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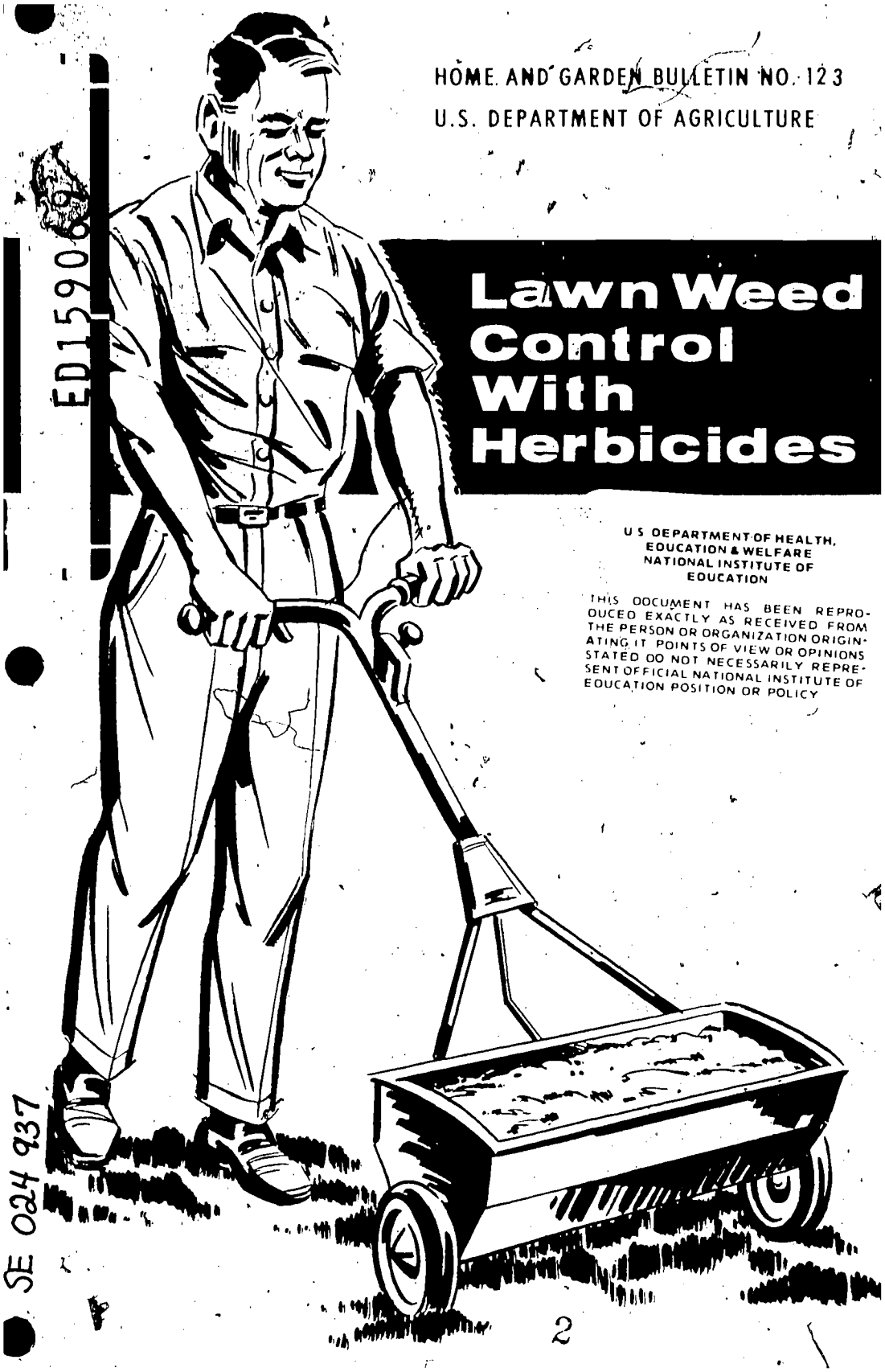
ABSTRACT

Information and diagrams are given for identification and treatment of weed grasses and broadleaf weeds. Herbicides are suggested for use against each weed and instructions are given for proper application. Information is given for buying herbicides, and applying sprays and cleaning sprayers. (BB)

HOME AND GARDEN BULLETIN NO. 123
U.S. DEPARTMENT OF AGRICULTURE

Lawn Weed Control With Herbicides



CONTENTS

- Some of the lawn weeds that are most widespread or difficult to identify are illustrated on pages 10–23.
- Reaction of widespread lawn weeds to commonly used herbicides is given on pages 8 and 9.

