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PROBLEM PERENNIAL WEEDS



Cooperative
Extension
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University

OF MICHIGAN

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¹ Common and scientific names of weeds are those accepted by the Weed Science Society of America.

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PROBLEM PERENNIAL WEEDS OF MICHIGAN

By Robert P. Rice, Jr., Alan R. Putnam,
and Ronald H. Lockerman¹

INTRODUCTION

PERENNIAL WEEDS LIVE for more than two seasons and may live indefinitely under favorable conditions. They differ from biennials which live for two seasons, and annuals which live for only one season.

Because they are severe competitors and difficult to control, perennial weeds are becoming increasingly important on agricultural land. In many fields where preemergence herbicides have been continually used, competition by the rapidly growing annuals has been eliminated, thereby improving the environment for growth and spread of perennials. At selective rates, preemergence herbicides usually kill only germinating seedlings of susceptible annual species and offer no control of established perennial weeds. Although preemergence herbicides may control germinating seedlings of perennials, vegetative structures such as rhizomes and tubers, which may be the principal means of reproduction for many perennials, are unharmed.

Perennial weeds can seriously reduce yields or completely destroy crops, causing great economic losses. Some, such as quackgrass and Johnsongrass, exude toxins that inhibit the growth of crops.

ACKNOWLEDGEMENTS

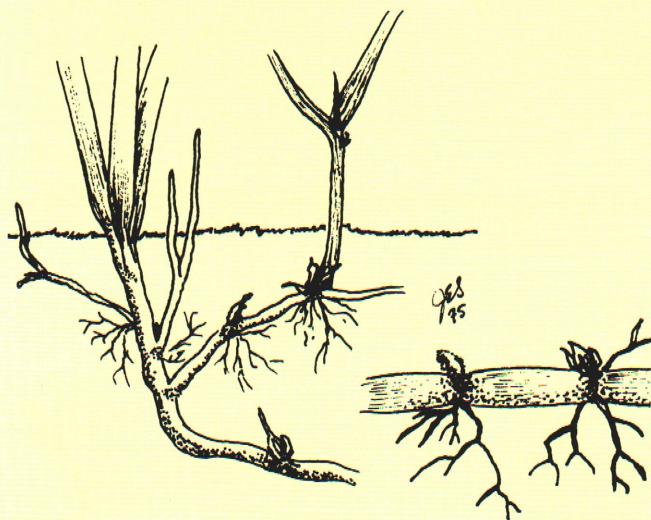
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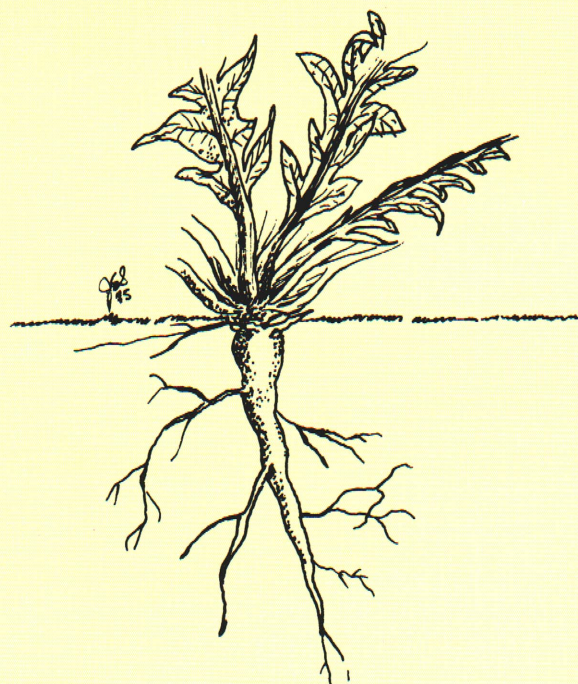
MORPHOLOGY AND REPRODUCTION

The morphology of different perennial weeds varies greatly; however, they all possess mechanisms for food storage and vegetative reproduction. Since the plant lives from year to year, it is necessary that food be stored for overwintering and subsequent early growth the next season.

