Herbicides

- Restricted vs. Non-restricted
  - Toxicity & risk to water

- Non-selective vs. Selective
  - Selective = 2,4-D Amine/Dicamba
    - Crossbow - brush
  - Non-selective = Glyphosate
    - (Roundup)

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Webster, Wright & Texas County
Timing is everything

Summer Annuals – (usually spring) when the plants are young & actively growing
Cocklebur, Smartweed, Pigweed, Jimsonweed, Lambsquarter, Ragweed

Winter Annuals – (Fall or early spring) when plants young and actively growing
Henbit, Horseweed, Deadnettle, Chickweed, Shepherdspurse

Biennials – Rosette stage (fall or early spring)
Wild Carrot, Thistles, Poison Hemlock, Spotted Knapweed

Perennials – pre-bloom to bloom stage
Curly Dock, Goldenrod, Chicory, Pokeweed, Milkweed
Selecting the Right Herbicide

• IDENTIFY THE WEEDS
  • What stage of growth are they in?
  • Is a mixture of different herbicides needed for broad spectrum control?
• Are legumes present? Planning to overseed?
• Read the herbicide label & follow directions
• Do you have appropriate protective wear?
### Herbicide Price Size Rate per Acre Cost per Acre

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Price</th>
<th>Size</th>
<th>Rate per Acre</th>
<th>Cost per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Amine</td>
<td>44.95</td>
<td>2.5 gal</td>
<td>1-1.5 qts</td>
<td>$8.02</td>
</tr>
<tr>
<td>Dicamba DMA</td>
<td>147.95</td>
<td>2.5 gal</td>
<td>2-4 ounces</td>
<td>$11.38</td>
</tr>
<tr>
<td>Chaparral</td>
<td>149.95</td>
<td>1.25 lbs.</td>
<td>2 oz</td>
<td>$14.99</td>
</tr>
<tr>
<td>Cimarron Max</td>
<td>159.43</td>
<td>10 oz</td>
<td>2 oz</td>
<td>$31.86</td>
</tr>
<tr>
<td>Crossbow</td>
<td>29.95</td>
<td>1 gal</td>
<td>2 qts</td>
<td>$14.97</td>
</tr>
<tr>
<td>GrazonNext HL</td>
<td>204.9</td>
<td>4 gal</td>
<td>2 pts</td>
<td>$12.62</td>
</tr>
<tr>
<td>Grazon P+D</td>
<td>92</td>
<td>2.5 gal</td>
<td>1.5 pts</td>
<td>$6.92</td>
</tr>
<tr>
<td>Milestone</td>
<td>94.95</td>
<td>1 qt</td>
<td>4-7 oz</td>
<td>$11.77</td>
</tr>
<tr>
<td>PastureGard HL</td>
<td>138.03</td>
<td>1 gal</td>
<td>1.5 pts</td>
<td>$25.88</td>
</tr>
<tr>
<td>Remedy Ultra</td>
<td>79.95</td>
<td>1 gal</td>
<td>2 pts</td>
<td>$19.98</td>
</tr>
<tr>
<td>Outrider</td>
<td>364.85</td>
<td>20 oz</td>
<td>1 oz</td>
<td>$18.24</td>
</tr>
<tr>
<td>Pastora</td>
<td>360</td>
<td>20 oz</td>
<td>1 oz</td>
<td>$18</td>
</tr>
<tr>
<td>Panoramic</td>
<td>153</td>
<td>1 gal</td>
<td>2 oz</td>
<td>$19.13</td>
</tr>
</tbody>
</table>

**Surfactant**

Surfactants are compounds that lower the surface tension (or interfacial tension) between two liquids, between a gas and a liquid, or between a liquid and a solid. Surfactants may act as detergents, wetting agents, emulsifiers, foaming agents, and dispersants.
Weeds / Woody plants
How to control them
Sericea Lespedeza

Remedy
Cimarron
PastureGard

• Apply when sericea is 12” or taller
• Or, from bud to flowering

Burning in Sept. and applying a Pre-emergent herbicide the following April. Or spray June – Sept.
Blackberry

(flowering)
Remedy
PastureGard
Surmount

(post flowering)
Cimarron

Best time to spray is late spring
Poison Hemlock

Tordon

Grazon

Best time to spray is when plants are young in the rosette stage.
Cedar

Fire

Chain Saw

Tordon < 4 cedars
Multiflora Rose

Grazon
Tordon
PastureGard
Remedy
(full bloom)
Locust

Grazon

Surmount

For larger trees Pathﬁnder II or cut and treat stump with Tordon RTU
Ironweed

Tordon
Grazon
Surmount
Remedy
PastureGard
Horsenettle

Grazon
Tordon
Milestone
Oak

Remedy
Sumac

2,4-D early
Remedy
Crossbow
Osage Orange

Remedy

Cut stump
And treat with Tordon

Basal bark treatment of
PathfinderII
Broomsedge

Lime Phosphorus Glyphosate through a wiper
Perilla Mint

2,4-D

Grazon

Remedy
Johnson Grass

Glyphosate
Ragweed

2,4-D

Grazon
Spiny Pigweed

2,4-D early

Grazon
Buckbrush

2,4-D early

Grazon
Marijuana

Call Sheriff’s Department
Steps to Applying a Pesticide

1. Calibrating your equipment
2. Calculating pesticide amount
3. Calculating water volume
Step 1: Calibrating your equipment

