

A basic guide for turfgrass managers



How to Select the Right Turfgrass



EACH spring marks the beginning of a battle fought from metropolis to hamlet the nation over, against weeds in turf.

In an era of outdoor living, attractive suburbs, and increasing appreciation of quality, weedy turf is not to be tolerated. Fortunately, technology is up to the challenge, thanks to a large arsenal of selective and effective herbicides, ever more convenient applicators with which to distribute them, and increasingly capable professional turf managers.

But all of this is not yet automatic, not a push-button affair in which the weeds become annihilated with the stroke of a magic wand. There is still need for human judgement, though

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most products carry clear instructions and are largely foolproof. One still needs to know what is a weed and what is not, and then recognize if possible what kind of a weed. Not all pests fall before the same pesticides—else there would not be “selectivity,” so much a miracle of modern weed control. Selectivity, of course, separates the grass sheep from the weed goats. And, it does take brainwork even for the routine (but vitally essential) exact application of pesticides, at just the right time.

So there is no substitute for understanding something about lawns as a community of living

things, as professional turfmen know so well.

Most turf managers realize they will have to identify the more onerous weeds before they can choose the proper herbicide to control them. What they don't always realize is that they should know lawngrass types equally well. This is sometimes pretty tough, even for the expert. It is complicated because inexpensive seed mixtures often contain hay-grasses little better than weeds, and more difficult to get rid of.

In the topflight Kentucky bluegrass blends for the North, there is usually included some fine fescue, in varieties such as *Chewings*, *Illahee*, *Pennlawn* and *Rainier* (selections developed in Oregon).

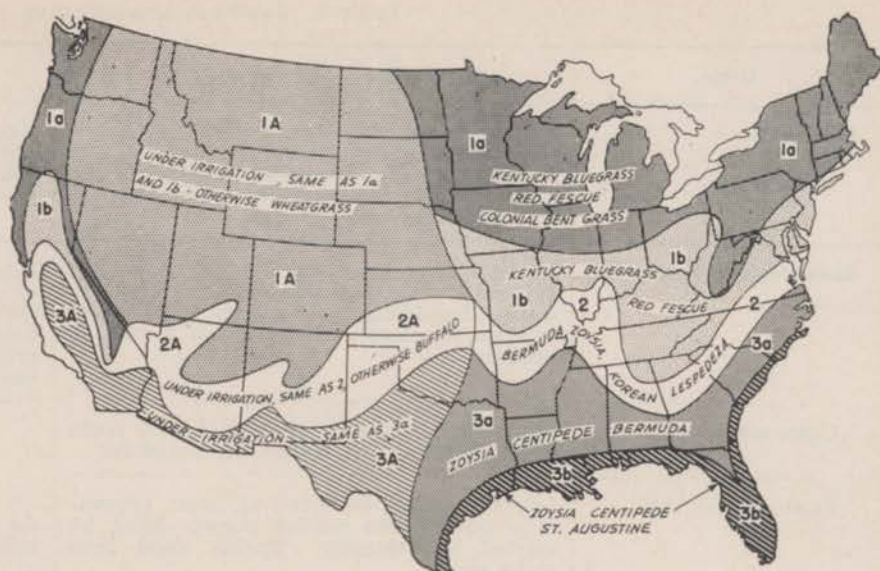
It is not surprising, then, that

individuals not thoroughly acquainted with lawngrasses don't recognize they may be introducing "weeds," when they plant seed mixtures containing a coarse haygrass fescue, tall fescue (in varieties such as Kentucky-31 or Alta). There is a world of difference between the elite fine fescues (*Festuca rubra*) and the clumpy tall fescues (*Festuca arundinacea*). The former are peers of Kentucky bluegrass, the latter a coarse bunchgrass inadmissible to the society of fine turfgrasses.

