

Management
and
uses
of
**KENTUCKY
BLUEGRASS**

Poa pratensis



In the State of Washington

Kentucky bluegrass is native to Europe. It has become naturalized and is widespread throughout the United States and Canada except in arid regions and in the gulf states. It is extensively used for turf, erosion control and pasture. It is the most important lawngrass in the Pacific Northwest, the Northern and central Great Plains and the inter-mountain region.

Description - Kentucky bluegrass is a highly variable species; dark green in color, perennial, sod-forming with smooth soft, flat, or folded, shiny leaves, usually not more than $\frac{1}{2}$ inch wide and 2-10 inches long, with boat shaped tips. The flower head is pyramid shaped and open with several tiers of branches. The spikelets are three to five flowered and are located at the ends of the branches. Seeds are small, also keeled like a boat and have a cobwebby hairy base. Plant stems grow 12 inches to

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36 inches tall and are usually numerous in a tuft. Plants bloom in late May to early June and seed matures early to mid-July. There are approximately **2,150,000** seeds per pounds.

ADAPTATIONS

Climate and Rainfall - This grass is best adapted to cool climates and prefers moist growing conditions. It will grow at sea level to 10,000 feet and north to the Arctic circle. It requires about 18 inches of annual precipitation or irrigation and will stand short periods of flooding. It has become a major component of many mountain meadows. It will go dormant with a summer drought and air temperature above 80° F. Bluegrass requires season-long moisture to keep it green. It withstands sub-zero temperatures but turns dormant and brown with cold weather. Under hot and humid conditions, it is subject to leaf and stem diseases.

Soils - Kentucky bluegrass prefers productive, moist to moderately well-drained, deep to moderately deep, silt and clay loam soils near pH 7. It does not thrive on acid or saline alkali soils. It will not survive or do well on excessively wet or droughty soils.

USES

Beautification - This grass is most used in lawns, parks, and cemeteries where it provides cover and a green foreground landscaped for homes, shrubs, trees, monuments, and public buildings.

Erosion Control - This sod-forming grass is excellent for erosion control where adapted and properly managed. Rhizomes are confined to the upper several inches of surface soil, but dense roots penetrate to several feet. It is used on roadsides, waterways and for cover seedings.

Pasture - Kentucky bluegrass is relished by all classes of livestock. It is highly palatable. It is seldom seeded for hay or pastures because of its aggressive character and low yields compared to other pasture grasses. Bluegrass invades alfalfa hay fields and heavily used pastures. It persists under heavy grazing. At medium to high altitudes in Montana, some varieties are seeded for pasture. Here and in cold climates, it is productive when well fertilized. There are many shallow, rocky, non-plowable areas where once established, it competes well with weeds and cannot be economically replaced.

Recreation - It provides an excellent turf for heavily used areas such as picnic grounds, golf fairways, ball fields, and campgrounds. Scars are readily healed by replacing with pieces of turf or by rhizomes from adjacent plants.

Wildlife - Bluegrass is highly palatable to, and is used by, deer and elk. It is grazed from the time it begins growth in early spring until it dries up in the summer or fall or is covered with snow. Succulent leaves are eaten by rabbits, turkeys, geese, and ducks. Seeds are eaten by songbirds and rodents.

ESTABLISHMENT

Seeding - A weed-free, firm, well-shaped and drained smooth seedbed is required. Fertilizers and amendments should be applied as indicated by soil tests. Seeds can be drilled or broadcast. Because they are small they should be covered with not more than 1/4 to 1/2 inch of soil or mulch. Where less than 18 inches of annual rainfall occurs, sprinkler irrigation is needed to keep the soil moist until the grass is well-established.

One to three pounds of clean seed per 1,000 square feet are ordinarily used for broadcast seedings. When carefully drilled, 20 lbs/acre are sufficient. It is best to seed Kentucky bluegrass alone for turf but often a small portion of annual or perennial ryegrass is added. Some packaged turf mixtures contain a high proportion of seed other than bluegrass. Check the labels carefully for purity, germination and other grasses when buying seed. When hydroseeded, seed should be put on ahead of the mulch. Early spring is the preferred time of seeding. Second choice, where sufficient water is available is August 15th to September 15th. Use the early date at higher elevations and where the growing season is short.

