USING COMPOST MADE FROM RECYCLED ORGANICS IN MUSHROOM CASING

WHAT IS COMPOST MADE FROM RECYCLED ORGANICS?

Recycled organics are compostable organic materials, such as those from home gardens and landscaping. Compost made from recycled organics is produced by shredding and stockpiling these green materials for up to six months, before being screened. That compost can be used in food production if it is produced according to the AS4454 standard for composts, soil conditioners and mulches. This standard ensures correct pasteurisation procedures so there are no food safety issues associated with using the product.

WHY USE RECYCLED ORGANICS AS A MUSHROOM CASING MATERIAL?

The Australian mushroom industry uses approximately 25,000 tonnes of peat casing each year. Mostly imported from Europe or Canada at a cost of $300 per tonne, peat is an expensive and limited resource.

Moreover, peatlands are a major carbon sink, sequestering 0.5 gigatons of CO^2 annually. Conversely, draining peatlands is a major source of greenhouse gases, equating to nearly 6% of global anthropogenic emissions. Banning or restricting peat mining is therefore an easy way for countries to meet emissions targets, and this is already occurring in some European countries.

Although the supply of peat is unlikely to stop altogether, costs are likely to rise and availability decline. Compost made from recycled organics is available at approximately 1/3 of the price of peat moss, and trials have demonstrated that up to 50% peat may be replaced by compost made from recycled organics.

TRIALS CONDUCTED

Applied Horticultural Research conducted trials funded by a NSW Environment Protection Authority grant that demonstrated the viability of growing mushrooms using a casing blend of peat moss and compost made from recycled organics (RO).

Casing materials were made by blending the RO product (Greenlife® Fine, supplied by Australian Native Landscapes), with Topterra peat moss at rates of 25, 50, 75 and 100% RO.

In addition to pasteurisation during the composting procedure at the production site, the RO product was pasteurised at 60°C for 6hrs immediately before casing, except for samples from a non-pasteurised RO treatment. This was done to test whether pathogens are introduced from the RO product.

RO products generally have a higher salt content than peat, and this can potentially reduce yields. In trials 2 and 3, a 50% blend was made using RO that had been leached by soaking in water for 5 minutes, draining and repeating three times. This halved the salt content of the RO.

This project is a Waste Less Recycle More initiative funded from the waste levy

Trialling casing blends of peat and compost made from recycled organics at the Marsh Lawson Mushroom Research Unit

TRIAL RESULTS

Adding 25% RO to the casing in Trial 1 produced similar yields to the pure peat control, while a 50:50 mix tended to reduce yield only slightly. However the 50% leached RO (flushed three times with water) achieved similar yields to that of peat in trials 2 and 3.

Using RO at 75% or 100% reduced yield compared to peat only.

DISEASE

In all three trials, unpasteurised 25% RO blends had similar yields to the pasteurised 25% blends. We had been concerned that using RO product which had not been pasteurised immediately before casing could introduce weed moulds or disease, but this was not observed in either trial. It is likely that high temperatures required to meet pasteurisation (>55°C for >3 days, repeated 3 times) in the piles of RO at the production facility are effective at removing pathogens in the material.

WHAT TO LOOK FOR WHEN SELECTING RECYCLED ORGANICS CASING MATERIALS

Three separate batches of RO product were trialled, including a well matured and finely ground product, as well as a younger, coarser fraction to help identify whether a coarser product allowed for better water infiltration through the casing layer. Results from our trials suggest that the variability in age and particle size profile of the RO products did not have a major impact on yield.

Our trials suggest that salt content of the RO product can impact on mushroom yields when using blends above 25% RO. If blending at rates over 25%, EC (electrical conductivity) of the RO product should be below 1.5.

