

Lawn Bowling Green Practices and Pace

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Introduction

This document was prepared to assist novice greens personnel, club executive members, most lawn bowlers, turf managers and public employees involved in caring for a lawn bowling green, who like most, are unfamiliar with lawn bowling green requirements. It provides information about factors that determine the pace or speed of a green. Most other agronomical factors associated with growing healthy turf can be found elsewhere.

Green Speed

A lawn bowling green should be fast, consistent and smooth so bowlers can play with self-confidence and finesse. Unlike a golf green, a bowling green must be very firm and level if bowls are to run true. The ideal bowling green should be level within 3 mm (1/8") over its entire area. In reality, this degree of uniformity can rarely be achieved. The tolerance of uniformity in Britain is $\pm 6\text{mm}$ (1/4") and in Australia is $\pm 5\text{mm}$ (3/8").

The speed or 'pace' for a bowling green is a measurement, stated in seconds for the time it takes a bowl to roll from its delivery until it comes to rest (*see Judson table*) at a point 27 meters (*approximately 90 feet*) up the green. Because of the weight differences between a golf ball (approx. 2.5 oz) and a bowl (up to 3 lb 8 oz), a stimpmeter reading cannot be used to give a meaningful measure of pace. The common manner to determine pace is to use a stopwatch and to average the results of 3 to 5 bowls. Nine seconds is slow, 12 seconds is acceptable and 14 seconds is considered good. The width of the draw (*the amount that the bowl curves during its travel*) is related to pace. As the pace increases, draws become wider - up to 10 feet in the case of a 14 second green. Acceptable tournament

speeds in Australia are 14-15 seconds for bermudagrasses during dormancy (*many major tournaments in Australia are cancelled if the green pace is not greater than 13 seconds*); speeds in New Zealand are 12-14 seconds for bentgrass and 15-19 seconds for cotula and starweed species. Bentgrasses in Britain are acceptable at 10-12 seconds depending on the season and in North America are 11-12 seconds for bentgrasses and 12-14 seconds for bermudagrasses.

JUDSON TABLE

Required Delivery Speed (kph)					
Head Distance (m)	Green Pace (sec)				
	10	12	14	16	18
21	17.1	14.3	12.2	10.7	9.5
24	18.3	15.3	13.1	11.5	10.2
27	19.4	16.2	13.9	12.2	10.8
31	20.8	17.4	14.9	13.0	11.6
36	22.4	18.7	16.0	14.0	12.5

Bolded text indicates the speed of a bowl to achieve a pace of 12 seconds.

Mowing

Mowing is important in conjunction with light polishing as the length of grass is one of the factors that affects green pace. The frequency of mowing may be determined by local conditions, the weather and the wear and tear on the green. Greens should be mowed four or five times per week and double cut on tournament days. Increased mowing frequency improves the turf surface -- the trade off being that mowers do cause some foliar damage. Cutting heights in Australia are 1.5 mm (1/16") for bermudagrass and 2-3 mm (1/16"- 1/8") for bentgrass. Bentgrasses in North America and Britain range from 3-6 mm (1/8"- 1/4") depending upon season and generally are 3.5 mm (5/32") in South Africa. New

Zealand cuts bentgrass in the range of 2-3 mm (1/16"- 1/8") and the other grasses at <2mm. Newer ultradwarf bermuda varieties are becoming available in North America that can be cut to 2 mm (less than 1/8"). Current turf practices now recommend that mowing heights be raised to promote turf health and that growth regulators, polishing, grooming techniques and additional mowing be used instead to maintain pace objectives.

For properly cut greens it is essential to maintain a sharp mower and to ensure a smooth bed knife face. Back lapping or sharpening should be done weekly to maintain that edge. The mowing pattern should consist of mowing corner to corner (45⁰ angle), changing the direction of the pattern each time you mow (i.e., south/east to north/west, followed by north/east to south/west). No matter the direction, a 50 per cent overlap should be done on each pass of the greens mowed. The green apron should be mowed in a direction that is parallel to the playing ditch, to a size of around three mower widths. Cutting the green in a vertical pattern is beneficial for turf smoothness, but mentally detrimental to bowlers. If the opportunity presents itself (jitney bowling) the green can be cut 90⁰ to the play or on occasion, the rinks can be cut in one direction. Some bowlers enjoy this approach as the rink boundaries become evident.

