Weeds in the Garden

A Minute of Prevention Is Worth Many, Many Hours of Weeding.

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What Extension Master Gardeners Do

Master Gardeners are trained volunteer educators. They work within their local communities to encourage and promote environmentally sound horticulture practices through sustainable landscape management, education, and training.

Sharing Knowledge. Empowering Communities.

2

Charlottesville-Albemarle

IN 2025
168 Master Gardeners
19 Master Gardener Interns

CONTRIBUTED A TOTAL OF
19,785 volunteer hours
and made
37,640 direct educational contacts

VALUED AT
$660,423*

*Based on a value of $33.38/hour from Independent Sector 2023 Value of Volunteer Hours by State

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What We'll Cover

- Understanding weed biology and life cycle
- Identifying weeds
- Strategies for weed management
- Choosing tools to get the job done

The focus is weeds in the perennial or vegetable garden. Invasive plants are technically weeds but are a topic for another presentation.

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What Is a Weed?

Weeds are plants that may have a negative impact on your garden:

- **"A plant you don't want"**
- **"A plant in the wrong place"**
- **"A plant out of place"**

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Characteristics of Weeds

Weeds are like any other plant:

- Invasive or native (part of our ecosystem)
- Annual, biennial, or perennial
- Broadleaf plants, conifers, grasses, or vines
- Preferred habitat (wet, dry, sun, shade)
- Spread by seeds, stolons, rhizomes, tubers, or some combination of those.

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Characteristics of Weeds

Weeds are primed for success:

- Rapid growth rate and quick reproduction
- May be better competitor for light, nutrients, and water
- Opportunistic, thriving in disturbed soil
- Tolerant of adverse growing conditions
- Adapted to readily spread
- Prolific seed producers, generating seeds that are viable for years.

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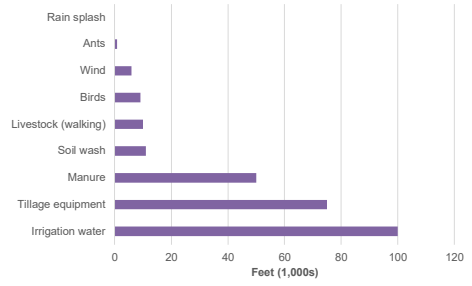
Mechanisms of Seed Dispersal



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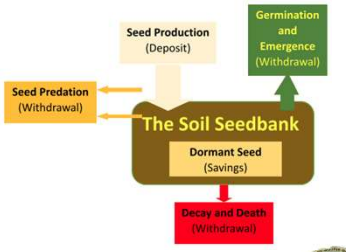
Weed Biology

- Weed seeds in the soil seedbank are mostly **dormant** or **dead.**
- Many weed control techniques are about keeping seeds from breaking dormancy and germinating.



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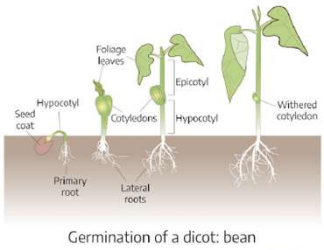
Weed Biology

- A dormant seed can be thought of as an *inactive* seed.
- It will *activate,* or *break dormancy,* in light, temperature, water, or oxygen conditions that favor germination.
- Disturbing soil often serves to break seed dormancy.



Germination of a dicot: bean

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Weed Biology

Weed Species	Seeds Produced per Plant
Common lambsquarters	72,450
Common purslane	52,300
Common ragweed	3,380
Pennsylvania smartweed	19,300
Prickly lettuce	27,900
Shepherd's purse	38,500 (viable for 35 years!)
Wild oat	250
Yellow foxtail	6,420 (viable for 30 years!)

Source: Wilson (1988)

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Weed Biology

- Anywhere from 3% to 31% of the viable seed bank can germinate in a given year, meaning that up to 97% of the viable seed remains dormant. **AND**
- Seeds are a food source for many insects, birds, and small mammals (more than 70% of the seed may be consumed).

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Beneficial Aspects of Weeds

- Beautiful flowers!
- Habitat and food for beneficial insects and birds.
- Can be edible or medicinal or used as dyes.
- Indicator plants for certain soil problems.

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Identifying Weeds

- Understanding which weeds grow at different times of year will help you identify them.
- Keep track of what you identify and its stage in the life cycle.
- Some weeds have a very fast growth cycle and offer a small window for control.
- Knowing how a weed spreads is important to controlling it.