COMMON AND CHEMICAL NAMES OF HERBICIDES MENTIONED IN THIS BULLETIN

Common name	*Chemical name*
2,4-D	2,4-(dichlorophenoxy)acetic acid
Silvex	2-(2,4,5-trichlorophenoxy)propionic acid
DSMA	Disodium methanearsonate
Dalapon	2,2-dichloropropionic acid
Metham	Sodium *N*-methyldithiocarbamate
Dazomet	Tetrahydro-3,5-dimethyl-2*H*-1,3,5,-thiadiazine-2-thione
DCPA	Dimethyl 2,3,5,6-tetrachloroterephthalate
Methyl bromide	Methyl bromide
MCPA	[(4-cloro-*o*-tolyl)oxy] acetic acid
Dicamba	3,6-dichloro-*o*-anisic acid
Siduron	1-(2-methylcyclohexyl)-3-phenylurea
Bensulide	*S*-(*0,0*-diisopropyl phosphorodithioate) of N-(2-mercaptoethyl) benzenesulfonamide
Benefin	*N*-butyl-*N*-ethyl-*a,a,a*-trifluoro-2,6-dinitro-*p*-toluidine
Terbutol	2,6-di-*tert*-butyl-*p*-tolyl-methylcarbamate

Washington, D.C. Revised April 1971

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LAWN WEED CONTROL WITH HERBICIDES

Information for this publication was furnished by the
Plant Science Research Division
Agricultural Research Service

Herbicides are available for control of most of the weeds found in lawns. If the precautions on the container label are followed, the recommended herbicides will not damage desirable plants.

Use herbicides only when necessary and as part of a complete lawn management program (see box).

Herbicides are applied as dry granules, wettable powder suspensions, or liquid solutions. Excess dosages of almost any herbicide will damage lawn grasses, and a herbicide may kill one weed and not affect others. To control some weeds, it may be necessary to use herbicides that will temporarily, or even permanently, injure the lawn grasses.

BUYING HERBICIDES

Herbicides are sold in liquid, powder, and granular forms. Most of them have common names that are assigned specifically to their chemical names. The active ingredients are shown by common or chemical name. Herbicides recommended for lawn weed control are listed on the inside front cover. Because of the great number of trade names under which these herbicides are sold, they are not listed in this publication.

The plant-killing strength of liquid forms of herbicides may be stated on labels either as pounds-per-gallon acid equivalent or as percent of active ingredient. Methyl bromide, a gas, is 98-percent basic chemical. The plant-killing strength of the other herbicides listed is stated on the label as percent active ingredient, and the label gives the lawn area to be treated with the package contents.

Methyl bromide, metham, and dazomet are fumigants and will kill lawn grasses. Complete reseeding is required after their use.

TREATING INFESTATIONS

Lawn weeds are classed either as weed grasses or as broadleaf weeds.

LAWN MANAGEMENT

Weeds are usually a minor problem in well-established, well-managed lawns. A good lawn management program calls for proper watering, fertilizing, and mowing and effective insect and disease control.

Home and Garden Bulletin 51, "Better Lawns," tells how to establish and maintain a good lawn. For a free copy, send a post card with your name and address and the number and title of the publication to the U.S. Department of Agriculture, Washington, D.C. 20250. Be sure to include your ZIP Code in your return address.

This section contains recommendations for treating infestations of some of the most troublesome weeds of each type.

Weed Grasses

Crabgrass

The two types of crabgrass treatment are:

- Preemergence treatment—the herbicide is applied in the spring, before the seeds germinate. This gives the best control and is easier.
- Postemergence treatment—the herbicide is applied after crabgrass emerges.

DCPA, benefin, bensulide, terbutol, and siduron, are preemergence herbicides for crabgrass control. Apply them only on established lawns, not on lawns that are to be seeded or that have recently been seeded. An exception is siduron, which may be applied to new bluegrass or fescue lawns, as well as to established lawns of these and other kinds. Apply the preemergence herbicides in April or early May before crabgrass germinates. Dosages of each herbicide to be applied are shown in table 1. Sprinkle the lawn with water after applying preemergence crabgrass killers to wash them off the leaves onto the soil surface.

DSMA and other arsonate materials give good postemergence control of crabgrass. Make three applications of one of these herbicides at 7- to 10-day intervals. Make the first soon after the crabgrass emerges.

Make sure the soil is moist before you apply DSMA. In hot, dry weather, water the soil thoroughly a few days before and a few days after each application.

Do not treat St. Augustine grass with DSMA. If you have fine-leaved fescue, treat with the lower rates recommended by the manufacturer, and only in early spring.

If broadleaf weeds are also present, you can control them by adding 2,4-D or silvex to the DSMA solution in the first application. Prepare the 2,4-D or silvex at the rate recommended on the labels for broadleaf weed control. After the first application make full-strength applications of DSMA at normal intervals.

SPOT INFESTATIONS

To treat spot infestations of weed grasses, use dalapon or petroleum naphtha.

If you use dalapon, mix 8 tablespoons (¼ pound) of the herbicide in a gallon of water. Apply the solution to the weeds at the ground level with a cane-type applicator, syringe, or similar device. You can apply the solution by hand if you wear a cloth glove over a rubber glove. Take care to keep the herbicide off desirable grasses.

If you use petroleum naphtha, apply 1 gallon per 1,000 square feet as a coarse spray or wet the foliage well. This will injure desirable perennial grasses, but they will recover. The herbicide is effective on all annual weeds.

TABLE 1.—*Springtime preemergence crabgrass control and reseeding with bluegrasses and fescues*

Herbicide	*Dose*[1]	*Relative to time of treatment*
DCPA	3.7 oz./1,000 sq. ft.	Reseed fall before or 60 days after.
Bensulide	5.5 oz./1,000 sq. ft.	Reseed fall after spring treatment.
Siduron	2.2 oz./1,000 sq. ft.	Reseed any time—before, at or after.
Benefin	0.7 oz./1,000 sq. ft.	Reseed fall after spring treatment.
Terbutol	3.7 oz./1,000 sq. ft.	Reseed fall after spring treatment.

