Complete Vegetation Killer (glyphosate and imazapyr)
- Products Available by Permit  
(Operator Identification Number) Available through Ag Dept
  - Chopper
  - Arsenal
  - Habitat





# Application Techniques for Woody Weeds

- Foliar
  - Spray-to-wet
  - Low volume “Drizzle”
- Directed
  - Stem injection
    - Hack-n-Squirt
    - E-Z-Ject
  - Basal bark
  - Cut stump
  - Wipe-on

# Spray-to-Wet

- Traditional Method
  - Low Concentration / High Volume
  - All stems and leaves should glisten
  - Avoid runoff
  - Apply at 1% - 2% active ingredient





# Low Volume or "Drizzle"

- New Method
  - High concentration/Low volume
  - Apply as a light sprinkle "drizzle"
  - Apply at 8% - 10% active ingredient



# Low Volume or "Drizzle"





# Low Volume or "Drizzle"



# Stem Injection

- Hack - N – Squirt
  - Wound is made in the trunk with a hatchet
  - Herbicide is placed in wound





# Hack - N - Squirt Application



# Hack - N - Squirt Application

- 1 hack for every 3" trunk diameter
- Apply 1ml of undiluted herbicide/hack
  - Hypo Hatchet Tree Injector





# Stem Injection

- E-Z-Ject
  - Uses a lance to inject herbicide capsules into woody shrubs and trees



