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This publication is a cooperative effort between the Iowa Soybean Association and the College of Agriculture and Life Sciences and Extension at Iowa State University.

**Note:** Information in this guide may be specific to Iowa. Those from outside Iowa should check with their state land grant university weed scientists or agronomic service provider for local information.

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Weed management is a vital aspect of profitable corn and soybean produc-
INTRODUCTION

Corn and soybean producers face multiple pest and plant health challenges that can often be effectively managed with an Integrated Pest Management (IPM) program. Weed management is vital for maximizing crop production and is an important component of IPM.

Accurate weed identification is the first step to successfully managing weeds. Because weed species vary in their response to different management strategies, proper identification is essential to develop effective management plans. These plans include cultural, mechanical or chemical control methods that are specific to the particular cropping system and weeds present. Control methods must be employed at the appropriate time for optimum results.

This field guide helps identify weeds by describing and illustrating diagnostic characteristics of weeds found in crop production fields in Iowa and neighboring states.

Weeds are arranged in two main categories: Grass and Grass-like Weeds and Broadleaf Weeds. Within the two main categories, weeds are arranged alphabetically by plant family and within each family by scientific name. This guide predominantly uses the most recently accepted common names specified by the Weed Science Society of America and scientific names by Flora of North America.

After identifying a weed problem, consult with state or local extension personnel and agronomic service providers to develop an effective management plan.
Life Cycles of Weeds

Weeds typically fall into one of three life cycle classifications: annuals, biennials or perennials. Some weeds may be classified into more than one life cycle. Weeds are usually best adapted to survive in a crop with a similar life cycle, germination time or growth habit. The most effective control methods often are based on the life cycle of a weed.

Annuals
Annual weeds complete their life cycle in one year and reproduce by seeds. There are summer and winter annual weeds. Summer annual weeds germinate in the spring, then grow, flower and produce seeds during one growing season. They are the most common type of weed in annually tilled fields. Winter annual weeds germinate in late summer or fall, establish a root system and vegetative growth, overwinter and then resume growing the next spring. They usually flower and set seed in spring or early summer and then die. Winter annual weeds can pose problems in fall-seeded crops, early spring grains, pastures and no-till fields. Annual weeds are most easily controlled in the seedling stage and become more difficult to control as they grow and mature.

Winter annual weeds can pose a problem in no-till fields.
Biennials

Biennial weeds require two years to complete their life cycle and, like annual weeds, only reproduce by seeds. Seeds germinate in the spring or summer and produce root systems and rosettes of leaves the first year. The following spring stems bolt (elongate) and plants flower, produce seeds and die. Biennial weeds are typically a problem in no-till fields, pastures and other undisturbed areas. Some biennial weeds can also behave as annuals, completing their life cycle in a single growing season. Chemical control of biennial weeds is most effective when applied to seedlings or during the rosette stage, before stems bolt.
Perennials
Perennial weeds live multiple years. They reproduce vegetatively and/or by seeds. Perennials typically inhabit no-till fields, pastures, roadsides and, occasionally, tilled fields. Most perennial weeds found in row crops regrow annually from underground overwintering structures.

Perennials can be grouped into two classes, simple and creeping. Simple perennials usually have taproots and reproduce by seed. Creeping perennials can reproduce by seed and vegetatively by rhizomes, tubers, stolons, budding roots and bulbs. Tillage breaks vegetative structures into pieces that can regenerate into new plants, potentially spreading the infestation within or between fields. Perennials may require either repeated efforts or a combination of management tactics to achieve adequate control. A well-timed systemic herbicide application may provide the most effective chemical control. Perennials are easiest to control as seedlings.

Canada thistle is an example of a weed that reproduces
Herbicide programs typically include soil-applied (e.g., preemergence) and postemergence products. Soil-applied herbicides control weeds as seeds germinate, reducing early-season weed competition and protecting yield potential. They also provide residual activity and greater flexibility in timing of postemergence herbicides. Postemergence applications target weed species not controlled by soil applications. Some postemergence herbicides only control weeds emerged at the time of application. Others control emerged weeds and provide residual activity against later emerging weeds.

A well designed weed management plan involves field scouting and protects crops from weed competition, prevents weed populations from increasing over time, minimizes herbicide injury and delays or prevents herbicide resistant weed development.

**Factors to consider when selecting herbicides**

- Weed escapes or problems the previous year
- Environmental conditions the previous year, including conditions favorable for herbicide carryover
- Herbicide tolerant crops used the previous year and planned for the current year
- Tillage plans for the current season
- Using herbicides with different sites of action to delay or prevent herbicide resistant weed development
- Using timely herbicide applications that prevent early-season weed competition and provide residual control for late-emerging weed species
- Crop rotation plans for the next year (carryover)
- Postemergence herbicide label restrictions based on crop and weed growth stage and/or height
Soil-applied herbicide application factors
Factors particularly important to consider for soil-applied products include soil type, environmental impacts such as leaching or runoff potential and possible interactions with insecticides or other herbicides. Rates should be based on soil type, target weeds and objectives of the application (full-season weed control versus set up for planned postemergence herbicide).

Postemergence herbicide application timing factors
Field scouting is particularly important when selecting postemergence herbicides. Fields should be scouted frequently following crop emergence to determine the need and appropriate timing of postemergence weed control. Weed species, density and growth rates are critical factors influencing how long weeds can compete with the crop before yields are reduced. Treat fields with heavy infestations as soon as possible after weeds emerge.

The initial growth of weeds is relatively slow, but their growth rate increases rapidly as time progresses. Weeds as small as two inches tall can reduce crop yields if present at high densities. Crop yield loss per day increases due to increasing competition of larger weeds.

Monitor weed emergence prior to postemergence applications.
Herbicide resistant weeds were first documented in the 1950s. Current weed control programs rely on only a few herbicide products, thus resistant weeds are expected to become more problematic in the future.

**Resistance** to herbicides results from repeatedly applying a herbicide with the same site (or mode) of action. This selects for individual plants genetically able to survive the herbicide. Resistance is the inherited ability of a weed to survive a herbicide dose that would normally control individual plants of that species. Surviving weeds reproduce, resulting in a population shift where most, if not all, of the plants are resistant. For example, nearly all common waterhemp populations in Iowa are resistant to ALS inhibitor herbicides following widespread use of these herbicides in the 1980s.

Weeds **tolerant** to a herbicide have always had the ability to survive exposure to the chemical. For example, giant foxtail is naturally tolerant to atrazine.

Rotating or tank mixing herbicides with different sites (or modes) of action within the season and across years will reduce the selection pressure on a weed population and decrease the likelihood of developing herbicide resistance. Where possible, include non-chemical weed control strategies.

**Mode of action**: Mechanism by which a herbicide kills a plant

**Site of action**: Specific protein to which a herbicide binds, disrupting a physiological process in plants. Herbicides with the same mode of action may or may not have the same site of action (see page 10).
### Herbicide Resistance

#### Examples of herbicide resistant weeds found in Iowa (June 2010)

<table>
<thead>
<tr>
<th>Herbicide Resistance</th>
<th>ACCase inhibitors</th>
<th>EPSPS inhibitors</th>
<th>Photosystem II inhibitors</th>
<th>PPO inhibitors</th>
<th>ALS inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common cocklebur</td>
<td></td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Common lambsquarters</td>
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<td>X</td>
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<tr>
<td>Common sunflower</td>
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<tr>
<td>Common waterhemp</td>
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<tr>
<td>Giant foxtail</td>
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<td>X</td>
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<tr>
<td>Giant ragweed</td>
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<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Marestail (horseweed)</td>
<td></td>
<td></td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Shattercane</td>
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</tbody>
</table>

* Common products are listed on page 10.*
### Herbicide mode and site of action

<table>
<thead>
<tr>
<th>Mode of action</th>
<th>Site of action group*</th>
<th>Site of action</th>
<th>Product examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipid synthesis inhibitors</td>
<td>1</td>
<td>ACCase inhibitors</td>
<td>Assure® II, Fusilade® DX, Poast Plus®, Select®</td>
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<tr>
<td>Amino acid synthesis inhibitors</td>
<td>2</td>
<td>ALS inhibitors</td>
<td>Accent® Q, Autumn™, FirstRate®, Harmony® GT, Option®, Python®, Resolve® Q, Steadfast® Q</td>
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<tr>
<td></td>
<td>9</td>
<td>EPSPS inhibitors</td>
<td>Roundup®, Touchdown®</td>
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<tr>
<td>Growth regulators</td>
<td>4</td>
<td>Unknown</td>
<td>2, 4-D, Clarity®, Stinger®</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Auxin transport inhibitors</td>
<td>component of Distinct®, Status®</td>
</tr>
<tr>
<td>Photosynthesis inhibitors</td>
<td>5**</td>
<td>Photosystem II inhibitors</td>
<td>Aatrex®, Atrazine, Sencor®</td>
</tr>
<tr>
<td></td>
<td>6**</td>
<td>Photosystem II inhibitors</td>
<td>Basagran®, Buctril®</td>
</tr>
<tr>
<td></td>
<td>7**</td>
<td>Photosystem II inhibitors</td>
<td>Linex®, Lorox®</td>
</tr>
<tr>
<td>Nitrogen metabolism</td>
<td>10</td>
<td>Glutamine synthesis inhibitors</td>
<td>Ignite®</td>
</tr>
<tr>
<td>Pigment inhibitors</td>
<td>13</td>
<td>Diterpene synthesis inhibitors</td>
<td>Command®</td>
</tr>
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<td>28</td>
<td>HPPD inhibitors</td>
<td>Balance® Flexx, Callisto®, Corvus™, Impact®,</td>
</tr>
<tr>
<td>Laudis®</td>
<td>14</td>
<td>PPO inhibitors</td>
<td>Aim®, Cobra®, Flexstar®, Phoenix™, Resource®, Sharpener™, Ultra Blazer®, Valor®</td>
</tr>
<tr>
<td>Cell membrane disrupters</td>
<td>14</td>
<td>Photosystem I electron diverters</td>
<td>Paraquat</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Photosystem I electron diverters</td>
<td>Paraquat</td>
</tr>
<tr>
<td>Seedling root growth inhibitors</td>
<td>3</td>
<td>Microtubule inhibitors</td>
<td>Prowl®, Treflan®</td>
</tr>
<tr>
<td>Seedling shoot growth inhibitors</td>
<td>15</td>
<td>Long-chain fatty acid inhibitors</td>
<td>Degree®, Dual II Magnum®, Harness®, INTRRO®, Outlook®, TopNotch®</td>
</tr>
</tbody>
</table>

* Site of action group is a classification system developed by the Weed Science Society of America.

