

# Weed Identification and Management

Advanced Master Gardener Training



## Weed = A Plant Out of Place

- Tolerate wide range of conditions
- Good competitors
- Some with allelopathic properties
- Large number of seeds
  - Long viability
  - Effective distribution
- May invade through runners, stolons
- Grow low; tolerate mowing

## Weed Identification: First Step in Managing

- Life cycle
  - Grassy vs. broadleaf
  - Annual, biennial or perennial
  - Summer annual vs. winter annual
- Seed and/or vegetative reproduction
- Environmental requirements / preferences
  - Wet or dry?
  - Sun or shade?

## Grassy vs. Broadleaf Weeds



Crabgrass

White Clover

MONOCOT

DICOT

## Grasses

Grasses have knees

- Round or flat stems
- Leaves emerge from 2 points
- Hairs or membrane at collar region

## Sedges

Sedges have edges

- Triangular stems
- Leaves emerge from 3 points

VT Weed Identification Guide



## Grasses

Round stems



## Sedges



Triangular stems



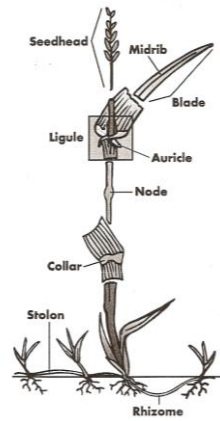
## Purple and Yellow Nutsedge



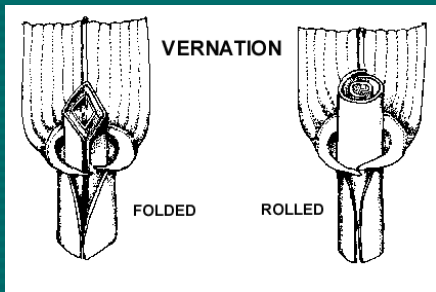
- Purple vs. yellow seedheads
- Yellow has lighter green leaves that taper gradually
- Purple has leaves that taper abruptly



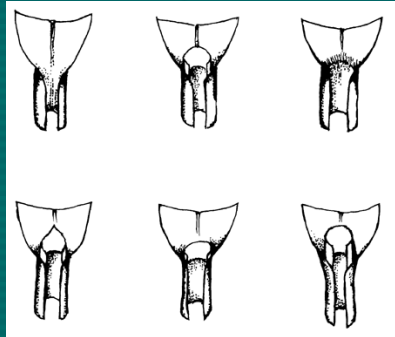
## Grass Anatomy



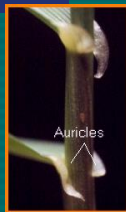
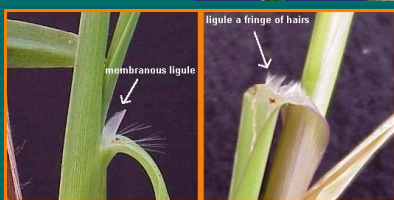
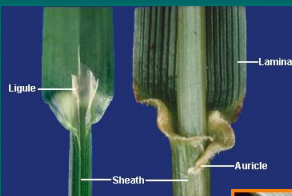
## Leaves Rolled or Folded



