

SPECIES SELECTION, EVALUATION AND CURRENT
IMPROVEMENT IN FESTUCA

Kenyon T. Payne, Joseph M. Vargas Jr.
and James B. Beard

The fescues, or species in the genus Festuca, are felt by some to be the "turfgrasses of the future". Within this genus may be found most of the important characteristics desired in an excellent turf. As pressures develop to conserve energy, water, and fertilizer materials, we find the fescues standing ready with a relatively low water requirement, tolerance to shaded conditions, a considerably lower nutrient (particularly nitrogen) requirement than the improved Kentucky bluegrass cultivars, and an appearance which is very acceptable. In addition, some species possess high levels of wear tolerance.

Two principal factors cause this genus to be far less popular than Poa, the present "queen of the cool season turfgrasses". The first is that while these desirable characteristics may be found in individual plants, sufficient plant breeding efforts have not yet been generated to bring these characteristics together to produce a truly outstanding fescue cultivar. The second, and more important factor, is that no cultivar has yet been forthcoming that possesses a satisfactory level of resistance to Helminthosporium, a fungal pathogen which causes leaf spot and melting-out. This single limitation, above all others, greatly reduces the desirability of the fine fescues as sole species in areas such as home lawns, since such monostands are unattractive during periods of disease, and are difficult to maintain in a weed free condition because of thinning out and reduced competitive ability.

An additional desirable characteristic in the fescues is that of a spreading or creeping habit. This is not yet consistently present in available cultivars. Strong rhizome development, such as that found in improved Kentucky bluegrass cultivars, would increase survival from stress, and would reduce the period necessary to develop satisfactory turf. This would increase sod production efficiency in this species, and would improve the development of turfgrass cover in the home lawn.

Four generations of heavy selection pressure for resistance to leaf spot at MSU have resulted in a small number of surviving lines. These contain both spreading and creeping types as well as non-creeping plants. Thus far no single plant has been isolated which produces a high level of resistant offspring. It thus appears that resistance to leafspot is inherited as a complex character rather than as one controlled by a small number of factors or genes. Hopefully, this will ultimately be an advantage in that once resistance is achieved, it will be more durable than if inherited simply.

The plants thus far selected for leafspot resistance include the wide leaf spreading type, the narrow leaf creeping type, both wide and narrow leaf non-creeping types, as well as hard fescue types.

A meadow fescue (Festuca elatior) synthetic has been developed and is being widely tested. This had excellent winter survival ability in Michigan, relatively narrow leaf width, and is comparable with Merion Kentucky bluegrass in appearance

and in its ability to survive the strong competition of Merion when seeded in a mixture. Preliminary results indicate that this synthetic may be useful in athletic fields, roadsides, golf course roughs and other areas where moderate levels of turfgrass quality are desirable. Wear tolerance levels have not as yet been established.

Variety tests conducted from 1969 through 1972 at MSU have resulted in general appearance ratings listed below for the species indicated and are an average of the number of individual observations of each cultivar as indicated. A rating of 1.0 is best and 9.0 poorest. The leading available cultivars only are presented here.

Kentucky bluegrass (75 observations)

Nugget	2.0
Adelphi	2.1
Sodco	2.2
A-20	2.2
Galaxy	2.2
Baron	2.3
Bonnieblue	2.4
A-34	2.5
Merion	2.5
Pennstar	3.2
Fylking	3.4

Red Fescue (70 observations)

C-26 (Hard)	2.3
Dawson	2.3
Golfroad	2.5
Highlight	2.6
Jamestown	2.8
Wintergreen	2.8
Pennlawn	3.9
Ruby	4.2

Bentgrass (51 observations)

	<u>1/4" cut</u>	<u>1/2" cut</u>
Emerald	2.2	2.2
Penncross	2.3	2.5
Seaside	3.1	2.9
Exeter	3.8	3.7
Astoria	4.0	3.9
Holfior	4.0	3.4
Boral	4.2	3.9
Highland	4.3	4.2
Pennpar	2.3	2.1
Cohansey	2.3	2.8
Toronto	2.4	2.2

Perennial Ryegrass (54 observations)

Manhattan	2.2
Norlea	3.4