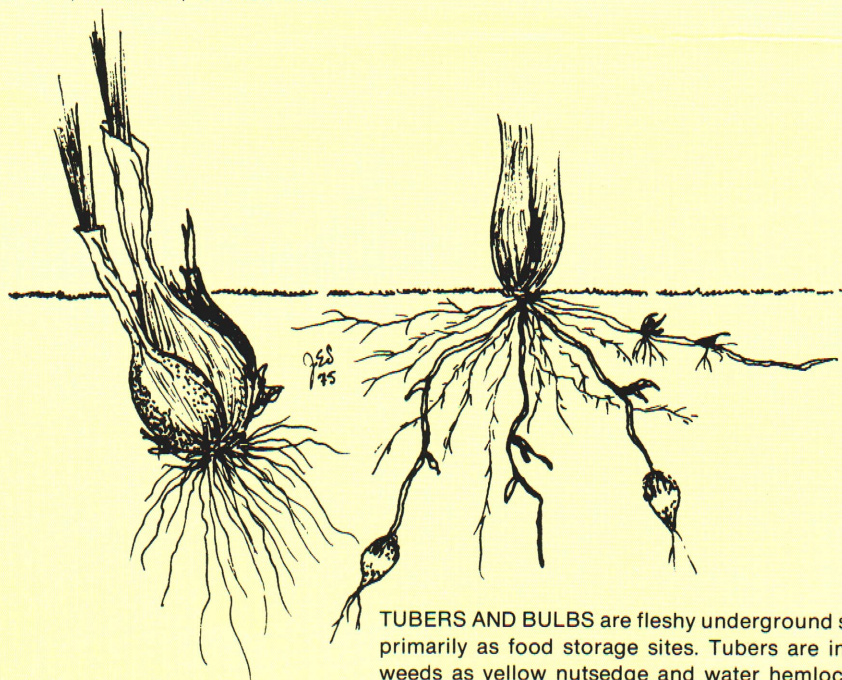
Food storage organs can be classified into the following groups:



RHIZOMES or underground stems may appear to be roots, but since they possess buds and nodes, they are botanically stems. Rhizomes often spread horizontally for a considerable distance from the plant and are common on such weeds as goldenrod, quackgrass and bindweed. The term, rootstock, is often used interchangeably with rhizome.



FLESHY ROOTS are important storage organs for many perennial weeds including dandelion, hoary allysum and curly dock. Several species possess fleshy taproots which penetrate straight downward. Other species possess creeping fleshy roots which not only penetrate to great depths, but may spread for a radius of several feet.



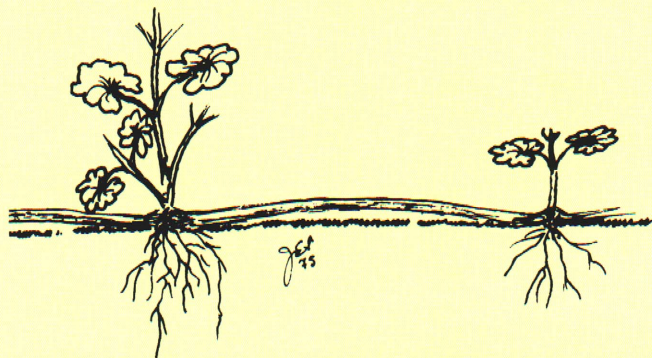
TUBERS AND BULBS are fleshy underground stems functioning primarily as food storage sites. Tubers are important on such weeds as yellow nutsedge and water hemlock. Bulbs are produced by wild garlic and wild onion.

Storage organs play a key role in the persistence and reproduction of perennial weeds, and to a large extent they determine the methods which are effective in controlling a particular weed.

In order for a weed to overwinter, it must store enough food to support limited respiration during the winter and to fuel new growth in the spring. The amount of food stored will depend primarily on environmental conditions during the previous growing season. Perennials overwinter and grow vigorously the next spring if conditions were favorable for sufficient food storage; however, insufficient storage of food results in winterkill or weak growth the following year.

Perennial weeds are often grouped into two categories according to their reproductive mechanisms. One group, called "simple" perennials, reproduces primarily by seed and may possess thick fleshy roots capable of regenerating a plant; however, unless they are mechanically cut or disturbed they do not generally reproduce from roots. Chicory and common dandelion are examples of this group. The second group, called "creeping" perennials, includes

those which commonly reproduce from creeping vegetative organs. These may be above ground (stolons) as in ground ivy and bermudagrass or underground rhizomes (rootstocks) as in quackgrass and Canada thistle. Perennials such as nutsedge and Jerusalem artichoke also reproduce by tubers.



Creeping perennials and those possessing tubers are the most difficult perennial weeds to control. With these, cultivation and other mechanical means of control often result in increased populations due to the spread of root and stem segments.

STRATEGIES FOR CONTROL

Several cultural practices can be employed to deplete food reserves of perennial weeds. Repeated mowing can reduce food reserves because plants utilize reserves for regrowth and are not allowed to produce sugars for storage. Repeated tillage on fallow fields is also an effective means of depleting storage reserves. Some weeds are effectively controlled by fallowing for one season whereas others may persist for two or three seasons. Fallowing is an expensive practice in that it requires considerable energy input with no immediate return from the land. The use of smother crops, such as barley, rye or sudangrass can help suppress some perennials. Incorporation of their growth into the soil also builds up organic matter.

