

Turfgrass Seed and Seed Mixtures

One of the most important steps in turfgrass establishment is the selection of high quality seed or a seed mixture that is adapted to the site conditions and intended use of the site. Poor quality seed may be low in viability and contain weed seeds and undesirable grass species. Use of poor quality seed may result in unsatisfactory turf establishment, and thus, wasted time, effort, and money. Also, if the species in the seed mixture are not adapted to the conditions at the site, the resulting stand may become thin and subject to soil erosion and weed encroachment.

Included in this publication are descriptions of the components of the turf seed label and suggestions for turf seed and seed mixtures for a variety of site conditions and uses in Pennsylvania. Information concerning specific varieties can be obtained from your county office of Penn State Cooperative Extension.

THE SEED LABEL

When purchasing turfgrass seed it is important to read the label to determine the kind, amount, and quality of seed in the container. All seed sold in Pennsylvania and other states is required by law to bear a tag or label indicating basic information about the quality of the seed. The basic information that should appear on the label is as follows:

1. Name and address of labeler.
2. Lot number.
3. Kind and variety of turfgrass seed listed in order of predominance.
4. Percentage by weight of pure seed of each species and variety (percentage purity).
5. Germination percentage (percentage viable seed).
6. Percentage by weight of other-crop seed.
7. Percentage by weight of weed seed.
8. Percentage undesirable grass seed.
9. Percentage by weight of inert matter.
10. Date on which the germination test was conducted.

The name and address of the labeler represents the party responsible for the contents of the container. The lot number is listed so that the contents of the container can be traced back to the original source of production.

Each label lists the species (kind) or species and varieties of turfgrasses in the seed container. By law, the label must

state the commonly accepted name of the turfgrass species or species and variety, listed in order of predominance when present in excess of 5.0 percent by weight of the contents of the container. In addition to listing the individual turfgrasses, the label must also provide the percentage by weight of pure seed of each species.

The percentage germination that is listed on the label for each turfgrass indicates the viability of the seed. Germination percentages are based on seed that germinated in a test sample. According to Pennsylvania law, germination tests must have been within the nine-month period prior to sale of the seed.

The percentage of other-crop seed in the container must be listed on the label. Other-crop seed includes all agricultural seed present in amounts of less than 5.0 percent by weight each. Since some crop seed is not compatible with the desirable turfgrasses in the mixture, it is usually best to purchase seed that is low in other-crop seed.

The percentage of weed seeds should not exceed 1.0 percent by weight in the container. Good quality grass seed usually contains no more than 0.5 percent weed seeds.

The label lists the percentage of undesirable grass seed in the container. By law, turfgrass seed cannot have more than 0.5 percent undesirable grass seed in the container. However, high quality turfgrass seed contains no undesirable grass species.

Seeds of, or seed mixtures containing, timothy, meadow fescue, orchardgrass, tall oatgrass, annual ryegrass, or clover are generally not suggested for turfgrass use. Annual ryegrass should be used for temporary turf stands only. Bentgrass may be used for specialized turfgrass areas (golf courses, bowling greens, croquet courts, tennis courts, etc.), but is not suggested for other turfgrass uses.

The percentage of inert material, such as chaff or foreign material, must be listed on the label and should not exceed 15.0 percent by weight except when fertilizer coating or pelleting is used to enhance establishment.

SUGGESTED SEED AND SEED MIXTURES

Listed below are some suggested turfgrass seed and seed mixtures for different site conditions and uses in Pennsylvania. Unless otherwise indicated, all suggestions are designed to produce a permanent turf. Procedures used to establish turfgrasses are outlined in Penn State Cooperation Extension Circular 163 "Turfgrass Establishment."

All seeding rates in this publication are in pounds per 1,000 square feet. If converting to an acre basis, multiply by 43. Three to five varieties of Kentucky bluegrass are suggested in a blend or mixture. The resulting increase in diversity will often provide greater overall resistance to turfgrass diseases and other environmental stresses.

In some cases, suggestions call for turf-type tall fescues or ryegrasses. This designation is required to distinguish the finer-textured, persistent grasses designed for high-quality turf use from the coarser-textured, pasture-type grasses such as 'Kentucky-31' tall fescue or nonpersistent grasses such as 'Linn' perennial ryegrass.

Fine fescues include creeping red, Chewings, and hard fescue. Sheep fescue is also a fine fescue, but is generally used for low maintenance situations and not in highly maintained turfs.

