How Fair Are Your Fairways?

A report card for evaluating fairway quality.

by PATRICK J. GROSS

Management practices, such as spot aerification using solid tines, can reduce traffic and wear problems, and improve the overall quality of fairways.

"MIRROR, mirror on the wall, who has the fairest fairways of them all?" Good question! As the popularity of golf has grown, so has the concept that a properly aimed and executed golf shot should be rewarded by fine, closely cropped turfgrass conditions. A ball coming to rest in a divot or on a thin patch of grass is considered by many to be an unfair lie. As a result of this attitude, we see golfers bumping the ball in the fairway and playing preferred lies or "Winter Rules" any time of the year. Is this fair or foul?

Technically, the term "fairway" does not exist in the Rules of Golf. All areas between the teeing ground and the green, except for hazards, are deemed "through the green." Instead of *through the green*, our fairways are becoming more like *greens* with intense maintenance practices such as sand topdressing, frequent cultivation, the use of lightweight mowing equipment, clipping removal, and intensified pest control programs. Advances in technology and ever-increasing maintenance budgets have made these programs possible in response to higher expectations from golfers for fairway quality.

Maintaining good fairway quality is more of a challenge than many people might think. Fairways generally encompass 25 to 50 acres with many diverse conditions, including variations in soil type, topography, and microclimates. Maintenance of such a large area requires a significant expenditure for equipment, labor, and materials. With so many variables, how does a superintendent address the various problems while attempting to provide a consistent, uniform, and playable surface? The most important first step is to evaluate the current conditions.

Report Card Rating System

An objective evaluation of fairway quality can be made by using a report card rating system, a concept that was first suggested by James F. Moore for evaluating putting greens (*Green Sec-*

tion Record, March/April 1998). The report card rating system assigns a letter grade to each of several factors affecting fairway quality. A grade of "A" is given for superior performance in a given category, with grades of "B," "C," or "D" for declining performance. A grade of "F" indicates failure.

A rating team comprised of the superintendent, golf professional, and members of the Green Committee should be established to develop the report card and assign grades. The first step is to examine each fairway and assign a grade for the *Historical Performance* of the fairway based on the general playing conditions during the past five years. This grade should be determined prior to evaluating any specific rating factors. Think of the grade for historical performance like a student's GPA, or an overall average of fairway quality. The second step is to assign a letter grade to each of the categories that contribute to fairway quality. It may be helpful to break the fairway into sections, with special emphasis placed on the landing zones. The third step is to address the deficiencies outlined in the report card. The purpose of this exercise is to objectively evaluate each factor in order to pinpoint areas where improvements can be made to improve the historical performance. For example, the historical performance of a fairway may receive a grade of "C" with a grade of "F" for drainage. By installing more drainage on this fairway, the grade for historical performance may rise to a "B" or "A."

Factors Affecting Fairway Quality

There are several factors that directly influence fairway quality: 1) turf density, 2) firmness, 3) resiliency, 4) turf selection, 5) mowing and grooming practices, 6) drainage, 7) irrigation management, and 8) pest control. The quality of a fairway does not depend on a single factor, but is most likely a combination of many influences. The following criteria can be used for determining a grade for each factor. The specific categories listed in the report card may not apply to your conditions and can be adjusted or changed as needed to adapt to local needs.

Turf Density

A tight, dense turf is very desirable on fairways. High shoot density is needed to hold the golf ball on top of the turf canopy so that the club can cleanly contact the ball and impart backspin. A ball that is nestled within the turf is difficult to control since turfgrass leaves are trapped between the club face and ball during the stroke, creating a *flier lie*.

Turf density is affected by several factors, including cutting height, mowing frequency, concentrated traffic, pest infestations, fertility, and cultivation. Basic agronomic programs can be implemented to improve turf density, including irrigation, cultivation, interseeding, fertilization, traffic control, and pest management. The following guidelines are offered for evaluating fairway turf density:

• A — Tight, dense turf, allowing the golf ball to rest on top of the turf;

Fairways are becoming more like greens with intense maintenance practices such as sand topdressing, frequent cultivation, the use of lightweight mowers, and intensified pest control practices.

no thin spots or areas of concentrated wear.

• B — Moderately dense turf, allowing most of the ball to rest on top of the turf; a few minor thin spots in areas of concentrated traffic.

• C — Marginal turf density. The golf ball is partially nestled into the turf; weak turf growth and excessive wear in several areas.

