# Workshop 3 Summary

About Workshop 3

On April 21 and 28, 2021 the Lab team convened the third and final Bioplastics Workshop: "Prototyping Potential Solutions". In this workshop we brought together 16 participants for Session A (April 21) and 15 participants for Session B (April 28). The goal of this workshop was to use a serious games approach to test potential solutions for the challenges with bioplastics and single-use waste identified in Workshops 1 and 2. In Session A, attendees contributed to the design of the games, and in Session B they participated in the activities.

Can You Sort It?

The purpose of this game was to test out labels to differentiate between biodegradable, compostable, recyclable and other (non-biodegradable, non-compostable, and non-recyclable) plastics, and determine the effectiveness of visual identifiers for sorting products.
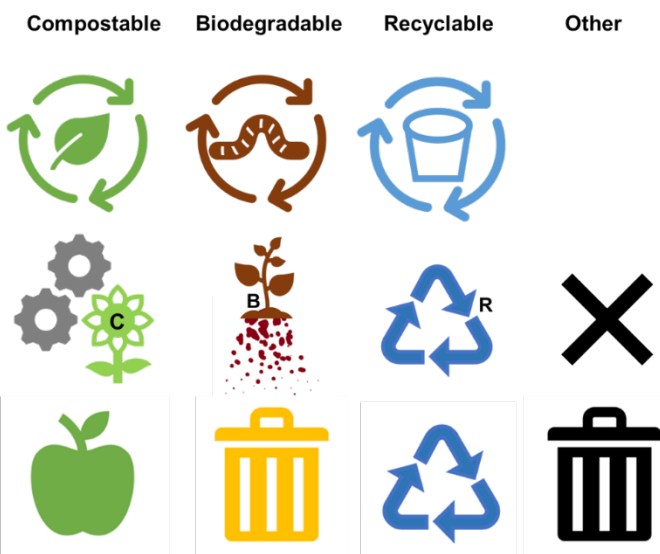
In **Session A,** participants were split into three groups and asked to individually come up with ideas for how to visually differentiate the types of plastic. Participants were prompted to consider symbols, colours, and other distinguishing features that could be applied to different types of packaging and single-use items. Each group member then shared their ideas, and the groups worked together to decide upon a common set of identifiers. Figure 1 shows the final labels from each group.

During the group discussions, some themes emerged, including:

Biodegradability: Two groups discussed problems with the biodegradable plastics category. Currently, there is no waste stream for biodegradable products, and the term 'biodegradable' does not have a single meaning.

Figure 1. Labels for the Can You Sort It game

Accessibility: Accessibility considerations were raised in discussion about different types of visual identifiers. For example, participants discussed the need for symbols in addition to colours, to account for colour blind individuals. The idea to include textures for visually impaired individuals was also introduced.

Cultural context: Symbols have different meanings and degrees of familiarity across cultures. Some participants emphasized the need to consider cultural context and geographic scale (e.g. regional, national, international) when selecting symbols for labelling plastics.

Reusables: Participants also considered visual identifiers for reusable products. A key challenge here was a need to communicate that a product is part of a reusables program or can be used multiple times, while also indicating how it should eventually be disposed at its end-of-life.

In **Session B**, workshop participants played the Can You Sort It game using the online Kahoot game platform. In three breakout groups, participants were tasked with sorting plastic packaging using the labels designed by a different group. The game gave players 5 seconds to answer each question, and there were 18 questions total.

The final scores for each group were 65%, 54% and 72% correct answers.

After the game, groups discussed their experiences in playing Can You Sort It. Participants generally felt that the game was easier as time went on. There were also different approaches to the game. Some players sorted the items based on their prior knowledge of the products, rather than the new symbols, while others focused only on the symbols.

