Lawn Weed Control
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Turf Tips for the Homeowner
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Lawn Weed Control Guide

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WEED CONTROL is an important aspect of lawn management for improving turfgrass uniformity and increasing the ability of the desirable lawn species to compete for nutrients and moisture in the soil. Thus, effective weed control enhances the beauty of a home lawn.

Soils may harbor a multitude of dormant weed seeds and vegetative parts. In addition, weed seeds are disseminated by wind, birds, equipment, animals, and man. As a consequence, turfgrass weeds are inevitable unless prevention and control methods are practiced.

Principal Methods

Turfgrass competition, resulting from proper management, is the basic requirement for preventive weed control. A strong competitive turf will limit the invasion of new weeds and tend to crowd out existing weeds. The presence of many weeds can often be related to the neglect of cultural practices such as adapted turfgrass species, good soil conditions, adequate fertilization, liming and proper mowing.

Mechanical control, as a method of weed control, includes handweeding, tillage prior to establishment, and mowing. Mowing is effective against many broadleaved weeds. However, plants with growing points below the cutting height may escape control. Cutting height is beneficial when it improves competition of desirable turfgrass species over the undesirable weed species.

Chemical control may be used when the afore- mentioned methods fail. Methods of herbicide use may include *preemergence* treatments applied prior to the emergence of the weed species. Herbicide treatments after emergence are called *postemergence* applications.

Herbicides

Herbicides may be classified into one of three types depending upon their effect on plants: contact, systemic and soil sterilants.

Contact herbicides kill plant parts covered by the chemical. Paraquat is a contact herbicide that causes a chemical burning of all plant tissue. These materials are useful in renovating lawns infested with a high proportion of crabgrass and other annual weeds. The areas may be reseeded soon after chemical application.

Systemic herbicides are absorbed by plant roots or above-ground parts and are translocated throughout the plant. They are either selective (kill weeds without harming desirable grasses) or non-selective (kill all plants). 2,4-D, 2,4-DP, MCPP, and dicamba are selective systemic herbicides useful in controlling many broadleaved weeds that invade turf.

Soil sterilants are chemicals that render the soil toxic to all plant life. The period of soil toxicity varies depending upon the material used. Amitrol persists in the soil for four to five weeks after application, while dalapon may last for up to two months. Other soil sterilants may prevent plant growth for several years. Dalapon and amitrole are useful in eradicating quackgrass, tall fescue and other weeds that cannot be controlled selectively.

Calibration of Compressed Air Sprayers

1. Measure 1,000 square feet of turf (a block 20 × 50 feet or equivalent), using twine to outline the block. (Most dosage recommendations are made for 1,000 square feet of area.)

2. Pour into the sprayer a measured amount of water (for example, 3 gallons).
3. Pump the sprayer up to a reasonable pressure. (On a 2- or 3-gallon sprayer, 40 to 50 full strokes of the pump are suggested.)
4. Open the cut-off valve and walk at a reasonable pace over the measured area until all the surface is covered.
5. Release the air pressure and measure the amount of water left in the tank.
6. Subtract the amount left in the tank (step 5) from the amount placed in the sprayer to find the amount used in spraying 1,000 square feet.

Example:

Three gallons put in sprayer—2 gallons left = 1 gallon used to cover 1,000 square feet.

The amount found in step 6 is the base for figuring how much chemical to use in each gallon of water when you actually spray. The actual amount of water used is not important, but whatever the amount, it must be a known quantity. Thus, if the suggested rate of chemical is 2 ounces per 1,000 square feet, you mix 2 ounces for each gallon of water the sprayer will hold. For instance, a 3-gallon sprayer will take 6 ounces of chemical. (Ounces per 1,000 square feet can be converted to pounds per acre by the factor 2.72: 2 ounces per 1,000 square feet × 2.72 = 5.41 pounds per acre.

Calibration of Dry Spreaders

1. Measure 1,000 square feet of turf (20 × 50 feet).
2. Choose a setting on the feed-regulating device (based on manufacturer's recommendations, if available).
3. Weigh out about 5 to 10 pounds of the dry chemical and place it in the hopper.
4. Open the feed and walk over the area until it has been fully covered.
5. Weigh the material left in the spreader.
6. Subtract the remainder from the original amount placed in the hopper to find how much you applied to the 1,000 square feet of turf.
7. Since most dry herbicides are sold in a ready-to-apply form, you may have to change the feed setting and repeat the process on a different area until you find a setting which is correct for the amount suggested on the product label.

