

CHAPTER VII

HOW TO DISTINGUISH DIFFERENT KINDS OF TURF

IT is often desirable to know definitely what grass composes a particular piece or patch of turf. This question arises frequently, and it is amazing how diverse may be the opinions of men who ought to be familiar with the commoner turf grasses and their weedy competitors.

It is not particularly easy to distinguish the different fine grasses from the turf alone. At times even the expert is puzzled, and the tyro is more often wrong than right. There are, however, differences in the turf that in nearly every case permit positive identification. These differences are pointed out in the following descriptions and are illustrated by the accompanying figures.

Two keys are also presented by means of which one should readily identify the turf of any one of the sixteen grasses described. These grasses include all the most common fine turf grasses and a few of the coarser weedy grasses often found on putting-greens.

The two keys are presented because in one the first division is based on the presence or absence of rootstocks, a character not developed in very young plants.

Inasmuch as the descriptions and keys require the use of a number of technical botanical terms, these require some explanation.

The true roots of grasses are very slender, mostly vertical, and usually but sparingly branched. Apart from the erect stems that bear the flowers, grasses may have stems that creep on the surface and usually root at the joints. These are called stolons. Many grasses also have underground branches, called rootstocks or rhizomes. These differ from roots in being stouter, usually horizontal, jointed, and bearing scales or reduced leaves at the nodes.

The grass leaf consists of two principal parts, the sheath or tube-like portion that envelops the stem, and the blade, which is nearly always narrow and usually flat. The hinge-like place where the sheath joins the blade is termed the collar. In some species, like Italian Rye-grass, the edges of the collar project on the sides into flange-like appendages. In other grasses like Sheep's Fescue and Meadow Fescue each angle at the top of the sheath extends

into a projection, called an auricle. On the inside of the junction of the sheath and blade is a delicate organ, usually a thin membrane, termed a ligule. Sometimes the ligule is a mere fringe of hairs and in a few grasses is lacking. The character of the ligule is very helpful in identifying a grass. The sheath is usually cylindrical in form, but in many grasses is flattened or compressed. Many grasses are more or less hairy, but where hairs are absent the surface is called glabrous. Before the blade expands it may be folded in the bud like the two covers of a book; or it may be convolute, that is, rolled from one edge to the other into a tube. This may be seen by pulling off the outer leaves until the young inner ones are exposed; or by cutting across with a sharp knife and examining the cross-section. As the parts to be examined are rather small, a good lens is necessary to see clearly the characters necessary for identification.

Key to Identify Grasses in Turf

- A. Plants with rootstocks.
 - B. Ligule a fringe of hairs BERMUDA-GRASS.
- BB. Ligule a small membrane.
 - C. Leaves stiff, bristle-like, sharp-pointed RED FESCUE.
 - CC. Leaves not stiff nor bristle-like.
 - D. Blades folded in the bud, the tip boat-shaped KENTUCKY BLUE-GRASS.
 - DD. Blades convolute in the bud, flat when expanded, not boat-shaped at tip.

TURF FOR GOLF COURSES

- E. Ligule long; blades rather broad REDTOP.
- EE. Ligule very short; blades narrow CREEPING BENT.
- AA. Plants without rootstocks.
- B. Collar with appendages in addition to the ligule; blades shiny beneath.
- C. Appendage a sharp projecting point from the angle of the sheath on each side MEADOW FESCUE.
- CC. Appendage a flange-like projection on each side of the collar.
- D. Blades folded in the bud . . . PERENNIAL RYE-GRASS.
- DD. Blades convolute in the bud . . ITALIAN RYE-GRASS.
- BB. Collar without appendages in addition to the ligule.
- C. Blades bristle-like, stiff.
- D. Leaves pale bluish green . . . SHEEP'S FESCUE.
- DD. Leaves bright green . . . FINE-LEAVED FESCUE.
- CC. Blades not bristle-like nor stiff.
- D. Leaves rather broad, convolute in the bud.
- E. Sheaths hairy; plants at length forming stolons . . . CRAB-GRASS.
- EE. Sheaths glabrous; plants never forming stolons . . . PIGEON-GRASS.
- DD. Leaves folded in the bud.
- E. Collar glabrous; blades narrow ANNUAL BLUE-GRASS.
- EE. Collar hairy; blades broad.
- F. Sheaths and blades hairy YELLOW OAT-GRASS.
- FF. Sheaths and blades not hairy.
- G. Plant forming stolons: ligule a fringe of hairs; tip of blade rounded CARPET-GRASS.
- GG. Plant not forming stolons: ligule a small membrane; tip of blade acute GOOSE-GRASS.

