

# MAINTENANCE OF BOWLING GREENS

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Internationally, lawn bowling is one of the oldest recreational pursuits. It was played in Rome, Greece and Egypt. Records show that a bowling green has existed in Southampton, England, since before 1611 and is still being played on, further that an annual competitive event has been scheduled on this green since 1776. In the Southern hemisphere, it was played in Hobart, Tasmania, in 1845 and in South Africa in 1882, and is quite popular in New Zealand and Canada. In the greater metropolitan area of Sydney, Australia, there are over 1,200 lawn bowling clubs and in Johannesburg, South Africa, the parks department maintains 66 public bowling greens.

Assuming that most, who read this article, are knowledgeable of the game, I will instead describe some of the maintenance practices associated with bowling. The first priority for every greenskeeper should be, of course, the development and maintenance of the playing surface itself, aiming to produce as high a standard as possible within the limitations of time, labour and monies available. Many clubs operate on very small budgets. I will not discuss the maintenance of ditches, banks and surrounding areas—although these are equally important to the overall location.

\* **Check Levels** — Prior to the start of the season, it is wise to check the level of the green using surveying equipment. This is the first step to ensure a smooth, level and firm surface so the bowls will run true and to maintain the “pace

of the green”. The speed or “pace of the green” is measured in the number of seconds it takes an experienced bowler to roll the ball approximately 90 feet. Once levels are obtained, this will indicate where top dressing is needed. If not, uneven areas or runs can result and the bowl does not run true. A board 3-4 m long is useful to do this type of levelling, then the rest of the green can be drag matted to disperse the topdressing material.

\* **Topdressing** — Improves the efficiency of mowing. More effective than rolling, as rolling compacts the soil, causing drainage problems, and limits air and water movement in the soil. In a free draining sand, topdressings can help with surface drainage when used with aeration practices. The area to be topdressed should have some growth and conditions should be dry, so as not to smother the grass plants. The greenskeeper should have a good knowledge of the physical make-up of his soil to ensure the proper mix is applied. On a newly-constructed green, it is wise to keep a stockpile of the original mix on hand if space allows for this operation. On sands, the current particle size should be adhered to (check original specifications). If soil is heavy, sands may be applied but very gradually over several years to the depth of the aeration holes, 3-4". No topdressing should be applied at more than 1/16 of an inch at one time although, if money is there, it may be applied more often. It is always spread following aeration and thatch removal, and should be distributed with a drag mat. As mentioned before, the exact proportions of your topdressing mix would be determined by the soil on site.

\* **Thatch** — Is a tightly intermingled layer of living and dead stems, leaves and roots of turfgrass that develops between the layer of green vegetation and the soil surface. Thatch is probably the biggest headache the greenskeeper has to deal with. Too much creates a slow green and decreases the overall green quality. It causes shallow rooting, poor penetration of fungicides, insecticides and fertilizers and affects overseeding practices as seed strays in this layer and does not make contact with the soil. Hence, poor germination. To control thatch, a vertical mower is often used, this machine verticuts and prunes below the mowing height, so some thatch, matted grass, plant runners and longer leaves are thinned. The blades of the mower should be set so they make soil contact but do not penetrate. When the season is finished, they can be reset so they penetrate about 1/4" into the soil. Mow from corner to corner of the green on a 45° angle with very little overlap. Then, a leaf blower or rakes may be used to blow debris to one side of the green for disposal. This particular operation should always be done about two days prior to play and is best done in early morning. Verticutting is usually done every two weeks throughout the growing season, depending on the condition of the green. It helps increase the playing speed of the green. Always enter and leave the green over ramps. Do not attempt during high temperatures.

\* **Core Cultivation** — The next operation which follows verticutting is more cultivation or aeration. This process helps to relieve compaction in the 1-2" of soil. It improves air exchange and water in filtration to the rootzone. Compaction is due to the amount of

play a green receives, the use of light rollers and, lastly, the mower — often a Scott-Bonner — which weighs some 350 lbs. The aprons of the green in particular receive a large amount of foot traffic. The cores may then be windrowed using the attachment on the aerator or, if the right consistency and material, may be drag matted over the area as top dressing. After these last two operations, the green should be watered thoroughly.

\* **Mowing** — Mowing is the most important job the greenskeeper will do, as this is what determines the green speed or "pace of the green"—this and some light rolling allows the bowl to run fast, freely and with the desired draw for either backhand or forehand. Bowling greens as a group are mown more closely than putting greens. A height of 3 mm or 1/8" during July and August is common while, the rest of the season, the green is usually kept at 5mm or 3/16" above the soil. The finest quality greens are achieved through daily mowings. The mower, most commonly used, is the electrically-powered Scott-Bonner, which is capable of the extremely close cutting heights required.

The secret is to maintain a sharp mower and to backlap with a grinding compound weekly to maintain that edge.

The mowing pattern should consist of mowing corner to corner (45° angle), changing the direction of the pattern each time you mow (eg. south/east to north/west, followed by north/east to south/west). Twice a month, mow in a north/south and east west direction, but not before a major tournament or special event as mowing in this direction will alter the draw of the green when bowled. No matter the direction, allow for a 50 per cent overlap 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 width of at least three times the mower width. If the club has sufficient area, a small sod nursery is useful to replace bare areas of the green. If this is not possible, then sod may be cut from the corner of the green and then seed cut out area down.