Grasses Basically Similar

Adding to the difficulty for the average fellow is the basic similarity among grasses. It is much harder to distinguish a grass weed from a lawngrass, than it is a broadleaf weed (like a dandelion) from a grass. Almost everyone recognizes dandelions, clover, plantains, ground ivy, and suchlike. But almost any rough grass has good chance of being termed "crabgrass" by the inexperienced, even the quite dissimilar tall fescue above mentioned. Certainly great disappointment is in store for the lawnsman who tries to eliminate tall fescue with a crabgrass killer! In their younger stages many annual grasses, such as foxtail, much resemble crabgrass, and even the expert is hard put to make the distinction. Nimblewill looks a lot like a patch of bent, or in border states may be confused with Bermuda. *Poa annua* is hard to tell from other bluegrasses in the spring, and the trailing *Poa trivialis* (rough bluegrass) could be confused with Kentucky bluegrass. In the South, where the wealth of weeds and grasses seems almost beyond comprehension, things can become so confusing that one dare not even generalize.

On the positive side, good lawngrass is, fortunately, easier to maintain than poor. First of all, the major lawngrasses are a pretty vigorous lot, hard to knock out, quick to recuperate. Else they wouldn't be lawn favorites. With most of the good-looking turfgrasses there is pretty good chance to find some chemical which will do the



map courtesy American Potash Institute

Figure 1. Areas where various turfgrasses are usually most effective.

Zone 1 (1a & 1b)

Natural Kentucky Bluegrass, *Poa pratensis* (including Arboretum, Delta, Newport, Park, Troy); **Red Fescues***, *Festuca rubra* (including Chewings, Creeping Red, Illahee, Pennlawn, Rainier); Clover, *Trifolium repens*.

1a only—Merion Kentucky Bluegrass; Colonial Bent Grasses, *Agrostis tenuis* (including Astoria, Highland); occasionally Creeping Bent, *A. palustris* (including seeded Seaside and Penncross, plus golf green varieties); **Rough Bluegrass**, *Poa trivialis*.

1b only—warm, difficult sites, possibly Tall Fescue; Bermudas (annually seeded, or hardy varieties such as U-3); Redtop, *Agrostis alba*.

Zone 2

Tall Fescue*, *Festuca arundinacea* (Kentucky-31, Alta); **Zoysias**°, *Z. matrella* (especially Meyer strain of "japonica" or Japanese lawngrass); **Bermuda**, *Cynodon dactylon* (seeded or vegetative); Kentucky Bluegrass**; Red Fescue**; **Korean Lespedeza**, *L. stipulacea* for temporary cover.

Zone 3 (3a & 3b)

Zoysias* ("matrella" strains; Emerald); **Centipede**, *Eremochloa ophiuroides*; Carpet, *Axonopus* sp.

3a only—Bermudas (seeded, and varieties such as Tiffine, Tiflawn, Tifgreen, Texturf); **African or Uganda**, *C. transvalensis*; **Sunturf**, *C. magenesii*.

3b only—**St. Augustine***, *Stenotaphrum secundatum* (including Bitter Blue, Floratine); Bahia, *Paspalum notatum* (including Pensacola); Bermuda strains.

Zones 1-A, 2-A, 3-A

These are arid versions of 1, 2, 3. The same species can be used where watering is possible, or in the higher mountains. Where irrigation is limited, some of the prairie grasses may have to be used, as:

1-A—Buffalo, *Buchloe dactyloides*; Sheep or Hard Fescue, *Festuca ovina*; **Wheat Grasses**, *Agropyron* (Crested—Fairway strain; also Intermediate, Slender, Western).

2-A—Buffalo; Gramas, *Bouteloua*; Love grasses, *Eragrostis*.

3-A—Buffalo; Love grasses (Boer, Lehman, Weeping); Meadow Fescue, *F. elatior*, in Southwest.

Ryegrass, perennial; and annual, Italian or domestic, *Lolium perenne* and *L. multiflorum*, are major ingredients of "cheap mixtures" in the North and temporary "wintergrass" in South; not good turf species.

Tall fescue (Kentucky-31 and Alta) is often an ingredient of "economy" mixtures, and may have some use in middle latitudes, which have hot, dry summers. Like ryegrass, it is not a really first-rate lawngrass, and should be avoided if possible.

