

Death, Taxes, and Weeds

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INTRODUCTION

When was the last time you said "I did not have any weed problems last year"? I have never heard anyone make that statement. Why are weeds so dependable that you can always count on having weed problems. This article will examine the reasons that weeds are as dependable as death and taxes.

A common definition of a weed—is a plant out of place. Weeds range from oak seedlings to daylilies to prostrate spurge growing in areas where they are not wanted. This definition does not distinguish between plants that possess truly weedy characteristics from those that are only occasional nuisances. A weed is a weed because it possesses certain definable characteristics that set it apart from other plant species. A better definition might be weeds are plants that are competitive, persistent, and pernicious. In other words, a true weed is a plant out of place and intends on staying there. True weeds exhibit the following characteristics:

- Competitive and aggressive
- Able to grow, survive, and reproduce almost anywhere
- Prolific seed producers
- Resistant to control
- Easily spread

Weeds produce large number of seeds (Table 1). The average weed produces about 2000 seeds per plant. In addition, weed seeds can remain viable in the soil for years. So they are able to build a large reserve of seeds in the soil.

Table 1. Weed seed production.

Weed species	Number of seeds
broadleaf plantain - <i>Plantago major</i>	36,000
common purslane - <i>Portulaca oleracea</i>	52,000
common ragweed - <i>Ambrosia artemisiifolia</i>	15,000
curly dock - <i>Rumex crispus</i>	40,000
evening primrose - <i>Oenothera</i>	119,000
Pennsylvania smartweed - <i>Polygonum pensylvanicum</i>	3000
redroot pigweed - <i>Amaranthus retroflexus</i>	117,000
yellow nutsedge - <i>Cyperus esculentus</i>	2400

WEED IDENTIFICATION AND LIFE CYCLE

The first step in developing a successful weed management program is identifying

your weeds and their associated life cycle. Knowing the correct name helps to understand the herbicide labels and control recommendations. Several pictorial guides are available for identifying weeds (Table 2). The weed's life cycle provides information on timing of germination and method of reproduction. In addition, the life cycle determines its adaptability to various management systems and its susceptibility to control measures.

Table 2. Weed identification manuals.

Weeds of Southern Turfgrass

Publication Distributions Center, IFAS Building 664, P. O. Box 110011, University of Florida, Gainesville, Florida 32611, (904-392-1764) (\$8.00).

Weeds of Arkansas (MP 169)

University of Arkansas, Cooperative Extension Service, P.O. Box 391, Little Rock, Arkansas 72203, Attn.: Cheryl Fraser (501-671-2038), \$5.00.

Identifying Seedling and Mature Weeds

Publications Office, Box 7603, North Carolina State University, Raleigh, North Carolina 27695-7603, (\$7.00).

SWWS Weed Identification Guide

Southern Weed Science Society, 1508 West University Ave., Champaign, Illinois 61821-3133 (217-352-4212). Call for cost.

All weeds fall into one of four life cycles: summer annuals, winter annuals, biennials, and perennials. Summer annual weeds germinate in the spring (around dogwood bloom in North Carolina), flower and produce seed in mid- to late summer and die in the fall. Common summer annual grass and broadleaf weeds are listed in Table 3. Winter annual weeds germinate from late summer to early spring, flower and produce seed in mid- to late spring and die in the summer. However, depending upon the location winter annual weeds can germinate and grow year-round. For example, in containerized plant production hairy bittercress can germinate and survive throughout the entire year. Common winter annual grass and broadleaf weeds are listed in Table 4. Annual weeds tend to germinate in largest numbers at the beginning of the season as soon as climatic conditions are favorable. However, both summer and winter annual weeds will continue to germinate in reduced numbers throughout their respective seasons.

Biennial weeds are plants that live for two growing seasons. Seed germinate in the spring, summer, or fall of the first year and plants overwinter as a basal rosette of leaves with a thick storage root. After the shoot tips are exposed to cold, the plants flower and produce seed in the summer of the second year and die in the fall. Wild carrot, bull thistle, common mullein, and common burdock are common biennial weeds.

