



earth-wise guide to

Weeds



description

A weed is a plant that is growing where it is not wanted; it easily reproduces and spreads; competes with desirable plants for space, light and nutrition; detracts from the aesthetics of the landscape; can harbor pests and diseases

germination

Weed seeds may lie dormant, germinating when soil is disturbed and seeds are exposed to light; seeds may be windblown, spread by birds or introduced with imported soil

goal

Disrupt the weed's life cycle without damaging the environment

For assistance identifying weeds and choosing least toxic options, call the AgriLife Extension at 512-854-9600

Least Toxic Solutions

Prevent Weeds

- Keep plants healthy to help them out-compete weeds
- Do not let weeds flower or go to seed – it greatly increases their potential population
- Do not bring soil with weed seeds or roots on site
- Use drip irrigation in beds to put water only where you want it – weeds will have a much harder time growing without water
- Monitor and remove weeds regularly before they get established
- Prevent weeds from growing by blocking light and/or creating a physical barrier to growth

Weed Barrier Options

- Cover plant beds with 4-6" of mulch
- Cover soil with 4-6 sheets of newspaper and cover with leaves to make a weed barrier in plant beds (lasts several months)
- Use weed control fabrics that allow water and air to reach plant roots (weeds may germinate in soil or fine-textured mulch on top of the fabric)
- Use a layer of cardboard covered with mulch for non-planted spaces like utility areas
- Avoid black plastic – it is non-biodegradable and reduces air exchange with roots

- Solarize new areas before planting to kill weeds and seeds (See Grow Green Installation and Maintenance fact sheet)
- Fill in pavement cracks with caulking compound formulated for asphalt or concrete

Physically Remove

- Pull weeds regularly to keep populations from getting out of hand
- Weed by hand when practical
- Pull or hoe weeds when plants are small and the soil is moist
- Use hoes designed to move horizontally below the soil surface to avoid bringing seeds to the surface
- Be careful not to damage shallow-rooted landscape plants

Weed Disposal

- Dispose of weeds that have flowered or gone to seed in the trash
- Put vegetative structures like rhizomes (underground stems) from Johnsongrass and "nutlets" from nutsedge in the trash – not in the compost pile

Avoid using weed and feed products because:

- the best time to treat weeds is not the best time to fertilize
- broadcasting weed killer over and entire lawn is usually overkill

If you must use a weed killer...

- Use herbicides only as a last resort – they can end up in streams and aquifers. They may also damage desirable turf and landscape plants
- Spot treat existing problems with a selective post-emergent product
- Understand and choose the correct product
 - Pre-emergents: prevent seeds from germinating – in general they are broadcast over a large area, most often used to control annual weeds; must be applied before targeted weed seeds germinate; use only if an area has a history of excessive weeds
 - Post-emergents: kill weeds after they have emerged; most often used on perennial weeds – may require more than one application for stubborn perennials

From
Your Yard



to Our
Creeks



From Left to Right (Korean Hoe, Diamond Hoe, Swan Neck Hoe, Stirrup Oscillating Hoe, Stirrup Hoe, Standard Garden Hoe)

- Non-selective post emergents: will kill or set back almost any plant they come in contact with
- Selective post-emergent herbicides: specifically formulated for certain types of weeds i.e. grassy weeds, broadleaf weeds, sedges and woody vegetation
- Don't use an herbicide right before a rain – it can run off to harm our creeks rather than helping your yard
- Always follow the EPA-approved label directions
- Consult with your Extension Agent or nursery professional for more information
- Apply products at the proper time for effective control or prevention of weeds
- Use a wiper applicator or weed wand designed to apply herbicide directly on the vegetation for post-emergent, non-selective products to minimize drifting
- When using a sprayer, use low pressure and large droplets; apply when it is not windy

Weeding Tools

Choose a tool that causes the least amount of soil disturbance

- Korean Hoe is shaped like a plow; used to grub out larger weeds or for making a shallow trench
- A Diamond Hoe has a flat diamond shaped blade designed to move just below the soil surface
- A Swan-neck Hoe has a curved neck that positions it to skim just below the soil surface
- The Stirrup or Oscillating Hoe has a double-edged blade that slides back and forth, minimizing soil disturbance
- The Standard Garden Hoe has a large blade that is set at a sharp angle to the ground for chopping through overgrown weeds
- A Collinear hoe has a angled handle and a narrow blade