Sodding - Commercial turf is available from several sources. Grass is established in special turf nurseries, sod is cut 1 to 2 inches thick, moved and laid on a smooth weed-free surface, fertilized and irrigated until well-rooted. For small areas and where immediate cover is required sodding may be more economical than seeding. Sod cutters may be rented to cut sod from old seed fields or pastures for use in waterways, roadcuts, etc. There are special standards for seed to be used in the production of commercial turf for sale in Washington.

SEED PRODUCTION

Over 90 percent of the Kentucky bluegrass in the United States is grown in the Pacific Northwest. Culture is mostly in solid stands. Breeder's and Foundation seeds are often established in rows, but these soon become solid. There is a quarantine on the transportation into eastern Washington of any seed stocks containing annual bluegrass seed. Most seed fields are established in the spring on a firm weed-free seedbed.

Some fall seedings have been planted under irrigation or on stubble-mulched land. Establishment is slow. Weeds are controlled by chemicals. No seed is harvested the first year. It takes two years to reach full production. When kept free of weeds and properly fertilized, a field may produce five or more annual seed crops. Up to 300 pounds of actual nitrogen are used depending upon the field, fertility condition, and age of the stand. Other fertilizers are used as indicated by soil tests. Principal diseases are leaf, stem, and stripe rust, powdery mildew and leaf spot. Insects are sod webworms, and stem maggots. Varieties differ with respect to their resistance to insects and diseases. Seed harvest is by direct combine or by windrowing before combining. Dessicants are rarely used ahead of direct combining. Often it is necessary to spread direct-combined seed to allow it to dry without injury. A major problem in seed production is disposal of straw and thatch that accumulate each year. No satisfactory system of mechanical removal has been devised. The current practice of burning is doomed because of air pollution. Clean seed yields vary to over 1,000 pounds per acre. Three hundred pounds per acre is a good average yield for dwarf turf varieties. Annual seed produced in the United States is 40 to 60 million pounds with a 10 to 17 million pound carry-over.

MANAGEMENT

Bluegrass can be mowed, moderately grazed or allowed to grow naturally. For erosion control maximum growth without mowing will provide maximum cover. In pastures and for wildlife, good production can be maintained if no more than 60 percent of the annual growth is removed. Where irrigated and well-fertilized, up to 90 percent can be harvested annually.

Where beauty is the primary concern as on home lawns, parks, golf courses, etc., mowers should be set to cut 3/4 to 1 inch high. Mow often enough so that not more than one-third of the total growth is removed at any one time. Fertilizer needs depend upon the locality and soil. Four to eight pounds of actual Nitrogen should be applied annually per 1,000 square feet of turf, add other nutrients as indicated by soil tests. The fertilizer should be applied in three increments; one-third each in March, June and August.

Irrigation needs will also vary by soil, season, and location. It is best to irrigate thoroughly to a depth of 12 inches when the surface-- 2 inches--becomes dry and crumbly.

There are many named or numbered varieties of Kentucky bluegrasses. The source and description of some important varieties are available. Many of these and others are grown under seed certification in the Pacific Northwest.

KENTUCKY BLUEGRASS VARIETIES ^{1/}

Arboretum

Source: Missouri Botanical Garden, St. Louis
Description: A common bluegrass from old pastures and lawns in northern Missouri.

Bargenta

Source: Barenbrug Holland N.V., Arnhem, Holland. U.S. and Canada - Steve J. R. Frohlich & Co., Princeton, N.J.
Description: Vigorous type adapted for pasture use.

Baron

Source: Barenbrug Holland and N.V., Arnhem, Holland. U.S. and Canada - Steven J. R. Frohlich & Co., Princeton, N.J.
Description: Rather broad, dark-green leaves; very persistent; and with good resistance to *Helminthosporium* leaf spot. Suitable for lawns, athletic fields, and roadsides. Drought-resistant, winter-hardy, makes dense turf, needs little mowing. Quick establishment; greens-up earlier in the spring than other varieties.

Belturf

Source: Plant Industry Station, Beltsville, Md
Description: Vigorous, semi-prostrate type; excellent rhizome development and spread. Fair seed yield at Beltsville; highly apomictic. High tolerance to leaf spot and rust. Distinguished from Merion by medium-green color and narrower leaves.

