

PROTURE
GUIDE TO THE
IDENTIFICATION
OF GRASSES

\$350



ProTurf® Guide to the Identification of Grasses

by Jim Converse

Jim Converse has been looking at turfgrass from all angles for over twenty years. After growing and studying it professionally as a grass farmer and a golf course superintendent, Jim came to Scotts and moved into research, helping to develop better strains of grass and better ways to grow them. He's used his research experience to write, illustrate, and photograph technical information about turf and turf problems for Scotts training manuals and seminars. Most recently, he's changed angles again, to detail that information in words and pictures for professional turfmen.

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Introduction

Plant taxonomy is a thorough, complete and exacting science. It starts with the basic study of botany and then proceeds to a long series of advanced related subjects. The taxonomist can observe a plant and point out very obvious features, or keys. By linking these keys together, the plant is placed in a particular family and eventually identified.

There is very little opportunity for the layman to become a complete taxonomist. But, with a little help, he can learn to identify many of the grasses he sees each day. Sometimes the differences are ever so

slight, but with observation and study key features can become quite obvious.

A taxonomist depends almost entirely upon flowering or seeding parts for absolute identification. This is because these parts are seldom affected by environmental factors. For example, in hot, dry weather a plant may assume an unnatural style of growth, but the flowering parts remain essentially constant.

The average observer seldom has the opportunity to see each grass produce seed. Even if this were possible, he would

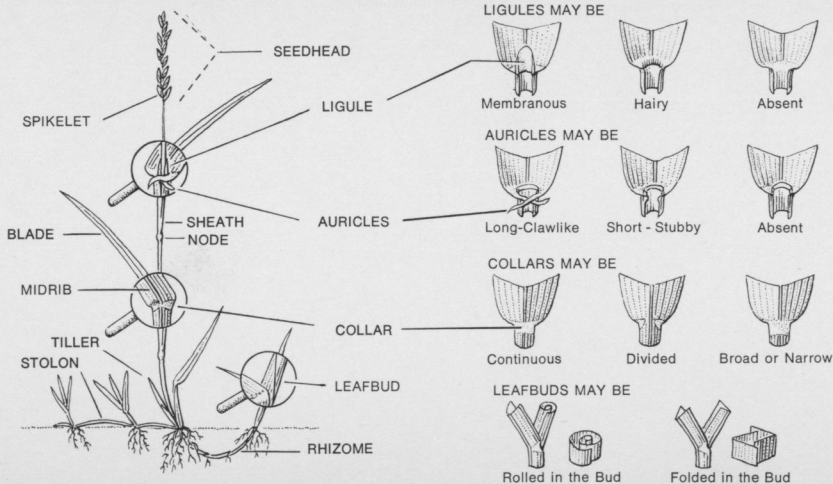
still lack the knowledge for intricate analysis of seeding parts. Therefore, it becomes necessary for the amateur to use the available vegetative features. But, to give complete help, we have tried to incorporate the outstanding features of both seeding and vegetative parts.

In describing the grasses, scientific terms have been reduced to a very basic level. This may disturb the scientific mind, but it is a sincere effort to make a complex subject understandable. Constant reference to a glossary can be distracting and discouraging.

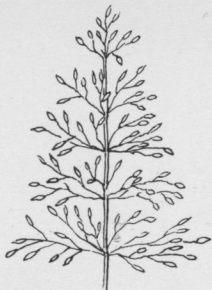
If the reader can learn to confidently identify a few of the more common grasses, we will have achieved one part of

our goal. But the real value will be in learning the basic methods of identification — how to find the characteristics which separate one grass from another. Once these methods of identification are learned, few grasses will remain unfamiliar to the serious observer.

Parts of a grass plant



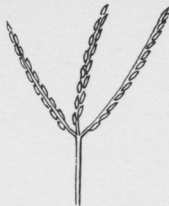
Examples of seedheads



Panicle: Triangular in outline with seeding branches around the main stem. Examples: Bluegrass, Redtop.



Spike: Spikelets attached at the top of an unbranched stem. Examples: Timothy, Foxtail



Slender seeding spikes attached at the top of the main stem. Examples: Crabgrass, Goosegrass



Slender seeding spikes attached along the top of the main stem. Examples: Signalgrass, Dallisgrass

Examples of spikelets



Forming clusters of seeds. Examples: Bluegrass, Ryegrass



With long pointed awns. Examples: Nimblewill, Wild Oats



Born singly on short branches. Examples: Witchgrass, Fall Panicum



Containing several seeds. Examples: Sandbur, Buffalograss

Major features in the identification of grasses

1. Vernation

The arrangement of a leaf or leaves in the budshoot. In general they may be classified as *rolled* or *folded*. (Example: New shoots of Kentucky bluegrass are folded. New shoots of Quackgrass are rolled.)

2. Ligule

The structure which clasps the stem at the junction of blade and sheath. The type (membranous or hairy) and shape (tall, short, jagged, etc.) remaining fairly uniform and constant within each given species.

3. Collar

The area on the outer side of the leaf where

the blade and the sheath join. It is generally much lighter in color and varies in size and shape from species to species.

4. Auricles

Appendages that project from either side of the collar. They may be slender, claw-like, long or short. In Quackgrass slender auricles clasp the stem.

5. Sheath

The tubular portion of the leaf which wraps around or encloses the stem. Edges of the sheath may join, overlap or be closed. They are also rough or smooth, cylindrical, flattened or compressed.

6. Blade

The upper portion of the leaf, which is divided from the sheath by the collar and the ligule. The length, width, type of tip, roughness or smoothness are a few characteristics of various species.

7. Rhizomes

An underground stem that produces a new plant. Rhizomes are present or absent, strong or weak.

8. Stolons

A horizontal, above ground stem that takes root at various intervals and gives rise to new plants.

9. Seedhead

The collection of flowering or seeding parts which are arranged in various ways, (spike, panicle, etc.). A very important identifying feature.

10. Spikelet

The unit of the seedhead which composes the seeding parts. Properly dissected and analyzed, it provides the most accurate method for the identification of various species.

Other characteristics, such as growth habit and color, all help to classify the various grasses. To make identification even more practical, it is advisable to use a small magnifying glass. Magnification of 10x to 16x is ideal for making tiny features more easily observed.

An asterisk () indicates key features.*

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Key

Grasses found in nearly all States

Folded in the bud

Membranous ligule

Ligule with jagged edges, divided in the center, long hairs at the collar edges.

1. Goosegrass

Sheaths flattened, blades long, lax, ligule very tall.

2. Orchardgrass

Apple-green color, medium ligule, forming patches and whitish seedheads in low-cut turf.

3. Poa annua

Hairy ligule

Sheaths flattened, yellow-green color, forming patches with sharp burs.

4. Sandbur

Very narrow leaves with rough edges, long hairs at the collar edges, growing in waste places.

5. Povertygrass

Rolled in the bud

Membranous ligule

Ligule tall, rounded, jagged edges, long hairs at the collar edges and near the ligule.

6. Crabgrass

A pale green tufted plant, flat blades, closed sheaths with pink veins, a nodding seedhead.

7. Chess

Plant covered with soft hairs, ligule medium tall, jagged, sheath closed, a nodding seedhead.

8. Downy Chess

Ligule medium tall, toothed at the corners and center, base of the plant swollen, bulb-like.

9. Timothy

Hairy ligule

A bright green erect plant, blades flat, tapered, seedhead a nodding brush-like spike.

10. Green Foxtail

A tufted plant, rather stiff leaves, giving off a foul aroma when crushed.

11. Stinkgrass

A coarse plant covered with hairs, leaves broad, sheaths reddish-purple at the base.

12. Witchgrass

Sheaths tinged with red, leaves spiraling upward, seedhead an erect, coarse brush-like spike, long hairs near ligule.

13. Yellow Foxtail

Ligule absent

Sheaths flattened, broad, purplish. Growing prostrate in turf. Seedhead rather coarse.

14. Barnyardgrass

Grasses found in cool season areas of the United States

Folded in the bud

Membranous ligule

A blue-green wiry plant, medium tall ligule, short, tapered blades, with a "boat-shaped" tip.

15. Canada Bluegrass

A blue-green wiry plant, tall ligule, tapered blades with a "boat-shaped" tip. Lower stems flat, pink, with short internodes.

16. Fowl Bluegrass

A dark green plant, spreading by rhizomes, forming good turf, blades with parallel sides and a "boat-shaped" tip.

17. Kentucky Bluegrass

A dark yellow-green plant, ligule pointed,

blades tapering to a "boat-shaped" tip, sheaths rough, spreading by stolons.

18. Poa trivialis

Sheath wider than the blade, blade less than 1/8 inch wide, short ligule, creeping by short rhizomes, forming a fine-bladed turf.

19. Fine Fescue

Shiny, tough, dark green blades, used as a durable turf. Sometimes a weed in fine-bladed sod.

20. Perennial Ryegrass

Rolled in the bud

Membranous ligule

Fast growing, yellow-green plant often used

as a temporary turf or nurse crop, slender claw-like auricles.

21. Annual Ryegrass

A tufted plant, creeping by short stolons to form turf. Not suited for putting greens.

22. Colonial Bentgrass

Rooting at the lower nodes and creeping by long stolons to form a dense turf. Used for putting greens.

23. Creeping Bentgrass

Slender, claw-like auricles clasping the stems, 1/4 inch blue-green blades, creeping by strong, thick rhizomes.

24. Quackgrass

Ligule rounded, jagged across the top, blades flat, 1/2 inch wide, tapered, creeping by rhizomes.

26. Reed Canarygrass

Blades with a constricted "M" or "W", ligule short, creeping by strong rhizomes, an erosion control.

27. Smooth Brome

Tall rounded ligule with long hairs at the collar edges. Plant reddish-purple, especially at the base, prostrate. Seedhead finger-like.

28. Smooth Crabgrass

Short ligule, blades broad, prominently veined, rough on the edges, used as a durable turf.

29. Tall Fescue

Short ligule, narrow blue-green blades, prominently veined, rough. A nodding spike-like seedhead with long bristles.

30. Wild Barley

Grasses found in warm season areas of the United States

Folded in the bud

Membranous ligule

A tough, coarse plant, spreading by very thick, short rhizomes to form an open turf.

31. Bahiagrass

Ligule short with a row of hairs across the top, sheaths flattened, collar constricted, blades broad, forming tufts.

32. Broomsedge

Ligule short with a row of hairs across the top, blades narrow, collar constricted, spreading and forming sod by leafy stolons.

33. Centipedegrass

Hairy ligule

Blades short, broad, rounded at the tip.

Creeping by stolons and forming a dense sod.

34. Carpetgrass

A very low growing plant, with yellow-green, thick leaves. Most often confused with Crabgrass.

35. Signalgrass

A blue-green plant, creeping by long stolons and forming dense turf. Blades short, broad, with a "boat-shaped" tip. Seedhead a thick spike.

36. St. Augustinegrass

Rolled in the bud

Membranous ligule

Ligule short, blades ½ inch wide, wavy along the edges, very coarse, growing in short clumps.

37. Bull Paspalum

Ligule tall, rounded, pointed at the tip.
Widely spreading from a flattened base.
Blades rough along the edges.

38. Dallisgrass

Ligule medium tall, pointed, jagged across the top, blades 1/4 inch wide, often reddish-brown on the tips. Growing in clumps.

39. Field Paspalum

Sparse hairs across the top of a very short ligule. Blades hairy along the edges. Rooting at the lower nodes.

40. Egyptian Crabgrass

Ligule tall with hairs across the top. Blades very wide, long. Spreads by very thick rhizomes. Often reaching 5 feet in height.

41. Johnsongrass

Creeping and spreading by rhizomes and stolons, forming mats. Ligule tall, rounded. Sometimes confused with Crabgrass.

42. Knotgrass

Starts growth in winter on dormant turf. Ligule tall, rounded, jagged edges. Sheaths compressed. Growing in small patches.

43. Rescuegrass

Ligule very tall, jagged across the top. Coarse, erect. Long, broad blades. Confused with Johnsongrass, but no rhizomes.

44. Sudangrass

Hairy ligule

A wiry, tough plant, spreading by rhizomes and stolons. The most important fine-bladed turfgrass in warm season areas. A weed in northern states.

45. Bermudagrass

Spreading by short tillers to form bunches. Short, stiff hairs on the collar. Blades sparsely hairy. Seedheads greenish-purple.