[1] These herbicides are usually sold prepackaged for a specific lawn area shown on the label.

Bermudagrass

Methyl bromide, dalapon, metham and dazomet and kill bermudagrass. Lawns treated with any of these herbicides must be reseeded.

Methyl bromide is recommended because it requires only one application and because the treated area may be reseeded in 2 or 3 days. Followup applications are always necessary to complete eradication with dalapon, metham, or dazomet, and the homeowner must wait longer before reseeding his lawn.

Methyl bromide.—Methyl bromide is available in kits which contain equipment needed for its application. It should be applied when soil and air temperatures are above 65° F. When temperatures are as low as 50°, the application rate must be doubled.

The application consists of (1) covering the area to be treated with a gasproof covering sealed to the ground with soil, (2) releasing the methyl bromide under the covering at the dose recommended by the manufacturer, and (3) removing the covering after a 24-hour waiting period. Remember—the gas is a deadly poison.

This technique can also be used to kill existing turf so that you can reseed an area without having to spade it.

Dalapon.—Mix dalapon with water—8 tablespoons (¼ pound) of dalapon with each gallon of water. Apply 1 gallon of the mixture to each 1,000 square feet of lawn to be treated. Make one application in late June, and another 3 to 4 weeks later to kill surviving plants. Reseed 4 weeks after the second application if temperatures have been high and the area has been kept moist. Otherwise, wait 6 weeks before reseeding.

Metham and Dazomet.—In applying metham or dazomet, follow the manufacturer's directions. Make one application in early August and another 4 to 6 weeks later to kill surviving bermudagrass plants. Reseed 3 to 4 weeks after the second application.

> Methyl bromide gas is a deadly poison. Do not expose children or pets to its fumes. Do not release it into a closed room.

APPLYING HERBICIDES

Apply herbicides according to the instructions on the container labels.

Do not overdose; overdoses add to the cost of treatment and may damage desirable plants.

For best results, apply herbicidal sprays only when—

- Temperature is between 70° and 85° F.
- Little or no wind is blowing. The herbicide may drift to and damage desirable plants.
- No rain is expected for several hours.

Follow all precautions listed on page 7.

Nimblewill

Rake the frost-killed nimblewill foliage out of the lawn in late fall or early spring. Reseed Kentucky bluegrass or a bluegrass-red fescue mixture into the raked soil.

If you reseed and get a good stand in the fall, treat the infested area in March with DCPA or siduron for control of nimblewill seedlings.

If you reseed in the spring, use only siduron, because other herbicides might damage the seedling lawn grasses. Re-treat the next spring with either DCPA or siduron for control of new nimblewill seedlings.

Broadleaf Weeds

To control broadleaf weeds such as chickweed, henbit, knotweed, ground ivy, and oxalis, use silvex alone or together with an equal amount of 2,4-D, both mixed half strength. Prepare the herbicide solutions at the doses recommended by the manufacturers.

Mixtures of 2,4-D and dicamba are useful for the control of knotweed, ground ivy, clover, red sorrel, and speedwell species. Follow the container label instructions carefully. Excess dicamba may leach into the soil and damage trees and shrubs.

On lawns where bentgrass and clover are to be maintained, apply 2,4-D or MCPA at 0.1 to 0.2 ounce per 1,000 square feet. Silvex will kill white clover and dichondra. Dichondra is also sensitive to 2,4-D. If you have St. Augustine grass, ask your State agricultural experiment station for recommendations before using either of these herbicides on the grass.

Apply the herbicides in spring or fall. Choose a day to apply sprays when the air temperature is above 60° F. and the wind is still. In most regions, fall treatment is more satisfactory; lawn grasses fill in bare spots after fall treatment, but crabgrass is more likely to fill them in after spring treatment.

Unless broadleaf weeds are an acute problem on new lawns, do not apply herbicide until 4 to 6 weeks after grass seedlings emerge. If broadleaf weeds are an acute problem in new seedings, 2,4-D and silvex, or MCPA may be applied at 0.01 ounce per 1,000 square feet, but some grass injury may occur. After the second or third mowing, 2,4-D and silvex may be applied, if needed, at the dose recommended on the label for perennial weeds.

Control wild onion or wild garlic with low volatile ester formulations of 2,4-D. Apply the 2,4-D at 0.07 ounce per 1,000 square feet or according to the manufacturer's di-

rections. Make the treatment every year in March or early April and in October or November until control is achieved. Three years of treatment may be necessary.

When dandelions or other broadleaf weeds occur in scattered stands, apply the 2,4-D mixture with a small sponge attached to the end of a stick, or with other applicators designed for spot treatments. If you use a sponge, wet it in the solution and press it against the base of each weed. Other plants touched with the sponge or applicator may be affected.

For more information on the effectiveness of 2,4-D, MCPA, and silvex on these and other weeds, see pages 8 and 9.

PREPLANTING TREATMENT

You can forestall weed infestations in new lawns by treating the soil in the prepared seedbed with methyl bromide. This herbicide is a fumigant that kills weed seeds as well as established plants. Its use is discussed under "Bermudagrass," page 5.

APPLYING SPRAYS

Use a sprayer that can be adjusted to make a coarse spray at low pressure. On very small areas you may use a garden sprinkling can.