Most premix products containing more than one herbicide are not included in this field guide.
Neither endorsement nor criticism is implied by Iowa State University of products mentioned or not mentioned in this publication.
Many key identification characteristics of grasses are evident in the collar region, which can be seen by carefully pulling the...
Grass Morphology

Basic structure of grass shoot

- Leaf blade
- Collar
- Leaf sheath

Close-up of collar region

- Midvein
- Leaf blade
- Ligule
- Auricle
- Sheath

Ligule types

- Ligule absent
- Ligule hairy
- Ligule membranous
**Identification Key**

**Ligule absent**

- **round stem**
  - leaves not grass-like
    - whorled branches
      - resembles miniature pine tree, < 2’ tall
    - leaves rough on both surfaces, stem usually tinged purple at base
  - stem is a tube, hollow between joints

- **triangular stem**
  - leaves grass-like
    - little to no branching
      - yellow-green, shiny blades
    - stems are four

- **leaves grass-like**
  - no ligule
  - not grass-like leaves
  - whorled branches

**Field horsetail**

**Scouringrush**

**Barnyardgrass**

**Yellow nutsedge**
Identification Key

Ligule hairy

- Leaf blade with many hairs

  - Blade hairy on upper and lower surface
    - Blades and sheaths covered with very short, dense hairs
      - One leaf margin usually crinkled
        - Woolly cupgrass
    - Blades and sheaths covered with long hairs
      - Prominent white midvein
        - Witchgrass
  - Blade hairy only on upper surface
    - Very short, stiff hairs
      - Sheath margins often transparent; seed is a large, spiny bur
        - Longspine sandbur
    - Fine, dense hairs
      - Very short hairs on sheath margins
        - Giant foxtail
**Identification Key**

- Leaf blade with few or no hairs
  - No prominent midvein
    - A few long hairs on blade near collar region
      - Sheath flat, margins hairless, often reddish near base
        - Yellow foxtail
      - No hairs on blade
        - Sheath margins hairy
          - Green foxtail
    - Prominent midvein
      - Sheath margins usually hairless; swollen nodes
        - Fall panicum
**Identification Key**

**Ligule membranous**

- **auricles absent**
  - leaf blade and sheath hairless to sparsely hairy
    - long, narrow leaf blades
      - flat stem; sheaths white at base
        - short, scaly rhizomes
          - blade rough; midrib not white or prominent
            - Wirestem muhly
        - blade smooth
          - midrib white above, prominent below
            - Shattercane
      - no rhizomes
        - blade with pronounced ridges on upper surface
          - narrow (< ½” wide), upright leaves
            - Foxtail barley

**Goosegrass**
**Identification Key**

- **Leaf blade and sheath hairy**
  - Sheath overlapping
  - Stems may root at nodes
  - Large crabgrass

- **Leaf blade and sheath hairy**
  - Sheath fused
  - Leaves have distinctive twist
  - Downy brome

- **Long, clasping auricles**
  - Prominent rhizomes
  - Quackgrass

- **Short, claw-like auricles**
  - No rhizomes; prominent leaf veins
  - Italian ryegrass
**Yellow nutsedge**

**Other names:** Yellow nutgrass, chufa  
**Scientific name:** *Cyperus esculentus*  
**Life cycle/height:** Perennial, up to 2 feet  
**Leaves:** Shiny, yellow-green and hairless with a distinct ridge along the midvein. Leaves are produced in groups of 3 at the base of the plant. No nodes are present.  
**Ligules:** None  
**Stems:** Erect, unbranched and 3-sided; triangular cross section. Rhizomes are wiry and scaly with nutlike tubers produced at the tips.  
**Seedhead:** Inflorescence is a cluster of yellow-brown spikes at the end of a solitary stem.  
**Comments:** Reproduces by seed, rhizomes and tubers. Prefers poorly drained soils.
**Field horsetail**

**Other names:** Common horsetail, monkey puzzle, bottle brush

**Scientific name:** *Equisetum arvense*

**Life cycle/height:** Perennial, up to 2 feet

**Leaves:** Small, scale-like and fused into sheaths around stems. Sheaths of spore-producing stems are light brown with 8 to 12 large, pointed, dark brown teeth; sheaths of vegetative stems are green with 10 to 12 black teeth.

**Ligules:** None

**Stems:** Spore-producing stems appear in early to mid-spring and are short lived. They are unbranched, whitish to light brown, usually thick and succulent and 6 to 12 inches tall. Vegetative stems are green with whorls of 10 to 12 ridged branches at each joint. Vegetative plants resemble miniature pine trees.

**Seedhead:** Spore-bearing cones on the ends of fertile stems are up to 1 inch long, oblong and rounded at the top. Cones are mostly brown and covered with spore-bearing tubercles that have black and white markings.

**Comments:** Reproduces by spores, rhizomes and tubers. Tolerant to most herbicides, including glyphosate. Found in poorly drained areas and is an increasing problem in no-till fields.
**Scouringrush**

**Other names:** Snakegrass, popgrass  
**Scientific name:** *Equisetum hyemale*  
**Life cycle/height:** Perennial, up to 4 feet  
**Leaves:** Ring-like sheaths up to 1 inch long at the top of each joint. Sheaths have a whitish-gray, brown or tan middle section and a black rim with up to 40 small, black teeth that may break off.  
**Ligules:** None  
**Stems:** Erect, evergreen, rigid, jointed and segmented with 10 to 40 fine ridges running lengthwise. Lower joints are spaced several inches apart; joints become closer together higher on the stem. Stems are hollow between joints. Spore-producing stems look like vegetative stems, except they end in a spore-bearing cone. Rhizomes with fibrous secondary roots are black, round and may have tubers.  
**Seedhead:** Spore-bearing cones are tan to brown, up to 1 inch long, oblong and pointed at the top.  
**Comments:** Reproduces by spores, rhizomes and tubers. Tolerant to most herbicides, including glyphosate. Increasing problem in no-till fields.
Downy brome

Other names: Drooping brome

Scientific name: Bromus tectorum

Life cycle/height: Early summer or winter annual, up to 2 feet

Leaves: Blades and sheaths are densely covered with soft hairs. Leaves have a distinctive twist. Sheaths are fused, not overlapping.

Ligules: Membranous, toothed or fringed with hair up to 1/8 inch long

Stems: Clump-forming, erect or spreading and hairless to slightly hairy

Seedhead: Inflorescence is a 2 to 8 inch long drooping panicle, often turning purple near maturity. Individual spikelets are 3/4 to 1 1/2 inches long, tipped with about 1/2 inch long awns.

Comments: Reproduces by seed. Resembles cheat (Bromus secalinus), but cheat is considerably less hairy throughout. Downy brome and cheat are found in overgrazed pastures and are an increasing problem in no-till fields.
**Longspine sandbur**

**Other names:** Burgrass, field sandbur  
**Scientific name:** *Cenchrus longispinus*  
**Life cycle/height:** Annual, up to 2 feet  
**Leaves:** Blades are flat, narrow, up to 8 inches long with very short, stiff hairs on upper surfaces that give them a rough texture. Hairs may only be visible with a hand lens. Lower leaf surface is hairless. Leaf margins are rough. Sheaths are mostly hairless but a few hairs may occur on the margins. Sheath margins are split part way up the stem.  
**Ligules:** Hairy, less than 1/10 inch long  
**Stems:** Hairless and mostly covered by the leaf sheaths  
**Seedhead:** Inflorescence consists of 4 to 20 round, spiny burs attached by short stems to 4 inch long zigzag stalks. Inflorescences are sometimes partly enclosed by upper leaves. Burs are hairy and have spines up to 1/4 inch long. Burs contain 2 to 4 seeds that are each about 1/5 inch long.  
**Comments:** Reproduces by seed. Germinates late, commonly found on field edges or in fields with sandy soils.
Large crabgrass

**Other names:** Hairy crabgrass, purple crabgrass

**Scientific name:** *Digitaria sanguinalis*

**Life cycle/height:** Annual, up to 3 feet

**Leaves:** Both leaf surfaces and sheath are hairy. Leaves are up to 8 inches long and often wider than most grasses. Sheaths are overlapping.

**Ligules:** Membranous, jagged, $\frac{1}{10}$ inch long

**Stems:** Erect or spreading, hairless and may root at nodes that contact ground

**Seedhead:** Inflorescence is a terminal panicle consisting of 3 to 10 slender, finger-like branches. Branches appear whorled. Seeds are yellow-brown, $\frac{1}{10}$ inch long and arranged alternately on branches of the inflorescence.

**Comments:** Reproduces by seed. Emerges later than most annual grass weeds and grows well under hot, dry conditions. Smooth crabgrass (*Digitaria ischaemum*) is similar to large crabgrass but does not have hairs on the leaf blades or sheaths, and is not as robust or tall.
Barnyardgrass

Other names: Japanese millet, watergrass

Scientific name: Echinochloa crus-galli

Life cycle/height: Annual, up to 4 feet

Leaves: Up to 20 inches long and 1 inch wide and predominantly hairless, except for occasional hairs at leaf bases. Leaves are rough on both surfaces with a distinct white midvein.

Ligules: Absent

Stems: Erect, thick, flattened, hairless and tinged red to maroon at the base

Seedhead: Inflorescence is an upright to nodding terminal panicle up to 10 inches long. Panicles have compact, thick, green to purple side branches that have individual spikelets each with a short, stiff, terminal awn. Seeds are brown or maroon.

Comments: Reproduces by seed. Prefers wet areas.
Goosegrass

Other names: Crowsfoot grass, silver crabgrass, wiregrass
Scientific name: Eleusine indica
Life cycle/height: Annual, up to 1 1/2 feet
Leaves: Blades are up to 12 inches long and folded along the midvein. Blades and sheaths are hairless or sparsely hairy except for long hairs near the collar region. Sheaths are flattened and white at the base.
Ligules: Membranous, uneven and less than 1/10 inch long
Stems: Prostrate to occasionally erect with a distinctive white center at the base
Seedhead: Inflorescence is composed of 2 to 13 spikes in finger-like clusters at tops of stems. Each spike is 1 to 6 inches long. There may be 1 or 2 individual spikes lower on the stem. Two rows of flattened spikelets occur along each spike.
Comments: Reproduces by seed.
Quackgrass

Other names: Couchgrass
Scientific name: *Elymus repens*

Life cycle/height: Perennial, up to 4 feet

Leaves: Up to 10 inches long. May have a few hairs on the upper surface; lower surface is hairless. Leaves have narrow auricles that clasp the stem. Auricles may not be present on mature leaves.

Ligules: Membranous, about 1/32 inch long

Stems: Erect and often bending out and up from the base of the plant. Plants spread by thin, yellowish to white, sharp-tipped rhizomes that may reach up to 3 1/2 feet long.