46. Purpletop

Growing in tufts. Blades narrow, tough growing upright, tapering to a fine point.

The spike-like seedhead often with a smutty fungus.

47. Smutgrass

This wiry, fine-bladed turf is formed by short rhizomes and stolons. Resembles Bermudagrass. Occasionally found in northern areas, where it turns brown with the first frost.

48. Zoysiagrass

Grasses found in Eastern States

Folded in the bud

Membranous ligule

Found throughout the eastern half of the United States.

32. Broomsedge (see southern grasses)

Rolled in the bud

Membranous ligule

Found in the east except for the New England states.

39. Field Paspalum (see southern grasses)

Ligule rounded with jagged edges, long hairs at the collar edges. Blades rough on the edges. A small, tufted plant with a pleasant aroma.

49. Sweet Vernalgrass

Wiry, rooting at the nodes, short blue-green blades, forming large open patches that turn brown with frost. Short jagged ligule, long hairs at the collar edges.

50. Nimblewill

A tufted blue-green plant covered with soft hairs, forming patches in desirable turf. Ligule medium tall, jagged across the top, hairy on the back. Seedhead soft, purplish.

51. Velvetgrass

Hairy ligule

Coarse, sprawling plant, sheaths often purplish, long, broad, tapered blades. Producing a spreading seedhead in the fall.

52. Fall Panicum

A small tufted plant, with narrow, tapered blades. Seedhead delicate, spreading. Long hairs at the collar edges.

53. Lovegrass

Found throughout the eastern half of the

United States.

46. Purpletop (see southern grasses)

Grasses found in Western States

Folded in the bud

Membranous ligule

Ligule short, with a row of hairs across the top, sheaths flattened, collar constricted, blades broad, forming tufts.

32. Broomsedge (a weed of eastern and southern states also found in California)

Very long, slender auricles, a tall ligule with

a jagged edge, flat blades. Producing a spike-like seedhead with long bristles.

54. Foxtail Barley

Tall ligule with a fringe of hairs at the top, long, stiff hairs at the collar edges, sheaths flat. Seedhead resembling a windmill.

55. Windmillgrass

Hairy ligule

A densely tufted grass with short, narrow blades. Long hairs at the collar edges. Grows from the Great Plains states southwestward.

56. Blue Grama

Spreading by strong rhizomes and stolons. Coarse, short pointed leaves. Hairy sheaths. Often used for erosion control. (southern California).

55. Kikuyugrass

Vigorous creeping rhizomes, forming sod. Male and female plants. Numerous stiff, erect blades. Very long hairs on the collar.

56. Saltgrass

A blue-green plant, creeping by long stolons and forming dense turf. Blades, short, broad, with a "boat-shaped" tip. Seedhead a thick spike.

36. St. Augustinegrass (A turfgrass around the Gulf States — found in Southern California)

Rolled in the bud

Membranous ligule

Rooting at the lower nodes and creeping by long stolons to form a dense turf. Used for putting greens.

23. Creeping Bentgrass (a cool season grass used throughout the southwest)

Ligule tall, rounded, pointed at the tip. Widely spreading from a flattened base. Blades rough along the edges.

38. Dallisgrass (a warm season grass found north through Oregon)

Creeping and spreading by rhizomes and stolons, forming mats. Ligule tall, rounded.

Sometimes confused with Crabgrass.

42. Knotgrass (a warm season grass found in western states to the Canadian border)

Ligule rounded, jagged across the top, blades flat, 1/2 inch wide, tapering. Creeping by rhizomes.

26. Reed Canarygrass (a cool season grass found throughout the southwest)

Tall, rounded ligule with long hairs at the collar edges. Plant reddish-purple, especially at the base, prostrate. Seedhead finger-like.

28. Smooth Crabgrass (a cool season grass found in the southwest)

Ligule rounded with jagged edges, long hairs at the collar edges. Blades rough on the edges. A small tufted plant with a pleasant aroma.

49. Sweet Vernalgrass (found throughout the eastern states — in the west California, Oregon and Washington)

A tufted blue-green plant covered with soft hairs, forming patches in desirable turf. Ligule medium tall, jagged across the top, hairy on the back. Seedhead soft, purplish.

51. Velvetgrass (also found in most eastern states)

Short ligule, narrow blue-green blades, prominently veined, rough. A nodding, spike-like seedhead with long bristles.

30. Wild Barley (found throughout the southwest and cool season areas)

Tall membranous ligule, jagged across the top, turning brown in the summer. Covering hills and waste places.

59. Wild Oats

Hairy ligule

Ligule with long hairs at the edges and on the collar. Blades blue-green, narrow, short, sparsely hairy. Forming a sod with aggressive stolons.

60. Buffalograss

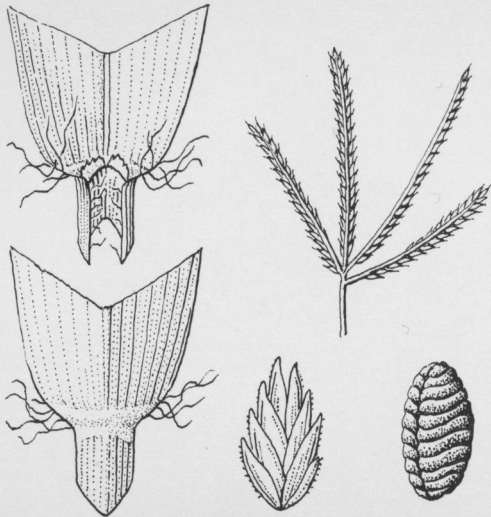
A small tufted plant, with narrow tapered blades. Seedhead delicate, spreading. Long hairs at the collar edges.

53. Lovegrass (found in California and most eastern states).



Goosegrass 1

(*Eleusine indica*)



Leaves folded in the bud.

* Ligule membranous, toothed, divided at the center.

Collar broad and, sparsely hairy at the edges.

Auricles absent.

* Sheaths compressed, flattened, white near the base, sparsely hairy along the edges.

* Seedhead 2 to 6, narrow spikes at the top of the main stem.

Spikelets flattened, containing 3 to 6 seeds.

A prostrate dark green **ANNUAL** forming a wiry, tough rosette. Heavy in the east, midwest, and deep south. Found only occasionally in the northwest.

2 Orchardgrass

(*Dactylis glomerata*)

Leaves folded in the bud.

- * Ligule membranous, very tall, sometimes jagged across the top.

Collar broad, prominent.

Auricles absent.

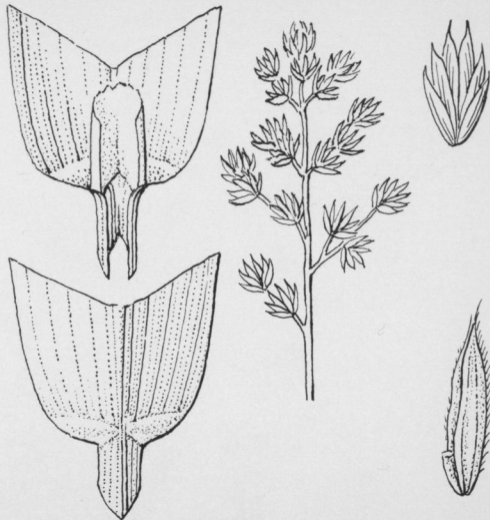
- * Sheaths strongly compressed, flattened, green above — white below.

- * Blades “V-shaped” in cross section, long pointed, lax.

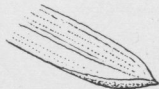
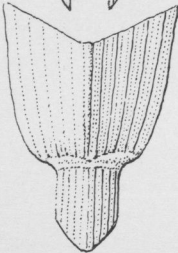
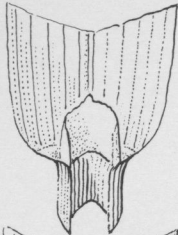
Seedhead a panicle, stiff branches terminating with fan-shaped spikelets.

Spikelets compressed, pointed, hairy on the keels, with 3 to 5 seeds.

A bluish-green PERENNIAL forming clumps. Tolerates close mowing but may reach 3 feet when undisturbed. Found throughout the United States.



Poa annua 3



Leaves folded in the bud.

* Ligule membranous, medium long, slightly pointed.

Collar narrow, smooth.

Auricles absent.

Sheaths slightly compressed, smooth.

* Blades short, lax, about $\frac{1}{8}$ inch wide, the edges *parallel* to each other, terminating in a "boat-shaped" tip.

Seedhead a short, open, greenish-white panicle.

Spikelets flattened, with 3 to 6 seeds.

This apple-green ANNUAL is distributed throughout the United States and tolerates all mowing heights. It grows vigorously in cool, moist weather and often forms extensive patches. Hot, dry weather causes it to die and leave unsightly bare areas in good turf.

4 Sandbur

(*Cenchrus pauciflorus*)

Leaves folded in the bud.

Ligule a fringe of hairs.

Collar broad, sometimes with sparse hairs on the edges.

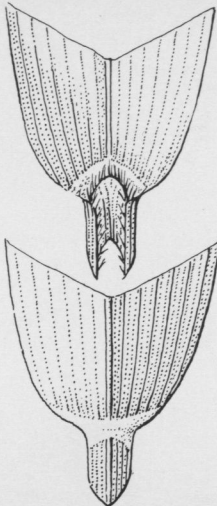
Auricles absent.

- * Sheaths flattened, loose, sparse hairs on the edges.

Blades flat, about ¼ inch wide, sometimes folded, tapering to a point, upper blades often enclosing burs.

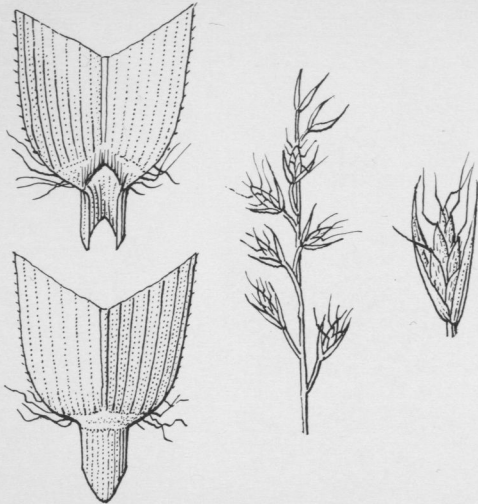
- * Seedhead a spike with from 6 to 20 burs.
- * Spikelets broad at the base and tapering to a tip, generally 2 seeds in each bur.

A yellow-green spreading ANNUAL, mostly erect, but occasionally forming mats. Spiny burs can cause painful injury. Thrives on sandy soils. Found throughout the United States but most troublesome in warmer areas.



Povertygrass 5

(*Danthonia spicata*)



Leaves folded in the bud.

* Ligule a fringe of hairs.

Collar medium, continuous, hairy along the edges.

Auricles absent.

* Blades about $\frac{1}{8}$ inch wide, often curled, sharp pointed, rough on the lower surface and edges.

Sheaths not compressed, smooth.

Seedhead a panicle with single spikelets on stiff branches.

Spikelets with awns, forming several seeds. A fine bladed, tufted PERENNIAL found on poor soils, often confused with Fine Fescue.

6 Crabgrass

(*Digitaria sanguinalis*)

Leaves rolled in the bud.

- * Ligule membranous, tall, with jagged edges.
- * Collar broad, prominent, with long hairs at the edges.

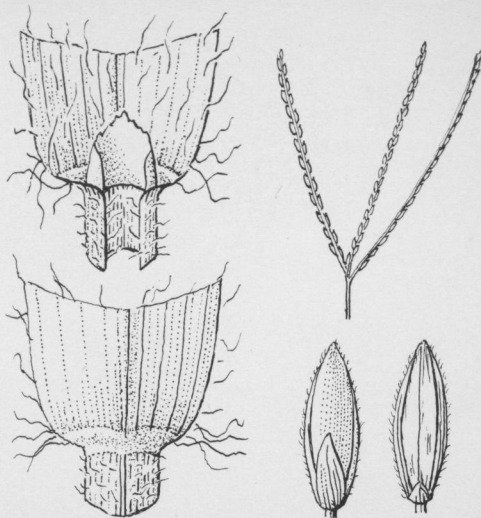
Auricles absent.

- * Sheaths compressed, hairy.
- * Blades flat, sparsely hairy, 1/4 inch wide, sharp pointed.

Seedhead 3 to 13 narrow spikes at the top of the main stem.

