Maximizing Your Weed Control Program

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What is a weed?
What is a weed?

- A plant out of place
  - Canada Thistle / Quackgrass
  - Corn in Soybeans
  - Creeping red fescue in the row
  - English Ivy in a lawn
  - Tall fescue in a Kentucky bluegrass lawn
  - Goldenrod - Garden to field
  - Purple loosestrife - Garden to noxious weed
  - Norway and Japanese maples – ornamental trees to invasive plants in natural areas
WHY MUST WE CONTROL WEEDS?
• Competition for water, nutrients, light
• Reduced survival, growth, quality
• Interfere with pesticide applications

• Allelopathy – natural growth inhibitors
• Increase risk of mower blight
• Increase risk of rodent damage
• Risk to humans – poison ivy, stepping into holes, snake encounters
• Aesthetics
Classification

Botanical vs. Life Cycle
Botanical

Cotyledon - Seed Leaf

Monocot – Grasses

Sedges – Grass-like with triangular stems

Dicot – Broadleaf
Monocot

- Monocot - Single seed leaf
- All grasses are monocots
- Not all monocots are grasses
- Sedges - distinct group
- Asiatic Dayflower is a monocot that looks like a dicot
Sedges

- 3 sided, triangular stems
- Leaves yellow to green, distinct midvein ridge
- No ligule or auricles
- Leaves in groups of 3
- SEDGES HAVE EDGES
Dicot

- Dicot - Two seed leaves
- Broadleaved weeds
Lifecycle

Annual
  Summer, Winter, Both
Perennial
  Herbaceous, Woody
Biennial
Annual

Summer

Winter
Perennial
Herbaceous
Woody
Biennial Growth Cycle

Seed
Death
Flower
Vegetative Growth 1
Dormancy
Vegetative Growth 2
What makes some weeds worse than others?

Annual vs Perennial

Annuals are easier to control with preemergence herbicides, which tend to be more selective.
Types of Root Systems

Grasses - dense and fibrous

Dicots – taprooted, fibrous, wide spreading

Rhizomes, Stolons, and Nutlets

  High energy reserves

Spread by cultivation and with soil (B&B)

Grow through preemergence herbicides
Seed Dispersal Mechanism

- Dandelion – windborne
- Bittercress – explosive
- Tumble pigweed
- Boxelder maple
- Poison ivy / Autumn olive – animal/bird
Significance

- Understand and classify risk of spread
- Establish management strategy
- Choose appropriate control methods
- Target vulnerable life stages
The Challenges

- The level of control needed
- The length of control needed
- Calibration of equipment
A weed control program has 3 parts

- Eliminate existing weeds prior to planting or prior to the next growing season*
  - Annuals and Perennials
  - Perennials = underground storage structures

- Prevent weed growth in and around growing area
  - preemergence herbicides

- Eliminate weeds as they appear
  - No prevention is perfect
  - Hand weeding, careful spot treatment with postemergence herbicides
Methods of Controlling Pests

- Mechanical
- Cultural
- Chemical
- Biological
Methods of Controlling Weeds in Christmas Trees
Methods of Controlling Weeds in Christmas Trees

- Hand-pulling
- Mowing
- Competition
- Herbicides
- Combination
  - Keep rows weed free with herbicides; mow alleys
Classifying the Herbicides

• Postemergence
  • Contact Vs Translocated
  • Selective Vs Nonselective
  • Residual / Nonresidual

• Preemergence
  • Selective
  • Residual
Factors Affecting Postemergence Herbicides Performance

- Rate of absorption/rainfall
- Time of application.stage of weed growth
- Weed leaf area
- Annual vs. Perennial
- Volume of application
Postemergence Nonselective

- **Contact**
  - Finale – Glufosinate
  - Reward – Diquat
  - Scythe – Pelargonic Acid
  - Octane 2 - Pyraflufen-ethyl