Two types of herbicides, soil sterilants and translocated chemicals, have provided effective control of certain perennial weeds. To be effective, the soil sterilants must be applied at relatively high rates that are incompatible with the culture of most crops. As a rule, time must be allowed for the herbicide to dissipate before planting a crop. An exception to this is atrazine, a selective herbicide which effectively controls quackgrass and at the same time allows corn to grow.

The translocated herbicides offer the greatest po-

tential for controlling deep-rooted perennials. To utilize these chemicals effectively, it is essential to wait until the weeds have developed a luxuriant canopy with adequate leaf area to intercept, absorb and translocate the chemical to the underground parts. Field bindweed, Canada thistle, and horsenettle are effectively controlled when sprayed during or after bloom. The optimum timing will vary with species, and wetting agents will increase the herbicide's effectiveness on most species. Several of the translocated herbicides have little or no residual activity in the soil which allows planting of crops within a few days to months after treatment. Suggestions for specific herbicides approved for perennial weeds are listed in Extension Bulletin E-791-S, **Suggested Herbicides for Perennial Weed Control.**

One of the most important principles of successful perennial weed control is prevention of large scale infestations. Fields should be watched carefully for small patches of perennial weeds that may have been introduced by seed or by vegetative parts carried by tillage equipment. These small patches should be "nipped in the bud" by timely spot treatment with the proper herbicide. If ignored for one or two seasons, these small patches can develop into serious problems.



Hedge bindweed (*Convolvulus sepium* L.)

LEAVES: alternate, large basal lobes, sharp pointed at tip, long petioles.

STEM: 3—10 feet long, twining or trailing on soil surface.

ROOT: extensive but shallow, fleshy, creeping rhizomes present.

FLOWER: 1.5—2 inches across, white and/or pink, funnel-shaped flower, lower part of flower and seedpod enclosed in two leafy bracts.

OTHER CHARACTERISTICS: Found in cultivated fields, fence rows, and waste areas, especially in moist areas. More prevalent in Southern Michigan. Reproduces by seeds and rhizomes.



Field bindweed (*Convolvulus arvensis* L.)

LEAVES: alternate, ovate with spreading basal lobes, variable, long petioled.

STEM: smooth and slender, may twine or spread overground.

ROOT: extensive, may be as deep as 20—30 feet.

FLOWER: white or pink, funnel shaped, about 1 inch across.

OTHER CHARACTERISTICS: Drought resistant and capable of persisting under most cropping systems. Reproduces by seeds and rootstocks. A serious weed of orchards and vineyards in Southern Michigan.



Wild buckwheat (*Polygonum convolvulus* L.)

LEAVES: alternate heart-shaped, pointed with smooth edges, more ovate than field bindweed.

STEM: slender, smooth, twining or creeping.

ROOT: coarsely fibrous, not as extensive as bindweed.

FLOWER: inconspicuous, greenish white, borne in clusters in leaf axils.

OTHER CHARACTERISTICS: Often confused with field bindweed but can be easily distinguished by the more heart-shaped leaves and difference in flowers. This is an annual species and is common to cropland throughout Michigan.

Photo courtesy Ellery L. Knake, University of Illinois



Chicory (*Cichorium intybus* L.)

LEAVES: basal rosette, 6—8 inches long resembling a dandelion, leaves along stems smaller and less lobed.

STEM: erect, branched, with a milky sap.

ROOT: large, fleshy taproot.

FLOWER: bright blue, consisting of ray flowers about 1 inch across at the ends of branches and in leaf axils. Flowers often close late in the day.

OTHER CHARACTERISTICS: Generally not a problem in cultivated fields, but thrives along roadsides, meadows and pastures throughout Michigan. Reproduces by seed.



Dandelion (*Taraxacum officinale* Weber)

LEAVES: simple, 3—10 inches long, variously lobed, with milky sap forming a basal rosette.

STEM: does not elongate but remains as a rosette.

ROOT: thick, fleshy, often branched, taproot may be several feet deep, sections capable of reproducing a new plant.

FLOWER: yellow 1—2 inches in diameter, ray flowers only borne on a long, hollow peduncle.

SEED: small achene topped with a tuft of white hair (pappus).

OTHER CHARACTERISTICS: Widely distributed throughout the state in lawns, meadows, gardens and pastures. Reproduces by seed.



Orange hawkweed (*Hieracium aurantiacum* L.)

LEAVES: basal without petioles, entire and covered with stiff hairs.

FLOWER: bright orange, ray flowers only, $\frac{3}{4}$ inch in diameter, borne on a 6—18 inch peduncle.

ROOT: fibrous, shallow.

OTHER CHARACTERISTICS: Common in pastures and soils of low fertility, particularly in Northern Michigan. Reproduces by seeds and stolons which run along the soil surface.



Photo courtesy William F. Meggitt

Perennial sowthistle (*Sonchus arvensis* L.)

