



# Common Weed Seedlings of the North Central States

Andrew J. Chomas  
James J. Kells  
J. Boyd Carey

Department of Crop and Soil Sciences  
Michigan State University



This publication was coordinated by *IDEA — Information Development • Expanding Awareness*, a collaborative effort initiated by the North Central Cooperative Extension Services to increase the efficiency and effectiveness of developing, producing, and/or marketing educational products nationwide. Publications are subject to peer review and prepared as a part of Cooperative Extension Activities in cooperation with the Cooperative State Research Education and Extension Services (CSREES) - US Department of Agriculture, Washington, D.C. The following states cooperated in making this publication available. For additional copies contact the publishing university.

For copies of this and other North Central Regional Extension resources contact the distribution office of the university listed below for your state. If your university is not listed, contact the producing university (marked with an asterisk).

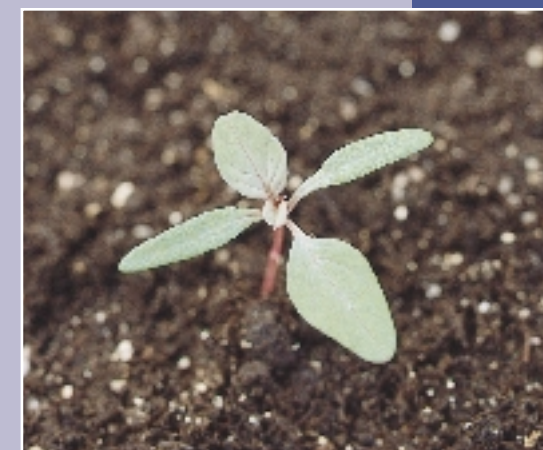
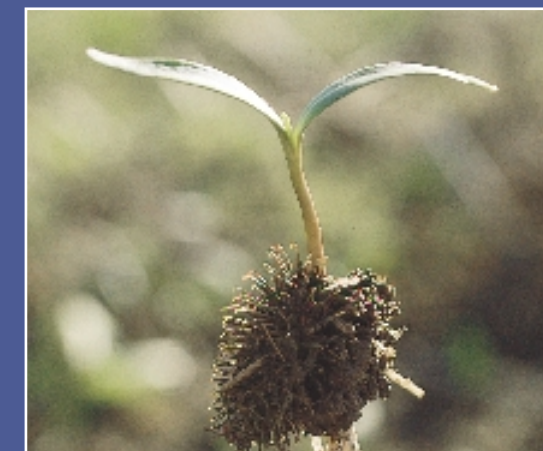
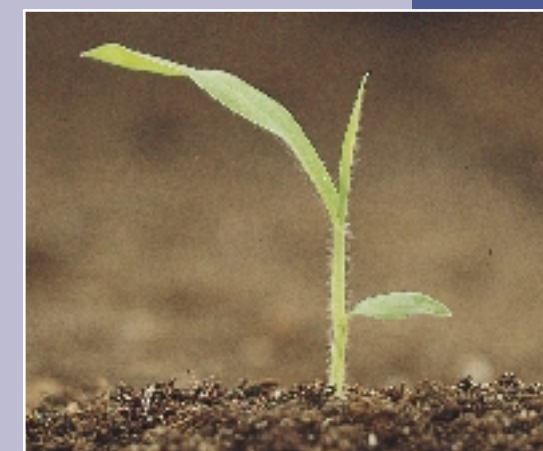
|   |  |   |  |
|---|--|---|--|
| University of Illinois<br>Information Technology and<br>Communication Services<br>Taft House<br>1401 Maryland<br>Urbana, IL 61801<br>(217) 333-2007 | Kansas State University<br>Distribution Center<br>Umberger Hall<br>Manhattan, KS 66506-3400<br>(913) 532-5830                                  | University of Nebraska<br>P.O. Box 830918<br>105 Ag. Comm. Building<br>Lincoln, NE 68583-0918<br>(402) 472-3023                   | South Dakota State University<br>Ag. Comm. Center<br>Box 2231<br>Brookings, SD 57007<br>(605) 688-5628   |
| Purdue University<br>Media Distribution Center<br>301 South Second Street<br>Lafayette, IN 47901-1232<br>1-(888) 398-4636                           | * Michigan State University<br>Bulletin Office<br>10-B Ag. Hall<br>East Lansing, MI 48824-1039<br>(517) 355-0240<br>email: marekh@msue.msu.edu | North Dakota State University<br>Extension Communications<br>Box 5655, Morrill Hall<br>Fargo, ND 58105-5655<br>(701) 231-7883     | University of Wisconsin<br>Cooperative Extension<br>Publications<br>Room 170<br>630 West Mifflin Street<br>Madison, WI 53703<br>(608) 262-3346 |
| Lincoln University<br>Cooperative Extension Service<br>900 Moreau Drive<br>Jefferson City, MO 65101<br>(314) 681-5557                               | University of Minnesota<br>Distribution Center<br>20 Coffey Hall<br>1420 Eckles Avenue<br>St. Paul, MN 55108-6069<br>1-(800) 876-8636          | Ohio State University<br>Publications Office<br>385 Kottman Hall<br>2021 Coffey Road<br>Columbus, OH 43210-1044<br>(614) 292-1607 | * Publishing University  |

Programs and activities of the Cooperative Extension Service are available to all potential clientele without regard to race, color, national origin, age, sex, religion, or disability.

In cooperation with *IDEA (Information Development • Expanding Awareness)*.

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and Cooperative Extension Services of Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin and Michigan. Margaret A. Bethel, acting Director, Michigan State University Extension, East Lansing, Mich. 48824-1039.

Reprinted June 2001





**A**ccurate weed identification is the first step in a successful weed management program. Weed species respond differently to different management strategies. Whether you choose chemical, cultural or mechanical control measures, you need to know what weed species are present. Failure to identify the weed problem accurately may lead to wasted time and money or excess pesticide applied to the environment.

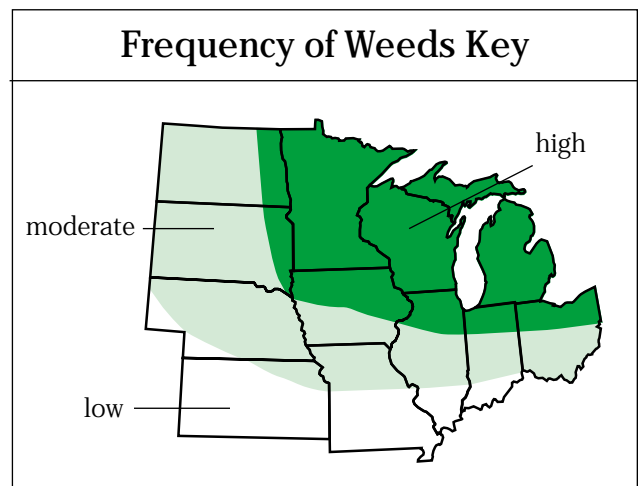
Because most weeds are most effectively controlled at a very young stage, it is important to identify them as early as possible. Unfortunately, many weeds look very similar at a young stage. This guide is designed to help identify seedling weeds while there is still time to control them.

