



# NORFOLK ISLAND MUSHROOMS

**When people talk about Australia's most easterly point, they are usually talking about Cape Byron. But, an outpost 1,400 km further east - Norfolk Island - is producing its own mushrooms, writes Dr Jenny Ekman.**

Only 35km<sup>2</sup> in area and home to around 1,700 inhabitants, Norfolk seems a very long way indeed from mainland Australia.

Norfolk Island was settled by Europeans in 1788, only five weeks after the first fleet arrived in Sydney. Convict labour was used to establish a small farming community. This served as a food bowl, sending crops and produce back to the Australian colony. The rich volcanic soil proved highly productive, and Norfolk helped keep the fledgling Sydney colony alive with supplies of salt meat and vegetables.

Unfortunately, concern about French incursions led to the colony's abandonment in 1814. A second penal settlement (1825-1855) was followed by a final, third settlement by Pitcairn Islanders. Many of these descendants of mutineers from the HMS Bounty and Tahitians still live on the island, maintaining their unique culture and language.

In such an isolated and remote environment, self-reliance and self-sufficiency are crucial. While some fresh produce is imported (following changes to Federal Biosecurity legislation), inconsistent supply and high



cost make local production essential for both locals and tourists.

Pitcairn descendent Darren Nicolai has lived on Norfolk island most of his life. Everybody on Norfolk seems to have multiple occupations. In Darren's case he is a licensed and qualified contractor and vegetable farmer. But in 2002 Darren and wife Anita had another idea - to add mushrooms to their farm offerings, rather than duplicating the many other vegetables already commercially harvested. But how?

I was lucky enough to spend some time with Darren and Anita on a recent trip, and was able to ask them all about it.

**JE: How did you start learning how to grow mushrooms?**

DN: It started with an intense amount of self-research, reading any and all available resources accessible on mushroom cultivation, composting and organic farming. Of course, the internet wasn't as evolved as it is today, so it was books that gave me the fundamentals.

We also visited mushroom farms in Hamilton and Christchurch in New Zealand - that were absolutely fantastic. They were generous in sharing their knowledge, experience and trade information as well as helping troubleshoot our farm plans, which were based on Paul Stamets references. With revised plans we then went about sourcing the entire infrastructure from multiple suppliers throughout NZ.

Bondor (manufacturer of insulated panels), fabricated the shed from insulated panels suited to the environmental conditions required for mushroom cultivation. Tyco supplied the air handling units. The whole lot was shipped across to Norfolk and within 3 months of our NZ visit we had installed our own small commercial mushroom farm, fully equipped with five growing rooms, a cool room and spawn run room: Avoca Mushrooms was born!

Admittedly we had some significant engineering challenges in the early days. It took a good two years before the faults were corrected and I could really get everything to work efficiently.



Norfolk Island mushroom farmer Darren Nicolai with the grasses he is growing to make mushroom compost.

### The compost conundrum

Norfolk Island mushroom farmer Darren Nicolai with the grasses he is growing to make mushroom compost.

**JE: What about compost? Clearly there's no wheat industry on Norfolk, and the cost and paperwork to ship bales or compost blocks would be crazy.**

DN: I tried a few things. Early on I trialled elephant grass and Bana grass. They are tall and grow well but the compost lacked structure. Now I have settled on a mixture of Rhodes, Gatton grass and broad leaf paspalum. I grow these together as a pasture mix. To harvest, I simply chop the green grass into a cage on the back of the tractor. After drying for a couple of days I mix the grass with chook manure, gypsum and some organic fertiliser with 14%N.

**JE: So that's stage 1, what about stage 2?**

DN: When I started, I was doing the whole thing manually. I'd get in there with a pitchfork and shift the entire 5 tonnes by hand. It would take me 2-3 days and I was fitter than I'd ever been in my life. Now, thank

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*When I started, I was doing the whole thing manually. I'd get in there with a pitchfork and shift the entire 5 tonnes by hand. It would take me 2-3 days and I was fitter than I'd ever been in my life.*

goodness, we have a fully automated phase 2 bunker with temperature and airflow monitoring. There was a lot of mucking about getting the aeration right - initially I just couldn't figure out why we were getting so many problems during cropping. It turned out the fan wasn't up to the job. We replaced that and suddenly everything came together.

**JE: That must have been a major relief.**

DN: Absolutely. We were nearly wiped out financially when two crops in a row failed because of red mites in the chicken manure. It would all be looking good, then suddenly all these mite eggs would appear on the casing surface. Now that we're getting the right temperature and time combination throughout the pile that hasn't happened again.

**JE: It sounds like you've learned an incredible amount simply through trial and error.**

DN: Yes, there's nothing like things going wrong to really help you know your operation inside out! We were hit and miss for four years, then in 2007 I was awarded a Churchill fellowship. This allowed me to visit farms in Europe and do compost and farm management courses through Venray in the Netherlands. I came back with lots of new ideas and a much better understanding of *Agaricus*.

**JE: Having figured out all the parts of the process, how do you bring it all together?**



Darren with his hand-turned compost pile



DN: We grow brown portobellos in 12kg bags. I import the spawn from Sylvan, and can run 150 bags at a time, which is enough to fill one grow room. They are cased using TopTerra black peat. From time to time I've run out of bags, peat, all sorts and had to... improvise. We usually get three to four flushes and the quality's good.

**JE: Has it worked out financially? Costs must be much higher than here on the mainland.**

DN: The logistics of getting anything to the island always results in higher costs. It's particularly volatile at





the moment with all that is going on in the world, which of course makes it even harder to operate a business on a remote and isolated island.

Costs are several times higher. For example, a box of spawn is \$100, but adding the freight costs means it's \$250 by the time it is transported to the island. Power on the island is generated by diesel and in the last few years prices have more than doubled to 72c/kWh (*N.B. local Australian farms usually pay less than 10c/kWh*). We got a couple of quotes for solar panels and it came in at over \$70,000. Even things like concrete - we want to fully seal the driveway, but with concrete costing \$3,000/m<sup>3</sup> it's a big investment.

The other challenge is that although we have an ABN and pay Australian taxes we are not part of any state and outside the GST system. This means we are ineligible for the grants and assistance available to other primary producers.

On the other hand, when we've got mushrooms available, we practically get mobbed (which we are always grateful for). We charge \$12.50/500g packet and sell them as fast as we can pick. We also sell the used compost. That sells out within a day too, and helps to cover some of the farm operational costs.

**JE: Right now a lot of the supermarket shelves are empty, you could probably charge even more.**

DN: Yes but unfortunately we're not growing at the moment. I need to replace the A/C units as they use an outdated refrigerant. What's more, shipping and biosecurity issues are making it hard to get some of the raw materials we need for production.

**JE: So, what's the plan for the future?**

DN: Once we get the units installed, finish the all-weather farm access, and can hopefully get some more renewable (and cost effective) energy solutions, we are planning to open for farm tours. Many people are interested in looking at small scale farming operations, as well as getting an appreciation of primary production at the grassroots level.

In addition to the mushrooms, we have a large variety of produce and animals here on the farm and plans for some value-added goods. We are also fully organic, so that adds extra interest.

**JE: I call that paradise!**

DN: Perhaps, but not for the faint hearted!!