LEAVES: crowded at base, becoming fewer farther up the stem, 4—8 inches long, alternate, clasping bases, lower leaves lobed, upper leaves less lobed.

STEM: 3—7 feet tall, erect with a milky sap and conspicuous gland-tipped hairs.

FLOWER: orange yellow, $\frac{1}{2}$ — $\frac{3}{4}$ inch, consisting of ray flowers. Seeds are small achenes with hairlike tufts.

ROOT: deep-rooted and wide-spreading, capable of producing new shoots from root sections.

OTHER CHARACTERISTICS: Common in cultivated fields, pastures and wastelands throughout the state. A serious weed in grain and row crops.

Photo courtesy William F. Meggitt



Bull thistle (*Cirsium vulgare* (Savi) Tenore)

LEAVES AND STEM: forms a basal rosette the first year with a heavy, 3—6-foot branched stalk the second year. Leaves deeply cut, spiny above and wooly below, alternate with needle point tips.

FLOWER: compact 1—2 inches in diameter, composed of deep purple or rose disk flowers.

ROOT: produces a large fleshy taproot.

OTHER CHARACTERISTICS: Common in abandoned fields and new pastures. Does not generally persist in cultivated fields. Usually behaves as a biennial. Reproduces by seed.



Canada thistle (*Cirsium arvense* (L.) Scop.)

LEAVES: alternate, oblong, with spiny, crinkled edges, upper leaves sessile, hairy beneath becoming glabrous at maturity.

STEM: erect, 2—5 feet tall, branching only at top.

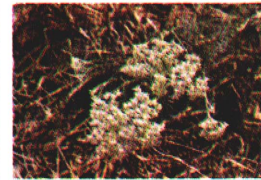
ROOT: extending several feet deep, and creeping horizontally. Capable of reproducing from root segments.

FLOWER: lavender, rose purple or occasionally white, dioecious, numerous, terminal or axillary, $\frac{3}{4}$ inch or less in diameter, disk flowers only, surrounded by bracts without spiny tips.

SEED: brown, $\frac{3}{16}$ inch long, attached to a tan, hairy tuft (pappus) which is easily removed.

OTHER CHARACTERISTICS: Widely distributed in cropland, pastures and waste areas. Reproduces by creeping roots and seed.





Yarrow (*Achillea millefolium* L.)

LEAVES: fern-like, soft, hairy, basal leaves longer than those on stems.

STEM: 1—2 feet tall, hairy, each crown may produce several stems.

FLOWER: white, pink or rose purple in flat-topped clusters at top of plant consisting of 5 to 10 small flowers. Each inflorescence consists of both ray and disk flowers.

ROOT: fibrous with creeping rhizomes.

OTHER CHARACTERISTICS: Reproduces by seed and creeping rhizomes. Does not generally persist in cultivated fields but is troublesome in pastures and lawns.

Photo courtesy William F. Meggitt



Goldenrods (*Solidago* species)

LEAVES: alternate, hairy, basal leaves larger, upper leaves smaller.

STEM: 6—30 inches tall, hairy.

ROOT: fibrous roots with creeping rhizomes.

FLOWER: yellow, terminal, in loose panicles or dense heads.

SEED: short, hairy achenes.

OTHER CHARACTERISTICS: A number of closely related species are found in abandoned fields throughout Michigan. Sometimes a weed problem in orchards. Reproduces by seeds and rootstocks.



Common yellow woodsorrel (*Oxalis stricta* L.)

LEAVES: Compound, with three heart-shaped leaflets, long petioles, sour tasting.

STEM: branching at the base, weak, prostrate or erect, hairy, roots at nodes.

FLOWERS: 5 petaled, yellow, ¼—½ inch in diameter, often in clusters.

SEEDPODS: slender, 5 ridged, pointed, explode when touched.

ROOT: fibrous taproots with slender rhizomes.

OTHER CHARACTERISTICS: Reproduces from rhizomes and seed which is forcibly ejected from seedpods. A weed of pastures, lawns, gardens and greenhouses.



Black medic (*Medicago lupulina* L.)

LEAVES: compound with 3 leaflets, the center one on a short stalk.

STEM: spreading, 1—2 feet long.

ROOT: shallow taproot.

FLOWER: yellow, $\frac{1}{16}$ inch long, in clover-like spikes borne on short branches.

OTHER CHARACTERISTICS: A common contaminant in alfalfa and alsike clover. Common in lawns, pastures and meadows throughout Michigan. Reproduces primarily by seed and may behave as an annual, biennial or perennial.



White clover (*Trifolium repens* L.)

LEAVES: compound on long petioles with three elliptic leaflets.

STEMS: creeping stolons

FLOWERS: white, pea-shaped in a dense, round spike

ROOTS: fibrous

OTHER CHARACTERISTICS: Often escapes from cultivation. Common throughout the state in pastures, roadsides, orchards and lawns.



