



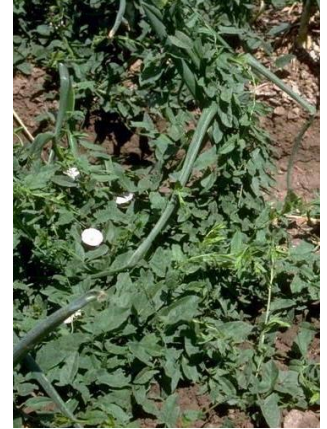
## Outsmart the Weeds! • Managing Weeds in Community Gardens

### An Ecological Perspective on Weeds

**A weed is a plant you have to manage in order to grow healthy, productive crops.** Weeds occupy an important niche in the garden ecosystem: they conserve soil that is left bare and take up extra nutrients. However, they also compete with crops, climb over plants (hindering their growth and promoting disease by reducing air circulation), and host crop pests and diseases. Smart weed management involves:

- **Understanding weed life cycles**, in order to break them at weak points.
- **Designing your garden to eliminate conditions that encourage weed growth** – that is, bare soil with extra moisture and nutrients, and light reaching the soil surface.

This packet (1) describes life cycles of common weeds in NC gardens, (2) outlines practices to prevent and manage weeds, and (3) provides photos of common weeds in each life cycle group so you can identify and manage them.



*Field bindweed growing over onions, inhibiting growth and competing for light, water, nutrients, and space.  
Photo: H. Schwartz, CSU, Bugwood.org.*

### Weed Life Cycles

*For a list and photos of common weeds in each group, see pp. 4-6.*

Type of Weed	Reproduction	Life cycle	Weak links & targeted strategies
<b>Summer Annuals</b>	Seed only	Germinate in late Spring, grow quickly, flower and set seed before frost.	<ul style="list-style-type: none"> <li>✓ Prevent seed from germinating in Spring.</li> <li>✓ Prevent seedlings from surviving in late Spring/ early Summer.</li> </ul>
<b>Winter Annuals</b>	Seed only	Germinate in Fall, over-winter as seedling/rosette, flower and set seed in early Spring.	<ul style="list-style-type: none"> <li>✓ Prevent seed from germinating in early Fall.</li> <li>✓ Prevent seedlings from surviving in mid- to late-Fall.</li> </ul>
<b>Simple Perennials</b>	Seed only	Grow for many years. Foliage dies back over the winter and re-grows from underground roots or stems. Produce seed every year.	<ul style="list-style-type: none"> <li>✓ Remove top-growth persistently (exhaust underground reserves).</li> </ul>
<b>Creeping Perennials</b>	Seed and vegetative (roots, rhizomes, tubers, and/or stolons)		<ul style="list-style-type: none"> <li>✓ Till &amp; remove belowground structures at vulnerable times of year; follow with cover crop (in beds) or mulch heavily with wood chips (in paths).</li> </ul>

## Preventing and Managing Weed Problems

### Exclusion:

Be careful about what you bring into your garden to exclude new weed seeds or 'propagules' (plant pieces that can grow into new plants)!

- ✓ **Use only finished compost and well-composted manure.** All parts of compost or manure piles must reach 140° F for a week or more to kill weed seeds and pathogens. Ask about any compost/topsoil mixes you bring in.
- ✓ **Use only straw or seed-free cover crop residue for mulch, NOT hay.**
- ✓ **Inspect the rootballs of perennials.**
- ✓ **Clean tools and equipment** before and after use, especially shared equipment that may carry seeds of new weeds from other gardens.
- ✓ **Remove weeds before they produce seed.**



*Remove weeds before they flower & produce seed, like this pigweed. Photo: R. Videcki, Bugwood.org.*

### Cultural Practices:

Close off niches for weeds by keeping the soil covered year-round (preferably with living plants), and manage your veggies to out-compete weeds.

- ✓ **Practice Crop Rotation:** Vary when you till and plant, since tillage stimulates weed seeds to germinate. Plant crops in different seasonal niches from your worst weeds: To prevent summer annuals, establish an early spring crop. To prevent winter annuals, establish a long-season summer crop.



*To prevent summer annual weed seeds from germinating, establish an early spring crop and avoid tilling in late spring. Photo: Big Stock Photo #68483539.*

- ✓ **Grow Vigorous Vegetable Crops and Manage them to Out-Compete Weeds:**
  - **Use ideal planting dates and transplants** to help the crop grow quickly and shade the soil. For more information, visit: <http://tinyurl.com/FCGGardenPlantings> and download "A Piedmont Garden Calendar" and "Vegetable Planting Guide for the Piedmont."
  - **Feed and water your crop, not the weeds:**
    - Get a soil test each fall and plan next year's nutrient additions accordingly. Extra nutrients only encourage weed growth. For guidance on what to apply, visit: <http://tinyurl.com/FCGHealthySoil> and download "Soil Test Interpretation and Soil Management" and the "Soil Test Interpretation Worksheet."
    - Use drip irrigation to water at the base of your crops. Avoid sprinkler irrigation, which waters weeds in-between rows.
  - **Mulch with straw or cover crop residue** while your crops are small.