Another Key to Identify Grass in Turf

- A. Leaves convolute in the bud.
- B. Collar with appendages in addition to the ligule; blades shiny beneath.
- C. Appendage a flange-like projection on each side of the collar ITALIAN RYE-GRASS.

- CC. Appendage a sharp projecting point from the angle of the sheath on each side MEADOW FESCUE.
- BB. Collar without appendages in addition to the ligule; blades not shiny beneath.
- C. Sheaths hairy.
 - D. Ligule a fringe of short hairs BERMUDA-GRASS.
 - DD. Ligule a thin membrane CRAB-GRASS.
- CC. Sheaths not hairy.
 - D. Blades broad, hairy above; rootstocks none PIGEON-GRASS.
 - DD. Blades not broad, glabrous; rootstocks present in older plants.
 - E. Ligule long; blades $\frac{1}{4}$ inch wide REDTOP.
 - EE. Ligule short; blades $\frac{1}{2}$ inch wide CREEPING BENT.
- AA. Leaves flat or folded in the bud.
 - B. Collar with a flange-like projection on each side PERENNIAL RYE-GRASS.
 - BB. Collar without flange-like projections.
 - C. Whole plant soft hairy YELLOW OAT-GRASS.
 - CC. Whole plant glabrous or nearly so.
 - D. Collar hairy; blades broad.
 - E. Sheaths green; plant at length producing stolons; ligule a fringe of hairs CARPET-GRASS.
 - EE. Sheaths white near the ground; plants never producing stolons; ligule a thin membrane GOOSE-GRASS.
 - DD. Collar not hairy; blades narrow.
 - E. Blades stiff, bristle-like, sharp-pointed.
 - F. Plants creeping by rootstocks; leaves usually bright green RED FESCUE.
 - FF. Plants in tufts.
 - G. Leaves pale bluish green SHEEP'S FESCUE.
 - GG. Leaves bright green FINE-LEAVED FESCUE.
 - EE. Blades not stiff nor bristle-like, the tip boat-shaped.
 - F. Leaves pale green; rootstocks wanting ANNUAL BLUE-GRASS.
 - FF. Leaves dark green; rootstocks present KENTUCKY BLUE-GRASS.

Perennial or English Rye-grass (Lolium perenne). — A glabrous perennial grass without rootstocks; sheaths broad, reddish near and below the ground; blades shiny on the under side, folded in the bud; ligule short, blunt; auricle shaped like a claw.

Perennial Rye-grass is well marked by the shiny under side of the blades, the broad, reddish sheaths, and the folded bud leaves. (Fig. 12.)

Italian Rye-grass (Lolium multiflorum). — Annual

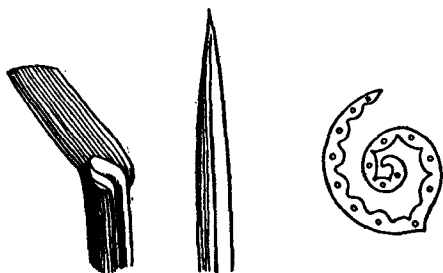


FIG. 16. — Italian Rye-grass (*Lolium multiflorum*), showing ligule, tip of leaf, and cross-section of rolled leaf-bud.

or short-lived perennial, distinguishable in the turf form from Perennial Rye-grass only by the blades being convolute in the bud. (Fig. 16.)