The traditional definition of a perennial weed is that it lives for more than 2 years. However, perennial weeds will live forever. Perennials are classified according to their method of reproduction as simple or creeping. Creeping perennial weeds can both overwinter and produce new independent plants from vegetative reproductive structures. Most can also reproduce from seed. Vegetative reproductive structures include:

Table 3. Common summer annual weeds.**Grasses**

barnyard grass - *Echinochloa crus-galli*
 broadleaf signal grass - *Brachiaria platyphylla*
 broomsedge - *Andropogon virginicum*
 crabgrass (smooth) - *Digitaria sanguinalis*
 crabgrass (large) - *Digitaria ischaemum*
 crowfootgrass - *Dactyloctenium aegyptium*
 dayflower - *Commelina diffusa*
 doveweed - *Murdannia nudiflora*
 fall panicum - *Panicum dichotomiflorum*
 giant foxtail - *Setaria faberii*
 green foxtail - *Setaria viridis*
 goose grass - *Eleusine indica*
 jungle rice - *Echinochloa colonam*
 southern sandbur - *Cenchrus echinatus*
 yellow foxtail - *Setaria glauca*

Broadleaves

annual lespedeza - *Lespedeza striata*
 bitter sneezeweed - *Helenium amarum*
 black medick - *Medicago lupulina*
 carpetweed - *Mollugo verticillata*
 common groundsel - *Senecio vulgaris*
 common purslane - *Portulaca oleracea*
 common ragweed - *Ambrosia artemisiifolia*
 daisy fleabane - *Erigeron strigosus*
 dogfennel - *Eupatorium capillifolium*
 eclipta - *Eclipta prostrata*
 hemp sesbania - *Sesbania exaltata*
 fireweed - *Erechtites hieracifolia*
 gaillardia - *Gaillardia pulchella*
 horseweed - *Conyza canadensis*
 narrowleaf vetch - *Vicia sativa* ssp. *nigra*
 narrow cudweed - *Gnaphalium falcatum*
 poorjoe - *Diodia teres*
 prostrate knotweed - *Polygonum aviculare*
 prostrate spurge - *Euphorbia supina*
 smooth pigweed - *Amaranthus hybridus*

Table 4. Common winter annual weeds.**Grasses**

- annual bluegrass - *Poa annua*
 little barley - *Hordeum pusillum*
 sweet vernalgrass - *Anthoxanthum odoratum*

Broadleaves

- annual sowthistle - *Sonchus oleraceus*
 bedstraw - *Galium aparine*
 Carolina faldedandelion - *Pyrrhopappus carolinianus*
 Carolina geranium - *Geranium carolinianum*
 common chickweed - *Stellaria media*
 corn speedwell - *Veronica arvensis*
 cutleaf eveningprimrose - *Oenothera laciniata*
 hairy bittercress - *Cardamine hirsuta*
 hairy buttercup - *Ranunculus sardous*
 henbit - *Lamium amplexicaule*
 hop clover - *Trifolium aureum*
 knawel - *Scleranthus annuus*
 parsley-piert - *Aphanes microcarpa* [syn. *Alchemilla microcarpa*]
 purple deadnettle - *Trifolium arvense*
 rabbitfoot clover - *Trifolium arvense*
 shepherdpurse - *Capsella bursa-pastoris*
 short buttercup - *Ranunculus parviflorus*
 spiny sowthistle - *Sonchus asper*
 thistle - *Cirsium* spp. (some species)
 venus lookingglass - *Triodanis perfoliata*
 Virginia pepperweed - *Lepidium virginicum*

Table 5. Common perennial weeds.**Grasses**

- bahiagrass - *Paspalum notatum*
 Bermudagrass - *Cynodon dactylon*
 broomsedge - *Andropogon virginicum*
 carpetgrass - *Axonopus affinis*
 dallisgrass - *Paspalum dilatatum*
 johnsongrass - *Sorghum halepense*
 Kentucky bluegrass - *Poa pratensis*
 nimblewill - *Muhlenbergia schreberi*
 orchardgrass - *Dactylis glomerata*
 purpletop - *Tridens flavus*
 quackgrass - *Elytrigia repens* [syn. *Agropyron repens*]
 sweet vernalgrass - *Anthoxanthum odoratum*
 tall fescue - *Festuca elatior* [syn. *F. arundinacea*]

Table 5. Common perennial weeds. (*Continued*)**Other weed species**

- rush - *Juncus* spp.
- yellow nutsedge - *Cyperus esculentus*
- wild garlic - *Allium vineale*
- wild onion - *Allium canadense*

Broadleaves

- broadleaf plantain - *Plantago major*
- buckhorn plantain - *Plantago lanceolata*
- catsear dandelion - *Hypochoeris radicata*
- chicory - *Cichorium intybus*
- cinquefoil - *Potentilla canadensis*
- common vetch - *Vicia sativa*
- common violet - *Viola* spp.
- curly dock - *Rumex crispus*
- dandelion - *Taraxacum officinale*
- dichondra - *Dichondra repens*
- honeysuckle - *Lonicera* spp.
- horsenettle - *Solanum carolinense*
- field bindweed - *Convolvulus arvensis*
- Florida betony - *Stachys floridana*
- greenbrier - *Smilax glauca*
- ground ivy - *Glechoma hederacea*
- mockstrawberry - *Duchesnea indica*
- mouse-ear chickweed - *Cerastium fontanum* ssp. *vulgare* [syn. *C. vulgatum*]
- mugwort - *Artemisia vulgaris*
- pennywort - *Hydrocotyle* spp.
- poison ivy - *Toxicodendron radicans*
- red sorrel - *Rumex acetosella*
- trumpet creeper - *Campsis radicans*
- Virginia dwarf dandelion - *Krigia virginica*
- Virginia buttonweed - *Diodia virginiana*
- white clover - *Trifolium repens*
- wild strawberry - *Fragaria virginiana*
- winter vetch - *Vicia villosa*
- yellow woodsorrel - *Oxalis dillenii*