- ✓ **Include Cover Crops in Rotations:** Cover crops shade the soil and take up water and nutrients, preventing weeds from growing. Once cover crops are cut down, the shoots can be chopped and left as mulch around vegetable transplants. For more information on cover cropping, visit: <http://tinyurl.com/FCGHealthySoil> and scroll down to “Cover Crops.”
  - **Plant summer cover crops in May or June (millet & cowpea, or buckwheat)** to out-compete summer annuals and prevent germination of winter annuals.
  - **Plant over-wintering cover crops in mid-September (rye & crimson clover) or October (rye & hairy vetch)** to out-compete winter annuals and prevent germination of summer annuals the following spring.
  - **Cover crops can also suppress creeping perennials** like Bermudagrass, field bindweed, or nutsedge. Till the soil to fragment the weed, remove as much as possible, and follow with a thick seeding of the cover crop to out-compete weakened weed fragments.



*Cover crops for weed suppression: (a) Millet/cowpea, a summer cover crop. (b) Rye/hairy vetch, an over-wintering cover crop. (c) Food crops, such as these melons, can be transplanted through the chopped shoots of a mature cover crop (without tilling). The shoots dry and form a mulch that continues to suppress weeds. Photos: M. Gregory, Forsyth CES.*

## Mechanical Practices:










- ✓ **Use mulches to deprive weeds of light.** In vegetable beds, straw or cover crop residue can be used. In paths, landscape fabric topped with wood chips can suppress Bermudagrass.
- ✓ **Remove or kill weeds at critical times with hand-weeding, hoeing, or shallow tillage.** Avoid deep tillage, which brings more weed seeds to the surface and damages soil structure.

## References & Further Resources

- Visit the Pest Management section of the FCG website (<http://tinyurl.com/FCGPestManagement>) and scroll down to “Weed Management” for links to further resources.
- This handout draws from “Twelve Steps toward Ecological Weed Management in Organic Vegetables” (and the more detailed articles it links to), written by Mark Schonbeck and published by eXtension.org. Available online at: <http://tinyurl.com/EcoWeedManagement>.



## Common Summer Annual Weeds in NC

Grasses:		
<b>Crabgrass</b> 	<b>Foxtails (ex: Green Foxtail)</b> 	<b>Goosegrass</b> 
Broadleaves		
<b>Galinsoga</b> 	<b>Jimsonweed (POISONOUS)</b> 	<b>Lambsquarters</b> 
<b>Morning-glory</b> 	<b>Pigweed</b> 	<b>Smartweeds (ex: Lady's Thumb)</b> 

**Photos** (originals may have been cropped) • Crabgrass, Galinsoga, Goosegrass, Green Foxtail, Lambsquarters, Morning-glory, & Lady's Thumb: M. Gregory, Forsyth CES. • Jimsonweed: F. & K. Starr, Bugwood.org • Pigweed: S. Kanan, Bugwood.org.



## Common Winter Annual Weeds in NC

### Chickweed



*Mat in fall*



*Flowers in spring*

### Hairy bittercress (Brassica)



*Seedling in fall*



*Flowers in spring*

### Henbit deadnettle



*Seedling in fall*



*Flowers in spring*

### Purple deadnettle



*Seedling in fall*



*Flowers in spring*

### Shepherd's Purse (Brassica)



*Seedlings*



*Rosette & stalk in spring*



*Flowers in spring*

### Yellow Rocket (Brassica)



*Seedling in fall*



*Flowers in spring*

**Photos** (originals may have been cropped) • Chickweed, Hairy bittercress (seedling), Henbit deadnettle, Purple deadnettle, Shepherd's purse (rosette & stalk in spring): M. Gregory, Forsyth CES. • Hairy bittercress (flowers): L. Mehrhoff, UCT, Bugwood.org • Shepherd's purse (seedlings): S. Dewey, USU, Bugwood.org. • Shepherd's purse (flowers): K. Rawlins, UGA, Bugwood.org. • Yellow Rocket (seedling): J. DiTomaso, UC-Davis, Bugwood.org. • Yellow Rocket (flowers): J. Byrd, MSU, Bugwood.org.



## Common Perennial Weeds in NC

### Simple (reproduce by seed only)

**Curly dock**



**Dandelion**



### Creeping (reproduce by seeds, stolons, rhizomes, roots, and/or tubers)

**Bermudagrass**



**Field bindweed**



**Hedge bindweed**



**Mugwort**



**Pokeweed (POISONOUS)**



**Purple nutsedge**



**Yellow nutsedge**



**Photos** (all Bugwood.org unless otherwise noted; originals may have been cropped) • Curly dock (foliage): A. White, USU. • Curly dock (flowering): S. Dewey, USU. • Dandelion seedling, Field bindweed, & Purple Nutsedge: J DiTomaso, UC-Davis. • Dandelion flower: R. Videcki, Doronicum Kft. • Bermudagrass: Pamela Trewatha, MO State University, [http://courses.missouristate.edu/pbtrewatha/Midwest\\_Weeds.htm](http://courses.missouristate.edu/pbtrewatha/Midwest_Weeds.htm) • Hedge Bindweed: T. Webster, USDA-ARS • Mugwort, Pokeweed (seedling) & Yellow Nutsedge: M. Gregory, Forsyth CES. Pokeweed (plant): A. Bridgman, SC DNR.