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2021 BioCycle/ BPI Virtual Workshop Report

Table Of Contents

3	Executive Summary
4	Roadmap
5	Action Plan
6	Introduction
7	Part One: Goals & Pre-Work
14	Part Two: Session 1 & Session 2
28	Part Three: Toward A Roadmap & Action Plan
32	Conclusion
33	Appendix

Executive Summary

The 2021 BioCycle / BPI Virtual Workshop sessions were a multi-stakeholder series of conversations with Composters & Haulers, Municipalities, Foodservice Operators & Brands, and Compostable Product & Material Manufacturers. The stated goals were:

- 1 Identify and confirm the top barriers to the acceptance and successful processing of certified compostable products.
- 2 Build consensus for a single set of acceptability criteria so that compostable products can be accepted and successfully processed by a broader set of composters processing food scraps.

Through pre-workshop surveys and interviews, agendas were set for two discussion sessions moderated by Nora Goldstein of BioCycle Magazine. The first session focused on the "Contamination" barrier, and the second session focused on the "Compostability Standards" barrier, or certified products not breaking down quickly enough in "real world" environments. A third barrier, "Organic Agriculture Rules", was addressed during the first session but due to its nature as a policy issue, a full session was not dedicated to a group discussion of it.

Both sessions were guided by a "ballot" of proposed action items designed to address the barrier in question. At the end of each session, all participants provided Yes / No indications of support or non-support for each action item. Participants were also given the opportunity to make new suggestions for action, as well as to provide open comments on the proposed actions. The complete results of these ballots can be found in Part II of this report.

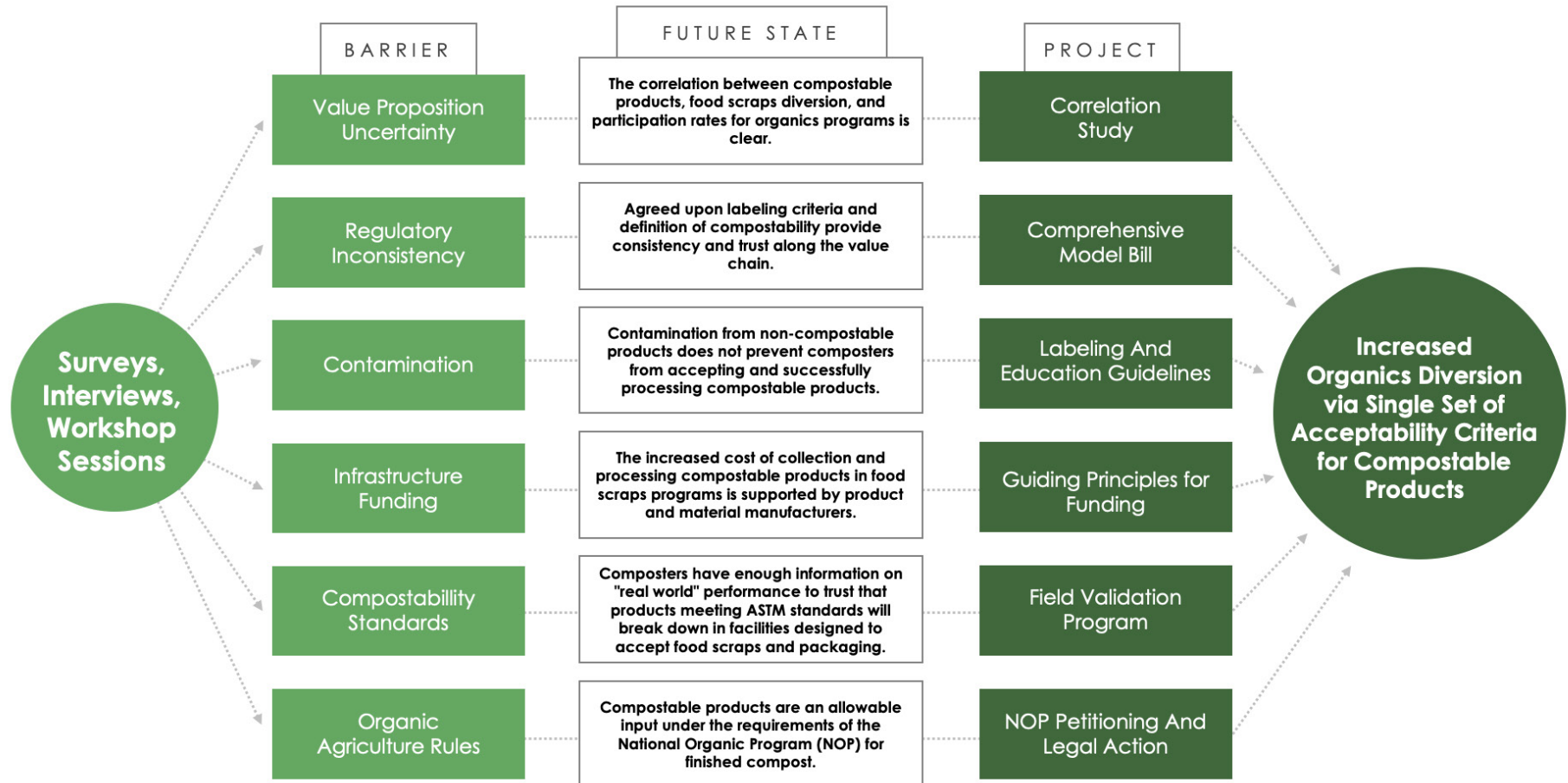
Once these first two sessions were complete, BPI and BioCycle considered the full breadth of perspectives provided and translated them into a Roadmap and Action Plan. The Roadmap has three key components - barriers, future states, and projects. The barriers, of which three are listed above, are core issues preventing acceptance and successful processing of compostable products. The future states are statements of what success looks like on each barrier. The projects are discrete work products that will be managed by BPI, its Committees, its Board of Directors, and through collaborations with external partners. The Action Plan builds off the Roadmap, with scope of work statements for each project, connections to the ballots, timing, and designations of project lead.

Drafts of the Roadmap and Action Plan were shared with the workshop participants during a set of reporting sessions that preceded publication of this report. During those sessions, participants provided comments and feedback on the Roadmap and Action Plan that were incorporated into the final versions included here.

While the work described in the Roadmap and Action Plan represents the full range of the conversations had during the workshop sessions, it is by no means an exhaustive list of what will be required to get us to the ultimate goal of increased organics diversion by way of a single set of acceptability criteria for compostable products. It is, however, a complete expression of the challenges and opportunities in front of us today. BPI looks forward to collaborating with you and your organization as we continue this important work.

Roadmap

The graphic below shows the results of the workshop process - barrier confirmation, future state articulation, and project identification.



BPI Action Plan

BARRIER	FUTURE STATE	PROJECT	SCOPE OF WORK	BALLOT ITEM(S)	TIMING	PROJECT LEAD
Value Proposition Uncertainty	The correlation between compostable products, food scraps diversion, and participation rates for organics programs is clear.	Correlation Study	A data gathering exercise around whether or not the use of compostable products leads to increases in food scraps diversion, and what the relationship is between their use and participation in organics programs.	Specific project identified and discussed in Session 1	2021	BPI Staff
Regulatory Inconsistency	Agreed upon labeling criteria and definition of compostability provide consistency and trust along the value chain.	Comprehensive Model Bill	A multi-stakeholder informed model bill that lays out certification and labeling requirements for compostable products, supported by field validation and industry standards for labeling.	Contamination / Regulatory 1 Compostability Standards / Regulatory 1, 3	2021	BPI Legislation & Advocacy Committee
Contamination	Contamination from non-compostable products does not prevent composters from accepting and successfully processing compostable products.	Labeling and Education Guidelines	Consumer / end-user testing of labeling techniques for compostable products to inform model bill and labeling guidelines, combined with messaging direction for all stakeholders.	Contamination / Product Labeling 1, 23 Contamination / Awareness, & Education 1, 2	2021	BPI Communications Committee
Infrastructure Funding	The increased cost of collecting and processing compostable products in food scraps programs is supported by product and material manufacturers.	Guiding Principles for Funding	Establish criteria for regulatory-driven, mandatory funding programs, as well as voluntary funding programs, that align with best practices for organics diversion programs, and include the compostable products industry.	Contamination / Operational Support for Composters 1 Compostability Standards / Operational Support for Composters 1	2021	BPI Board Task Force
Compostability Standards	Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging.	Field Validation Program	Launch field validation program to integrate with existing data sets on performance of compostable products in a diverse mix of real world environments, making data available to composters and others through online portal and annual reports.	Compostability Standards / Field Validation of ASTM Standards 1	2022	BPI Composter & Municipality Committee
Organic Agriculture Rules	Compostable products are an allowable input under the requirements of the National Organic Program (NOP) for finished compost.	NOP Petitioning and Legal Action	Continue engagement with NOP, establish coalition with composters and other partners to either file a petition with the NOSB or pursue a rule change with NOP.	No ballot items were introduced for Organic Agriculture.	2026	BPI Staff

Introduction

The BioCycle / BPI Virtual Workshop sessions that took place in January 2021 were not the first multi-stakeholder conversations about the challenges that come with collecting, accepting, and processing compostable products, and they cannot be the last if there is to be any hope of solving them for good.