1. Mark off the area to be used in calibration

   Your calibration area does not have to be the same area that you plan to spray. It just needs to be a known area.

2. Record the time taken to spray the calibration area – only when spraying (using only water). Calculate distance traveled per unit time (speed)

3. Collect in a graduated container and measure the output from the sprayer per unit time (flow rate)
Step 2: Calculating Pesticide Amount

1. Mark your calibration area = 1000 sqft

2. Time to spray the area = 50 s to cover 1000 sqft
   - Distance traveled = 200 ft
   - Speed = 200 ft/50 s = 4 ft/s

3. How much water came out = 0.75 gal
   - Flow rate = 0.75 gal/50 s = 0.015 gal/s

Sprayer application rate = 0.75 gallons per 1000 sqft

OR

(43,560 sqft/acre x 0.75 gal/1000 sqft) gallons/acre
  = 32.67 gallons/acre
Example: calculating Pesticide Amount

1. Determine your area
   - 100 ft x (5 ft x 4) = 2000 sqft
   - 2000 sqft / 43,560 sqft = 0.046 acres
     (treatment area in acres)

2. Pesticide: Malathion 5EC
   - Rate for potato leafhopper on beans:
     2 pints/acre (application rate)

3. How much pesticide for your area?
   - 2 pints/acre x 0.046 acres = 0.092 pints of Malathion 5EC
   - 473 ml/pint x 0.092 pints = 43.4 ml of Malathion 5EC for 2000 sqft (pesticide amount)
Step 3: Calculating Your Water Volume

1. Determine the distance you have to travel to cover your spray area
   - Based on your spray width

2. Determine the time to cover your spray area

3. Calculate your water volume
Example: Calculating your water volume

1. Determine **travel distance**
   - $100 \text{ ft} \times 4 = 400 \text{ ft}$

2. Speed = $4 \text{ ft/s}$ (from calibration)
   - $\frac{400 \text{ ft}}{4 \text{ ft/s}} = 100 \text{ s}$ (travel time)

3. Flow Rate (sprayer output) = 0.015 gallon/s (from calibration)
   - $0.015 \text{ gal/s} \times 100 \text{ s} = 1.5 \text{ gal}$
   - $1.5 \text{ gal} \times 3.785 \text{ L/gal} = 5.7 \text{ L}$ (water volume)

1 gallon = 3.785 L
Pesticide calculation Results

- To treat 2000 ft\(^2\) with Malathion 5EC you need:

  43.4 ml Malathion 5EC in 5.7 L water

If your tank holds 2 L, you would need to re-fill approximately 3 times to cover your area.
Good YouTube video for using calibration cup

https://extension.psu.edu/calibration-how-tos-easy-way-to-sprayer-calibration
Pesticide Calculations

Pints/quarts/gallons per acre

\[
\text{Gallons in tank} \underline{\text{__________}} = \text{acres sprayed per tankfull} \\
\text{Gallons applied per acre}
\]

Acres sprayed per tank \( \times \) Amount formulation per acre = Amount for needed in tank

Your sprayer applies 22 gallons per acre and your tank holds 400 gallons. The labeling rate is 1 ½ quarts per acre. How much pesticide formulation should you add to make a full tank?

Hint: 22 gallons per acre will treat just under 5 acres with 100 gallons, so 400 gallons will treat just under 20 acres. Therefore, your answer should be less than 20 acres \( \times \) 1 ½ quarts per acre, or less than 30 quarts.
Gallons in tank (400) \( \div \) Gallons per acre (22) = Acres sprayed per tankful

\[ 400 \div 22 = 18.2 \text{ acres sprayed per tankful} \]

Acres per tankful (18.2) \( \times \) Amount of form per acre (1.5 quarts) = amount needed in tank (27.3 qts)

\[ 18.2 \times 1.5 = 27.3 \text{ quarts (27 quarts plus 9.6 ounces) per acre} \]

(1 qt = 32 oz., therefore, 32 oz. \( \times \) .3 = 9.6 oz.)
Remove the weeds from the garden of your life which stops you from bearing good and happy fruits...!

− Experience Speaks