- **Translocated**
  - Roundup Pro / Rodeo - Glyphosate
  - Touchdown - Sulfosate
Octane 2

- Non-selective contact herbicide disrupts cell membranes
- Carry over from the cotton industry
- 1-4 fl oz/ A
- Do not make more than 3 apps per year or apply >13.6 fl oz
Comments on Roundup and Touchdown

- Do not use them in galvanized tanks
- Dirty water neutralizes them
- Do not get them on green bark
- They are water soluble, so they are easy to mix and clean out of tanks
Selective Control Grasses Only

- Fusilade II (16 oz/A)
  - Add NIS
- Segment (32 oz/A)
  - contains a surfactant
- Envoy (17 oz/A)
  - Add crop oil concentrate
Control Broadleaved Weeds Only

- 2,4-D
- Stinger, Lontrel
- Garlon 3A & 4E
  - Turflon is Garlon + 2,4-D
  - Confront is Garlon + Lontrel
  - Broadleaved weeds & brush
  - Foliar/Bark absorbed; Translocated
  - Non-residual
- XXX Dicamba XXX
Control Nutsedge

Basagran T&O

- Controls nutsedge and some broadleaved weeds
- Add a crop oil concentrate
- Mostly absorbed thru leaves, little translocation
- Can burn foliage, especially conifers
- 1.5-2 pt/A
Sedgehammer/Prosedge

- Controls nutsedge and equisetum
- Use a nonionic surfactant
- Used at very low rates (about 1 oz/A)
Proper Use of Translocated Herbicides

- Apply when weeds are at the proper stage of growth
- Apply when weeds are actively growing
- Avoid tillage and mowing just prior to application
- Delay tillage or mowing
- Assure the spray contacts all of the weeds.
- Avoid application just prior to rainfall
Preventing Weed Growth With Preemergence Herbicides

Use a Combination of Products
Factors Affecting Preemergence Herbicide Performance

- Soil texture (sand/clay) & pH
- Rainfall
- Light/temperature sensitivity
- Length of residual activity
- Formulation
- Incorporation/cultivation
- Postemergence activity
- Time of application with respect to weed germination
- Weeds to be controlled
  - broadleaves vs. grasses
  - Annuals vs. perennials
No One Preemergence Herbicide Controls All Weeds
Best on Broadleaved Weeds

Atrazine
Simazine
Gallery
Goal
Ronstar
Sureguard
Hazards of Long Term Use

- Atrazine, Simazine, and Velpar are all ‘Triazine’ herbicides.
- Many Triazine-resistant weeds have developed
TUMBLE PIGWEED

REDROOT PIGWEED

LAMBSQUARTER

PA. SMARTWEED

MARESTAIL / HORSEWEED

REDROOT PIGWEED
Gallery

- Best on broadleaved weeds
- Moa unknown, kills prior to emergence
- Low solubility
- Temp. & Photo stable
Goal and Ronstar

- Kill by contact
- Very low solubility
- Temp. & Photo stable
- Need light to be active
- Adsorbed by organic matter
Sureguard

- MOA similar to Goal
- Good on broadleaves and grasses
- Controls triazine-resistant weeds
- Provides long-term control
Apply Sureguard before budbreak to avoid foliage burn

Sureguard at 4-8 ounces per acre + Pendulum at 1-2 qts per acre
Best On Grasses

Surflan
Pendulum
Barricade
Pennant
Devrinol
Kerb
Dinitroanilines (DNA’s)

- Surflan (X = Surflan + Balan)
- Pendulum
- Barricade
- Treflan
• Kill seeds as they germ.
• Inhibit root growth
• Low solubility
• Adsorbed by organic matter
• Very limited foliar absorp.
• Temp. & Photo stable
  • except for Treflan
The Following are Not Dna’s

Devrinol (napropamide)

- root absorbed  moa unknown
- moderate solubility
- sensitive to photo-decomp.
- decomposes >45°
Pennant (metolachlor)

