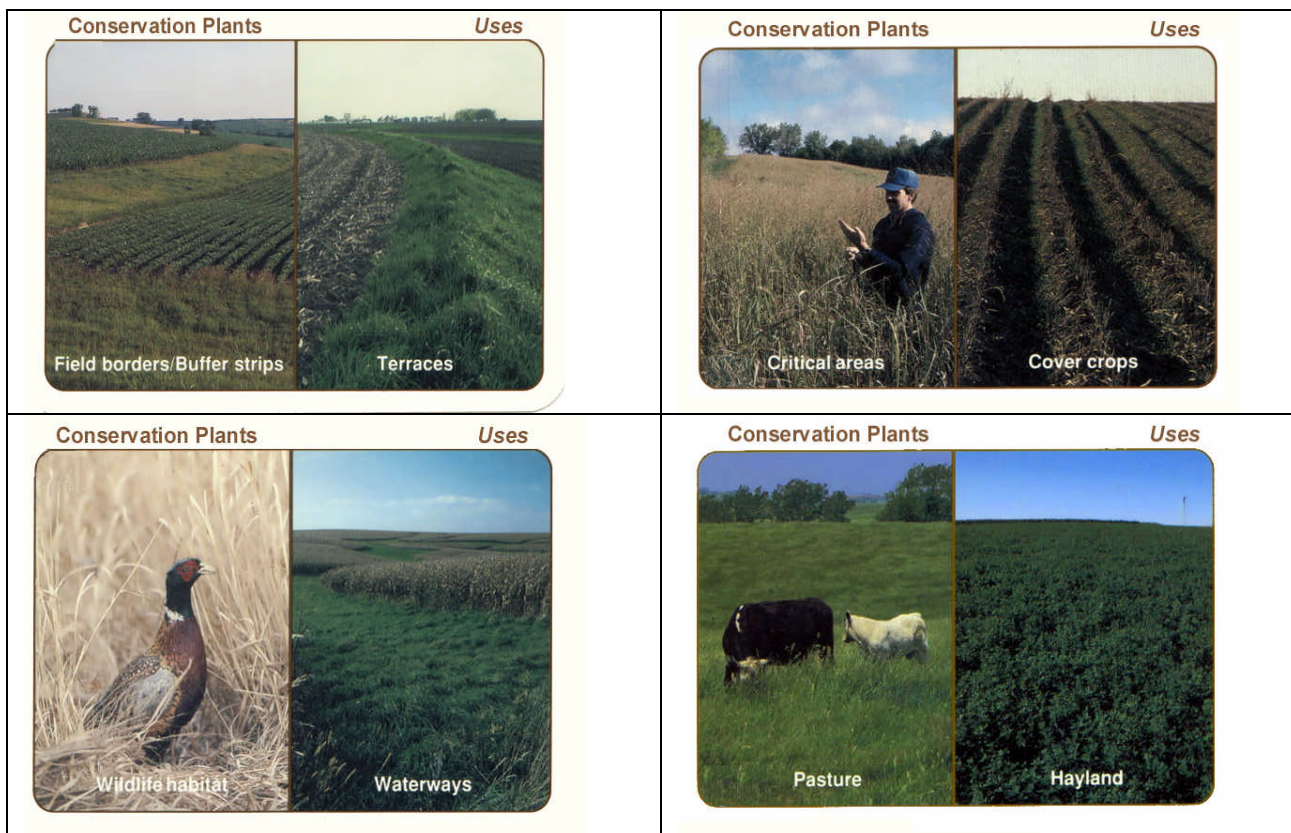


**About this guide.....**

The purpose of this guide is to help you identify some commonly used conservation plants. Its color photos, line drawings and seed photos will help you make identifications. Also included are plant stand evaluation and recommended use charts. Keep this guide with you as long as you need it!