PRECAUTIONS

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers—out of reach of children and pets—and away from foodstuff.

Apply pesticides selectively and carefully. Do not apply a pesticide when there is danger of drift to other areas. Avoid prolonged inhalation of a pesticide spray or dust. When applying a pesticide it is advisable that you be fully clothed.

After handling a pesticide, do not eat, drink, or smoke until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Dispose of empty pesticide containers by wrapping them in several layers of newspaper and placing them in your trash can.

It is difficult to remove all traces of a herbicide (weed killer) from equipment. Therefore, to prevent injury to desirable plants do not use the same equipment for insecticides and fungicides that you use for a herbicide.

Even distribution of the spray on a small area is not difficult. When using a pressure sprayer on a large area, you can usually avoid leaving wide gaps or making overlaps by setting stakes or by placing objects on the ground and walking toward them while spraying. Or you can stretch guide strings across the lawn and follow them while spraying.

CLEANING SPRAYERS

Clean your sprayer after each use.

Thorough washing with water and detergent is sufficient if the herbicide used was dalapon, DSMA, metham, dazomet, or DCPA. This cleaning method also is satisfactory after use of 2,4-D, or silvex—if the sprayer will not be used later for spraying insecticide or fungicide on garden or ornamental plantings.

If the sprayer has contained 2,4-D, or silvex, and it may be used later for spraying fungicide or insecticide on desirable plants, clean it with activated charcoal or household ammonia. Activated charcoal is recommended because it cleans very rapidly, but household ammonia is satisfactory.

If you use activated charcoal, put 1 ounce of it, together with 1 to 2 ounces of household detergent, in 2½ gallons of water and agitate thoroughly. Operate the sprayer with this mixture in it for about 2 minutes and it will be clean.

If you use ammonia, make a solution of 2 tablespoons of ammonia in a quart of water. Fill the sprayer with the solution and spray a small amount through the nozzle. Let the rest of the solution stand in the sprayer overnight. Then pour out the solution and rinse the sprayer twice with clean water. Spray part of each rinse through the nozzle.

Effectiveness of herbicides for control of common lawn weeds

Weed	Type of plant	Control [1]		
		2,4-D	MCPA	Silvex
Bindweed, field (*Convolvulus arvensis*).	Perennial	Good	Good	Good.
Buttercup, creeping (*Ranunculus repens*).	Perennial	Very good.	Excellent	Excellent.
Chickweed, common (*Stellaria media*).	Annual	Good	Fair	Excellent.
Chickweed, mouseear (*Cerastium vulgatum*).	Perennial	Good	Fair	Excellent.
Cinquefoil, Canada (*Potentilla canadensis*).	Perennial	Very good.	Good	Good.
Cinquefoil, sulphur (*Potentilla recta*).	Perennial	Very good.	Good	Good.

See footnote at end of table.

Effectiveness of herbicides for control of common lawn weeds—Continued

Weed	Type of plant	Control [1]		
		2,4-D	MCPA	Silvex
Dandelion (*Taraxacum officinale*).	Perennial	Excellent	Excellent	Excellent.
Dock, curly (*Rumex crispus*).	Perennial	Very good.	Good	Fair.
Garlic, wild (*Allium vineale*).	Perennial	Good	Fair	Poor.
Goosegrass (*Eleusine indica*).	Annual	Poor	Poor	Poor.
Ground ivy (*Glecoma hederacea*).	Perennial	Good	Fair	Very good.
Henbit (*Lamium amplexicaule*).	Annual	Fair	Fair	Very good.
Ivy, English (*Hedera helix*).	Perennial			
Knawel, annual (*Scleranthus annuus*).	Annual	Poor	Poor	Good.
Knotweed (*Polygonum aviculare*).	Annual	Good	Fair	Good.
Medic, black (*Medicago lupulina*).	Annual	Good	Good	Very good.
Moneywort (*Lysimachia nummularia*).	Perennial	Excellent		
Nutsedge, purple (*Cyperus rotundus*).	Perennial	Fair	Poor	Poor.
Nutsedge, yellow (*Cyperus esculentus*).	Perennial	Fair	Poor	Poor.
Pennywort, lawn (*Hydrocotyle rotundifolia*).	Perennial	Very good.		Excellent.
Plantain, broadleaf (*Plantago major*).	Perennial	Excellent	Excellent	Very good.
Plantain, buckhorn (*Plantago lanceolata*).	Perennial	Excellent	Very good.	Very good.
Plantain, rugel (*Plantago rugelii*).	Perennial	Excellent	Excellent	Very good.
Poison ivy (*Rhus radicans*).	Woody	Good	Good	Excellent.
Poison oak (*Rhus diversiloba*).	Woody	Good	Fair	Excellent.
Puncturevine (*Tribulus terrestris*).	Annual	Very good.	Fair	
Sorrel, red (*Rumex acetosella*).	Perennial	Poor	Poor	Fair.
Speedwell, corn (*Veronica arvensis*).	Annual	Fair	Poor	Fair.
Speedwell purslane (*Veronica peregrina*).	Annual	Good	Poor	
Spurge, spotted (*Euphorbia maculata*).	Annual	Fair		Good.
Strawberry, wild (*Fragaria*).	Perennial	Fair	Poor	Good.
Thistle, Canada (*Cirsium arvense*).	Perennial	Good	Good	Good.
Violet (*Viola*)	Perennial	Fair	Poor	Good.
Woodsorrel, yellow (*Oxalis stricta*).	Perennial	Fair	Poor	Very good.