Dewberry (Northern) (*Rubus flagellaris* Willd)

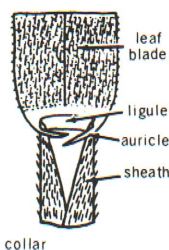
LEAVES: compound, 3-5 ovate leaflets, variously pubescent, rough.

STEM: woody with thorns, prostrate to arching.

FLOWERS: solitary and terminal, usually 2-5 each pedicel, white to pink, usually 5 stamens, pistils numerous.

ROOTS: deep, spreading several feet.

OTHER CHARACTERISTICS: Escaped from cultivation, an increasing problem in perennial crops in S.W. Michigan. Reproduces both by seed, which may be spread by birds, and by stems, which may root at the tips.



Quackgrass (*Agropyron repens* (L.) Beauv.)

LEAVES: soft, flat with clasping auricle, lower leaf sheaths are hairy.

ROOT: rhizomes present 2—8 inches deep with roots arising only at nodes.

FLOWER: spike with numerous short spikelets consisting of 3—7 florets.

OTHER CHARACTERISTICS: A primary noxious weed which spreads by seeds and rhizomes. Suppresses crop growth both by competition and by toxic root exudates. Difficult to control by cultivation since rhizome sections will reroot and sprout at each node. Found in open waste places, pastures and many cropped areas throughout upper and lower Michigan.



Johnsongrass (*Sorghum halepense* (L.) Pers.)

LEAVES: alternate, simple, smooth, to 20 inches long, 1/4-1/2 inch wide.

STEMS: erect or decumbent, 1.5 to 6 feet tall, rooting at nodes.

ROOTS: branching, fibrous with stout, pointed rhizomes with purple spots.

FLOWERS: spikelets in pairs, or at the ends of branches in threes. Panicles are large, purple, hairy.

OTHER CHARACTERISTICS: Seeds large, up to 1/8 inch long. Reproduces by seed and rhizomes. Now found occasionally in Southwest Michigan but is spreading. Difficult to control in cropland.



Yellow nutsedge (*Cyperus esculentus* L.)

LEAVES: 3 ranked, grasslike, light green with closed sheaths.

STEM: triangular, 0.5—2 feet, erect.

FLOWER: small, yellow to yellow brown, arranged in narrow spikelets or umbel-like inflorescences.

ROOT: fibrous root system with scaly rootstocks bearing small, rounded, nut-like tubers.

OTHER CHARACTERISTICS: Capable of reproducing from seed or tubers. One of the most serious weeds in the Northern United States. Most common in moist lowland soils but may adapt to drier soils.



Wild garlic (*Allium vineale* L.)

LEAVES: 2 ranked, nearly round, hollow, striped and tapering.

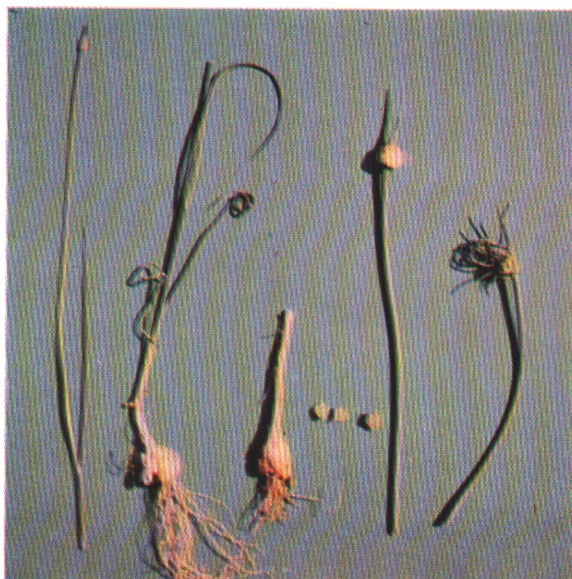
STEM: stiff, erect, leafy to near middle.

FLOWER: small, greenish white to purple, born on short stems above aerial bulblets.

ROOT: fibrous roots extending from base of small bulb.

OTHER CHARACTERISTICS: Reproduces from seed, aerial bulblets and underground bulbs. Similar to wild onion except that onion leaves are flat and not hollow. Serious pest in pastures, small grains and grapes. Imparts a disagreeable odor and flavor to milk when ingested by cows. Found almost exclusively in Southern Michigan.

Photo courtesy James Miller, University of Georgia



Bouncing bet (*Saponaria officinalis* L.)

LEAVES: opposite, smooth, 2—3 inches long, about 1 inch wide, sessile.

STEM: 1—2 feet tall, jointed and usually unbranched.

ROOT: short, thick.

FLOWER: showy clusters, of 5-petaled, pink flowers (occasionally white) about 3/4 inches long, base inclosed in tubular calyx.

