







Weed Control in the Landscape

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Learning objectives

- Definition of 'weed'
- Growth characteristics of weeds - growth habit and reproduction
- Basic techniques for weed identification and basic weed control methods
- Pre-emergent and post-emergent & selective and non-selective herbicides

- Most effective use of herbicides & herbicide application methods and equipment
- Commonly used herbicides and their classification and nomenclature
- Herbicide application methods and equipment
- Weed control for vegetable gardens, orchards, turf and landscapes

Attractive, Functional Landscape





What is a Weed?

- Plant out of place
- Plants causing economic loss
- Non-native plant (Privet, *Ligustrum* spp.)
- Plants whose virtues have not been discovered



Chinese Privet
(*Ligustrum sinense*)



Kudza
(*Pueraria lobata*)

Why Control?

- Plant competition
- Prevent economic loss
- Hosts for insects and diseases
- Maintain landscape beauty

Reason Weeds Survive

- Hard seed coat, deep burial, germination inhibitors, prolific seed production
- Persistent vegetative structures: Bulbs, tubers, rhizomes, stolons, and corms.



Common Weeds

Weed Life Cycles

Annual: Completes growth cycle in a single growing season (crabgrass).

Perennial: A plant that can persist more than two years, and reproduce through roots or seeds (clover).

Biennial: A plant that normally requires two growing seasons to complete its life cycle, flowering and fruiting in its second year (wild carrot).

Seed Germination Factors

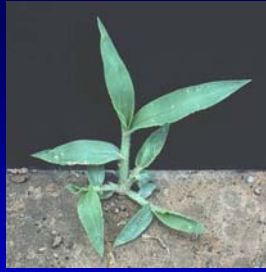
- Oxygen
- Light
- Scarification (physical removal of the seed coat)
- Temperature
- Water

Weed Seed Production

	<u>Seed / Plant</u>
Pigweed	>200,000
Lambsquarters	>30,000
Crabgrass	53,000
Annual Bluegrass	2,000

Weeds can be a
problem 12 months
a year!

Summer annual
grasses



Southern crabgrass



Smooth crabgrass



Goosegrass



Winter annuals



**Boat shaped
leaf tip**

Annual bluegrass



Common chickweed



Henbit



Hairy bittercress

**Summer annual
broadleaf weeds**



Prostrate spurge

Milky sap

**Perennial broadleaf
weeds**



Dandelion



Wild violet



**Pennywort or
Dollarweed**



Perennial grassy weeds



Wild garlic bulbs and bulblets



Purple and Yellow Nutsedge



Leaf tips differ



Yellow nutsedge flower



Purple nutsedge flower



Purple nutsedge rhizome tuber system



Dallisgrass



Control vs. Eradication

Control - Process of limiting a weed infestation to a desirable level.

Eradication - Elimination of all plants and plant parts.

Weed Management Strategy

- Identify weed, life cycle, habitat
- Integrated Pest Management
 1. Preventive
 2. Physical
 3. Cultural
 4. Biological
 5. Chemical

Preventive Methods

- Weed-free seed and plant material
- Screened and sterilized topsoil and soil amendments
- Keep equipment clean

Physical Removal and Barriers

- Hoeing and hand removal
- Mowing
- Cultivation
- Mulches and landscape fabrics

Hand Pulling and Hoeing

- Good control method for small weeds
- Generally easier to control annuals

Mowing

- Useful in turf and pastures
- Mowing reduces seed production of weeds if done before flowering.

Cultivation

Advantages: Controls most weeds quickly and easily

Disadvantages: Can be expensive, delayed by weather, and may prune crop roots



Repeat cultivation to control each flush of weeds.

Mulches and Landscape Fabrics

- Fabrics type affects the degree of weed suppression.
- Straw, wood chips, pine straw, newsprint, and other organic materials prevent the emergence of weeds and enhance the organic matter content.

Cultural Methods

- Adapted plants
- Fertility and pH
- Water management
- Insect and disease control

Biological Methods

Living organisms for weed control

- Insect (thistle weevil)
- Grazing animals (Geese)
- Fish (Grass carp)

Chemical Methods

Herbicide - chemical that is used to control, suppress or kill weeds.

Herbicide Classification

Preemergence: Applied before weed seed germination (trifluralin). Generally no control of emerged weeds.

Postemergence: Applied after weed emergence. Generally no control of unemerged weeds.