Challenges identified include:

- Difficulty seeing the symbols and colours.
- Paying attention to only the symbol, rather than the colour.
- Prior associations with the colours and symbols which conflicted with their meanings in the game.
- Disconnect between the label colours and the colours used for each answer in the game.
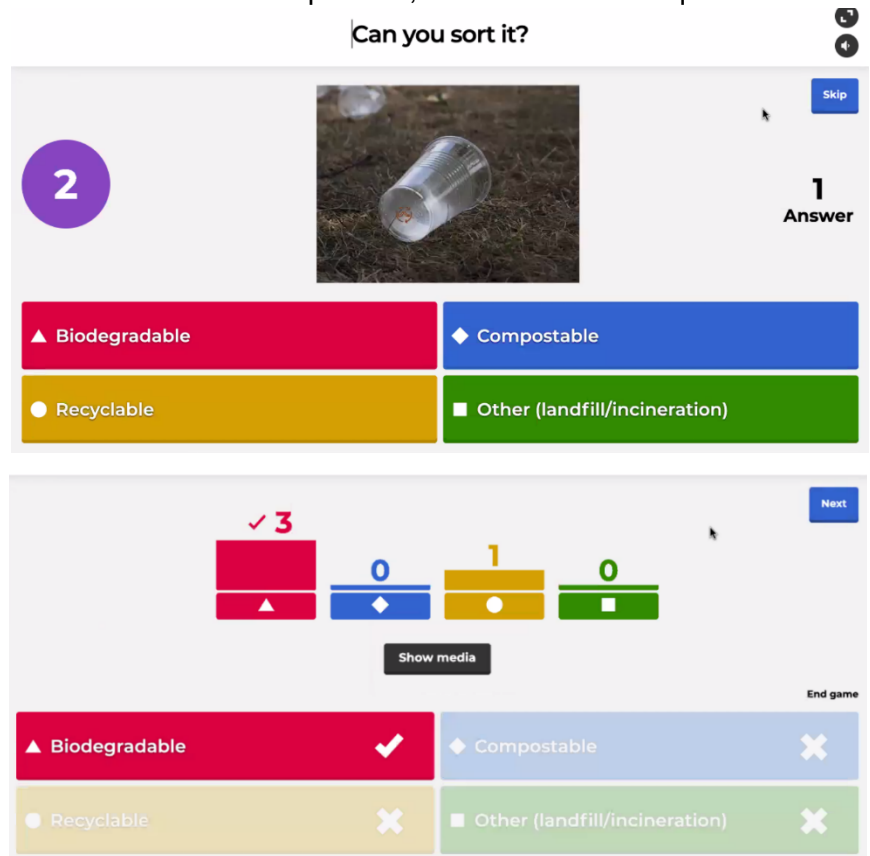

Figure 2. Screen captures from the Can You Sort It Kahoot game

There were also many suggestions and considerations that can be applied to the broader issue of labelling bioplastics. Some participants raised the need to use symbols without colours for certain products, and to also avoid complexity in the symbol design. Accessibility concerns were raised once again with respect to not relying solely on colour to interpret the label. The issue of biodegradability also arose, and some participants flagged that some of the biodegradable labels could easily be mistaken for the compostable category, or should only be used in marine or agricultural industries. Finally, certain groups reflected on the challenges of educating the public on new symbols and scaling up standardization of labels for bioplastics at the global level since so much plastics manufacturing and packaging of products takes place outside of Canada.

SIMBIOCity

In this game, the lab participants were interacted with an alternate world, called SIMBIOCity, where all single-use plastics were banned. The plastics ban applied specifically to food packaging and foodservice, and included bioplastics. The purpose of this game was to design and 'visit' a grocery store, a mall food court, and an urban vegetable farm in SIMBIOCity.

During **Session A**, participants broke out into three groups to each tackle one of the following situations:

Grocery Store: selling cheese without single-use plastics.

Urban vegetable farm: selling greens and berries without single-use plastics.

Food Court: without any plastic takeout containers, cutlery, cups, lids and straws.

The groups designed each of these scenarios by answering the following questions:

- What would you use instead?
- What supporting facilities, resources and workflows would you need?
- What rules and regulations should you consider for this to work?

Tables 1, 2 and 3 on the following pages show the answers that were generated in this brainstorm session. These ideas were used as inputs for the Session B activity.

In **Session B**, the groups returned to SIMBIOCity, this time virtually visiting one of the places that they did not help design. The activity started with facilitators introducing their group to the location and how it was adapted to the single-use plastics ban. The grocery store group focused specifically on cheese, the urban farm looked solely at greens, and the food court dealt more broadly with the replacement of disposable foodservice containers and items.

The activity then proceeded to gauge the reactions of participants towards these options. The groups were asked a series of questions from the perspectives of staff, customers, and the system and participants voted using a scale of 1 to 5. The responses from each group are summarized on Table 4. After the voting activity, groups discussed the assumptions behind their answers, their concerns, and ideas to improve the system. The following themes emerged across the conversations.

Standardization/Centralization: All three groups found that the proposed changes would be more feasible if they occurred on a systems level. This could mean implementing the same changes across all vendors at a farmer's market or food court or establishing the changes across an entire municipality or region. Centralized arrangements for managing the system would also contribute to better outcomes. Participants discussed that by standardizing and centralizing the changes, the issues of cost, competition and consumer uptake would be reduced.

Food safety: Each of the groups had concerns relating to food safety, although they acknowledged that with the right system set up these concerns could be mitigated.

Local systems: The groups all identified that the single-use plastic ban presented exciting opportunities for more localized systems, products, and supply chains.

Environmental impact: All the groups voted overwhelmingly that the proposed options would be more environmentally friendly. However, in the discussion participants also raised the complexity of determining environmental impact, which would extend beyond the impacts of reducing single-use plastic waste.

Equity/Inclusion: During each discussion, participants emphasized the need to develop these systems to be equitable, inclusive and affordable. Otherwise, these changes could disqualify people who are unable to participate in a deposit system or purchase and carry reusable items.

Bioplastics: When asked what role bioplastics could play in this system, the urban farm and food court groups each identified specific uses for bioplastics. The urban farm group visualized bioplastics being used exclusively on the distribution side and the back end of the farmer's market, but not for mass consumption by the public. This group discussed both the possibilities of using reusable bioplastics and single-use bioplastics that could decompose directly on the farms. The food court group determined that bioplastics could be used for the reusable dishes and takeout containers. This group favoured the idea of a domestic circular system, where bioplastics are produced locally and the reusables are returned at their end of life to form inputs for new bioplastic products.

Thank You!

This concludes our third and final Bioplastics workshop. Thank you for contributing your time and expertise to the Food Systems Lab and SIMBIO Project! We appreciate your invaluable participation throughout this journey. Stay tuned for a policy brief and journal articles to come.

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Table 1. Session A Design: Grocery Store

What would you use instead	Supporting facilities, resources, workflows	Rules/Regulations
Cheese		
• Cheese wheel • Cheesecloth • Reusable clamshell container	• More localized economy and cheese manufacturing/vendors • More time and preparation ahead of time • Labour • Pre-order option • Reusable container system • Industrial dishwasher	• More stringent regulations for materials • Consider trade distance rather than borders • Shift from grocery stores as front-end retailers
Crackers & Cereals		
• Reusable containers at different scales for different products • Glass jars • Recycled aluminum containers • Airtight or vacuum sealable valve • Ensure appropriate airspace	• Use QR codes for product branding • Apply the system at the distribution level	• Regulatory pathway with stepping stones • Regulations to encourage this shift • Supports to accommodate rural areas, individuals who do not have the capacity for reusables or do not have base homes