OTHER CHARACTERISTICS: An escaped ornamental found primarily in waste areas; and ditch banks. Reproduces both by seed and rootstock. More abundant in Southern Michigan.



White cockle (*Lychnis alba* Mill.)

LEAVES: opposite, long and narrow, pointed, sessile, covered with short hair.

STEM: 1.5—2 feet tall, erect, stout, branched, hairy and sticky.

ROOT: thick, fleshy.

FLOWER: fragrant, white to pink, 3/4-inch diameter, borne on erect stems in leaf axils or in loose panicles, base enclosed in a tubular calyx. Flowers open at night.

OTHER CHARACTERISTICS: Found along roadsides, edges of fields and in small grains and legumes. Reproduces primarily by seeds. Often behaves as a biennial.





Swamp smartweed (*Polygonum coccineum* Muhl.)

LEAVES: alternate, oblong, 2.5—8 inches long with a prominent midrib, basal sheath surrounds stem.

STEM: 1—3 feet tall, swollen at nodes.

ROOTS: extensive, woody, rhizomes present.

FLOWER: pink, produced in a dense, erect spike 1—3 inches long.

OTHER CHARACTERISTICS: Usually found in wet, poorly drained areas, but becoming more prevalent in cropland in Southwestern Michigan. Spreads primarily by rhizomes which root at the nodes and also by seed.



Healall (*Prunella vulgaris* L.)

LEAVES: opposite, with moderately long petioles, margins entire or irregular, oval shaped, 1—4 inches long.

STEM: 2—24 inches long, erect or spreading, branched, 4 sided, hairy when young, becoming smooth with age.

FLOWER: violet to purple in a dense spike. Each flower is a two-lipped tube with the upper lip hood shaped and larger than the lower lip. Each flower is subtended by a bract.

ROOT: fibrous and shallow.

OTHER CHARACTERISTICS: Found in lawns and meadows where there is ample moisture. Reproduces from seeds and short stolons.



Ground ivy (*Glechoma hederacea* L.)

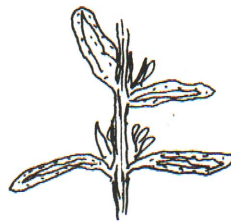
LEAVES: opposite, palmately veined, nearly round or kidney shaped, with round-toothed edges, minty odor.

STEM: square, creeping, rooting at the nodes.

FLOWER: inconspicuous, blue, 2-lipped, funnel shaped, borne in leaf axils.

OTHER CHARACTERISTICS: Common in lawns, orchards and waste places especially in damp, rich soil in shady areas. Reproduces by seeds and creeping stolons.

Photo courtesy William F. Meggitt



St. Johnswort (*Hypericum perforatum* L.)

LEAVES: opposite, elliptical to oblong, covered with small clear dots.

STEM: 1—2 feet tall, somewhat 2-edged and woody at base.

ROOT: branched and extending deep into the soil, short shallow rhizomes extend out several inches from crown.

FLOWER: yellow, with occasional black dots on edge, 5 petals, about ¾ inch in diameter.

OTHER CHARACTERISTICS: Particularly common in pastures and along roadsides. Somewhat poisonous to livestock. Reproduces both by seed and rootstocks.



Field horsetail (*Equisetum arvense* L.)

LEAVES AND STEM: Produces a reproductive and a vegetative stem. Reproductive stems are stout, topped with a cone-shaped fruiting structure, jointed, up to ¼ inch thick and unbranched. Vegetative stems are wiry with whorled lateral branches. Leaves are green and form cup-shaped sheaths at the joints only on the vegetative stems.

FLOWER: absent, reproduces by spores contained in the fruiting structure.

ROOT: deep and extensive rhizome system with small tubers attached.

OTHER CHARACTERISTICS: Capable of reproducing from rhizome sections and tubers. Most common in wet, sandy or gravelly soils throughout the state. Poisonous to livestock.

Photo courtesy William F. Meggitt



Eastern bracken (*Pteridium aquilinum* (L.) Kuhn.)

LEAVES: triangular, fronds arise directly from the rhizome and consist of many branches, each containing numerous segmented leaflets.

FLOWER: absent, reproduction is by spores contained in sporangia on the underside of fronds.

ROOT: thick, black, scaly rhizomes which may be 20 or more feet long.

OTHER CHARACTERISTICS: Found in pastures and woodlands particularly on acid soils. More common in Northern Michigan. Poisonous to livestock.

Photo courtesy James Miller, University of Georgia



Common milkweed (*Asclepias syriaca* L.)

LEAVES: opposite, oval, 4—8 inches long with prominent veins; smooth upper surface and downy lower surface.

STEM: erect and stout, 2—5 feet tall, covered with downy hairs. Leaves and stems with milky sap.

ROOT: thick, fleshy roots may extend to a considerable depth.

