Eco thermal wool sleeve packaging.

Unpacking the advantages of eco-friendly packaging

As the wine industry continues to review its impact on the environment, companies on both sides of the Tasman are reviewing the materials used to package wine, and in doing so, creating innovative alternatives for producers seeking sustainable options, as **Simone Madden-Grey** writes.

The recent Wine Intelligence report Global SOLA: Opportunities for Sustainable and Organic Wine reviewed the connection between sustainability and market opportunity. In a survey of more than 17,000 regular wine drinkers across 17 markets, covering the SOLA categories of sustainable, organic, low alcohol and alternative wines, sustainable and environmentally friendly wine scored highly in terms of purchase consideration. It was also highlighted that in order to capitalise on environmental credentials, producers needed effective promotion strategies. An example of this could arguably be demonstrated by the recent figures from New Zealand where sustainability has been central to brand New Zealand. Record exports totalling NZ$1.92bn were achieved in 2020, a six percent increase on the previous year.

New Zealand innovations

In response to client requests for an environmentally friendly alternative to polystyrene, Grant Rimmer, founder and CEO at Aotearoa Wine Innovations, began to investigate suitable options. Rimmer and his team produced the wool based Thermo Eco Packaging whilst continuing to work around the core DTC wine export business nzwinehome.

Offsetting the carbon footprint of wine shipment was where Rimmer said they were "seeking to make a genuine difference" and that difference includes primary material sourcing and labour costs. All wool used to make the packaging is from New Zealand which eliminates the environmental impact of shipping wool to New Zealand and production in Auckland keeps wages for this particularly Kiwi product in the local economy.

Feedback about the Thermo Eco Packaging has been favourable, not least from Jancis Robinson MW, who is well known for refusing to accept samples packaged in polystyrene. In creating the product, Rimmer and his team looked to polystyrene as the benchmark for its protection, thermal stability and lightweight qualities. Various prototypes were trialled including a cardboard product making use of a honeycomb structure to absorb some of the shock during shipping as well as providing a layer of thermal protection. As with other unsuccessful prototypes, the cardboard honeycomb structure failed to meet all the different testing phases of shipping and in this particular instance, it did not have sufficient bounce if too much weight was added to the box. Eventually it was polystyrene's ability to bounce when dropped that proved the most difficult to replicate.

Subsequent testing confirmed that wool not only out-performed polystyrene for temperature insulation in hot and cold temperatures, it also successfully absorbed impact if dropped. The internal structure of the wool case base was developed around the honeycomb principle and this meant that the packaging was able to absorb the shock of a drop or multiple drops before fully compacting and no longer providing protection. The way in which it compacts acts in a manner similar to polystyrene.

When first rolling out the product, both wool and polystyrene were offered to clients before moving exclusively to the wool sleeve. Rimmer said the importance of promoting a sustainable alternative meant the company absorbed part of the costs in order to price it only slightly higher than polystyrene. The non-rigid structure of wool also means producers are not limited to specific bottle shapes in order to use the product.

The wool sleeves can be branded for merchandising and Jo Mills, director of Rippon Vineyard in Central Otago, confirmed the product is used for private retail.

"Changing to the eco-wool packaging was a no-brainer when, up until then, polystyrene had been what our wines were packaged in," Mills said.

Changing to the eco-wool packaging was a no-brainer when, up until then, polystyrene had been what our wines were packaged in.

Jo Mills

The decision was equally easy for VALLI Wine in Central Otago. Hollis Giddens, sales and marketing manager, said they were keen to use the product for their international DTC sales and the response from clients has been extremely positive. One client in New South Wales donated the wool sleeves to a local wildlife refuge for use as microbat pouches. To complement the successful launch of the industry product, a heavier duty, multi-use consumer product, branded Wool Hero, was released in October 2020.

Also based in New Zealand and using mycelium as an alternative to polystyrene is a new business called BioFab NZ. The root-like structure of mushrooms, or mycelium, is impressively strong and the ability of fungi to reassemble its molecular structure within a rapid timescale makes it possible to grow mycelia in customised forms, such as packaging for wine bottles. Additionally, a mycelium-based product can be successfully composted within 45 days.