## Ligules

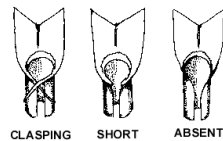


## Grass Anatomy

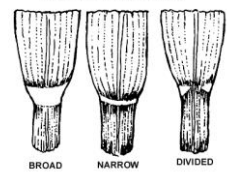


## Auricles and Collars

### AURICLE CONFIGURATION



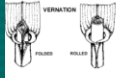
### LEAF BLADE COLLARS



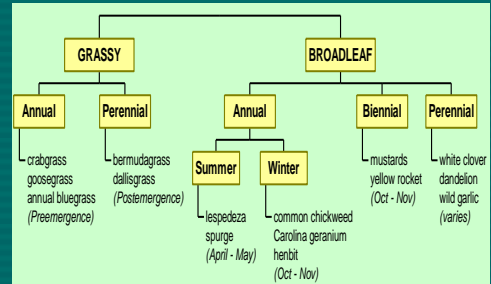
# Identification Key

## Vegetative Identification Key for Turfgrasses and Grassy Weeds

- A. Leaf vernation folded
- B. Small, claw-like usually auricles present; ligule a very short membrane; blades dull above, with distinct ribbing/veination, glossy-shiny below; base of sheath glossy, usually reddish/purple in color. Bunch grass. **Perennial ryegrass (*Lolium perenne*)**
- BB. Auricles absent
- C. Creeping stolons present
- D. Ligule a fringe of hairs; leaf blades 1.5-3 mm wide, with a sharply-pointed leaf tip; scaly rhizomes and flat stolons present. Vernation may appear to be "rolled". **Bermudagrass (*Cynodon dactylon*)**
- DD. Ligule tall, white membrane
- E. Leaf blades usually light, apple-green color, parallel-sided, leaf blade may have a wrinkled band; may spread (perennial biotypes) by weak to strong stolons, while annual biotypes display distinct bunch-type growth. Flowers often present. **Annual bluegrass (*Poa annua*)**
- EE. Ligule a tall membrane; narrow blades light yellow-green, rough, glossy, with a pointed leaf tip; thin stolons present. **Rough bluegrass (*Poa trivialis*)**



# Types of Weeds



# Grassy Weeds

## Annuals

# Crabgrass



- Summer annual grass
- Two species: large crabgrass (hairy) and smooth crabgrass
- Spreading clumps with wide, blue-green leaves
- Tall, membranous ligule
- Broad collars with hairs

# Goosegrass



- Summer annual
- Stems are flattened, whitish green at base
- Zipper-like seed heads

# Annual Bluegrass (*Poa annua*)



- Light-green blades with boat-shaped tips
- Leaves folded in the bud
- Whitish seedheads on short stalks
- Winter annual

## Annual Ryegrass



- Broad leaf blades
- Large clasping auricles
- Reddish leaf bases
- Rolled in the bud



## Grassy Weeds

Perennials

## Common Bermudagrass (Wiregrass)



- Spreading warm-season grass
- Leaves are folded in the bud



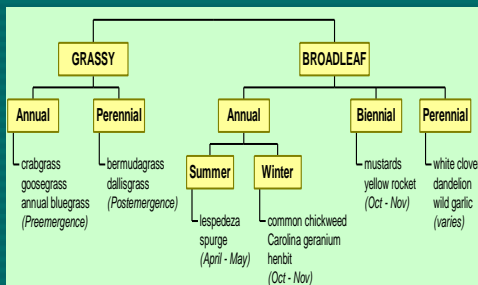
## Nimblewill



- Easily confused with common bermuda
- Leaves are rolled in the bud
- Ligules are short and jagged
- Finer bladed than bermuda



## Types of Weeds



## Broadleaf Weeds

Winter Annuals

## Common Chickweed



- Leaves opposite
- Broad, oval, pointed, smooth leaves
- White, star-shaped flowers

Mouse-ear Chickweed  
perennial with hairy  
leaves



## Henbit



- Square stems
- Upper leaves sessile, lower leaves petioled
- Pink to purple flowers
- Moist, fertile soils



## Henbit



- Winter annual
- Treat in October and November
- Most broadleaf products are effective



## Purple Deadnettle



- Winter annual
- Treat in October and November
- Most broadleaf products are effective

## Hairy Bittercress



- Winter Annual or Biennial
- Treat in October and November
- Most broadleaf products are effective

## Broadleaf Weeds

Summer Annuals



## Speedwells



- SA, WA or P
- Oval-shaped, hairy leaves
- Leaf arrangement varies
- Light blue flowers
- Shade tolerant



## Common Lespedeza



- Summer Annual
- Treat in April & May
- Most broadleaf products effective

## Spotted Spurge

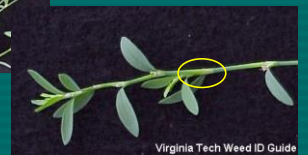


- Summer Annual
- Treat in April & May
- Most broadleaf products effective

## Prostrate Knotweed



- Forms mats
- Stems with swollen joints and papery sheaths
- Grows in compacted soils



## Broadleaf Weeds

Perennials

## Broadleaf Plantain



- Low-growing rosette of large, rounded leaves
- Inconspicuous flowers
- Prefers moist, shady areas



## Buckhorn Plantain



- Basal rosette of long, narrow leaves
- "Foftail" like terminal flower cluster
- Prefers full sun



## Dandelion



- Prostrate basal rosette
- Long, narrow, deeply-notched leaves
- Bright yellow flowers
- Puffball seed head