FLOWER: pink to white, star shaped, in large ball-shaped clusters, slightly fragrant.

SEED: flat, brown, with tuft of silky hairs enclosed by a spiny green to gray seedpod 2—4 inches long.

OTHER CHARACTERISTICS: Common in cultivated fields, pastures, and along roadsides throughout Michigan. Reproduces by seed and creeping rootstocks.



Hemp dogbane (*Apocynum cannabinum* L.)

LEAVES: opposite, elliptical, smooth edged, smooth or hairy, on conspicuous petioles.

STEM: erect to 15 inches tall with a milky sap.

FLOWERS: small, 5 white to greenish white petals.

ROOTS: long horizontal rootstocks.

OTHER CHARACTERISTICS: A highly variable species. Reproduces by seeds borne in a long, slender pod or by new shoots from rhizomes. Recently infesting cropland in Southern Michigan.



Pokeweed (*Phytolacca americana* L.)

LEAVES: alternate, oval, smooth and entire, large though smaller at top of plant.

STEM: erect, stout, 3—9 feet tall, reddish, dying to ground each winter.

FLOWER: small, white, 5 petal-like sepals, in long, unbranched racemes.

FRUIT: a purple, globose berry with crimson juice containing 10 seeds.

ROOT: large (up to 6 inches in diameter) poisonous taproot.

OTHER CHARACTERISTICS: Common in fence rows, edges of clearings and cropland in Southern Michigan. Though young shoots may be eaten, old shoots and other plant parts are poisonous.



Curly dock (*Rumex crispus* L.)

LEAVES: large, 6—12 inches long, smooth, mostly basal, lance-shaped with curly edges.

STEM: 1—4 feet tall, single or in groups from crown.

ROOT: large, yellow taproot.

FLOWER: borne in dense clusters at tips of stems, green turning to reddish brown at maturity.

OTHER CHARACTERISTICS: Reproduces primarily by seed. Commonly found in pastures, roadsides, new hay fields and in small grains. Found throughout upper and lower Michigan.



Broadleaved dock (*Rumex obtusifolius* L.)

Similar to curly dock except leaves are broad and flat with a heart-shaped base. More widely distributed in lower peninsula.



Red sorrel (*Rumex acetosella* L.)

LEAVES: alternate, arrow-shaped, 1—3 inches long, thick, smooth, and acid to taste, early growth consists of a basal rosette.

STEM: ½—2 feet tall.

ROOT: extensive but shallow, rhizomes present.

FLOWER: yellow or red on erect racemes, male and female flowers found on separate plants.

OTHER CHARACTERISTICS: Species is highly variable. Spreads both by seeds and rhizomes. Survives in areas of poor drainage and soils of low fertility, often found in pastures, meadows and sometimes in lawns. Widely distributed in upper and lower Michigan.



Clammy groundcherry (*Physalis heterophylla* Nees)

LEAVES: alternate, 2—3 inches long, broadly oval, wavy or broad toothed edge, pubescent.

ROOT: thick, fleshy, creeping rootstocks.

FLOWER: bell-shaped, drooping, five petals, greenish yellow with brown or purple center, $\frac{3}{4}$ inch in diameter borne in leaf axils.

FRUIT: round, yellow berry enclosed by a papery calyx.

STEM: hairy, erect, to broadly spreading 1—3 feet tall.

OTHER CHARACTERISTICS: Capable of reproducing by seed and from segments of thick rhizomes which may extend a considerable distance both horizontally and vertically. Found in cultivated fields, pastures and meadows throughout Michigan. There are many similar species that vary in leaf shape, pubescence and growth habit.



Horsenettle (*Solanum carolinense* L.)

LEAVES: alternate, oblong, wavy edged or lobed, rough yellow prickles on petioles, midribs and veins.

STEM: 1—4 feet tall, hairy with slender spines.

ROOT: fleshy roots may extend 5 or more feet.

FLOWER: borne in clusters on spiny petioles, white to purple, 5-lobed, $\frac{3}{4}$ inch across, perfect.

FRUIT: tomato-like, smooth, round, $\frac{3}{8}$ — $\frac{5}{8}$ inch in diameter.

OTHER CHARACTERISTICS: Most commonly found in sandy soils in the lower peninsula. A serious weed on cropland in Southern Michigan. Reproduces by seeds and creeping rootstocks.



Bitter nightshade (*Solanum dulcamara* L.)

LEAVES: 2—5 inches, dark green, alternate, often 3-lobed at base.

STEM: vine-like, 2—10 feet, twining or prostrate, may root at nodes.

ROOT: extensive, creeping roots.

FLOWER: white to purple, 5-lobed, perfect, $\frac{1}{2}$ inch across in loose axillary clusters.

FRUIT: $\frac{3}{8}$ inch round berry, green turning bright red at maturity.