These calibrations apply as much to the person using the equipment as to the sprayer or spreader. For that reason, keep your walking speed and the pressure in the tank as constant as possible.

Active Ingredient

The active ingredient (a.i.) is the part of a chemical formulation that produces herbicidal effects. For example, a 50% granular formulation (50G) contains 50% active ingredients of the herbicide. If a 100-pound bag of granular herbicide contains 50% active ingredients, 2 pounds of material are required to yield 1 pound of active ingredient. Treatment of 1 acre with a 50% granular herbicide, at the rate of 12 pounds per acre, requires 24 pounds of granular material per acre, or approximately ½ pound of granular material per 1,000 square feet (1 acre = 43,560 sq. ft.).

Liquid formulations generally give active ingredients as pounds per gallon (lbs. a.i./gal) rather than as a percent of the formulation. For example, 2,4-D is generally formulated as 4 lbs. a.i./gal; therefore, an application of 1 pound per acre of this formulation requires 1 quart of liquid for each acre covered.

All herbicide recommendations are based on active ingredients, **not** the actual weight of the formulated material.

General Considerations

for Effective Herbicide Usage

Most herbicides do not act immediately and the effects may not be observed for several days or weeks. Herbicides should be applied at recommended rates to prevent burning off the above ground plant tissue before the herbicide can be translocated into the root system. Lower rates with repeated applications are often most effective for controlling perennial weeds.

The use of 2,4-D in the vicinity of flower beds, ornamental shrubs and home gardens may cause considerable damage. Amine and other low volatile formulations of 2,4-D and related herbicides are recommended for home lawns. Herbicides should be sprayed at low pressure during days of minimal or no wind to insure against drift.

Dicamba should be used only when it is necessary to kill a persistent weed species and should not be used within the root zone of trees or shrubs as injury may result.

Successful chemical weed control depends upon (a) proper weed identification, (b) proper herbicide selection, and (c) following directions on the label of the container.

Sprayer Care

Always drain and rinse the tank with water, then partially refill and flush through the nozzles after each spraying regardless of the chemical used. To clean 2,4-D or other growth regulator type herbicides, add detergent to the flushing water. Rinsing or flushing with a 0.3% activated charcoal suspension for 2-3 minutes may be used. Drain and rinse thoroughly with clean water.

A single sprayer should not be used for growth regulators, herbicides, insecticides and fungicides. A separate sprayer should be used for herbicides, especially 2,4-D type herbicides.

Chemical Control of Lawn Weeds

Most broadleaved weeds can be effectively controlled by fall application of mixtures of 2,4-D, 2,4-DP, MCPP and/or dicamba. Numerous commercial products containing mixtures of 2,4-D, 2,4-DP, MCPP and/or dicamba are available for broad spectrum broadleaved weed control. For specific weed problems, use the control measures indicated below. The aforementioned herbicide rates per 1,000 sq. ft. are all based on the 4 lb. active ingredient (a.i.) per gallon. Chemicals are sold in various concentrations. Read the label and follow the directions.