This guide includes 54 of the most common problem weed species in the North Central Region. It is divided into two main sections: grass and grasslike weeds, and broadleaf weeds.

Grass weeds are especially difficult to distinguish, so an identification key is included on page 3. This key gives you a step-by-step progression of questions that will help you identify each species correctly.

An illustrated guide to broadleaf weed characteristics is included on page 2. There is also a glossary of terms on page 1. Referring to these sections will help you understand many of the terms used in the written descriptions of each species. An alphabetical index of the weed species is included on page 1 for quick reference.

## Frequency of Weeds Key



## Acknowledgements:

The authors thank the following contributors of photos used in this publication:

Chris Boerboom, University of Wisconsin:  
14b, 17a, 17c, 45c, 52a

Jerry Doll, University of Wisconsin:  
1a, 16a, 16b, 16c, 31b, 32a, 32b, 35b, 39b, 44b, 49b

J.D. Green, University of Kentucky:  
23b, 45a, 53a

Aaron G. Hager, University of Illinois:  
5a, 27a, 27c, 33b, 44a, 47a, 47b, 54a, 54b

Bill Johnson, University of Missouri:  
5b, 5c, 21a, 21b, 21c, 23c, 24a, 24b, 24c, 33a, 33c, 44c

James Mickelson, University of Wisconsin:  
17b

Kelly Nelson, Michigan State University:  
23a, 27b, 37b, 53b

Robert Parker, Washington State University:  
9b, 29a, 29c

Dallas Peterson, Kansas State University:  
9a, 9c, 18a, 18b, 18c, 26a, 26b, 26c, 37a, 37c, 42a, 42b, 42c, 53c, 54c

Dean Swan, Washington State University:  
6c, 29b, 38a, 38b, 38c, 47c

Richard Zollinger, North Dakota State University:  
6a, 6b

# Table of Contents



|  |    |  |    |
|--|----|--|----|
| Amaranth, Palmer ( <i>Amaranthus palmeri</i> ) .....     | 12 | Mustard, Wild ( <i>Brassica kaber</i> ) .....                        | 17 |
| Barnyardgrass ( <i>Echinochloa crus-galli</i> ) .....    | 4  | Nightshade, Eastern Black ( <i>Solanum ptycanthum</i> ) .....        | 13 |
| Bindweed, Field ( <i>Convolvulus arvensis</i> ) .....    | 11 | Nightshade, Hairy ( <i>Solanum sarrachoides</i> ) .....              | 13 |
| Brome, Downy ( <i>Bromus tectorum</i> ) .....            | 6  | Nutsedge, Yellow ( <i>Cyperus esculentus</i> ) .....                 | 4  |
| Buckwheat, Wild ( <i>Polygonum convolvulus</i> ) .....   | 11 | Oat, Wild ( <i>Avena fatua</i> ) .....                               | 5  |
| Campion, White ( <i>Silene alba</i> ) .....              | 19 | Panicum, Fall ( <i>Panicum dichotomiflorum</i> ) .....               | 8  |
| Carrot, Wild ( <i>Daucus carota</i> ) .....              | 20 | Pennycress, Field ( <i>Thlaspi arvense</i> ) .....                   | 16 |
| Chickweed, Common ( <i>Stellaria media</i> ) .....       | 20 | Pepperweed, Virginia ( <i>Lepidium virginicum</i> ) .....            | 16 |
| Cocklebur, Common ( <i>Xanthium strumarium</i> ) .....   | 14 | Pigweed, Redroot and Smooth .....                                    | 12 |
| Crabgrass, Large ( <i>Digitaria sanguinalis</i> ) .....  | 6  | ( <i>Amaranthus retroflexus</i> , <i>A. hybridus</i> )               |    |
| Crabgrass, Smooth ( <i>Digitaria ischaemum</i> ) .....   | 6  | Purslane, Common ( <i>Portulaca oleracea</i> ) .....                 | 20 |
| Cupgrass, Woolly ( <i>Eriochloa villosa</i> ) .....      | 9  | Quackgrass ( <i>Elytrigia repens</i> ) .....                         | 4  |
| Dandelion, Common ( <i>Taraxacum officinale</i> ) .....  | 18 | Ragweed, Common ( <i>Ambrosia artemisiifolia</i> ) .....             | 15 |
| Foxtail, Giant ( <i>Setaria faberi</i> ) .....           | 7  | Ragweed, Giant ( <i>Ambrosia trifida</i> ) .....                     | 15 |
| Foxtail, Green ( <i>Setaria viridis</i> ) .....          | 7  | Rocket, Yellow ( <i>Barbarea vulgaris</i> ) .....                    | 17 |
| Foxtail, Yellow ( <i>Setaria glauca</i> ) .....          | 7  | Sandbur, Longspine ( <i>Cenchrus longispinus</i> ) .....             | 9  |
| Henbit ( <i>Lamium amplexicaule</i> ) .....              | 21 | Shattercane ( <i>Sorghum bicolor</i> ) .....                         | 5  |
| Horseweed (Marestail) ( <i>Conyza canadensis</i> ) ..... | 19 | Shepherd's-purse ( <i>Capsella bursa-pastoris</i> ) .....            | 16 |
| Jimsonweed ( <i>Datura stramonium</i> ) .....            | 14 | Sida, Prickly ( <i>Sida spinosa</i> ) .....                          | 10 |
| Johnsongrass ( <i>Sorghum halepense</i> ) .....          | 5  | Smartweed, Pennsylvania ( <i>Polygonum pensylvanicum</i> ) .....     | 10 |
| Kochia ( <i>Kochia scoparia</i> ) .....                  | 19 | Sunflower, Common ( <i>Helianthus annuus</i> ) .....                 | 14 |
| Ladysthumb ( <i>Polygonum persicaria</i> ) .....         | 10 | Tansymustard, Pinnate ( <i>Descurainia pinnata</i> ) .....           | 17 |
| Lambsquarters, Common ( <i>Chenopodium album</i> ) ..... | 13 | Thistle, Bull ( <i>Cirsium vulgare</i> ) .....                       | 18 |
| Lettuce, Prickly ( <i>Lactuca serriola</i> ) .....       | 21 | Thistle, Canada ( <i>Cirsium arvense</i> ) .....                     | 18 |
| Mallow, Venice ( <i>Hibiscus trionum</i> ) .....         | 21 | Velvetleaf ( <i>Abutilon theophrasti</i> ) .....                     | 15 |
| Millet, Wild-Proso ( <i>Panicum miliaceum</i> ) .....    | 8  | Waterhemp ( <i>Amaranthus rudis</i> , <i>A. tuberculatus</i> ) ..... | 12 |
| Morningglory, Ivyleaf ( <i>Ipomoea hederacea</i> ) ..... | 11 | Witchgrass ( <i>Panicum capillare</i> ) .....                        | 8  |
| Muhly, Wirestem ( <i>Muhlenbergia frondosa</i> ) .....   | 9  |  |    |