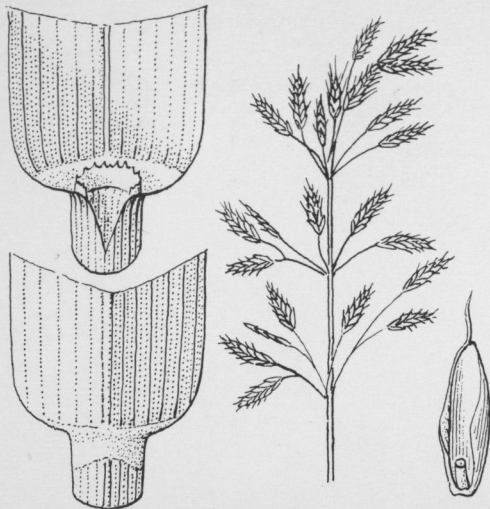
Spikelets in 2 rows, elliptical, one seed.

A spreading blue-green ANNUAL that roots at the lower nodes. A common weed throughout the United States.



Chess 7

(*Bromus secalinus*)



- Leaves rolled in the bud.
- * Ligule membranous, short, toothed.
Collar broad.
Auricles absent.
Sheaths not compressed, smooth.
Blades $\frac{1}{4}$ inch wide, flat, mostly smooth but occasionally sparsely hairy.
 - * Seedhead pyramid-shaped, nodding.
Spikelets long, narrow, flat, short awns, 6 to 10 seeds.

A tufted, pale green ANNUAL first observed as a contaminant in grain fields. Grows throughout the United States but rather sparse in extreme southern areas.

8 Downy Chess

(*Bromus tectorum*)

Leaves rolled in the bud.

- * Ligule membranous, medium-tall, jagged edges with hairs near the top.

Collar narrow, hairy.

Auricles absent.

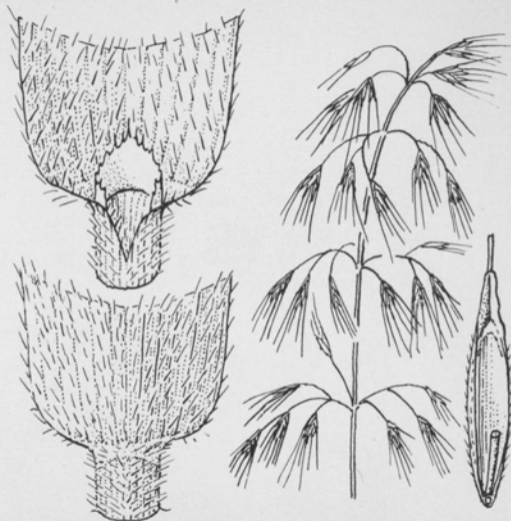
- * Sheaths not compressed, hairy, prominent veins, with the veins pinkish below ground.

Blades flat, hairy, weak, $\frac{1}{4}$ inch wide, sharp pointed.

- * Seedhead a long, dense, drooping panicle, sometimes purple.

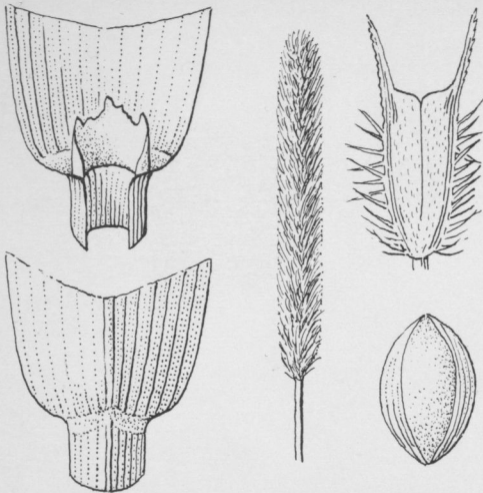
Spikelets covered with hairs, long awns, 4 to 7 seeds.

A slender, erect ANNUAL that often invades new seedings. Found throughout the United States with the exception of extreme Southeastern states. Particularly heavy in Washington and Oregon.



Timothy 9

(*Phleum pratense*)



- Leaves rolled in the bud.
- * Ligule membranous, medium long, toothed at the corners and at the apex. Collar medium, continuous. Auricles absent. Sheaths smooth, not compressed. Blades flat, $\frac{1}{4}$ inch wide indistinctly nerved, sharp pointed.
 - * Seedhead a dense spike, 2 to 4 inches in length. Spikelets with awns, keels hairy, containing a single seed.
 - * Base of plant bulb-like, swollen.

A coarse bluish-green PERENNIAL forming clumps. An escaped hay crop found throughout the United States.

10 Green Foxtail

(*Setaria viridis*)

Leaves rolled in the bud.

* Ligule a fringe of hairs.

Collar narrow, hairy.

Auricles absent.

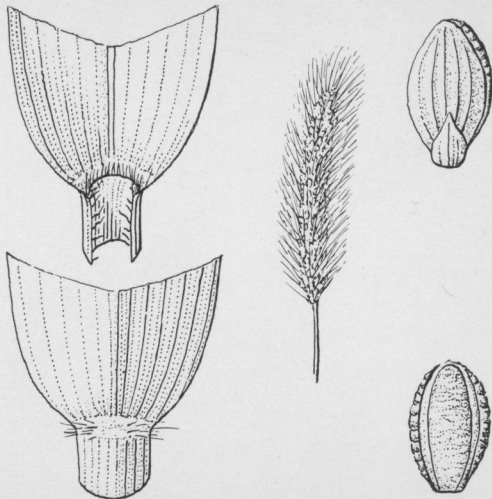
Sheaths slightly compressed, hairy along the edges.

* Blades soft, flat, narrow at the base, slightly more than $\frac{1}{4}$ inch wide, sharp pointed.

* Seedhead a soft, nodding bushy spike, green to purple.

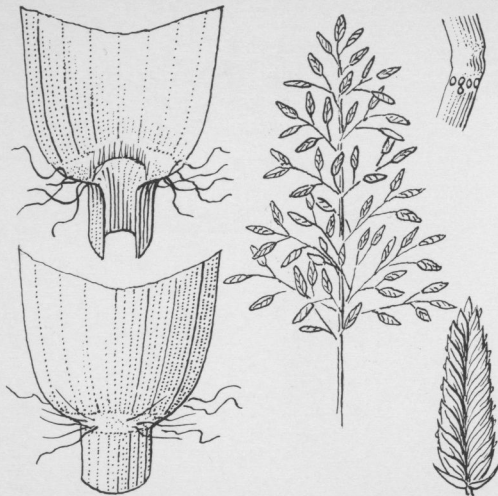
Spikelets oval, transversely ridged, 2 or 3 long awns below, a single seed.

A bright green clump-type **ANNUAL** branching at the base. Common throughout the cooler parts of the United States. Found in California and Florida but infrequent in other southern states.



Stinkgrass 11

(*Eragrostis cilianensis*)



Leaves rolled in the bud.

Ligule a fringe of hairs.

Collar continuous, narrow, long hairs at the edges.

Auricles absent.

Sheaths slightly compressed.

* Blades dull above, glossy below, tapered.

* Nodes with a ring of glands below.

* Seedhead a spreading gray-green panicle. Spikelets long, compressed, containing 10 to 40 seeds.

A slender tufted ANNUAL with a disagreeable odor. Found throughout the United States but only sparingly in the Northwest.

12 Witchgrass

(*Panicum capillare*)

Leaves rolled in the bud.

Ligule a fringe of hairs.

* Collar continuous, broad, hairy.
Auricles absent.

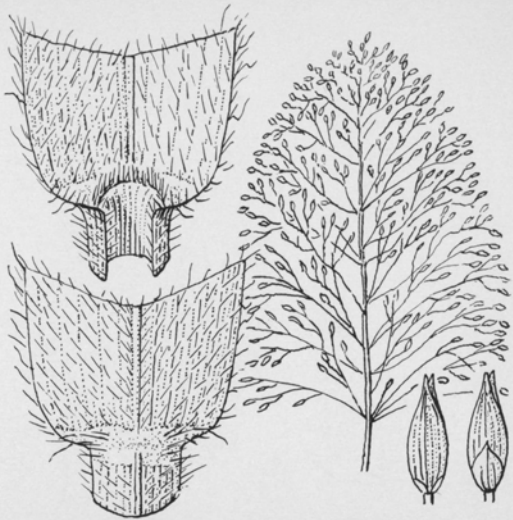
* Sheaths slightly compressed, purplish,
densely hairy.

* Blades flat, densely hairy, 1/2 inch wide,
sharp pointed.

* Seedhead a widely spreading, densely
seeded panicle, sometimes half the length
of the entire plant.

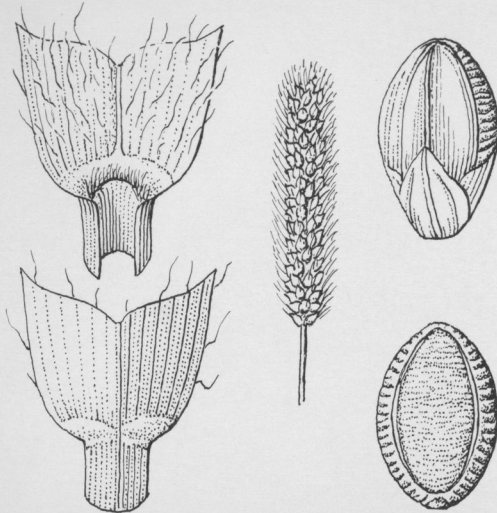
Spikelets containing a single seed.

A tufted, coarse, hairy ANNUAL that seeds
heavily in the fall. Widespread across the
United States.



Yellow Foxtail 13

(*Setaria lutescens*)



- Leaves rolled in the bud.
Ligule a fringe of hairs.
Collar continuous, narrow.
Auricles absent.
- * Sheaths compressed, tinged with red near base, mid-vein prominent.
 - * Blades flat, often spiraling upward, hairy on upper surface near ligule.
 - * Seedhead a coarse, bushy spike.
- Spikelets with transverse ridges, surrounded by one to several bristles, with a single seed.

A coarse tufted **ANNUAL** with erect, leafy stems. Grows all across the United States. Heavy in the midwest and east, to light in northern Florida.

14 Barnyardgrass

(*Echinochloa crusgalli*)

Leaves rolled in the bud.

* Ligule absent.

Collar broad, continuous.

Auricles absent.

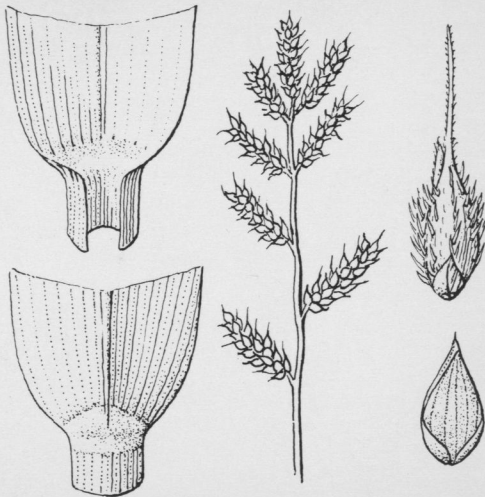
* Sheaths compressed, very flat, purple tinged near base.

Blades flat, narrow at base, thick mid-vein, sometimes sparsely hairy along the edges.

* Seedhead a coarse, branching panicle.

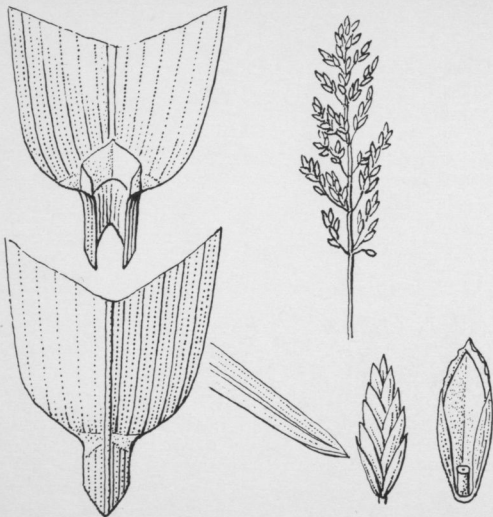
Spikelets barbed, awns long or short, with a single seed.

A coarse, sprawling, purple tinged ANNUAL. Lying fan-shaped and prostrate in turf. Found throughout the United States.