Table 6. Optimum application rates and timing of glyphosate to obtain 90% or better control one season later.

Weeds	Rate*	Optimum timing
aster (<i>Aster</i>), goldenrod (<i>Solidago</i>), dog fennel (<i>Eupatorium</i>)	1%	First flowering
Bermudagrass (<i>Cynodon</i>)	2%	First flowering
blackberry (<i>Rubus</i>)	1 to 1.5%	Fall and early winter
honeysuckle (<i>Lonicera</i>)	1 to 1.5%	Full bloom (early summer)
kudzu (<i>Pueraria lobata</i>)	1.5 to 2%	Full bloom (early summer)
lespedeza (<i>Lespedeza</i>)	1%	Full bloom (midsummer)
perennial grasses (quackgrass, johnsongrass, fescue)	1%	First flowering
poison ivy (<i>Toxicodendron radicans</i>)	2%	2 weeks either side full bloom
trumpet creeper (<i>Campsis radicans</i>)	1.5%	Later summer to mid-fall
Manufacturer does not claim effectiveness on the product label for the following species		
clematis vine (<i>Clematis</i>)	1%	After bloom until fall
English ivy (<i>Hedera helix</i>)	2 to 3%	3 -5 expanded new leaves (early spring)
greenbrier (<i>Smilax</i>)	3%	5 fully expanded leaves (early spring)
Japanese knotweed (<i>Polygonum japonicum</i>)	2%	Late summer to early fall before frost
mugwort (<i>Artemisia</i>)	1.5 to 2%	Full flower (later summer to fall)
passion flower (<i>Passiflora</i>)	1%	Bloom to first fruit
sericea lespedeza (<i>Lespedeza cuneata</i>)	1%	Full bloom (midsummer)
Virginia creeper (<i>Parthenocissus quinquefolia</i>)	1%	Later summer to early fall
wisteria (<i>Wisteria</i>)	1.5 to 2%	6 to 8 weeks after bloom

* 1% = 1.25 fl. oz. Roundup 4L per gallon of water.

Rhizomes: Elongated horizontal underground stems—Bermudagrass, yellow nutsedge, quackgrass, horsenettle, red sorrel.

Tubers: Thickened underground stems borne on the ends of rhizomes—yellow nutsedge.

Bulbs: Leaf tissue modified for food storage and borne on a small plate of stem—wild garlic.

Stolons: Horizontal aboveground stems—mockstrawberry, white clover, Bermudagrass.

Creeping roots: Roots modified for food storage and reproductive vegetative reproduction—Canada thistle, red sorrel.

Simple perennial weeds overwinter by means of a vegetative structure such as a perennial root with a crown and they reproduce almost entirely from seed. It normally takes 2 years for these weeds to complete a perennial cycle from seed. Simple perennial weeds have no natural means of spreading vegetatively (stolons, rhizomes, etc.). Their roots are usually fleshy and can grow very large. Examples include common dandelion, curly dock, buckhorn plantain, and broadleaf plantain. Common perennial grass and broadleaf weeds are listed in Table 5.

STAGE OF GROWTH

There are four stages of plant growth: (1) germination, (2) seedling, (3) vegetative, and (4) flowering and seed production. The stage of growth that you are trying to control plays a big role in your management choices and how successful you will be. Germinating seeds and very young plants are most susceptible to control methods. Dormant seeds are not effected by most weed control practices. The most resistant stage of plants that develop from seed occurs after flowering. Not only do they achieve maximum resistance but the main objective of preventing seed production and stand replenishment has been lost.

The growth stages of perennial weeds are different in that they do not start each year from a germinating seed. To get acceptable control of perennial weeds, the root system must be controlled. Perennial weeds are most susceptible to control measures during active periods of growth and carbohydrates (food manufactured in the leaves) are moving downward toward the roots. This commonly occurs from early spring growth until flowers open. Once flowers open resistance to control measures often increases. The second susceptible window with perennial weeds occurs during the fall when the plant is once again moving carbohydrates downward to the roots which carries the herbicide along with it. The optimum rate and timing for several tough to control perennial weeds are listed in Table 6.