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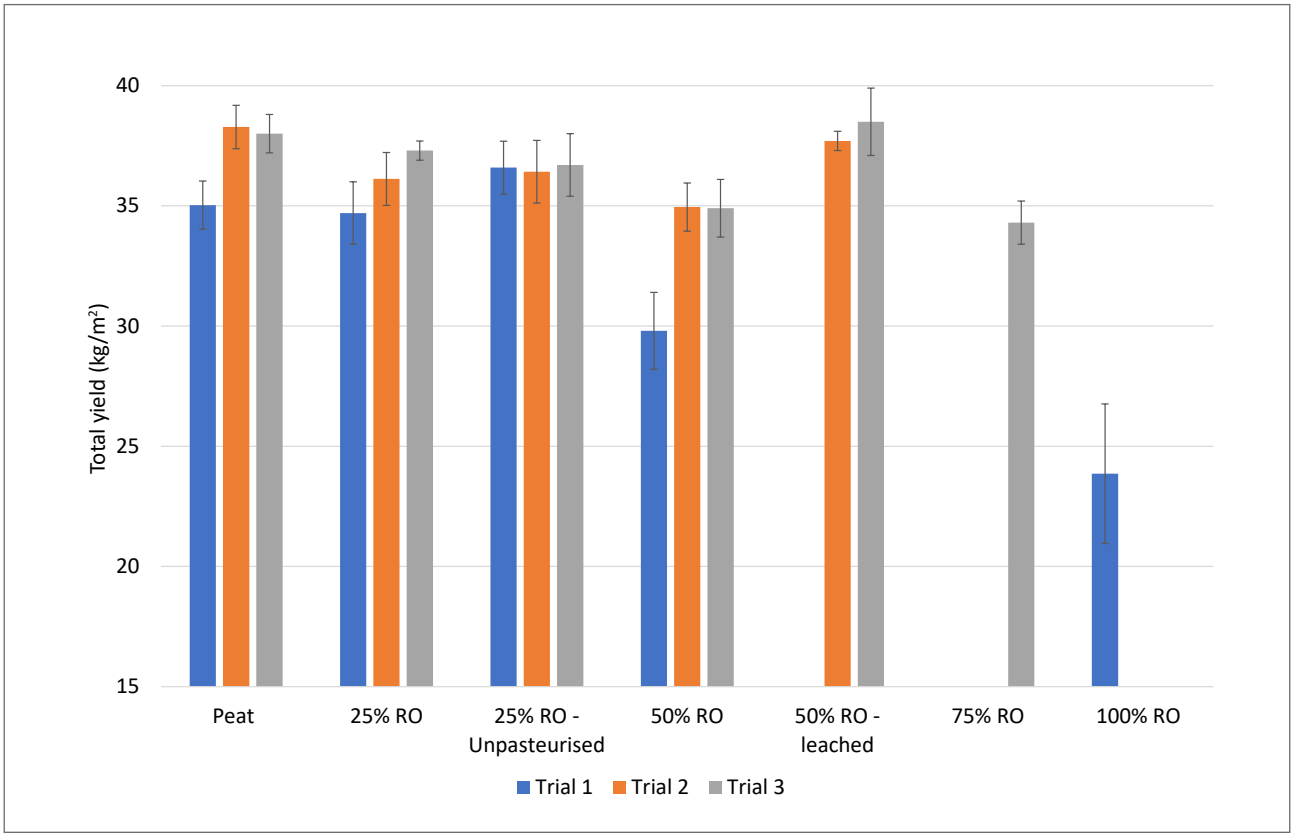

Mushroom yields of blocks cased with blends of peat and recycled organics product

Both coarse (left) and fine (right) compost made from recycled organics was trialled and found to perform similarly.

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POTENTIAL SAVINGS FOR MUSHROOM GROWERS

The results are very promising for Australian mushroom growers. Compost made from RO is approximately a third the price of imported peat, and incorporation at rates of 50% represents a significant saving. Reducing reliance on imported peat also improves the overall sustainability of the mushroom industry.

COST SAVING BASED ON 40L CASING/M^2

Cost of recycled organics ~ \$50/m^3

Cost of peat ~ \$150/m^3

Pure peat casing = \$6/m^2

50% RO blend = \$4/m^2

= 33% saving

HOW TO TRIAL RECYCLED ORGANICS AS CASING ON YOUR FARM

The trials conducted were limited to three batches of RO product from a single supplier. Recycled organics products differ between suppliers, so small trials should be conducted on-farm for several cropping cycles before taking the step of incorporating RO in casing materials across the entire farm.

To start with, try incorporating RO at a rate of 25% in your casing material, and apply that to a small section of the growing room.

When blending peat and the RO product, water should be added to the RO to increase the moisture content to a similar level as the peat (in our trials, RO was approx. 50% moisture, while peat was approx. 75%).

Record yields from the trial and compare them with those achieved from standard peat casing in that same cropping cycle.

WHERE TO SOURCE RECYCLED ORGANICS PRODUCTS

- Recycled organics suppliers can be found at: https://www.aora.org.au/find-a-composter.
- Ensure the product is compliant with AS4454
- Ensure consistency of product
- Request a physical and chemical analysis of the product, in particular the salt content (EC)

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