



# Standard Guide for Maintaining Warm Season Turfgrasses on Athletic Fields<sup>1</sup>

This standard is issued under the fixed designation F2269; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This guide covers the minimum requirements for maintaining warm-season turfgrasses used for natural surface athletic fields. Practices covered include mowing, fertilization, irrigation, core cultivation, winter overseeding, pest management, and requirements for management of dormant turf winter overseeded with cool-season turf (see also Guide F2060).

1.2 The decisions involved in maintaining a quality natural playing surface should consider soil types, local climate and other factors. Therefore, it is recommended that you contact your local cooperative extension service for more specific information on soils, and grass species and cultivars adapted to your area.

1.3 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

F2060 ~~Guide for Maintaining Cool Season Turfgrasses on Athletic Fields~~ Guide for Maintaining Cool Season Turfgrasses on Athletic Fields

F2651 Terminology Relating to Soil and Turfgrass Characteristics of Natural Playing Surfaces

## 3. Terminology

~~3.1 Definitions of Terms Specific to This Standard:~~

~~3.1.1 athletic field—a field constructed and utilized for conduct of various organized sporting events.~~

~~3.1.2 overseeding—the practice of seeding a turfgrass into a turf area that has an established turfgrass.~~

~~3.1.3 thatch—an accumulation of undecomposed organic matter that can form at the soil surface in a turf.~~

~~3.1.3.1 Discussion—Excessive thatch is not normally a problem found on heavily used athletic fields that are properly maintained. If excessive thatch does occur, it may be removed or controlled by the practice of vermicutting.~~

~~3.1.4 warm-season turfgrasses—grass species widely adapted to warm temperate climates. Some species persist and are used in cool humid to cool sub-humid climates; referred to as a transition zone. Warm-season species commonly used for natural playing surfaces include hybrid bermudagrass, common bermudagrass, seashore paspalum, zoysiagrass, and kikuyagrass, and these turfs may be overseeded with a cool-season turf such as annual or perennial ryegrass in the winter months. Note that the use of kikuyagrass as a turf on athletic fields is not generally recommended. Kikuyagrass is included in this standard because despite its shortcomings as an athletic turfgrass, many athletic field managers are managing kikuyagrass athletic fields as it is an invasive, volunteer species. In some countries kikuyagrass is considered a noxious weed and its intentional use or planting may be banned.~~

~~3.1 Definitions:~~

~~3.1.1 Except as noted, soil-related and turfgrass-related definitions are in accordance with Terminology F2651.~~

## 4. Significance and Use

4.1 A dense, uniform stand of turfgrass on a playing surface improves the playing quality and safety of the field by providing firm footing for the athletes and by cushioning their impact from falls, tackles or slides. These standards are the minimum inputs

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F08 on Sports Equipment and Facilities and is the direct responsibility of Subcommittee F08.64 on Natural Playing Surfaces.

Current edition approved June 10, 2003. Published June 2003. DOI: 10.1520/F2269-03.

Current edition approved June 1, 2011. Published July 2011. Originally approved in 2003. Last previous edition approved in 2003 as F2269 – 03. DOI: 10.1520/F2269-11.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

required to provide such a surface. Various published guides have been used in the development of this standard (1-8).<sup>3</sup>

4.2 Field conditions may directly influence the frequency and type of athletic injuries occurring as a result of using the fields. While these standards do not guarantee that such injuries will be prevented, a well maintained turf on a natural playing surface should minimize field-related injuries.

## 5. Apparatus

5.1 *General*—Experience and good judgment are important to match the proper type of equipment to the nature of the task to be performed.

5.1.1 *Mowing Equipment*—Mower types include reel, rotary, and flail; although the latter type is not recommended for fine playing surfaces. A reel mower should be used for playing surfaces requiring mowing at less than 2.5 cm (1.0 in.). Mower blades should always be kept sharp and properly adjusted in accordance to manufacturer’s recommendations. Mowing equipment should be operated in a speed range (ground and engine speed) consistent with the manufacturer’s recommendation.