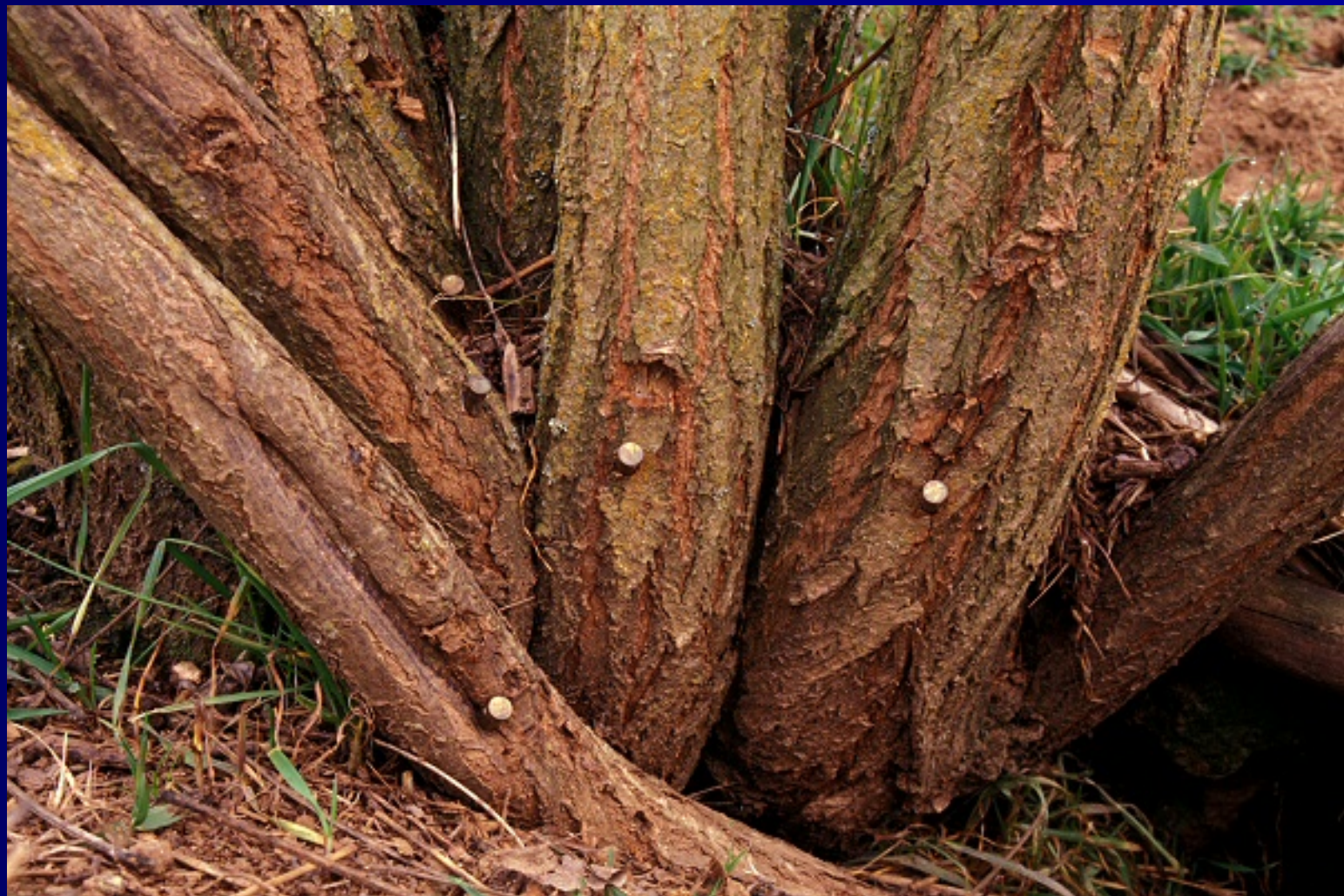
# E-Z-Ject Application

- Lance is placed against base of plant.
- Metal teeth at base are pushed into the tree.
- With a thrust, brass capsule is injected into tree.
- 1 capsule for every 3" in trunk diameter





# E-Z-Ject Application



# Basal Bark Application

- Basal portion of the plant is sprayed with herbicide solution
- From ground up 12"
- Apply at 8% - 10% active ingredient of triclopyr (ester) or imazapyr
- Efficacy improved with the addition of a adjuvant (methylated seed oil)





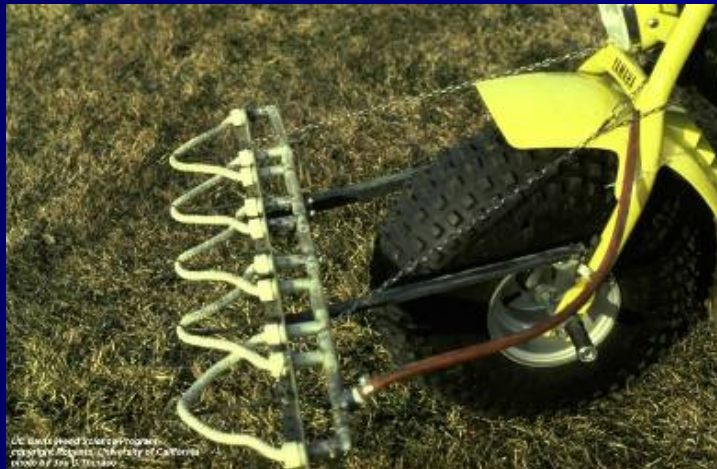
# Cut Stump Application

- Tree or shrub is cut down leaving a stump
- Stump is treated with a herbicide solution
- Apply at 8% - 10% active ingredient



# Wipe-on Application

- Uses a moistened sponge or rope to apply herbicide directly to plant foliage
- Effective on groundcovers, vines, seedlings, and resprouts
- Apply at 8% - 10% active ingredient



# Which one to use?

- Timing
  - Glyphosate
    - Late Summer to Early Fall
    - Apply before leaves lose their green color
  - Triclopyr or Imazapyr
    - Spring or Early Fall
    - In spring apply after full leaf expansion
- Avoid applying herbicides in the middle of summer and/or during hot weather



# Precautions & Follow-up

- Always follow the pesticide label.
- A single application may not always give 100% control, and retreating may be necessary.



# Drizzle Application

- Herbicides used
  - Roundup Pro
    - 10% - 20% solution
  - Chopper or Garlon 4
    - 10% - 20% solution
  - Garlon 3A
    - 10% - 20% solution



# Hack - N - Squirt Application

- Herbicides used
  - Roundup, Chopper, Garlon 4, or Garlon 3A
    - 1 hack per 3-4 inches in diameter
    - 50% to Undiluted product
    - 1 ml herbicide/hack

# E-Z-Ject Application

- Herbicide used
  - Imazapyr (Copperhead)
    - Each capsule contains 1 ml of herbicide
    - 1 capsule / 3-4 inches in diameter