Canada Bluegrass 15

(*Poa compressa*)



- Leaves folded in the bud.
- * Ligule membranous, medium long, abrupt.
 - * Collar narrow, divided by a strong mid-vein. Auricles absent.
 - * Sheaths strongly compressed, flattened, sometimes tinged with red.
 - * Blades short, with each side *tapering* toward a "boat-shaped" tip.
- Seedhead a narrow, compressed panicle.
Spikelets flattened, with 3 to 6 seeds.

This wiry, tough blue-green PERENNIAL spreads by short rhizomes and forms a very open sod. It prefers waste places or open ground and is an obvious weed in good turf.

16 Fowl Bluegrass

(*Poa palustris*)

Leaves folded in the bud.

* Ligule membranous, very tall.

Collar medium, divided into two parts by the mid-vein.

Auricles absent.

* Sheaths compressed, flattened, mid-vein prominent, purplish at the base with a short distance between nodes.

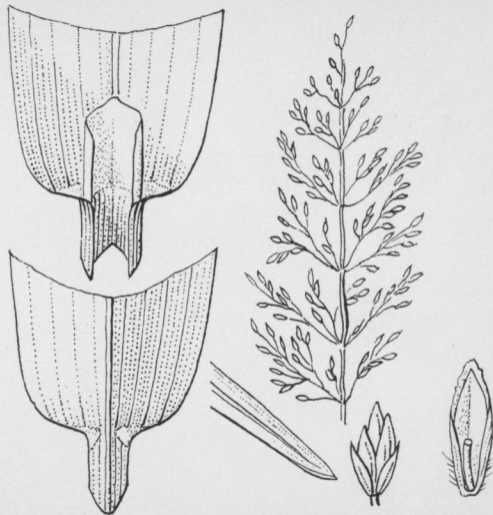
* Blades very narrow, less than $\frac{1}{8}$ inch, with each side *tapering* toward a "boat-shaped" tip.

Seedhead an oblong, open panicle, yellowish-green to purple.

Spikelets flattened, with 2 to 4 seeds.

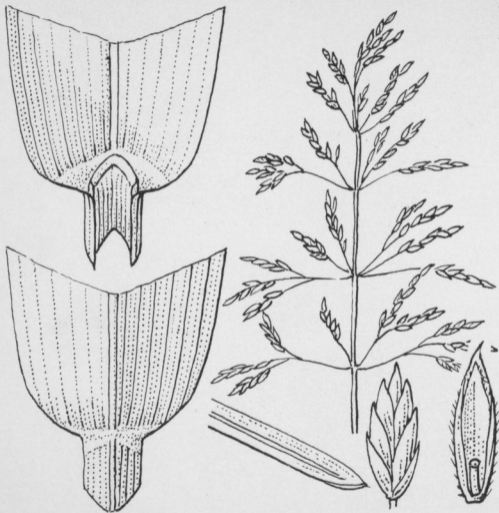
A wiry, tough PERENNIAL, spreading by short rhizomes. An impurity in lawns.

Found frequently in moist, open ground across the cooler areas of the United States.



Kentucky Bluegrass 17

(*Poa pratensis*)



- Leaves folded in the bud.
- * Ligule membranous, very short, abrupt. Collar narrow. Auricles absent.
 - Sheaths green, compressed, smooth.
 - * Blades long, less than $\frac{1}{8}$ inch wide, the edges *parallel* to each other, terminating in a "boat-shaped" tip.
 - * Seedhead an open pyramid-shaped panicle, lower branches generally in fives. Spikelets flattened, with 3 to 5 seeds.

This dark green PERENNIAL creeps by rhizomes and forms a dense sod. There are many improved varieties with various characteristics. Widely distributed throughout the United States except for arid regions and the deep south.

18 Poa trivialis

Leaves folded in the bud.

* Ligule membranous, long, toothed at the tip.
Collar broad, smooth.

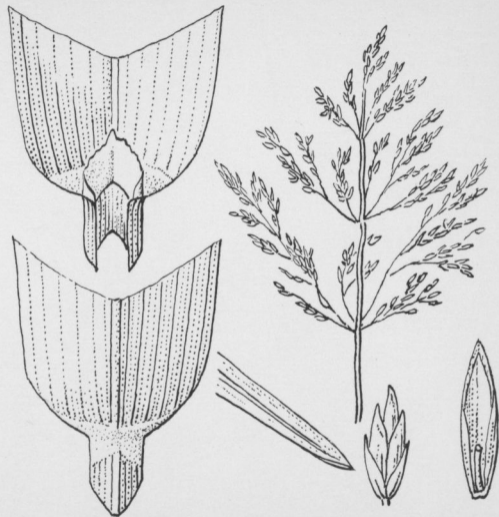
Auricles absent.

* Sheaths compressed, rough to the touch.

* Blades flat, $\frac{1}{8}$ inch wide, rough on the edges, *tapering* to a "boat-shaped" tip.
Seedhead an oblong panicle.

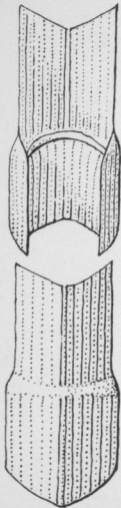
Spikelets flattened, with 2 to 3 seeds.

A yellow-green PERENNIAL bending at the base and creeping by stolons. Often used in seed mixtures as a shade grass. Found mostly from Minnesota, Illinois, and Kentucky eastward. In the west, northern California, Oregon, and Washington.



Fine Fescue 19

(*Festuca rubra*)



- Leaves folded in the bud.
- * Ligule membranous, very short.
Collar narrow, indistinct.
Auricles absent.
- * Sheaths slightly rough, not compressed,
wider than the blades, lower sheaths
brown.
- * Blades very narrow, 1/16 inch wide or
less, bristle-like, slightly folded.
Seedhead a closed, coarse panicle.
Spikelets pale green, rough, short awns,
4 to 6 seeds.

A tufted, fine-bladed PERENNIAL bending at a red to purplish base and spreading by short rhizomes. Used as an excellent shade grass. Found all across the United States with the exception of the deep southeast.

20 Perennial Ryegrass

(*Lolium perenne*)

Leaves folded in the bud.

- * Ligule membranous, medium tall, toothed near the tip.

Collar narrow.

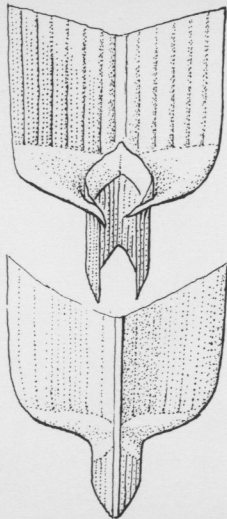
- * Auricles short, not clasping the stem. Sheaths reddish below ground, smooth.

- * Blades from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch wide, prominently veined above, very glossy and smooth beneath.

- * Seedhead a long, narrow spike, with spikelets placed edgewise along the main stem.

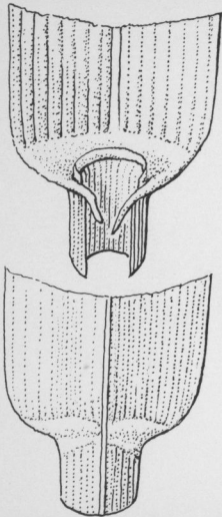
Spikelets flattened, without awns, 6 to 10 seeds.

A dark green tufted PERENNIAL which forms a durable turf. Occasionally found as a weed in fine-bladed grasses. Occurs throughout the northern states and as far west as California.



Annual Ryegrass 21

(*Lolium multiflorum*)



- Leaves rolled in the bud.
- Ligule membranous, short.
- Collar broad.
- * Auricles narrow, long and claw-like.
- Sheaths not compressed, yellowish-green at the base.
- * Blades long, tapered, prominent veins above, very glossy below, edges smooth.
- * Seedhead a long, narrow spike, with spikelets placed edgewise along the main stem.
- * Spikelets with awns, containing 10 to 20 seeds.

A tufted apple-green ANNUAL often used as a nurse crop or temporary turf. Sometimes persisting for several years.

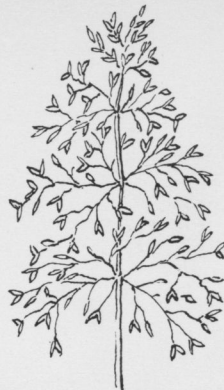
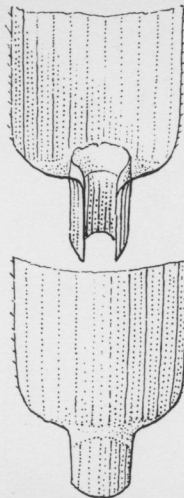
22 Colonial Bentgrass

(*Agrostis tenuis*)

Leaves rolled in the bud.

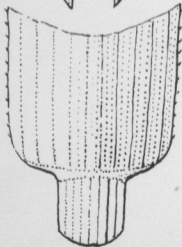
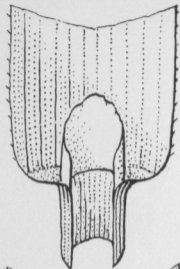
- * Ligule membranous, rather short.
Collar narrow.
Auricles absent.
Sheaths smooth, not compressed.
- * Blades rough along the edges, flat, very narrow, tapered.
- * Seedhead an open, delicate, pyramid-shaped panicle.
Spikelets, small, elliptical, with a single seed.

This tufted PERENNIAL creeps by short stolons, and lacks aggressive lateral growth. Used mostly as a grass for lawn and higher cut turf areas.



Creeping Bentgrass 23

(*Agrostis palustris*)



- Leaves rolled in the bud.
- * Ligule membranous, tall, rounded.
Collar narrow.
Auricles absent.
Sheaths smooth, not compressed.
- * Blades narrow, flat, veined, rough along the edges.
- * Seedhead a panicle, generally compressed.
Spikelets small, elliptical, with a single seed.

A low growing, fine-bladed PERENNIAL, creeping by long vigorous stolons. Used for putting greens in all cool season areas. Propagated by both seed and stolons.

24 Quackgrass

(*Agropyron repens*)

Leaves rolled in the bud.

Ligule membranous, very short.

Collar broad, continuous.

- * Auricles claw-like, slender, clasping the stem.

Sheaths not compressed, lower sheaths with short hairs, upper sheaths smooth.

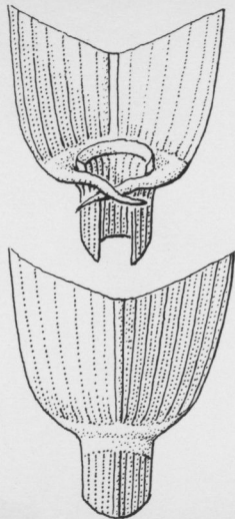
- * Blades flat, 1/4 inch wide, rough on the upper surface, smooth below, pointed.

- * Seedhead a spike, with spikelets facing the main stem.

Spikelets flattened, 4 to 6 seeds.

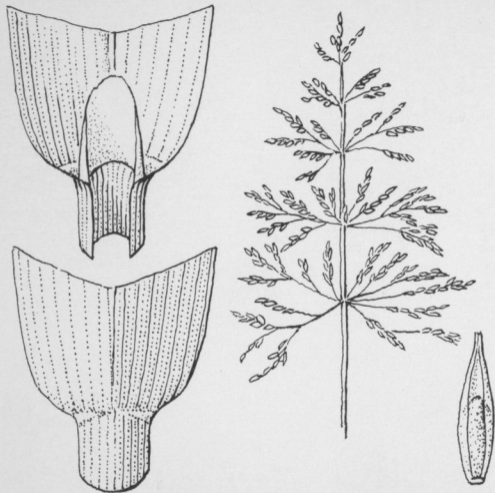
- * Rhizomes, sharp, long, aggressive.

This blue-green, aggressive PERENNIAL creeps by strong underground rhizomes. Once established, it is extremely difficult to eradicate. Common in northern states and south through North Carolina, Arkansas, Oklahoma and California.



Redtop 25

(*Agrostis alba*)



- Leaves rolled in the bud.
- * Ligule membranous, very tall, rounded.
 - * Collar narrow, divided into two parts by a space.
Auricles absent.
 - Sheaths not compressed, smooth.
 - Blades flat, $\frac{1}{4}$ inch wide, veins prominent on upper surface, edges rough.
 - * Seedhead a spreading panicle, reddish color.
 - Spikelets with one seed.
 - * Rhizomes, strong, spreading.

A blue-green PERENNIAL creeping by rhizomes. Occasionally used as a filler in turf seed mixtures. Found in cooler areas across the United States.