- Best on grasses + nutsedge
- General growth inhibitor
- Absorbed by shoots of germinating weeds
- High solubility
- Adsorbed by organic matter
- Sensitive to temp. & Photo. Decomposition
Kerb (pronamide)

- Inhibits cell division
- Controls some perennial weeds
- Root absorbed and translocated
- Adsorbed by organic matter
- Low-medium solubility
- Sensitive to temp. & Photo decomposition
Special Use Herbicides

Oust + Velpar = Westar

6-12 oz/A
Lower rates for younger plantations
Prior to bud break
Add 0.25% NIS for some postemergence control
Westar Precautions!!

- Application equipment must be very carefully calibrated.
- Read the label carefully to determine the proper rate to apply.
- Make sure you have a scale that can accurately measure the amount needed.
- Do not apply the highest label rate two years in a row.
Tower (dimethenamid-p)

High leaching potential

Labeling prohibits application to sand-textured soil with less than 3% organic matter where depth to ground water is 30 feet or less.

Emerging grasses absorb the material through the roots

Emerging broadleaves absorb the material through the shoots

Apply 21-32 fl oz /A

Labeled for new plantings
Marengo (indaziflam).

Inhibits cellulose production in seedlings.

Apply 7.5-15.5 fl oz/A

Do not use in new plantings

Apply as a directed spray

Do not allow contact with the foliage

Wait 2 months after transplanting
General Recommendations

Site preparation

Prior to planting

Late summer or early fall

Roundup Pro (2-4 qts / a) + Garlon

or Dicamba *if needed*

Establish a cover crop

Seed hard fescue at 20 lbs/a *late*
The Year of Planting

Aatrex (1.5 qt) or
Princep (1.5 qt) or
Gallery (11 oz) plus
Goal (1 qt) plus
Surflan (2 qt) or
Pendulum (3.6 qt) or
Barricade (2.3 lb) or
Pennant (1.3 -2.6 pt) or
Devrinol (6 lb)
The Year of Planting

Tower (21-32 fl oz) plus
Princep (1.5 qt)  or
Gallery (11 oz)  or
Pendulum (3.6 qt)
After Budbreak

Princep (2 qt)  or
Gallery (11 oz)  plus
Pendulum (3.6 qt)  or
Surflan (2 qt)  or
Barricade (2.3 lb)
Later Years Early Spring

Princep (2.5 - 3.0 qt) or
Aatrex* (2.5 - 3.0 qt) or
Goal* (1-1.5 qt) or
Gallery (11 oz)

Plus

Surflan (2 qt) or
Pendulum (3.6 qt) or
Barricade (2.3 lb) or
Pennant (1.3 -2.6 pt) or
Devrinol (6 lb)

*BEFORE BUDBREAK
SUREGUARD

Sureguard (8-12 oz) plus
Surflan (2 qt) or
Pendulum (3.6 qt) or
Barricade (2.3 lb) or
Pennant (1.3 -2.6 pt) or
Devrinol (6 lb)
Westar

Westar 6 - 12 oz/A

Plus

Surfactant 0.25% v/v
Marengo

7.5-15 fl oz/A
Early Fall - after buds set and needles mature

Glyphosate (1.5-3 pt) plus Princep (1 qt) or Gallery (11 oz) plus ???

Garlon (0.75)
Sureguard

Roundup at 1-1.5 qts per acre  +  Sureguard at 4-8 ounces per acre
Eliminating Escapes
During the Growing Season

- Glyphosate at low rates 4-8 ounces per acre
- Stinger / Lontrel at 4-8 oz per acre
- Goal at 1 pt to 1 qt per acre
  - Add surfactant after trees are hardened
- Stinger / Lontrel + Goal
Eliminating Escapes During the Growing Season

Grasses
  Fusilade
  Segment
  Envoy
Eliminating Escapes With a Fall Application

- Glyphosate and/or Garlon, plus a preemergence broadleaf herbicide
Any Questions??

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