Bowling Green Digest
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The path to perfection

by Henry Bechelet

The summer months of June, July, and August are when, as bowling greenkeepers, we try to make the green sing! Our aim is to create the perfect surface where the bowls run freely to facilitate the artistry and expression of the game. And there is no better game when the green is running properly.

To achieve our perfect surface, we need to focus on its firmness, smoothness, and pace. This will require careful attention to moisture management, plant health, and our surface preparations. During this time, we must remain flexible and responsive to the prevailing weather conditions and always adjusting our method as the surface requires.

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1 Surface firmness considerations

Surface hardness is essential for green speed. Bowls are heavy and they will sink into a soft surface, killing its momentum. Surface hardness is influenced by a combination of soil moisture status, organic matter levels, turfgrass species, and general maintenance practices. Our aim as greenkeepers is to optimise all these factors to create a firm and fast surface for play.

Soil moisture content is a primary short-term influence on surface hardness. Generally, drier surfaces are firmer, while wetter surfaces are softer. Throughout the summer, our aim is to maintain a firm and dry surface, but this must be balanced carefully to avoid pushing the turf into moisture stress or the development of dry patches.

Ideally, we manage soil moisture levels with regular monitoring using an accurate soil moisture probe. This allows us to keep a close eye on the situation and prevent the development of turf stress or hydrophobic soil conditions. If you don't have access to a professional moisture probe then you will need to be especially attentive to the visual signs of localised drying and be prepared to act quickly.

Using a probe to guide the way, our soil moisture targets will be influenced by a number of factors. The grass species present will affect our strategy with bents and fescues being more tolerant of dry conditions than annual meadow-grass (Poa annua). Other environmental and management factors, such as high temperatures and mowing height will also influence turf stress tolerance and will influence our moisture management decisions.

Above all, it is important not to heap on too many pressures onto the turf and so we sometimes need to ease off with our management intensity and pay more attention to watering when summer stresses are at their peak. Depending on the dominant species and prevailing conditions, our target soil VMC levels might range from 10-25% for the bents and fescues under low management intensity to 20-25% for annual meadow grass dominance under more intense pressure.

Wetting agent technologies, play an important role in supporting our soil moisture management strategy. Wetting agents are specialist surfactants that help optimise soil water movement and retention in the rootzone to help us maintain turf health more easily during dry summer conditions.

As discussed in previous editions, we recommend taking a proactive programmed approach with the application of quality wetting agents such as H2Pro TriSmart or Qualibra on a monthly basis from March onwards. This approach helps us maintain plant health and surface consistency without having to immediately resort to heavy watering during dry spells.

An accurate soil moisture probe allows us to keep a close eye on the situation and prevent the development of turf stress or hydrophobic soil conditions.

A soil moisture probe can help guide the need for watering

During dry spells, the hand watering of localised dry areas is usually our first line of attack to only water those areas that need it. We use hose-end wetting agent diluter guns loaded with wetting agent tablets to maximise the effectiveness of any localised hand watering treatments. Undisruptive surface pricking or sarrel roling will also help water to penetrate down into the rootzone.

Whilst overall irrigation will be necessary during prolonged dry periods, the main focus might need to be on dealing with the advent of localised dry areas. An over-reliance on overall irrigation tends to result in the production of a soft and slow surface.

The development of dry patch creates a patchy and uneven surface

Spot treat localised dry areas using a hose end wetting agent diluter gun

The Syngenta Turf Advisor app is an invaluable tool, particularly in the summer months, when an understanding of drying conditions becomes critical. By comparing actual rainfall against evapotranspiration (ET) losses specific to your site, you can gain a much clearer picture of the net moisture balance.

At this time of year, the figures can be really eye-opening. Monitoring them regularly helps us quantify how much moisture is being lost from the soil, providing a guide for when supplementary irrigation might be needed.

Excessive organic matter in the upper rootzone can act like a sponge and retain moisture to soften the surface. In contrast, a well-managed soil profile (typically less than 5% organic matter in the top 0–20mm) create firmer, more consistent playing surfaces. Soil profiles with organic matter levels that are within target also tend to be more responsive to effective irrigation and less prone to developing localised dry patch.

Soil organic matter content is typically measured using the Loss on Ignition (LOI) test—a service offered by laboratories such as STRI and ETL. This test allows us to compare our own thatch levels against recognised targets, which helps us formulate our end of season work.

We'll cover autumn renovations in more detail in the next edition, but in the meantime, now may be a good opportunity to submit core samples from your green to those laboratories for organic matter testing to help focus our efforts later on.

Soil organic matter content can be measured using the loss on ignition test.