In late August 2020, the California legislative session concluded with a mixed outlook for the future of compostable products and organics diversion in that crucial state. In many ways the situation in California was, and continues to be, a microcosm of the issues facing the industry across North America. There is tremendous market demand for compostable packaging, but composters are having varying degrees of success accepting and processing the material. Resolving this reality prompted BPI to invest in a multiple step process to solicit input from four major stakeholder groups — Composters & Haulers, Municipalities, Foodservice Operators & Brands, and Compostable Product & Material Manufacturers — with the goal of generating consensus on an action plan for 2021 and beyond. The input was solicited from the four stakeholder groups via a survey, one-on-one interviews, and two virtual workshop sessions. Each stage was designed to work towards consensus on critical “next step” actions.

The term “successful processing” shows up frequently in the language used for this workshop, and is worth calling out specifically here. This is especially important because some composters, for a variety of reasons, accept compostable products but screen them out before any processing ever takes place. Compostable products and packaging exist to facilitate the diversion of food scraps from landfills, but the products and packaging themselves must also be diverted from landfills if the zero-waste value proposition that attracts food service operators, brands, end-users and consumers to them is to be realized. The treatment of key barriers in these workshop sessions, and for BPI more broadly, assumes that the screening out of compostable products before processing is not a viable solution in the long term, though it may be a practical one in the short term. It may also be the best indicator of how challenging these barriers have become for some composters, and will hopefully bring increased urgency to the work ahead.

By October 2020, there was a target list of workshop participants from the four key stakeholder groups. Nora Goldstein from BioCycle Magazine agreed to sign on as a moderator and consultant to the process. From there, BPI began the scheduling, planning, interviewing and other work required to execute a multi-stakeholder virtual workshop in the midst of the 2020 - 2021 COVID pandemic reality.

STATED GOALS

There were two stated goals for the workshop sessions:

- 1 Identify and confirm the top barriers to the acceptance and successful processing of certified compostable products.
- 2 Build consensus for a single set of acceptability criteria so that compostable products can be accepted and successfully processed by a broader set of composters processing food scraps.

Participants

BPI wishes to thank all of the participants who generously gave their time to this effort. While every attempt was made to build consensus and accurately portray the spirit of the discussions, individual participants may not endorse all views expressed in this report.

COMPOSTERS & HAULERS



DAN GOOSEN



ERIC MYERS



LYNN HOFFMAN



KATE BAILEY | DAN MATSCH



JUSTEN GARRITY



CARLA CASTAGNERO



CHUCK JOSWIAK



TIM DEWEY-MATTIA



ERIC POTASHNER



JACK HOECK



JOHN WATTS



LESLIE ROGERS

Two composting facilities that participated in the workshop wish to remain unnamed.

MUNICIPALITIES



BRIDGET ANDERSON



XINCI TAN



KELLIE KISH



SEGO JACKSON



HILLARY NEAR

FOODSERVICE OPERATORS & BRANDS



RENATA NERI



KEVIN QUANDT



JENNA EVANS | KEVIN SCHMIDT



JOANNE YEE



ANGELA GILBERT



GRAHAM GIVENS

COMPOSTABLE PRODUCT & MATERIAL MANUFACTURERS



CHRIS MITCHELL



PHIL VAN TRUMP



DEREK ATKINSON



JULIA WETSTEIN



VINEET DALAL



PEG HOKS



TIM GOODMAN



JAKE HEBERT



EMILY EWING



STEVE ROSSE



LYNN DYER



RENAUD DES ROSIER



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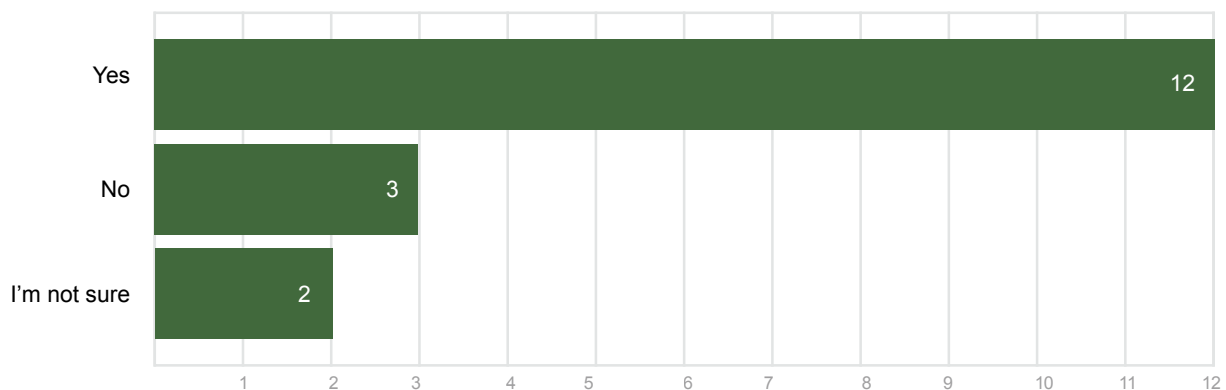
Surveys And Interviews

Each participant was sent a survey designed to inform programming decisions. Participants were asked a range of questions about compostable products, their efficacy in the effort to collect and process food scraps, and the most commonly cited barriers to the acceptance and successful processing of compostable products. In addition to the survey responses, all Composters & Haulers, Municipalities, and Operators & Brands were invited to complete 30-minute interviews with the Moderator and BPI Staff. Over 75% of this group participated in one of these interviews, which provided opportunities for participants to expand on their survey responses, and were critical components in the workshop development process.

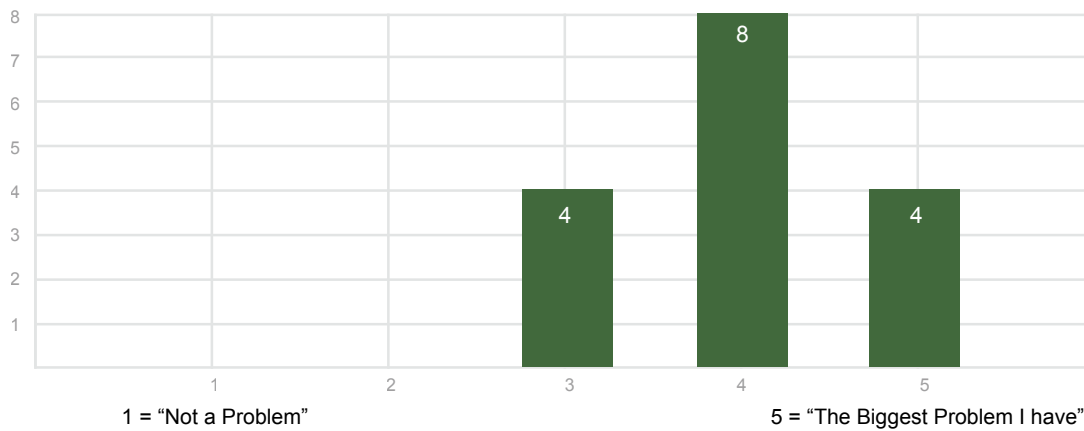
The complete survey results can be found in the appendix of this report, and responses to selected questions have been chosen for display below.