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Identifying Weeds

- Use plant apps (Picture This, iNaturalist), Google Lens, or the PMG Help Desk (email a photo).
- NC State Extension "Plant Toolbox": https://plants.ces.ncsu.edu/
- University of Maryland Extension: https://extension.umd.edu/resources/yard-garden/weeds/weed-identification/
- Virginia Tech: https://weedid.cals.vt.edu/

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Weed Growth Cycles

Winter annuals

- Germinate in early fall, survive the winter, regrow and flower in spring and die when temperatures warm (henbit, chickweed)

Summer annuals

- Germinate in spring, grow in summer, die in fall (stiltgrass, crabgrass)

Limiting seed germination and dispersal are priorities for managing annual weeds.

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Weed Growth Cycles

Biennials

- Complete their growth in 2 years
- Produce leaves and store food in the first year.
- In the second year, they flower, produce seeds, and die.

Control in the first year, before they flower and produce seeds.

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Weed Growth Cycles

Perennials

- Live for more than 2 years.
- Reproduce by vegetative structures and seeds.
- Top growth dies back in winter, but underground storage structures enable the plant to grow again next year.

Most difficult weeds to control; they will regenerate from any underground parts left alive in the soil.

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Winter/Early Spring Weeds

- Common chickweed *(Stellaria media)*
- Mouse-ear chickweed *(Cerastium holosteoides)*
- Common speedwell *(Veronica arvensis)*
- Hairy bittercress *(Cardamine hirsuta)*
- Henbit *(Lamium amplexicaule)*
- Knawel *(Scleranthus annuus)*
- Purple deadnettle *(Lamium purpureum)*
- Shepherd's purse *(Capsella bursa-pastoris)*

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Winter/Early Spring Weeds

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Winter/Early Spring Weeds

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Winter/Early Spring Weeds

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Winter/Early Spring Weeds

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Spring Weeds

- Cleavers (also called stickywilly, grip grass, sticky weed) *(Galium aparine)*
- Dandelion *(Taraxacum officinale)*
- False dandelion *(Hypochaeris radiacata)*
- Ground ivy (Creeping Charlie) *(Glechoma hederacea)*

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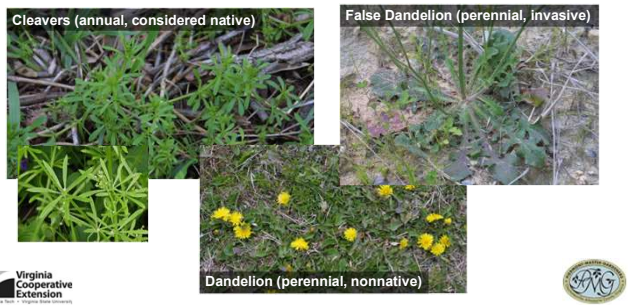
Spring Weeds



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Spring Weeds

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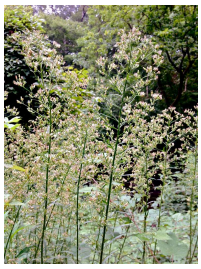
Summer Weeds



Summer weeds include

- Bermudagrass *(Cynodon dactylon)*
- Canada thistle *(Cirsium arvense)*
- Crabgrass *(Digitaria sanguinalis)*
- Horseweed *(Erigeron canadensis)*
- Japanese stiltgrass *(Microstegium vimineum)*
- Jimsonweed *(Datura stamonium)*

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Summer Weeds (*cont'd.*)

- Plantain *(Plantago major)*
- Purslane *(Portulaca oleracea)*
- Smartweed *(Persicaria pensylvanica)*
- Spotted spurge *(Euphorbia maculata)*
- Virginia buttonweed *(Diodia virginiana)*
- Yellow nutsedge *(Cyperus esculentus)*
- Yellow woodsorrel *(Oxalis stricta)*

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Summer Weeds

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Summer Weeds: Canada Thistle

