

## INTEGRATING NEW CULTIVARS INTO RENOVATING ATHLETIC FIELDS AND PARKS

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There are many athletic fields and parks in the U.S. that are in need of renovation to improve their playability and safety. In some cases the introduction of new turfgrass cultivars will not have a major effect because they will not survive until problems such as inadequate drainage, poor soils or poor management are corrected. In many cases the problems are being caused by the use of unadapted varieties and the invasion of undesirable grasses and weeds. In these situations the introduction of new traffic tolerant turfgrasses can greatly improve the playability of athletic fields and parks.

Prior to the 1970's the improved turf-type Kentucky bluegrasses were the main species used for the renovation of athletic fields and parks in the northern part of the U.S. During the 1970's the new turf-type perennial ryegrasses became available and were successfully used to renovate turf areas. In the last 3-4 years a new generation of tall fescues have been released that show great promise for athletic fields. Fine fescues, such as Chewings, creeping and hard fescues, can be used in areas of parks not subject to more than a moderate amount of traffic.

### KENTUCKY BLUEGRASSES

There are many improved varieties of Kentucky bluegrasses presently available. Most of the new, low growing, dense varieties will perform well on athletic fields. There are some diseases which can be damaging to bluegrasses at times, and the resistance levels in the presently available varieties do vary greatly. Leaf spot is a disease that increases in severity on all varieties under severe traffic.

Leaf spot, caused by Helminthosporium spp. can severely damage common type varieties (characterized by narrow leaves and erect growth habit) such as Park, Kenblue, and Delta when they are cut short and fertilized heavily. A-34, Adelphi, America, Bonnieblue, Bristol, Challenger, Columbia, Eclipse, Majestic, Midnight, Parade, Sydsport and Touchdown are examples of turf-type varieties with improved leaf spot resistance. The turf-type varieties Baron, Cheri, Glade, Merit, Ram I, Victa and Wabash would be considered as being moderately resistant. All of the above mentioned turf-type varieties have improved resistance to strip smut (Ustilago striiformis) compared to Merion, which is very susceptible.

In areas with southern exposure and intense heat buildup Fusarium blight can be a devastating disease with very slow recovery. The varieties Adelphi, Columbia, Parade and Sydsport have shown better resistance to this disease. Stem rust (Puccinia graminis) can reduce turf quality during hot, dry periods

which slows down the growth of bluegrass. The varieties Adelphi, Eclipse, America, Columbia, Parade and Bristol have improved resistance, while Touchdown and Merion are quite susceptible.

The varieties Midnight, Adelphi, Bristol, Glade and Ram I have a dark green color. Bonnieblue, Challenger, Parade, Columbia and Majestic retain better winter color and green up early in the spring compared to varieties such as Baron, Nugget, and Victa.

When compared with other turfgrass species a strong case can still be made to include a good proportion of Kentucky bluegrass in turfgrass mixtures to improve cold hardiness, sod forming ability and recuperative potential to repair injuries to turf by their spreading rhizomes. A-34, Touchdown and Sydsport are varieties of bluegrass which are vigorous turf formers and good candidates to be used in athletic field mixtures with ryegrass.

#### PERENNIAL RYEGRASSES

None of the other turfgrass species can germinate and tiller as rapidly as the new ryegrasses. In the renovation of turf areas the new ryegrasses have the best chance of getting established of any of the turfgrass species. Since Manhattan perennial ryegrass was released in 1967 as the first real improved turf-type perennial ryegrass, there have been many other improved turf-types released. These varieties, such as Birdie, Blazer, Citation, Dasher, Derby, Diplomat, Fiesta, Omega, Pennfine, Pennant, Regal and Yorktown II have displayed the excellent establishment rate and persistence of Manhattan.

At the present time, there is another generation of turf-type varieties on the market that are showing improvements in density, mowing quality, and overall disease resistance. Manhattan II, Palmer, Prelude, Citation II, Allstar, Birdie II, Repell and Omega II can be included in this category. These varieties have also shown improved leaf spot and crown rust resistance compared to the earlier varieties. The above varieties with a II designation also have had excellent resistance to stem rust, which is a serious disease in turf under low fertility and in seed production fields.

All of the new improved turf-type varieties have shown excellent wear tolerance in our trials located in Hubbard when compared to other species. There is still a need to continue to improve the Fusarium nivale and red thread levels in perennial ryegrass varieties. The new ryegrasses also have the ability to survive in highly compacted soils better than other turfgrass species.