Select Responses From Composters, Haulers, And Municipalities

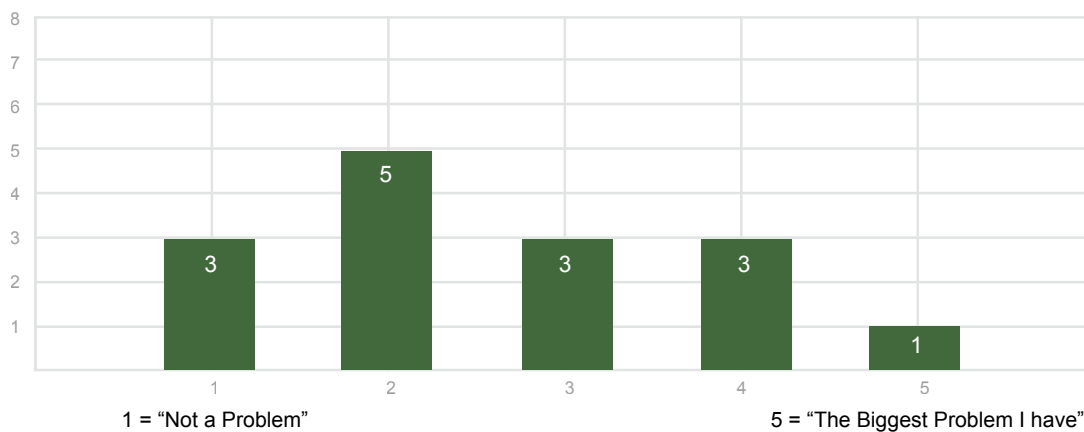
Do you think compostable products help you process more food scraps? (COMPOSTERS, HAULERS & MUNICIPALITIES)



How challenging is contamination from non-compostable products? (COMPOSTERS, HAULERS & MUNICIPALITIES)

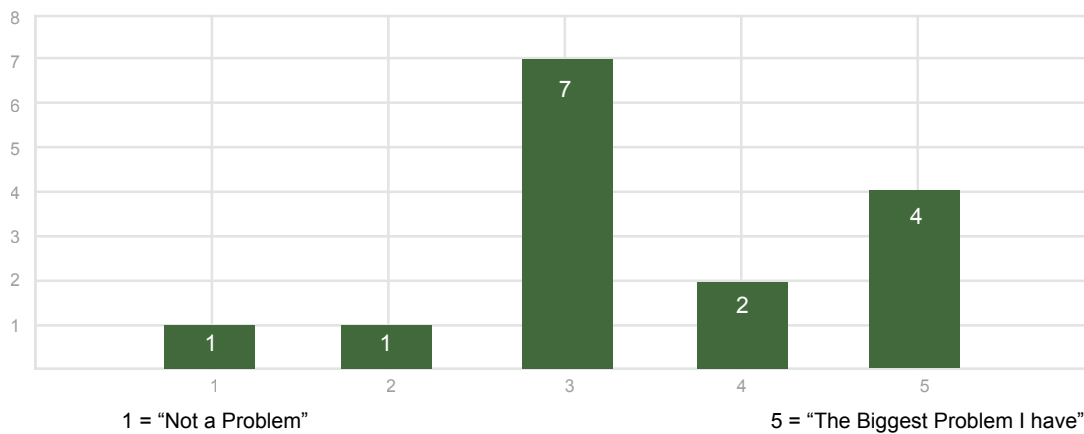


How challenging is the issue of compostability standards as it relates to products meeting ASTM standards not breaking down fast enough? (COMPOSTERS, HAULERS & MUNICIPALITIES)



How challenging is the issue of Organic Agriculture standards limiting end market opportunities?

(COMPOSTERS, HAULERS & MUNICIPALITIES)



Barrier Identification And Selection

The survey results confirmed an operating assumption that BPI has had for some time, which is that the three most commonly cited barriers to the acceptance and successful processing of compostable products are:

- ① Contamination
- ② Compostability Standards (products meeting ASTM standards not breaking down fast enough in "real world" environments)
- ③ Organic Agriculture Standards (limited end-market opportunities for finished compost in which compostable products are an input)

Given that there were only two, two-hour workshop discussion sessions to work with, the decision was made to dedicate the first session to the "Contamination" barrier, and the second session to the "Compostability Standards" barrier. This was largely done due to the nature of the "Organic Agriculture Standards" barrier as a policy issue that would benefit less from group discussion than the other two.

Future State Definitions

As a guide for the discussions, future state definitions for "Contamination" and "Compostability Standards" were generated and circulated to the participants. These future state definitions capture BPI's expressions of what success looks like on the Contamination and Compostability Standards barriers, and rely heavily on the feedback participants gave in their survey responses and interviews.

CONTAMINATION FUTURE STATE: "Contamination from non-compostable products does not prevent composters from accepting and successfully processing compostable products."

COMPOSTABILITY STANDARDS FUTURE STATE: "Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging."

Proposed Action Items

A list of proposed action items to bridge from the present state to the desired future state for each barrier was generated, again with heavy reliance on the survey responses and interviews. The action items were divided up into different categories - **Regulatory, Product Labeling, Field Validation of ASTM Standards, Awareness & Education, and Operational Support for Composters** - and are listed below.

Proposed Action Items - Contamination

REGULATORY

- ① Draft and promote model bill language that...
 - Requires third-party certification for compostable products.
 - Requires specific labeling and identification methods for compostable products.
 - Prohibits specific labeling and identification methods for non-compostable products.
 - Specifically addresses lookalike products and prohibits use of terms that invite confusion and contamination.
 - Requires the use of compostable packaging in food service environments where composting infrastructure exists.
 - Creates funding mechanisms for growth in composting infrastructure.

PRODUCT LABELING

- ① Fund and execute research project for end-user and consumer testing of on-product labeling techniques for compostable products.
- ② Update BPI's 2020 labeling guidelines to reflect research and missing stakeholder input from Brands, Operators, Composters and Municipalities.
- ③ Launch industry-wide voluntary pact that Manufacturers, Brands, and Operators sign on to pledging specific actions on labeling.

AWARENESS & EDUCATION

- ① Drive consistent messaging from all stakeholders (Manufacturers, Brands, Operators, Composters, Municipalities) around composting and compostable products.
- ② Design broader based awareness campaigns and messaging for end-users and consumers about what to put into organics bins and why.

OPERATIONAL SUPPORT FOR COMPOSTERS

- ① Fund composter ability to handle a small amount of contamination from non-compostable products without screening out all packaging.

Proposed Action Items - Compostability Standards

FIELD VALIDATION OF ASTM STANDARDS

- 1 Develop (or build on an existing) collaborative program designed to generate comprehensive data on the performance of certified products in composting facility systems.

CORE PROGRAM ELEMENTS

- A testing plan that keeps the burden off of composters.
- Standardized testing protocols that produce reliable and trustworthy data.
- Representative participation from different geographies, climates, and composting systems.
- Agreement on baseline operating conditions - e.g., heat, moisture, C:N, etc.
- Annual reports and anonymous database of results available to composters and others.

REGULATORY

- 1 Draft and promote model bill language that uses the ASTM standards to define compostability and leverages field validation results (when available) to establish specific time frames and operating conditions.
- 2 Adjust the ASTM standards and testing requirements as needed based on field validation results.
- 3 Address existing problems related to standards in regulatory language with collaborative industry voice.

AWARENESS & EDUCATION

- 1 Drive standardized education efforts on the existing ASTM compostability standards, required testing, and what the results say about how a product will perform in "real world" environments.
- 2 Collaborate on industry statements communicating results of field validation program in conjunction with annual reporting on database development.
- 3 Integrate successful processing methods for compostable products into composter training and certification programs.

COMPOSTER OPERATIONAL SUPPORT

- 1 Fund composter ability to modify processing conditions to better process compostable products.

