



SHBG

SOUTHERN HIGHLANDS BOTANIC GARDENS LTD

OPERCULUM APRIL 2015

Southern Highlands Autumn Gardens Weekend: 18 – 19 April 2015

Twelve months of planning certainly paid off—we raised \$60,000 over the weekend with half of that amount being achieved by the plant sales. How fortunate we are with our merry band of plant propagators—what a stunning display and range of plants available for the sale. When the gates opened at ‘Quindalup’ at 9am on Saturday it was like a Boxing Day rush to pick up the bargains. (Chris Blaxland took all the photographs in this article.)



Kristine Gow presides over the native plants sales

The eight gardens on display all looked suitably autumnal, very lovely and so welcoming. Thank goodness the weather kept fine until Sunday afternoon when the temperature dropped with cool winds and drizzly rain. On Sunday night fierce winds blew two of our tents inside out and partially destroyed the aluminium frames. But we could only sigh with relief that the change hadn’t arrived earlier.

This year we trialed an on-line ticketing system and although fewer than a hundred people bought their tickets this way, it enabled us to examine the future possibilities for a computerised system.



What to choose is always the problem!

Some of the comments the committee members received from the visitors about the weekend were heart-warming:

“The organisation of this event is fantastic and I heard many positive comments throughout the two days. Please pass on our praises at your next committee meeting.”

“We are blessed to have people like you working so passionately for the love of gardens.”



The contented purchaser

Everything ran smoothly with a steady stream of visitors during both days—though we noticed that very few locals came on the Sunday afternoon when it turned colder.



The peaceful lake at ‘Bellagio’

What is the next stage for the Botanic Gardens?

A number of people over the weekend asked us about the current plans and what was happening on the site. We are still waiting for the new State Minister to sign off the lease and until then we are somewhat hamstrung. The planting that has already occurred on the site is along the fence line and in areas where we know the bulldozers won’t be required to contour the

land. As soon as the lease is signed, the earthworks to create the landscape design will be able to commence.

We are delighted that the toilet block has been erected (though we haven't yet installed the toilets). Everyone is pleased with this new development—the extension neatly continues the verandah from round the front of the pavilion. At the moment the wet tents from the Autumn weekend are hanging in this space.

The working bees on the first Tuesday of each month continue to attract a large group of the Friends. Some may be weeding, planting or mowing



. . . some may be engaged washing plant pots, checking plant labels in the shade house or packing aprons (see Shandra Egan below).



There is always a job for you!

Next Working Bee
Tuesday 5 May 2015—at 10am
 There will be a special sale of some of the plants left over from the plant sale.

Book Launch at the Site: 10 April

The Mayor of Wingecarribee Shire Council, Cr Duncan Gair, launched Deidre Hill's book *Gardening in the Southern Highlands* on Friday 10 April on the SHBG site. Over a hundred Friends turned up on a cool afternoon to celebrate the occasion.

Charlotte Webb OAM presided over the event and presented the Mayor with a special fuchsia she had propagated from the garden of Muriel Stuart. Muriel's father, Alf Weeks, who was the President of the

Bowral Garden Club in the 1970s, emigrated to Australia from England when Muriel was a small child. Her garden is a treasure-trove of beloved plants, including her father's favourite—*Fuchsia 'Shower of Stars'*.

Deidre's excellent book is on sale at the Bowral Bookshop or can be purchased through the Webb's Office. The cost is \$35—\$18.50 will be donated by Deidre to the SHBG for each book purchased through SHBG or, if purchased through the Bowral Bookshop, \$10 will be donated to SHBG.



Deidre Hill at the launch 10 April 2015 (photo Judy Barford)

The Role of Mycorrhizial Fungi
 By Tony Emmett

The true significance of *living soil* has eluded understanding by many cultures and civilizations over time. We are now able to see clearly the steps involved in the creation of fertility upon which we as a species and a society depend.

The mixture of macroscopic and microscopic life in the soil, with the water, oxygen, humus and minerals, can now be explained and demonstrated. We can now begin to create and recreate the wonderful woodlands, which have been lost from poor understanding by successive societies over the last several millennia. Many of the world's deserts began as forests, long ago.

The way tree roots develop wider coverage with the mycorrhizial fungi in the soil anastomosing into the root hairs is now being recognized as fundamental to forest development. Frank introduced the term mycorrhiza in 1885, but it has taken until recent times for the extent of their influence to be fully recognized.

Establishing a root system

The time it takes a tree to *get established* is really the time it takes for the root hairs to grow out from the larger roots and to set up the associated mycorrhizial fungal network of connections. When you move a tree keeping soil with the roots preserves the particular set of friendly fungi there ready to inoculate the recipient soil.

As we look at the tree roots we find the fine white extensions at the end of each root, which are very

fragile, these are the *root hairs* and they go out into the soil. The tree needs to be held, supported by a stake, so it doesn't shake with the wind, so as to not shear off the growing root hairs. Prevention of soil compaction helps growth of fungal mycelium, as does maintaining the right level of moisture. You can promote growth of the soil organisms with the various seaweed extracts, and you can also use molasses and water, to which you can add your old milk, for giving sugars to help growth of the supporting soil fungi. You can inoculate soils with commercially available fungal mixtures.

When plants establish their rooting system in the soil, it is not only growing out the finer extensions of roots into soil crevasses, it is also establishing relationships with the soil inhabitants, at all levels, macroscopic and microscopic. The major living organisms are the mycorrhizial fungi, of which there are many different types, all named and described. As we work at creating the right conditions for plant growth it is interesting to reflect on the living constituents, as well as the ways life on earth has been organized with this.