Seedhead: Inflorescence is a 2 to 8 inch long, narrow spike consisting of many individual spikelets arranged in 2 rows along the stem. Individual spikelets have prominent awns. Seedheads look like slender wheat seedheads.

Comments: Reproduces by seed and rhizomes. Typically the first grass to emerge in crop fields, normally occurring in distinct patches. Often found in wet areas and is an increasing problem in no-till fields. It is a noxious weed in Iowa.
Woolly cupgrass

**Other names:** Hairy cupgrass

**Scientific name:** *Eriochloa villosa*

**Life cycle/height:** Annual, up to 3 feet

**Leaves:** The first leaf is wide and typically lies flat just above the soil surface. Upper and lower surfaces of leaf blades and sheath are covered with fine, dense, very short hairs (use a hand lens to help see hairs). One leaf margin is usually crinkled.

**Ligules:** Hairy, about 1/16 inch long

**Stems:** Erect or occasionally decumbent and rooting at lower nodes. Stem is covered with short, soft hairs.

**Seedhead:** Inflorescence is covered with soft hairs and has 1 or 2 rows of large, 1/5 inch long seeds on finger-like branches. Each seed is nestled in a hairy “cup.”

**Comments:** Reproduces by seed. It typically emerges 7 to 10 days prior to the foxtails. Seedlings resemble large crabgrass (page 23), but hairs on large crabgrass are considerably longer. Woolly cupgrass seeds are relatively large and may remain attached to the roots when plants are dug from the soil. Woolly cupgrass is difficult to control with soil-applied herbicides.
Foxtail barley

Other names: Squirreltail

Scientific name: *Hordeum jubatum*

Life cycle/height: Perennial, up to 2 feet

Leaves: Flat, stiff, upright with pronounced ridges on upper surfaces and 2 to 6 inches long. Blades and sheaths are hairless or sparsely hairy.

Ligules: Membranous, about ⅛ inch long

Stems: Erect, stiff, hollow, hairless and clump forming

Seedhead: Inflorescence is a nodding, 2 to 4 inch long (excluding awns) bristly spike, sometimes partially enclosed in upper sheaths. Awns are 1 to 3 inches long.

Comments: Reproduces by seed. Plants may appear bluish-green. May be more problematic in no-till fields.
**Italian ryegrass**

*Other names:* Annual ryegrass  
*Scientific name:* *Lolium multiflorum*  
*Life cycle/height:* Annual, up to 3 feet  
*Leaves:* Up to 8 inches long with narrow, claw-like auricles. The upper surface is dull with prominent veins; the lower surface is glossy. Sheaths are hairless.  
*Ligules:* Membranous, less than $\frac{1}{10}$ inch long  
*Stems:* Erect and often tinged red or purple at the base  
*Seedhead:* Inflorescence is a 4 to 16 inch long spike with spikelets arranged alternately along the stem. Each spikelet is attached edgewise to the central stem. The lower bract enclosing each seed in the spikelet usually has an awn up to $\frac{1}{3}$ inch long.  
*Comments:* Reproduces by seed. More prevalent in no-till fields.
**Wirestem muhly**

**Other names:** Common satin grass  
**Scientific name:** *Muhlenbergia frondosa*  
**Life cycle/height:** Perennial, up to 3 feet  
**Leaves:** Blades are 2 to 4 inches long, broadest near the middle, rough and hairless. Sheaths are hairless.  
**Ligules:** Membranous, about $\frac{1}{2}$ inch long  
**Stems:** Plants have a dense, bushy appearance. Stems are hairless, stiff and erect early, becoming decumbent later. Stems often form roots at the nodes when they contact soil. Rhizomes are short, thick and scaly.  
**Seedhead:** The central stem terminates in a narrow panicle 3 to 4 inches long. The panicle consists of about 6 to 12 branches, each up to $\frac{3}{4}$ inch long with $\frac{1}{8}$ inch long spikelets. Smaller, 1 to 2 inch long side panicles may develop from the middle to upper stem nodes.  
**Comments:** Reproduces by seed and rhizomes. It is an increasing problem in no-till fields.
**Witchgrass**

**Other names:** Panicgrass, ticklegrass

**Scientific name:** Panicum capillare

**Life cycle/height:** Annual, up to 4 feet

**Leaves:** Both leaf surfaces are covered with hairs. Leaves are 4 to 10 inches long with a prominent white midvein. Sheaths are finely ribbed, covered with dense, soft hairs and have overlapping margins.

**Ligules:** Hairy, $\frac{1}{16}$ inch long

**Stems:** Erect or curving up from the base

**Seedhead:** Dense, funnel-shaped panicles emerge from the uppermost leaves and spread as the plant matures. Mature panicles are many-branched, 4 to 12 inches long and 3 to 12 inches wide and are often half the length of the entire plant. Each panicle branch terminates in a single spikelet.

**Comments:** Reproduces by seed. The panicle can detach from the plant and roll across the ground, distributing the seeds.
Fall panicum

Other names: Fall panic, fall panicgrass

Scientific name: Panicum dichotomiflorum

Life cycle/height: Annual, up to 4 feet

Leaves: Blades are hairless or sparsely hairy with a prominent midvein. Sheaths are hairless. Seedlings have hairs on the lower leaf surface and sheath, but hairs disappear as plants mature.

Ligules: Hairy, up to ½ inch long

Stems: Hairless, round and glossy. Nodes are usually swollen. Roots may form at lower nodes. Stems have an unusual zigzag growth habit.

Seedhead: Inflorescence is a large, spreading panicle. Individual spikelets are yellow, oval and about ½ inch long.

Comments: Reproduces by seed. Emerges later than other annual weedy grasses, thus is more common in fields that do not develop a complete canopy (e.g., seed corn).
**Giant foxtail**

**Scientific name:** *Setaria faberi*

**Life cycle/height:** Annual, up to 5 feet

**Leaves:** Blades are up to 16 inches long. Upper surfaces are covered with short, fine hairs. Sheaths have very short hairs along margins.

**Ligules:** Hairy, up to 1/8 inch long

**Stems:** Erect, round, hollow and usually without hairs

**Seedhead:** Inflorescence is a cylindrical, bristly panicle that is 3 to 8 inches long. The inflorescence has a nodding appearance.

**Comments:** Reproduces by seed. One of the most problematic grass weeds in corn and soybean.
**Yellow foxtail**

**Other names:** Pigeon grass

**Scientific name:** *Setaria pumila*

**Life cycle/height:** Annual, up to 3 feet

**Leaves:** Blades are up to 12 inches long and hairless, except for prominent, scattered long hairs on upper blade surface near the collar. Sheaths are flattened, hairless and often turn reddish-purple near the base.

**Ligules:** Hairy, up to 1/8 inch long

**Stems:** Erect or prostrate, flattened and hairless

**Seedhead:** Inflorescence is a cylindrical, bristly panicle up to 6 inches long. Individual spikelets are about 1/10 inch long. Each spikelet has 1 to 3 bristles that turn yellowish brown at maturity. Seeds are largest among the foxtails.

**Comments:** Reproduces by seed. Plants tiller more frequently, have a more prostrate growth habit and are more tolerant of mowing than the other foxtails.

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**Yellow foxtail collar region**

**Yellow foxtail seedhead**

**Reddish-purple base**

**Yellow foxtail young plant**
Green foxtail

Other names: Green bristlegrass

Scientific name: Setaria viridis

Life cycle/height: Annual, up to 3 feet

Leaves: Hairless, rough and up to 12 inches long. Sheaths are usually hairless except for short hairs along the margins.

Ligules: Hairy, up to $\frac{1}{8}$ inch long

Stems: Erect, hairless and slightly bent at nodes. May be branched at the base.

Seedhead: Inflorescence is a cylindrical, 1 to 3 inch long, bristly panicle. Individual spikelets are rounded and nearly flat on one side with 1 to 3 bristles coming from the base. Bristles are $\frac{1}{4}$ to $\frac{1}{2}$ inch long and green to purple.

Comments: Reproduces by seed. A variant of green foxtail, purple robust foxtail, is larger than most green foxtail plants and has distinct purple bristles.
**Shattercane**

**Other names:** Wild cane, broomcorn  
**Scientific name:** *Sorghum bicolor*  
**Life cycle/height:** Annual, up to 12 feet  
**Leaves:** Blades are hairless, 12 to 24 inches long and 1 to 2 inches wide with a prominent midvein. Blades may have reddish-purple splotches. Sheaths are hairless or occasionally with hairs near the collar region.  
**Ligules:** Membranous, with a fringe of hairs on top, ½ inch long  
**Stems:** Erect and hairless with prominent nodes (like corn). Tillers are produced at the base.  
**Seedhead:** Inflorescence is a terminal panicle held above the leaves. Seeds are shiny black kernels similar to forage sorghum.  
**Comments:** Reproduces by seed. Shattercane is a wild type of grain and forage sorghum. Seeds remain viable in the soil for 2 to 3 years. In southern Iowa, plants that resemble shattercane but have rhizomes are the perennial weed johnsongrass (*Sorghum halepense*). Shattercane is a noxious weed in Iowa.
Key identification characteristics of broadleaf weeds are cotyledon and leaf shape as well as flower color and structure.
**Broadleaf Morphology**

- **Petiole**
- **Cotyledon**
- **Hypocotyl**

Leaves alternate

Leaves opposite

**Leaf margins**

- **Entire**
- **Lobed**
- **Toothed (serrated)**
- **Wavy**
Leaf shapes

Round
Ovate
Oval
Elliptic
Lanceolate
Linear
Oblong
Spade-shaped
Heart-shaped
Redroot pigweed

**Other names:** Rough pigweed, carelessweed

**Scientific name:** *Amaranthus retroflexus*

**Life cycle/height:** Annual, up to 6½ feet

**Leaves:** Cotyledons are linear with a prominent midvein and reddish undersides. Leaves are alternate, ovate and usually have a small notch at the tip. Leaf surfaces are rough with hairs on the underside, most notably on the veins. Leaf margins are entire to wavy. Petioles are up to ½ inch long.

**Stems:** Erect, often with red markings, especially near the base. Stems are usually thick, multi-branched and have short hairs, mostly on the upper parts of the plant.

**Flowers/fruit:** Small, greenish flowers grow in dense terminal and axillary clusters. Clusters are thick, prickly spikes up to 8 inches long. Flowers have bracts about twice as long as sepals. Seeds are small, round and shiny black.