## Glossary

**awn** – a slender bristle of a grass spikelet.

**midrib** – the central vein running lengthwise along the underside of a leaf or cotyledon; underside of midvein.

**prostrate** – lying flat on the soil surface.

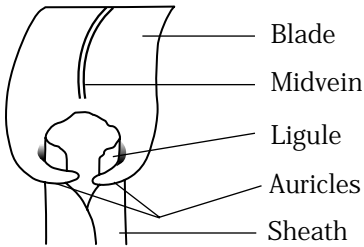
**rhizome** – an underground stem from which new plants may emerge, appears to be a root.

**rosette** – a cluster of leaves growing from a common point at the soil surface, without a stem.

**tuber** – underground nutlike storage organ located at tips of rhizomes.



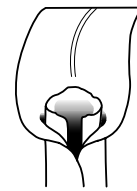
## Grass Morphology



## Ligule Types



Absent

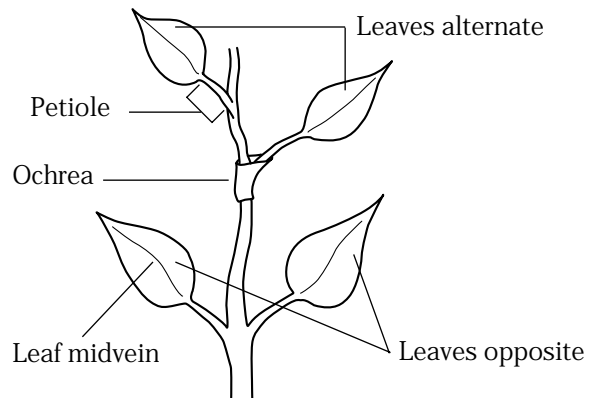
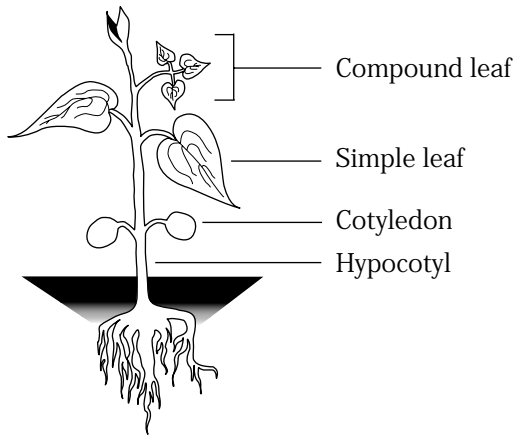