[1] Omission of a term indicates effectiveness is not known.

LARGE CRABGRASS

BN-12840-X

Crabgrass, an annual, reproduces by seeds. The stems are stout and vigorous; those that are prostrate root at the joints. Stems are not hairy. The leaf blade and the lower part of the leaf (sheath), which encloses the stem, are hairy on large crabgrass; leaves and sheaths on smooth

SMOOTH CRABGRASS

BN-12841-x,

crabgrass are hairless. Most leaf blades of large crabgrass are ¼ to ⅓ inch wide. Smooth crabgrass is not as coarse and tall as large crabgrass. Seeds are borne on 3 to 10 branches that radiate from the top of upright stems. The two rows of seed are on opposite sides of the branch.

NIMBLEWILL

BN-12832-X

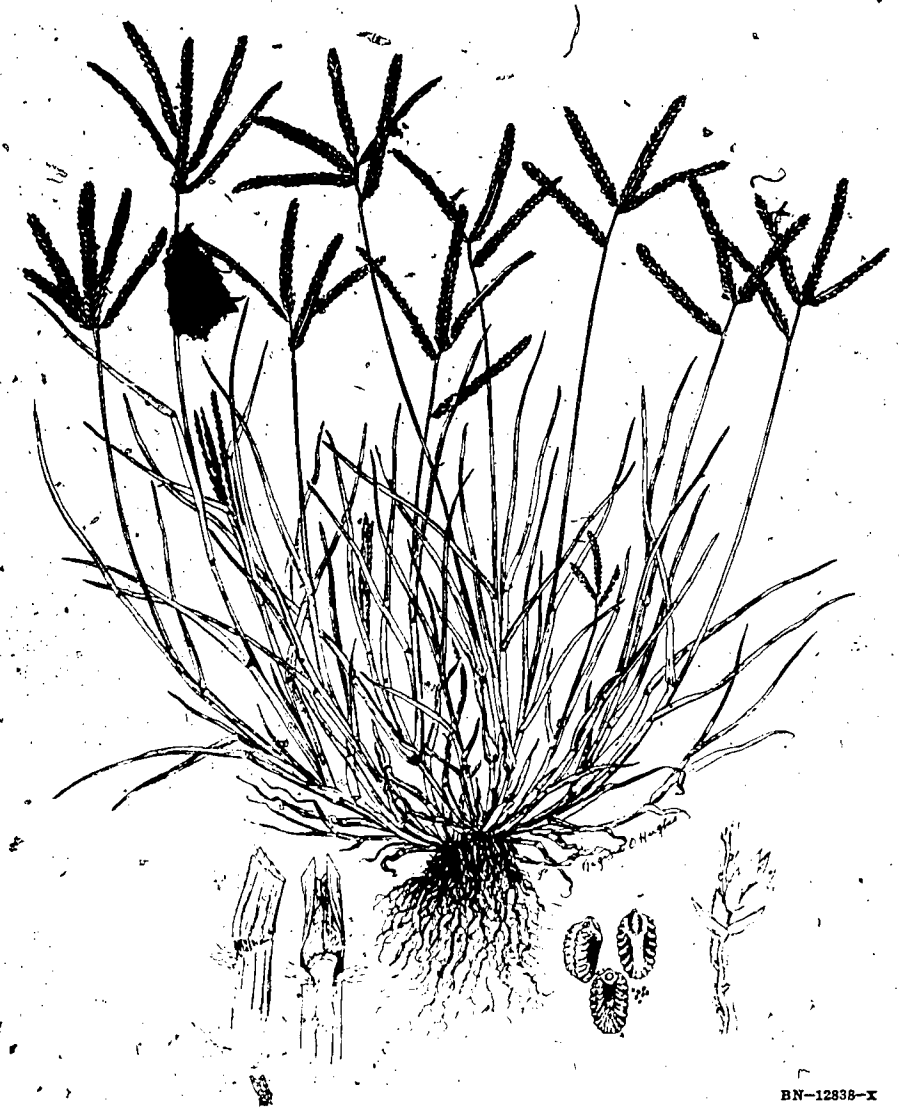
Nimblewill, a perennial, reproduces by seeds and by stems that root at the lower joints. Growth that develops from rooting stems forms dense patches 10 inches or more in diameter. The lower part of the stem is semiprostrate; upper parts curve upwards. The slender, branching stems are not hairy. Leaf blades are short, flat, and hairless. The stems that bear the seeds are branching and 2 to 6 inches long. Seeds are very fine and borne singly.

BERMUDAGRASS

BN—12839—X

Bermudagrass is an aggressive perennial grass that forms a dense, heavy sod. It reproduces by prostrate stems (both above and below ground) that root at the joints, and by seeds. Belowground stems are hard, scaly, and sharp pointed. Aboveground stems are gray green and most of their surface is hairless. There are long hairs at the edges just above the junction of the sheath (the part of the leaf that encloses the stem) and leaf blade. Seeds are borne on three to five branches that radiate from the end of a flattened stem; the two rows of seeds on each branch are pressed closely against one side of the branch.