Mycorrhizial Fungi grow into the Root Hairs

It has now been demonstrated that not only do the mycorrhizial fungi assist with uptake of water and minerals, but the hyphae of mycelium actually grow into root hairs to facilitate this process. The symbiosis between tree or plant, and its friendly fungal associates, is very important.

There are many different types of mycorrhiza, which have been named, and these will vary with different plant types and different areas of the world. Not only do the fungi give water and minerals, particularly phosphates, to the tree, but in return the tree gives plant sugars back to the fungi. These fungi will also help tree establishment in areas of *contaminated soil*, which is being shown to be of great importance. It is the actual growth of fungal mycelium into the root hair creating a living anastomosis, which is the real connection of the tree to the soil in living terms. Everything else is a side issue, a supporting act, a supplementing performance.

The Living Soil

Many have failed to understand that fertility is a living thing, which we can create, or destroy. The humus, water, air, and living microlife, along with minerals, create the fertility, which sustains us on this planet. We know the worms which burrow making tunnels and turning over soil putting out their worm castings as part of it all. But the best are the mycorrhizial fungi. All the other soil creatures help also in this turning and lightening, keeping the air spaces, avoiding compaction.

By its association with the mycorrhizial fungi the tree root system is made to extend for miles greatly increasing its effectiveness. There are many types of soil fungi, friendly and unfriendly, helpful or pathogenic. The phytophthora and phylloxera are problems in some areas of the country, some tree or vine types, some soil types.

Protection from Sun and Drying

I was watching friends of the Southern Highlands Botanical Gardens spreading a *thick layer of mulch* over the soil on 3rd March 2015 at the function, which included a sale of Daffodil bulbs by Tony Davis—the famous daffodil breeder we are fortunate to know. My mind was drifting over the significance of what I was watching. That mulch was preparing a whole field of mycorrhizial fungi to promote interaction with the tree root hairs, the business end of tree growth.

Societies around the world over 10 thousand years or more have failed to appreciate the significance of the micro-life in the soil and the need to protect it from the ultraviolet sun radiation, and from drying too much. Successive societies over this time have felled forests and allowed the mycorrhizial fungi in the soil to be killed by solar radiation, because they failed to understand what was happening. They have allowed the forest soil to then degrade and finally much later become desert. This cycling of land through the forest phase is the key to recreating fertility and abundance around the globe.

Significance of The Moon

And the moon, our great friend in the sky! You know that as the moon passes over it not only pulls up the sea water by gravitational attraction creating ocean tides; it also pulls up the groundwater, so at full moon the groundwater is high. As the moon goes to the other side of the earth and its gravitational pull recedes, the groundwater recedes, going back deeper, pulling air and oxygen into the soil through the holes; holes of the worms, slaters, beetles, grubs, bacteria and fungi. This up and down movement of soil water, with the circling of the moon, is pulling air in and out of the soil, with each moon circuit, and is literally the *lungs of the earth*, the periodic respiration of our soil, the oxygen of life.

The Steiner technique spreads a watery culture of fungi and bacteria over the fields by the light of the full moon, when groundwater is high, and there is no UV radiation, to effectively promote soil regeneration without chemicals.

Summary

But now we come to the best part. The root hairs of the trees and plants are the active component making the tree work. They actively interrelate with the soil mycorrhizial fungi, which have been shown microscopically, to actually grow into the root hair. We now know the mycelium of fungal interconnections extends over miles in the soil as trees and plants get established. It is the symbiosis of friendly fungi in soil with their interconnecting mycelium, which is the basis of fertility as we know it. So the mycelium supplies the tree with water and minerals, and in return the tree supplies the fungi with plant sugars; the life of interconnected organisms making the planet a working living wonder.



Examining the 'Moongate' in the Emmett's garden, 'Vine Cottage' (photo Brian Rapsey)



The entry to 'Arcadia' from the paddock car park (photo Judy Barford)

The Board of SHBG:

Chairman: Charlotte Webb OAM
 Members: Barry Barford, Frank Nevill
 Jacqui Page, Chris Webb

Committee of Friends of SHBG

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Friends of the Southern Highlands Botanic Gardens

Renewal of Membership

If you haven't already paid your Friends' membership for June 2015 to June 2016, please complete this form or the one on the website.

Please note that if you joined after 1 April 2015 your membership is paid until June 2016.

(Don't forget to include your email address to help us reduce mailing costs.)

TITLE & NAME

ADDRESS

POSTCODE

PHONE HOME

PHONE MOBILE

EMAIL

DATE:

MEMBERSHIP	1YEAR Valid to 30/6/2016	3 YEAR Valid to 30/6/2018
Individual	\$20	\$60
Household	\$35	\$105
Single Concession	\$15	\$45
Household Concession	\$25	\$75
Clubs/ Groups	\$50	\$150
Corporate	\$200	\$600
Donation	\$ _____	\$ _____
Cheque enclosed	\$ _____	\$ _____

Please list any particular interest, qualification or skill you have that may be of help to the SHBG

Details for direct deposit

BSB: 802-101 A/c no.: 350489 Reference: Your name
 Or cheques payable to Southern Highlands Botanic
 Gardens Ltd. and return cheque and completed form to
 SHBG, PO Box 707, Moss Vale, 2577