Herbicide Classification

Contact: Causes localized plant tissue injury. Does not readily move through the plant (glufosinate)

Systemic: Readily moves through the plant tissue (glyphosate)

Herbicide Classification

Selective: Kills some plant species, but does not damage others (2,4-D)

Nonselective: Generally kills all plant species (glyphosate)

Preemergence Herbicide Application Dates

Fall - Sept 1 – Oct 1, N.GA

- Oct 1 – Nov 1, S.GA

Spring - Mar 1 – Apr 1, N.GA

- Feb 15 - Mar 15, S.GA

Advantages Postemergence Herbicides

- Flexible application time
- Spot treatment
- Small containers
- Fits well into IPM programs

Postemergence Herbicide Precautions

- Avoid windy days (spray drift)
- Do not apply dicamba mixtures over the root zone of ornamental trees and shrubs
- Read the label

Before You Use Herbicide

1. Identify weed.
2. Read and UNDERSTAND label .
3. Follow directions carefully.
4. Use only recommended amount!
5. Maintain and calibrate equipment.
6. Do not use on desirable plants not listed on label.

Turfgrass Herbicides

Preemergent Turfgrass Herbicides

- Annual grass control in all turfgrasses
 - Balan (benefin)
 - Surflan (oryzalin)
 - XL (benefin + oryzalin)
 - Team Pro (benefin + trifluralin)
 - Halts (pendimethalin)
 - Dimension (dithiopyr)

Postemergent Turfgrass Herbicides

2,4-D Mixtures

- Does not control weedy grasses
- Good - dandelion, plantains, wild garlic
- Poor to fair – common chickweed, henbit
- Use on all turfgrasses except St. Augustine
- Example = Weed-B-Gon

MSMA DSMA CMA

- Postemergence control of weedy grasses
- Use in tall fescue, zoysia, bermuda
- Initially discolor tolerant turfgrass species
- Avoid application above 90° F
- Do not use on centipede and St. Augustine
- Example = Ortho Crabgrass Killer Formula II

Sethoxydim

- Controls crabgrass, goosegrass, and sandbur
- Suppresses bahiagrass
- Use only on centipedegrass
- Example = Vantage

Atrazine

- Can be used on: Centipede, St. Augustine, Zoysia
- Dormant bermudagrass
- Cool-season grasses and bahiagrass are not tolerant
- Comes in both sprayable and granular formulations
- Depending on the weed, atrazine has both pre and post emergence activity

Turfgrass Fertilizer/Herbicide Combinations

- Fertilizers can be combined with either pre- or postemergence herbicides.
- Created so you don't have to make separate applications of fertilizers and herbicides.
- Products available from many manufactures selling nearly identical products.

Herbicides for use in Ornamentals

Preemergent Herbicides

- Surflan (oryzalin)
- Treflan (trifluralin)
- Snapshot (trifluralin and isoxaben)
- XL (benefin and oryzalin)
- Casoron (dichlobenil)

Postemergent Herbicides

- Vantage (sethoxydim)
- Grass-B-Gon (fluazifop-P)
- Roundup (glyphosate)
- Finale (glufosinate)
- Sharpshooter (Potassium salts of fatty acids)

Equipment

Hand pump sprayer



Handheld rotary spreader

Equipment



Drop spreader



Broadcast spreader

Calibration

Hand held granular spreaders:

- Know the size of the area to be treated
- Weight out granular herbicide needed for that area
- Uniformly apply the pre-weighted granular herbicide to the designated area



Calibration

Push type drop and broadcast spreaders:

- Many companies sell spreaders to go along with their granular herbicides (i.e. Scott's, Lesco, etc.).
- Their granular herbicide products will have the appropriate spreader setting listed on the bag.



Calibration and Application

Pump type sprayers:

- Measure the area to be treated.
- Using the herbicide label, determine the amount of herbicide needed.
- Measure out herbicide.
- Mix water and herbicide concentrate.
- Pressurize sprayer, and uniformly apply herbicide solution to the are.



Hand pump
sprayer

Weed management program

1. Diagnose problem
2. Evaluate methods
3. Select method
4. Initiate program

Always read and follow the herbicide label!

Questions?

Turfgrass Web Page

- www.georgiaturf.com or .org
- Photographs of major weeds
- Control recommendations
- Popular articles, fact sheets
- Links to pertinent sites



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