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Summer Weeds: Crabgrass

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Summer Weeds

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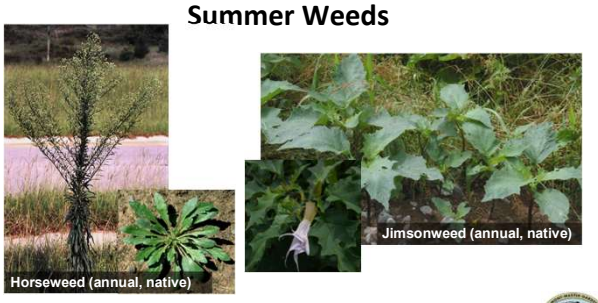
Summer Weeds



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Summer Weeds

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Summer Weeds

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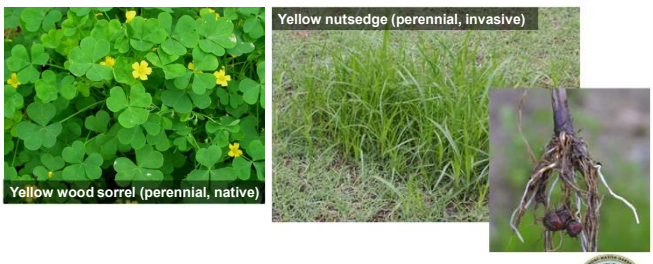
Summer Weeds



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Late Summer/Fall Weeds

- Beefsteak plant *(Perilla frutescens)*
- Burnweed *(Erechtites hieracifolia)*
- Mulberry weed *(Fatoua villosa)*
- Mugwort *(Artemisia vulgaris)*
- Pokeweed *(Phytolacca americana)*
- Ragweed *(Ambrosia artemisiifolia)*

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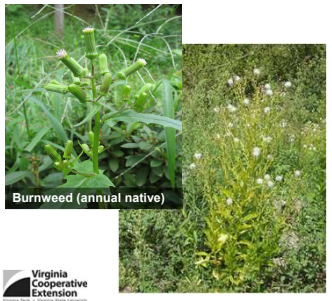
Late Summer/Fall Weeds



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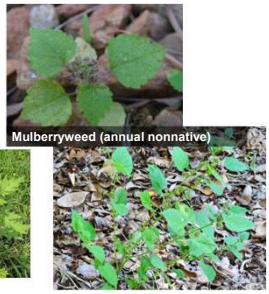
Late Summer/Fall Weeds



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Late Summer/Fall Weeds

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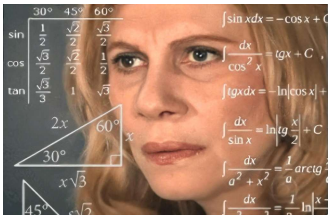
Controlling Weeds

The strategy:

- Know your weeds
- Reduce the seed bank
- Avoid bare soil
- Avoid soil disturbance
- Plant densely
- "Weed Patrol"



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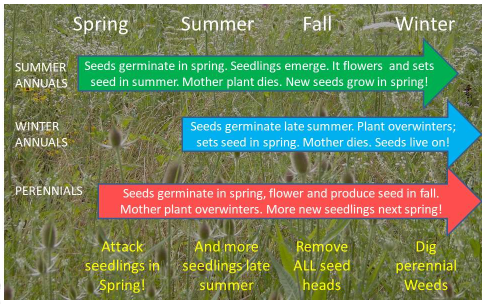
Timing Is Critical



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Controlling Weeds

Three main categories of control:

- Manual (hand-pulling, tilling)
- Environmental (creating conditions unfavorable to weed growth)
- Chemical (herbicides, fire).

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Manual Control

- Manual control means using your hands or tools to remove or neutralize the plant.
- Know how the plant reproduces:
  - Remove underground structures and/or
  - Keep it from going to seed.

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Manual Control—Annuals

When using manual control, work smarter, not harder.

- Uprooting weeds disturbs the soil, which exposes the seed bank and promotes germination.
- Simply cut the plant at the base and dispose of it.
- Or, cut or pull the flowers or seed heads off and dispose of them, leaving the rest of the plant.

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Manual Control—Annuals

- Timing is critical.
- Wait for the plant to flower and start to develop seeds.
- If you cut the plant before it flowers, it may develop new growth and flower/go to seed anyway.
- If the plant is in the way, of course, you may need to pull it.

This approach will start to reduce the seed bank in your garden, and you should start to see less of the weed over time.

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Manual Control—Perennials

- Perennials generally need to be dug out or smothered.
- Again, know how the plant reproduces.
- If you don't have time or energy to dig, removing fruits and seeds may still have a beneficial impact on your garden over time.