Session Progression

The proposed action items were the basis for small and large group discussions during each session, and all participants provided Yes / No expressions of support or non-support for each action item via electronic ballot at the end of the sessions. Participants also had the opportunity to write in proposed action items that were not included on the ballots, and to make general comments on topics related to the specific barrier being addressed. The results of the discussions and ballot submissions for each session are the focus for Part II of this report.

PART TWO : SESSION 1 & SESSION 2

SESSION 1 - Contamination

JANUARY 14, 2021

Desired Future State :

"Contamination from non-compostable products does not prevent composters from accepting and successfully processing compostable products."

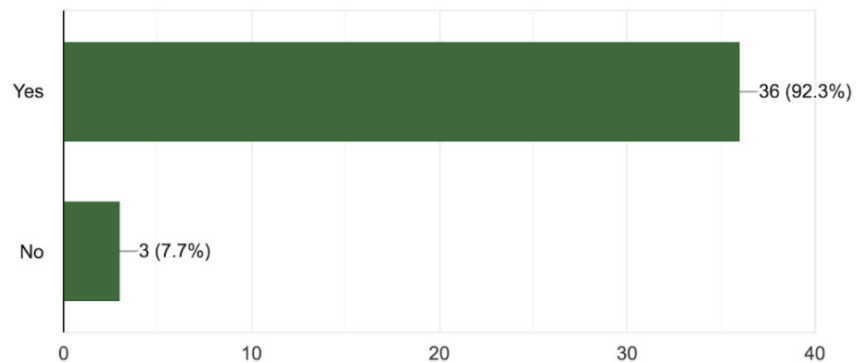
After opening remarks from BioCycle and BPI, participants were reintroduced to the workshop goals, and reminded of the specific actions all participants could expect to take while in the sessions:

- 1 Discuss proposed action items to address barriers to the acceptance and successful processing of compostable products
- 2 Privately "vote" on proposed action items before leaving the sessions via electronic ballots.

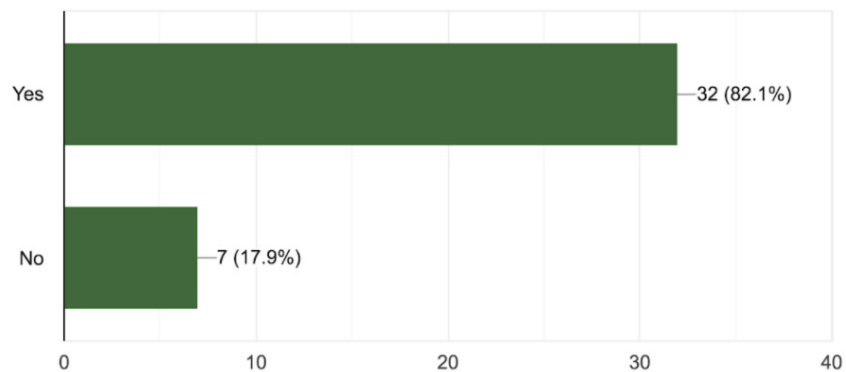
With this in mind, participants were shown the survey results detailed in Part I before splitting off into five separate breakout sessions for a review and discussion of the proposed action items for the "Contamination" barrier. Following the breakout sessions, a moderated discussion anchored by the proposed action items took place. The session concluded with each participant providing Yes / No responses to each action item, in addition to new ideas and further comments. The Yes / No responses and selected comments are provided below.

Proposed Action Item Responses - Regulatory

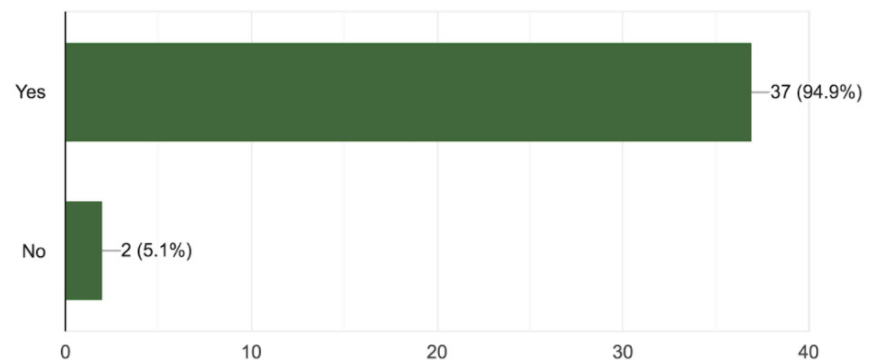
Require specific labeling and identification methods for compostable products.



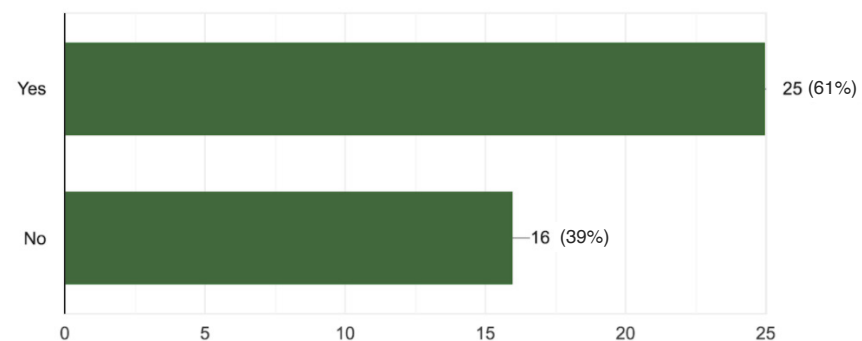
Prohibit specific labeling and identification methods for non-compostable products.



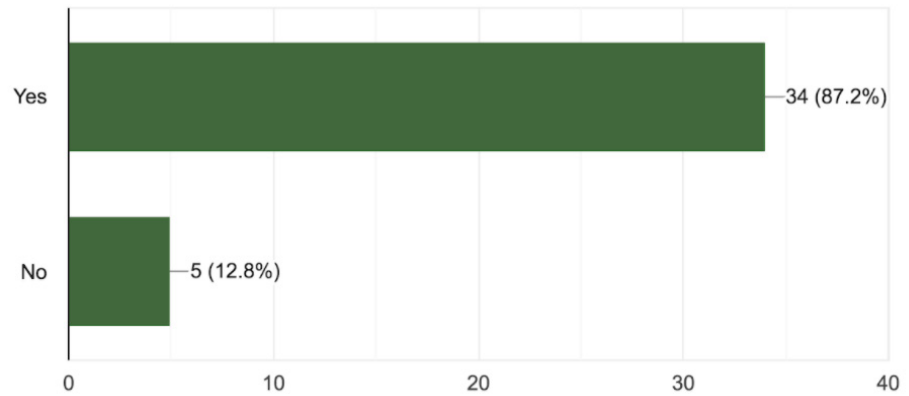
Specifically address lookalike products and prohibit use of terms that invite confusion and contamination.



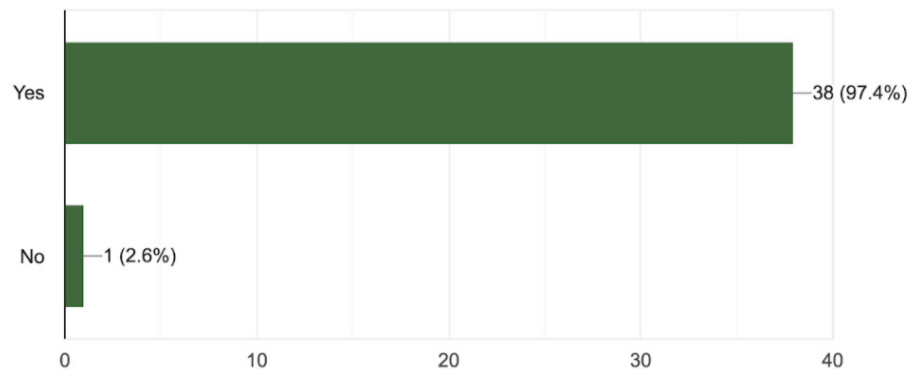
Require the use of compostable packaging in food service environments where composting infrastructure exists.



Create funding mechanisms for growth in composting infrastructure.



Require third-party certification for compostable products.