• D — Fairways with weak turf growth and several bare areas, especially in the landing zone.

• F — Fairways with poor turf growth and expansive bare areas during most times of the year.

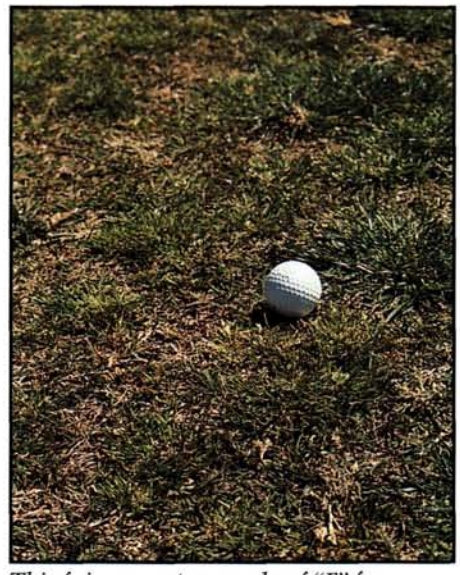
Firmness

Good fairway firmness is desirable for a proper stance and to provide an acceptable amount of bounce and roll once the ball lands on the fairway. The factors that most affect fairway firmness include thatch, drainage, and irrigation. Approximately ½" of thatch is desirable on fairways for good resiliency and wear tolerance. Excessive thatch contributes to a number of problems, including wet, soft surface conditions, pest problems, damage by mowing equipment, and plugged lies. Good drainage and proper irrigation are other important factors contributing to good surface firmness and allowing an acceptable amount of bounce and roll once the golf ball lands on the fairway. Unfortunately, fairway firmness is often sacrificed to satisfy golfer demands for lush green conditions. It is ironic that many of the same golfers who insist on lush green conditions also complain about the lack of bounce and roll on the fairways. In such cases, it is important for the governing course officials to set an objective standard for the superintendent to follow based on the design of the course and the prevailing conditions. Until an accurate method or device can be developed to determine fairway firmness, it is suggested to measure the bounce and roll on a reasonably flat fairway when a ball is struck by a driver from the tee.

• A — Firm conditions throughout the fairway. A well-struck tee shot will bounce and roll approximately 20 to 25 yards.

• B — Firm surface conditions in the landing zone and most other areas. A well-struck tee shot will bounce and roll approximately 15 to 20 yards.

• C — Slightly soft and spongy surface conditions. Ball travels only 10 to 15 yards after landing.



This fairway gets a grade of "F" for patchy, inconsistent turf that often dies each year. Introducing improved turf varieties along with good cultural management practices might raise the overall grade to a "B" or even an "A."

• D — Less than 10 yards bounce and roll with soft, wet surface conditions. Mud often clings to the golf ball.

• F — Splat! Plugged lies are a common occurrence.

Resiliency

Resiliency is the ability of a fairway to tolerate and recuperate from traffic and wear. Resiliency is influenced by several factors, including soil conditions, turf selection, thatch levels, intensity of traffic, and fertility. Many courses today are built on sites with very poor soil conditions. In such cases, it is extremely important to implement preventive measures to avoid excessive wear in fairways, such as frequent core aeration, the installation of cart paths, and the establishment of a cart use policy. Generally, as the amount of play increases beyond 35,000 rounds per year, so does the need for an expanded cart path system. But golf carts are not the only culprits — heavy traffic from maintenance equipment can be just as much to blame for accelerated wear. The following grading scale is offered for evaluating fairway resiliency:

• A — No visible wear on any portion of the fairway. Excellent cart path design. Preventive program in place for aerification and traffic control.

• B — Minor wear areas in high-traffic zones. Good cart path design. Aerification is performed at regular intervals. Some measures are taken to control traffic.

• C — Moderate wear areas throughout the fairway. Aerification performed infrequently. Limited cart path system with few measures taken to control traffic.

• D — Heavy wear in landing zones and other areas of the fairway. Minimal aerification is performed. Cart paths are too narrow or nonexistent, with no measures taken to control traffic.

• F — Significant bare areas throughout the fairway. The aerifier has never left the maintenance shop. Cart paths — what cart paths?

