
GREENS TURF-ROLLING RESEARCH-II

The potential benefits of rolling greens reentered the cultural picture due to (a) the substantial use of high-sand root zones in putting greens thereby greatly reducing the potential for soil compaction problems from turf rolling and (b) the preference of golfers for fast ball roll speeds which have been achieved principally through very close mowing heights that also results in further shortening of the root system, reduced turfgrass health and canopy density, and a resultant increase in moss and algae problems. This situation leads to the question of whether the increased ball roll distance achieved by turf rolling can substitute for the ball roll distance accomplished by extremely close mowing heights. The result would provide the opportunity to raise the cutting height, thereby achieving better overall turf health, rooting, and canopy density, plus an associated reduction in moss and algae.

Thus, investigations were conducted over the past two years in conjunction with two cooperators: (1) Jeff Holmes and Doug Kendziorski conducted studies with a single weighted, powered mechanical walking turf roller at the Grand Traverse Resort in Traverse City, Michigan, and (2) Steve Hammon and Mike Morris conducted studies with a 3-gang, powered mechanical turf roller at Crystal Down Country Club in Frankfort, Michigan. At both experimental sites the greens were constructed of well drained high-sand root zones and were composed of mature creeping bentgrass (*Agrostis stolonifera* var. *stolonifera*) turf with minimal thatch. Most of the studies were conducted in each of two years in multiple locations, with a randomized block design of three replications used. The ball roll distance as measured by the stimpmeter technique prior to initiation of the individual turf rolling studies ranged from 9.5 to 10.5 feet (2.9 to 3.2 meters).

The findings from these studies can be summarized as follows:

- A single mowing in early morning consistently increased distance of ball roll by 10% at the morning reading.
- One, two, three, or four consecutive turf rollings each morning increased the distance of ball roll from 10 to 20%.
- Differential effects of rolling 2 to 4 times dissipated after 1.2 to 3.3 days. However, plots receiving the multiple rollings still sustained an 8 to 10% greater distance of ball roll when compared to adjacent non-rolled areas, when there were no longer any differential effects.
- There was no increase in the distance of ball roll when the rolling pressure was increased from 4.8 to 11.9 pounds per lateral inch (0.85 to 2.13 kg/lateral cm.).
- The distances of ball roll were similar when the turf was rolled with the direction of mowing in comparison to when the turf was rolled against the direction of mowing.
- Operating speed did not influence the distance of ball roll.
- There was a decided visual improvement in surface smoothness for ball roll as a result of turf rolling.

These studies conducted over two years at two locations indicate that turf rolling has the potential of being used as a component in turfgrass cultural systems for high-sand, creeping bentgrass putting greens where the goal is to achieve high ball roll speeds, while sustaining the best possible turfgrass health. Further, there are other dimensions in terms of (a) turfgrass effects from rolling on a long-term basis and (b) how turf rolling should be integrated from a timing standpoint with other turfgrass cultural practices that need to be investigated. The Institute plans to continue these original investigations first initiated in 1992.