OTHER CHARACTERISTICS: Usually found in moist soil along fence rows, thickets and edges of clearings. Reproduces by seeds and stolons. A mildly poisonous plant.



Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.)

LEAVES: palmately compound, dull green, serrate.

STEM: long, woody, vinelike, climbs by attaching itself to supports with adhesive discs on the end of many-branched tendrils.

FLOWER: well-branched panicles, terminal and from upper leaf axils, not commonly observed.

FRUIT: nearly black berries.

OTHER CHARACTERISTICS: Often confused with poison ivy but is easily distinguished by having 5-foliate leaves. Common in Southern Michigan in woodland margins and fencerows.



Poison ivy (*Rhus radicans* L.)

LEAVES: alternate, shape is highly variable, glabrous or slightly pubescent, edges smooth to irregularly serrate, compound with three large leaflets.

STEM: erect and shrubby or vinelike.

ROOT: creeping rootstocks.

FLOWER: small, yellowish green, 5-petaled, inconspicuous, arising from axils of previous years growth.

FRUIT: a small, round, green-white drupe.

OTHER CHARACTERISTICS: All parts of plant contain a poisonous material. Contact with any part of the plant or smoke from burning is hazardous. Reproduces by seed or rootstocks. Found in woods, fencerows, thickets, along roadsides and is a serious weed in orchards. More abundant in lower peninsula.



Trumpet creeper (*Campsis radicans* (L.) Seem.)

LEAVES: opposite, pinnately compound, 8—15 inches long, 7—11 leaflets.

STEM: vining, 20—40 feet long, woody, climbing or spreading along ground.

ROOT: vigorous, tough, running.

FLOWER: showy, orange, 2.5—3 inches long, trumpet shaped, borne in clusters on short stems.

SEED POD: cigar-shaped, 4—6 inches long, splitting in half at maturity.

OTHER CHARACTERISTICS: Escaped from cultivation primarily in Southwest Michigan. Capable of surviving in cultivated fields but most common in fencerows. Reproduces by roots, stems and seed.

Buckhorn plantain (*Plantago lanceolata* L.)

LEAVES: strap-shaped, in basal rosette, 2—10 inches long, hairy, 3 to 5 prominent veins running lengthwise.

ROOT: shallow, tough, fibrous.

FLOWER: numerous, petals inconspicuous in short cylindrical spikes on long peduncles.

OTHER CHARACTERISTICS: Found in lawns, meadows, and pastures, more abundant in Southern Michigan. Reproduces by seed.



Broadleaf plantain (*Plantago major* L.)

LEAVES: alternate in a rosette, basal, broad with prominent veins, edges usually wavy.

ROOT: fleshy with many fibrous roots.

FLOWER: numerous on spikes, petals inconspicuous.

OTHER CHARACTERISTICS: Common in lawns and pastures throughout the state. Reproduces by seed.



Hoary alyssum (*Berteroa incana* (L.) DC.)

LEAVES: gray-green, alternate, hairy, oblong, ½—3 inches long with smooth edges, often forming a basal rosette.

STEM: 1—3 feet tall, much branched at top.

FLOWER: white with 4 deeply divided petals produced in a long raceme.

SEEDPODS: oblong with a short beak at the end, formed on bottom of raceme first.

ROOT: thick taproot.

OTHER CHARACTERISTICS: Appears early in season and produces seeds until frost. Reproduces by seed. Found primarily in meadows, pastures and waste areas of lower and upper peninsula.



GLOSSARY

Achene—a dry, one-seeded fruit in which the ovary wall remains free from the seed coat.

Alternate—situated singly at each node.

Auricle—a small, projecting lobe or appendage at the base of an organ.

Axil—position where a leaf joins the stem.

Axillary—located or arising from an axil.

Basal—pertaining to parts of the plant located nearest to ground level.

Bract—a modified or reduced leaf subtending a flower or inflorescence.

Bulb—an underground stem with fleshy, scale-like leaves which store food.

Calyx—the outer series of floral leaves enclosing a flower.

Disk flower—in composites, the tubular flowers in the center of the inflorescence.

Drupe—a one-seeded fruit with a fleshy outer wall and a bony inner wall.

Erect—upright.

Floret—one of the small flowers comprising an inflorescence.

Fron—a fern leaf.

Glabrous—smooth, lacking hair.

Globose—sphere shaped.

Inflorescence—a flower cluster.

Lobe—a partial division of a plant organ.

Node—the point on a stem from which leaves and branches arise.

Opposite—situated at opposite sides of the same node.

Ovate—egg shaped.

Palmate—a compound leaf with leaflets attached at the same point at the top of a petiole.

Panicle—an inflorescence having repeated branching with each branch bearing a flower.

Pedicel—the stalk to a single flower in an inflorescence.

Peduncle—the stalk to a solitary flower or inflorescence.