Membranous



Hairlike

## Broadleaf Morphology



## Cotyledon Shapes



Kidney



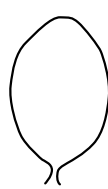
Linear



Lanceolate



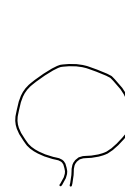
Oblong



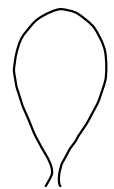
Oval



Ovate



Round



Spatulate

## Leaf Margins



Entire



Lobed



Pinnatifid

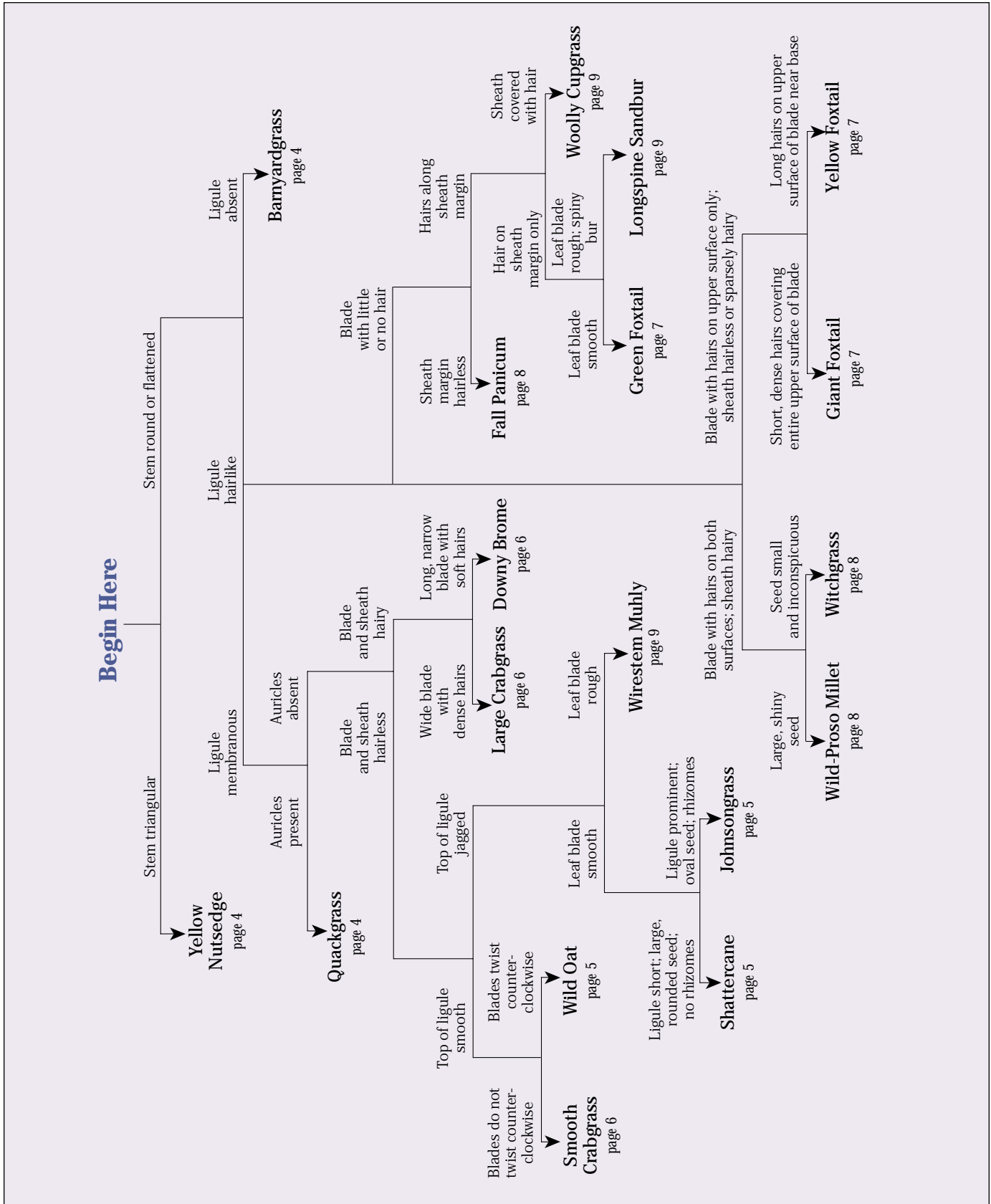


Serrate or Toothed



Undulate

# Identification Key for Grass and Grasslike Weeds



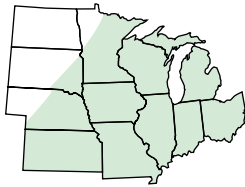




## 1. Yellow Nutsedge

*(Cyperus esculentus)*

Perennial. Not a grass species. Stem is triangular, solid and nodeless. Leaves are smooth, hairless and deeply keeled. Whole plant is yellowish to pale green. Tubers (nutlets) usually present at tips of rhizomes.



a.



b.

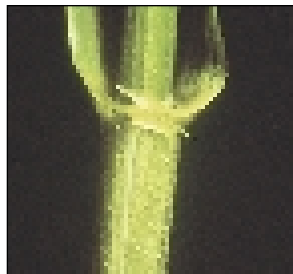
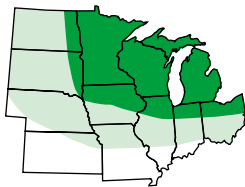


c.

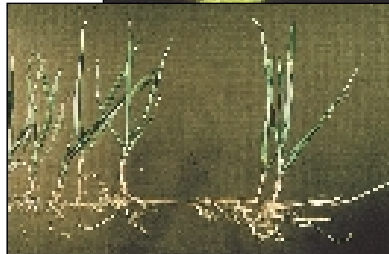
## 2. Quackgrass

*(Elytrigia repens)*

Perennial. Leaf sheath and blade hairless or sparsely hairy. Clasping auricles present. Short, membranous ligule. Rhizomes usually present.



a.



b.

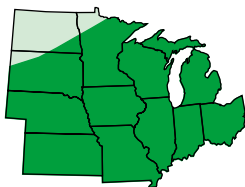


c.

## 3. Barnyardgrass

*(Echinochloa crus-galli)*

Summer annual. Leaf sheath and blade hairless. No ligule. No auricles. Stem flattened.



a.



b.



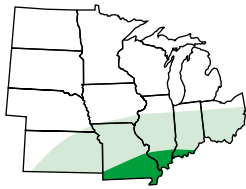
c.



## 4. Johnsongrass

(*Sorghum halepense*)

Perennial. Leaf sheath and blade hairless. No auricles. Prominent, jagged, membranous ligule. Oval, shiny seed. Rhizomes usually present.



a.



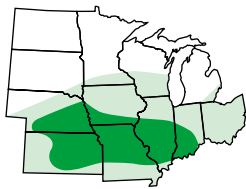
b.



c.

## 5. Shattercane

(*Sorghum bicolor*)  
Summer annual. Leaf blades are flat. Leaves resemble those of forage sorghum or Sudan grass. Ligules are short and membranous, with a terminal fringe of fine hairs. Large, rounded, shiny seed.



a.



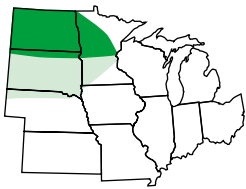
b.



c.

## 6. Wild Oat

(*Avena fatua*)  
Summer annual. Seedling leaves twist counterclockwise. Membranous ligule. Stems are erect and hollow. Distinguished from domestic oats by the twisted awn, which bends at right angles and a horse-shoe-shaped seed at its base.



a.



b.



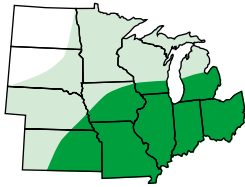
c.





## 7. Large Crabgrass (*Digitaria sanguinalis*)

Summer annual. Leaf sheath and blade (both surfaces) densely hairy. Membranous ligule. No auricles. Leaf blade, particularly the first leaf, is short and wide compared with blades of most other grasses.



a.



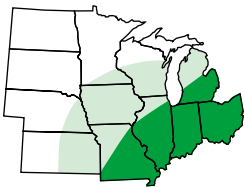
b.



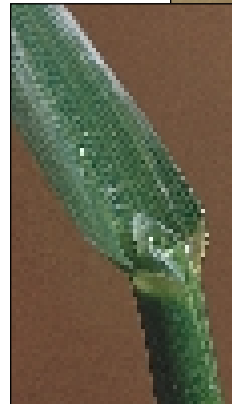
c.

## 8. Smooth Crabgrass (*Digitaria ischaemum*)

Summer annual. Leaf sheath and blade hairless or sparsely hairy. Membranous ligule. No auricles. Similar in appearance to large crabgrass.



a.



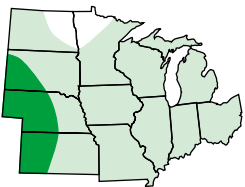
b.



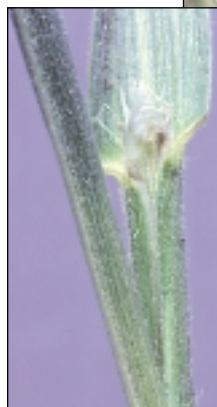
c.

## 9. Downy Brome (*Bromus tectorum*)

Winter or summer annual. Leaf blade is long and narrow with clockwise twist. Both blades and sheaths are light green and covered with soft hairs. Membranous ligule rounded to collar-shaped, may be toothed. Sheath closed.



a.



b.



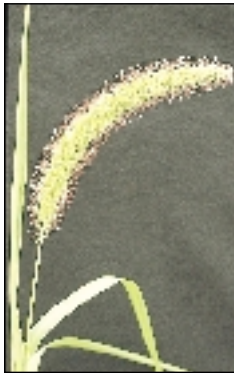
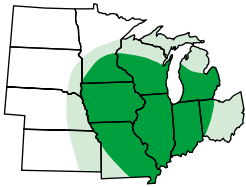
c.