Cougar (Reg. No. 7)

Source: Plant Materials Center, (SCS, Pullman, Wash.; Washington Agricultural Experiment Station, cooperating.
Description: Dwarf, low-growing, short, dark-green leaves. Similar to Merion, but 10 to 14 days later in seed maturity. Produces very few aberrant plants. Resistant to powdery mildew.

^{1/} From AGR Handbook 170, 1972

Delta

- Source : Canada Department of Agriculture Research Station,
Ottawa, Ontario, Canada.
- Description: Vigorous, erect, fine-stemmed, relatively early, apomictic.
Adapted to cooler sections of Kentucky bluegrass region,
where leaf spot infestations, to which it is susceptible,
are less frequent, Marked resistance to mildew. Used
for pasture and turf.

Fylking

- Source : Swedish Seed Association, Svalof, Sweden.
- Description: Low-growing, semi-prostrate, dense turf; short, medium-
wide blades; good root system. Moderate to good
resistance to leaf spot, rust, *Fusarium roseum*, and
strip smut. Rate of growth during Cestablishment not
so rapid as Merion, but with more rapid initial emergence.
Tolerates close mowing.

Kenblue

- Source: Kentucky Agricultural Experiment Station, Lexington, Ky .
- Description: Consistently superior in performance to all named varieties
and to seed lots of foreign origin, in tests at Kentucky
Agricultural Experiment Station, Lexington. Superiority
attributed to resistance to diseases and tolerance to sod
webworm.

Merion (Reg. No. 1)

- Source: Plant Industry Station, Beltsville, Md., by U. S. Golf
Association Green Section, ARS cooperating.
- Description: Low-growing, short leaves, good color, High degree of
resistance to *Helminthosporium* leaf spot. More tolerant
to close mowing than common Kentucky bluegrass. Susceptible
to rust and stripe smut.

Newport (Reg. No. 2)

- Source : Plant Materials Center, SCS, Pullman, Wash. and Carnegie
Institution.
- Description: vigorous, highly-productive, coastal race of broad climatic
tolerance. Wide, dark-green leaves, low-growing, fair to
good in seed production, medium-late in seed maturity, rapid
sod-forming. Appears to be fairly resistant to rust and
Helminthosporium leaf spot.

Nugget

Source: Alaska Agricultural Experiment Station, ARS cooperating.
Description: Outstanding winter survival. Very dense, dark-green, tolerant to powdery mildew and *Helminthosporium* spp., good seeds yields. Comparatively narrow leaves, erect seedheads, good rhizome development, rapid germination and growth. Snow mold reaction comparable with other varieties. Highly apomictic.

Park (Reg. No. 4)

Source: Minnesota Agricultural Experiment Station, St. Paul, Minn.
Description: In Minnesota described as being superior to Merion in seedling and plant vigor, resistance to rust and sod formation.

Pennstar

Source: Pennsylvania Agricultural Experiment Station, University Park, Penn.
Description: Dark-green; similar to Merion in general appearance. High resistance to leaf spot, rust, and stripe smut. In extensive tests has exhibited wide area of adaptation, tolerance to close mowing, and less thatch than most aggressive types. Not high seed producer.

Prato

Source: D. J. van der Have, Kapelle-Biezeling, Netherlands.
U. S.-Northrup, King & Co.
Description: Produces dense turf because of prolific tillering and above-average number of leaves per tiller. Under turf conditions, leaves medium-narrow, with lower leaves tending to be prostrate. Slightly lighter-green than common. Individual plants very leafy, with medium-wide rather than short leaves. Moderately resistant to *Helminthosporium* spp. and some tolerance to rust. Maturity slightly later than common.

Primo

Source: Plant Breeding Institute, Weibullsholm, Landskrona, Sweden.
Canada - Ontario Seed Cleaners and Dealers, Ltd.,
Brampton, Ontario.
Description: Fairly low-growing, broad leaves; shorter flowering stems than Merion. Fall dormancy more pronounced and spring growth earlier than Merion. Anthocyanin pigment in flowers less intense than Merion. Indications of susceptibility to *Helminthosporium* leaf spot.

Sodco

Source: Indiana Agricultural Experiment Station, Lafayette, Ind.
Description: Dark-green, **slow-germinating**, slow-growing, turf type. Leaves medium to wide, height medium, thatch buildup slow. Resistant to powdery mildew and stripe smut. Tolerates medium shade and close mowing, requires ample nutrition and good care.