**Comments:** Reproduces by seed.
**Common waterhemp**

**Other names:** Tall amaranth, waterweed  
**Scientific name:** *Amaranthus rudis*  
**Life cycle/height:** Annual, up to 8 feet  
**Leaves:** Alternate, lanceolate to ovate-lanceolate, frequently notched at the tip and up to 6 inches long and 1 ½ inches wide. Leaves have shiny upper surfaces and entire leaf margins. Petioles are long, occasionally as long as the blades.  
**Stems:** Erect, branched, hairless, round to irregularly ridged, often with red streaks and reddish nodes  
**Flowers/fruit:** Flowers are arranged in narrow, compressed panicles up to 1 foot long. The inflorescence may develop directly from upper branches or upper leaf axils. Individual plants produce either male or female flowers that are less than ½ inch long. Seeds are small, round and shiny black.

**Comments:** Reproduces by seed. A single plant can produce thousands of seeds. Populations of common waterhemp are resistant to different herbicides including glyphosate (page 9).
Poison-hemlock

Other names: Deadly hemlock, poison parsley

Scientific name: *Conium maculatum*

Life cycle/height: Biennial, up to 10 feet

Leaves: A rosette of fern-like leaves 1 to 1 1/2 feet across forms the first year. The second year the plant bolts. Leaves on stems are dark glossy green, alternate and 8 to 16 inches long. Leaves are fern-like and hairless with finely divided leaflets.

Stems: Erect, branched, hairless, hollow between nodes and covered with distinct purple spots.

Flowers/fruit: Upper stems terminate in compound umbels 2 to 5 inches across. Individual flowers are about 1/10 inch wide with 5 white, notched petals. Fruit are oval, flattened and grayish-brown, with 2 wavy ribbed segments that split into 2 parts when mature. Each fruit has 2 flattened, smooth seeds.

Comments: Reproduces by seed. All plant parts are poisonous to humans and livestock. Foliage has a strong parsnip odor. It is a noxious weed in Iowa.
Wild carrot

**Other names:** Queen Anne’s lace, bird’s nest

**Scientific name:** *Daucus carota*

**Life cycle/height:** Biennial, up to 5 feet

**Leaves:** A rosette of fern-like leaves forms the first year. The second year the plant bolts. Leaves on stems are alternate and oblong, with deeply dissected, lobed segments. Scattered white hairs often occur along petioles, margins and lower midveins of leaflets.

**Stems:** Erect, branched, hollow and hairless or rough-hairy

**Flowers/fruit:** Numerous small, white flowers occur in an umbel, typically with a single purple flower in the center. Each flower produces 1 ribbed seed with bristly hairs along the ribs. As seeds mature, umbels cup inward into a “bird’s nest” that can detach from the flowering stalk and roll in the wind.

**Comments:** Reproduces by seed. Plant resembles a typical garden carrot during the first year of growth. Crushed leaves smell like carrots. It is a noxious weed in Iowa.
**Wild parsnip**

**Scientific name:** Pastinaca sativa

**Life cycle/height:** Biennial, up to 5 feet

**Leaves:** First year plants produce a rosette of large, upright leaves that resemble celery leaves. The second year the plant bolts. Leaves on stems are alternate, hairless and pinnately compound. Lower leaves are up to 18 inches long and 6 inches wide with long petioles. Upper leaves are progressively smaller with short or no petioles. Individual leaflets are up to 3 inches long and 2 inches wide with coarsely toothed margins.

**Stems:** Erect, grooved and hollow

**Flowers/fruit:** Upper stems terminate in double umbels of small, yellow flowers, each with 5 petals. Each umbel is up to 6 inches across and sits on the end of a long, hairless stalk. Seeds are flat, round and straw-colored with 5 ribs.

**Comments:** Reproduces by seed. If plant sap gets on skin that is exposed to sunlight, skin may redden and develop a rash. In severe cases, blisters and burning pain may occur.
**Hemp dogbane**

**Other names:** Indian hemp  
**Scientific name:** *Apocynum cannabinum*  
**Life cycle/height:** Perennial, up to 4 feet  
**Leaves:** Opposite, ovate to elliptic, 2 to 5 inches long and ½ to 1½ inches wide with short petioles  
**Stems:** Erect, hairless and branched near the upper part of the plant. Stems turn red as they mature.  
**Flowers/fruit:** Numerous clusters of small, greenish-white flowers occur at the ends of short stems. Each flower is less than ¼ inch long and consists of 5 fused petals. Fruit are 4 to 8 inch long bean-like pods produced in pairs that turn red-brown when mature. Pods split open at maturity to release small, spindle-shaped seeds. Each seed has a tuft of long, silky hair that aids wind dispersion.  
**Comments:** Reproduces by seed, creeping roots and rhizomes. Leaves and stems exude a milky sap when broken. Plants produce toxins that can cause digestive problems in livestock.
Common milkweed

Other names: Broadleaf milkweed

Scientific name: Asclepias syriaca

Life cycle/height: Perennial, up to 6 feet

Leaves: Opposite, ovate, 4 to 10 inches long and 2 to 4 inches wide with entire margins. Lower leaf surfaces are covered with fine hairs; upper surfaces are usually hairless. A distinct white midvein runs along the length of each leaf, with smaller side veins extending toward the leaf margins.

Stems: Erect, hollow, sparingly branched and covered with fine hairs. Stems are green initially but may turn reddish with maturity.

Flowers/fruit: Pink to purple or occasionally greenish-white flowers develop in ball-shaped clusters at the ends of stems and in the upper leaf axils. Single flowers are on long, slender stalks. Seedpods are 3 to 5 inches long, teardrop-shaped, grayish-green and hairy with warty bumps. Seeds are flat, brown and each seed has a tuft of silky hairs that aids wind dispersion.

Comments: Reproduces by seed, creeping roots and rhizomes. All parts of the plant emit milky sap when broken.
Honeyvine milkweed (Honeyvine swallowwort)

Other names: Climbing milkweed
Scientific name: *Cynanchum laeve*
Life cycle/length: Perennial, vine up to 10 feet

Leaves: Opposite, entire, heart- to triangular-shaped with pointed tips, 3 to 7 inches long and 2 to 5 inches wide. Leaves occur on 1 to 4 inch long petioles and are hairless with white veins that arise from a common point.

Stems: Slender, hairless and twining, often climbing on other plants

Flowers/fruit: Small, white, tube-shaped flowers with 5 lobes are in clusters on stalks in leaf axils. Fruit are smooth, angled, teardrop-shaped pods that are up to 5½ inches long and 2½ inches wide. Seeds are ovate, flattened and brown with silky white hairs.

Comments: Reproduces by seed and rhizomes. Flowers are honey-scented.
Common ragweed

Other names: Annual ragweed, short ragweed

Scientific name: Ambrosia artemisiifolia

Life cycle/height: Annual, up to 3 feet

Leaves: Cotyledons are thick and oval to oblong. Leaves are lacy, finely divided and usually slightly hairy. Lower leaves are opposite; upper leaves are alternate. Leaves are up to 4 inches long and wide.

Stems: Erect, branched and usually hairy

Flowers/fruit: Male flowers are produced in racemes at the end of stems; female flowers are produced in the upper leaf axils. Flowers are greenish-yellow and about 1/8 inch long. Fruit are achenes topped with several spikes and resemble a crown.

Comments: Reproduces by seed. Produces abundant pollen (a “hay fever” plant).
**Giant ragweed**

**Other names:** Horseweed  
**Scientific name:** *Ambrosia trifida*  
**Life cycle/height:** Annual, up to 13 feet  
**Leaves:** Cotyledons are round to oblong. Leaves have 3 to 5 lobes, toothed margins and petioles up to 2½ inches long. Leaves are rough, hairy and opposite on the lower stem; upper leaves are sometimes alternate.  
**Stems:** Erect, branched, rough and hairy  
**Flowers/fruit:** Greenish-yellow male flowers occur in racemes at the ends of branches. Female flowers occur in upper leaf axils. Individual flowers are about ⅙ to ⅓ inch long. Fruit are achenes that resemble a crown.  
**Comments:** Reproduces by seed. Germinates earlier than most other common summer annual weeds. Produces abundant pollen (a “hay fever” plant).
**Common burdock**

**Other names:** Wild rhubarb, beggar’s buttons

**Scientific name:** *Arctium minus*

**Life cycle/height:** Biennial, up to 5 feet

**Leaves:** Plants produce a rosette of very large leaves the first year and bolt the second year. Rosette leaves are 10 to 18 inches long and 5 to 12 inches wide, spade-shaped with heart-shaped bases and slightly wavy margins. Lower leaf surface is white and woolly.

**Stems:** Erect, many branched, hollow, grooved, hairy and sometimes with a reddish tint

**Flowers/fruit:** Flower heads are comprised of purple disk flowers. The seedhead is covered with hooked bracts that form a detachable bur that attaches to passing animals and humans.

**Comments:** Reproduces by seed.
**Musk thistle**

**Other names:** Nodding thistle  
**Scientific name:** *Carduus nutans*  
**Life cycle/height:** Biennial, sometimes annual, up to 6 feet

**Leaves:** Plants produce a rosette the first year. The second year plants bolt. Leaves are dark green with light green midribs and white margins; about 10 inches long and 4 inches wide. Leaves are lanceolate and deeply lobed with 3 to 5 white or yellow spines along the margins of each lobe. Leaves on the flowering stems are alternate, clasp stems and become progressively smaller towards the top of the plant.

**Stems:** Erect and branched with spiny wings extending down the stem from the leaf bases.

**Flowers/fruit:** Nodding, solitary flower heads are produced at the ends of branches. Flowers are pink to purple and 1 to 2 inches wide. Spiny bracts, often tinged purple, occur below the flower heads. Fruit are tan to brown achenes about 1/6 inch long with tufts of hair.

**Comments:** Reproduces by seed. Seeds may mature in seedheads even after control measures kill the plant. It is a noxious weed in Iowa.
Canada thistle

Other names: Canadian thistle, creeping thistle

Scientific name: *Cirsium arvense*

Life cycle/height: Perennial, up to 4 feet

Leaves: Alternate, oblong to lanceolate with irregular lobes and spiny margins. Upper surfaces are dark green and hairless; lower surfaces are light green. Leaves are 3 to 8 inches long and 1 inch wide and attach directly to or clasp the stem.

Stems: Grooved, hollow, branched above, hairless early, becoming hairy with age

Flowers/fruit: Male and female flowers occur on separate plants. Flower heads are ¾ to 1¼ inches wide and consist of pink, purple or occasionally white disk flowers surrounded by spineless bracts. Fruit are flat, brown, ½ inch long achenes with tufts of hair.