* stand shade well

** prefer shade
most-useful species are in boldface

Table 1. Southern Lawngrasses

Grass	Thumbnail Sketch	Pests And Most Used Pesticides
Bahiagrass	Utility lawns, not demanding great care, adapted to sandy soils along coastal plain. Medium coarse, spreading fairly slowly. Low cost, started from seed. Seedheads a mowing nuisance.	Needs usual weed control, tolerant to phenoxy's but not arsonates, atrazine-simazine, and most northern weedkillers. Disease and insects not usually serious.
Bermudagrasses, all kinds	Fast growing, excellent for both lawn and specialty turf, but needs regular care (frequent fertilization, mowing, etc.). Not tolerant of shade. Can become a pest in borders.	Like bluegrass in the North, quite tolerant of most herbicides, but avoid atrazine-simazine: choose according to the weed being controlled. DSMA gets rid of dallisgrass. Although attacked, shakes off most insect and disease complications.
Common	Somewhat coarser, easily planted from seed: looks well if reasonably cared for.	
Sunturf and U-3	Improved, finer textured varieties, reasonably hardy into border states. Must be started vegetatively. Spring dead spot some areas.	As for group. Some of the selected varieties are more sensitive than common.
Tifgreen, and similar improved selections.	Elite fine-textured varieties for superior lawns and golf greens, requiring generous care. Vegetative starts only. Thatch.	
Centipede	A medium-textured, rather slowly spreading lawngrass, especially for poor soils and low maintenance. Resents alkalinity and high fertility. Start from seed (2 years) or vegetatively.	Treat considerably with phenoxy herbicides. Avoid arsonates; can stand atrazine and simazine. Some debilitating insects such as ground pearl, but generally hardy.
St. Augustine, including Bitter Blue, Floratine, etc.	Coarse, but widely used old favorite, well adapted to shade. Moderate growing, now experiencing serious difficulties with chinch bug and disease. Must be vegetatively started.	Injured by arsonate and often by phenoxy herbicides, but tolerant of atrazine and simazine. Needs constant insecticide treatment against chinch bug (Trithion, Diazinon, Ethion, etc.) and often fungicide (PCNB, Thiram, etc.).
Zoysia, all kinds	Among best of southern turfs once established, but slow to grow. Tolerates shade, quite winter-hardy. Adapted to almost any soil and maintenance with only moderate care.	Not injured by usual lawn herbicides; tolerates preemergence use of simazine-atrazine. Weeds a serious problem with new plantings because of slow growth. Like Bermudas, attacked by but usually not seriously injured from disease and insects (except billbug in Florida).
"Japonica"	Coarser form, can be started from seed.	
"Matrella"	Finer textured, more attractive forms for deep South, started vegetatively.	As for group.
Meyer	Medium coarse variety, quite hardy in North (but poor winter color in South). Vegetative starts only.	

weeds in, without harming the lawngrass (at least more than temporarily). That's why we can take a wide range of broadleaf weeds (Dicots) out of grass these days, with the miraculously effective phenoxy (2,4-D) group of chemicals. That is why we can even separate grass from grass, as when we prevent crabgrass in bluegrass lawns by using preemergence chemicals (Dacthal, Zyrton, Betasan, arsenicals, Trifluralin, etc.). Or it can be knocked out, after it gets started, with the arsonates (DMA,

AMA). Yes, ruggedness and beauty go together splendidly in most of the widely used lawngrasses.

Occasionally, because of wide dissimilarity in grass type, and marked differences in climate where grown, a herbicide that is very effective in one location may not "cut the mustard" in another. Some of the better northern herbicides, such as 2,4-D and the arsonates, injure subtropical turfs such as St. Augustine. On the other hand, St. Augustine in its turn is remarkably resistant

to certain chemicals such as simazine and atrazine, which almost sterilize a Corn Belt soil for many grasses. It will be necessary to await subsequent opportunity to take a closer look at individual grasses, their strengths and weaknesses, as far as herbicide resistance is concerned. This article looks over the nation as a whole, pointing out which grasses grow where, and the main features which must be considered in their use, and in the prevention of weeds.