**Uses**



**Conservation Plants**

**Uses**

**Conservation use**

**Cool-season plants**

	Pasture	Hay	Wildlife habitat	Waterways	Field borders/buffers	Terraces	Critical areas	Cover crops	Nurse crops
Smooth bromegrass	H	S*	H*	H	H	H	H*	N	N
Orchardgrass	H*	S*	S*	N	S*	S*	S*	N	N
Timothy	S*	S*	S*	N	S*	S*	S*	N	N
Tall fescue	S	N	N	N	S*	S*	S*	N	N
Reed canarygrass	S	S	N	S	N	N	S*	N	N
Redtop	S*	N	S*	S*	S*	N	S*	N	N
Kentucky bluegrass	S	N	N	S	S	N	S*	N	N

\* most suitable in mixtures  
 H=highly recommended    S=suitable    N=not suitable

**Conservation Plants**

**Uses**

**Conservation use**

**Cool-season plants**

	Pasture	Hay	Wildlife habitat	Waterways	Field borders/buffers	Terraces	Critical areas	Cover crops	Nurse crops
Perennial ryegrass	S*	N	N	N	N	N	S*	N	S
Cereal rye	N	N	N	N	N	N	N	H	S
Annual ryegrass	N	N	N	N	N	N	N	N	S
Oats	N	N	N	N	N	N	N	S	H
Wheat	N	N	N	N	N	N	N	S	S

\* most suitable in mixtures  
 H=highly recommended    S=suitable    N=not suitable

**Conservation Plants**

**Uses**

**Conservation use**

**Legumes**

	Pasture	Hay	Wildlife habitat	Waterways	Field borders/buffers	Terraces	Critical areas	Cover crops	Nurse crops
Alfalfa	S*	H	H*	N	H*	N	H*	N	N
Red clover	S*	S	S*	N	S*	N	H*	N	N
White clover	S*	N	N	N	N	N	S*	N	N
Birdsfoot trefoil	H*	N	S*	N	S*	N	H*	N	N
Sweet clover	N	N	H*	N	N	N	N	N	N
Alsike clover	S*	N	N	N	S*	N	S*	N	N
Hairy vetch	N	N	S*	N	N	N	S*	H	S
Crownvetch	S*	N	N	N	N	S*	S*	N	N

\* most suitable in mixtures  
 H=highly recommended    S=suitable    N=not suitable

## Conservation Plants

## Uses

Conservation use	Conservation use										
	Pasture	Hay	Wildlife habitat	Waterways	Field borders/buffers	Terraces	Critical areas	Cover crops	Nurse crops		
<b>Warm-season plants</b>											
Switchgrass	H	S	H	S*	S	S	H*	N	N		
Indiangrass	H	S	H	N	S	N	H*	N	N		
Big bluestem	H	S	H	S*	S	S	H*	N	N		
Little bluestem	S*	N	H*	N	N	S*	H*	N	N		
Sideoats grama	S*	N	H*	N	N	S*	H*	N	N		
Eastern gamagrass	S	H	S	N	N	N	S*	N	N		

Note: Warm season plants are not recommended in mixtures with introduced cool season plants

\*most suitable in mixtures

H=highly recommended      S=suitable      N=not suitable

## Evaluating Stands

Seeding success may not be obvious from visual observation. Use the chart below to determine whether your first-year stand is adequate. Lay a square-foot frame, or a circular frame with a 42.5-inch circumference on the ground. Count the number of seedlings within the frame, taking at least 10 counts for each 10 acres, in representative areas of the field. The table is based on pure stands; if a mixture of grass and legume is planted, reduce the numbers by the ratio of each species planted.

Inadequate stands should be re-seeded. When a stand is judged to be between adequate and inadequate, it should be reevaluated after the second growing season. Warm-season grasses may need to be evaluated after the third growing season.

## Conservation Plants

## evaluating stands

Species	Use	Seedlings needed per square foot					
		Critical areas		Forage		Idle land	
		A	N	A	N	A	N
Big bluestem, Indiangrass, Sideoats grama		>4.0	<1.0	>2.0	<0.5	>1.0	<0.25
Switchgrass		>4.0	<2.0	>2.0	<0.5	>1.0	<0.25
Little bluestem		>6.0	<1.5	>3.0	<0.75	>1.5	<0.38
Smooth bromegrass, Reed canarygrass		>4.0	<2.0	>2.0	<1.0	>1.0	<0.5
Tall fescue		>4.0	<2.0	>1.0	<1.0	>1.0	<0.5
Crownvetch, Ladino clover, Orchardgrass		>8.0	<4.0	>4.0	<2.0	>2.0	<1.0
Kentucky bluegrass, Redtop, Timothy		>10.0	<5.0	>5.0	<2.5	>2.5	<1.25
Alfalfa, Alsike clover, Birdsfoot trefoil, Red clover		>12.0	<6.0	>6.0	<3.0	>3.0	<1.5