Kentucky Blue-grass (Poa pratensis). — Perennial, glabrous, dark green, spreading by creeping rootstocks; leaves folded in the bud, narrow, usually channeled above and boat-shaped at tip; ligule membranous, short. (Fig. 17.)

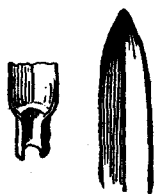


FIG. 17. — Kentucky Blue-grass (*Poa pratensis*), showing ligule and boat-shaped leaf-tip.

The dark green color and the peculiar apex of the leaf, which splits if the blade be drawn between the thumb and finger, usually identify this grass beyond question.

Annual Blue-grass (*Poa annua*). — Annual or rarely living more than one year, growing in small circular tufts, glabrous; leaves pale green, soft, often wrinkled at base; sheaths compressed; ligule membranous.

Annual Blue-grass is usually easily recognized by its pale green color; by appearing in late fall and early spring; and by blooming when only an inch or so high.

Redtop (*Agrostis alba*). — Perennial, glabrous, dark green, spreading by creeping rootstocks; leaves rolled in the bud, becoming flat, acute at tip; sheaths smooth, not compressed; ligule membranous, long. (Fig. 18.)

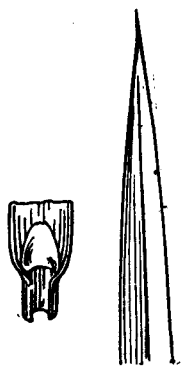


FIG. 18. — Redtop (*Agrostis alba*), showing ligule and leaf-tip.

Creeping Bent (*Agrostis stolonifera*). — Distinguishable in the turf from Redtop only by its short ligule and narrow leaves. Young Redtop is extremely like Creeping Bent, but as the plants become larger the broader leaves of Redtop become evident. (Fig. 19.)

Red Fescue (Festuca rubra). — A glabrous perennial with creeping rootstocks; leaves numerous, bristle-like, dark green; sheaths becoming brown and papery; ligule short, acute.

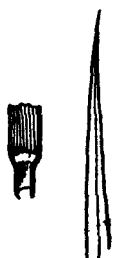


FIG. 19. — Creeping Bent (*Agrostis stolonifera*), showing ligule and leaf-tip.

Red Fescue may be distinguished at once from other bristle-leaved fescues by its creeping rootstocks.

Fine-leaved Fescue (Festuca capitata). — Perennial, glabrous, forming small dense circular tufts; blades very numerous, bristle-like, dark green. Distinguishable from Red Fescue by the absence of rootstocks, and when in bloom by lacking awns to the flowers.

Sheep's Fescue (Festuca ovina). — A perennial, glabrous grass growing in small circular tufts; leaves very numerous, bristle-like, stiff, sharp-pointed, pale bluish green; old sheaths persisting as dark fibers; ligule very short, membranous; auricles blunt. (Fig. 20.)

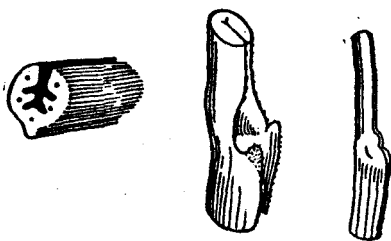


FIG. 20. — Sheep's Fescue (*Festuca ovina*), showing cross-section of leaf-blade, and blunt appendages at tip of sheath both on basal and on stem leaves.

Sheep's Fescue may be distinguished from all other common grasses by its stiff, bristly leaves and pale bluish green color.

Meadow Fescue (Festuca elatior).

— A perennial, glabrous, tufted grass; leaf-blades convolute in bud, tapering at tip, shiny beneath, rough on the margins and with the nerves prominent on the upper surface; ligule short; upper angles of the sheath each bearing a sharp appendage. (Fig. 21.)

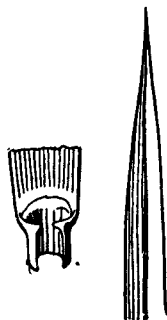


FIG. 21. — Meadow Fescue (*Festuca elatior*), showing short ligule, sharp appendages, and tip of leaf-blade.