Comments: Reproduces by seed, rhizomes, creeping roots and root fragments. Rhizomes can extend up to 3½ feet. Plants often form thick patches. It is a noxious weed in Iowa.
Marestail (Horseweed)

Other names: Muletail fleabane  
Scientific name: Conyza canadensis  
Life cycle/height: Winter or early summer annual, up to 7 feet  
Leaves: Seedlings develop as a basal rosette; stems elongate later. Leaves are alternate but may appear whorled as they are crowded along the stem. Leaves are linear, usually toothed, hairy, up to 4 inches long and attached directly to the stem. Leaves become progressively smaller up the stem.  
Stems: Erect, branched towards the top and covered with stiff hairs  
Flowers/fruit: Very small flowers in large panicles are positioned at the tops of stems. Each flower head has a narrow, pointed green bract at the base and is composed of yellow disk flowers and white ray flowers. Fruit are small, yellow achenes, each with a white pappus that aids wind dispersion.  
Comments: Reproduces by seed. Populations of marestail are resistant to glyphosate.
Common sunflower

Other names: Annual sunflower

Scientific name: *Helianthus annuus*

Life cycle/height: Annual, up to 12 feet

Leaves: Lower leaves are opposite and heart-shaped. Upper leaves are alternate, ovate to lanceolate, 4 to 16 inches long and 2 to 8 inches wide with toothed margins and long petioles.

Stems: Erect, upwardly branched, very rough and hairy

Flowers/fruit: Showy flower heads are 1 to 5 inches across and are composed of 17 or more yellow ray flowers that are up to 2 inches long and surround dark red to purple disk flowers. Bracts around flower heads are coarse-hairy and gradually taper to a slender tip. Fruit are flattened achenes that are gray or brown with black mottling.

Comments: Reproduces by seed. It is a noxious weed in Iowa.
Jerusalem artichoke

Other names: Girasole, Jerusalem sunflower

Scientific name: Helianthus tuberosus

Life cycle/height: Perennial, up to 10 feet

Leaves: Lower leaves are opposite, broadly ovate, covered with short, stiff, white hairs, 4 to 10 inches long and 1 ½ to 5 inches wide. Upper leaves are alternate, lanceolate and taper to a point. Leaves have finely toothed margins, 3 prominent veins and 1 to 3 inch long, winged petioles.

Stems: Erect, branched towards the top and usually covered with stiff, white hairs or occasionally hairless

Flowers/fruit: Showy flower heads are produced at the ends of stems. Each flower head is about 2 inches wide and consists of 8 to 20 outer bright yellow ray flowers that surround dark yellow to brown disk flowers. Fruit are tan to brown achenes up to ½ inch long.

Comments: Reproduces by seed, tubers and rhizomes.
Prickly Lettuce

Other names: Wild lettuce

Scientific name: Lactuca serriola

Life cycle/height: Annual or sometimes biennial, up to 5 feet

Leaves: Seedlings develop as a rosette; stems elongate later. Leaves are alternate, lobed, clasp the stem and are up to 14 inches long. Basal and lower leaves are oblong to ovate and have spines on margins and along the midveins of lower leaf surfaces. Leaves become smaller and more lanceolate toward the top of plant and may lack spines.

Stems: Erect and branched toward the top. The lower portion of the stem has spines.

Flowers/fruit: Inflorescence is a panicle with 50 to 100 small flowers with yellow, toothed petals. As flowers mature, they may have a blue tint. Fruit are brown, flattened achenes, each with a long beak and a white pappus.

Comments: Reproduces by seed. Plant parts contain a milky sap.
**Dandelion**

**Scientific name:** *Taraxacum officinale*

**Life cycle/width:** Simple perennial, up to 2½ feet in diameter

**Leaves:** All leaves are in a basal rosette and are usually 4 to 10 inches long. Leaves are oblong, narrow and deeply toothed with lobes that point toward the center of the rosette. A prominent, hollow central vein runs along the length of each leaf. Leaves are sparsely hairy or hairless and contain a milky sap.

**Stems:** Forms a rosette of leaves

**Flowers/fruit:** Flower heads consisting of yellow ray flowers are 1 to 2 inches wide and sit singly on the end of erect, unbranched, hollow stalks that are up to 10 inches tall. Fruit are brown achenes each with a feathery, white pappus. Seedheads look like puff balls.

**Comments:** Reproduces by seed. Taproots are thick and long.
Common cocklebur

Other names: Cocklebur, rough cocklebur

Scientific name: Xanthium strumarium

Life cycle/height: Annual, up to 7 feet

Leaves: Cotyledons are large, linear to oblong and waxy. The first leaf pair is opposite; later leaves are alternate. Leaves are triangular to ovate, irregularly lobed with slightly toothed margins and covered with stiff hairs. Leaves are 2 to 6 inches long with long petioles and have 3 prominent veins arising from the same point.

Stems: Erect and branched with short, stiff, ascending hairs. Stems have small maroon to black spots.

Flowers/fruit: Flowers are inconspicuous, green and occur in clusters in leaf axils and at the ends of stems. Fruit are barrel-shaped, 2-chambered burs, $\frac{1}{2}$ to 1 inch long and covered with hooked prickles. Each bur contains 2 seeds.

Comments: Reproduces by seed. Seedlings and seeds can be toxic if ingested. It is a noxious weed in Iowa.
**Yellow rocket**

**Other names:** Winter cress  

**Scientific name:** *Barbarea vulgaris*  

**Life cycle/height:** Winter annual or biennial, up to 3 feet

**Leaves:** Alternate, dark green and shiny. Basal leaves have a large lobe at the end and 1 to 4 lateral lobes arranged oppositely along the leaf midvein. Leaves get progressively smaller and less lobed up the stem. Leaf margins are toothed and wavy.

**Stems:** Erect, angular, hairless or with a few hairs and branched at the top

**Flowers/fruit:** Flowers are produced in elongated, rounded clusters at the ends of branches. Flowers have 4 bright yellow petals that are ¼ to ½ inch long. Fruit are elongated, narrow and about 1 inch long capsules with a slender beak.

**Comments:** Reproduces by seed. Can be confused with other mustards (e.g., wild mustard, page 62; tall hedge mustard, page 96).
Shepherd’s-purse

**Other names:** Shepherd’s pouch

**Scientific name:** *Capsella bursa-pastoris*

**Life cycle/height:** Summer or winter annual, up to 2 feet

**Leaves:** Basal leaves are lanceolate with pointed lobes and up to 4 inches long. Stem leaves are alternate, lanceolate to linear with entire to toothed margins and are much smaller than basal leaves. The bottom lobes of upper leaves clasp the stem.

**Stems:** Erect, sparsely branched, thin and arising from the basal rosette

**Flowers/fruit:** Flowers are clustered in elongated racemes. Flowers are very small with white petals up to ⅛ inch long. Fruit are distinctively triangular, heart-shaped capsules that split in 2 sections at maturity. Seeds are small, yellow-orange and shiny.

**Comments:** Reproduces by seed. One plant produces thousands of seeds that survive for long periods in soil.
**Pinnate tansymustard**

**Other names:** Tansymustard  
**Scientific name:** Descurainia pinnata  
**Life cycle/height:** Summer or winter annual, up to 2½ feet  
**Leaves:** Alternate, light green, 2 or 3 times pinnately divided giving a distinctively lacy appearance. Lower leaves are up to 4 inches long; upper leaves are much smaller and not as finely divided.  
**Stems:** Erect, single to many branched and densely hairy  
**Flowers/fruit:** Flowers are in a raceme with individual flowers set on ¼ to ½ inch long stalks. Flowers have 4 pale yellow petals. Fruit are pencil-like capsules up to 1 inch long. Mature capsules split to shed small, orange-brown seeds.  
**Comments:** Reproduces by seed.
**Wild mustard**

**Other names:** Charlock, wild rape

**Scientific name:** *Sinapis arvensis*

**Life cycle/height:** Summer or winter annual, up to 3 feet

**Leaves:** Basal leaves are unevenly lobed with coarsely toothed margins. Upper leaves are alternate, oblong to ovate, entire with coarsely toothed and wavy margins. Leaves become progressively smaller up the stem. Lower leaves have short petioles; upper leaves lack petioles.

**Stems:** Erect, slightly branched towards the top of the plant with white hairs that point downward and purple rings at the base of young stems

**Flowers/fruit:** Flowers are in a raceme. Each flower is about ⅓ inch across with 4 bright yellow petals. Fruit are hairless or sometimes bristly capsules about 1 inch long with a beak. Seeds are round and purple to black.

**Comments:** Reproduces by seed. It is a noxious weed in Iowa. Can be confused with other mustards (e.g., yellow rocket, page 59; tall hedge mustard, page 96).
Field pennycress

Other names: Stinkweed, fanweed

Scientific name: *Thlaspi arvense*

Life cycle/height: Winter annual, sometimes early summer annual, up to 2 feet

Leaves: Basal leaves develop in a rosette up to 5 inches wide. Leaves are oval and hairless with wavy margins. The flowering stem emerges the next spring. Stem leaves are lanceolate with toothed margins and pointed lobes; bottom lobes clasp the stem.

Stems: Erect, hairless and branched at the top

Flowers/fruit: Flowers occur in elongated clusters at the ends of stems. Flowers are about ½ inch across with 4 white petals. Lowest flowers set fruit first. Fruit are flat, round, ½ inch wide capsules with wings that have a notch at the end. Capsules split in half, each containing several dark red-brown seeds.

Comments: Reproduces by seed. The entire plant turns bright yellow to tan at maturity. All plant parts have a sharp odor and can give a bitter taste to milk if eaten by cows.
Marijuana

Other names: Ditch weed, hemp

Scientific name: Cannabis sativa

Life cycle/height: Annual, up to 9 feet

Leaves: Lower leaves opposite; upper leaves alternate. Leaves are palmately divided into 5 to 9 leaflets. Individual leaflets are hairy with distinctly toothed margins and are up to 5 inches long.

Stems: Hairy, rough, grooved and fibrous

Flowers/fruit: Greenish-yellow male and female flowers are produced in the leaf axils on separate plants. Male flowers are in elongated inflorescences with each stalked flower coming off a central stem. After the male flowers have shed pollen, the plant soon dies. Female flowers are in sessile, spike-like clusters about 1 inch long. Fruit are globe-shaped, 1-seeded achenes.

Comments: Reproduces by seed. Plant parts exude a characteristic odor when broken or rubbed.
**White campion**

**Other names:** White cockle, catchfly

**Scientific name:** *Silene latifolia*

**Life cycle/height:** Biennial or sometimes a short-lived perennial, up to 3 feet

**Leaves:** Basal leaves develop as a rosette. Basal leaves have short petioles, while most stem leaves lack petioles. Stem leaves are opposite, variable, ranging from lanceolate to oval and become smaller higher on the stem. Leaves are up to 4 1/2 inches long and softly hairy on both surfaces.

**Stems:** Erect or occasionally decumbent. Multiple stems often grow from a crown at the ground. Stems are covered with many short, soft hairs and have swollen nodes.