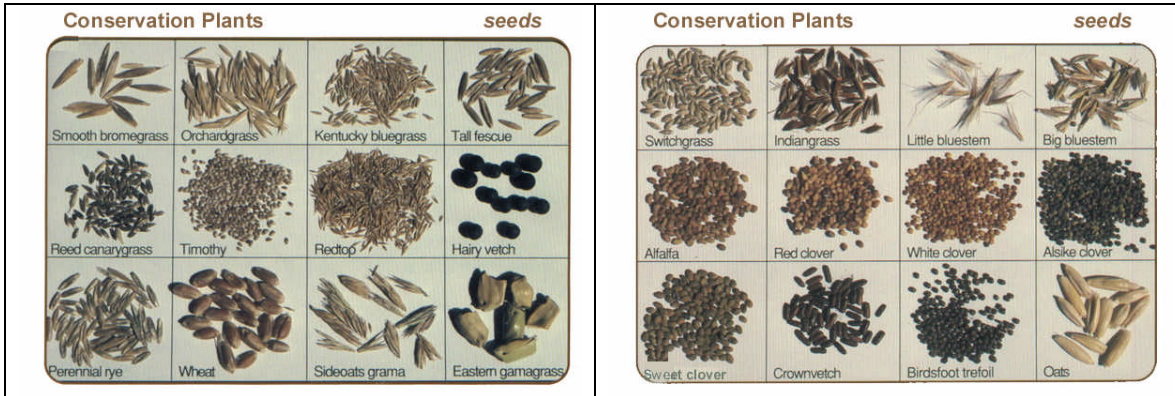
>=greater than    <=less than    A=adequate    N=not adequate



## Seeds

### Early ID -- Seed is Key

Grasses can be very difficult to identify in early growth stages. The seed may be the best identify aid. A seed retains its form and position in the ground through the seedling's early growth stages. To identify a seedling, carefully dig it up and compare it to photographs or actual seeds.



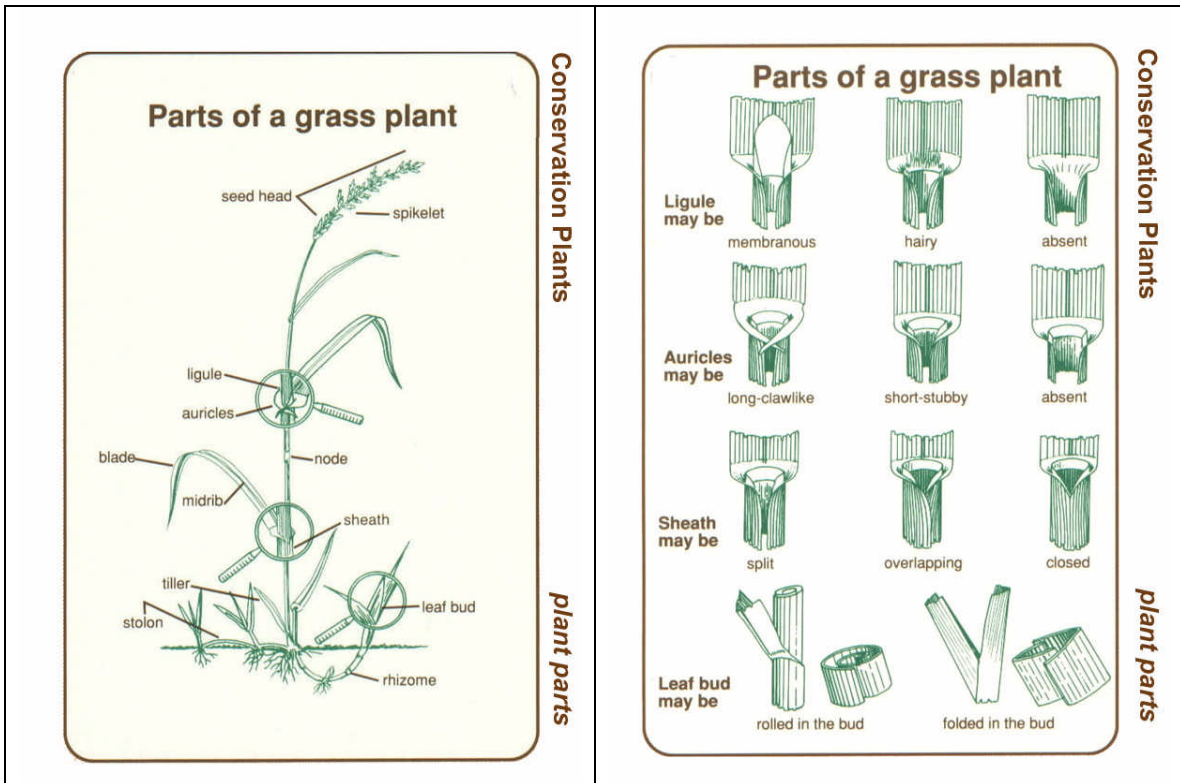
Plant	Number of seeds per pound	Number of seeds to be found in a square foot per pound seeded*
Alfalfa	200,000	5
Alsike clover	700,000	16
Annual ryegrass	227,000	5
Big bluestem	165,000	4
Birdsfoot trefoil	400,000	9
Cereal rye	18,000	.4
Crownvetch	110,000	3
Eastern gamagrass	7,280	.2
Hairy vetch	20,000	.5
Indiangrass	175,000	4
Kentucky bluegrass	2,177,000	50
Little bluestem	260,000	6
Oats	13,000	.3
Orchardgrass	654,000	15
Perennial ryegrass	227,000	5
Red clover	275,000	6
Redtop	4,990,000	114
Reed canarygrass	533,000	12
Sideoats grama	191,000	4
Smooth bromegrass	136,000	3
Sweet clover	260,000	6
Switchgrass	389,000	9
Tall fescue	207,000	5
Timothy	1,230,000	28
Wheat	15,000	.3
White clover	800,000	18