Polishing

Polishing the turf with a greensiron should increase the pace of a green by at least one second. A green with proper sand specifications can be polished up to five times a week without compaction. Polishing should be performed in the same direction as the cut as this will enhance the pace. The use of weighted rollers to polish turf can result in compaction and is discouraged. Compaction and excessive wear of turf close to the plinths is often a result of poor head management techniques, such as moving rink centers and changing playing direction.

Compaction

Although not a direct factor in determining pace, compaction causes other problems such as preventing thatch breakdown, something which does reduce pace. Frequent treatments with a solid spike or slit aerator will help remedy the compaction by getting the water and the oxygen to the root zone. Another method to reduce compaction is pencil tining. These aeration methods have very little impact on green smoothness so greens generally can be played upon immediately. If you use large aerators with wide turf tires some ruts (runs) may be produced and when you play next, your bowl may follow these ruts if you have aerated in the direction of play. If you hire a contractor, explain why you want them to aerate from corner to corner. My own experience suggests disease vigilance may be required when using slit tining deeper than 4" depending upon soil composition.

Thatch

Thatch occurs as the natural growth of all grasses, particularly with bent or types that are spread by runners. Thatch is a mat of organic material composed of roots, stems and stolons and is a serious problem that affects green performance. Thatch holds water, harbors disease organisms and makes the grasses susceptible to damage, slowing the pace. In most cases, the members know nothing else and appear happy with their unnecessarily heavy greens that occasionally become so bad that the older members simply cannot heave their bowls to the hog line.



There are four main practices that are used to control thatch: mechanical dethatching (*verticutting*), hollow tine aeration (*physically removing a piece of thatch*), topdressing with sand and increasing the microbial activity in the soil. The latter method increases the activity of the good bacteria and fungi which allows the thatch to decompose at a faster rate, particularly as soil temperatures rise.

Verticutting

There are different degrees of verticutting. Green performance and thatch prevention can be enhanced by setting the blades so they cut into the top 2-3 mm (1/16" - 1/8") of the surface. This practice will improve the fineness of the grass and greens can be bowled on within one day. This process can be done weekly during high growth periods and monthly during slow growth periods. Aggressive dethatching (*scarification*) is typically done near the end of the season. Most often the green is not usable for periods of 1-2 weeks. For this procedure the top 13 mm (1/2") of soil should be dry. Ideally, the blades should be spaced 3/4" apart and set to a depth not greater than 9 mm (3/8") for the first pass. It is better to repeat the process than to be unduly drastic the first time over. Later, the blades can be lowered to a depth such that the majority of thatch is being cut and brought to the surface, but not so deep that the main disturbance is to the soil. Be careful and aim to leave a green lawn behind as these machines are powerful enough to destroy your green. There should be at least 75% of your original lawn left and all the detritus should be removed from the green when finished.

Aeration

Hollow tine aeration is a less drastic method of removing thatch. In many cases, hollow tine aeration can remove thatch layers as deep as four inches. The proper way to aerate is from corner to corner. It will take longer to do it this way but it is better. Aeration can be done using a walk behind corer with 3/4" or 5/8"

hollow tines. Remove all plugs from the greens. You can use a wide mouth (plastic) snow shovel to pick up the cores if you do not have a core harvester. All cores should be discarded.

Top Dressing

Top dressing with sand is best applied through a drop or spin spreader. Shovel spreading with a wheelbarrow is okay as long as you try to spread it as evenly as possible to start with. You should have completed scarification and hollow tining before top dressing although positive benefits are still achieved from top dressing straight onto a lawn (it improves fertility and will help in the reduction of thatch). As with all treatments prolonged use without variation generally causes problems. Currently the beneficial values of top dressing with sand are being questioned and linked to a fine turf “circle of decline”. The reason given is that the soil becomes inert and unable to support microbes, contributing to poor root growth. Consequently, it may be prudent to do continuous soil testing to determine if there is a problem. It is not recommended to top dress with products containing loam, soil or clay, as they represent varied grain sizes. These products may also include weed seeds that if applied to your turf will cause headaches later. Top dressing products should be composed of sterile compost and double washed golf grade sand. The recommended maximum percentage of compost is around 10 percent. The addition of compost materials is proposed when the green becomes enriched with pure sand or becomes too acidic. The continued use of the same “sized” sands thought to be present in the green is recommended as drainage problems may occur if large variations in grain size are applied. A grit size of 60 is popular.

You must ensure that the crown (growing point) of the grass is not covered with top dressing. You must work the top dressing in until you can hardly see it.