- Thick fleshy taproot up to 2 feet long.
- Reproduces by wind-blown seed and broken taproot segments.
- Leaves and flower stalks exude a "milky" juice

## Ground Ivy



- Creeping growth habit
- Small, opposite, heart-shaped leaves with rounded tooth edges
- Mint family – square stems, creeping, root at nodes
- Bluish-purple flowers, funnel shaped
- Found in rich, damp, shady areas where drainage is poor



## Wild Violet



- Heart-shaped leaves
- Scalloped margins
- Blue, blue-violet, purple flowers
- Shady locations



## White Clover



- Three dark green leaflets
- White flower cluster
- White crescent markings on leaflets
- Black medic has wedge-shaped leaves, yellow flowers



## Yellow Woodsorrel



- Three, pale green, heart-shaped leaflets
- Small yellow flowers with 5 petals
- Very shade tolerant. Can move in from woodland edges.



## Mouse-ear Chickweed

- Oblong, dull green hairy leaves
- Small, opposite leaves
- Prostrate creeping stems that root at the nodes forming a shallow mat.
- Small white flowers, May – October



## Mouse-ear Chickweed

- Oblong, dull green hairy leaves
- Small, opposite leaves
- Prostrate creeping stems that root at the nodes forming a shallow mat.
- Small white flowers, May – October
- Spreads by seeds and stolons

## Virginia Buttonweed



- Perennial
- Treat in May and repeat
- Very difficult to control



## Wild Garlic



- Perennial
- Treat October thru November & February thru March
- 2,4-D + Dicamba most effective (S-I)



## Weed Identification Assistance

### Internet

[www.turfweeds.net](http://www.turfweeds.net)  
[www.ppws.vt.edu/weedindex.htm](http://www.ppws.vt.edu/weedindex.htm)

### Publications

Weeds of Arkansas

### Local Extension Office

[www.ext.vt.edu](http://www.ext.vt.edu)



## Weed Management For Home Lawns



An Integrated Approach



## Before Using a Herbicide

- Establish a threshold
  - How many weeds can you tolerate?
- Consider chemical alternatives
  - Is it possible to hand pull weeds?
- Correct cultural practices
  - Thick, healthy lawns resist weeds
  - Fertility and mowing height
- Identify the weed

## SMART Lawn Practices

- Maintain soil pH between 6.2 to 6.5
- Apply crabgrass preventer in early spring
  - No fertilizer!
- Mow at the proper height
  - 3 inches for tall fescue
- Treat broadleaf weeds in the spring
- Aerate in the fall
- Fertilize in the fall
- Treat broadleaf weeds in the fall
  - Weed and feed formulations okay

## Mowing Height and Weeds

Height	# Broadleaf Weeds per 100 sq. ft.
1 inch	42.3
2 inch	2.5
3 inch	0.2

## If Herbicides are Necessary

- Identify the weed
  - Grassy vs. Broadleaf
  - Annual vs. perennial
  - Summer annual vs. winter annual
- Determine best time to treat
- Determine most effective product

## VA Pest Management Guide

### Home Grounds and Animals

[www.pubs.ext.vt.edu/456/456-018](http://www.pubs.ext.vt.edu/456/456-018)

## Organic Weed Control Marketed for Home Lawns

Active Ingredient	Products	Uses
Clove Oil	EcoSmart, Bioorganic Weed & Grass Killer; Burnout 2	Nonselective, seedling weed control
Acetic acid (vinegar)	Weed/Grass Killer, Natural Weed Control, Erath Earth, Maestro-Gro Blackjack 21, Burnout Weed & Grass Killer	Nonselective, seedling weed control
Ammoniated soap of fatty acid	Garden Safe Weed & Grass	Nonselective, seedling weed control

## Organic Weed Control Marketed for Home Lawns

Active Ingredient	Products	Uses
Cinnamon Bark	AgraLawn Crabgrass Killer, Garden Weasel	Crabgrass control in warm-season lawns
Cinnamon oil, rosemary oil	Organic Weed Killer	Nonselective, seedling weed control
Citrus oil (d-limonene)	Nature's Avenger, Worry Free Weed & Grass Killer	Nonselective, seedling weed control
Citric acid	Burnout 2, Natural Weed Control	Nonselective, seedling weed control