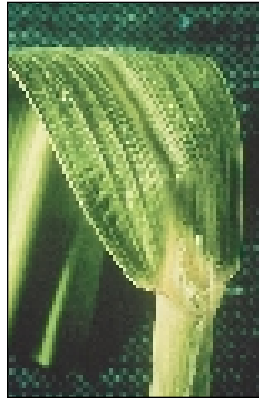


## 10. Giant Foxtail (*Setaria faberi*)

Summer annual. Entire upper side of leaf covered with dense, short hairs. Sheath margin hairy. Hairlike ligule. No auricles.



a.



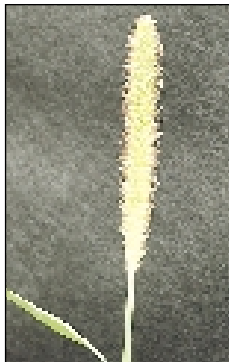
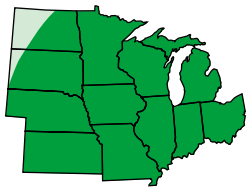
b.



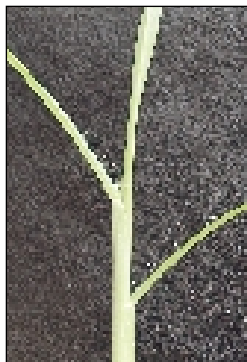
c.

## 11. Yellow Foxtail (*Setaria glauca*)

Summer annual. Leaf blade hairless except for long, wiry hairs on upper side near base. Sheath is hairless. Hairlike ligule. Stem flattened. No auricles.



a.



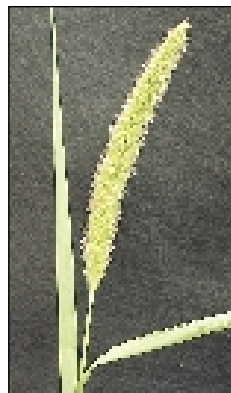
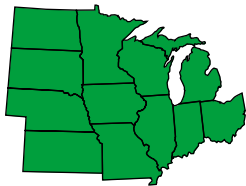
b.



c.

## 12. Green Foxtail (*Setaria viridis*)

Summer annual. Leaf blade is hairless. Leaf sheath is hairless except for short hairs along margins. Hairlike ligule. No auricles.



a.



b.

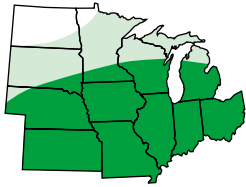


c.



## 13. Fall Panicum (*Panicum dichotomiflorum*)

Summer annual. Leaf sheath and blade hairless. Hairlike ligule. Leaf midrib prominent and somewhat white on older plants. No hairs on sheath margin. No auricles.



a.



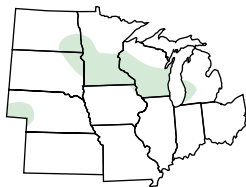
b.



c.

## 14. Wild-Proso Millet (*Panicum miliaceum*)

Summer annual. Leaf blade (both surfaces) and sheath hairy. Back of midrib often with a row of hairs protruding at a 90° angle. Hairlike ligule. No auricles. A large, oval-shaped, shiny, dark brown to black seed often persists on the root system.



a.



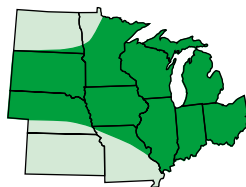
b.



c.

## 15. Witchgrass (*Panicum capillare*)

Summer annual. Leaf blade (both surfaces) and sheath densely hairy. Hairlike ligule. Leaf midrib prominent. No auricles. Seed smaller and less persistent than that of wild-proso millet.



a.



b.



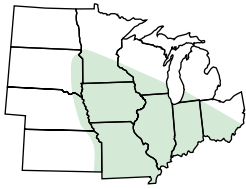
c.



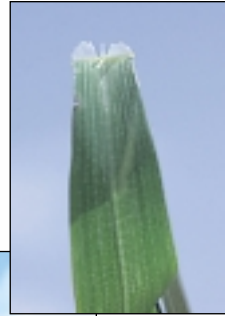


## 16. Wirestem Muhly (*Muhlenbergia frondosa*)

Perennial. Leaves are flat, rough to the touch and have short blades scattered along the stem and dense near the tip, giving a bushy appearance. Ligules are membranous and torn or jagged across the top. Scaly rhizomes usually present.



a.



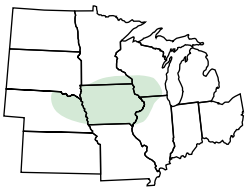
b.



c.

## 17. Woolly Cupgrass (*Eriochloa villosa*)

Summer annual. Leaf blades are covered with fine hairs; one leaf margin is often distinctly crinkled. Hairlike ligule; leaf sheath covered with short hair. First leaves are wide and lay flat with the soil surface. Large seed.



a.



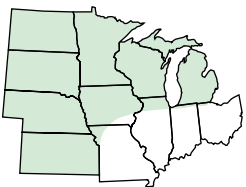
b.



c.

## 18. Longspine Sandbur (*Cenchrus longispinus*)

Summer annual. Leaf sheaths are flattened, very loose, smooth with hairy margins. Leaf blades are flat, rough and sometimes sparsely hairy. Hairlike ligule. Seed enclosed in spiny bur.



a.



b.



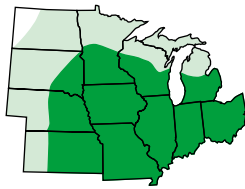
c.



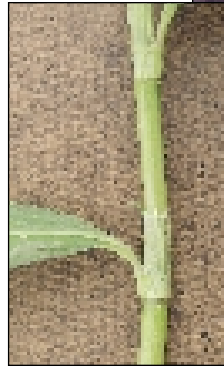


## 19. Ladysthumb (*Polygonum persicaria*)

Summer annual. Cotyledons are lanceolate with rounded tips and smooth on both surfaces. Leaves are alternate, smooth and lanceolate with smooth edges. May or may not have a purplish mark (watermark) near the center of the leaf. Nodes are surrounded by an ochrea with hairs extending up the stem. Similar to Pennsylvania smartweed.



a.



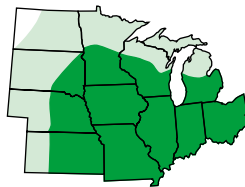
b.