Proposed Action Item Selected Comments - Regulatory

"There was a suggestion about making these items above a "suite". I think that certification of a compostable product means - specific labeling and labels a "class" of composting (similar to recycling numbers) that would designate what method of composting can handle the material. I would also say that it is most important to ban misleading labeling and greenwashing elements so that we eliminate the confusion from the end user."

"No question that especially the prohibitions and enforcement are major challenges, but this is worth pursuing at the federal level. At state or muni level, could still work IF we agree on a template to avoid a patchwork."

"As discussed - agree that certification is

required to avoid contamination as long as we can create some consistent guidelines / standardization among certifying parties and testing protocols. This may relate more to the guidelines discussion proposed for next week. The same goes for labeling - consistent labeling will help divert compostable foodservice ware from the landfills and avoid contamination. It will serve all consumers and composters as long as standardization happens nationwide. As an Operator, the cost associated with having different labelling guidelines depending on the state is non feasible. Finally - requiring the use of compostable packaging should only happen where facilities exist. That is to grant proper end of life . Some locations may be better set up for recycling, others for composting."

"I would be against specific identification mandates for branded products that would affect their marketing or brand image. Going up against competitors who are not facing a similar identification mandate would have an advantage from a 'shelf look' perspective and brands use their packaging to stand out on shelf."

for what you really want and know that you may have to give a piece or two up to get it passed."

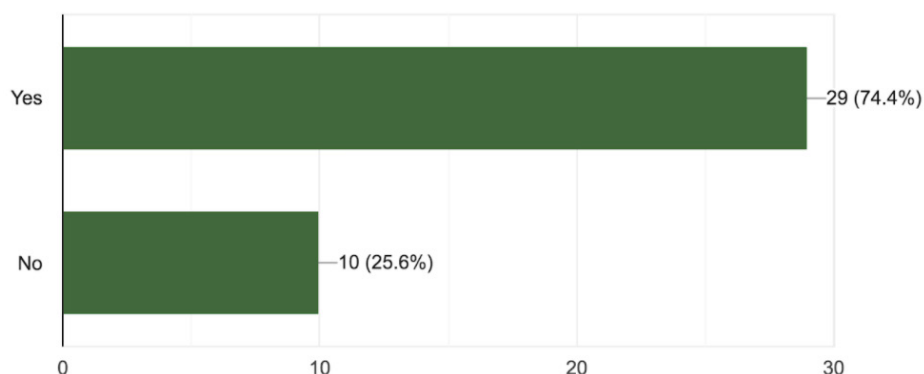
"Funding/EPR - funding infrastructure needs to include collection as well as processing capacity. "No" for requiring use unless/until we have standardization upstream."

"Funding mechanism should be separate from labeling bill. Addressing landfilling costs is a needed priority. Encouraging other States to enact a tax or fee for everything landfilled - and that pot of money can ONLY be used for other environmental programs/infrastructure (recycling, organics recycling, litter cleanups, etc.) For model labeling, I'd recommend shooting

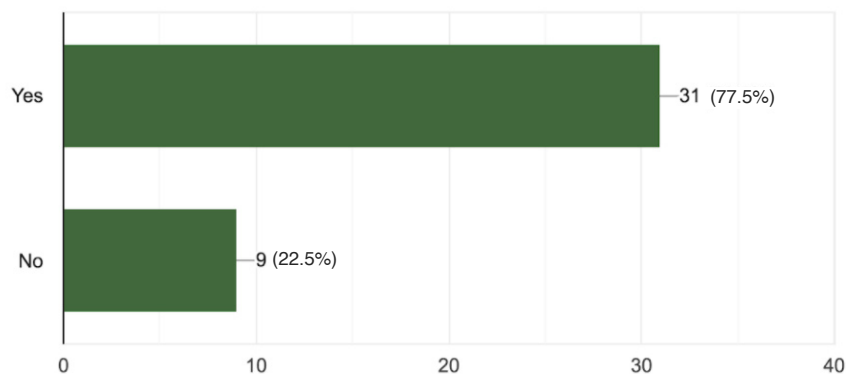
"Regulatory attention (versus voluntary) should be the priority ... Composters need funding to accept/be involved. Why should they get all the stress and no support from those up the chain who are benefiting from the use of these products."

Proposed Action Item Responses - Product Labeling

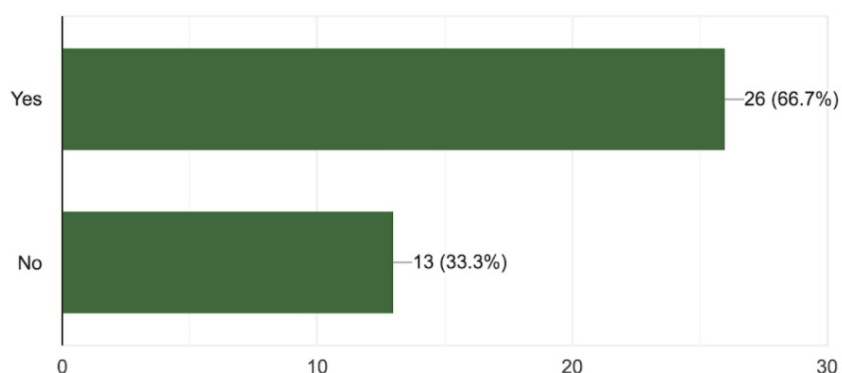
Fund and execute research project for end-user and consumer testing of on-product labeling techniques for compostable products.



Update BPI's 2020 Labeling Guidelines to reflect research and missing stakeholder input from Brands, Operators, Composters and Municipalities.



Launch industry-wide voluntary pact that Manufacturers, Brands and Operators sign on to pledging specific actions on labeling.



Proposed Action Item Selected Comments - Product Labeling

"Voluntary pacts already exist and will be duplicative. Better/stronger to be handled through regulatory action."

"BPI 2020 update is a solid yes. The two others are conditional, or "if..." It would be nice to have the consumer testing but not essential at this time. So nice if possible. The industry wide labeling pact would be for non-compostable packaging industry to sign on to not "trespass" into space that needs to be reserved for compostable packaging (tinting, labeling, images, etc.)"

"We need data-driven insights to help us understand how product identification and labeling and a consumer-education/awareness campaign can help drive a shift in consumer behavior to improve proper disposal."

"Consistent labeling will help divert compostable foodservice ware from the landfills and avoid contamination."

"Big push on product labelling in the Plastics Pact; would coordinate there and join this effort- they need a lot of help on composting!; you already have voluntary compliance with who is using the label."

"Labeling from a composters perspective is only effective if the products can easily be identified and discerned at scale (think 20 ton loads), and it's unlikely that major brands are going to change their brand labelling as noted in our breakout session. Starting incrementally with plastic bag standards would be a huge leap forward vs. trying to identify every product as compostable."

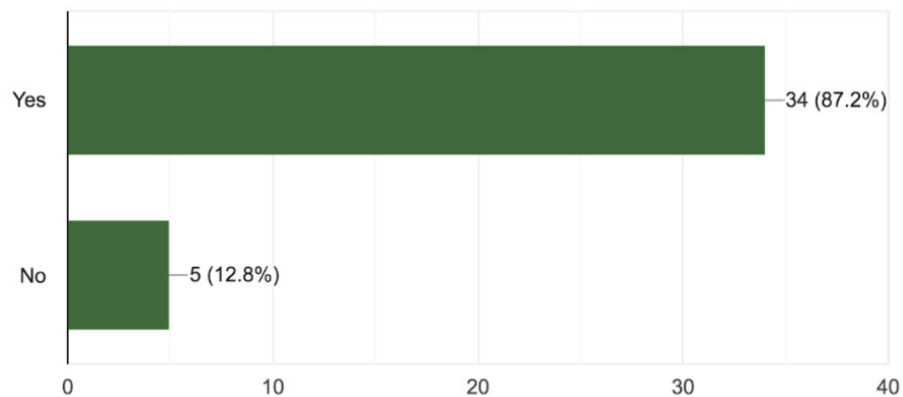
"I think the pact is the most interesting of these. It could lead to well-supported regulation with industry buy-in. I'm not sure yet another certification logo or pact logo helps consumer confusion, but it's a good tool for industry to align."