Resources

Bio-Integral Resource Center (BIRC): 510-524-2567/ www.birc.org

Texas AgriLife Extension:

<http://aggie-turf.tamu.edu/answers4you/broadleafweeds.htm>

Weeds: Control Without Poison by Charles Walters

The Gardener's Weed Book: Earth-Safe Controls by Barbara Pleasant

Common Weeds of the United States by United States Agricultural Research Service

Name	Description	Growing Season	Comments/ Growing Conditions	Least Toxic Solutions
PERENNIALS, BROADLEAF				
Broadleaf Plantain <i>Plantago major</i>	<ul style="list-style-type: none"> Rosette with large, rounded, wavy-edged leaves Greenish flowers on 5-10" stalks 	<ul style="list-style-type: none"> Warm season perennial Seeds germinate early to late spring 	<ul style="list-style-type: none"> Reproduces by seed Resprouts from root system Prefers rich soil and moderately wet areas 	<ul style="list-style-type: none"> Remove by hand or weed fork Be sure to remove the entire crown of the plant
Dandelion <i>Taraxacum officinale</i>	<ul style="list-style-type: none"> Rosette with lobed and serrated leaves Round, fluffy seed heads Yellow flower Milky sap 	<ul style="list-style-type: none"> Cool season perennial Seeds germinate in fall 	<ul style="list-style-type: none"> Reproduces by seed Resprouts from root Prefers moist areas in full sun Edible 	<ul style="list-style-type: none"> Can easily be removed with a weed fork Must remove the taproot
Dichondra <i>Dichondra repens</i>	<ul style="list-style-type: none"> 1/2 to 3/4" kidney shaped leaves Inconspicuous in turf 	<ul style="list-style-type: none"> Warm season perennial Seeds germinate in spring 	<ul style="list-style-type: none"> Creeping stems root where nodes contact the soil Seeds may stay dormant for years Grows in both sun and shade Prefers fertile soil that is frequently watered 	<ul style="list-style-type: none"> Shallow roots make it easy to remove by hand if soil is moist and loose Use a diamond, swan neck or stirrup hoe
Field Bindweed <i>Convolvulus arvensis</i>	<ul style="list-style-type: none"> Vine with 3-10' long stems; can run along ground or climb Flower similar to Morning Glories Leaves are alternate with smooth edges 	<ul style="list-style-type: none"> Warm season perennial Seeds germinate in spring and summer 	<ul style="list-style-type: none"> Reproduces by seed Plant fragments of roots as short as 2" can form new plants Seeds may live in soil 60 years 	<ul style="list-style-type: none"> Dig out root with a weed fork to eliminate Repeat every 2 or 3 weeks or as soon as the bindweed reaches 6" in length
Poison Ivy <i>Toxicodendron radicans</i>	<ul style="list-style-type: none"> Creeping or climbing woody vine Leaf edges may be smooth, wavy or serrated Alternate leaves with 3 leaflets 	<ul style="list-style-type: none"> Leaves out from deciduous stem in spring with onset of warm weather 	<ul style="list-style-type: none"> Reproduces by rhizomes* and seeds spread by birds Resprouts from root Can cause rashes when dormant Fumes from burning can cause lung damage 	<ul style="list-style-type: none"> Wear gloves, long sleeves and long pants if removing manually Must eliminate roots
PERENNIALS, GRASSY				
Bermudagrass <i>Cynodon dactylon</i>	<ul style="list-style-type: none"> Fine-textured grass, often used as a turfgrass Becomes a weed when it starts creeping into landscape beds 	<ul style="list-style-type: none"> Warm season perennial Goes dormant with the onset of cold weather 	<ul style="list-style-type: none"> Spreads by seeds, rhizomes* and stolons** Spreads rapidly during hot times of year Grows in any soil; prefers full sun 	<ul style="list-style-type: none"> Use barriers that extend 8-10" below the surface Dig out as much of the roots and stolons** as possible with a Korean hoe May take several tries
Dallisgrass <i>Paspalum dilataum</i>	<ul style="list-style-type: none"> Low-growing, coarse-textured grass Light green leaves Long seed heads on tall stalks 	<ul style="list-style-type: none"> Warm season perennial Seeds germinate in spring 	<ul style="list-style-type: none"> Grows faster than most turfgrasses Thrives in hot, humid conditions Prefers moist soil Tolerates sandy and clay soils 	<ul style="list-style-type: none"> Dig out crown of the plant and remove all of the stem with a weed fork
Johnsongrass <i>Sorghum halepense</i>	<ul style="list-style-type: none"> Wide leaf blade with white strip down the center Can grow up to 6' Thick, creeping rhizomes* 	<ul style="list-style-type: none"> Warm season perennial 	<ul style="list-style-type: none"> Reproduces by rhizomes* and seeds Stems root at the nodes Sometimes introduced by soil brought in from off site 	<ul style="list-style-type: none"> Take out as much of the rhizome as possible Persistent so may take several tries
Quackgrass <i>Elytrigia repens</i>	<ul style="list-style-type: none"> Grassy plant can grow 1-3.5' tall Resembles wheat 	<ul style="list-style-type: none"> Evergreen 	<ul style="list-style-type: none"> Reproduces by seed and rhizomes* Tolerates all types of soils 	<ul style="list-style-type: none"> Do not till -- broken segment of plants can root and sprout into new plants Persistent so may take several tries
PERENNIALS, SEDGE				
Nutgrasses Yellow Nutsedge <i>Cyperus esculentus</i> Purple Nutsedge <i>Cyperus rotundus</i>	<ul style="list-style-type: none"> Grass-like in appearance Has a triangular stem Some rhizomes* terminate in hard tubers (nutlets) 	<ul style="list-style-type: none"> Emerges from nutlet in spring 	<ul style="list-style-type: none"> Spreads via rhizomes* and seeds Often reappears after a good summer rain Prefers sun Sometimes introduced by soil brought from off site 	<ul style="list-style-type: none"> Thoroughly remove with a weed fork in the spring before nutlets form Persistent so may take several tries
* rhizomes- underground stems **stolons- above ground stems				