## Organic Weed Control Marketed for Home Lawns

Active Ingredient	Products	Uses
Thyme oil	Biorganic Weed & Grass Killer	Nonselective, seedling weed control
Ethanoic acid	Burnout Weed & Grass Killer	Nonselective, seedling weed control
Corn gluten (Alaniny-alanine)	Amazingly Green, Corn Weed Blocker, Espoma Green, Weed Man, WOW!, NaturO, Jonathan Green Organic Weed Control, Safe-T-Weed, Garn'n-Wise Organics, Dynaweed, Concern Weed Prevention Plus	Selective, seedling weed control

## Organic Lawn Weed Control

- As most severely injure desirable turf, must be used for spot treatment of seedling weeds.
- Turf in treated area quickly turns brown, but recovers in one to two weeks - as do mature weeds.
- Useful for gardens and ornamental beds; limited for lawns.
- Corn gluten meal is the only selective herbicide that exists for home lawns.

## Integrated Pest Management rarely means '100% pest control'

- Beauty is in the eye of the beholder??
- How much pest pressure can you tolerate before treating? Is preventive vs. curative 'better'?
- Alternatives to standard chemical treatments?



## VA PMG Lawn Weed Control

Table 5.8 Broadleaf Weed Control in Bluegrass, Tall Fescue, Perennial Ryegrass, and Common Bermudagrass.

Weed	Classification	Response to Herbicides							Preferred Time to Treat
		2,4-D + dicamba	2,4-D + MCP	2,4-D + Dicamba + MCP	2,4-D + Dicamba + Trifluralin	2,4-D + Dicamba + Penoxsulam			
Bedstraw	VA	S	I	R-I	S	I-S		Spring	
Bindweed - Field	P	S	I-S	S	S	S		Spring	
Hedge	P	S	I-S	S	S	S		Spring	
Bittercress	WA	S	S	S	S	S		Fall	
Chickweed - Common	WA	S	S	S	S	S		Spring & Fall	
Mouseear	WA & P	S	I-S	S	S	S		Spring & Fall	
Carrot - wild	P	S	S	S	S	S		Fall	
Cats ear/Dandelion	P	S	S	S	S	S		Fall	
Chickweed - Common	WA	S	S	S	S	S		Spring & Fall	
Mouseear	WA & P	S	I-S	S	S	S		Spring & Fall	
Chicory	P	S	S	S	S	S		Fall	

[www.pubsext.vt.edu/456/456-018](http://www.pubsext.vt.edu/456/456-018)

## Summer Annual



**Crabgrass**  
Treat in March

## Winter Annual



**Annual Bluegrass (Poa annua)**  
Treat in August

## Pre-emergent Chemicals for Crabgrass Control

- Benfen (Balan)
- Bensulide (Betasan)
- Bensulide + Oxadiazon
- DCPA (Dacthal)
- **Dithiopyr (Dimension)**
- Ethofumesate (Prograss)
- Oryzalin
- Oxadiazon (Ronstar)
- Pendimethalin
- Proflaminate (Barricade)
- Siduron (Tupersan)
- Benfen + Oryzalin (XL Herbicide)
- **Benfen + Triluralin (Team)**

## Pre-emergent Chemicals for Crabgrass Control

### Siduron (Tupersan)

- only product that can be used when seeding new turfgrass

### Summer Annual



Common Lespedeza  
Apr & May

### Winter Annual



Common Chickweed  
Oct & Nov

## VA PMG Lawn Weed Control

Table 5.8 Broadleaf Weed Control in Bluegrasses, Tall Fescue, Perennial Ryegrass, and Common...

Weed	Response to Herbicides					Time to Treat
	2,4-D + Dicamba	2,4-D + MCPP	2,4-D + Dicamba + MCPP	2,4-D + Dicamba + Triclopyr	2,4-D + Dicamba + Penoxsulam	
Bedstraw						
Bindweed - I						
Trifolium						
Bitterroot	S	I	R-I	S	I-S	
Black Medic						all
Buttercup	S	I-S	S	S	S	all
Butterweed	S	I-S	S	S	S	quarterly
Carpetweed	S	S	S	S	S	
Carrot - Wild	S	S	S	S	S	
Cats ear Dandelion	P	S	S	S	S	Fall
Chickweed - Common	WA	S	S	S	S	Spring & Fall
Mouseear	Wk & P	S	I-S	S	S	Spring & Fall
Chicory	P	S	S	S	S	Fall