Mowing will temporarily influence surface firmness through its rolling action. Lower cutting heights also increase firmness by reducing leaf cushion and encouraging tighter sward formation. Stand alone rolling or turf ironing will contribute to increased firmness (and pace) by consolidating the surface. We always need to be careful not to overdo mowing intensity and rolling as they can severely affect the health of the sward and so affect the smoothness of the surface.

2 Surface smoothness considerations

Surface smoothness is essential for the bowls to run true to their line and finish out properly. Smoothness comes from the creation of a fine, dense, healthy and well refined sward. Surface smoothness alongside firmness are the primary ways in which we create our "running" surface.

Appropriate nutrition, primarily from liquid fertiliser, will be needed to maintain plant health and density throughout the summer months. There is always a balance to be struck with fertiliser inputs because too much nitrogen will create a soft, slow and lush surface, and too little will cause sward thinning and result in unevenness.

As a guideline for nutrition during this time, we would want to apply the Greenmaster Liquid "High N" 33-0-0 at a rate of 2.5 litres per 1000m^2 (in 50 litres of water) on a monthly basis. You can split this dose down into more frequent applications for more consistent turf responses. If you do not have a sprayer then we would recommend the microgranular slow-release fertiliser Sierraform GT K-STEP 6-0-27 applied at a rate of 25-30g/m^2 every 6-8 weeks. Adjustments in future fertiliser inputs should be made to correct any unduly lush or weak growth responses.

During the summer, we tend to aim for an actual mowing height of around 4mm, making fine adjustments based on weather conditions.

The plant growth regulator, Primo Maxx II can be tank-mixed with liquid fertiliser to help increase sward density and stress tolerance to significantly improve surface smoothness. This is a professional product that should only be applied by (or under the supervision of) suitably qualified spray operatives and according to the label recommendations.

Surface and sward refinement can also help us perfect surface smoothness. Brushing before cutting can help to lift lateral growth to refine the surface and help facilitate a cleaner cut.

Sward quality and refinement have a huge bearing on surface smoothness

Occasional light verticutting might also be helpful especially when trying to refine or thin out coarser grasses such as perennial ryegrass and Yorkshire fog. Be careful not to verticut too intensively or too frequently because this can cause a weakening of the sward and create unevenness.

Maintaining the correct mowing height is crucial for creating a smooth surface. During the summer, we tend to aim for an actual mowing height of around 4mm, making fine adjustments based on weather conditions. The optimal cutting height is one that creates a running surface without weakening the sward. Mowing too short can lead to turf stress and result in sward thinning and surface unevenness. Conversely, mowing too high can result in a bumpy, uneven, and slow surface. We are always searching for the optimal cutting height at any given time.

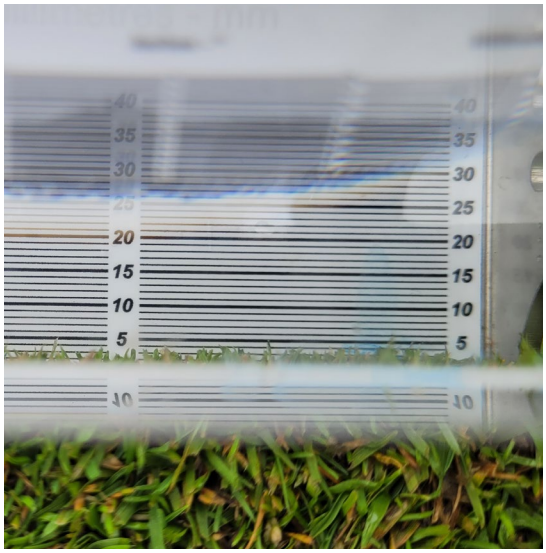
The actual cutting height can vary depending on the firmness of the surface. The cutting height might become lower in wetter conditions if the mower is sinking into the softer surface. A prism gauge is a good way of monitoring the actual cutting height and determining if adjustments in the bench setting are needed.

Wear and tear on the green from concentrated play, should be managed carefully with periods of rest and regular rink movements needed to maintain smooth running.

The development of turf damaging diseases can also affect the surface smoothness. Refer to syngentaturf.co.uk for descriptions of the main summer turf diseases and integrated strategies for their control.

3 Surface speed considerations

We create a fast running surface primarily through optimising firmness and smoothness, but green speed is also influenced by mowing height. Lower mowing heights generally create a faster surface, but caution is needed because overly close mowing also make the green more susceptible to stress, deterioration and unevenness. We must therefore carefully manage the mowing height and frequency to achieve the desired speed whilst preventing undue stress impacting on the turf. This requires flexibility and adjustments to fine tune the mower settings as needed.