26 Reed Canarygrass

(*Phalaris arundinacea*)

Leaves rolled in the bud.

- * Ligule membranous, tall, rounded, often torn, hairy on the back, wider than the sheaths.

Collar broad.

Auricles absent.

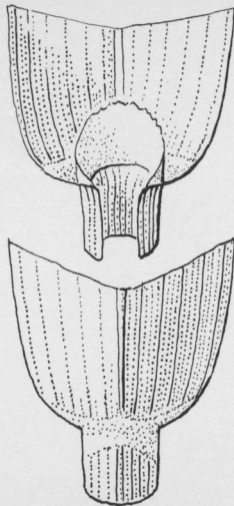
- * Sheaths not compressed, transparent along the edges.

- * Blades flat, rough along the edges, ½ inch or more wide, 3 to 8 inches long, sharp pointed.

Seedhead a compressed panicle.

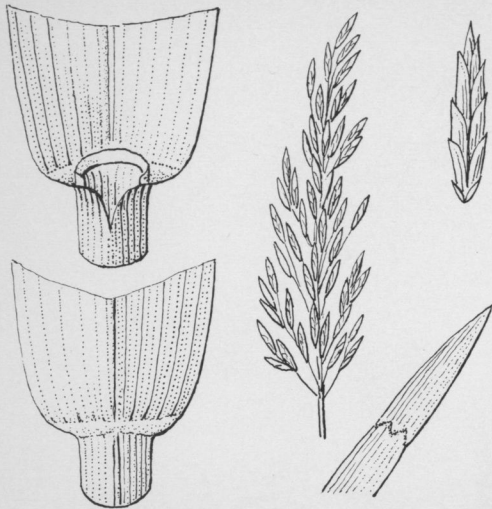
Spikelets long, narrow, pointed, with a single seed.

A coarse, sod-forming PERENNIAL reproducing by seed and spreading by thick, creeping rhizomes. Will not survive under continuous close mowing. Found throughout cool season areas of the United States.



Smooth Brome 27

(*Bromus inermis*)



Leaves rolled in the bud.

Ligule membranous, short.

Collar narrow, continuous.

Auricles absent.

* Sheaths not compressed, closed nearly to the top.

* Blades about 1/4 inch wide, smooth, often constricted to form an "M" or "W"

* Rhizomes strong, spreading.

Seedhead an erect panicle, with branches in a circular pattern around the main stem.

Spikelets, narrow, pointed, with 7 to 11 seeds.

A blue-green, creeping PERENNIAL used as a pasture grass and on steep banks for erosion control. Grows from California eastward across the northern states.

28 Smooth Crabgrass

(*Digitaria ischaemum*)

Leaves rolled in the bud.

* Ligule membranous, tall, rounded.

Collar broad, sparsely hairy.

Auricles absent.

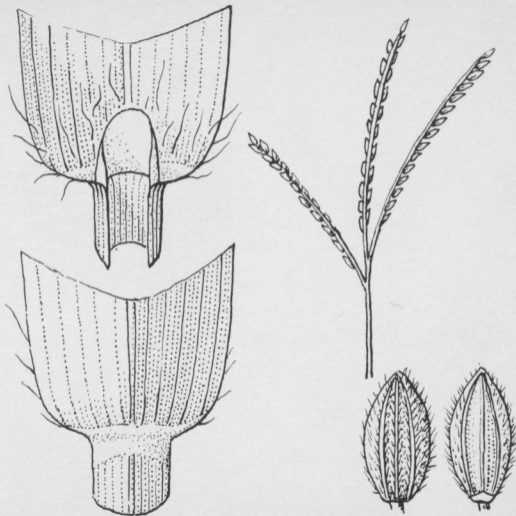
* Sheaths compressed, smooth, generally tinged with purple.

* Blades sparsely hairy near the ligule, ¼ inch wide, sharp pointed.

Seedhead 2 to 6 narrow spikes at the top of the main stem.

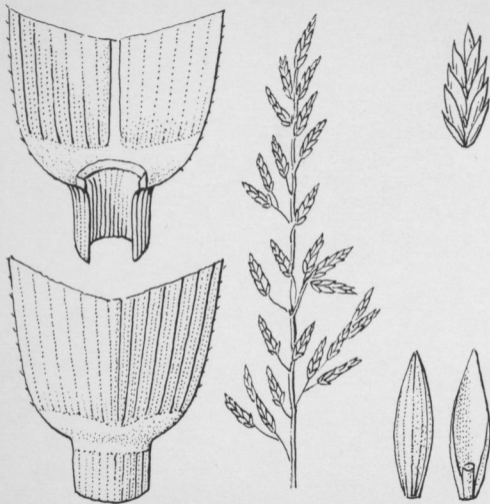
Spikelets generally in two rows on each spike, elliptical, containing one seed.

A low growing ANNUAL that avoids mowing. It lies prostrate in turf and roots at the lower nodes. Common in most northern states and from southern California eastward through Tennessee and northern Georgia.



Tall Fescue 29

(*Festuca arundinacea*)



- * Leaves rolled in the bud.
- * Ligule membranous, short.
Collar broad, continuous.
Auricles absent.
Sheaths not compressed, reddish-pink below ground.
- * Blades flat, strongly veined above, rough along the edges, sharp pointed.
Seedhead an erect, somewhat compressed panicle.
Spikelets containing 6 to 8 seeds.

A coarse, dark green PERENNIAL. Develops into a durable, coarse turf in thick stands but can form objectionable clumps in fine-bladed grasses. Grows from California eastward through the mid-south and across the northern United States.

30 Wild Barley

(*Hordeum jubatum*)

Leaves rolled in the bud.

Ligule membranous, short.

Collar divided by the mid-vein.

Auricles absent.

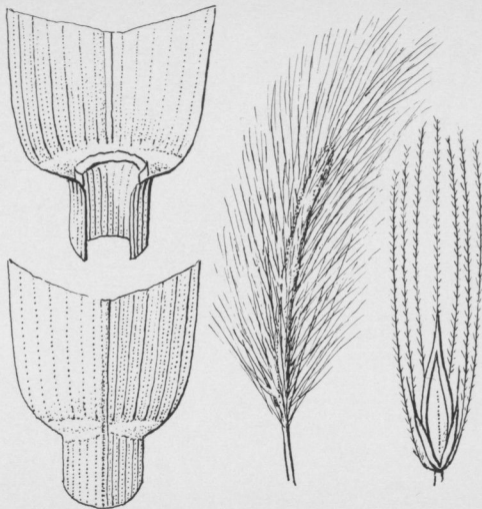
Sheaths compressed.

* Blades narrow, long, tapered, rough to the touch.

* Seedhead a yellow-green to purple, nodding, bushy spike, 1½ to 3 inches long.

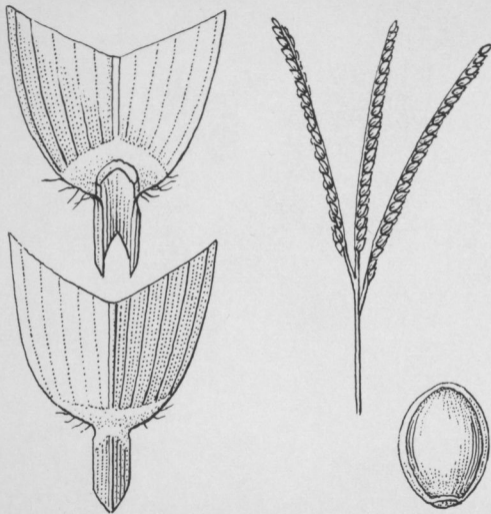
* Spikelets with long, barbed awns, rough to the touch, with a single seed.

A short, blue-green PERENNIAL growing in clumps. Often found along roadsides in all but the southeastern states.



Bahiagrass 31

(*Paspalum notatum*)



Leaves folded in the bud.

Ligule membranous, short.

* Collar constricted, broad, sparse long hairs at the edges.

Auricles absent.

Sheaths compressed, sparsely hairy.

Blades flat or folded, more than $\frac{1}{4}$ inch wide, sparsely hairy, tapering to a point.

* Seedhead 2 or 3, rarely 5, slender spikes, mostly 2 joining at the top of the main stem and others below.

Spikelets blunt at the base, rounded at the center and tapering to a blunt tip, with a single seed.

A low growing PERENNIAL, creeping by short, strong, woody rhizomes. Found all around the Gulf Coast. Used extensively as turf in central and southwestern Florida.

32 Broomsedge

(*Andropogon virginicus*)

Leaves folded in the bud.

- * Ligule membranous, fringed with hairs.
- * Collar narrow, divided by the mid-vein, hairy at the edge. Auricles absent.

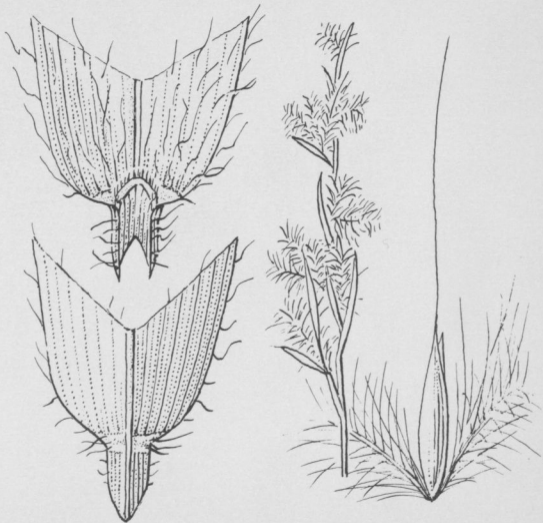
- * Sheaths very strongly compressed, flattened.

Blades compressed near base, hairy along the edges and near ligule, about ¼ inch wide, sharp pointed.

Seedhead slender, narrow, with 2 to 4 seeding stalks.

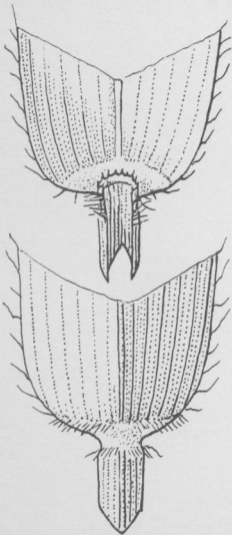
Spikelets awned, in pairs, cotton-like, with tufts of hair at the base.

Found throughout the eastern half of the United States and California. Leaving unsightly brown tufts in winter.



Centipedegrass 33

(*Eremochloa ophiuroides*)



Leaves folded in the bud.

Ligule a short membrane with short hairs across the top.

* Collar broad, much constricted, hairy.
Auricles absent.

Sheaths compressed, flattened, hairs at the edges near the ligule, a prominent mid-vein.

* Blades compressed or flattened, short, less than $\frac{1}{4}$ inch wide, strong mid-vein, sparsely hairy along the edges.

* Seedhead a slender spike.

Spikelets broad at the base tapering to a rounded tip, a single seed.

A dark green, low growing PERENNIAL that creeps by slender, flat, leafy stolons. It forms a desirable turf from North Carolina south through Georgia and North Florida and then westward around the Gulf into Arkansas and Texas.

34 Carpetgrass

(*Axonopus compressus*)

Leaves folded in the bud.

Ligule a fringe of hairs.

Collar narrow, indistinct, hairy at edges.

Auricles absent.

Sheaths compressed, flattened.

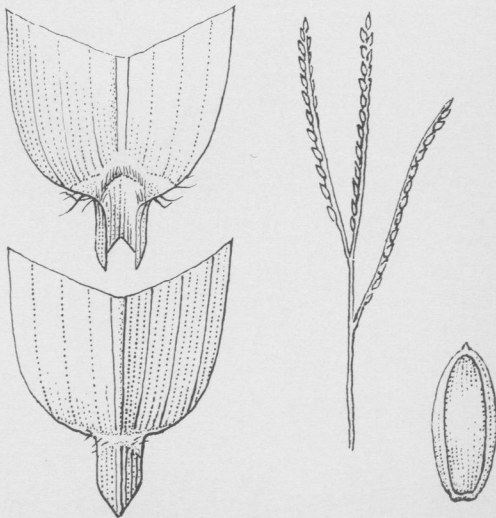
- * Blades short, at least ¼ inch wide, rounded at the tip.

Seedhead 2 to 5 finger-like arms, 2 at the top of the main stem, others below.

Spikelets broad at the base and tapering to a point, a single seed.