GOOSEGRASS



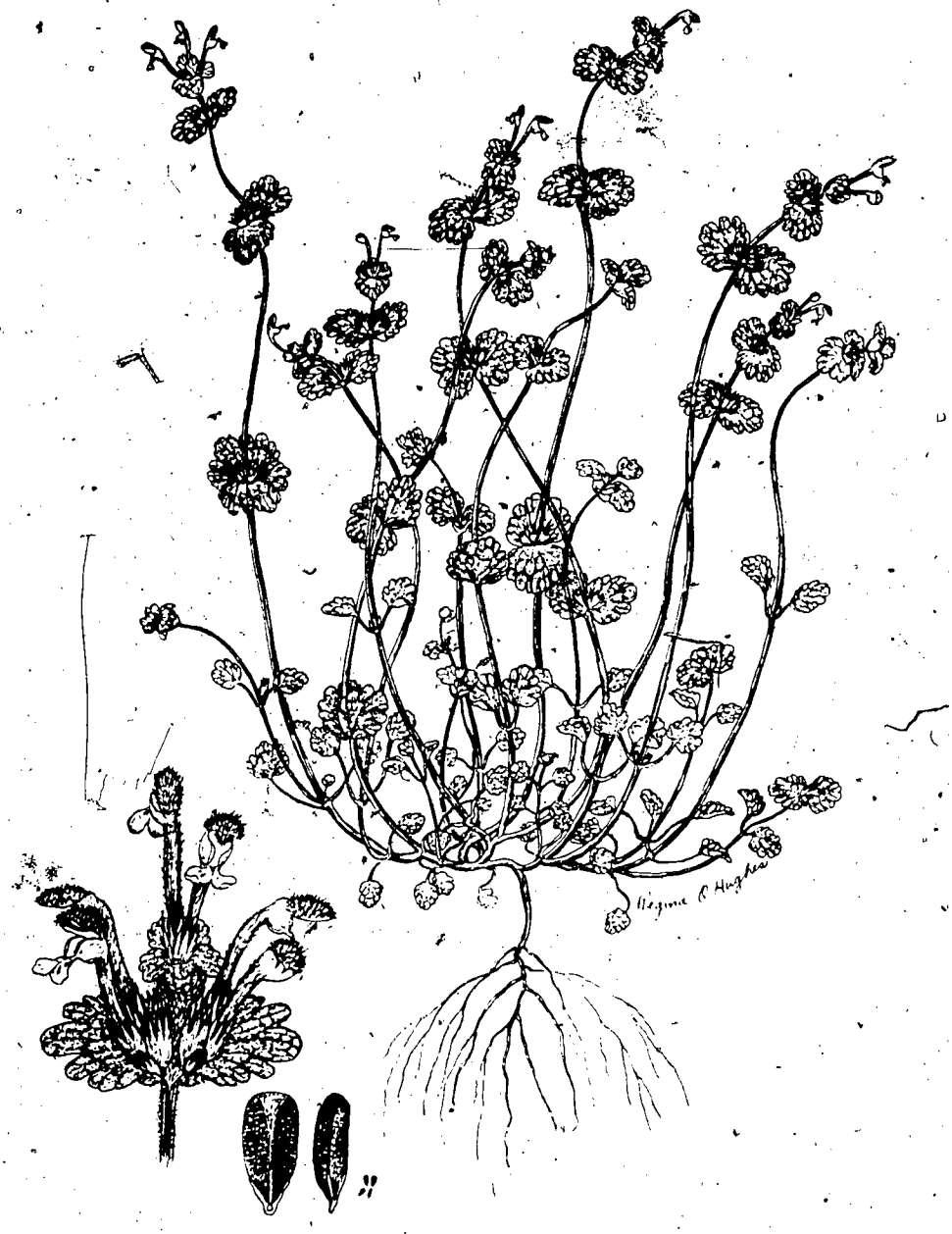
BN-12838-X

Goosegrass is an annual that reproduces by seeds. In general appearance, it has some resemblance to crabgrass. Stems are prostrate and without hairs, like those of smooth crabgrass. Crabgrass stems root at the joints; goosegrass stems do not. The pale-green leaf blades usually are without hairs and are 3 to 12 inches long; they may be folded. Seeds are borne on 2 to 10 branches that radiate from near the top of the stem. There are two rows of seeds, both of which are on one side of the branch.

GROUND IVY

Ground ivy, a perennial, reproduces by seeds and by creeping stems. Stems that are prostrate root at the joints; those that are upright give rise to long leaf stalks. Stems have four sides. The bright green leaves are almost round with round-toothed edges, and ½ to 1½ inches in diameter. Flowers are small, bluish purple, funnel shaped, and borne in small clusters in the axils of the leaves.