Table 2. Session A Design: Urban Farm

What would you use instead	Supporting facilities, resources, workflows	Rules/Regulations
Greens		
• Mesh bags (linen or hemp) • Reusable containers (glass or plastic) • Local plant leaves	• Farmers provide bags/containers • Subscription model: Repeat buyers return the bags/containers • Different systems for repeat vs. non-repeat buyers • Centralized sanitization system • Washing stations at the market • Farmers can fill the customers' bags	• Requirement to exchange bags at the market to prevent contamination • Regulations for food safety, liability and risks • Food safety plan for farmers market • Recall plans
Berries		
• Egg carton/cardboard-like baskets • Reusable containers with lids • Reusable woven baskets with recycled paper under berries	• Land to grow the supplies • Infrastructure	• Only 3 or 4 types of packaging materials

Table 3. Session A Design: Food Court

What would you use instead	Supporting facilities, resources, workflows	Rules/Regulations
Takeout containers, cutlery, cups, lids, straws		
• Reusable plastic containers • Plates, utensils, cups to be washed and reused • Bring your own dishes • Dishes that are safe and durable • Cups, lids and straws for multiple purposes (e.g. coffee, bubble tea)	• Different systems for takeout vs. eating in, and repeat vs. non-repeat customers • Deposit system for reusable takeout containers • Chips/barcodes to track takeout containers • No barriers for people eating in • Incentivize public to bring in their own dishes • Centralized facilities and staff for dishwashing • Public washing stations • Create a desirable dine-in environment • Map of deposit drop-off locations • Dishwasher behind a transparent wall to improve public confidence	• Public education campaign • Clear rules for bringing your own containers • Education and capacity building support for food court landlord, vendors, staff • Include deposits in the price.

Criteria	Scale (1-5)	Grocery Store	Urban Farm	Food Court
Table 4. Session B Activity: Voting Outcomes				
Staff Perspective				
Will packing this item take less or more time compared to a current item?	5=A lot more time; 4=Somewhat more time; 3=About the same time; 2=Somewhat less time 1=A lot less time	5, 4, 4, 4, 5	4, 4, 4, 4, 4, 5	3, 3, 3, 3, 3
How much easier or harder would it be to manage this system compared to before?	5=A lot harder; 4=Somewhat harder; 3=About the same; 2=Somewhat easier; 1=A lot easier	5, 3, 4, 5, 5	3, 4, 5, 5, 5, 5	4, 4, 5, 5, 5, 5
How much would you sell this item for compared to a current item?	5=A lot more; 4=Somewhat more; 3=About the same; 2=Somewhat less; 1=A lot less	3, 5, 4, 5, 4	4, 4, 4, 4, 3, 3	3, 3, 4, 2, 4, 4
Customer Perspective				
How convenient would it be to buy this item in this form compared to a current item?	5=A lot more convenient; 4=Somewhat more convenient; 3=About the same; 2=Somewhat less convenient; 1=A lot less convenient	5, 1, 3, 3, 1	1, 2, 3, 3, 3, 3, 3	3, 3, 2, 2, 4, 3
How much would you pay for this item compared to a current item?	5=A lot more; 4=Somewhat more; 3=About the same; 2=Somewhat less; 1=A lot less	4, 4, 3, 3, 3	4, 4, 4, 4, 3, 3, 3	4, 4, 4, 4, 3, 3
Systems Perspective				
How confident are you in this option maintaining food safety compared to a current item?	5=A lot more confident; 4=Somewhat more confident; 3=About the same confidence; 2=Somewhat less confident; 1=A lot less confident	2, 1, 3, 3, 3	2, 2, 2, 2, 2, 1, 1	2, 3, 2, 3, 5, 2
How well do you think this would support a just economy compared to a current item?	5=Support a lot more; 4=Support somewhat more; 3=Support about the same; 2=Support somewhat less; 1=Support a lot less	5, 2, 5, 2, 3	4, 4, 4, 4, 3, 2, 5	5, 5, 5, 4, 4, 4
How environmentally friendly is this option compared to a current item?	5=A lot more environmentally friendly; 4=Somewhat more environmentally friendly; 3=About the same; 2=Somewhat less environmentally friendly; 1=A lot less environmentally friendly	5, 4, 5, 4, 4	4, 4, 4, 4, 4, 5, 5	5, 4, 5, 5, 4, 4