**Flowers/fruit:** Flowers are formed in loose, flat-topped clusters. Each flower has 5 white petals that are 1/2 inch long and deeply divided, giving the appearance of 10 petals. Sepals are fused into a bladder-like tube below the petals. Plants have either 10 or 20 prominent veins on the sepal tube. Fruit are tough, tan capsules with 10 curled-back teeth.

**Comments:** Reproduces by seed.
Common chickweed

Other names: Winterweed, chickenwort
Scientific name: Stellaria media
Life cycle/height: Annual, up to 2 feet

Leaves: Opposite, ovate or elliptic with a pointed tip, up to 1 ¼ inches long, light green and hairless or with a few hairs near the base. Lower leaves have long petioles; upper leaves lack petioles.

Stems: Lower stems are decumbent, often rooting at the nodes; upper stems are erect or ascending. Lower stems are hairless; upper stems have a distinctive row or two of fine hairs.

Flowers/fruit: Flowers occur singly in the leaf axils and in small clusters at the ends of stems. Flowers have 5 petals that are deeply lobed, giving the appearance of 10 petals. Seeds form in oval capsules that split into 6 sections.

Comments: Reproduces by seed. Forms a mat and sometimes survives winters in protected areas. Can be confused with mouseear chickweed (page 96).
**Common lambsquarters**

**Other names:** White goosefoot  
**Scientific name:** *Chenopodium album*  
**Life cycle/height:** Annual, up to 6 feet  

**Leaves:** The first pair of leaves is opposite, all other leaves are alternate. Leaves are triangular-shaped (roughly like a goose’s footprint) and up to 2½ inches long with long petioles. Leaves may develop red or purple shading along the edges. Leaf margins are toothed; individual teeth are large, widely spaced and blunt. Young leaves are covered with a white mealy material that wears off with time.

**Stems:** Erect, moderately branched, hairless and vertically grooved with red, purple or light green stripes

**Flowers/fruit:** Green, inconspicuous flowers occur in dense panicle clusters at tips of branches and in upper leaf axils. Seeds are round to oval, somewhat flattened, black to brown and partially enclosed by star-shaped, papery coverings.

**Comments:** Reproduces by seed.
Kochia

Other names: Burning bush
Scientific name: Kochia scoparia
Life cycle/height: Annual, up to 6 feet
Leaves: Alternate, linear to narrowly lanceolate, 1 to 2 inches long and tapering to a point. Leaf margins are entire and fringed with hairs.
Stems: Erect, highly branched and often with a reddish tint
Flowers/fruit: Flowers are inconspicuous, green and in clusters up to 2 inches long. Clusters occur at the ends of stems and in leaf axils. Hairy bracts below flowers give the plant a prickly appearance. Seeds are flattened, grooved on each side, dull brown and enclosed in a membranous seed coat.
Comments: Reproduces by seed. Mature plants are round, bushy and can break off at the soil surface and tumble in the wind.
**Russian-thistle**

**Other names:** Tumbleweed, tumbling thistle  
**Scientific name:** *Salsola tragus*  
**Life cycle/height:** Annual, up to 3 feet  
**Leaves:** Alternate, simple, sessile or clasping the stem, linear; up to 3 inches long and very narrow. Margins may be entire to very finely toothed. Initial leaves are long and soft with a pointed tip; mature leaves are small and scale-like, tipped with a stiff spine.  
**Stems:** Erect, branched from the base, ridged and often with reddish-purple stripes  
**Flowers/fruit:** Many inconspicuous flowers without petals arise from the leaf and stem axils. Mature fruit are reddish-green and have prominent, papery wings. Seeds are small, round, smooth and shiny black.  
**Comments:** Reproduces by seed. Mature plants are round and can break off from the roots, then blow across fields, scattering seeds. Mature plants may be toxic to livestock.
**Asiatic dayflower**

**Other names:** Common dayflower

**Scientific name:** *Commelina communis*

**Life cycle/height:** Annual, up to 2½ feet

**Leaves:** Alternate, lanceolate tapering to a point and 2 to 4 inches long with parallel veins. Leaves clasp the stem forming prominent basal sheaths.

**Stems:** Decumbent or sometimes erect, hairless, round, thick, fleshy with swollen nodes and often rooting where nodes contact soil

**Flowers/fruit:** Small, showy flowers with 2 large, bright blue petals above a single, small white petal. Flowers arise from green bracts at ends of long flower stalks. Each flower is open for only 1 day. Fruit are capsules that hold reddish-brown, wrinkled seeds.

**Comments:** Reproduces by seed. Dislodged stems often re-root, allowing plants to survive tillage. It is a monocot, not a true broadleaf. It is tolerant to glyphosate.
Field bindweed

Other names: Creeping Jenny, field morning-glory

Scientific name: *Convolvulus arvensis*

Life cycle/length: Perennial, vine up to 6 feet

Leaves: Alternate, arrowhead or spade shaped, mostly hairless but occasionally with hairs, 1 to 2 inches long and ½ to 1 inch wide. Leaf bases have lobes that point outward.

Stems: Climbing or trailing vine that forms dense mats

Flowers/fruit: Flowers are funnel-shaped, white to pink and ½ to 1 inch long. Two small bracts are about 1 inch below the flower base. Fruit are oval to round capsules, usually with 2 compartments, each containing 1 to 4 seeds.

Comments: Reproduces by seed, creeping roots and rhizomes. Plants may be toxic to livestock. It is a noxious weed in Iowa.
**Ivyleaf morningglory**

**Other names:** Entireleaf morningglory

**Scientific name:** *Ipomoea hederacea*

**Life cycle/length:** Annual, vine up to 10 feet

**Leaves:** Cotyledons are butterfly-shaped and usually narrower at the base. Leaves are alternate, ivy-shaped and 2 to 4 inches long with 3 distinct, pointed lobes. Petioles range from 2 to 5 inches. Leaves and petioles are covered with hairs that stick straight out.

**Stems:** Twining or climbing vines, with hairs that stick straight out

**Flowers/fruit:** Flowers are showy, purple or blue to white and 1 to 2 inches long with petals fused into a funnel. Sepals at the base of the flower are covered with hairs. Fruit are capsules shaped like a slightly flattened ball and contain 4 to 6 dark brown to black, wedge-shaped seeds.

**Comments:** Reproduces by seed. Seeds contain hallucinatory compounds.
Tall morningglory

**Other names:** Common morningglory  
**Scientific name:** Ipomoea purpurea  
**Life cycle/length:** Annual, vine up to 6 feet  

**Leaves:** Cotyledons are butterfly-shaped. Leaves are alternate, heart-shaped and up to 4½ inches long and wide with hairs that lie flat against the leaf surface. Petioles are up to 5 inches long. 

**Stems:** Trailing or climbing hairy vines  

**Flowers/fruit:** Flowers are purple, blue, white or variegated, funnel-shaped, 1 ¾ to 3 inches long and form in clusters of 3 or more. Sepals at the base of the flower are ½ to ⅔ inch long and hairy. Fruit are globe-shaped capsules, each with 4 to 6 dark brown to black seeds.  

**Comments:** Reproduces by seed. Seeds contain hallucinatory compounds.
**Burcucumber**

**Other names:** Wall burcucumber  
**Scientific name:** *Sicyos angulatus*  
**Life cycle/length:** Annual, vine up to 20 feet  
**Leaves:** Alternate, hairy, broadly heart-shaped with 3 to 5 lobes and finely toothed margins. Leaves are up to 8 inches long and wide.  
**Stems:** Hairy, especially at leaf nodes, ridged and climbing with branched tendrils  
**Flowers/fruit:** Flowers have fused petals, 5 lobes and are white to pale yellow. Fruit are oval, about 1/2 inch long and covered with sharp spines and long hairs. Each fruit contains 1 seed. Fruit resembles very small cucumbers.  
**Comments:** Reproduces by seed. Resembles garden cucumber, especially when young.
Toothed spurge

Other names: Toothed-leaf poinsettia

Scientific name: *Euphorbia dentata*

Life cycle/height: Annual, up to 2 feet

Leaves: Opposite, variable, lanceolate to linear with toothed margins and up to 3 inches long. Leaves are hairy on both sides with at least 1 dark red spot on the upper surface, especially on older leaves. Lower leaves are occasionally alternate while leaves at the ends of stems near the flowers often appear whorled.

Stems: Erect with opposite, hairy branches

Flowers/fruit: Flowers are inconspicuous, have no petals and occur in clusters at the ends of branches. Fruit are smooth, yellowish-green capsules that are divided into 3 parts. Each capsule normally contains 3 seeds.

Comments: Reproduces by seed. All parts of the plant emit a milky sap when broken.
**Henbit**

**Scientific name:** Lamium amplexicaule

**Life cycle/height:** Summer or winter annual or biennial, up to 14 inches

**Leaves:** Opposite, round and margins with rounded teeth. Leaves have hairs on the upper surfaces and along the veins of the lower surfaces. Lower leaves have petioles; upper leaves are attached directly to stem. Upper leaves are smaller than lower leaves.

**Stems:** Decumbent and square with downward pointing hairs, may root at lower nodes

**Flowers/fruit:** Small, tubular; purple to red flowers with lip-like projections are arranged in whorls in upper leaf axils.

**Comments:** Reproduces by seed. More prevalent in no-till fields. Thick patches can make areas appear purplish as plants flower. Can be confused with ground ivy (page 96) and purple deadnettle (Lamium purpureum).
**Star of Bethlehem**

**Other names:** Sleepy dick, summer snowflake

**Scientific name:** Ornithogalum umbellatum

**Life cycle/height:** Perennial, up to 1 foot

**Leaves:** Shiny, dark green with a distinct white midrib, narrow and grass-like. Leaves are up to 12 inches long and ¼ inch wide.

**Stems:** Leafless, hairless and flowering

**Flowers/fruit:** Flowers have 6 white petals with a prominent green stripe on the back. Flowers resemble stars and occur at ends of stems. Fruit are 3-lobed, yellow-green capsules that contain several oval, black seeds.

**Comments:** Reproduces by seed and vegetative bulbs that separate from the parent bulb. It is a monocot, not a true broadleaf.
**Velvetleaf**

**Other names:** Buttonweed, butterprint  
**Scientific name:** *Abutilon theophrasti*  
**Life cycle/height:** Annual, up to 7 feet  
**Leaves:** Cotyledons are round to heart-shaped with short hairs on both surfaces. Leaves are alternate, broadly heart-shaped gradually tapering to a point, 3 to 8 inches long and nearly as wide with long, slender petioles. Leaves have round-toothed margins and soft, hairy surfaces that feel velvety.  
**Stems:** Erect, branched near the top and covered with short, soft hairs  
**Flowers/fruit:** Flowers are yellow to yellow-orange and ½ to 1 inch wide with 5 petals. Flowers form singly on short stalks in the upper leaf axils. Fruit are about 1 inch wide, bowl-shaped green capsules that turn dark brown. Each capsule has 9 to 15 compartments containing grayish-brown, notched seeds.
Venice mallow

Other names: Flower-of-an-hour, shoo-fly
Scientific name: Hibiscus trionum
Life cycle/height: Annual, up to 2 feet
Leaves: Alternate, divided into at least 3 distinct segments with up to 7 lobes. Segments are oblong; middle segment is largest. Leaves have coarsely toothed margins, long petioles and are up to 3 inches long.