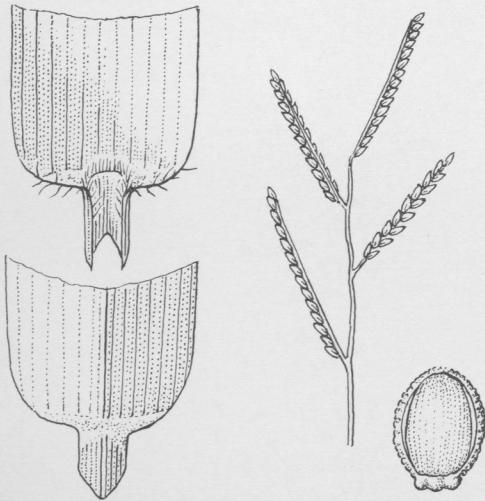
- * Nodes densely hairy.

This spreading PERENNIAL creeps by aggressive stolons, which produce many plants at short intervals. It forms extensive patches in moist places. Found from Florida around the Gulf States through Texas, but seldom north of Arkansas to North Carolina.



Signalgrass 35

(*Brachiaria plantaginea*)



- Leaves folded in the bud.
- * Ligule a fringe of hairs.
 - * Collar medium with sparse hairs at the edges.
- Auricles absent.
- Sheaths compressed, flattened, smooth.
- * Blades very short, broad, thick, pointed.
 - * Seedhead 2 to 6 slender spikes, pointing upward and alternating along the main stem.
- Spikelets broad and rounded at the base, tapering to a point, with a single seed.

A low growing yellow-green ANNUAL that spreads by rooting at the lower nodes. Often confused with Crabgrass. Found in Georgia, Florida, Louisiana, Arkansas, Oklahoma, and Texas.

36 St. Augustinegrass

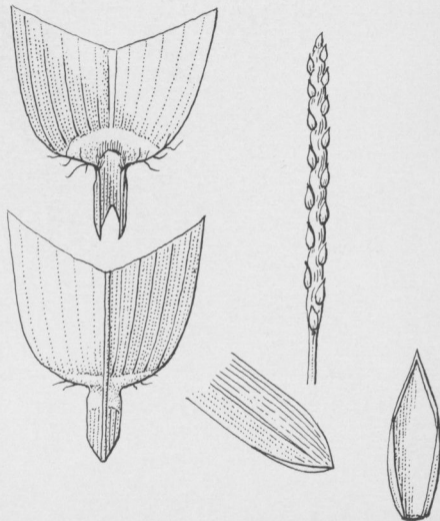
(*Stenotaphrum secundatum*)

Leaves folded in the bud.

Ligule a short fringe of hairs.

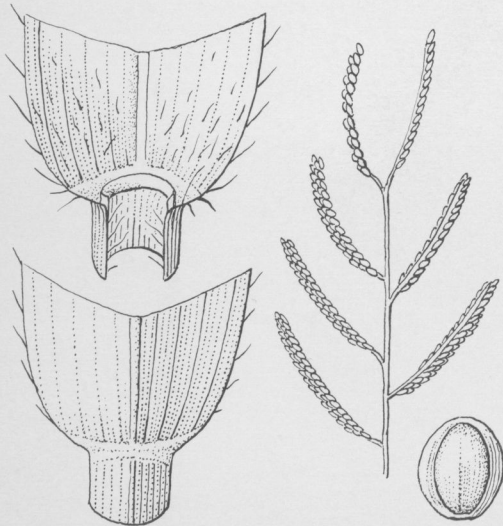
- * Collar broad, smooth, much constricted.
 - Auricles absent.
 - * Sheaths compressed, flattened, with a prominent mid-vein, sometimes sparsely hairy along the edges.
 - * Blades very short, smooth, at least 1/4 inch wide, with a "boat-shaped" tip.
- Seedhead a thick spike with few spikelets imbedded along the sides.
- Spikelets thick, elliptical, with one seed.

A dark green, leafy PERENNIAL creeping by extensive stolons. It provides a rather coarse, spongy turf in areas of the deep south. Found from southern Florida into Georgia and around the Gulf Coast through Alabama, Mississippi, Louisiana, and Texas. Occasionally cultivated in southern California.



Bull Paspalum 37

(*Paspalum boscianum*)



PROTURF GUIDE TO GRASSES

- Leaves rolled in the bud.
- * Ligule membranous, short.
Collar very narrow.
Auricles absent.
Sheaths loose, smooth, with a prominent mid-vein.
 - * Blades flat, wavy along the edges, a prominent mid-vein, $\frac{1}{2}$ inch wide, sparsely hairy along the edges and near the ligule, often tinged with purple.
 - * Seedhead 4 to 12 thick spikes joining along the top of the main stem.
Spikelets in rows of 3 or 4, blunt at the base, round, with a single seed.

A thick, coarse ANNUAL forming unsightly clumps in turf. Found from Virginia to Tennessee, Arkansas and Texas and all southern states below this area.

38 Dallisgrass

(*Paspalum dilatatum*)

Leaves rolled in the bud.

* Ligule membranous, tall, rounded.

Collar broad, smooth.

Auricles absent.

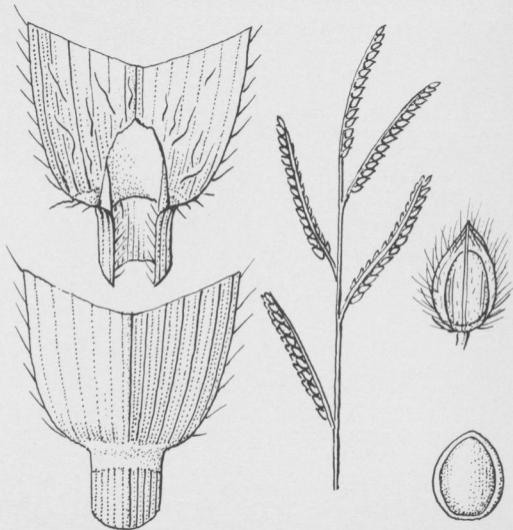
Sheaths compressed, mid-vein prominent.

* Blades flat, nearly 1/2 inch wide, mid-vein prominent, sparse hairs near the ligule, edges rough.

* Seedhead 3 to 6 slender spikes, pointed upward along the main stem.

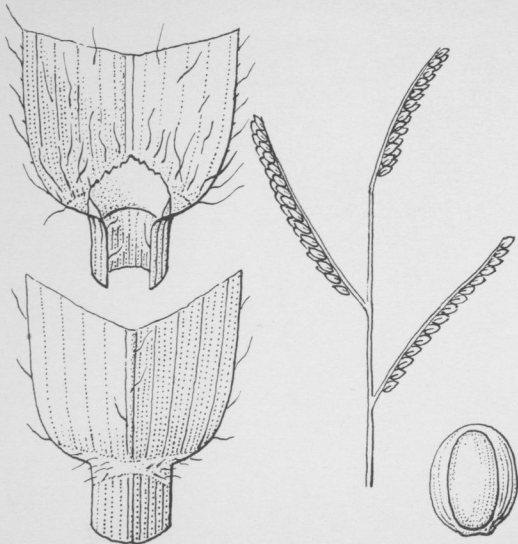
Spikelets are flattened, rounded, pointed at the tip, hairy at the base with a single seed.

A tall, coarse, yellow-green PERENNIAL that forms spreading clumps. Found from New Jersey to Tennessee and Florida, west to Texas and California.



Field Paspalum 39

(Paspalum laeve)



Leaves rolled in the bud.

* Ligule membranous, medium tall, rounded, jagged around the edges.

Collar broad, hairy.

Auricles absent.

* Sheaths strongly compressed, sparsely hairy along the edges and mid-vein, mid-vein prominent.

Blades flat, at least $\frac{1}{4}$ inch wide, smooth to sparsely hairy, hairy near the ligule and along the edges.

Seedhead with 3 to 4 spikes scattered along the top of the main stem.

Spikelets in two rows, almost round, with a single seed.

A yellow-green, coarse PERENNIAL spreading at the base. Found from New Jersey to Ohio south to Florida and Texas.

40 Egyptian Crabgrass

(*Dactyloctenium aegyptium*)

Leaves rolled in the bud.

- * Ligule a short membrane with hairs across the top.

Collar narrow, smooth, with hairs at the edges.

Auricles absent.

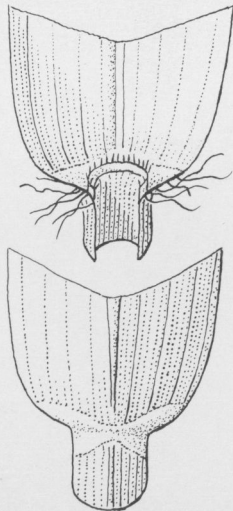
Sheaths compressed, smooth, with some hairs near the ligule.

Blades flat, 1/4 inch wide, sparse hairs along the edges.

- * Seedhead, 2 to several thick spikes at the top of the main stem.

Spikelets flat, broad, awns present, spaced along two rows, 3 to 5 seeds.

A yellow-green ANNUAL spreading and rooting at the lower nodes. It branches freely at the base and often forms mats. Growing from North Carolina to Florida and around the Gulf Coast through Texas. Found sparingly in Arizona and California.



Johnsongrass 41

(*Sorghum halepense*)

Leaves rolled in the bud.

- * Ligule membranous, very tall, abrupt, the top jagged with hairs.

Collar broad.

Auricles absent.

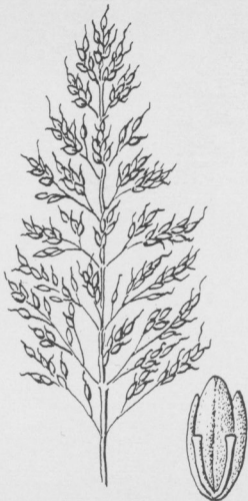
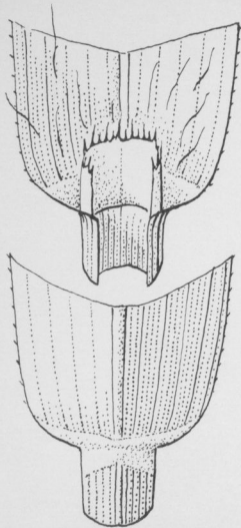
Sheaths compressed, smooth, pale green to reddish-brown.

- * Blades flat, very long, with sparse hairs near the ligule, $\frac{1}{2}$ inch or more wide, sharp pointed, mid-vein white and thick.

- * Seedhead a tall, coarse, open panicle. Spikelets oval, silky, with awns, bearing single seeds.

- * Ring of hairs below the nodes at the base.

An aggressive, spreading PERENNIAL with rhizomes more than $\frac{1}{4}$ inch thick. This coarse plant often becomes a problem in cultivated crops and may reach a height of 6 feet. Found throughout the southern half of the United States.



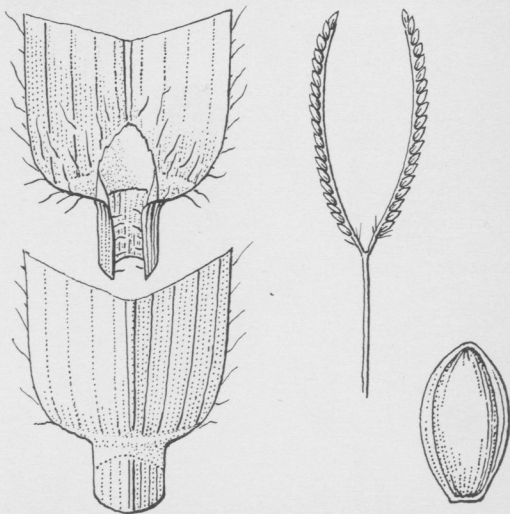
42 Knotgrass

(*Paspalum distichum*)

Leaves rolled in the bud.