5.1.2 *Spreaders*—Spreaders are necessary if dry fertilizer or pest control materials are to be applied. Spreader types may include drop, rotary (centrifugal, spinner), or oscillating. Spreaders should be calibrated to deliver the desired, labeled, or recommended rate of fertilizer or pest control product being applied.

5.1.3 *Sprayers*—Sprayers are necessary if liquid fertilizers or pest control materials are to be applied. Low pressure systems are recommended. Sprayers should be calibrated to deliver the desired, labeled, or recommended rate of fertilizer or pest control product being applied.

5.1.4 *Core Cultivators*—Core cultivation (aerification, coring) equipment relieves soil surface compaction. Core cultivators should be of the type that physically removes soil, such as a hollow tine or spoon. Cultivators with 1.3 to 1.9 cm (½ to ¾ in.) tines on spacing not more than 15 cm (6 in.) should be used on all playing surfaces. Spikers, slicers, or similar types of equipment are not as effective for relieving surface compaction. In addition to soil compaction found immediately at surface, the mechanical aeration practices may be performed such that the aeration tines penetrate to a depth sufficient to disrupt compacted layers. The effectiveness of such practices will depend upon equipment capabilities and adjustment.

5.1.5 *Seeders*—Broadcast or slit seeders should be used for any overseeding or renovation operations. Slit seeders cut a groove into the soil and deposit the seed in the groove at a predetermined depth. To achieve the same results, broadcast seeders will require a higher rate of seed application due to less effective seed-to-soil contact. Additionally, a broadcast seeded field will generally require more irrigation to effectively germinate seed compared to slit seeded fields. Seeding of bare soils can be accomplished by broadcast seeders, drop seeders, or slit seeders but each method will require a mulch for effective germination. Hydroseeding methods can be used effectively to apply seed and mulch in a hydrosurry to a bare soil surface but is not effective as a winter overseeding practice on existing turf.

5.1.6 *Irrigation System or Equipment*—Ideally some source of water should be available for irrigation. Systems can range from portable or permanently installed types.

5.1.7 *Soil Sampling Tube*—Used to sample soils for testing purposes.

## 6. Mowing

6.1 *Mowing (General)*—The periodic removal of excess shoot growth is necessary on natural surface playing fields.

6.2 *Mowing Height*—The mowing height of a natural surface athletic field will vary with the sport, turfgrass species, and time of the year. Adjust mowing heights accordingly, using the chart below:

Sports Field Use	Grass Species	Mowing Height
Baseball/Cricket Infields, Field Hockey Fields	hybrid bermudagrass, zoysiagrass, or seashore paspalum	6.4 to 19 mm (0.25 to 0.75 in.)
Baseball/Cricket/Softball Outfields; Soccer, Football, Lacrosse, Polo, and Rugby Fields; Intramural and Multiple-use Fields	hybrid bermudagrass, zoysiagrass, or seashore paspalum;  common bermudagrass, kikuyagrass;  bahia grass	19 to 38 mm (0.75 to 1.5 in.)  38 to 64 mm (1.5 to 2.5 in.)  64 to 102 mm (2.5 to 4 in.)

NOTE 1—Adjustments in mowing height should be made to accommodate the sport using the field. Mowing heights should be increased by 25 % when the fields are not being used, or when the mowing height does not influence the game. A modest increase in mowing height adds photosynthetic leaf area to the turf canopy and may increase turf health and assist recovery rates of worn fields.

6.3 *Mowing Frequency*—Fields should be mowed as often as necessary. No more than 1/3 of the leaf surface should be cut off at any one mowing. Under normal growing conditions, this usually means every 5 to 7 days for fields maintained at 3.8 cm (1.5 in.) or higher, and two or three times a week for baseball infields and other closely mowed fields.

<sup>3</sup> The boldface numbers in parentheses refer to the list of references at the end of this standard.