"From what we've seen, even internally, consumer knowledge is a disaster, so consumer teaching feels important to complete prior to testing labeling techniques. I always support industry-wide pacts and pledges; I think it's something we need more of on all things sustainability. How do we accelerate?"

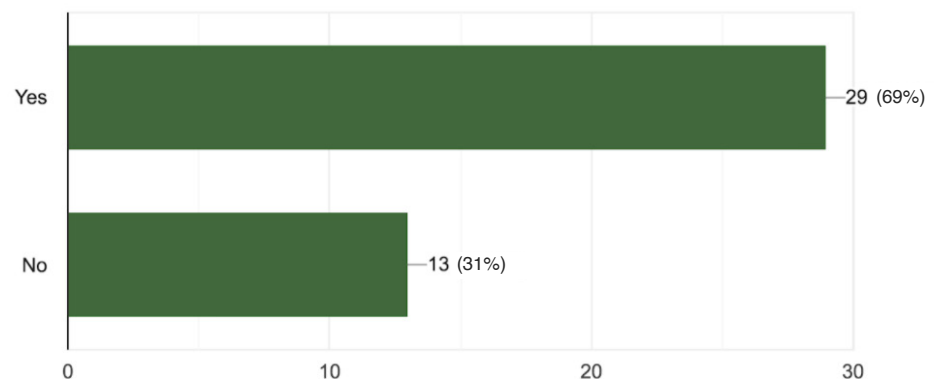
"I would like the labeling pact to be linked to a manufacturer/brand/operators ability to use the BPI logo. As in if it was misused, they could lose their ability to use it."

Proposed Action Item Responses - Awareness & Education

Drive consistent messaging from all stakeholders (Manufacturers, Brands, Operators, Composters, Municipalities) around composting and compostable products.



Design broader based awareness campaigns and messaging for end-users and consumers about what to put into organics bins and why.



Proposed Action Item Selected Comments - Awareness & Education

"We did not discuss much, but it has been my experience that when composting programs with compostables fail, it is because of this."

"Agree with education and awareness in order to help with contamination. With that said, this action may be secondary in the sense that we will need to address standardization of certifying guidelines, and standardization of labelling in order to facilitate education and awareness actions."

"Hard to imagine the awareness and education proposals being effective outside of very tightly defined geographic areas where ample outlets exist. Otherwise, way too much confusion and misinformation."

"All of the above and a lot of it. We have a long way to go on education."

"I just think that it is too difficult to do either of these until there is more "systems" work done."

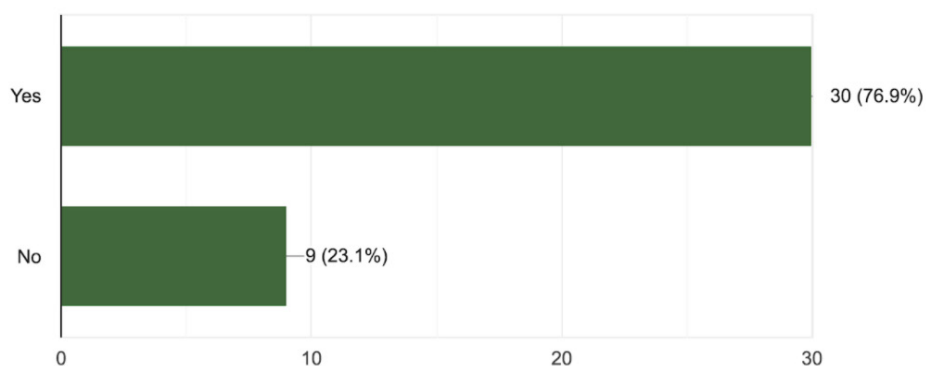
Would be great to have consistent list of top three contaminants that can be widely messaged--i.e. is it really about cups or bags or utensils or glass??; awareness is super important to make stronger connection to climate impact of recycling, but more focused on food scraps than compostable products."

"Possibly consider targeted education in schools for areas with food scrap collection/drop off facilities."

"One of the challenges may be that each municipality has different requirements for what is allowed in their organics bins, however, a toolkit that can easily be customizable by a municipality/region would be helpful."

Proposed Action Item Responses - Operational Support For Composters

Fund composter ability to handle a small amount of contamination from non-compostable products without screening out all packaging.



Proposed Action Item Selected Comments - Operational Support For Composters

"Provide a subsidy (through EPR) for composters to (a) purchase equipment that can help with contamination or (b) allow composters to run a portion of their facility at slower speed, lower efficiency, etc. to accommodate for packaging products without affecting profitability of the business."

"Big request to lead/help develop EPR model to help fund infrastructure; we need a model bill to put forward."

"This is more a general funding question - i.e. it's important to fund collection and composting infrastructure development in general, not just for how to handle packaging."

"I heard some composters express lack of interest in funding to address contamination. The intent is to have this only address contamination that cannot be stopped upstream of the facility. As we hear from facilities their costs of dealing with contamination - hard to believe that financial support for them to do so would not be beneficial."

"I think our efforts are best focused upstream at reducing possible contamination before it arrives at facilities."

"Why should composters have to accept compostable products & packaging? Why is any amount of contamination acceptable for the composters?"

"Prioritize funding to private operators. Often seems like funding goes to municipalities and non-profits and not for-profit facilities."

"I agree with the comment regarding the need for a longer term study of Seattle/San Francisco approach vs Portland and results."

"Need to determine through a larger session where funding prioritization should go."

"Focus education to brand manufacturers to understand how commercial compost facilities actually operate, the challenges that we are faced with...etc."

"I feel this question needs more detail, and it could open a Pandora's Box or become a slippery slope. "Small amount of contamination" can mean different things depending on perspective. 10% may not seem like a lot, but it is significant to a composter, but a manufacturer might think that's no problem. Even a small amount of plastic contamination can mean millions of pieces of microplastics that end up in gardens all over, not only polluting the environment but also affecting the finished compost's marketability."

SESSION 2 - Compostability Standards

JANUARY 21, 2021

Desired Future State :

"Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging."

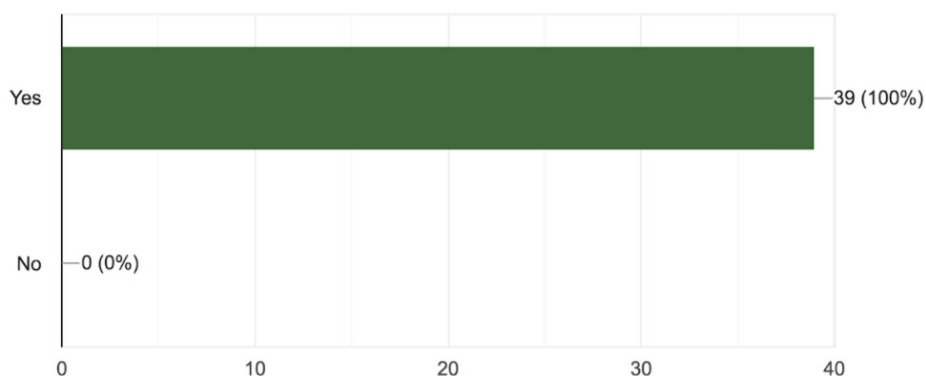
The second session began with a quick review of the Compostability Standards barrier and future state to make sure all participants were in alignment with BPI's definition of the barrier, which was described simply as, "Products meeting ASTM standards not breaking down quickly enough in real world environments."

BPI's Executive Director, Rhodes Yepsen, gave a short review of the ASTM standards - why they exist, testing requirements, the role of "real world composting" in their development, and conclusions from a presentation he gave to ASTM Members in 2017 that called for "real world" data to build confidence in the lab disintegration tests.