*Example: If the recommendation is to plant 8 pounds of big bluestem per acre, expect to find about 32 seeds in a square foot.*

Conservation plants

seeds

## Plant Parts



## Conservation Plants

### **The Elsberry Plant Materials Center**

The Elsberry Plant Materials Center is a 243-acre facility near Elsberry, Missouri. The Center, operated by the US Department of Agriculture, Soil Conservation Service, serves the states of Iowa, Illinois and Missouri.


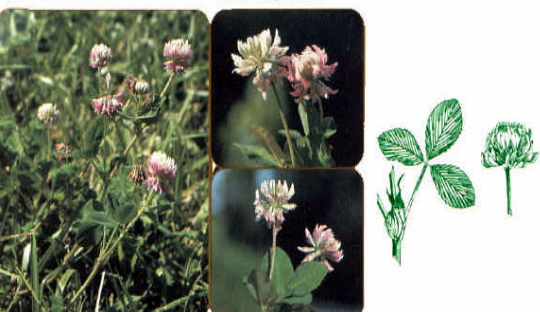


The center is examining more than 1,000 collections of grasses, legumes and woody plants. Its primary task is to develop plants to help control soil erosion on cropland and to improve water quality. Plants are also developed to increase forage production, provide wildlife habitat, beautify the land and for other purposes.

The center continually strives to find the best plants for soil and water conservation.





### **Plants for Conservation**





Maintaining good ground cover is basic soil conservation. Recognizing the best plant for the intended purpose, planting it correctly and keeping it healthy is a formula for successful care of the land.

## The List.....





<p>Alfalfa <i>Medicago sativa</i></p> 	<p><b>Alfalfa -- <i>Medicago sativa</i></b></p> <p><b>About this plant:</b>            Perennial Legume            Growth occurs from crowns            Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> Usually three leaflets with terminal leaflet on small stem; 1/3 of leaflet is toothed  <u>Flower:</u> Purple</p>
<p>Alsike clover <i>Trifolium hybridum</i></p> 	<p><b>Alsike clover -- <i>Trifolium hybridum</i></b></p> <p><b>About this plant:</b>            Perennial short lived legume            Growth from a crown with multiple stems            Grows 12 to 24 inches tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> Three leaflets all equal distance from petiole, no light marks present on upper leaf surface, not shiny underneath  <u>Flower:</u> White to rose  <u>Other:</u> No hairs on vegetative parts</p>
<p>Annual ryegrass <i>Lolium multiflorum</i></p> 	<p><b>Annual ryegrass -- <i>Lolium multiflorum</i></b></p> <p><b>About this plant:</b>            Annual            Cool season            Grows 1 to 2 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, smooth and open  <u>Blade:</u> Rolled in the bud shoot, flat, 1/8-inch wide  <u>Ligule:</u> Small, membranous  <u>Other:</u> Small auricles present</p>
<p>Big bluestem <i>Andropogon gerardii</i></p> 	<p><b>Big bluestem -- <i>Andropogon gerardii</i> (native)</b></p> <p><b>About this plant:</b>            Perennial grass            Warm season            Spreads by short rhizomes            Somewhat bunchy            Grows 6 to 9 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round to somewhat flattened, open purplish at base, usually hairy  <u>Blade:</u> Rolled in the bud shoot, silky hairs widely dispersed on upper leaf surface  <u>Ligule:</u> Small membrane</p>

