



Advantages of mycorrhizae

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SUBTROP

Mycorrhizae are fungi that live in a symbiotic, mutualistic relationship with plants in the rhizosphere (area surrounding roots). There are mainly two types of mycorrhizae, namely arbuscular mycorrhizal fungi and ectomycorrhizal fungi. The former grow intercellularly into roots of plants, between cells (usually through root hairs), whereas the latter form sheaths around the surface of roots. A third type also exists, namely ectendomycorrhizae, the name being self-explanatory.

How do mycorrhizae benefit plants?

The first report of the English word "mycorrhiza" was in 1885. Soon after that the word spread and scientists started to look for these organisms on all kinds of plants. It became quite clear that plants that grew in the presence of mycorrhizae usually grew quicker or appeared healthier. Some plant species cannot survive whatsoever in the absence of mycorrhizae. They benefit the plants by growing mycelia into fine spaces where roots do not readily grow and transporting mineral nutrients to the plant root area. In return, the plant supplies the fungus with carbohydrates and possibly other nutrients. The mycorrhizae thus increase the nutrient-uptake ability of the plant.

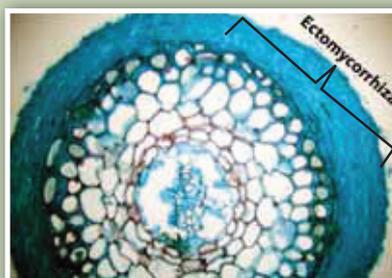


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Do mycorrhizae hold any value for the litchi?

As early as 1921 the benefits of mycorrhizal association with litchi plants has been documented¹. Since then, several trials have confirmed and demonstrated the positive effects of mycorrhizae on litchi plants. Mycorrhizal associations with various other plant species have been researched. However, the amount of research that has been done on litchi mycorrhizae is limited. *Rhizophagus litchii* was described as a symbiont of litchi roots in 1971². More recently it was demonstrated that mycorrhizal-inoculation of litchi air-layered plantlets enhanced leaf and root growth^{3,4}. Commercial application (or at least experimentation) of mycorrhizae to litchi trees in nurseries, whether air-layered or cuttings, should be considered. When considering yield gain it would be difficult, if not impossible, to speculate the effect that mycorrhizae could have. However, it is clear that overall tree health could benefit from these organisms.

References

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- ²Sonn, W.I.T.H.L.G. *Rhizophagus in mycorrhizal association with Litchi chinensis* Sonn. *Mycopathologia* 45, 337-354 (1971).
- ³Janos, D.P., Schroeder, M.S., Schaffer, B., Crane, J.H. & Street, S.W. Inoculation with arbuscular mycorrhizal fungi enhances growth of *Litchi chinensis* Sonn. trees after propagation by air-layering. *Plant Soil* 85-94 (2001).
- ⁴Sharma, S.D., Kumar, P., Raj, H. & Bhardwaj, S.K. Isolation of arbuscular mycorrhizal fungi and *Azotobacter chroococcum* from local litchi orchards and evaluation of their activity in the air-layers system. *Sci. Hortic. (Amsterdam)*. 123, 117-123 (2009). **ST**

the next three to four years. It has been made clear to us that different cultivars require very different farming practices to succeed. These "tricks" are currently being documented.

- More good news is that our intellectual knowledge bank, accessed via a password from the SALGA website, is gathering momentum. Paid up members, in good standing, may apply for their password by contacting Kate Hamilton-Fowle at the Subtrop offices (tel: 015 307 3676; info@subtrop.co.za).
- More good news is that the attendance at our study group functions is increasing, clearly more and more members see the value. Those that missed the session on 29 October, given by our Australian visitor, missed a talk of immense value from somebody whose lifelong passion has been litchi farming and cultivar breeding. We will repeat this in the future. Sadly the attendance was poor.

It is with sincere regret that Dr Deon Begemann has retired. However, fortunately, he has agreed to continue to assist us, particularly from a technical point of view. Deon has made a huge contribution to our progress over many, many years. We thank him most sincerely for his unselfish contribution and wish him and his wife endless years of good health and happiness. *Deon you are an example to us all, thank you.*

Sakkie Froneman needs a special mention. He relentlessly walked the new cultivars through the DAFF mine field in Stellenbosch, until they were safely grafted onto the awaiting rootstock in Nelspruit. The main problem was that they forgot where they had laid the mines! I will not comment publicly on the drama Sakkie experienced, as it will not help, and our Australian visitor's report back is unprintable. *Sakkie you did much more than required of you. Thank you.*

I wish you all a very successful harvest.

Gavin Hardy