Stems: Erect, spreading or branching from the base and covered with stiff hairs.

Flowers/fruit: Flowers form individually on stalks in leaf axils. Flowers are 1 to 2½ inches across with 5 creamy white petals. Petals have a purple blotch at the base and often have purple margins. The sepals form a membranous sack with distinctive dark green veins at the flower base. Fruit are round, hairy capsules enclosed in the sacks.

Comments: Reproduces by seed.
Common mallow

**Other names:** Cheeseweed, dwarf mallow

**Scientific name:** *Malva neglecta*

**Life cycle/height:** Annual or occasionally biennial, less than 1 foot

**Leaves:** Cotyledons are heart-shaped with 3 main veins. Leaves are alternate, round to heart-shaped, entire or shallowly lobed with round-toothed margins. Leaves have short hairs on upper and lower surfaces. Petioles are 2 to 7 inches long and hairy.

**Stems:** Partly erect or decumbent and branched from the base. Stems are covered with hairs, especially when young.

**Flowers/fruit:** Flowers form in leaf axils and have 5 white, purple-tinged petals with notched tips. Fruit are flat, round capsules. Each capsule consists of 12 to 15 compartments, each containing a reddish-brown, notched, disc-like seed.

**Comments:** Reproduces by seed.
**Prickly sida**

**Other names:** Teaweed, spiny sida  
**Scientific name:** *Sida spinosa*  
**Life cycle/height:** Annual, up to 2 feet  
**Leaves:** Cotyledons are heart-shaped and covered with short hairs. Leaves are alternate and oval to lanceolate with toothed margins. Leaves are up to 2 inches long and sparsely covered with hairs. Petioles are up to $\frac{1}{4}$ inches long with small spines (stipules) at each petiole base.  
**Stems:** Erect, many branched and covered with fine, soft hairs  
**Flowers/fruit:** Light-yellow, $\frac{1}{3}$ inch wide flowers develop alone or in small clusters in upper leaf axils on $\frac{1}{2}$ inch long stalks. Fruit are capsules that split into 5 segments when mature.  
**Comments:** Reproduces by seed.
Wild four-o’clock

Other names: Heartleaf four-o’clock

Scientific name: *Mirabilis nyctaginea*

Life cycle/height: Perennial, up to 4 feet

Leaves: Opposite, broadly ovate to ovate-lanceolate, often with pointed tips. Leaves are hairless, 1½ to 3 inches long and 1 to 2 inches wide. Middle and lower stem leaves have ½ to 3 inch long petioles; upper leaves attach directly to the stem.

Stems: Erect and freely branching, hairless or sparsely hairy with swollen nodes

Flowers/fruit: Flowers occur in terminal clusters on forked branches. Groups of 3 to 5 pink to purple flowers develop within a 5-lobed green bract. Flowers are bell-shaped tubes with 5 lobes. Fruit are grayish-brown, narrowly oblong, strongly ribbed and wrinkled.

Comments: Reproduces by seed.
**Common pokeweed**

**Other names:** Inkberry, pokeberry

**Scientific name:** *Phytolacca americana*

**Life cycle/height:** Perennial, up to 10 feet

**Leaves:** Alternate, hairless, oblong to lanceolate with pointed tips, entire to slightly wavy margins and petioles up to 2 inches long

**Stems:** Hairless, succulent, varying from light green to bright purplish-red

**Flowers/fruit:** Small, white flowers are arranged in an elongated cluster about 3 to 6 inches long and 1 inch wide. Individual flowers are arranged around the flowering stalk on short pedicels which may be white, green, pink or purplish-red. Fruit are berries, green when immature and dark purple to black when mature.

**Comments:** Reproduces by seed. All parts of the mature plant are poisonous, especially the roots. The dark red berry juice easily stains.
Wild buckwheat

Scientific name: *Fallopia convolvulus*

Life cycle/length: Annual, vine up to 5 feet

Leaves: Cotyledons are oblong-oval to linear. Leaves are alternate, hairless and heart to triangle-shaped with pointed tips and entire margins. Basal lobes point inward toward the petiole. There is a short ocrea at the base of each petiole.

Stems: Twining vines have long internodes and branch at the base.

Flowers/fruit: Flowers are inconspicuous, greenish-white or pink and clustered in leaf axils. Single seeds are enclosed in dry, black, 3-sided fruit.

Comments: Reproduces by seed.
**Swamp smartweed**

**Other names:** Devil’s shoestring  
**Scientific name:** *Persicaria amphibia*  
**Life cycle/height:** Perennial, up to 3½ feet  
**Leaves:** Alternate, lanceolate to oval with pointed tips and up to 10 inches long and 2½ inches wide. Leaves have prominent veins and wavy margins and are hairless or with stiff hairs. Leaves have petioles with a membranous ocrea surrounding the stem at nodes.  
**Stems:** Erect or decumbent, swollen at nodes and able to root at lower nodes  
**Flowers/fruit:** Flowers are arranged in 1 to 6 inch long compact spikes at the ends of stems. Individual flowers are pink and about ½ inch long with 5 united petals. Fruit are oval to round achenes that are ¼ inch long.  
**Comments:** Reproduces by seed, rhizomes and rooting stems.
**Pennsylvania smartweed**

**Other names:** Pennsylvania knotweed, pinkweed

**Scientific name:** *Persicaria pensylvanica*

**Life cycle/height:** Annual, up to 3 feet

**Leaves:** Cotyledons are narrow and lanceolate with rounded tips. Leaves are alternate and lanceolate with pointed tips and entire margins. Older leaves are hairless or slightly hairy. Leaves have short petioles with an ocrea surrounding the stem at nodes. Leaves may have a purple watermark.

**Stems:** Erect or ascending, branched and hairless with swollen nodes

**Flowers/fruit:** Small, pink to white flowers are in terminal spike-like clusters at the ends of stems. Fruits are shiny black, flat and round achenes with pointed tips.

**Comments:** Reproduces by seed. Can be confused with ladysthumb (page 96) and swamp smartweed (page 85).
Curly dock

**Other names:** Sour dock, yellow dock  
**Scientific name:** *Rumex crispus*  
**Life cycle/height:** Perennial, up to 4 feet  

**Leaves:** Rosette leaves are long and narrow with round to pointed tips, wavy margins (resembling bacon strips) and long petioles. Leaves on flowering stems are alternate and become progressively smaller higher on the stem. Leaves have prominent midveins and an ocrea that surrounds the stem.  

**Stems:** Flowering stems bolt during late spring. Stems are unbranched, thick, ridged, hairless and often turn red.  

**Flowers/fruit:** Flowers are in narrow, 6 to 18 inch long panicles. Flowers have no petals, but consist of greenish sepals that turn reddish-brown with age. Fruit are triangular brown achenes surrounded by 3 paper-like wings.  

**Comments:** Reproduces by seed and root segments. It is a noxious weed in Iowa.
Catchweed bedstraw

Other names: Cleavers

Scientific name: Galium aparine

Life cycle/height: Annual, up to 4 feet

Leaves: Whorled with 6 to 8 leaves per node. Blades are simple, linear; ¾ to 3¼ inches long and less than ½ inch wide. Leaf margins and lower midrib have backward pointing bristles. Leaf tips have sharp, firm points.

Stems: Square, edges lined with stiff hairs pointing backward allowing plants to cling to adjacent plants, or when broken off, to clothing or animals

Flowers/fruit: Flowers are small and have 4 white petals with pointed tips. Fruit are globe-shaped and covered with stiff, hooked hairs giving them a bur-like appearance.

Comments: Reproduces by seed. Often forms a thick mat.
Corn speedwell

Other names: Common speedwell
Scientific name: Veronica arvensis
Life cycle/height: Summer or winter annual, up to 1 foot

Leaves: Lower leaves are opposite, broadly oval and hairy with rounded teeth along the margins and short petioles. Small, narrow, bract-like upper leaves are alternate and attach directly to stem. As plant matures, lower leaves often die and fall off.

Stems: Erect or ascending, branched from the base and covered with long, soft hairs

Flowers/fruit: Inconspicuous light blue to violet flowers form in the upper leaf axils. Fruit are hairy, heart-shaped capsules that contain many tiny, yellow seeds.

Comments: Reproduces by seed.
Jimsonweed

Other names: Moonflower, thornapple
Scientific name: *Datura stramonium*
Life cycle/height: Annual, up to 5 feet
Leaves: Cotyledons are long and narrow with a prominent midvein. Leaves are alternate, ovate, hairless and 3 to 8 inches long with petioles up to 4 inches long. First leaves have entire margins; later leaves have large, uneven and coarsely toothed margins.

Stems: Erect, branched above, hollow and hairless with purple tinting

Flowers/fruit: Flowers are white to purple-white, 2 to 5 inch long funnel-shaped tubes with 5 points along the borders. Fruit are large, oval capsules covered with stiff spines. Capsules split into 4 parts when mature. Each part contains numerous flat, dark brown to black seeds.

Comments: Reproduces by seed. Crushed leaves and stems produce a distinctive, unpleasant odor. All plant parts are poisonous.
Smooth groundcherry

Other names: Longleaf groundcherry

Scientific name: *Physalis longifolia*

Life cycle/height: Perennial, up to 3 feet

Leaves: Alternate, ovate to lanceolate, hairless to slightly hairy with entire to toothed margins and long petioles

Stems: Erect, branched and prominently grooved, becoming semi-woody with age. Lower stems are usually tinged purple.

Flowers/fruit: Flowers have 5 yellow to greenish-yellow petals with purple centers fused into a bell shape. Individual flowers droop from the branch and leaf axils. Fruit are orange, red or purple berries surrounded by a green, lantern-shaped, papery bladder. Each fruit contains many flat, round to kidney-shaped seeds.