Probably the easiest way to

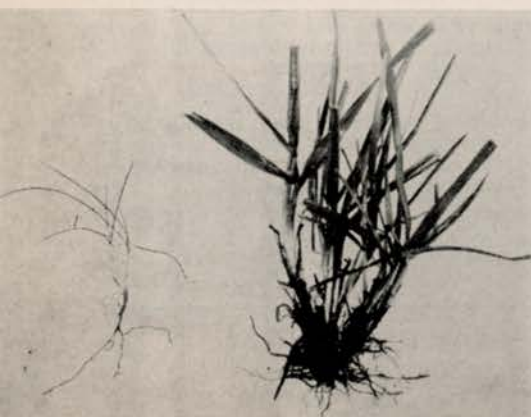
Table 2. Northern Lawngrasses

Grass	Thumbnail Sketch	Pests And Most Used Pesticides
Bentgrass, all kinds	Outstandingly attractive for close-mowed turf, but requires care (attentive mowing, ample fertilization, usually irrigation and fungicidal protection). Will thatch. Most at home in moist, coolish locations.	Various summer diseases, winter snow mold are main affliction; use broad spectrum fungicides. Typical insect and weed troubles, controllable with insecticides, phenoxy and other northern-type herbicides (use care).
Highland	Lawns and fairways, usually mowed ½-1 inch. Represents the less demanding non-creeping varieties which also include Astoria and other Colonial types. More erect, less temperamental; high-quality seed from Oregon. Highland is from a section where summers are hot and dry; should be adequately adapted to most of East.	Usually less demanding than creepers, and often less afflicted with disease. Will tolerate most herbicides, including Banvel for clover, though temporarily scorched by Zytron (sprays) and Silvex.
Pennecross	Mostly golf greens. Exquisite creeping bent, available as seed, representative of all creepers including vegetative selections. Prolific growth gives dense patches that don't mix well in other turf. Thatch is often serious. Extra and constant care needed, usually very close mowing.	Fungicides at recommended rates are safe. Be very careful or don't use phenoxy herbicides at all. Seem able to take pre-emergence treatment as with familiar crabgrass preventers.
Redtop	A coarse species used as nursegrass, seldom permanent, not a component of better seed mixtures.	Impermanent cover, not worth treating.
Bluegrasses, all kinds	Outstanding general-purpose turfgrasses, attractive, spreading, recuperative. Survive best under high mowing, and do not need elaborate care. All varieties from seed.	Weed invasion perhaps the most frequent trouble, but major weeds are easily controlled with phenoxy, preemergents and arsenicals. Sometimes sod webworm or grubs.
Kentucky, natural	A rugged performer, widely adapted, workhorse of lawn seed mixtures.	Not a prima donna; holds up well under all familiar treatments, including Zytron and Banvel sprays. Attacked by leaf spot disease (<i>Helminthosporium</i>), but seldom succumbs if mowed tall and not overfertilized.
Merion	An elite variety for lower growing turf. Heavy feeder and may thatch. Perhaps better adapted to northern than southern reaches of bluegrass belt.	As with other bluegrasses, except not tolerant of phenyl mercuries (PMAS) formerly much used against crabgrass. Leaf spot disease resistant.
Park	A sturdy variety, fast sprouting with seedling vigor. A combination of natural bluegrass selections.	As with natural Kentucky bluegrass.
Rough bluegrass (<i>Poa trivialis</i>)	For damp shade. A rather delicate species without wear-resistance, similar to bentgrasses.	Limited weed invasion. Treat more carefully than Kentucky bluegrass, about as considerably as bentgrass.
Fescues	Extremely rugged and drought-resistant.	About as with Kentucky bluegrass.
Fine fescues (Chewings, Creeping red, Illahee, Penn-lawn, Rainier, etc.)	Fine lawngrass, good companion for Kentucky bluegrass. Well adapted to shade, dry soil and minimum fertility.	Experiencing similar pests as for Kentucky bluegrass and similarly treated. Not quite so tolerant of some pesticides as is bluegrass (viz. Zytron).
Tall and meadow fescues (Alta and Kentucky-31 varieties).	A pasture species, tough and coarse, often planted on roadsides and sometimes play areas.	Few pests, and in any event seldom worth worrying about.
Ryegrass	Mainly pasture cover, but because of low cost often main component of "cheap" seed mixtures.	Wide range of diseases and weeds, but unlike with superior, perennial grasses hardly worth expense of treatment.
Annual or Italian	May be legitimately used in small quantities as nursegrass, or as temporary cover. Quick to establish, but turns coarse.	Damping off of seedlings may sometimes be serious, but preventive measures doubtfully worth cost with this impermanent grass. Weeds come as ryegrass dies.
Perennial	Finer textured, more attractive than annual, but does not make first-rate sod. Fairly long-lasting under proper conditions.	As for group.