Application rates of 6-7 kg per square metre are about the most that should be applied. One green may take up to 5 tons of sand to fill all the holes. More may be required if you have deeply hollow tined at close intervals. It is best to choose a reasonably dry, breezy day to apply the top dressing as it will run and spread more easily.

One of the keys to top dressing is the levelling and working in. You really should invest in either a lute or a dragmat. The lute is harder work (*manual*) but provides more level results. The dragmat is easier to use as it can be towed behind a ride on mower or golf cart. My experience is that the dragmat does the best job with minimal turf damage (*we use a Bannerman model*), and we did not experience turf damage as described by others. It is important to fill all the holes, if holes are not filled they will collapse and cause low spots, especially along the plinth.

Soil Testing

At a minimum annual soil testing should be performed to determine nutrient levels. Every greens person should own a small hand held soil sampler and conduct bi-weekly sampling to examine the soil for the existence of thatch, root growth density, disease symptoms, grubs and drainage patterns.

Irrigation

Irrigation management is undoubtedly one of the important factors in determining pace and maintenance of a quality lawn bowling green. The timing of irrigation has a large impact on green pace. A major problem faced by turf managers is the requirement to produce fast paced, consistent surfaces, while at the same time keeping the turf in a healthy condition. Many greens personnel cross their fingers when providing dry fast greens, on hot summer days, hoping the turf will survive until watering. Overwatering reduces pace and the amount of

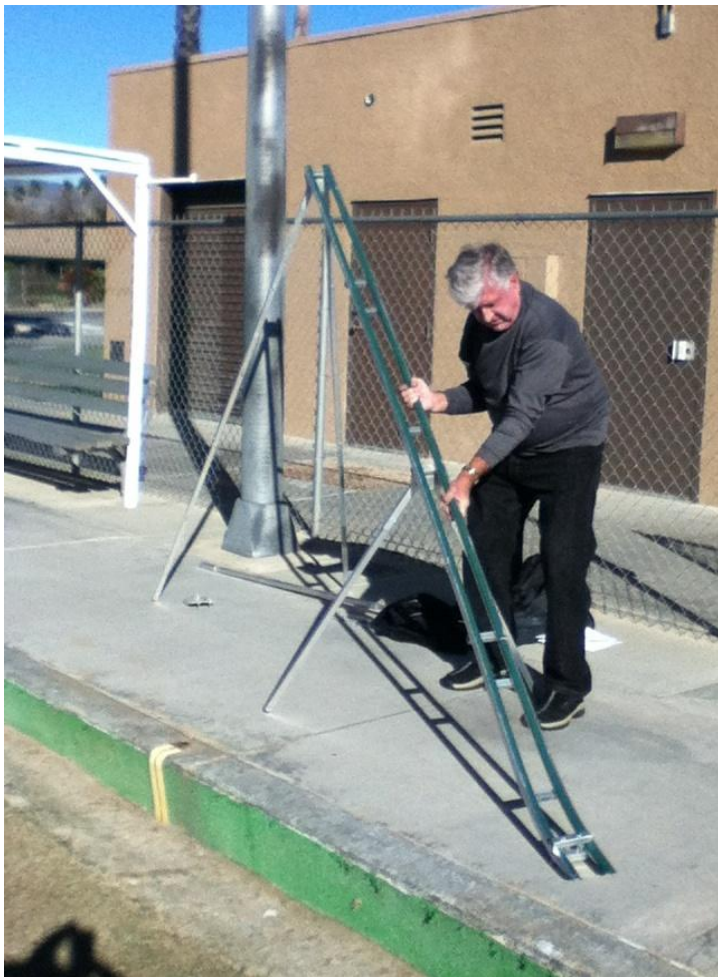
irrigation required will vary for different grass types. (*i.e. bermudagrasses require a lot less water than bentgrasses, particularly during the dormant phase*). Some important factors of any irrigation program involve:

- Deep and infrequent applications of water (watering to field capacity)
- Minimization of light frequent hand watering
- Syringing during times of stress (ensuring it's a very fine spray)
- Knowing your irrigation system and how much it applies
- Avoiding hydrophobic conditions
- Knowing your water quality by having it analyzed
- Using wetting agents

Addendum

To my knowledge, there are no published standards for synthetic or natural surfaces, outside of Britain. Presently, Australia and the United States are thought to be in the process of developing standards.

With respect to the measuring of green pace, some South African clubs are currently constructing and testing bowls' ramps for this purpose.



Patrick Collins with a bowls' ramp.

GOOD LUCK AND SPEEDY GREENS

And remember...always be willing to learn.

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