Broadleaf Plantain



Bermudagrass



Dandelion



Dallisgrass



Dichondra



Johnsongrass



Field Bindweed



Quackgrass



Poison Ivy



Yellow Nutsedge



Carpetweed



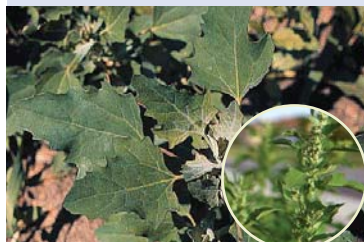
Spotted Spurge



Chickweed



Annual Bluegrass



Common Lambsquarters



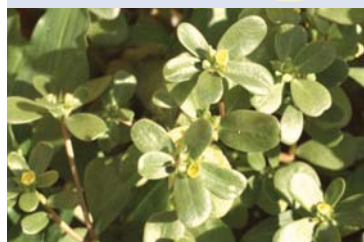
Large Crabgrass



Henbit



Sandbur



Purslane



Smooth Crabgrass

PERENNIAL SOLUTIONS

Least toxic solutions

- Manually remove the root system
- Water thoroughly 1-2 days before digging to soften soil
- Remove flower or seed heads to prevent spreading

Did You Know...?

The weed killer **Atrazine** has been detected in **70% of Austin's springs**

If you must use a weed killer...

- Herbicides are more effective against young growing weeds
- Choose a product that is formulated to kill the specific weed (non-selective products will kill or set back any plants they come in contact with)
- Read and follow label directions
- Spot treat problems when possible
- Be aware that very aggressive weeds may require more than one application

ANNUAL SOLUTIONS

General habits

- Annual weeds germinate from seeds each year; usually mature in one growing season and die within 12 months
- Cool season annual seeds typically begin germinating in late September and grow through the winter months; warm season annual seeds typically begin germinating in early March and grow through the spring and summer months

Least toxic solutions

- Pull or mow before plants seed
- Mulch beds before September to suppress winter annuals early and before March to smother warm season annuals

- Use a string trimmer on more mature growth of broadleaf weeds
- Spot treat young plants with products that contain herbicidal soap or 20% acetic acid (vinegar)

If you must use an herbicide...