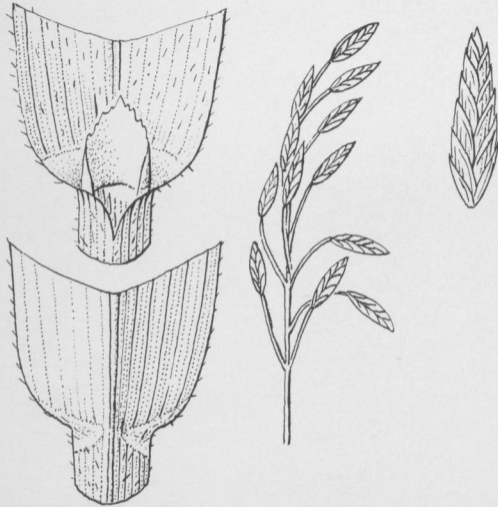
- * Ligule membranous, tall, rounded.
- * Collar broad with long hairs on the edges. Auricles absent.
- Sheaths compressed, smooth, hairy edges. Blades flat to folded, hairy near the ligule, sparsely hairy along the edges.
- * Seedhead mostly 2 spikes at the top of the main stem, occasionally one below.
- Spikelets elliptical, broad at the base, pointed at the top, with a single seed.
- * Rhizomes, strong, spreading.

This dark green PERENNIAL creeps by rhizomes and stolons and forms extensive matted patches. It is a particular problem from South Carolina into Florida and westward through Texas and Oklahoma, but it also thrives in states west of the Rockies.



Rescuegrass 43

(*Bromus catharticus*)



- Leaves rolled in the bud.
- * Ligule membranous, tall, rounded, hairy on the back. Collar broad. Auricles absent.
- * Sheaths strongly compressed, hairy to smooth in older plants, closed, forming a tube around the stem. Blades sparsely hairy, flat, up to $\frac{1}{2}$ inch wide.
- * Seedhead an open panicle, nodding. Spikelets up to 1 inch in length, flattened, with 4 to 12 seeds.

A bunch-type, short-lived PERENNIAL. It makes extensive growth in all southern states except Florida during winter and then disappears during hot, dry weather. Found sparingly in western states except Washington.

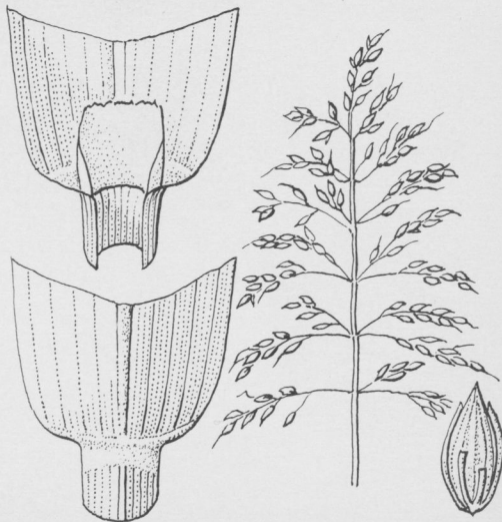
44 Sudangrass

(*Sorghum sudanense*)

Leaves rolled in the bud.

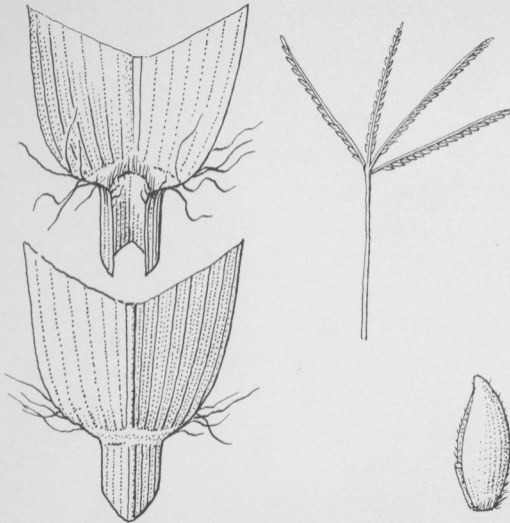
- * Ligule membranous, tall, abrupt, jagged across the top, wider than the sheaths. Collar broad, smooth. Auricles absent.
- * Sheaths slightly compressed, transparent along the edges.
- * Blades flat, sharp pointed, pale green above, 1/2 inch or more wide, mid-vein thick and pale green.
- * Seedhead a tall, coarse, open panicle. Spikelets oval, with awns, a ring of hairs at the base, sparsely silky, bearing single seeds.

A heavy tufted ANNUAL with erect stems and long leaves. Often confused with Johnsongrass but does not spread by rhizomes. Found growing across the southern half of the United States.



Bermudagrass 45

(*Cynodon dactylon*)



- * Leaves folded in the bud.
- * Ligule a fringe of hairs.
- * Collar narrow, covered with long hairs. Auricles absent. Sheaths strongly compressed, sparsely hairy.
- * Blades short, $\frac{1}{8}$ inch wide, rough along the edges, sharp pointed. Seedhead 3 to 5 slender spikes, joining at the top of the main stem. Spikelets oval, in two rows, containing a single seed.

A warm season PERENNIAL that creeps by strong rhizomes and stolons and forms an excellent turfgrass. Most improved hybrid varieties are planted by stolons or sod. Often found as a wiry, spreading weed in northern states. Common south of a line from Maryland to Kansas and northern California.

46 Purpletop

(*Tridens flavus*)

Leaves rolled in the bud.

Ligule a fringe of hairs.

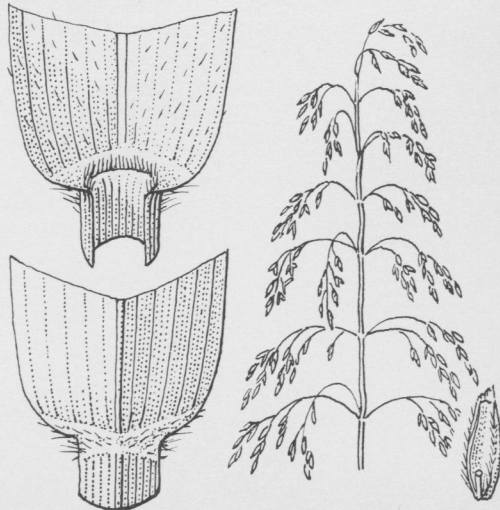
Collar broad, hairy.

Auricles none.

- * Sheaths strongly compressed, tough, glossy, slightly hairy on the upper edges.
- * Blades narrow at the base, minutely hairy above and glossy beneath, about 1/2 inch wide, sharp pointed.
- * Seedhead a tall open panicle, usually purple.

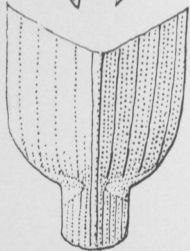
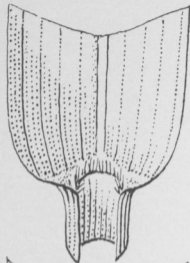
Spikelets oblong with 6 to 8 seeds.

This bunch-type PERENNIAL starts growth in early spring and seeds from July to September. Found growing from Nebraska to New Hampshire and southward to Texas and Florida.



Smutgrass 47

(*Sporobolus poiretii*)



- Leaves rolled in the bud.
Ligule a fringe of hairs.
- * Collar divided into two parts by the mid-vein.
Auricles absent.
Sheath smooth, round.
Blades flat, less than $\frac{1}{4}$ inch wide, tapering to a sharp point.
 - * Seedhead a long narrow, spike-like panicle, often black with a smutty fungus.
Spikelets oval to elliptical, with a single seed.

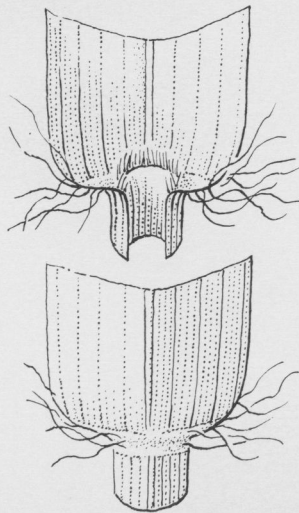
An erect, tough PERENNIAL often destroying the appearance of desirable turf. This member of the "Dropseed" family is found from Texas to Oklahoma, east to Virginia and all other states south of this area.

48 Zoysiagrass

(*Zoysia matrella*)

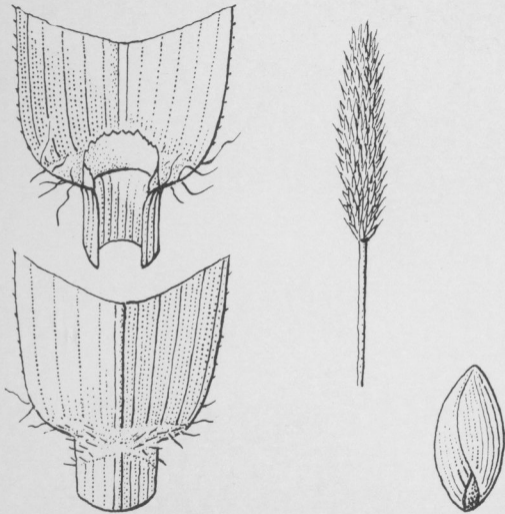
- * Leaves rolled in the bud.
- * Ligule a fringe of hairs.
- * Collar medium, covered with long hairs. Auricles absent. Sheaths absent. Blades short, sharp pointed.
- * Seedhead in the form of a weak spike, spikelets alternate on two sides. Spikelets blunt at the base, round and tapering to a point.

A medium to fine PERENNIAL that spreads by short rhizomes and stolons. Develops into a desirable turf in warm areas but turns brown with frost in cooler areas. Nearly always planted vegetatively. Grown as far north as Connecticut west to Nebraska and then California. Performs best in hot dry areas.



Sweet Vernalgrass 49

(*Anthoxanthum odoratum*)



Leaves rolled in the bud.

* Ligule membranous, medium tall, jagged.

* Collar broad, long hairs at the edges.

Auricles absent.

Sheaths not compressed.

Blades flat, 1/4 inch wide, edges rough, sharp pointed.

* Seedhead a compressed spike-like panicle.

Spikelets with awns and a single seed.

A low-growing tufted PERENNIAL that is readily identified by its pleasant aroma. The plant becomes more aromatic as it dries. Found from Illinois, Arkansas and Louisiana eastward, with the exception of Florida. On the west coast it occurs in California, Oregon, and Washington.

50 Nimblewill

(*Muhlenbergia schreberi*)

Leaves rolled in the bud.

* Ligule membranous, short, jagged.

* Collar medium, smooth, long hairs at the edges.

Auricles absent.

* Sheaths compressed, prominent white membrane along the edges.

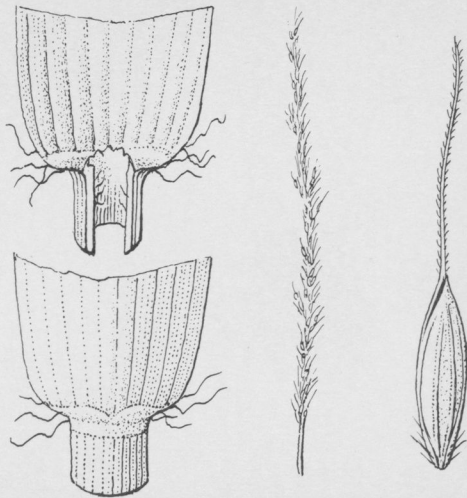
* Blades short, narrow, flat, pointed.

Seedhead a loose, lax, spike-like panicle.

Spikelets contain a single seed, long awns.

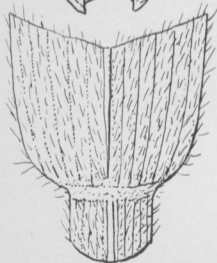
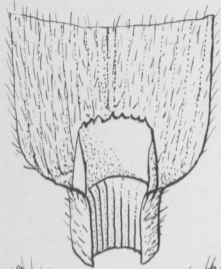
Stolons short, creeping.

A blue-green PERENNIAL forming patches that resembles bentgrass. Turns brown in winter. Very common throughout the midwest and eastern states.



Velvetgrass 51

(*Holcus lanatus*)



- Leaves rolled in the bud.
- * Ligule membranous, medium tall, jagged at the top and hairy on the back. Collar continuous, hairy, narrow. Auricles absent.
- * Sheaths compressed, pink nerved, densely hairy.
- * Blades flat, soft, hairy, sharp pointed. Seedhead a panicle, soft, plume-like, purplish, 2 to 5 inches long. Spikelets with a short, soft awn, containing 2 seeds.

A grayish-green, velvety PERENNIAL forming patches. Grows throughout the northern states but a particular problem in the Pacific Northwest.

52 Fall Panicum

(*Panicum dichotomiflorum*)

Leaves rolled in the bud.

Ligule a fringe of hairs.

Collar continuous, broad.