Turf Selection

Proper turf selection can mean the difference between excellent fairways and years of misery and high maintenance costs. Breeding and research have provided improved turf varieties with the benefits of lower water use, better natural pest resistance, and reduced maintenance requirements. Courses are strongly urged to evaluate and use these new grasses where applicable. Improved cultivars can be introduced through interseeding or in conjunction with a fairway renovation program. It is most important to choose the grass or combination of grasses that best suit your climate and growing conditions. A monostand of turf is not necessarily the ideal. Avoid making decisions only on the basis of color. If you have any questions regarding turf selection for your particular area, contact your regional Green Section agronomist for assistance. The following guidelines are offered for evaluating turf selection on fairways:

• A — Proper turf selection in all areas of the fairway based on the prevailing climate that provides uniform playing conditions.

• B — Proper turf selection and uniformity in most areas. Active efforts to interseed or introduce improved turfgrass varieties.

• C — A fairly uniform mixture of grasses that perform reasonably well. Limited interseeding is done to introduce new varieties.

• D — A variety or mixture of grasses that is not adapted to the prevailing climate and growing conditions. Extraordinary maintenance required to keep the grass alive.

• F — Turf surprise! A patchy, inconsistent turf that often dies each year.

Mowing and Grooming Practices

A clean, well-defined fairway with an attractive mowing pattern is what many golfers equate with good fairway

Table 1
Recommended Fairway Cutting Heights for Various Turfgrass Species

Turfgrass Species	*Inches (fraction)*	*Inches (decimal)*	*Centimeters*
Annual bluegrass	3/8 - 9/16	0.37 - 0.56	0.95 - 1.42
Bentgrass	3/8 - 9/16	0.37 - 0.56	0.95 - 1.42
Common bermudagrass	7/16 - 3/4	0.43 - 0.75	1.11 - 1.90
Hybrid bermudagrass	7/16 - 5/8	0.43 - 0.62	1.11 - 1.58
Perennial ryegrass	7/16 - 3/4	0.43 - 0.75	1.11 - 1.90
Kentucky bluegrass	5/8 - 1	0.62 - 1.00	1.58 - 2.54
Kikuyugrass	1/2 - 3/4	0.50 - 0.75	1.27 - 1.90
Seashore paspallum	1/2 - 3/4	0.50 - 0.75	1.27 - 1.90
Zoysiagrass	1/2 - 3/4	0.50 - 0.75	1.27 - 1.90

quality. Specific factors relating to mowing and grooming practices include cutting height, mowing frequency, clippings and debris, and fairway contours. The use of lightweight mowing equipment and sharp, accurately adjusted cutting units has a major impact on the overall quality of fairways. The playing characteristics of the course also are greatly influenced by the cutting height of the turf. An excessively low cut on fairways can make the surface too fast, allowing balls to roll through the fairway into the rough or hazards. Also, a low cutting height is more difficult for the high-handicap golfer who prefers more turf under the ball to make a sweeping stroke. An excessively high cut is equally undesirable, restricting the amount of bounce and roll and contributing to "flier lies." If the golfers at your course are complaining that the greens don't hold a shot, the problem may not be the greens but rather an excessively high cut on the fairways. Another important factor is mowing frequency. In general, lower cutting heights require an increased mowing frequency to prevent excessive clippings and reduce the potential for mower scalping. Table 1 lists the range of recommended cutting heights for most fairway turf species. Fairway width and contours are other important factors, but these are architectural issues that should be discussed with a golf course architect along with the superintendent, golf professional, and the Green Committee. Arbitrary changes to fairway width or contours should be avoided since this may ruin the strategy and design of the golf hole and unfairly penalize the high-handicap golfer. The following grading scale is offered to evaluate the quality of fairway mowing and grooming operations:

- A — Fairways mowed five times per week or more with lightweight mowers at the appropriate cutting height for the turf species. All areas are free of clippings and debris.
- B — Fairways mowed three to four times per week with lightweight mowers at the appropriate cutting height for the turf species. Most areas free of clippings and debris.
- C — Fairways mowed two to three times per week at the upper end of the recommended range of cutting heights. Grass clippings and debris sometimes found on the surface.
- D — Fairways mowed one to two times per week. Excessive growth between mowing treatments. Grass clippings and debris often observed on the fairways.
- F — Fairways mowed infrequently. Turf often allowed to grow beyond 3/4". Excessive clippings, turf scalping, and debris often observed on the fairways.

Drainage

The need for drainage has almost become a cliché in the golf course maintenance industry, but it is amazing how often this factor is overlooked or ignored. There are actually two important aspects of drainage — surface drainage and subsurface drainage. A good drainage system is especially important in high-rainfall areas to remove excess water and allow play to resume within a reasonable amount of time after a heavy rainstorm. The main factors affecting drainage include topography, soil type, compaction, and the amount of thatch. The following grading scale is offered to evaluate the quality of fairway drainage:

- A — Good surface and subsurface drainage on all areas of the fairway. Preventive measures in place to maintain good drainage, including routine aerification, clearing of subsurface drain lines, and trimming grass around all drain inlets.
- B — Good surface and subsurface drainage in most areas. Reasonable efforts for aerification, and the installation and maintenance of the subsurface drainage system.
- C — Adequate drainage with problems in isolated areas. Occasional efforts to improve the drainage system.
- D — Drainage problems in many areas of the fairway. Action taken to improve drainage only in emergency situations.
- F — Drainage problems throughout the entire fairway. The lack of drainage is a main limiting factor in fairway quality.

Irrigation Management

Most superintendents recognize the importance of proper water application to sustain turfgrass health and the increasing need to conserve water resources. A dependable, well-designed irrigation system is a key element for conserving water resources, maintaining healthy turf, and providing good playing quality on a consistent basis. A good irrigation system allows the superintendent to precisely control when and where irrigation applications are needed. For optimum playing quality, it is preferred to maintain dry, firm conditions. The recommended standard for irrigating fairways is to place primary importance on turfgrass health, followed by surface firmness and turf color. In short — keep it healthy all of the time, keep it firm most of the time, and keep it green as best you can. The following guideline is offered to evaluate fairway irrigation practices:

- A — Turf is irrigated to maintain healthy, firm conditions and generally green color with an absence of wet areas.
- B — Most areas are healthy and firm, with minor wet and dry spots on portions of the fairway.
- C — Turf slightly overwatered, with a moderate number of wet and dry areas. Lack of control between sunny and shaded areas.
- D — Most of the fairway is overwatered.
- F — All areas are overwatered on a consistent basis, or courses with no fairway irrigation.

Pest Control

Infestations of weeds, insects, and diseases are bound to occur on fairways

from time to time. Damage can be quite severe in areas of the country with prolonged periods of hot, humid weather. Basic agronomic requirements, including sunlight, irrigation, fertility, thatch levels, and cutting height can influence the degree of pest infestation. Today, courses are encouraged to implement an integrated pest management program that emphasizes early detection and cultural control programs. Minor infestations of weeds, disease, or insects can and should be tolerated by most golf courses in an effort to reduce overall pesticide use. The following guidelines are offered to evaluate fairway pest control practices:

- A — Fairways with minimal pest problems in all areas. Preventive cultural measures taken to improve the growing environment and avoid pest problems.
- B — Pest infestations approaching predetermined thresholds in landing zones, with slightly higher populations in other areas. Corrective measures taken to control pests and improve the growing environment.
- C — Pest populations slightly above predetermined thresholds, which negatively affects fairway playing quality. Limited spot treatments made to eliminate pests.
- D — Pest problems beyond recommended limits on most of the fairway. No IPM program and inconsistent efforts to control pests.
- F — Fairway dominated by pest problems, resulting in widespread turf loss and unacceptable playing quality.

Implementing Changes

Once the rating team completes the report card, a plan can be developed to address specific deficiencies. In most cases, fairway quality can be improved by addressing basic agronomic requirements, including:

- Aerification
- Irrigation
- Sunlight
- Drainage
- Fertility
- Pest Control
- Interseeding

Sometimes, fairway improvement may require large capital expenditures for items such as a master drainage system, new mowers, or additional cart paths. Not every course has the resources to implement the necessary changes, but the report card rating system is a valuable tool to pinpoint what is needed and begin planning for future improvement.

Conclusion

Perfect fairway conditions will be difficult to maintain for any length of time, given the occurrence of divots, moles, pest problems, and the unpredictability of Mother Nature. After all, shot-making skills and overcoming obstacles are integral to the game of golf. Yet, we can always strive for improvement in playing conditions. The report card for fairways is an excellent exercise for the superintendent and members of the Green Committee to objectively evaluate fairway conditions and chart a course for needed improvement. As programs are implemented, golfers will no doubt notice the change from *fair* fairways to truly outstanding fairways.

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Report Card for Fairways

Rating Team: Date Completed:

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Historical Performance																		
Turf Density																		
Firmness																		
Resiliency																		
Turf Selection																		
Mowing & Grooming																		
Drainage																		
Irrigation																		
Pest Control																		