- Post-emergent herbicides are more effective before a weed has flowered or gone to seed
- Pre-emergents that target cool season or winter annuals must be applied in mid-September before their seeds germinate
- Pre-emergents that target warm season or summer annuals must be applied late January before their seeds germinate

Name	Description	Growing Season	Comments/ Growing Conditions	Least Toxic Solutions
ANNUALS, BROADLEAF				
Carpetweed <i>Mollugo verticillata</i>	<ul style="list-style-type: none"> Forms circular mats up to 20" wide Leaves grow in whorls around the stem 	<ul style="list-style-type: none"> Warm season annual Seed germinates in spring 	<ul style="list-style-type: none"> Prolific seeder Shallow taproot Prefers fertile, dry, sandy soil 	<ul style="list-style-type: none"> Easy to remove with hoe
Common Chickweed <i>Stellaria media</i>	<ul style="list-style-type: none"> Grows in thick mats Small white flowers with five petals Shiny, pointed leaves 	<ul style="list-style-type: none"> Emerges in fall; grows very little until late winter 	<ul style="list-style-type: none"> Shallow, fibrous roots Found most often in shady, moist lawn areas 	<ul style="list-style-type: none"> Easy to hand pull
Common Lambsquarters <i>Chenopodium album</i>	<ul style="list-style-type: none"> Low-growing in turf or sprawling and upright Wavy Leaves Green flowers with white mealy powder 	<ul style="list-style-type: none"> Warm season annual Seed germinates in spring 	<ul style="list-style-type: none"> Thrives in rich, fertile soil Edible 	<ul style="list-style-type: none"> Easy to pull by grabbing base of plant
Henbit <i>Lamium amplexicaule</i>	<ul style="list-style-type: none"> Grows upright but can root at the nodes Rounded, serrated leaves Square stems Pale purple flowers 	<ul style="list-style-type: none"> Cool season annual Seed germinates in the fall; grows very little until late winter to early spring 	<ul style="list-style-type: none"> Fibrous shallow roots Prefers good soil with high moisture level Edible 	<ul style="list-style-type: none"> Easy to hand pull
Purslane <i>Portulaca eleracea</i>	<ul style="list-style-type: none"> Prostrate; branches from a central point Shiny, fleshy leaves and purple-red stems Inconspicuous yellow flowers 	<ul style="list-style-type: none"> Warm season annual Seed germinates in late spring 	<ul style="list-style-type: none"> Seed can remain viable up to 40 years Thrives in extremely hot, dry weather Edible 	<ul style="list-style-type: none"> Remove by hand Put plant fragments in trash because they can root
Spotted Spurge <i>Euphorbia maculatacaule</i>	<ul style="list-style-type: none"> Grows in dense mats Reddish green to dark green leaves with purple splotch on top Inconspicuous flowers 	<ul style="list-style-type: none"> Warm season annual Seed germinates in late spring to early summer 	<ul style="list-style-type: none"> Prolific seeder Shallow taproot Stem has milky sap 	<ul style="list-style-type: none"> Easy to hand pull or hoe
ANNUALS, GRASSY				
Annual Bluegrass <i>Poa annua</i>	<ul style="list-style-type: none"> Upright, clumping growth Grows 4"-6" when not mowed Seed heads appear in mid to late spring 	<ul style="list-style-type: none"> Cool season annual Seed germinates in fall Grows very little until late winter 	<ul style="list-style-type: none"> Prefers wet, compacted soils Small clumps growing in lawn makes it look uneven 	<ul style="list-style-type: none"> Insert weed fork into soil at the base of plant, then twist and remove
Large Crabgrass <i>Digitaria sanguinalis</i>	<ul style="list-style-type: none"> Can grow to more than 3' tall Pale, blue-green, sharply pointed leaves 	<ul style="list-style-type: none"> Warm season annual Seed germinates spring to fall 	<ul style="list-style-type: none"> Spreads by seed and by long stems rooting at the nodes Single plant can produce 150,000 seeds/year Thrives in hot, dry conditions 	<ul style="list-style-type: none"> Dig out crown of plant and remove all of the stem with a weed fork
Sandbur <i>Cenchrus longispinus</i>	<ul style="list-style-type: none"> Mat-forming Grows 12" tall Pale green leaf blades Produces seed stalk with sharp burs 	<ul style="list-style-type: none"> Warm season annual Seed germinates in spring 	<ul style="list-style-type: none"> Usually found on poor sandy soils 	<ul style="list-style-type: none"> Dig out crown of plant and remove all of the stem with a weed fork
Smooth Crabgrass <i>Digitaria ischaemum</i>	<ul style="list-style-type: none"> Low-growing 15" or shorter Dull green leaves; some reddish-purple color appears on stems as it ages 	<ul style="list-style-type: none"> Warm season annual Seed germinates spring through fall 	<ul style="list-style-type: none"> Spreads seed and roots from nodes touching soil Most often found in turf; it will tolerate mowing and still produce seed 	<ul style="list-style-type: none"> Dig out crown of plant and remove all of the stem with a weed fork

