



# The Soilsmart Newsletter

## Issue 5 August 2005

Welcome to issue number 5 - In this issue we update some of our current work and we look at renovation as an opportunity to enhance soil ecology, manageability and structure.

Firstly though let's update the progress of Les Ruse at Wollongong RSL Bowling Club, who has been following a Soilsmart program for the past 15 months, and whose efforts provide some insights into just what is possible when we get the soil biology working more effectively for us.

Les is one of those rare individuals who recognises the fact that although we are judged by what the above ground portion of the turf looks and plays like, it's actually what is happening underneath that plays the major role in that result. Les realised some time ago that current turf management practices were actually quite destructive, so he started actively looking for ways to lessen the impact on the soil as a means to improving manageability, reducing input costs and improving safety for both himself and his staff.

Of course we all know the soil environment is crucial to the health of all plants, but it is possibly more so in turf because of the intensive and unnatural way we have to manage the plants growing in it.

Of course one of the main problems with greens is that the planting medium is biologically weak to start with, it has little or no capacity to hold nutrients or moisture and is consequently pre-disposed to disease and stress factors.

### BUT WE'VE TRIED BIOLOGICAL PRODUCTS

Most turf managers understand the importance of soil biology, but we simply haven't had the right products, knowledge, nor have we had the ability to effectively measure and manipulate it. There just hasn't been a clear or comprehensive alternative for those interested in finding a better way to proceed.

Of course there have been a number of biological products introduced to the market in recent years, and some have had limited success for a short period. But nature is built on diversity and these products, although containing useful organisms, simply lack the broad natural diversity that the soil needs to function properly.

Having tried different products and approaches over a period of four years with varying degrees of success, Les sent soil samples away (from greens 2 & 3) to the **Soil Foodweb Institute (SFI)** for biological analysis in March 2004. SFI have developed a unique method of measuring soil organisms by direct microscopy (counting them through the lens of the microscope). The results of the samples revealed that with the exception of bacteria, most biological groups (particularly beneficial fungi) were well below acceptable levels.

With renovations some months away we started Les on a remedial program in May 2004, which involved monthly applications of **Soil & Plant Tonic** - a liquid biological inoculant to stimulate soil biology. In September 2004 (following four applications of **Soil & Plant Tonic**, greens 2 & 3 were re-sampled to assess the performance of the remedial program.

### September Results - Average of Greens 2 & 3

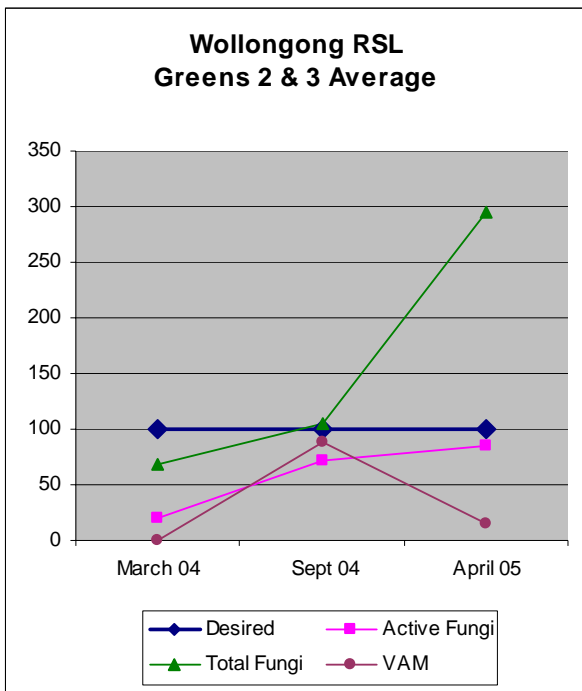
Test Date	Active Bacteria	Total Bacteria	Active Fungi	Total Fungi	VAM	Nematodes
24/03/2004	63	51	8	34	0	3
22/09/2004	50	27	28	3	44	8
Target level	40	50	40	50	50	67
% Change	-21%	-47%	+247%	+55%	+3450%	+175%

Most significantly, the September results showed an increase in fungal resources (the initial focus of the remedial program). In particular, Vesicular Arbuscular Mycorrhizal Fungi (**VAM**) had increased dramatically from being totally absent in the earlier analyses.