# Basal Bark Application

- Herbicides used
  - Chopper or Garlon 4
    - 20% in oil carrier



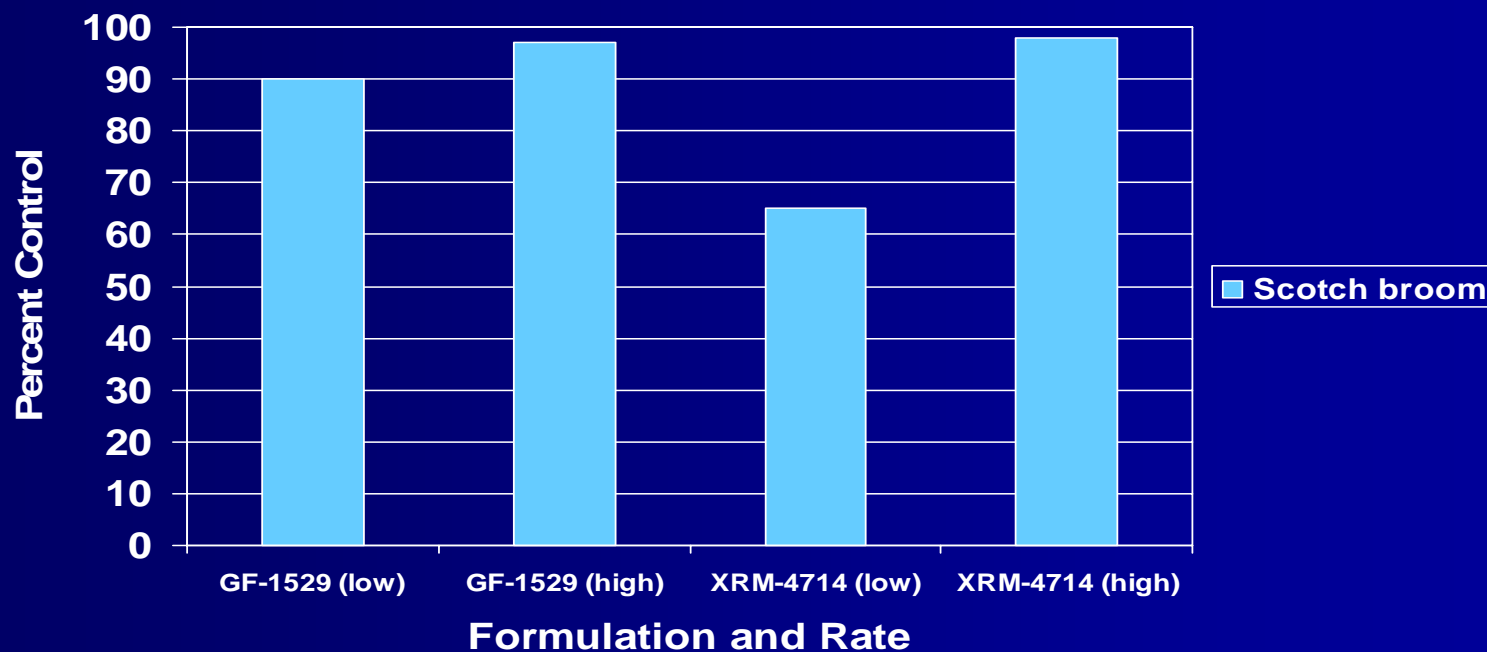
# Cut Stump Application

- Herbicides used
  - Roundup Pro
    - 50% solution (in water)
  - Chopper or Garlon 4
    - 25% - 50% solution (in oil carrier)
  - Garlon 3A
    - 50% solution (in water)

# Wipe-on Application

- Herbicides used
  - Roundup
    - 25% - 50% solution in water
  - Chopper or Garlon 4
    - 25% - 50% solution in oil carrier and water

## *Woody Plant Control Provided by Garlon 4 Ultra versus Garlon 4*



GF-1529 = Garlon 4 Ultra  
XRM-4714 = Garlon 4











# Questions to Answer...

- What is the weed?
- How does it propagate?
- Does it have any characteristics that may make some control techniques difficult?



# Control Strategies

- Non-Chemical
- Chemical



# Mechanical Control

*... the cutting or  
uprooting of weeds*

- Hand pulling
- Weed Wrench



# Mechanical Control

- Lopping





# Mechanical Control

- Mowing / brush cutter



# Mechanical Control

- Mastication
  - Rotary
  - Flail or fixed tooth



# Mechanical Control

## Bulldozing





# Cultural Control

*... the manipulation of the environment by non-mechanical means to control weeds*

- Burning



# Cultural Control

- Grazing



# Chemical Control



# Spraying Woody Weeds



# Glyphosate

- Post emergent
  - Only kills emergent plants
- Non selective
- Formulation
  - Water soluble
  - Not effective on basal bark method
- Contains a surfactant
- Available over the counter



# Imazapyr

- Post & Pre emergent
  - Kills emergent plants and prevents seed germination
- Non-Selective
- An esterified seed oil should be added to increase efficacy
- Not available over the counter
  - Need an Operator Identification Number from County Ag Office





# Triclopyr

- Post emergent
    - Only kills emergent plants
  - Selective (Broadleaf)
- ## Formulations
- Garlon 4
    - An esterified seed oil should be added to increase efficacy
  - Garlon 3A
    - A non-ionic surfactant should be added to increase efficacy
  - Not available over the counter
    - Need an Operator Identification Number from County Ag Office
  - Ortho Brush B Gon



# ***Garlon 4 Ultra***



- Formulated in methylated seed oil
- Increased performance on woody species
- Reduced VOC (emission potential) for regulated states such as California
- Now registered in California