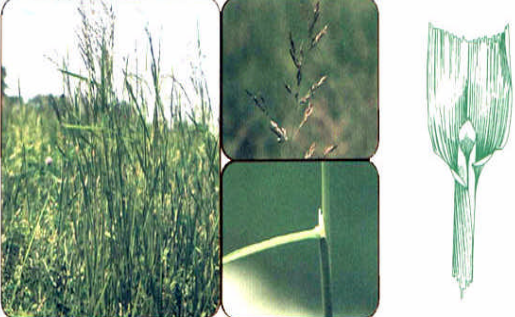





<p><b>Birdsfoot trefoil</b> <i>Lotus corniculatus</i></p> 	<p><b>Birdsfoot trefoil -- <i>Lotus corniculatus</i></b></p> <p><b>About this plant:</b>  Perennial legume  Growth occurs from crowns but roots can also produce new growth  Grows 12 to 18 inches tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> 5 leaflets, 3 above and 2 below  <u>Flower:</u> Yellow to deep orange, tinged with red  <u>Other:</u> Inch-long seed pods resemble several toes of a bird's foot, thus plant's name</p>
<p><b>Cereal rye</b> <i>Secale cereale</i></p> 	<p><b>Cereal rye -- <i>Secale cereale</i></b></p> <p><b>About this plant:</b>  Annual cereal grain  Grows 3 to 5 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, smooth, split with overlapping margins  <u>Blade:</u> Rolled in the bud shoot, 1/2 to 1 inch wide, margins rough  <u>Ligule:</u> Small membranous, torn on the edges  <u>Other:</u> Small auricles without hairs</p>
<p><b>Crownvetch</b> <i>Coronilla varia</i></p> 	<p><b>Crownvetch -- <i>Coronilla varia</i> *</b></p> <p><b>About this plant:</b>  Perennial legume  Spreads to underground rootstocks  Creeping stems grow to 3 to 5 feet tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> 12 to 14 pairs of leaflets arranged along a common stem, no tendrils  <u>Flower:</u> Variegated white to purple in color</p>
<p><b>Eastern gamagrass</b> <i>Tripsacum dactyloides</i></p> 	<p><b>Eastern gamagrass -- <i>Tripsacum dactyloides</i> (native)</b></p> <p><b>About this plant:</b>  Perennial grass  Forms bunches up to 4 feet in diameter with thick short jointed rhizomes  Grows 6 to 8 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Flattened and open  <u>Blade:</u> Rolled in bud shoot, flat, smooth, up to 1/2-inch wide, with large, prominent, light-colored midrib  <u>Ligule:</u> Ring of short hairs</p>