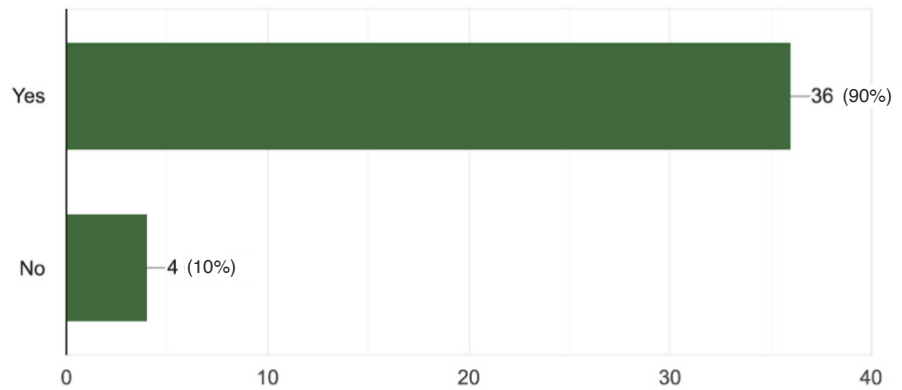
With this in mind, participants split off into five separate breakout sessions for a review and discussion of the proposed action items for the "Compostability Standards" barrier. Following the breakout sessions, a moderated discussion anchored by the proposed action items took place. The session concluded with each participant providing Yes / No responses to each action item, in addition to new ideas and further comments. The Yes / No responses and selected comments are provided below.

Proposed Action Item Responses - Field Validation Of ASTM Standards

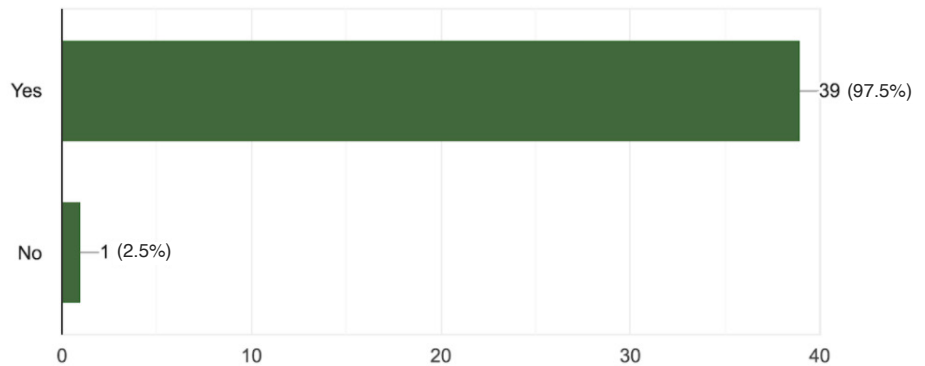
Develop (or build on existing) collaborative program designed to generate comprehensive data on the performance of certified products in composting facility systems.



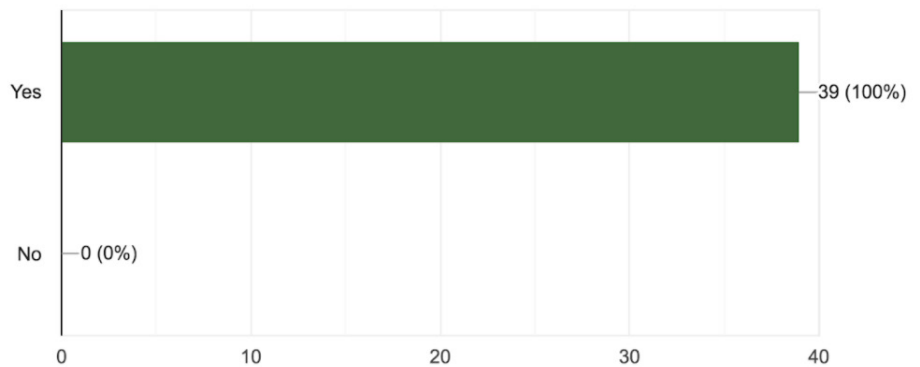
A testing plan that keeps the burden off of composters.



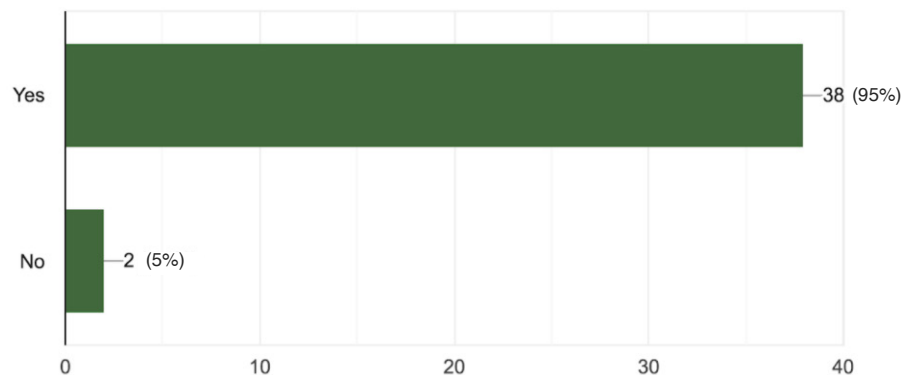
Standardized testing protocols that produce reliable and trustworthy data.



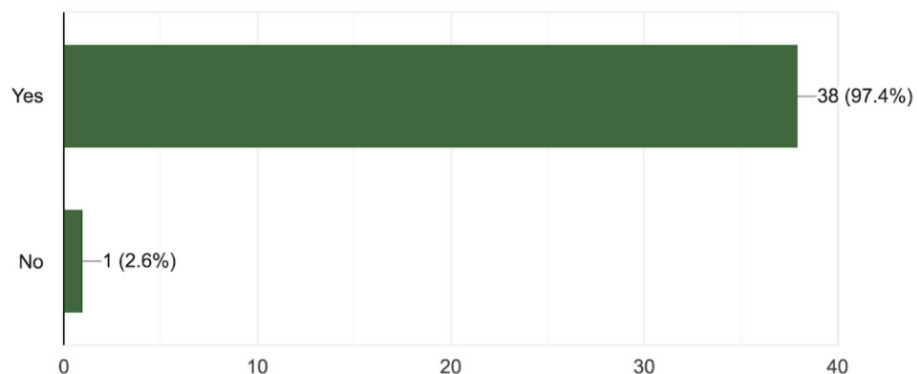
Representative participation from different geographies, climates, and composting systems.



Agreement on baseline operating conditions – e.g., heat, moisture, C:N, etc.



Annual reports and anonymous database of results available to composters and others.



Proposed Action Item Selected Comments - Field Validation Of ASTM Standards

"Field validation of what's actually causing the most issues and in what regions and using what types of technology, seems paramount to designing test procedures and then designing materials to meet them."

"Build on the CREF Open Source Field Testing Protocols."

"Time must be a measured, tracked parameter in order to determine if the current timeframes are valid."

"Mentioned in the discussion was an agreement on what "mature compost" is and to use that as baseline, ie if a composter produces mature compost, then compostable items will break down in their process."

"The core program elements need to reflect actual variability in compost operations and have to be validated with real world testing. The anonymous database will need a validation process so that the information is considered reliable. Also, the standards should consider not only the product, but how it is likely to be received from a quantity standpoint at compost facilities."

"Cannot treat all packaging as equal - need to address variability within packaging, as well as composters."

"Regarding the last question above: I would love to see annual reports and databases of testing results. However, I don't agree with the database being anonymous. The database and results would only be helpful if we can see what products/manufacturers passed or failed. I could see the compost facilities at which the testing took place being anonymous, but if they were, then at least information about their specific processing procedures would be necessary (temperature, time, moisture, windrow/ CASP, etc.)"

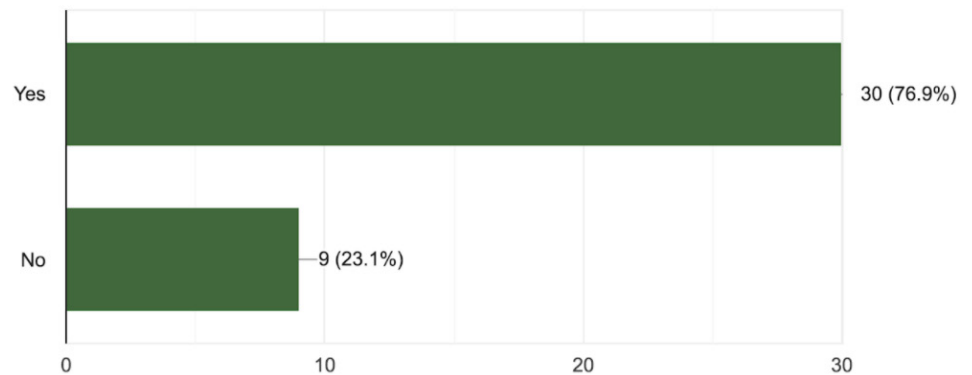
"The idea of standardization of composting facility parameters to fit the needs of compostable products disposal does not appeal to me. So long as these efforts do not head in that direction, then all components seem to make sense and should be included."