#### TALL FESCUES

In the last four years the release of Rebel, Falcon and Olympic has resulted in tremendous interest in new turf-type tall fescues. These new lower-growing, dense and finer textured grasses are showing real improvements in disease resistance and turf performance compared to the old, common type

varieties Kentucky 31, Alta and Fawn. Some other new tall fescue varieties available are Adventure, Apache, Finelawn I, Hounddog, Jaguar, Mustang, Bonanza and Arid.

The outstanding characteristic of the new tall fescues is their deep root system that results in their ability to stay green two to three weeks longer than the other cool season turfgrass species under drought conditions. Some of the new varieties such as Adventure, Jaguar, Apache and Olympic have shown improved shade tolerance. Under moderate shade conditions, the leaf texture of these new tall fescues becomes finer and yet they maintain good density. The tall fescues have also shown better tolerance to many common insect problems than most other turfgrass species.

In our wear trials and in trials conducted in Bingley, England last year, new lower growing, denser tall fescues showed superior wear tolerance when compared to Alta, Fawn and Kentucky 31. They were not as wear tolerant as the best perennial ryegrasses in our trials, but they were better than most of the Kentucky bluegrasses and all of the fine fescues.

#### FINE FESCUES

All of the present fine fescues will not perform well under severe athletic wear. They do have the ability to maintain a dense turf under low fertility better than Kentucky bluegrasses, perennial ryegrasses and tall fescues. There are certain park situations where areas are not trafficked heavily and shade is a problem where fine fescues will perform well. The hard fescue varieties, such as Aurora, Waldina, Scaldis, C-26 and Reliant, have shown somewhat better traffic tolerance and overall disease resistance than other fine fescues in our trials. The Chewings fescues, such as Jamestown, Banner and Shadow were somewhat less traffic tolerant, but superior to the creeping fescue varieties.

#### MAJOR RENOVATION

If an area is severely contaminated by undesirable species of grasses such as bentgrass, Poa annua or other coarse perennial grasses it will require the use of a non-selective herbicide such as Roundup to kill these grasses prior to reseeding. This will greatly improve the chances for successful establishment of the desired turfgrasses. If severe thatch is present in an old turf area, it should be removed prior to reseeding with a dethatcher. After the thatch has been removed a dethatcher or vertical type mower can be used in two different directions after seeding to improve soil-seed contact. Another approach is to use a slit seeder that places the seed in contact with the soil in one operation. The disadvantage to this system is that the placement of seed in rows takes longer to fill in the turf area.

## MINOR RENOVATION - AN ANNUAL EVENT

If a turf area only has thin areas from traffic or disease damage and little or no weedy grass contamination, the overseeding of an area followed by incorporation with a dethatcher or a slit seeder treatment should be sufficient. In most athletic situations this should be done on an annual basis to maintain a good stand of desirable turfgrasses. This is especially true for non-rhizomatous species like perennial ryegrass or tall fescue. Species such as Poa annua have successfully invaded turfgrass areas by its ability to form viable seeds throughout the growing season. A turfgrass manager must continually add seed of improved turfgrasses to compete with contaminating species.

## ATHLETIC FIELD MIXTURES

The combination of 60-70% turf-type Kentucky bluegrass and 30-40% turf-type perennial ryegrass is an excellent athletic field mixture. The presence of bluegrass should improve sod strength and injury repair and the ryegrass will contribute excellent wear tolerance, compaction tolerance and leaf recuperative potential.

If a field will not be budgeted to provide the irrigation and fertility needed to maintain a healthy bluegrass and ryegrass mixture, the new longer growing tall fescues are a good alternative. The only species that mixes with tall fescues is 5% Kentucky bluegrass by weight. The varieties of bluegrass chosen for this purpose should be varieties with intermediate vigor such as Adelphi, Columbia, Parade, or Majestic.

## PROPER MANAGEMENT

All of the improved turfgrass species require good management to perform well. The perennial ryegrasses require somewhat more nitrogen fertilizer to maintain attractive growth followed by Kentucky bluegrasses, tall fescues and fine fescues. The amount of fertilization and irrigation must be determined by an analysis of the athletic demands on each turf area. The pesticides required for serious weed, insect and disease problems must be a part of an annual budget for athletic field maintenance.

## SUMMARY

There are now many new cultivars of improved turfgrasses available for the renovation of athletic fields and parks. The major advances have been in the areas of improved traffic tolerance, disease resistance, rapid establishment, and drought tolerance. All of these new grasses still demand proper management to be used successfully.