

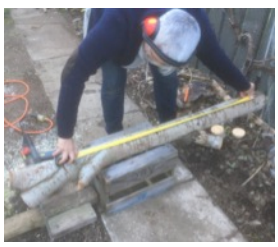
in collaboration with

Manual - how to grow mushrooms on logs

Log preparation

Inoculating logs is a relatively easy way to grow mushrooms – if you are able to source logs:

- best if logs cut in autumn/winter as most nutrients in the wood
- best be between 1-6 weeks old (best to order spawn when you have fresh logs)
- if for some reason you can't inoculate at the required time then consider to seal your cut surfaces with bees wax ahead of inoculation to prevent colonisation from other fungi
- hardwood logs are preferred (time to colonise ←→ time until consumed = the harder the wood the longer it takes to be colonised but the longer the logs will produce) ideal are the two logs on the right of the second photo below); when working with bees wax be aware that bees are attracted to its smell – keep the pot covered when not using
- the thicker the bark the better; oak is premium but poplar, willow, liquidambar, birch, etc is fine; no conifers or fruit trees
- straight logs w/o branches are best, completely cut off any side branches and seal all injuries and ends with wax (if you don't it's ok but may increase chance of other spores intruding; bees wax is best, but soy wax or preserving or cheese wax also work; note that paraffin wax is derived from fossil fuels and may contain unhealthy components) make the most of your logs if they are hard to come by and accept quirky forks as in the end the mushrooms don't care the shape of the logs, it's just your aesthetics and ability to stack them easily
- log length depends on your personal strength to handle these, your incubation area and capability to pre-soak logs in ice water to force fruit (use bathtub, wheelbarrow, blue sandpit shell, etc)
- in preparation for and after inoculation:
    - never store logs in direct contact with soil (use pallets, bricks, rebar to raise above soil)
    - don't store logs in direct contact with sun, maximum is dappled shade; cover with shade cloth or build a plastic tent over them but allow for air flow around the base
    - store your logs safely and parallel to minimise exposure to drying out; cover if your inoculation gets delayed eg by awaiting your inoculation materials being shipped or colonising the materials a bit more (spray water if you store indoors)
    - ensure you are gentle on the logs to protect the bark






Log inoculation

- prepare a clean working surface, outdoors with shade is perfect
- assemble all your tools (cut logs, sanitiser, melted (bees) wax, brush with natural! bristles, tape measure, marker, drill with sizes 8.5 - 9 drill bit, electrical tape, hammer, labels, inoculation material eg dowels or spawn – bring out when you are really ready
- mark your logs where to drill; rule of thumb is the more dowels the faster and safer the colonisation but the more expensive. Generally measure 5cm from end and 5cm from other end, and every 10-15cm inbetween. Measure your log circumference and rotate your log approx 8-12cm and mark again but this time start in the middle of the first two markers so you get a diamond pattern
- measure length of dowels, stick electrical tape around your drill to this length plus 2-3mm so you only drill to required depth, then sanitise your hands, drill handle and bit, hammer
- drill holes no deeper than your tape, you might have to adjust tape every once in a while but don't forget to sanitise it again; some dowels can be hammered into log ends
- hammer dowels into log completely, you can do the whole log at once before you seal with wax or you seal row after row which reduces handling of log; if the dowels stick out drill the remaining holes that much deeper
- seal with food grade wax brushing over the top to prevent other spores or rain to get in and start a false inoculation
- seal ends and any cut off branches or other wounds or injured bark with wax
- if you grow a variety of mushrooms (not in the same spot) and on a variety of wood consider to label with date and other specs (piece of aluminium can is long lasting)
- carefully stack done logs in a water bath for 24 hours (set timer!) and store parallel in incubation location
- don't mix exotic and native species to avoid genetic contamination of NZ species

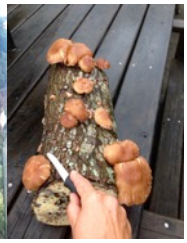


Log incubation

- find a suitable longterm location for your incubation and fruiting logs (shady, moist, protected from wind)
- during dry weather/season sprinkle the logs well 1-2x/week with non-chlorinated water, soak if they feel light – alternatively soak logs once every 3-4 weeks
- after 4-12 months (dep on mushroom and tree type and size of logs) start force fruiting (stomp shitake logs onto soft ground) immerse logs in ice cold water for no longer than 24 hrs; tipp: pre-freeze 3-5 plastic bottles with water to cool water in wheel barrow, bathtub, barrel, etc then stand them up off the soil in your shady spot
- check after 4-7 days – see pinheads growing? Check every day from now to not miss the prime time – might take up to 7days but don't miss it
- slugs and snails looooove mushrooms – don't use poison but possibly beer traps or Quash in a wider circle around the fruiting logs; or use any other trusted method
- don't force-fruit more often than about 3-4 times/year, pop the dates in your calender

- if you have a good number of logs, consider to force only 50% of logs and the other half a few weeks later to have a regular supply
- keep notes when inducing/harvesting to know when resting time is achieved







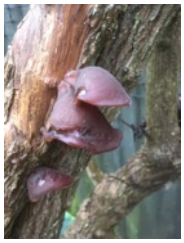
General bits and bites of useful information

- mushrooms are the visible fruiting body of a much larger organism, the mycelium which below soil surface or bark
- check before you eat - you need to verify what you eat is what you intended to grow
- sterile tools and working environment increases your success rate
- time frames are crucial and should be adhered to
- logs take much longer to fruit than person-made substrate blocks from straw or sawdust, but fruit over many more years and produce zero rubbish but only organic compost.
- leave dowels/spawn as long as possible in their clean bags, only take out what you need
- only ever inoculate a log with one type of mushroom
- only store same mushroom type logs in one stack (only Shitake or only Oyster)
- don't use a too big or small drill bit; most dowels are 8mm so use 8.5 or 9mm only – this is because the mycelium covered dowel needs to be in tight contact with the log to grow into the log.

A word on foraged logs

It is entirely possible to collect logs or branches that have wood ear or turkey tail mushroom growing on them - but you must ensure that

- it is permitted to do so
- you have experience with foraging these types of mushroom and/or can verify the mushroom with an expert and/or a number of reference books/websites
- you only take a little and leave enough for nature and other foragers
- the most prolific and easy to ID wild mushrooms are wood ear (Auricularia cornea) and turkey tail (Trametes versicolor)
- check your own garden, I found both types on dying and dead bushes in our garden



And finally - enjoy the precious, healthy bounty of the forest!

If you would like to get in touch to arrange a hands-on or online workshop please contact Ellen distinct@orcon.net.nz for more information.

Mushroom log inoculation – simple citizen science research
This project encourages hobbyists and others to record what native mushroom strains they are growing on the types of wood available to them to better understand growing and fruiting patterns. Post your results on the fb group NZ Mushroom Growing

In general: Most logs are selaed with wax on both ends, cut branch collars and bark injuries. Logs are left to rest for a minimum of 1 week and max of 8 weeks before inoculation.

Tree cutting date	**Tree type**	**Inoculation date**	**Mushroom type/strain**	**Comments / Observations / Harvest**
3.7.2020	Casuarina/She-Oak	4.8.2020	NZ Shitake, grains	Totem inoculated with 3 layers of grains inbetween, loosely covered with plastic bag Logs inoculated with plugs.