After being encouraged by the performance of the greens, Les included **OziVerm** (a solid biological inoculant of worm castings) in his Spring renovations and brought greens 1 & 4 onto the liquid program.

All four greens were tested in March 2005 to monitor the development and balance of the biological population. Fungal resources have continued to develop, however the VAM colonisation had declined slightly. As Les has been using little or no chemicals on the greens this was difficult to understand, however we believe that low rates of a plant growth regulator was the probable cause.

Currently Les continues to be substantially chemically free with only slight signs of disease detectable, but not enough to cause a problem. Les also reports that the greens have not gone dormant this Winter.



## RENOVATION AN OPPORTUNITY IN DISGUISE

Whilst we can use **Soil & Plant Tonic** as an effective liquid inoculant, and **BioGrow** as a biological stimulant throughout the year, renovation is an opportunity to add more potent 'solid' inoculants into the program to accelerate the rebuilding process.

Quality solid inoculants such as **OziVerm** and **GranoVerm** carry a greater load of the larger organisms (protozoa, beneficial nematodes etc) as well as a diverse array of fungi, bacteria and an extremely stable form of organic matter.

Whenever possible these potent biological products should be included in the renovation program in all turf areas - **including sportsfields where the boost to soil biomass will help relieve compaction, increase root depth and reduce moisture requirements.**

## WHAT'S NEW

### SoilSafe Biologically Activated Mineral Fertilizers

We have included **GranoVerm** (our popular granulated worm castings product) with rock minerals and other soil friendly materials into the **SoilSafe** fertilizer range. **GranoVerm** is rich in beneficial soil organisms, which ensures that the mineral components are digested and efficiently converted to plant available nutrients.

	N	P	K	Ca	Mg	OC
SoilSafe Starter	1.4	5.7	0.4	14.2	1.4	13.1
SoilSafe Grower	3.4	3.8	3.9	11.3	3.4	8.9
SoilSafe Activated P	0.3	8.5	0.5	15.8	1.1	6.2
SoilSafe MEND	10.2	2.2	8.5	7.2	1.1	10.6

Introducing **SoilSafe MEND** - a biologically activated, slow release mineral fertilizer, totally organic and biologically friendly, it's ideal for use as a feed at renovation or in general turf applications.

### Soilsmart OC Trace Elements

The OC range includes major (N, P, K), secondary (Ca, Mg,) and trace elements (Zn, Fe, B, Mn, Mo, Cu), and has been developed using organic chelating agents and food grade nutrients. At a molecular level the organically chelated nutrients are much smaller in atomic weight enabling greater uptake and effectiveness.

**If you would like to discuss your needs, or to arrange a soil assessment, please contact.**

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### Results of biological tests average of greens 2 & 3 (desired level is set as 100)

**Since March 2004 Les has noticed**

- ✓ An increased depth and vitality of the roots.
- ✓ Up to 50% more clippings from treated greens.
- ✓ Treated greens are using less irrigation.
- ✓ Treated greens are holding on in hot weather
- ✓ Disease pressure has reduced significantly – Les has not used fungicides on treated greens.

At this stage we have a growing number of customers following a Soilsmart program, and similar results are being observed. We are currently working with both bowling and golf clubs, and also major sporting stadiums, commercial horticulture and viticulture.

## GETTING STARTED

The best way to get started is by measuring the current biological status on your soil. Soilsmart can measure the quality and quantity of soil organisms and help you develop a practical program to re-build the biological life in your soil, grow healthier plants, and reduce input costs.

1. Measure the current biological condition of the soil. Measure and test soil compaction levels.
2. Soil biology assays let you know the amount and types of soil organisms present, as well as, what the desired ranges of these organisms are for the plants you are working with.
3. What is the current chemistry of the soil? Any dramatic imbalance or deficiency in soil chemistry should be addressed at the start of the program.