

Case study: Mushroom trays and the challenges of a circular economy

Intended audience

This case study may be of interest to:

- Customers who purchase mushrooms from Bidfood or Oliver Kay
- Anyone interested in the challenges of driving a more circular economy in foodservice

The context

Bidfood and Oliver Kay sell fresh mushrooms in plastic trays (as pictured on the right). These are standard European mushroom carriers, used throughout the industry. Their design means that they're easily stackable, lightweight, and crucially allow easy passage of air, preventing the mushroom from 'sweating' and therefore prolonging shelf life. This is crucial, because our mushrooms are grown in a damp environment at ideally 20°C, so their packaging needs to be fit for purpose from the point of packing, chilling and transportation, right through to customer delivery.



These trays weigh approximately 180g each and at approximately 80p per tray, are cheap to manufacture. Made from recycled polypropylene, they are also fully recyclable. Bidfood provide 927,580 trays per annum to their customers (2025 data) – equivalent to 167 tonnes of polypropylene. It's a huge amount but still a fraction of those used across the food industry. In theory, they're also reusable, but there are several reasons why they can't get reused in practice; these are now explained.

The problem

Neither Bidfood nor Oliver Kay will collect mushroom trays from customer premises for three legitimate reasons:

- 1) We don't have a waste carrier licence, so we can't backhaul waste items
- 2) We can't incur the risk of contamination from waste trays (that have often been stored outside customer premises on the floor, with exposure to vermin) – collecting them from customers would involve us loading them onto lorries with food that's yet to be delivered to other customers
- 3) There's no industry system in place for mushroom tray reuse; the most we could do is arrange for the trays to be recycled.
- 4) The trays are of low financial value; the costs of collection, washing and redistribution back to suppliers are collectively far greater than the financial cost of a new tray. It's important to note that although they're stackable, they also take up significant space on a vehicle even when empty – they don't condense down or 'sit inside' each other when stacked.

However, our customers and our teams wanted us to investigate options that favoured a more circular economy, either by finding an alternative tray or arranging reuse with our suppliers, as we're all too aware of the impacts of excessive plastic use.

Action we took

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It was clear that there was no easy solution for this problem, so more research was needed. Anna Turner, one of our National Account Managers and Foodservice Packaging Association Board Member, was studying for a degree in food packaging at the time of this issue arising, so decided to undertake this as a project as part of her degree.

Theoretical possible alternatives to the current plastic tray are single use cardboard trays (example pictured on the right); at 15p per unit (at the time of writing), they're far cheaper than plastic trays, but can't offer the breathability of the plastic trays that allow air flow, so this wouldn't be practical as the cost of greater food waste would be prohibitive. They would also absorb moisture which would affect their rigidity, meaning that they couldn't stand up to the rigours of the packaging conveyor belt, the condensation occurring in the chiller, handling and loading onto vehicles, leading to crushing and further waste.



From a customer point of view, the desirable solution would be a sturdy reusable crate (example pictured on the right) – but we cannot overcome the obstacle of taking back items classed as waste, on our vehicles. It would also entail an industry-wide transformation of current practices, given the prevalence of the single use plastic tray.



A (partly) circular solution

Bidfood have implemented a solution for their own plastic waste trays (generated for example, when we transfer mushrooms into buffet boxes) and have an ongoing arrangement with [Philip Tyler Polymers](#), who collect our empty crates once there is a full load equivalent. They pay for these, even though they are deemed a waste product. Once received, they weighbridge the load, shred or granulate the material to a good clean regrind. This is then processed into pellet form or sold as a regrind. This recycled material is then used for other crates (not food grade), boxes, the automotive industry, housewares, gardening equipment, and playground floors. It cannot be used for medical equipment. Although this is a workable solution for our in-house waste trays, we appreciate that most customers don't have the space to allow them to accumulate enough trays for dedicated recycling collections.

In summary

This case study demonstrates that the 'mushroom tray problem' (as it has become known internally!) is unfortunately a perfect example of the financial cost of an item not reflecting wider costs (known as 'externalities'). Plastic is cheap to produce but none of the wider social and environmental costs are factored into production. EPR (Extended Producer Responsibility) is an example of a legal mechanism that aims to levy the producers of such plastics to shoulder the expense of greater investment in recycling schemes and so on, but for now, we're yet to see this change. Even Philip Tyler Polymers (mentioned above) can only process between 1500-3000 tonnes per month; they're limited by capacity, not availability of raw material.

Next steps

We'll continue to support customers wherever possible, with their sustainability objectives, and in instances like this one, where there isn't an easy solution, we will do our best to explain the challenges. Our factsheets explain many challenges of food sustainability and what we're doing about them – please find them at <https://www.bidfood.co.uk/sustainability/sustainability-factsheets/>.