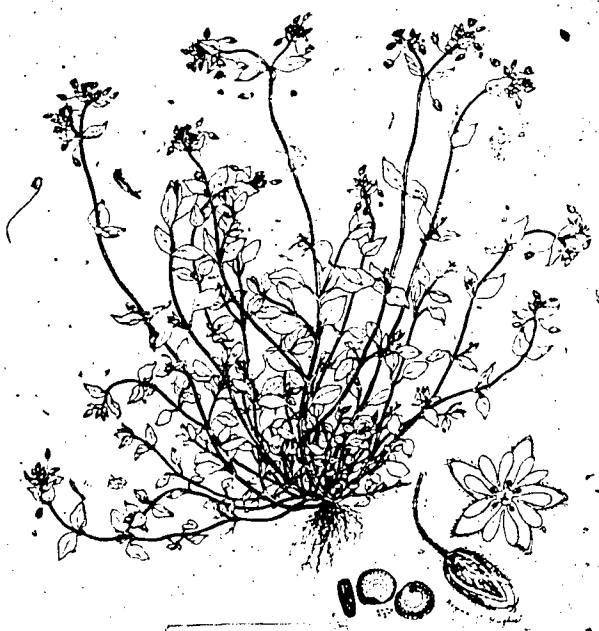
HENBIT



BN—12836—X

Henbit is a winter annual that reproduces by seeds and, occasionally, by rooting at the joints where stems touch the ground. Stems are 4 to 16 inches tall, slender, hairless, and four-sided. Leaves are opposite each other on the stems, and are hairy with rounded teeth. Lower leaves are borne on leaf stalks; upper leaves are attached directly to the stem and clasp the stem. Flowers are pinkish to purple.

COMMON CHICKWEED

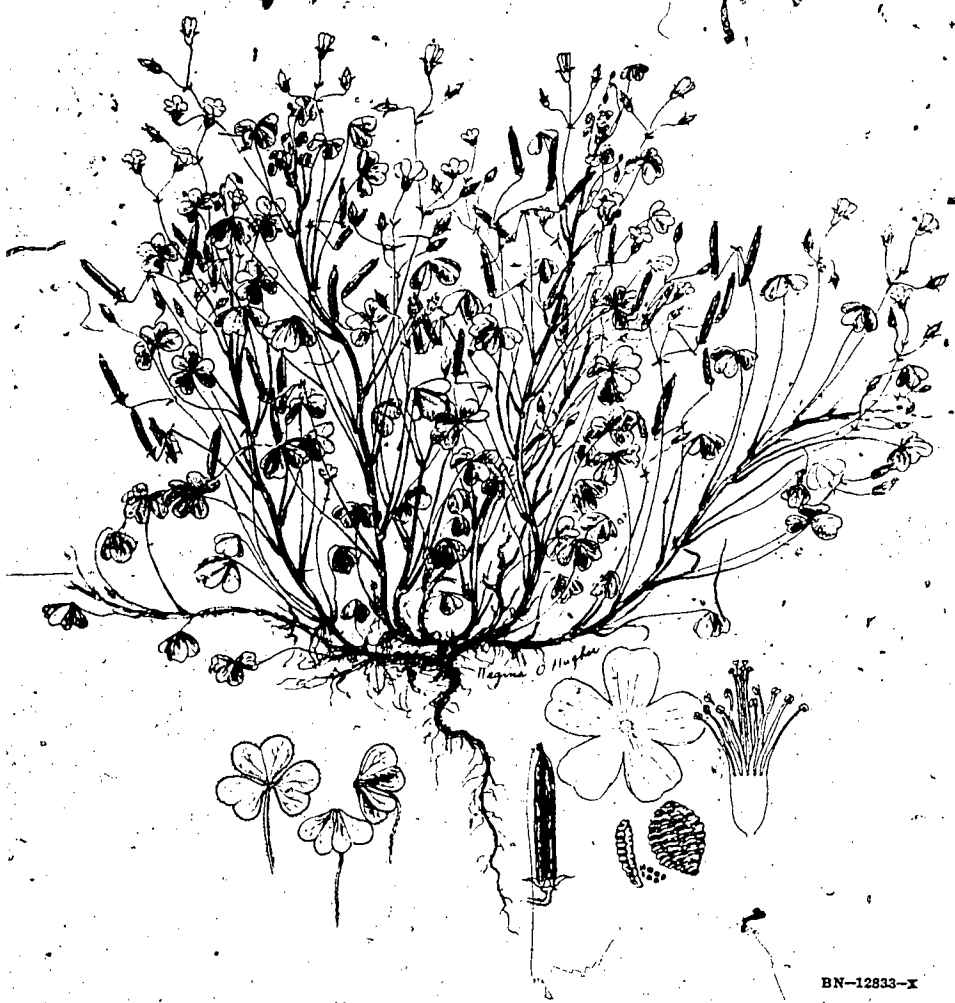


MOUSEEAR CHICKWEED

BN-12835-X, BN-12834-X

Common chickweed and mouseear chickweed are similar in habit of growth. Common chickweed is a low-spreading plant, and mouseear chickweed is partly spreading to erect. Leaves on both plants are small, single, and opposite each other on the stems. Flowers on both are small; the petals are white and fine. But there are distinct differences: (1) Leaves of common chickweed are broadly oval, pointed at the tip, not hairy, and are borne on short leaf stalks; leaves of mouseear chickweed are very hairy, more elongated than round, and attached directly to the stem. (2) Flower petals are slightly notched on mouseear chickweed, and deeply notched on common chickweed. Common chickweed is an annual or winter annual that reproduces by seed and by creeping stems that root at the joints. Mouseear chickweed is a perennial that normally reproduces by seeds; occasionally, it reproduces by root development on lower branches.