\* **Fertilizer** — A fertilizer program for this year is one that should result from soil tests taken last autumn. A minimal program is important in order to keep

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down thatch accumulation and excessive shoot growth, which cannot be tolerated on bowling greens. Usually a 4:1:2 ration fertilizer is recommended (Lawn Bowls Canada) such as 20-5-10. Another method for determining nitrogen needs of bowling greens is to multiply the number of growing months x .36 kg (.72 pounds) of nitrogen per 92m<sup>2</sup> (1,000 sq. ft.). Tissue analysis is available from the Land Resource Science Department at the University of Guelph to find phosphorous, potash and trace elements required. Greens made of soil usually require between 3-4 lbs. of nitrogen per 1,000 sq. ft. per season. Information on soil testing by accredited agencies may be obtained from your county OMAF (Ontario Ministry of Agriculture and Food) office. Also

available, are soil sample boxes and forms.

\* **Sand Greens** — Turfgrass nutrition studies have been done on sands in California. In these tests, nitrogen, phosphorous, and sulphur were always found to be deficient. Research indicates superphosphate 0-20-0 can be used to add a relatively large amount of phosphorous and sulphur. This material does not leach rapidly nor injure plants. (Leaching is the removal of materials by solution within the soil).

Nitrogen is a problem because most forms are soluble in water and soon leach from the sands. Some of these forms would be nitrates ammoniacals and ureas, as well as most nitrogen mixes and blends. For an effective program, these have to be applied frequently. Once the turfgrass is established, a 1/2 lb. per growing month gives very good sod. Natural organic fertilizers are not as soluble, they're called slow release, and are useful because of less leaching and foliage burning is minimal. They last longer, so less interruption of play. They are more expensive (OMAF publication 383).

Best method, is to use a broadcast spreader; fill away from turfgrass area so no damage to turf will result. It is desirable to split the amount of fertilizer required so that you cover the green twice. Once north/south, once east/west. Spreading distances can be noted by using markers at each end of the green to minimize overlap. Best to fertilize once dew has been removed and then water in after application.

\* **Weed Control** — Cuts down on bumpiness caused by many broad-leaved weeds. If not a serious problem, they can be removed with a dandelion digger or knife, roots and all. Most bowling greens will also be plagued by some of the

grasses such as annual bluegrass and crabgrass. These can be controlled with pre-emergent herbicides (Ontario Ministry of Agriculture and Food Publication 529). Here again, attention should be paid to the directions on the label. 2, 4D will damage bent grass lawns. Mecoprop is good but best applied in the fall or cooler weather. Application of pesticides requires a licence and posting of your green is necessary 24 hours in advance of spraying. Contact the Ministry of Environment in your area. Have a contractor spray when required.

\* **Disease Control** — Can often be a problem. One of the best preventions, where possible, is to avoid planting large shade trees, or buildings such as pavilions too close to the green or landscape plantings. Irrigation should not be left so puddling occurs. Aerifying and thatch removal programs will help alleviate some fungus diseases. However, most greenskeepers will tell you a winter snow mould can be controlled with a preventive fungicide October-November, depending on location, prior to first snowfall and again if green is bare during mid-winter.

\* **General Maintenance** — Should include irrigation. Many greens have underground pop up systems controlled by moisture sensors or tensiometers. Many clubs have to pay for water. Most of the wear on bowling greens occurs on the ends. Scheduled movement of the rink markers two feet or more laterally will help to distribute traffic and result in more uniform wear. The practice of alternating the direction of play from north/south to east/west is also helpful at times. A general rule of thumb is to apply 1" of water per week but this can vary as to soil type, mowing heights, temperatures and scheduling between play.

Earthworms have not been mentioned and, although have some beneficial efforts such as breaking down the thatch layer, aeration and some relief to compaction, are otherwise considered a nuisance. The cast are spread by machinery and bowlers. The mud is an ideal environment for undesirable broad-leafed weeds. The casts can also cause an uneven turf surface, which can affect play. Earthworms cannot tolerate acid conditions so even the use of previously-mentioned superphosphate will discourage them or a sulphate iron. Pick up clippings, dethatching and aeration will also help, as they ingest organic matter as their food supply. Chemicals do not give lasting control since Chlordane was banned.

Bambooning, dragging a hose or brooming is useful each day to remove dew. Syringing in hot weather will help during hot dry periods. Most important is to obtain a calendar of bowling events, so maintenance can be completed around these functions — to avoid conflict.

As Edgar R. Haley states in his book, *The Construction of a Bowling Green*, "the given draw should be exactly the same on every rink or green. Such a state can be confidently expected on a properly constructed and properly maintained green."

Good luck to you all.

*Acknowledgements to Bill Harding, North York Parks for his helpful information.*

### **New Publication**

Recreational Fields — 'A Guide to Site Selection, Construction and Maintenance.' Copies may be purchased by contacting R.W. Daniels, Ph. D. at the Nova Scotia Agricultural College, Truro, N.S. B2N 5E3. Cost is \$12.95 (\$10.00 plus \$2.95 for shipping and handling).

### **PRODUCT UPDATE**

#### **Kentucky Bluegrass Variety**

Alene, a Kentucky bluegrass variety, has a medium-dark genetic colour and improved disease resistance. The grass normally germinates in seven to ten days. This rapid growth is particularly useful for renovation and erosion prevention. In 40 days after planting, Alene can be expected to produce 12 tillers for each seedling.

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### **PRODUCT UPDATE**

#### **Bentgrass Sod Information Kit**

Growing high-quality bentgrass sod for golf greens is different than growing sod for other areas on the golf course. Production methods are unique. There are special requirements for drainage, rootzone mixes, and other management techniques after the seed has emerged.

The kit deals with all aspects of high-quality bentgrass sod production, from developing a proper rootzone mix to harvesting and shipping. Superintendents with bentgrass nurseries will find the kit useful in many ways.

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### **New Publication**

'Turf Grass Problems in the Prairie Provinces.' Publication 1767E. Contact: Carl E. Lynn, B.S.A., P.Ag., Information officer (Extension and Public Relations).