Comments: Reproduces by seed. Leaves and unripe fruit are poisonous.
**Horsenettle**

**Other names:** Bull nettle  
**Scientific name:** *Solanum carolinense*  
**Life cycle/height:** Perennial, up to 3 feet  
**Leaves:** Alternate, elliptic to oval, 2 to 5 inches long with 1 to 3 pairs of pointed lobes. Both leaf surfaces are covered with star-shaped hairs. Prominent spines up to ½ inch long are on midveins and petioles.  
**Stems:** Erect to spreading with prominent spines and star-shaped hairs  
**Flowers/fruit:** Flowers occur in clusters on prickly flower stalks. Flowers have 5 purple to white petals with yellow, cone-shaped anthers. Fruit are berries, about ½ inch wide, green when immature, turning yellow and wrinkled with maturity. Each berry contains 40 to 160 seeds.  
**Comments:** Reproduces by seed and creeping rhizomes. Leaves smell like a potato when crushed. Leaves, stems and berries are poisonous, even when the plant is dead. It is a noxious weed in Iowa.
Eastern black nightshade

**Other names:** Black nightshade

**Scientific name:** *Solanum ptycanthum*

**Life cycle/height:** Annual, up to 3 feet

**Leaves:** Cotyledons are small, oval with pointed tips and a purplish tinge underneath. Leaves are alternate, simple, ovate to lanceolate with entire to irregularly toothed wavy margins. Leaves are hairless to slightly hairy and purple on lower surfaces. Leaves are up to 3 inches long and 2 inches wide and have petioles. Leaves commonly have small round holes caused by flea beetle feeding.

**Stems:** Erect and branched, hairless or slightly hairy

**Flowers/fruit:** Flowers are mostly white or slightly purple and star-shaped. Flowers have 5 petals fused at the base surrounding 5 yellow anthers and are about 3/8 inch across. Flowers occur in clusters of 4 to 5. Fruit are berries; green when immature, shiny black at maturity and are about the size of soybeans.

**Comments:** Reproduces by seed. All plant parts are poisonous; plant parts become more toxic with age, except for berries. Berries mixed with harvested soybeans can stain beans and reduce the value of the crop.
**Buffalobur**

**Other names:** Kansas thistle, prickly nightshade

**Scientific name:** *Solanum rostratum*

**Life cycle/height:** Annual, up to 2 feet

**Leaves:** Alternate, deeply lobed, 2 to 5 inches long with prominent leaf veins, stiff, straight hairs on upper surfaces and dense, star-shaped hairs on lower surfaces

**Stems:** Erect, branched and covered with tiny hairs and yellow, straight spines

**Flowers/fruit:** Flowers are bright yellow, 5 lobed and about 1 inch wide. Fruit are globe-shaped berries enclosed by a spiny calyx containing many kidney-shaped, pitted seeds.

**Comments:** Reproduces by seed. Leaves, berries and roots are poisonous. Spines can cause injury.
**Field pansy**

**Other names:** Wild pansy, Johnny jump up  

**Scientific name:** *Viola bicolor*  

**Life cycle/height:** Summer or winter annual, up to $\frac{1}{2}$ foot  

**Leaves:** Alternate, hairless and slightly lobed with petioles. Upper leaves have leafy stipules up to 1 inch long at the leaf base. Stipules have deep, narrow lobes with hairless to slightly hairy edges and are the same color as leaves.

**Stems:** Erect, branched near base, light green to purplish and hairless  

**Flowers/fruit:** Flowers are about $\frac{1}{2}$ inch across, with 5 petals and 5 sepals. Petals are pale to medium blue-violet with dark purple lines and white at the flower throat. The side petals are bearded with white hairs. The lowermost petal has a yellow patch near the base. Seed capsules contain small, light brown, oval seeds that are ejected from the capsule when mature.

**Comments:** Reproduces by seed. Tolerant to glyphosate. It is a problem in no-till fields.
Some weeds are very similar in appearance to weeds described in this guide but can be differentiated by the following characteristics.

**Ground ivy**
*Scientific name:* Glechoma hederacea  
*Comments:* May be confused with henbit (page 76). Ground ivy differs by having upper leaves with petioles and a more prostate growth habit.

**Ladysthumb**
*Scientific name:* Persicaria maculosa  
*Comments:* May be confused with Pennsylvania smartweed (page 86). Ladysthumb differs by having an ocrea with hairs on the top. Swamp smartweed (page 85) also has an ocrea with hairs on the top.

**Mouseear chickweed**
*Scientific name:* Cerastium fontanum  
*Comments:* May be confused with common chickweed (page 66). Mouseear chickweed differs by having prominent hairs on leaves and stems.

**Tall hedge mustard**
*Scientific name:* Sisymbrium loeselii  
*Comments:* May be confused with other mustards (e.g., yellow rocket, page 59; and wild mustard, page 62). Tall hedge mustard differs by having leaves with triangle-
Many technical terms are used to describe weed morphology. It is important to know the definition of these terms for accurate weed identification.
Achene- A dry, one-seeded fruit that does not open or split.
Alternate- Leaves spaced singly along a stem, with one leaf at each node.
Annual- A plant that completes its life cycle during a single growing season.
Auricle- A claw-like or clasping appendage at the base of a grass leaf blade where it meets the sheath (near the collar).
Awn- A narrow, stiff bristle occurring at the end or edge of a plant organ.
Axil- The area where the stem and leaf meet.
Axillary- Positioned in or rising from an axil (for example, axillary buds).
Basal- Positioned at or near the base of a structure.
Biennial- A plant that requires two years to complete its life cycle.
Blade- The elongated, extended and flattened part of a leaf.
Bolt- To produce a stem from a basal rosette by rapid elongation.
Bract- A reduced leaf or leaf-like structure at the base of a flower or flower cluster.
Bristle- A short, stiff hair or hair-like structure.
Bulb- An underground stem with fleshy, thick storage leaves or scales.
Calyx- The outermost whorl of flower parts, usually green sepals that cover other flower parts in the bud.
Collar- The area of a grass leaf at the junction of the blade and sheath.
Compound- Consisting of two or more parts united in a single structure. For example, a compound leaf is divided into two or more distinct leaflets.
Cotyledon- The first leaf or leaves of a newly emerging plant, also called seed leaves.
Creeping perennial- A perennial that can reproduce and spread vegetatively.
**Decumbent**- Horizontal or laying flat for most of the length with only the tip ascending.

**Disk (flower)**- Tubular flowers in the center of a flower head, characteristic of the sunflower family.

**Elliptic**- Oval-shaped, but tapering at both ends.

**Entire**- A continuous, untoothed margin.

**Hypocotyl**- The stem of a young seedling below the cotyledon(s).

**Inflorescence**- A cluster of flowers.

**Integrated weed management**- Combines different management strategies such as cultural, mechanical and chemical methods to adjust to changing weed problems and weed population shifts.

**Internode**- The area of a stem between successive nodes.

**Lanceolate**- A long, narrow shape that is widest at the base and tapers to a tip.

**Leaflet**- One part of a compound leaf.

**Ligule**- In grasses, a thin membrane or ring of hairs at the junction of the leaf sheath and blade on the inside of the leaf collar.

**Linear**- Long and narrow with parallel sides.

**Lobe**- A rounded segment of a plant part.

**Margin**- The edge or border of a plant part.

**Mealy**- Covered with material that resembles meal in texture.

**Midrib or midvein**- The central vein of a leaf.

**Nodding**- Drooping or bending over and downward.

**Node**- Joint in a stem where leaves and branches emerge.

**Noxious weed**- Weeds classified under the Iowa Weed Law. The law gives each county the authority to order the destruction of weeds classified as noxious by the state.

**Oblong**- Having an elongated, rounded shape, like a rectangle with rounded corners.

**Ocrea**- A papery sheath that encloses the stem at the nodes, characteristic of the smartweed family.
**Glossary**

**Opposite** - Leaves growing in pairs, two at each node on the stem.

**Ovate** - Having an oval outline; egg-shaped.

**Palmate** - Lobed, divided or veined from a common point like the fingers of a hand.

**Panicle** - Seedhead with a main axis and subdivided branches; may be compact or open.

**Pappus** - A cluster of hairs, bristles or scales that crown the top of achenes and aid wind dispersion of seeds of some species in the sunflower family.

**Pedicel** - The stalk of a spikelet or individual flower in an inflorescence.

**Perennial** - A plant that lives for more than two years.

**Petiole** - The stalk between the leaf blade and the stem.

**Pinnate** - A compound leaf arrangement with leaflets occurring on opposite sides of an elongated axis.

**Prostrate** - Lying on the ground.

**Raceme** - An inflorescence where the spikelets or flowers are on stalks coming off a central axis or stem.

**Ray (flower)** - Strap-shaped flowers of some members of the sunflower family.

**Rhizome** - A creeping, underground stem that can vegetatively generate new growth.

**Rosette** - A circular cluster of leaves radiating from a stem where the internodes have not elongated. A rosette appears as a circular fan of leaves on the ground.

**Sepal** - A portion of the calyx; usually green but may look like petals.

**Sessile** - A leaf or flower attached directly to another structure; without a petiole or pedicel.

**Sheath** - Lowest part of the leaf that encloses the stem of grass plants; a structure that surrounds another plant structure.
Shoot- New plant growth that can include stems, flower buds and leaves.

Simple- A single plant structure that is unbranched or undivided.

Simple perennial- A perennial that reproduces only by seed.

Spike- An elongated, unbranched seedhead.

Spikelet- A small or secondary spike composed of one to several flowers, characteristic of grasses and sedges.

Stipules- Small, often leaf-like appendages arising from the petiole near the leaf base in some plants; may be modified to spines.

Stolon- An aboveground, modified stem that roots at the nodes giving rise to new plants.

Succulent- Soft or fleshy.

Summer annual- A plant that germinates in the spring or summer and completes its life cycle before winter.

Taproot- The main root, growing almost vertically downward, from which small, lateral roots spread out.

Tendril- A slender, cylindrical modified leaf or stem that twists or coils around a supporting structure.

Terminal- The tip or end of a stem or leaf.

Tiller- A shoot arising from a bud at the base of the plant.

Toothed- A projecting or divided part of a plant; jagged row on the edge of a leaf or flower.

Tuber- A short, thickened portion of an underground stem; provides food storage for the plant.

Tubercle- A small projection or bump on the surface of a plant structure.

Umbel- A flat-topped or rounded inflorescence with branches that come out from a common point.

Wavy- Having undulating and wavelike curves.

Whorl- A ring of three or more structures at a single node.

Winter annual- A plant that germinates in the early fall to early spring, flowers, produces seed in mid-to late spring, then dies.
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Acknowledgements


Additional editing by David Wright, Tamsyn Jones, Greg Tylka, Karen Simon, LeAnn Strother and Dawn Refsell.

Illustrations by Kaitlin Lindsay, Azusa Okawa, Jamie Rippke, Jessica Thompson and Stephen Robinson with oversight by Lynn Clarke (pages 12-17).

Graphic design by Gary Usovsky.

Photo credits:
Iowa State University – Kristine Schaefer and Bob Hartzler, except where noted.
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University of Missouri Weed ID Guide – field pansy images (page 95).

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture.