

Managing Soil Biology in Bowling Greens

Wollongong RSL Bowling Club – Figtree NSW

Control: Greens 1 Untreated

Treatment: Greens 2 & 3 Soil & Plant Tonic applied monthly for 4 months

Modern turf management, like many land management practices is facing increasing pressure to become more sustainable. In contrast, pressure from disease and climate variability is increasing the need to spend more on chemical, fertilizers and irrigation in an effort to correct deficiencies and alleviate disease pressure.

Interestingly many of the current issues faced by turf managers can be traced to a gradual decline in soil health. This is particularly pronounced when dealing with putting and bowling greens. More often than not grasses are growing in a substrate which is biologically weak, has little or no capacity to hold nutrients and is consequently pre disposed to disease and stress factors. As a result greens need constant attention (watering, feeding, disease control, de-thatching, coring/slicing, treating nematodes and other insect pests) and so on, to simply keep maintain a playable surface.

Les Ruse at Wollongong RSL Bowling Club realised some time ago he needed to concentrate more of his effort on increasing the health of his soil. Having tried different products and approaches over a period of four years with varying degrees of success, Les eventually sent soil samples away (from greens 2 & 3) for biological analysis in March 2004. The results of the samples revealed that with the exception of bacteria, most biological groups (particularly beneficial fungi) were below acceptable levels.

In consultation with Soilsmart Horticulture, Les began a remedial program in May 2004, which involved biological inoculation and stimulation. Because renovation was some months away, it was impossible to incorporate solid inoculants immediately, so the initial program concentrated on monthly applications of Soil & Plant Tonic - a liquid biological inoculant, followed by BioGrow (Humic and Fulvic acids) to stimulate soil biology. In September 2004 (following four applications of Soil & Plant Tonic, greens 2 & 3 were re-sampled and sent for another biological analysis to assess progress and the performance of the remedial program.

Observations

Most significantly the September results showed an increase in fungal resources (which was the initial focus of the remedial program). In particular Vesicular Arbuscular Mycorrhizal Fungi (VAM) had moved from being totally absent to more than 50% infection in green number #2 and 19% in green number #3.

From a more practical standpoint, Les has noted the increased depth and vitality of the roots. Previously only a few spindly, unhealthy looking roots had followed the core holes with most of the roots within 25mm of the surface, where now the treated greens are showing average root depth of 100mm. The treated greens are showing less stress - in hot and windy weather the treated greens are cutting up to 50% more clippings than the untreated greens. Disease pressure has also reduced significantly, and Les has not had to use fungicides at all on greens 2 & 3 (as at January 2005) some eight months after started the biological program.

Results - Average of Treated Greens 2 & 3

	Active Bacteria	Total Bacteria	Active Fungi	Total Fungi	VAM	Beneficial Nematodes
24/03/2004	63	51	8	34	0	3
22/09/2004	50	27	28	53	44	8
Target level	40	50	40	50	50	67
High Level	100	100	100	100	100	100
Change	-20.8%	-47.4%	+246.6%	+55.3%	+440%	+175%

Soilsmart products and technical services are specifically designed to help manage one of the most complex and diverse eco-systems on earth - the interface between the soil and the plants we grow.

Soilsmart products will help you to build a strong and balanced biological soil eco-system, maintain aerobic soil conditions and develop a disease suppressive environment in the root zone.

Biological Diversity

The plants we rely on to grow quality crops, turf surfaces and landscapes all evolved in the presence of, and rely on, a strong and symbiotic relationship with beneficial soil organisms which play a significant role in regulating the health of the entire plant/soil eco-system.

The key to success however is diversity - nature is built on it — consequently we have developed a range of products and programs that have a broad bio-diversity and offer long term benefit. They are also based around indigenous Australian biological species which are suited to our climatic and soil conditions.

Even small changes to your existing programs can improve biology and quickly translate into improved aerobic soil conditions and healthier and more resilient plants. These advances also result in more extensive and vigorous root systems and an increase in water use efficiency. Maintaining bio-diversity and balance also encourages the conversion and retention of minerals, increasing fertilizer efficiency and minimising the need for repeated applications.

Soilsmart products and programs allow you to stay ahead of pests and disease and offer a truly preventative approach to soil and plant health by:

- Building Organic Carbon reserves in your soil.
- Establishing a natural defensive network against disease and pests.
- Strengthening plant health and stress tolerance.
- Increasing fertilizer efficiency.
- Sustaining soil Oxygen levels.
- Reducing costs and improving risk management.

The science that enables us to measure and manipulate the soils' biological properties has advanced rapidly in the past decade, bringing about a much better understanding of how we can influence this very complex bio-system to our advantage. Soilsmart have maintained an association with and are accreditation with organisations like The Soil Foodweb Institute USA, who are at the forefront of research and technology development in this important area of environmental management.

