

The Putting Green Performance Pyramid

A framework for putting green performance.

BY CHRIS HARTWIGER

Inevitably, the comparison of putting green conditions between rival clubs is a topic of conversation on many USGA Turfgrass Advisory Service visits. Clearly explaining why the putting greens perform, or don't perform, at a golf course is not an easy conversation between an agronomist and a course official. The course official is searching for the one thing that makes a difference, while the agronomist must respectfully explain that there are many factors that contribute to the performance of a putting green.

Over the past year, the Southeast Region has started using a new method to help explain putting green performance that seems to resonate with both course officials and superintendents. We call it the Putting Green Performance Pyramid, shown graphically in Figure 1. Take a moment to study it and then return to reading the article.

THE COMPONENTS — THE BASE

A pyramid is strong because it has a wide base. The higher a pyramid extends, the wider the base must be. For putting greens, the base is composed of numerous factors, including (in no particular order):

- Sunlight and air movement
- Water quality
- Soil nutrient status
- Disease control
- Soil-borne pests
- Irrigation (watering practices and system issues)
- Organic matter
- Core aeration with topdressing to fill holes
- Sand topdressing (quantity, quality, and frequency)
- Mowing practices
- Winter management strategies (bermudagrass putting greens)
- Summer survival strategies (bentgrass)

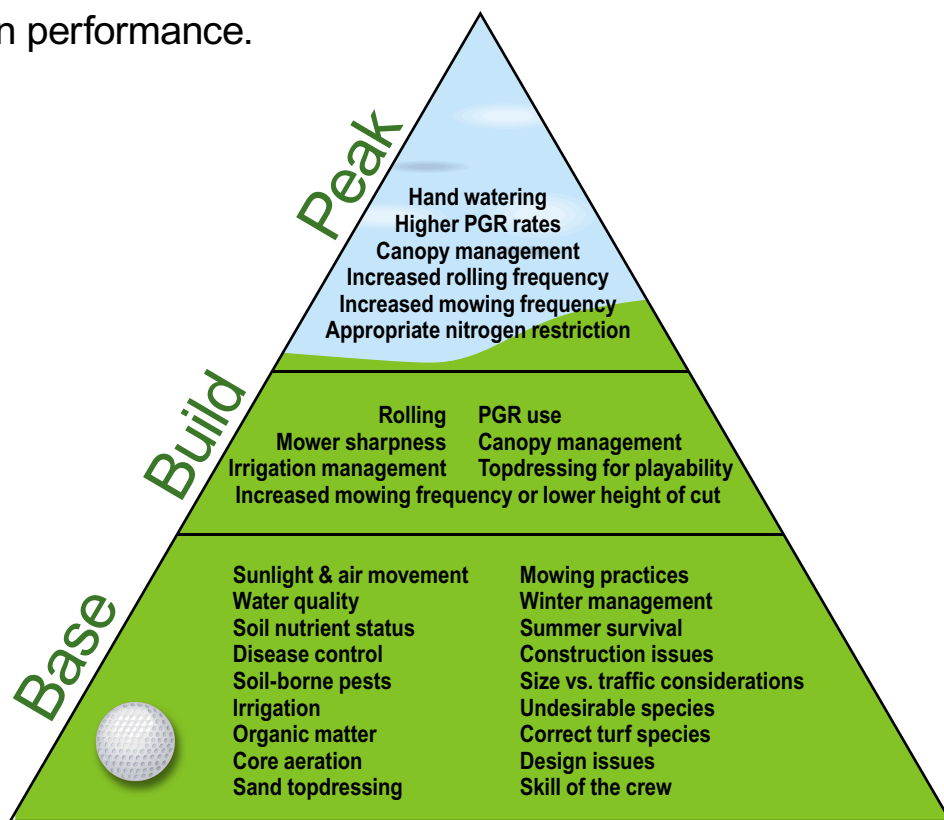


Figure 1: The Putting Green Performance Pyramid

- Construction issues (rootzone quality, drainage issues, etc.)
- Size vs. traffic considerations
- Presence of undesirable species (*Poa annua*)
- Correct turf species per expectations
- Design issues (limited cupping area)
- Skill of the crew

When evaluating the performance of a set of putting greens, it is necessary to consider each of these factors. For putting greens to succeed year in and year out, all these considerations should be solid. If one or more are lacking, there are issues in the foundation of the pyramid that might limit the level to which the putting greens can be managed. Identifying these weak "bricks" in the base is an opportunity for the course to strengthen them.

BUILD PERIOD

The term *build period* is used as it represents a focus on surface management practices designed to get the putting greens ready for a playing

season. Once again, the broader the base, the higher the build period can be. In practical terms, this means that the putting greens can be elevated to a higher standard for a longer time because the core agronomic practices have produced a healthy base of turf. Practices in the build period include:

- Rolling
- Plant growth regulator (PGR) use
- Mower sharpness (ability to maintain maximum mower sharpness)
- Canopy management (light vertical mowing, brushing, etc.)
- Irrigation management (emphasis on playability)
- Topdressing for playability improvements
- Increased mowing frequency or lower height of cut

PEAK PERIOD

This period refers to the highest point of the pyramid. Sometimes it is desirable or necessary to peak the putting greens for short durations for key



Above left: The mowing program, including frequency, mower setup, and mower sharpness, has a role in all three levels of the Putting Green Performance Pyramid. Above right: Finishing touches, such as rolling to improve smoothness and green speed, are representative of the pinnacle of the Pyramid.



Sometimes golfers are puzzled why their putting greens never reach a high peak during the year or why the peak period is short. Reviewing basic factors such as sunlight levels will help them to understand why the peak will never be high.

events on the calendar. The peak period might last 7 to 14 days and is a condition not considered to be either economically or environmentally sustainable. Many golfers at home do not realize that the putting greens they see on TV each week are in a peak period, while the putting greens at their home course may be in the build or even base period. When they see putting greens at their peak week in and week out, they may come to think that's how all putting greens should play. Not true! Practices in the peak period include:

- Hand watering to maximize playability and consistency
- Higher PGR rates
- Canopy management (more frequent)
- Increased rolling frequency
- Increased mowing frequency
- Appropriate nitrogen restriction

CONCLUSION

It is our intention that this article sparks conversation in your maintenance facility and clubhouse. We hope this framework may help you explain why your putting greens perform the way they do. The practices listed under base, build and peak periods are not intended to be all-inclusive. If we have left anything out, feel free to email us and we will improve the pyramid. We would love to hear from you.

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