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Manual Control—Perennials

- Some perennials, like ground ivy, mouse-ear chickweed, mugwort, and Virginia buttonweed are very hard to control by hand pulling.
- For these plants, environmental control (e.g., smothering, solarization), chemical control, or digging out to a depth of several inches may be a more effective option.

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Smothering and Solarization

- *Smothering:* Covering the target area in fall with cardboard and/or 6 to 12 inches of mulch or wood chips.
- *Solarization:* Covering the target area with clear plastic to kill undesired plants with excess heat.

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Environmental Control

- Environmental control means creating the conditions that are unfavorable to weed growth.
- Soil is an important factor in environmental control. Many weeds thrive in disturbed soil or in soils in specific pH ranges.

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Environmental Control

- Plant densely, to block light and germination.
- Keep grass trimmed at 4 inches. Lawn weeds can migrate into your garden.
- Alter soil pH or composition to impede growth (test your soil first!).
- Use raised beds.
- Avoid soil disturbance.
- Cover bare soil with ground cover, mulch, or wood chips.

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Herbicides

Pros

- Fast and effective when used correctly

Cons

- Harmful to environment
- Can be toxic
- Can harm desired plants
- Often used incorrectly; labels may not be easy to understand.

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Herbicides

Categories:

- Pre-emergent
- Postemergent
- Contact
- Systemic
- Selective
- Nonselective

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Herbicides

- Identify the plant.
- Choose the correct herbicide.
- Use appropriate PPE and equipment.

Most important: Read all label instructions!

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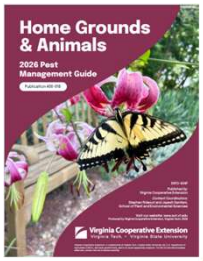
Herbicides

More information is available in this publication from VCE.



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If You Choose to Use Herbicides

- Never spray when pollinators are active on the plant.
- Never spray when it's breezy or when rain is forecast for the near future.
- Use extra care when near water; use only herbicides that are indicated as safe for aquatic habitats.

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Homemade Herbicide

- DIY options such as salt/vinegar/soap combinations are not very effective and can harm your soil. They might kill leaves, but the roots will remain.
- Alternatives such as smothering and solarization may be more effective.
- DIY herbicide is technically illegal.

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Helpful Tools

- Knee pad
- Bucket or tarp
- Gloves and other PPE
- Camera

And a good soaking rain can be an excellent assist!

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Helpful Tools

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Disposing of Weeds

- Dispose of in trash or in brush pile.
- Burning weeds is ok, but check to be sure that it is safe
- Be very careful when composting weeds or adding to brush pile. **Do not add creeping, perennial weeds with strong, extensive root systems or weed seeds to compost or brush piles.**

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Mitigation, Not Elimination

- Weeds will always be popping up in the garden.
- Not every weed seed will sprout.
- Aim to reduce the quantity of weeds over time.
- Pick your battles.

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Prevention Is Key

- Know your weeds
- Reduce the seed bank
- Avoid bare soil
- Avoid soil disturbance
- Plant densely
- Do "Weed Patrol"

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Resources

- NC State Extension Gardener "Plant Toolbox": https://plants.ces.ncsu.edu/
- Virginia Tech/Virginia Cooperative Extension Weed Identification website: https://weedid.cals.vt.edu/
- University of Maryland Extension: https://extension.umd.edu/resources/yard-garden/weeds/weed-identification/

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Resources

- Master Gardeners of Northern Virginia *Safe and Effective Weed Control:* https://mgnv.org/mg-virtual-classroom/safe-and-effective-weed-control/
- Virginia Cooperative Extension Publications: https://ext.vt.edu
- Extension websites for all land grant universities: https://www.extension.org/search

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PMG Resources

- Call, e-mail, or visit our Horticulture Help Desk
  albemarlevcehelpdesk@gmail.com
  Telephone: (434) 872-4583
- www.piedmontmastergardeners.org
  - ➢Subscribe to *The Garden Shed,* our free, monthly online newsletter
  - ➢Check for upcoming events and classes
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  - ➢Facebook: **https://www.facebook.com/AlbemarleCharlottesvillePMGs**
  - ➢Instagram: **https://www.instagram.com/piedmontmastergardeners/**

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Scan the QR Code

For the slide handout and other resources:

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