product toxicity comparisons

Evaluation of active ingredients only; does not include toxicity information on inert or "other" ingredients.

Toxicity/Threat:

○ low ◐ low to moderate ◑ high ● highest NA not applicable
 ? unknown toxicity 🌍 earth-wise

Hazards:



note	Product Name	active ingredient(s) / concentrations	human toxicity		aquatic life	birds, bees, pets	soil mobility	environmental persistence	
			acute	chronic					
	Pre-emergent								
🌿 most toxic	Concern® Weed Prevention Plus™ 8-2-4	Corn gluten 100%	○	○	◐	○	?	?	
	Monterey Weed Impede™	Oryzalin 40.48%	○	○	●	○	○	○	
	Preen® Garden Weed Preventer	Trifluralin 1.47%	◐	?	●	◐	○	◐	
	Green Light® Amaze® Grass & Weed Killer	Benefin 1%, Oryzalin 1%	◐	●	◐	◐	○	◐/●	
	Post-emergent								
🌿	Green Light® Organic Spot Weeder	2-Phenethyl proprionate 2.5% Eugenol 2.5%	○	?	?	○	○	○	
🌿	Bioganic™ Spot Weeder Ready-to-Use	Phenethyl proprionate 2.5% Eugenol 2.5%	○	?	?	○	○	○	
🌿	Ortho® Ecosense™ Brand Organic Weed & Grass Killer	2-Phenethyl proprionate 2.5% Eugenol 2.5%	○	?	?	○	○	○	
🌿 most toxic	Roundup® Weed and Grass Killer Ready-to-Use Plus	Glyphosate 2%, Pelargonic acid 2%	◐	?	◐	○	○	◐	
	Eliminator® Weed & Grass Killer	Glyphosate 2%	◐	?	◐	○	○	◐	
	SedgeHammer	Halosulfuron - methyl 75%	◐	◐	◐	○	◐	?	
	Ortho® Weed-B-Gon Max® Ready to Spray	Triclopyr 1.56%, MCPA 13.72%, Dicamba 1.35%	◐	◐	◐	◐	◐	○	
	Maestro Gro Vinegar	Acetic acid/Vinegar 20%	●	?	◐	○	○	○	
	Amdro® Image® Nutsedge Killer	Imazaquin 3.3%	◐	?	◐	○	●	◐	
	Eliminator® Liquid Edger	Sodium cacodylate 0.53% Cacodylic acid 0.09%	◐	●	◐	◐	○	◐/●	
	Hi-Yield® Atrazine Weed Killer	Atrazine 40.8%, Related compounds 2.2%	◐	◐	◐	○	●	◐	
		Pre and Post-emergent (for pavement cracks)							
	🌿 most toxic	Roundup® Extended Control Weed & Grass Killer plus Preventer Concentrate	Glyphosate 18%, Diquat 0.73% Imazapic 0.3%	◐	?	◐	○	○	◐
Ortho® Season Long Max® Weed & Grass Killer Plus Preventer Ready-to-Use		Glyphosate 0.25% Oxyfluorfen 0.25%	◐	?	◐	○	○	◐	

The City of Austin and the Texas AgriLife Extension provide this information as a comparative reference only. Listing of a specific product trade name does not constitute an endorsement of its use. Many other pesticides and pesticide products, other than those listed in these tables are available and may be suitable for use.

Products rated by Grady J. Glenn, Ph.D., B.C.E., of the Pesticide Safety Education Program, Texas AgriLife Extension Service who can be reached for questions at (979) 862-1035. The rating system was developed by Philip Dickey of the Washington Toxics Coalition.