Troy

Source: Montana Agricultural Experiment Station, Bozeman, Mont., ARS cooperating.
Description: Vigorous pasture strain. Released for use in irrigated pastures in Montana. Tall, erect-growth habit, good recovery, open sod. Not outstanding with respect to disease resistance. Adapted to cooler parts of Kentucky bluegrass region, Early maturing; ready to graze at Bozeman 10-14 days before other strains.

Windsor

Source: Research Division, O. M. Scott & Sons Co., Marysville, Union County, Ohio.
Description: Produces very dense turf cover when maintained under mowing height ~~from~~ three-fourths to over 2 inches. Leaf texture slightly finer than Merion. Clipping measurements over 2-year period shows Windsor produces less vertical growth than ~~common~~, Delta, and Park. Moderate to high resistance to *Helminthosporium* leaf spot and **rust**. Performs well under high ~~Summer~~ temperatures and low soil-moisture levels.

VICTA (Windsor 11)

Source: Research Division, O. M. Scott & Sons Co., Marysville, Ohio.
Description: Low-growing variety. Moderate to high level of resistance to *Helminthosporium vagans*, *H. sativum*, *Puccinia*, *dpp.*, *Sclerotinia homeocarpa*, *Ustilago striiformis*, and *Fusarium roseum*. Blue-green leaf color. Seed ca. 900,000/lb.

BLUEGRASS VARIETIES CERTIFIED BY STATES IN 1973 ^{2/}

Variety Name	Type* (Where Known)	Idaho	Oregon	Washington
A-34-P ^{1/}				X
Adelphi (P-69)-P	Turf	X		X
Arista-P			X	X
Arboretum	Pasture	X	X	
Bargenta	Pasture			
Baron-P	Turf		X	X
Belturf	Turf			
Bonniblu			X	
Brunswick (P-57)			X	
C-1 (Newport)	Pasture		X	
Cougar	Turf	X	X	X
Delft-P				X
Delta	Pasture	X	X	X
Fy lking-P	Turf	X		X
Galaxy-P		X	X	X
Glade (P-29)-P	Turf			X
Kenblue	Pasture	X	X	X
Majestic (P-84)				X
Merion	Turf	X	X	X
Newport	Pasture	X	X	X
Nugget	Turf	X	X	X
Park	Pasture	X		X
Pennstar-P	Turf	X	X	X
Prato-P	Pasture		X	X
Primo	Pasture			
Sodco-P	Turf		X	X
Troy-P	Pasture			X
Victa-P	Turf		X	X
Windsor-P	Intermediate		X	X

*Turf types are low-growing dwarf varieties. Those listed under pasture are common tall-growing types.

- ^{1/} P- indicates a proprietary variety.
Miscellaneous Bluegrass varieties and their sources,
A-10, A-20, A-34, - Warrens turf Turf Nursery, Palos Park, Calif.
Adelphi, Brunswick, Glade, Majestic - New Jersey Agr. Expt. Station
FFR 9-031 - Farmer Forage Research, Lafayette, Indiana
South Dakota 4305 - Agr. Expt. Station, Brookings, South Dakota
Palouse (local common strain) - Pomeroy Seed Company
Garfield (local common strain) - Garfield Co.
Geary - Klamath Falls source of Merion
Adorno, Arista Bonkenta, Captan, Monopoly - The Netherlands
Atals, Golf, Primo, Sysport, Sobra - Sweden
Apoll 31, Dasas, Knstein, Otoft, Soma-Hunsballe, T34 - Denmark

- ^{2/} Compiled with the help of Professor A. G. Law and the Washington, Oregon, and Idaho Agricultural Experiment Stations.

Bluegrass References

Cougar Kentucky bluegrass. Ext. Circ. 352 ~~WSU~~ 1967

The Effect of post harvest draught on Kentucky bluegrass seed production
Circ, 484 Wash. Agr. Expt. Station 1968

Grass varieties in the U.S. Agr. Handbook No. 170 ~~USDA~~ - 1972

Merion bluegrass seed production Circ. 470 California Agr. Expt.
Sta. 1958

Grasses for Eastern Wash. School turf EM3539 ~~WSU~~ 1972

Home Lawns for Oregon Sta. bul. 516 Oregon Agr. Expt. Sta. 1954

Home Lawns Ext. Bul. 482 ~~WSU~~ 1970

Better Lawns Home and Garden Bull. 51 ~~USDA~~ 1964