Keen to see the product become more common across industries as an eco-friendly packaging option, BioFab's co-founder and CEO James Ferrier confirmed initial production in New Zealand is scheduled to begin September 2021, after which production facilities will be built in Australia. Ferrier says that to create a custom mould for a wine bottle, a computer assisted design (CAD) is generated to produce a sample mould from mycelium which, if approved, is then used for larger volume production. Costs to produce a CAD and sample mould start at NZ$2,000. Companies such as Seedlip Drinks, Dell, and LUSH already use mycelium-based packaging for shipments, suggesting this innovative product could easily sit within the wine industry.

Australian developments

Another option for environmentally friendly packaging comes from Australian company Great Wrap. After successfully producing a plastic wrap for domestic use, founders Jordy and Julia Kay have turned their attention to a commercial application, including wine pallet wrap.

It is often more expensive to use alternative materials, but Jordy Kay says that their company are "an impact driven company".

"So we put the profitability to one side and worked on problem solving," he explained.

Working behind the scenes and not requiring any modification to consumer

Great Wrap founders Julia and Jordy Kay

Mycelium-based packaging. Photo: BioFab NZ

Eco thermal wool sleeve packaging

behaviour is central to successful uptake of the product.

"No one has to change, we will change the materials, we will do the hard work so everyone else can keep doing what they are doing," Kay said.

One of the initial challenges of producing an environmentally friendly plastic wrap was identifying a feedstock that was not dependent on intense agricultural production. This led to the development of a patented feedstock that uses around 60% food waste, diverting that food waste from landfill and providing the starch required for plastic production. The purchase of an extruder has been the final piece in bringing the commercial product to market and the company is planning to launch the commercial wrap in June 2021.

The company also intends to harness a relatively new development in biodegradable technology by making use of biopolymers known as Polyhydroxyalkanoates (PHA). Although PHAs have existed naturally for billions of years, their wider application in a commercial setting is new and the fact that they are both soil and marine degradable is key to increased interest in their use. Kay describes this as "the silver bullet to packaging", predicting that PHAs will be the most manufactured plastic resin 10 years from now.

The PHA group consists of several different families of polymers capable of producing materials that range from hard and brittle to soft and elastic. Bacterial fermentation is used to convert the feedstock into a PHA, which can then be converted to a plastic wrap. Great Wrap has begun working with Monash University to refine the production process, including identifying the type

of bacteria best suited to producing a PHA for conversion into a commercial plastic wrap.

The company's goal is to eliminate plastic wrap in both domestic and commercial spaces over the next five years and the response right across the beverage industry has been extremely encouraging.

"For a lot of people pallet wrap is the last thing in their supply chain that is made of plastic, so creating a compostable and biodegradable plastic wrap fills an important gap," said Kay.

In South Australia, a new organisation is also working to promote sustainable packaging within the industry. Wine Industry Sustainable Packaging Alliance (WISPA) was formed in 2018 and came into existence as a response to the 2025 National Packaging Targets. Chaired by Diarmaid O'Mordha of Endeavour Group, WISPA aims to bring industry together to work collectively in addressing this common goal. O'Mordha describes the group as "collaborative in nature with most of what is done being made available to anyone who requests it".

To date, WISPA has mapped out all the packaging materials that exist within industry and aligned them against the 2025 targets. Next on the agenda is to increase awareness of their presence, but in the meantime anyone interested in accessing WISPA resources or becoming a member should contact Diarmaid O'Mordha: diarmaid.o'mordha@edg.com.au

Innovation coupled with a desire to minimise environmental impact continues to shape the wine industry strategy for sustainability and longevity. Environmentally friendly packaging provides tangible evidence of long-term commitment to sustainability, while strengthening the message around commitment to the environment.

Further information

Australia's 2025 National Packaging Targets – Australian Packaging Covenant Organisation, https://apco.org.au/national-packaging-targets

References

'WISPA: Supporting the wine industry towards a circular economy', Brian Johnston, Environmental Services Officer, KESAB, and Diarmaid O'Mordha, Quality & Sustainability Manager, Endeavour Group, 27 October 2020 (www.wmrr.asn.au/Web/Conferences_and_Events/SA_Conference/2020/Program.aspx)

'Annual Report 2020', New Zealand Winegrowers Inc

'Global SOLA: Opportunities for Sustainable and Organic Wine', Wine Intelligence, February 2020

PW