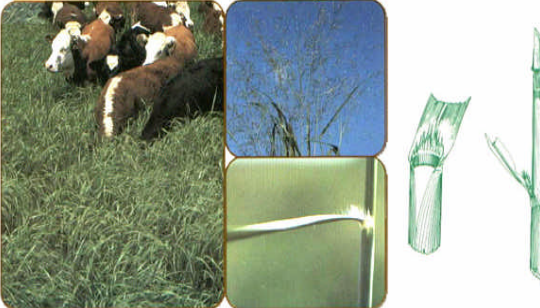


<p><b>Hairy Vetch</b> <i>Vicia villosa</i></p> 	<p><b>Hairy vetch -- <i>Vicia villosa</i></b></p> <p><b>About this plant:</b>  Winter annual legume  Usually planted in late summer for major growth the following year  Grows 3 to 4 feet and attaches to other plants by tendrils</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> Multiple leaflets arranged along the sides of a common stem ending in a tendril  <u>Flower:</u> Blue violet  <u>Other:</u> Vegetative parts are covered by small hairs</p>
<p><b>Indiangrass</b> <i>Sorghastrum nutans</i></p> 	<p><b>Indiangrass -- <i>Sorghastrum nutans</i> (native)</b></p> <p><b>About this plant:</b>  Perennial grass  Warm season  Strong bunch grass  Grows 2 to 4 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Flattened, open, often purplish at the base  <u>Blade:</u> Folded in the bud shoot, folded along the midrib, narrow (less than 1/4-inch wide)  <u>Ligule:</u> Small membranous</p>
<p><b>Kentucky bluegrass</b> <i>Poa pratensis</i></p> 	<p><b>Kentucky bluegrass -- <i>Poa pratensis</i></b></p> <p><b>About this plant:</b>  Perennial grass  Cool season  Sod forming  Grows 1 to 2 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Somewhat flattened and open  <u>Blade:</u> Folded in bud shoot, 1/8-inch wide, boat shaped tip and two white lines down center of leaf  <u>Ligule:</u> Small, membranous</p>
<p><b>Little bluestem</b> <i>Schizachyrium scoparium</i></p> 	<p><b>Little bluestem -- <i>Schizachyrium scoparium</i> (native)</b></p> <p><b>About this plant:</b>  Perennial grass  Warm season  Spreads by short rhizomes, somewhat bunchy  Grows 3 to 6 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, open, may be hairy at the base  <u>Blade:</u> Rolled in the bud shoot, flat, narrowed at the base  <u>Ligule:</u> Prominent, membranous, clawlike -- often referred to as a rifle sight</p>





<p>Oats <i>Avena sativa</i></p> 	<p><b>Oats -- <i>Avena sativa</i></b></p> <p><b>About this plant:</b>  Annual cereal grain  Cool season  Grows 2 to 4 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, short, hairy, split with overlapping margins  <u>Blade:</u> Rolled in the bud shoot, 1/4 to 1/2 inch wide, margins short, hairy  <u>Ligule:</u> Prominent, membranous, rounded and toothed  <u>Other:</u> Auricles absent</p>
<p>Orchardgrass <i>Dactylis glomerata</i></p> 	<p><b>Orchardgrass -- <i>Dactylis glomerata</i></b></p> <p><b>About this plant:</b>  Perennial grass  Cool season  Bunch grass  Grows 2 to 4 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Flattened and open  <u>Blade:</u> Folded in bud shoot, flat, at least 1/4-inch wide  <u>Ligule:</u> Large, membranous, often split at maturity</p>
<p>Perennial ryegrass <i>Lolium perenne</i></p> 	<p><b>Perennial ryegrass -- <i>Lolium perenne</i></b></p> <p><b>About this plant:</b>  Perennial grass (short lived)  Cool season  Bunch grass  Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Flattened, smooth and open  <u>Blade:</u> Folded in the bud shoot and V-shaped, 1/8-inch wide, smooth and glossy below  <u>Ligule:</u> Small, membranous  <u>Other:</u> Narrow, small auricles</p>
<p>Red clover <i>Trifolium pratense</i></p> 	<p><b>Red clover -- <i>Trifolium pratense</i></b></p> <p><b>About this plant:</b>  Biennial or short lived perennial legume  Growth is from crow's; tufted appearance  Grows 18 to 30 inches tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> Three leaflets all equal distance from petiole, light colored V marks present on upper leaf surface, not shiny underneath  <u>Flower:</u> Rose red color  <u>Other:</u> Vegetative parts usually covered with many hairs, does not have stolons</p>

<p>Redtop <i>Agrostis alba</i></p> 	<p><b>Redtop -- <i>Agrostis alba</i></b></p> <p><b>About this plant:</b>  Perennial grass  Cool season  Sod forming  Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, open, shorter than internodes  <u>Blade:</u> Rolled in the bud shoot, up to 1/4-inch wide, with prominent veins on the surface  <u>Ligule:</u> Large, membranous and shovel shaped</p>
<p>Reed canarygrass <i>Phalaris arundinacea</i></p> 	<p><b>Reed canarygrass -- <i>Phalaris arundinacea</i> *</b>  (native)</p> <p><b>About this plant:</b>  Perennial grass  Cool season  Sod forming  Grows 2 to 6 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, open and pale below ground  <u>Blade:</u> Rolled in the bud shoot, flat, up to 1/2-inch wide  <u>Ligule:</u> Large membranous ligule, pointed, often described as papery  <u>Other:</u> Large rhizomes, greater than 1/8-inch diameter</p>
<p>Sideoats grama <i>Bouteloua curtipendula</i></p> 	<p><b>Sideoats grama -- <i>Bouteloua curtipendula</i></b>  (native)</p> <p><b>About this plant:</b>  Perennial grass  Warm season  Sod forming  Grows 1 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, open, longer than the internodes  <u>Blade:</u> Rolled in bud shoot, flat, up to 1/8-inch wide, hairs protruding from bumps on margins  <u>Ligule:</u> Small, membranous with short hairs on top</p>
<p>Smooth bromegrass <i>Bromus inermis</i></p> 	<p><b>Smooth bromegrass -- <i>Bromus inermis</i> *</b></p> <p><b>About this plant:</b>  Perennial grass  Cool season  Sod forming  Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, closed near the top  <u>Blade:</u> Rolled in the bud shoot, pinched 'W' in leaf blade  <u>Ligule:</u> Small, membranous</p>