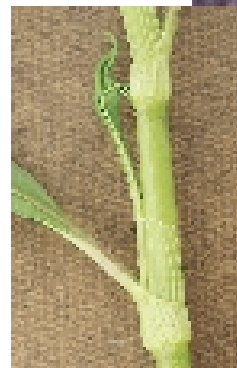
c.

## 20. Pennsylvania Smartweed (*Polygonum pensylvanicum*)

Summer annual. Cotyledons are lanceolate with rounded tips and smooth on both surfaces. Leaves are alternate, smooth and lanceolate with smooth edges. May or may not have a purplish mark (watermark) near the center of the leaf. Nodes are surrounded by an ochrea. Very similar to ladysthumb, but Pennsylvania smartweed does not have hairs extending from the ochrea up the stem.



a.



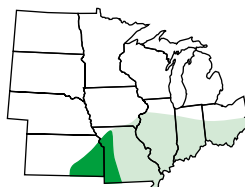
b.



c.

## 21. Prickly Sida (*Sida spinosa*)

Summer annual. Cotyledons are rounded to heart-shaped with a shallow indentation or notch at the apex. Leaves are alternate, simple, oblong, with toothed edges. Stems are highly branched and softly hairy, with small spines at the leaf nodes.



a.



b.



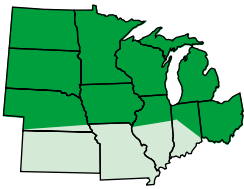
c.



## 22. Wild Buckwheat

*(Polygonum convolvulus)*

Summer annual. Cotyledons are linear and hairless. Stems are reddish and hairless. Nodes are surrounded by an ochrea. First leaf is arrow-shaped.



a.



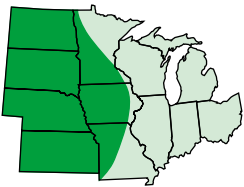
b.



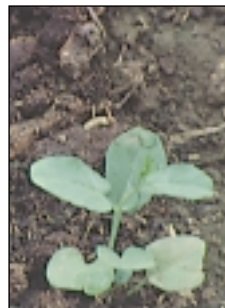
c.

## 23. Field Bindweed *(Convolvulus arvensis)*

Perennial. Cotyledons are smooth, dark green, square to kidney-shaped. Leaves are ovate with spreading basal lobes. Flowers are white to pink.



a.



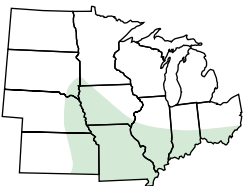
b.



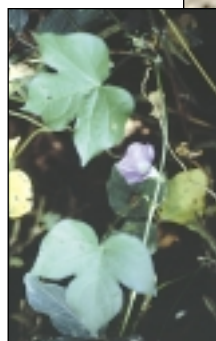
c.

## 24. Ivyleaf Morningglory *(Ipomoea hederacea)*

Summer annual. Cotyledons are butterfly-shaped, deeply notched at the tip. Leaves are usually three-lobed, alternate, hairy. Erect hairs on stems, petioles and leaves.



a.



b.



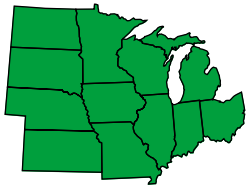
c.





## 25. Pigweed (Redroot, Smooth) (*Amaranthus retroflexus*, *A. hybridus*)

Summer annual. Cotyledons linear and hairless. Leaves are alternate and ovate with a small notch or indentation at the tip. This notch helps differentiate pigweed from eastern black nightshade. Leaves also have purple petioles. Smooth pigweed (*A. hybridus*) looks very similar to redroot pigweed (*A. retroflexus*) as seedlings, but can be differentiated by reproductive structures. Photo 25b is redroot pigweed.



a.



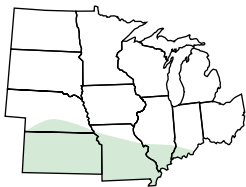
b.



c.

## 26. Palmer Amaranth (*Amaranthus palmeri*)

Summer annual. Cotyledons are linear and hairless. Leaves with few or no hairs; stem and leaf surfaces are smooth. Petioles are often longer than leaf blades. Plants often have a poinsettia-like appearance with symmetrical leaf arrangement. Leaves occasionally have a V-shaped pattern on blade. Each plant is either male or female.



a.



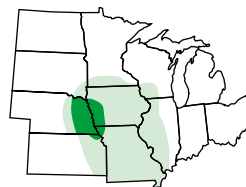
b.



c.

## 27. Waterhemp (*Amaranthus rudis*, *A. tuberculatus*)

Summer annual. Cotyledons are egg-shaped. Leaves are narrowly ovate to lanceolate, alternate, often waxy in appearance. There are no hairs. Stem and leaf surfaces are smooth. Each plant is either male or female.



a.



b.



c.

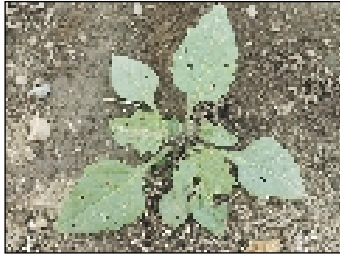
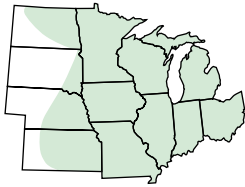




## 28. Eastern Black Nightshade

*(Solanum ptycanthum)*

Summer annual. Cotyledons small, ovate and green on both surfaces. First leaves are ovate and simple with a wavy edge and petioles. First leaves have purple undersides. May look like redroot pigweed when very small, but does not have notch at leaf tip as redroot pigweed does. Fruits are glossy black berries.



a.



b.

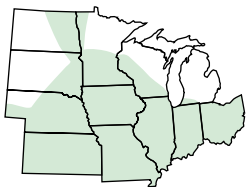


c.

## 29. Hairy Nightshade

*(Solanum sarrachoides)*

Summer annual. Similar to eastern black nightshade except leaves and stems have prominent hairs. Mature fruits are olive-green, yellow or brown berries.



a.



b.

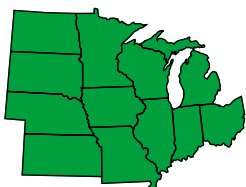


c.

## 30. Common Lambsquarters

*(Chenopodium album)*

Summer annual. Cotyledons are small and linear. First two leaves are opposite and ovate with smooth edges. Later emerging leaves are alternate and triangular with unevenly toothed edges. Cotyledons and leaves are covered with white, mealy granules that look like frost.



a.



b.



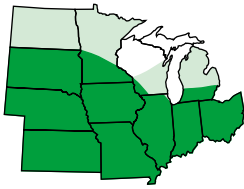
c.