Most likely to be confused with the rye grasses, but easily distinguishable by the sharp-pointed appendages on the sheath.

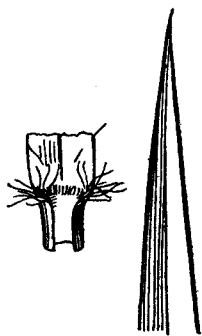


FIG. 22. — Bermuda-grass (*Cynodon dactylon*), showing the leaf-tip and the long hairs that replace the ligule.

Bermuda-grass (Cynodon dactylon).
— Perennial, with both rootstocks and stolons, dark bluish green; blades soft, flat; sheaths compressed, sparsely hairy; ligule a fringe of short hairs; rootstocks thick and white. (Fig. 22.)

The rootstocks and ligules of Bermuda-grass are characteristic.

Yellow Oat-grass (*Trisetum flavescens*). — A perennial, loosely tufted, pale green grass; sheaths and blades soft, hairy; blades folded in the bud, becoming flat, $\frac{1}{4}$ to $\frac{1}{2}$ inch wide; ligule a short obtuse membrane.

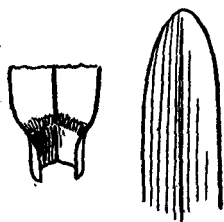


FIG. 23. — Carpet-grass (*Axonopus compressus*). Leaf-tip rounded and ligule a circlet of hairs.

Carpet-grass (*Axonopus compressus*). — A perennial grass with compressed stems creeping on the surface; leaf-blades $\frac{1}{8}$ to $\frac{1}{4}$ inch wide, 2 to 4 inches long, rounded at tip, folded in the bud, glabrous except a few long hairs near the base; sheaths much compressed; ligule a fringe of short hairs. (Fig. 23.) A common grass in the South, especially near the Gulf Coast.

Goose-grass (*Eleusine indica*). — Annual, in circular tufts; leaves sparsely hairy above, somewhat folded, about $\frac{1}{4}$ inch wide, acute at tip; sheaths strongly compressed, white near the ground, hairy along the margins; collar hairy; ligule membranous. (Fig. 24.) A common summer weed, often on putting-greens.

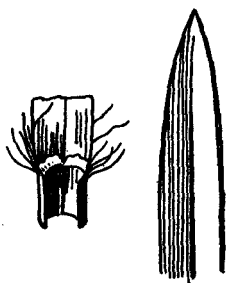


FIG. 24. — Goose-grass (*Eleusine indica*), showing ligule and leaf-tip.

Pigeon-grass (*Chætochloa lutescens*). — Annual weedy grass often found in putting-greens; leaves hairy on the upper surface, $\frac{1}{4}$ inch or more wide; ligule a fringe of short hairs. (Fig. 25.)

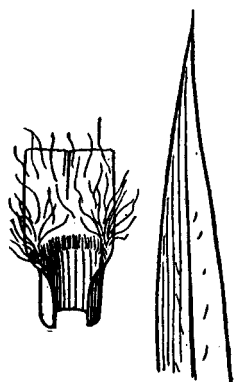


FIG. 25. — Pigeon-grass (*Chætochloa lutescens*), showing hairy blade, ligule or circlet of hairs, and broad leaf with acute tip.

Crab-grass (*Syntherisma sanguinalis*). — Annual, with at length branches creeping on the surface;

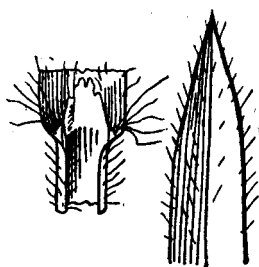


FIG. 26. — Crab-grass (*Syntherisma sanguinalis*), showing ligule, and hairy sheath and blade with acute tip.

leaves pale green, sparsely hairy, about $\frac{1}{4}$ inch wide; sheaths compressed, hairy; collar hairy; ligule membranous. (Fig. 26.)

Crab-grass may easily be distinguished from Pigeon-grass by the ligules; and from Goose-grass by the more hairy sheaths, and the convolute young leaves.