accomplish this is through a chart. A reference chart appears on pages 18-19. Lest the weed problems seem to overshadow the positive qualities, keep in mind that any good turfgrass licks most of its own weeds. But you must give it the chance to "be there fustest with the most-est." For example, crabgrass has little chance, if through autumn and spring a tight bluegrass sod is built through correct fertilization, high mowing, and the bolstering of thin sod with good seed. Few weeds can crowd out zoysia, if this elite turfgrass has been helped through its early years by weed control, watering, and fertilization. First attention should be directed to fulfilling the lawngrass' needs. Herbicide application is a mopping-up action, to take care of what the grass has not been able to cope with. If weed problems are great and persistent, take a second look at your turf maintenance program; herbicides can't make up for faulty procedures!



Above is the vaunted Kentucky bluegrass plant as it would appear if let go to seed. Pencil points to an underground spreading stem (rhizome), responsible for knitting the tight sod so characteristic of this grass. Below are two fescues. The tall fescue to the right is unsuited as a lawn grass, while the fine-textured member of the red fescue group on the left is the peer of Kentucky bluegrass.



Speakers at this year's New England Herbicide Workshop included (left to right), front row: Roland E. Roberts, Univ. of Maine; Jay S. Koths, Univ. of Conn.; and Robert J. Schramm, Jr., Boyce Thompson Institute. In second row are Arthur Bing, Cornell Ornamental Research Lab; John Havis, Univ. of Mass.; and John Ahrens, Conn. Agr. Exp. Sta.

Present and Future Uses of Herbicides Studied at Annual New England Workshop

Current and coming uses of herbicides in ornamentals and other crops received penetrating analysis during the annual New England Herbicide Workshop at the Waltham Field Station in Waltham, Mass., Feb. 4.

More than 100 herbicide-oriented researchers, developers, applicators, and users were present this year.

Uses of herbicides in herbaceous perennial and annual ornamentals were outlined by Dr. Arthur Bing from the Cornell Ornamentals Laboratory in Farmingdale, L.I., N.Y.

"Where practical," Dr. Bing said, "we recommend preplanting treatment with a soil sterilant such as steam, methyl bromide, Vapam, or Vorlex, especially for seeds or closely set small plants."

Preplant treatments with EPTC, Trifluralin, and some experimental materials, have been successful with such ornamentals as dahlia, marigold, and petunia. EPTC incorporated at 10-15 lbs. active ingredient per acre shows great promise for the control of quackgrass and Artemesia, Dr. Bing reported.

Use of herbicides in commercial nursery plantings were detailed by Dr. John Havis from the University of Massachusetts in Amherst. He has found that the one material most useful in commercial nursery stock is simazine.

Dr. Havis said that 1½-2 lbs.

active ingredient per acre of simazine will give adequate control for many weeks in nurseries.

Fall applications of simazine have proven to be more beneficial than spring in that a lower rate of application has given adequate control of weeds during the spring season, the Massachusetts researcher elaborated.

One of the coming uses of herbicides listed by Dr. John Ahrens from the Windsor Field Station of the Connecticut Agricultural Experiment Station dealt with an application under a mulch. Simazine applied under a mulch of salt hay or plastic film has increased the growth of young apple trees as much as 75%, Dr. Ahrens indicated. Of interest to *Weeds and Turf* readers is the fact that this technique might have wide application in the establishment of ground covers on slopes such as highway embankments.

Dr. Ahrens commented on the situation where one resistant weed species tends to become a problem with the use of a single herbicide. Combinations of 1 to 2 lbs. simazine plus 3 lbs. diphenamid or 6-8 lbs. Dacthal or 3-4 lbs. EPTC, have shown some promise and may replace straight simazine applications in the future.

Research has shown that activated charcoal, when applied to the soil, will inactivate simazine, thereby making it safe to plant

(Continued on page 31)