### 31. Common Cocklebur

*(Xanthium strumarium)*

Summer annual. Cotyledons are smooth, waxy and lanceolate and may be protruding from the bur. Leaves are alternate and triangular to ovate with a rough, sandpaper feel.



a.



b.

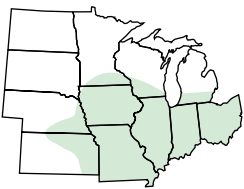


c.

### 32. Jimsonweed

*(Datura stramonium)*

Summer annual. Cotyledons smooth and lanceolate. Hypocotyl is often hairy. Leaves are smooth and alternate with petioles. Seedling has an unpleasant odor when crushed.



a.



b.

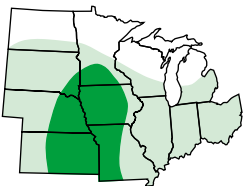


c.

### 33. Common Sunflower

*(Helianthus annuus)*

Summer annual. Cotyledons are oval. Leaves are alternate, simple, rough, hairy, mostly with saw-toothed margins tapered to a point.



a.



b.



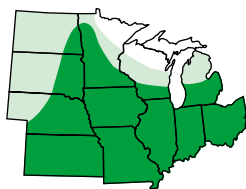
c.





## 34. Common Ragweed (*Ambrosia artemisiifolia*)

Summer annual. Cotyledons are thick and oval to spatulate with grooved petioles. Adult leaves are pinnatifid with a lacy appearance. Small seedling very similar to giant ragweed, but common ragweed cotyledons are much smaller with purple undersides.



a.



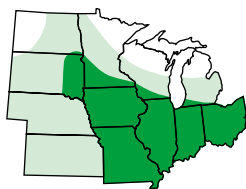
b.



c.

## 35. Giant Ragweed (*Ambrosia trifida*)

Summer annual. Cotyledons oval to spatulate with grooved petioles. Early leaves covered with dense hair. Small seedling very similar to common ragweed, but giant ragweed cotyledons are three to four times larger and green underneath instead of purple. Adult leaves are deeply three-lobed (occasionally five-lobed) with a rough surface.



a.



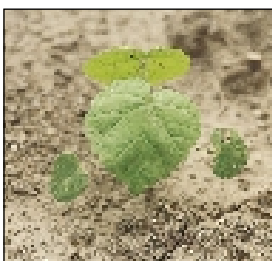
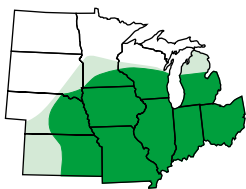
b.



c.

## 36. Velvetleaf (*Abutilon theophrasti*)

Summer annual. Cotyledons have slightly different shapes—one is nearly round; the other, more heart-shaped. Both cotyledon margins are entire, and cotyledons are covered on both surfaces with short hairs. The stem is densely hairy. Leaves are heart-shaped and alternate with serrated margins and velvety, hairy surfaces.



a.



b.



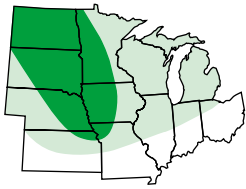
c.



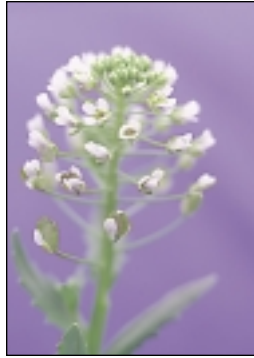


### 37. Field Pennycress (*Thlaspi arvense*)

Summer or winter annual. Cotyledons are bluish green and round. Young leaves are smooth, round to oval, with distinct petioles.



a.



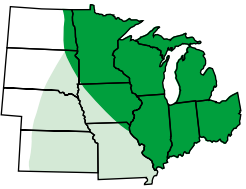
b.



c.

### 38. Virginia Pepperweed (*Lepidium virginicum*)

Summer or winter annual. Cotyledons lack hairs, have a peppery taste and are unequally oval, with long petioles. Leaves on stem are lanceolate to linear, coarsely toothed, usually without petioles; basal leaves are hairless, lobed, with one large terminal lobe and several smaller lateral ones.



a.



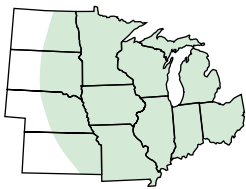
b.



c.

### 39. Shepherd's-purse (*Capsella bursa-pastoris*)

Summer or winter annual. Cotyledons and early leaves are oval to spatulate and are borne on long petioles. Older rosette leaves are variable in shape and variously lobed with toothed or wavy edges.



a.



b.

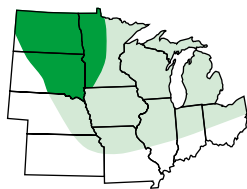


c.



## 40. Wild Mustard (*Brassica kaber*)

Summer or winter annual. Cotyledons are kidney-shaped and smooth. Leaves are alternate and hairy and vary considerably in size and shape. Stem also hairy, especially near base.



a.



b.



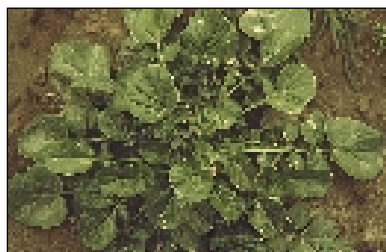
c.

## 41. Yellow Rocket (*Barbarea vulgaris*)

Winter annual or biennial. Cotyledons and early leaves are round to ovate and are borne on long petioles. Cotyledons have a slight notch at the tip. Older leaves are pinnately lobed with a large terminal lobe.



a.



b.

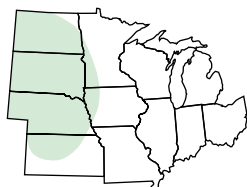


c.

## 42. Pinnate Tansymustard (*Descurainia pinnata*)

(*Descurainia pinnata*)

Summer or winter annual. Cotyledons are spatulate. Leaves are light green, alternate, finely divided, almost fernlike; surfaces have gray or whitish hairs.



a.



b.



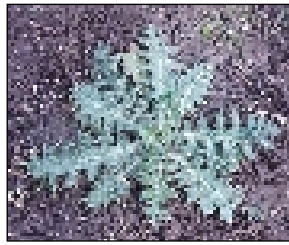
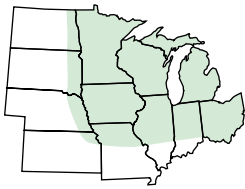
c.





## 43. Bull Thistle (*Cirsium vulgare*)

Biennial. Cotyledons are round to spatulate, hairless and fleshy. First leaves are oval to spatulate with spines and a rough, bumpy surface. Forms rosette with adult leaves becoming pinnatifid and with dense hairs on undersurfaces.



a.



