



Testing of truffle or mushroom seedlings

Courier or drop-in seedlings to:

Alexis Guerin, Mycotree, C/-Southern Woods Nursery, 1002 Robinsons Road, Templeton, Christchurch New Zealand.

Please contact me if you have any questions: alexis@mycotree.co.nz | 027 434 0387

Why testing seedlings?

There is no point planting a seedling to establish a truffle or mushroom orchard if the seedling is not well-mycorrhized by the target species. Although a well-established initial mycorrhization alone cannot guarantee the harvest of truffles and mushrooms (other factors will come into play such as favorable environmental conditions and appropriate orchard management) it is an absolute prerequisite for success!

Mycotree offers the testing and certification of seedlings inoculated with the following “target” truffle or mushroom species:

- *Tuber melanosporum* (Périgord black truffle)
- *Tuber borchii* (Bianchetto truffle)
- *Tuber aestivum* syn. *T. uncinatum* (Summer truffle or Burgundy truffle)
- *Lactarius deliciosus* (Saffron milk cap)

Mycotree’s approach to testing is unique, but similar to that used by scientists who test the truffle seedlings of France’ biggest commercial truffle nurseries (AgriTruffe and Robin Pépinières) since 1973 (Andrés-Alpuente et al. 2014).

The testing methodology is not destructive and tested seedlings can be returned to you.

Quality Standard

Mycotree will test seedlings against the **Quality Standard commissioned by the New Zealand Truffle Association**, internationally peer-reviewed, and adopted by the NZTA in February 2022. Information about the standard is public and available on the NZTA website.

<https://www.nztruffles.org.nz/wp-content/uploads/2022/12/SUMMARY-OF-NATIONAL-STANDARD-FOR-INOCULATED-SEEDLINGS.pdf>

Methodology of mycorrhiza testing

The testing is based on a double-step (dissecting and compound 7x to 400x) microscopical analysis completed by DNA testing if required. The double-step microscopy is crucial to confirm the identity of the target species.

Under New Zealand conditions, the identification of mycorrhizae of *T. melanosporum* and *T. aestivum* by morphology only is reliable, while mycorrhizae of *T. borchii* must be DNA tested in addition to microscopical analyses (Guerin-Laguette et al. 2013, 2021).

The abundance of target mycorrhizae is assessed based on their frequency of detection and the presence of branched/young clusters of mycorrhizae. This assessment is made possible by the experience of the observer. The presence of non-target, non-truffle mycorrhizae will also be assessed as per the standard.

Testing/sampling regime

Depending on the batch size, the standard specifies testing a random sample of 3-10% of seedlings.

Mycotree can travel to sample seedlings. Non-biased sampling options, e.g., the buyer or his/her representative selects the test seedlings, are to be arranged if seedlings are couriered to Mycotree. Tested seedlings will be returned at the nursery's or the buyer's expenses.

Fees

Sample of seedlings (3 to 10% of seedlings depending on batch size):

\$31 per tested seedling (minimum of 5 seedlings), i.e., analysed under two complementary microscopes.

Rapid individual testing of all seedlings (depending on the results from a sample of seedlings, this may be the only option to certify seedlings):

This can be arranged @ \$150/h providing it is logistically possible. It is best if seedlings' handling assistance is available.

Prices exclude DNA testing (\$95 per mycorrhiza sample) and disbursement, e.g., mileage, shipping fee to return seedlings. Mycotree is not GST registered.

Results

For the Seedling Testing Report, depending on the results' complexity, 1-3h could be required @ \$150/h.

Mycotree will provide a concise report advising:

- Presence and abundance of target and/or non-target species and their development for each tested seedling.

- Estimated percentage of seedlings per batch deemed suitable to establish a truffle plantation.
- Conclusions for each batch tested and recommendations if seedlings of a given batch need further testing.

The Testing Report will include a Certificate for seedlings/batches that pass the testing

Mycotree's batch certificate implies that the nursery and their customers acknowledge that the results are based on a sample of seedlings randomly collected from that batch.

Only individually tested seedlings that passed the test according to the specifications of the standard will be certified and labelled.

References

- Andrés-Alpuente A, Sánchez S, Martín M, Aguirre ÁJ, Barriuso JJ. 2014. Comparative analysis of different methods for evaluating quality of *Quercus ilex* seedlings inoculated with *Tuber melanosporum*. *Mycorrhiza*, 24 (Suppl 1), S29–S37.
<https://doi.org/10.1007/s00572-014-0563-x>
- Guerin-Laguette A. 2021. The sustainable cultivation of edible mycorrhizal fungi - furthering the dream. *Mycoscience* 62, 10–28. <https://doi.org/10.47371/mycosci.2020.11.007> Free to download from:
https://www.jstage.jst.go.jp/article/mycosci/62/1/62_MYC520/_article
- Guerin-Laguette A, Cummings N, Hesom-Williams N, Butler R, Wang Y. 2013. Mycorrhiza analyses in New Zealand truffières reveal frequent but variable persistence of *Tuber melanosporum* in co-existence with other truffle species. *Mycorrhiza*, 23, 87–98.
<https://doi.org/10.1007/s00572-012-0450-2>