<p>Sweet clover <i>Melilotus sp.</i></p> 	<p><b>Sweet clover -- <i>Melilotus sp.</i></b></p> <p><b>About this plant:</b> Biennial legume (some annual forms also) Growth occurs from a crown with one main stem Grows 2 to 5 feet tall</p> <p><b>Identification Tips:</b> <u>Leaf:</u> Usually three leaflets with terminal leaflet on small stem; entire leaflet is toothed <u>Flower:</u> Yellow/White <u>Other:</u> White sweet clover is more coarse, taller and flowers 10 to 20 days later than yellow sweet clover</p>
<p>Switchgrass <i>Panicum virgatum</i></p> 	<p><b>Switchgrass -- <i>Panicum virgatum</i> (native)</b></p> <p><b>About this plant:</b> Perennial grass Warm season Sod forming Grows 3 to 6 feet tall</p> <p><b>Identification Tips:</b> <u>Sheath:</u> Round, open, white to purplish tinged below <u>Blade:</u> Rolled in the bud shoot, flat up to 1/2-inch wide <u>Ligule:</u> Fringe of hairs with a dense mat of hairs extending onto the upper leaf surface</p>
<p>Tall Fescue <i>Festuca arundinacea</i></p> 	<p><b>Tall fescue -- <i>Festuca arundinacea</i> *</b></p> <p><b>About this plant:</b> Perennial grass Cool season Bunch grass; forms a weak sod Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b> <u>Sheath:</u> Round, open, fitting loosely around the stem <u>Blade:</u> Rolled in the bud shoot, smooth and shiny underneath, ridged on the upper surface <u>Ligule:</u> Small membranous <u>Other:</u> Very small auricles, not readily seen by the naked eye</p>
<p>Timothy <i>Phelum pratense</i></p> 	<p><b>Timothy -- <i>Phelum pratense</i></b></p> <p><b>About this plant:</b> Perennial grass Cool season Bunch grass Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b> <u>Sheath:</u> Round, open and overlapping <u>Blade:</u> Rolled in the bud shoot, flat, up to 1/4-inch wide, often twisted <u>Ligule:</u> Large, membranous, with notch at either side <u>Other:</u> Each stem grows from a distinctive swollen base</p>



<p>Wheat <span style="float: right;">Triticum aestivum</span></p> 	<p><b>Wheat -- <i>Triticum aestivum</i></b></p> <p><b>About this plant:</b>  Annual cereal grain  Grows 2 to 3 feet tall</p> <p><b>Identification Tips:</b>  <u>Sheath:</u> Round, smooth, split with overlapping margins  <u>Blade:</u> Rolled in the bud shoot, 1/4 to 1/2 inch wide, margins smooth  <u>Other:</u> Small auricles, mostly long, hairy</p>
<p>White Clover <span style="float: right;">Trifolium repens</span></p> 	<p><b>White clover -- <i>Trifolium repens</i></b></p> <p><b>About this plant:</b>  Perennial legume  Spreads by stolons  Grows 6 to 12 inches tall</p> <p><b>Identification Tips:</b>  <u>Leaf:</u> Three leaflets all equal distance from petiole, light colored V marks present on upper leaf surface, shiny underneath  <u>Flower:</u> White to pinkish white  <u>Other:</u> No hairs on vegetative plant parts</p>

\* indicates the plant may be considered weedy or invasive in some parts of the US and may not be appropriate for conservation uses in certain areas. Check with your local Conservation District or state department of natural resources for more information on weediness and recommendations for use. This guide is primarily intended as an identification tool. Persons intending to use these plants for conservation or landscape should consult additional sources of information for use, establishment, and management of the species.

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