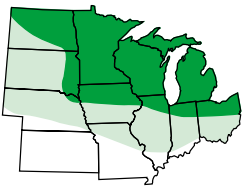
b.



c.

## 44. Canada Thistle (*Cirsium arvense*)

Perennial. Cotyledons are dull green, relatively thin. Leaves are alternate, usually with crinkled edges and spiny margins somewhat lobed and smooth.



a.



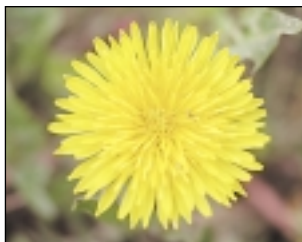
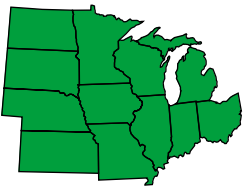
b.



c.

## 45. Common Dandelion (*Taraxacum officinale*)

Perennial. Cotyledons are spatulate. Produces a rosette of leaves arising from a crown. Leaves are simple, lobed and variable. Contains a milky juice.



a.



b.

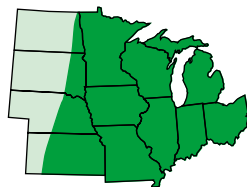


c.



## 46. Horseweed (Marestail) (*Coryza canadensis*)

Winter or summer annual. Cotyledons are smooth, green and spatulate. Early leaves are entire. Later leaves are alternate, without petioles, crowded around the stem, entire or toothed, and often hairy.



a.



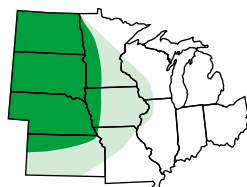
b.



c.

## 47. Kochia (*Kochia scoparia*)

Summer annual. Cotyledons are narrow, oblong and covered with soft, fine hairs. Leaves are alternate, simple, hairy, pointed, without petioles.



a.



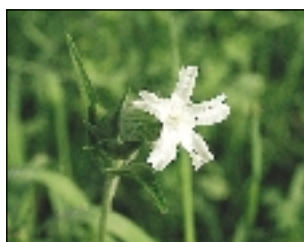
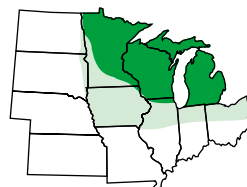
b.



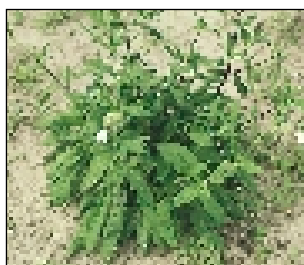
c.

## 48. White Campion (*Silene alba*)

Biennial or short-lived perennial. Cotyledons are spatulate and hairy. First leaves are also hairy and narrowly oval.



a.



b.



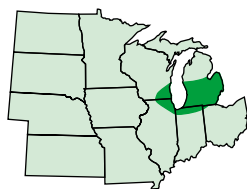
c.





## 49. Common Purslane (*Portulaca oleracea*)

Summer annual. Cotyledons are linear and hairless. Leaves are opposite with each pair rotated around the stem 90° from the previous pair. Leaves are smooth and spatulate, thick, fleshy and without hairs. Stems are prostrate and reddish.



a.



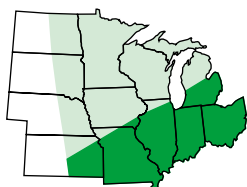
b.



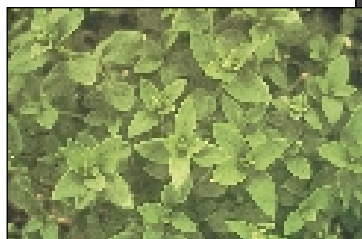
c.

## 50. Common Chickweed (*Stellaria media*)

Summer or winter annual. Cotyledons are lanceolate. Seedling is small, pale green and only sparsely hairy. First leaves have very pointed tips and petioles. Hypocotyl is slender and often reddish.



a.



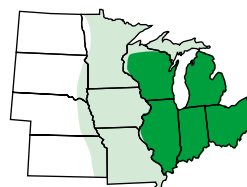
b.



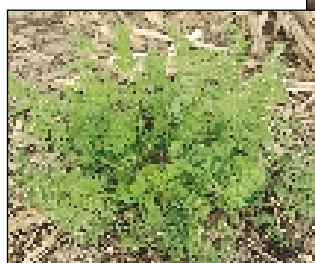
c.

## 51. Wild Carrot (*Daucus carota*)

Biennial. Cotyledons are linear, long and smooth. The first emerging leaf and subsequent leaves are compound, lacy and pinnatifid. Seedling similar in appearance to cultivated carrot.



a.



b.

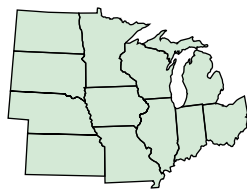


c.



## 52. Prickly Lettuce (*Lactuca serriola*)

Summer or winter annual, or sometimes a biennial. Cotyledons are oval to spatulate. Seedling is a rosette of leaves arising from a crown. First leaves are pale green and spatulate. Later emerging leaves have spiny edges and prickly spines along the underside of a prominent midrib. Stem is hollow with milky juice.



a.



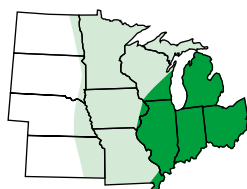
b.



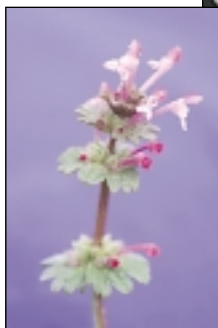
c.

## 53. Henbit (*Lamium amplexicaule*)

Winter annual. Cotyledons are round on hairy petioles. The base of cotyledon blade is notched where it meets the petiole. Leaves are opposite, hairy, with rounded teeth. Lower leaves have petioles; upper leaves wrap around the stem and are without petioles.



a.



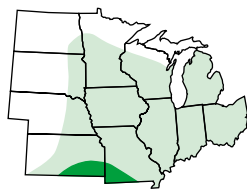
b.



c.

## 54. Venice Mallow (*Hibiscus trionum*)

Summer annual. Cotyledon blades are yellow-green, thick, rounded or heart-shaped. Cotyledon petioles are often longer than the blades. Leaves are alternate; smooth on upper surface and hairy on lower surface. First two leaves round with toothed margins; subsequent leaves deeply lobed.



a.



b.



c.