BROADLEAF WEEDS IN ESTABLISHED TURF

Postemergence applications

WEEDS	HERBICIDE (Trade name)	RATES Lb./A (a.i.)	RATES tsp./1000 sq. ft.	REMARKS
Burdock **Broadleaf plantain** **Buckhorn plantain** **Dandelion** **Heal-all** **Orange Hawkweed** **Shepherd's purse** **Thistles** **Wild carrot** **Yellow rocket** **Hoary Alyssum**	2,4-D	1	4	Spray in fall and/or early spring. Fall treatment best. Spring treatment should be applied prior to flowering. Thistles may require repeated fall applications. Use correct rate, as excessive rate will merely burn off the top of perennials. Hoary alyssum should be sprayed in fall when in rosette stage with twice usual rate. Toxic to bentgrass turfs.
Common chickweed **Mouse-eared chickweed**	MCPP	1	4	May be used in summer on bentgrass. May be difficult to obtain in small containers for home lawn use.
Ground ivy **(Creeping Charlie)** **Purslane** **White clover** **Black medic** **Henbit** **Oxeye daisy** **Roundleaf mallow** **Violet** **Poison Ivy**	2,4-D + 2,4-DP or 2,4-D + MCPP + dicamba or 2,4-D + dicamba			See herbicide label for use rates. Apply in fall, or in spring before mid-May. Turf injury may result at temperatures above 70 °F. Repeat applications may be needed. Spring and summer applications for poison ivy. Avoid spraying within root zone of trees and shrubs with products containing dicamba.
Dog fennel **Knotweed** **Prostrate spurge** **Red sorrel** **Yarrow**	dicamba	3/8	2	Use only for hard-to-kill species. Do not use within root zone of trees and shrubs. Check with county agent as state law has restrictions on its use.
Mossy stonecrop **(Sedum)**	2,4-D ester	2	8	Use spring or fall treatment. May require second application following season. Check with county agent as state law has restrictions on its use.
Speedwell **(*Veronica* sp.)**	endothall (1.46 lb/gal)	1 1/2	125	Early spring or fall. May require second application. Temporary browning of grass may occur at high rates and high temperatures.
Creeping speedwell	DCPA *(Dacthal)*	12	45	WP formulation only. Spray on mature leaves in spring or fall. Granular formulation not effective. May take 1 month to show effect.

BROADLEAF WEEDS IN NEWLY SEEDED TURF

Postemergence applications

Weeds	Herbicide (Trade name)	RATES Lb.A (a.i.)	RATES tsp./1000 sq. ft.	REMARKS
Seedling broadleaved weeds in newly seeded turf	bromoxynil *(Brominal)* *(Buctril)*	3/8	1 1/2	May be used in seedling turf when height exceeds 2 in. For heavy infestation of annual broadleaf weeds. Apply when weeds are less than 1½ in. across or 3 in. in height.
	2,4-D	½	2	Do not use on newly seeded turf until grass is past mowing height.

ANNUAL GRASSES

Preemergence Applications

Weed	Herbicide (tradename)	RATES lb/A (a.i.)	RATES tsp./1000 sq. ft.	REMARKS
Annual bluegrass	bensulide *(Betasan)*	12	54 (9 fl oz) of 4E[4] or 8 lb of 3.6g[4] or 4 lb of 7.0g[4] or 2.4 lb of 12.5g[4]	Apply in early fall and again in early spring. Do not reseed treated areas within 4 months after application
Crabgrass[2] Goosegrass[3]	benefin *(Balan)*	2	0.8 oz. of 2.5g[4] or 9 fl oz	Not recommended for use on bent-grass turf. Do not reseed treated areas within 4 months after application.
	or bensulide *(Betasan)*	7 1/2	34 (5.6 fl oz) of 4E[4] or 4.8 lb of 3.6g[4] or 2.4 lb of 7.0g[4] or 1.9 lb of 12.5g[4]	Safe on mature sod of all turf-grass species. Do not reseed treated areas within 4 months after application.
	or DCPA *(Dacthal)*	11	1/3 lb of 75% WP[4] or 4½ lb of 5g[4] or 9 lb of 2.5g[4]	Safe for use on established bluegrass; may injure bentgrasses and fine fescues. Do not reseed treated areas within 2 months after application.
	or oxadiazon *(Chipco Ronstar G)*	3	3½lb	Do not use on red fescue or bentgrass. Do not apply to wet turf. Do not reseed treated areas within 4 months after application.
	or siduron *(Tupersan)*	12	4.5 oz	Lower rates can be used simultaneously with seeding of lawn grasses. Will injure some bentgrass varieties.

[1]Should be watered into the soil by rain or irrigation within one week of application for effective control.
[2]Apply preemergence crabgrass herbicides in April or early May before Forsythia blossoms start to fall.
[3]Germinates 2-4 weeks after crabgrass.
[4]Herbicides are available in several formulations. A 4E is a 4 lb/gallon active ingredient emusifiable concentrate (a liquid) and a 3.6g is a 3.6% active ingredient granular (dry) formulation. A 75% WP is a 75% active ingredient wettable powder (powder is mixed with water and sprayed).

Postemergence Applications				
	DSMA, AMA MSMA, MAMA	6		Apply before crabgrass is 2 to 3 in. tall. Repeat two or three times at seven-day intervals. May cause turf discoloration.

PERENNIAL GRASSES

Postemergence applications, no selective chemical control				
Bentgrass **Tall fescue** **Quackgrass** **Nimblewill**	amitrol *(Amitrol-T)* or	4	12/gal water	Spot treat when actively growing. Wait 4-5 weeks, then reseed.
	dalapon *(Dowpon)* or	10	30/gal water	Spot treat when actively growing. Wait 7-8 weeks, then reseed.
	glyphosate *(Roundup)* *(Kleenup)*	Rate varies with weed species and product. See label		When applied as directed, controls most existing vegetation. Prior to turfgrass establishment or renovation. Do not mow area or disturb soil and underground plant parts before treatment. Allow weeds to grow at least 8 inches high before treatment. Do not begin renovation for 7 days after treatment. Roundup is not recommended for domestic application except by professional applications. For spot application, use a spray solution with a concentration of 0.6% active ingredient.

MISCELLANEOUS

WEEDS	HERBICIDE (Trade name)	RATES Lb./A (a.i.)	RATES tsp./1000 sq. ft.	REMARKS
Yellow Nutsedge	bentazon *(Basagran)* or	1	4½ (in 1 gal of water)	Do not apply to newly seeded turf until plants are well established. For best control, do not mow 3-5 days before and after treatment. Repeat applications may be needed. Reapply after 10-14 days but do not use more than 3 lb/A (13½ tsp/1000 sq. ft.) in one season. Thorough coverage needed. Use minimum spray pressure of 40 psi, and 40 gallons of water per acre (1 gal/1000 sq. ft.). Avoid spraying over the top of shrubs, trees, and ornamentals. Not available in small amounts.
	DSMA, AMA MSMA, MAMA	6		Requires two or more applications at weekly intervals. Must treat 2 months after emergence, but before nutlets form.
Wild onion **Wild garlic**	2,4-D	2	8	Will require several years to eradicate. Use spot treatment of isolated clumps.
Sandbur	AMA, DSMA	3		Repeat once or twice at seven-day intervals. May cause some discoloration of turf. Apply when 2 in. tall.
Vegetative desiccants	paraquat *(Paraquat)*	1/2	4	Complete kill of plant top-growth. Used for chemical burnoff of annual grasses and broadleaf seeds. Ineffective on perennial weeds and grasses. No residue, may reseed immediately. Use of X-77 surfactant will enhance coverage and kill.

SEED BED STERILIZATION

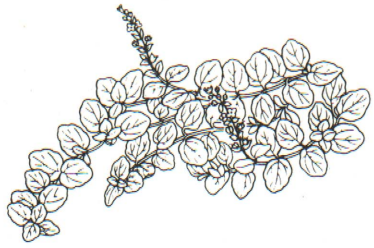
WEEDS	HERBICIDE	REMARKS
ALL	methylbromide *(Dowfume)* metham *(Vapam)* *(VPM)* methyl-isothiocyanate *(Vorlex)*	For use on newly prepared seedbeds prior to seeding lawns. Kills weed seeds, vegetation, insects, nematodes and fungal organisms. FOLLOW LABEL EXACTLY. Materials dangerous unless properly handled. Seeding must be delayed after treatment as indicated by labels. Special equipment may be required.

Some Common, Trade and Chemical Names of Commonly Used Turf Herbicides

COMMON	TRADE NAME	CHEMICAL
Amitrole	*Amitrol-T, Cytrol, Weedazol*	3-amino-1,2,4-triazole
benefin	*Balan, Balfin®*	N-butyl-N-ethyl-666, trifluoro, 2,6-dinitro-p-toluidine
bensulide	*Betasan*	0,0-diisopropyl phosphorodithiate S- ester with N-(2-mercaptaethyl) benzenesulfonamide
bentazon	*Basagran*	3-isopropyl-1-H-2, 1,3-benzothiadiazin-4 (3H)-one 2,2-dioxide
bromoxynil	*Buctril*	3,5-dibromo-4-hydroxybenzonitrile
dalapon	*Dowpon®*	2,2-dichloropropionic acid
DCPA	*Dacthal*	dimethyl 2,3,5,6-tetrachloro-terephthalate
dicamba	*Banvel*	2-methoxy-3,6-dichlorobenzoic acid
DSMA	*Ansar, Weed-E-Rad*	Disodium methanearsonate
endothall	*Desi-I-Cate, Hydrothol, Aquathol*	7-oxabicyclo (2,2,1) heptane-2,3-dicarboxylic acid
glyphosate	*Roundup, Kleenup*	N-(phosphonomethyl) glycine
MAMA	*Ansar, Weed-Hoe, Weed-E-Rad*	monoammonium methanearsonate
MCPP (mecoprop)	*Iso-Cornox, Vipex, Vipar*	2-[(4-chloro-o-tolyl) oxy] propionic acid
MSMA	*Trans-Vert, Ansar, Weed-Hoe*	Monosodium methanearsonate
oxadiazon	*Chipco Ronstar G*	2-tert-butyl-4-(2,4 dichloro-5-isopropoxyphenyl-Δ^2 -1,3,4-oxadiazolin-5-one
paraquat	*OrthoParaquat*	1,1′dimethyl 4,4′bipyridinium
siduron	*Tupersan*	1-(2-methylcyclohexyl)-3-prenylurea
terbutol	*Azak, Hercules 9573*	2,6-di-tert-butyl-p-tolyl-methylcarbamate
2,4-D	*Weedone LV-4, Chipman 2,4-D*	2,4-dichlorophenoxyacetic acid
2,4-DP	*Weedone—DP*	2,4-dichlorophenoxypropionic acid

BROADLEAVED WEEDS

BUCKHORN

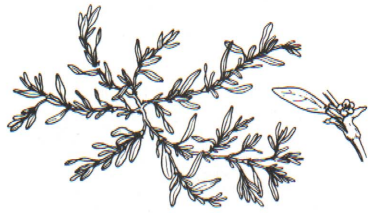


SPEEDWELL

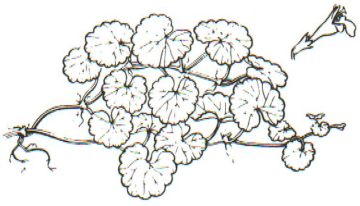
PLANTAIN

WHITE CLOVER

DANDELION



KNOTWEED (prostrate)

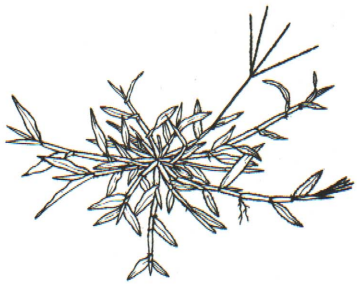


GROUND IVY

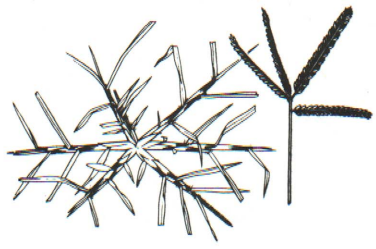
CHICKWEED (mouse-eared)

CHICKWEED (common)

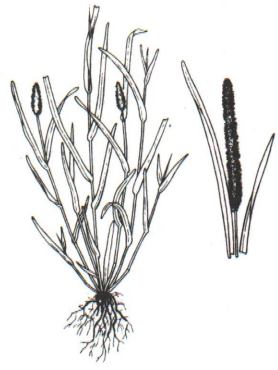
ANNUAL GRASSES



CRABGRASS



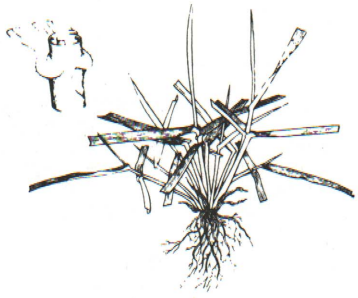
GOOSEGRASS



FOXTAIL

PERENNIAL GRASSES

QUACKGRASS



TALL FESCUE

YELLOW NUTSEDGE

MICHIGAN STATE UNIVERSITY

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