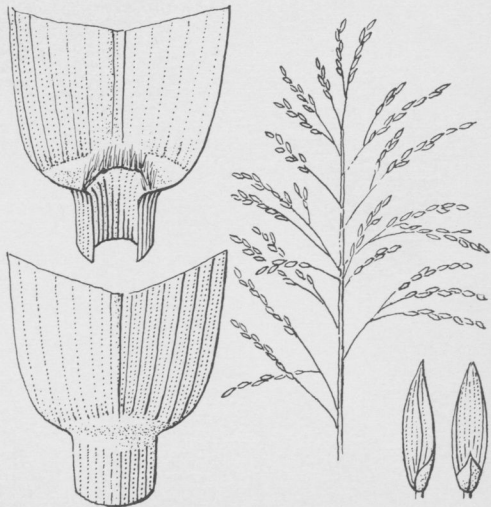
Auricles absent.

Sheaths slightly compressed, smooth.

* Blades flat, dull above, glossy beneath,
mid-vein prominent from $\frac{1}{4}$ to $\frac{1}{2}$ inch
wide, sharp pointed.

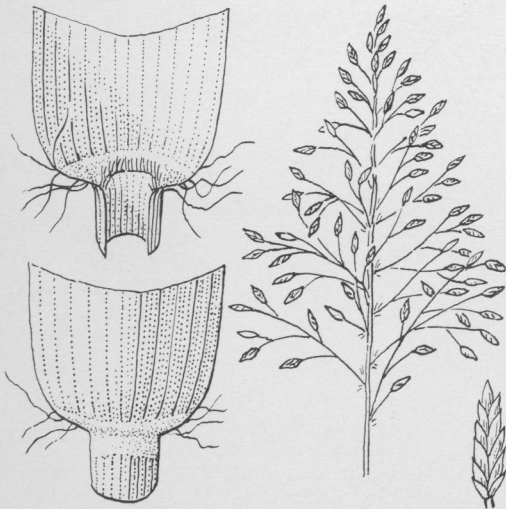
* Seedhead a widely spreading open panicle.
Spikelets with prominent veins, purple
tinged.

A coarse, sprawling, bright green
ANNUAL, seeding in the fall. Found
throughout the United States.



Lovegrass 53

(*Eragrostis pilosa*)



- Leaves rolled in the bud.
- * Ligule a fringe of hairs.
 - * Collar continuous, medium, hairy at the edges.
- Auricles absent.
Blades narrow, flat, tapered, rough above, smooth below.
Sheaths slightly compressed.
- * Seedhead a delicate open panicle, hairy where branches join the main stem.
- Spikelets gray-green to nearly black, containing 3 to 9 seeds.

A slender, erect ANNUAL, growing in clumps. Found from Texas into Oklahoma and across the eastern states. On the west coast it is found occasionally in California.

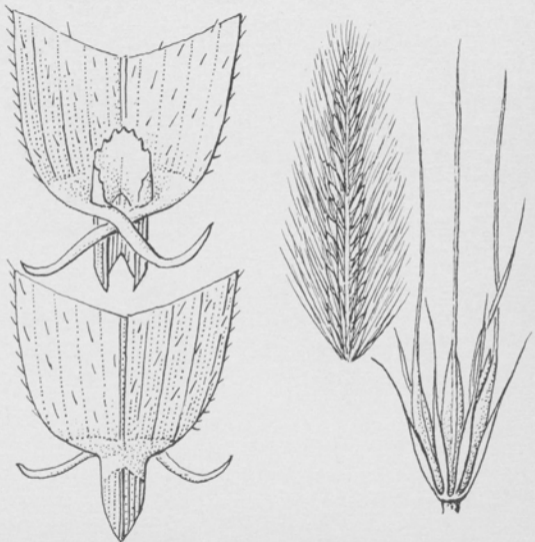
54 Foxtail Barley

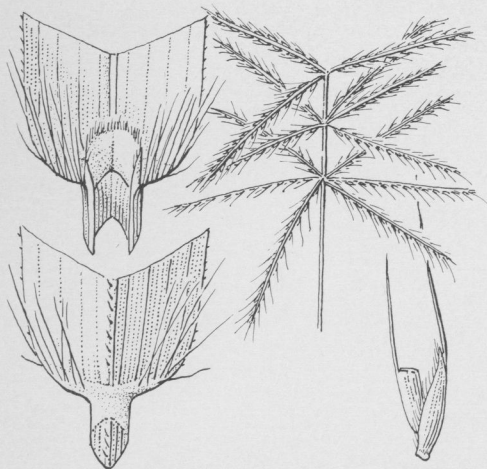
(*Hordeum murinum*)

Leaves folded in the bud.

- * Ligule membranous, tall, with a jagged edge.
Collar broad.
- * Auricles very long, membranous, twisting not clasping.
- Sheaths flattened, smooth, with membranous edges.
- Blades flat, sparsely hairy rough along the edges, tapering to a point.
- * Seedhead a yellow-green, brush-like spike.
Spikelets with long awns, a single seed.

A branching, spreading ANNUAL, growing rather prostrate and seeding heavily. Starts growth in early spring throughout most western states.





Windmillgrass 55

(*Chloris verticillata*)

- Leaves folded in the bud.
- * Ligule membranous, tall, hairs at top. Collar broad, with long hairs. Auricles absent.
- * Sheaths compressed, very flat, with a sparsely hairy and prominent mid-vein, edges are transparent.
- * Blades narrow, short, $\frac{1}{8}$ inch wide, folded, crowded at the base, sparse hairs on the prominent mid-vein.
- * Seedhead of long slender spikes spreading away from the main stem in a circular pattern, 1 to 3 spaced groups. Spikelets with long awns, a single seed.

A short PERENNIAL bunchgrass that spreads by seed and rooting at the lower nodes. It grows from Illinois southward through Louisiana and Texas and west through Kansas, Colorado and California.

56 Blue Grama

(*Bouteloua gracilis*)

Leaves folded in the bud.

Ligule a fringe of hairs.

Collar medium with long hairs at the edges.

Auricles absent.

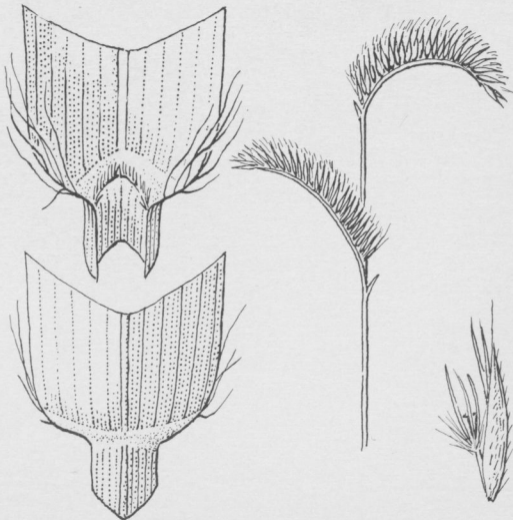
Sheaths compressed, smooth.

* Blades very narrow, flat, less than $\frac{1}{8}$ inch wide, tapering to a point.

* Seedhead with 1 to 3 curved spikes along the main stem, a bristle-like appearance.

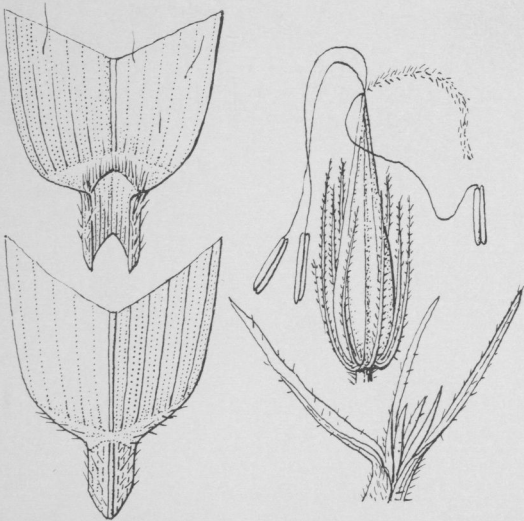
Spikelets in two rows, with short awns, a single seed.

A short, slender, densely tufted PERENNIAL that develops a thin sod. It creeps by short rhizomes and is often confused with Buffalograss. Found from Montana to Wisconsin, southwest through Nevada and California and south through Arkansas and Texas.



Kikuyugrass 57

(*Pennisetum clandestinum*)



Leaves folded in the bud.

Ligule a fringe of hairs.

Collar medium, with fine hairs.

Auricles absent.

* Sheaths strongly veined, covered with fine hairs, compressed, flat, coarse.

Blades flat or folded, sparsely hairy, tapering to a point.

* Seedhead composed of 2 to 4 spikelets enclosed in the upper sheath.

Spikelets rounded at the base and tapering upward to a sharp point, bristle-like awns from beneath.

A low growing, tough, aggressive PERENNIAL, creeping by both rhizomes and stolons. Used primarily for erosion control, but can become a troublesome weed. Found in southern California.

58 Saltgrass

(*Distichlis stricta*)

Leaves folded in the bud.

* Ligule a fringe of hairs, short in the center, very long on the edges.

* Collar broad, with very long hairs. Auricles absent.

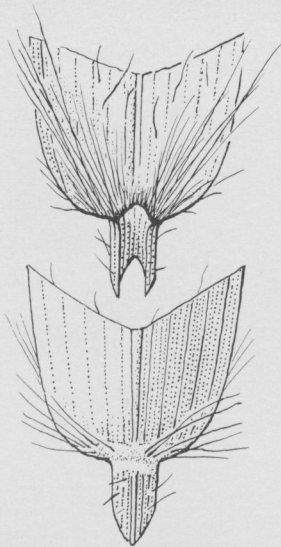
Sheaths compressed, flattened.

Blades stiff, erect, short, sharp pointed, flat or folded.

* Seedheads produced on male and female plants, resembling each other.

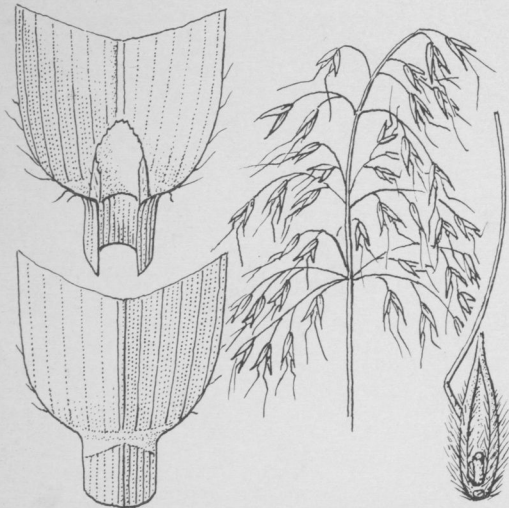
Spikelets long, narrow and sterile on male plants, short, narrow, and fertile on female, containing 7 to 9 seeds.

A low growing, wiry, tough, PERENNIAL that forms dense sod from long creeping rhizomes. Male and female plants generally grow in separate patches. Found from Minnesota through Missouri, Oklahoma, Texas, and all states westward.



Wild Oats 59

(*Avena fatua*)



Leaves rolled in the bud.

- * Ligule tall, rounded, rough along the edges, sparsely hairy on the back.
- * Collar medium, smooth, sparsely hairy at the edges.

Auricles absent.

Sheaths compressed, mostly smooth, occasionally sparsely hairy.

Blades flat, about $\frac{1}{4}$ inch wide, rough to the touch, sparsely hairy near the ligule.

Seedhead a loose, open, nodding panicle.

- * Spikelets coarse, nearly one inch long, short, stiff hairs, with 2 or 3 seeds and twisted awns.

A stout, erect ANNUAL turning brown in mid-summer and covering hills and waste places in western states. Found occasionally in the midwest and eastern states, heavy from North Dakota through New Mexico and westward.

60 Buffalograss

(*Buchloe dactyloides*)

Leaves rolled in the bud.

- * Ligule a fringe of hairs, short in the center, long at the edges.

Collar broad, hairy.

Auricles absent.

- * Sheaths short, flattened, smooth.
- * Blades less than $\frac{1}{8}$ inch wide, flat, twisted or curled, sparsely hairy.
- * Seedhead composed of male and female flowers. Male flowers in curved branches at the top of the main stem. Female flowers are hard burs just above the leaf sheaths, 1 to 4 fertile seeds.

A blue-gray PERENNIAL sod-forming grass that reproduces by seed and creeping rhizomes. It is used for pasture and erosion control and seldom grows taller than 5 inches. Found from Louisiana into Arizona and north through Montana and Minnesota.