SITE CONDITIONS AND TURF USES

Seed mixtures for general conditions (home lawns, parks, cemeteries, institutional grounds, and commercial properties)

■ OPEN, SUNNY LOCATIONS AND WELL-DRAINED SOILS

Southeastern Pennsylvania (south and east of South mountains)

Kentucky bluegrass	100%	at 2-3 lb per 1,000 sq ft
Kentucky bluegrass	80-90%	} at 3-4 lb per 1,000 sq ft
Perennial ryegrass	10-20%	
Kentucky bluegrass	40-60%	} at 3-4 lb per 1,000 sq ft
Fine fescues	30-40%	
Perennial ryegrass	10-20%	} at 6-8 lb per 1,000 sq ft
Turf-type tall fescue	100%	
Turf-type perennial ryegrass	100%	at 4-5 lb per 1,000 sq ft

Other areas of Pennsylvania—all seed mixtures and rates listed above or

Fine fescues	100%	at 4-5 lb per 1,000 sq ft
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■ MODERATE-TO-PARTIAL SHADE

Fine fescues	40-50%	} at 4 lb per 1,000 sq ft
Kentucky bluegrass	40-50%	
Perennial ryegrass	10-20%	} at 4-5 lb per 1,000 sq ft
Fine fescues	100%	
Turf-type tall fescue	100%	at 6-8 lb per 1,000 sq ft

■ HEAVY SHADE, WELL-DRAINED SOILS

Fine fescues	100%	at 4-5 lb per 1,000 sq ft
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■ HEAVY SHADE, POORLY-DRAINED SOILS

Rough bluegrass (<i>Poa trivialis</i>)	100%	at 2-3 lb per 1,000 sq ft
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Turf seed mixtures for heavy-use areas (parks, playgrounds, athletic fields for football, soccer, lacrosse, field hockey, baseball, softball)

Kentucky bluegrass	100%	at 2-3 lb per 1,000 sq ft
Turf-type perennial ryegrass	100%	at 4-5 lb per 1,000 sq ft
Kentucky bluegrass	80-90%	} at 3-4 lb per 1,000 sq ft
Perennial ryegrass	10-20%	
Turf-type tall fescue	100%	at 6-8 lb per 1,000 sq ft

Note: Tall fescue requires time to establish strong root systems. It may not withstand heavy use on athletic fields, unless practice and play are withheld for two growing seasons following seeding.

Seed and seed mixtures for low maintenance turf areas (service areas, utility areas, highway rest areas, parks)

Turf-type tall fescue	100%	at 6-8 lb per 1,000 sq ft
Use if appearance is important.		
Nonturf-type tall fescue	100%	at 8-10 lb per 1,000 sq ft
Use if coarse, light green, and high-cut turf is not objectionable.		
Fine fescues	100%	at 4-5 lb per 1,000 sq ft

Seed for golf courses

■ GREENS

Creeping bentgrass	100%	at 1 lb per 1,000 sq ft
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■ TEES AND FAIRWAYS

Creeping bentgrass	100%	at 1 lb per 1,000 sq ft
Perennial ryegrass	100%	at 4-5 lb per 1,000 sq ft

Seed for renovation of recreational turf (athletic fields, playgrounds, lawns, parks, and golf course fairways, tees, and roughs)

Turf-type perennial ryegrass	100%	at 2-5 lb per 1,000 sq ft
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Seed mixtures for temporary purposes (areas needing temporary cover for quick erosion and dust control)

Annual or Italian ryegrass	100%	at 4-5 lb per 1,000 sq ft
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PURE LIVE SEED

Occasionally, turfgrass seed is sold that is low in purity and germination. To compensate for the reduced quality, the seeding rate should be increased. The amount of seed required to compensate for poor purity and germination can be determined by calculating percentage pure live seed (PLS). To calculate PLS, the percentage of pure seed is multiplied by the percentage of germination, and the product is divided by 100. For example, 85 percent pure seed x 72 percent germination / 100 = 61 percent PLS. To determine how much seed to plant, divide the percentage PLS into 100. Thus, in this example, 100/61 = 1.6. Hence, 1.6 pounds of seed with a purity of 85 percent and a germination of 72 percent would need to be planted for each pound specified in the desired seed mixture.

Seed that is low in purity and germination is often sold at a reduced price. One way of determining if the reduced price is really a bargain is to divide the PLS into 100 and then multiply by the cost of the seed. A comparison of two seed lots is provided as an example.

Seedlot A

(sold at 'reduced' price of \$0.95 per lb)

$$\text{PLS} = (85) \times (60) / 100 = 51\%$$

$$100 / 51 = 2 \text{ lb of seed needed per lb of seed specified}$$

$$\text{Cost} = \$0.95 \times 2 = \$1.90$$

Seedlot B

(sold at regular price of \$1.65 per lb)

$$\text{PLS} = (99) \times (90) / 100 = 89\%$$

$$100 / 89 = 1.1 \text{ lb of seed needed per lb of seed specified}$$

$$\text{Cost} = \$1.65 \times 1.1 = \$1.82$$

A comparison of actual cost per pound of pure, viable seed reveals that the seed that appeared to be a bargain was actually more expensive.

Revised by Peter Landschoot, associate professor of turfgrass science, from Special Circular 168 *Turfgrass Seed Mixtures*, by John C. Harper II, professor emeritus of agronomy.

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