A prism guage can be used to check the actual cutting hieght

It makes sense to try to be objective with the assessment of green speed and be working to agreed and measurable performance criteria. Bowlers, as a group, aren't necessarily the most objective or reliable sounding boards if we are wanting help to guide decision making about the surface set up. We can measure the pace of a bowling green by timing how long a bowl takes to roll a set distance (27m) to give the pace in seconds. The faster the green the longer it takes for a bowl to travel the set distance.

To measure the pace, we need to choose a representative, level section of the green in good playing condition. To standardise the procedure we can use a ramp to deliver the bowl in a consistent manner to reach the 27m mark.

If using a player instead, they must deliver the bowl as consistently as possible to finish on the 27m mark. Repeat the process several times in opposite directions and average the results. 14-16 seconds would be regarded as being fast for a flat green, but for crown greens, where slopes are involved, a surface might be very fast if a level section is timed at 13-14 seconds.

In terms of mowing guidance, the frequency of mowing is important for maintaining a consistent pace throughout the week. Ideally, we would always mow on the day of league fixtures but this is not always possible.

Mower checks/tasks would include:

- **Ensure cylinder-to-bottom-blade contact.** There should be light, even contact across the full width using a simple paper test. Poor contact can lead to tearing rather than cutting.
- **Roller inspection is needed** to make sure front and rear rollers are clean and turning freely. Debris build-up can affect height-of-cut consistency.
- **Use an accurate height-of-cut gauge to set mowing height.** Check both ends of the cylinder to ensure the cut is level across the width. Typically, bench setting of 4–5mm is a common summer mowing height on bowling greens. Use a prism gauge on the green to check the actual cutting height compared to the bench setting.
- If your mower has a groomer unit ahead of the cylinder (to lift prostrate growth) **you must be careful to back off during dry or stressful conditions** to prevent undue damage to the stressed turf.
- **It is always important to clean the mower thoroughly after use.** Remove all clippings and debris, paying special attention to the bottom blade, cylinder, rollers, and under the grass box area.

When it all comes together

The summer is the time when we aim to perfect our bowling surface. This will involve all our skills and the use of inputs to create a firm, smooth and fast surface that brings the game alive. There isn't any single prescription for achieving this because each green is different, our resources vary, and the weather conditions can fluctuate wildly. To succeed we must be flexible and manage the surface under the conditions that we face.

Here is a summary of the key points to consider...

- **Maintain surface firmness by managing soil moisture** (ideally using a moisture probe, wetting agents, hand watering localised dry spots and not overwatering).
- **Submit samples to measure your soil organic matter content** and help guide your autumn work.
- **Maintain sward density with appropriate nutrition**, sward refinement, minimising undue turf stress and possibly with specialist products such as Primo Maxx II.
- **Set your mowing heights and frequencies** to support the production of a well-paced but healthy surface.
- **Constant monitoring, mower adjustment and care are all needed** to optimise the performance and health of the green.

The summer is undoubtedly a difficult time because perfection is not an easy goal. But we take on the challenge because by creating that perfect surface we facilitate enjoyment, healthy competition and feelings of accomplishment within our fellow bowlers. It won't always be easy, and the bowlers won't always be thankful, but when it all comes together there is no better feeling.

Good luck and catch up next time for the autumn work.

Henry Bechelet

Guidance Note:
Equipment and Professional Product Applications

Effective greenkeeping depends on using the right equipment and professional product applications. Essential tools like well-maintained mowers, sprayers, spreaders, switches, brushes, and aeration equipment are crucial for maintaining turf quality and consistency.

Regular servicing and calibration of these tools ensure accuracy and precision in all maintenance tasks. It's also vital that all operatives are properly trained in the use of greenkeeping equipment.

Training opportunities are available through organisations like the Greenkeepers' Training Committee, GMA, Lantra and Bowls England, ensuring that operatives have the skills and knowledge to use equipment safely and effectively.

Professional plant protection products should only be applied by trained and certified operatives to ensure safety, legal compliance, and the effectiveness of the products, while also safeguarding the environment.

Proper handling, application, and storage are essential, and operatives must hold recognised certificates of competence, available through organisations like City & Guilds and Lantra. Safety protocols, including the use of appropriate Personal Protective Equipment (PPE), must always be followed.

Additionally, storage facilities must meet required standards, such as bunded floors, to contain any spills and ensure safe storage.

Useful links

icl-growingsolutions.com/turf
bowlsengland.com
bowls-central.co.uk
groundstraining.com
lantra.co.uk
thegma.org.uk
cityandguilds.com
syngentaturf.co.uk