YELLOW WOODSORREL



BN—12833—X

Yellow woodsorrel, a perennial, reproduces by seeds. It is a low-growing plant, 4 to 12 inches tall. The weak stems branch at the base and may root at the joints. Leaves are divided into three folded, heart-shaped leaflets that radiate from the end of a long, slender leaf stalk. Leaves are sour tasting. The yellow flowers have five petals and occur in clusters.

NUTSEDGE

BN—28664

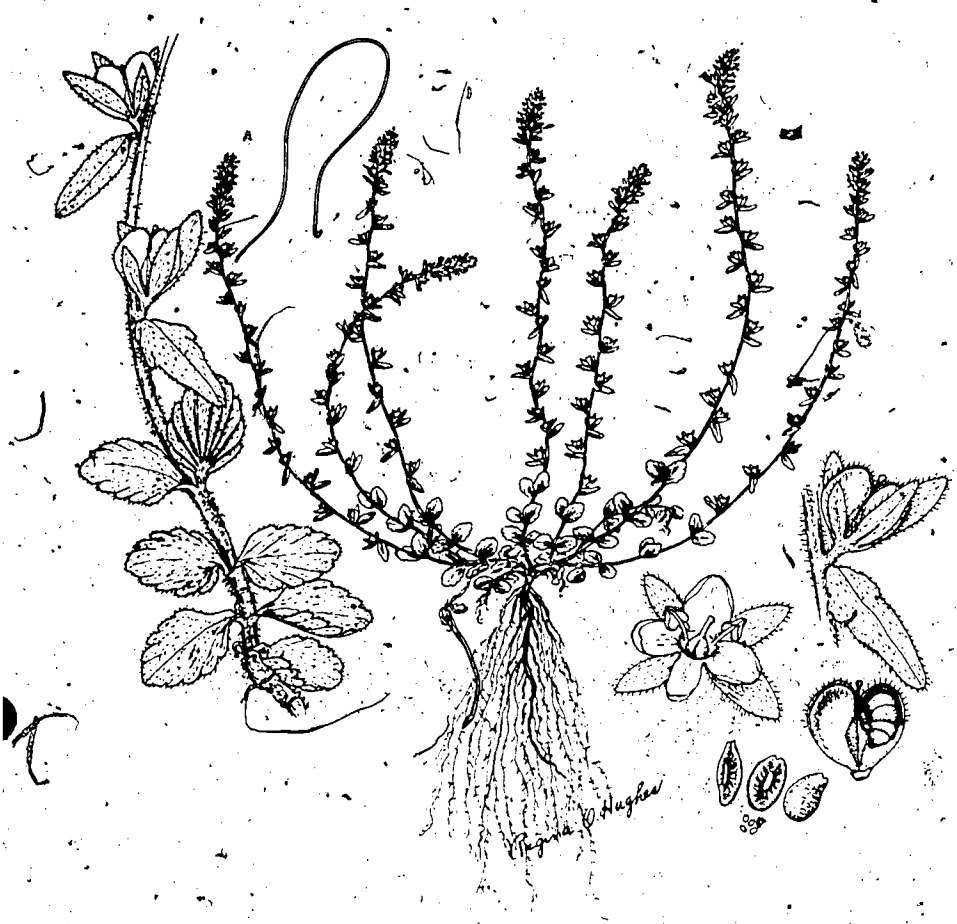
Nutsedge, or nutgrass, is a grass-like perennial weed. It reproduces by seed and tubers on the root. Mature plants have nut-like tubers at the tips of the fibrous roots. Stems grow erect and are triangular in cross section and yellowish-green in color. Looking down on the plant, the leaves appear in three ranks corresponding to the triangular stem. Nutgrass is found especially in lawns established in low, wet areas and in lawns that are watered excessively in the summer.

PURSLANE SPEEDWELL

BN—28863

Purslane speedwell is a winter annual that reproduces by seed. Its root system is quite fibrous. The small, white flowers are located in the axils of the upper leaves. The seed pod is flat, heart shaped, and about ⅛ inch wide. The weed is noticed especially in early spring when bluegrass is just starting to grow well.

CORN SPEEDWELL



BN-28662

Common or corn speedwell is a winter annual that reproduces by seed. Its leaves are more oval than those of purslane speedwell and are notched on the margins. The flower petals are blue, and the whole plant is covered with tiny hairs. The heart-shaped seed capsule may be ¼ inch wide. Like purslane speedwell, this weed is found growing in lawns in early spring when bluegrass is making vigorous growth.

RED SORREL

BN—28665

Red sorrell is a perennial that reproduces by creeping rootstocks and seed. It gets its name from the reddish appearance of the seed head. The rootstocks are shallow. The leaves are 1 to 2 inches long, thick with smooth surface, and sour tasting. The weed is seen mostly in the spring and fall when it is cooler. It persists in areas of poor drainage and acid soil conditions.

ANNUAL FOXTAIL GRASSES

BN—28661

The foxtails shown are summer annual weed grasses. They reproduce only by seed. Yellow foxtail is the species most often found in lawns. In mowed lawns, yellow foxtail produces a mat of foliage and seed heads. The stem bases usually are reddish. The bristle (foxtail) is usually straight and stiff and 1 to 2 inches long. The leaves are flat but may have a spiral twist; they have long hairs where the leaf joins the stem. This weed's growth season is similar to that of crabgrass and control methods are the same for both weeds.

This publication supersedes Home and Garden Bulletin 79, "Controlling Lawn Weeds With Herbicides".

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