[www.pubsext.vt.edu/456/456-018](http://www.pubsext.vt.edu/456/456-018)

## Broadleaf Weed Controls

- 2,4-D + Dicamba
- 2,4-D + MCPP (Mecoprop)
- 2,4-D + Dicamba + MCPP
- 2,4-D + Dicamba + Triclopyr
- 2,4-D + Dicamba + Penoxsulam
- Observe preferred time to treat

## Broadleaf Weed Control for Homeowners

- Most broadleaf weed problems
  - Combinations of 2,4-D, MCPP, MCPA, dicamba
- Harder to control weeds
  - triclopyr and/or carfentrazone
- Lots of weeds or perennial grasses
  - glyphosate (non-selective)

## Broadleaf Weed Control

Read the Label



MCPA +  
triclopyr +  
dicamba



triclopyr



MCPA +  
triclopyr +  
dicamba

## Broadleaf Weed Control

Read the Label



2,4-D +  
MCPP +  
dicamba



MCPA +  
MCPP +  
dicamba +  
carfentrazone



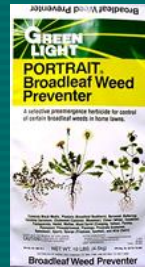
carfentrazone+  
2,4-D + MCPP +  
dicamba

## A Simple Weed Management Plan

- **Mid-March**
  - Apply a crabgrass preventer
  - Do not use product with fertilizer!
  - Repeat for season-long control
- **April and May**
  - Broadleaf weed killer for summer weeds
- **October and November**
  - Broadleaf weed killer for winter weeds
  - Consider weed and feed formulations

## Broadleaf Weed Control

Preemergent



- Contains Gallery® herbicide
- Apply early spring for white clover, spotted spurge, yellow woodsorrel, prostrate knotweed
- Apply late summer for common chickweed, henbit, dandelion, corn speedwell, shepherds-purse, plaintains

## Special Cases

### Managing Wiregrass (Common Bermudagrass)



Very Difficult!

Glyphosate  
Ornamec®  
Turflon Ester®





## Managing Wiregrass (Common Bermudagrass)

- Glyphosate (common name)
  - Various brand names
  - Example is Roundup®
- Ornamec®
  - Fluazifop is active ingredient
  - Rate is critical (can damage turf)
- Turflon Ester®
  - Triclopyr is active ingredient
  - Will not damage turf

## Yellow Nutsedge



- A sedge, not a grass
- Treat in late spring to early summer
- Sedgehammer® is very effective (formerly known as Manage®)

## Post-emergent Crabgrass Controls

- Fenoxaprop
- Fluazifop
- Quinclorac + 2,4-D + Dicamba + Sulfentrazone
- Quinclorac + 2,4-D + Dicamba
- Sethoxydim



## Annual Bluegrass (Poa annua)



- Apply a crabgrass preventer, but in August
- Not all crabgrass preventers are effective
- Do not apply if seeding turfgrass
- Will prevent grass seed for germinating

## Moss and Algae



- Shade conditions
- Restricted air movement
- Poor drainage
- Chemical controls are short term

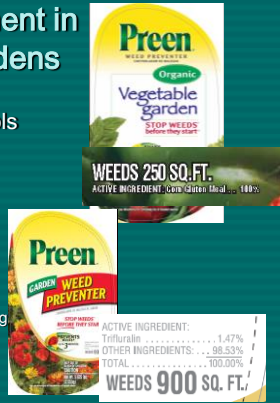
## Weed Management in Vegetable Gardens

- General Cultural Controls
  - Winter Cover Crop
  - Cultivation / Hoeing / Hand Weeding
  - Mulches
- General Biological Controls
  - None recommended



## Weed Management in Vegetable Gardens

- General Chemical Controls
  - Organic
    - None recommended
  - Conventional
    - Trifluralin at planting
    - Glyphosate
      - In fall, after harvest
      - In spring, prior to planting



## Weed Management in Ornamental Beds

- Cultivation / Hoeing / Hand Weeding
- Mulches: organic, rock, synthetic
- Biological – none
- Chemical
  - Organic
    - Preemergence – none
    - Postemergence – acetic acid; clove oil + citric acid
  - Conventional
    - Trifluralin (Treflan, Preen)
    - Glyphosate – directed sprays

The Weed Eezy

Jerry's Weed Stick

The Weed Ball

The Weed Popper

### Targeted Weed Control