"I see this as a product manufacturer and brand sponsored program that tests BPI certified products in a variety of environments and compost systems, and shares the findings externally. Brand names and test sites, etc. could be left out of the reported data, the info would specify general terms about the product and test site. (Ex: PLA fork, aerated static pile, Pacific Northwest, disintegration 42 days). The report would also list best practices and anecdotes as seen by the facilities during testing."

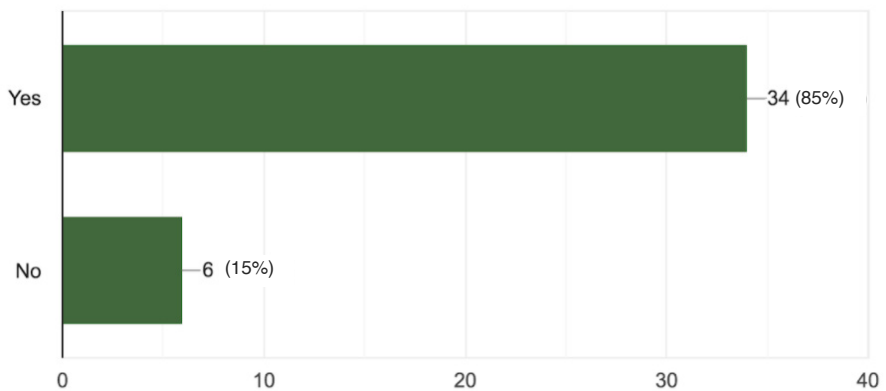
"The field testing needs to be standardized for sure, but I marked yes and no above because I do not believe we are going to get this information, also not sure how helpful it is; I think we want to focus on the end product as the metric. Just like we say with compostable products that it does not matter what they are made of, only that they meet the performance criteria, I suggest that this is the same for composters. It does not matter what their process is, as long as they reach a certain endpoint which is mature compost."

Proposed Action Item Responses - Regulatory

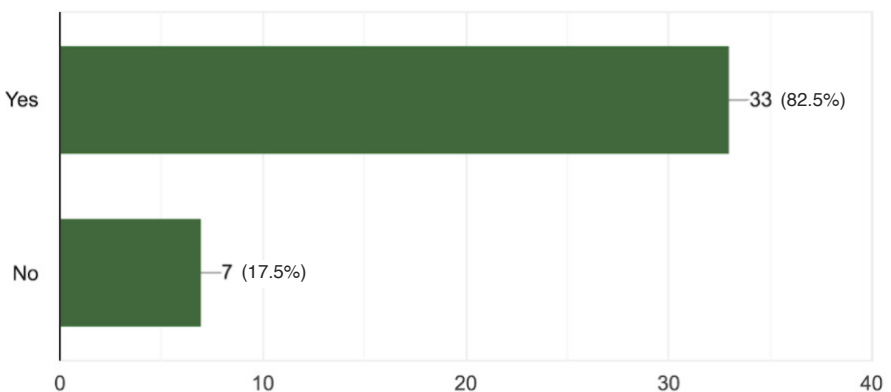
Model bill language that uses the ASTM standards to define compostability leverages field validation results (when available) to establish specific time frames and operating conditions.



Adjust the ASTM standards and testing requirements as needed based on field validation results.



Address existing problems related to standards in regulatory language with collaborative industry voice.



Proposed Action Item Selected Comments - Regulatory

"Maybe help develop model contract language for local units of government/haulers/composters regarding acceptability standards for compostable products (and how contaminants vs. non-fully composted compostable items) are handled."

"Want to explore the idea of working with existing regulatory authorities like CDFA to standardize implementation."

"I said no to the model regulatory question because it denotes validation from the field when available - it must include field validation in my opinion."

"The ASTM/ISO standard is not generally accepted/has much credence right now."

"Think that getting the buy-in from state regulatory bodies on the updated standards and testing regimen will be important."

"All of these Yes answers of course have a big "it depends on how the field testing is designed" attached."

"Shortening the time frame in ASTM seems like a good idea, but there would still be differing views as to what that proposal should be. ASTM D6400 currently accounts for a lot of good things in that we know biodegradation is occurring and that there is no eco-toxicity. Rather than change the standard, I think adding field validation and simply reporting the time frames observed for different products in multiple environments would be more effective."

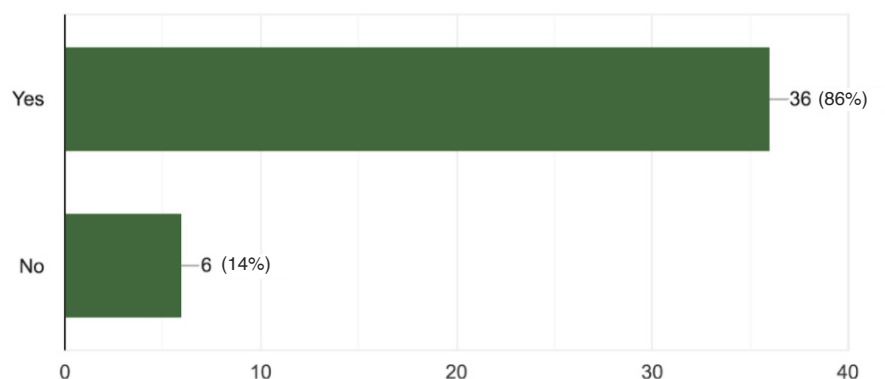
"Regulatory needs to refer to one unique set of standards nationwide that composters use and trust. Having regulations in the US referring to different standards is disruptive, making packaging development difficult and limiting opportunities to expand composting more broadly."

"For Model bill language that uses the ASTM standards - this should include fluorinated chemical limits, during breakout groups this was brought up that these limits are not included in ASTM standards."

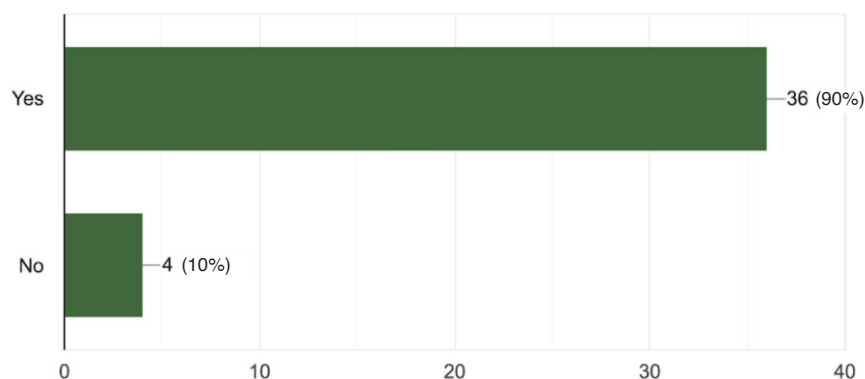
Proposed Action Item Responses - Awareness & Education

(NOTE: Due to a technical error, Yes / No responses were not gathered for Action Item 3 - "Integrate successful processing methods for compostable products into composter training and certification programs". There was, however, broad support expressed for this action in participant comments.)

Drive standardized education efforts on the existing ASTM compostability standards, required testing, and what the results say about how a product will perform in "real world" environments.



Collaborate on industry statements communicating results of field validation program in conjunction with annual reporting on database development.



Proposed Action Item Selected Comments - Awareness & Education

"I support awareness and education on BPI certification for residents as our composter will accept BPI certified products (as do all in our state). Residential education on ASTM would only be confusing as not many products reference ASTM standards. Education on ASTM for composters or manufacturers is a different story and I defer to their comments on that piece."

"Push universal education only after there is alignment / universal standard. Otherwise will not be useful as currently there are patchwork of standards being following."

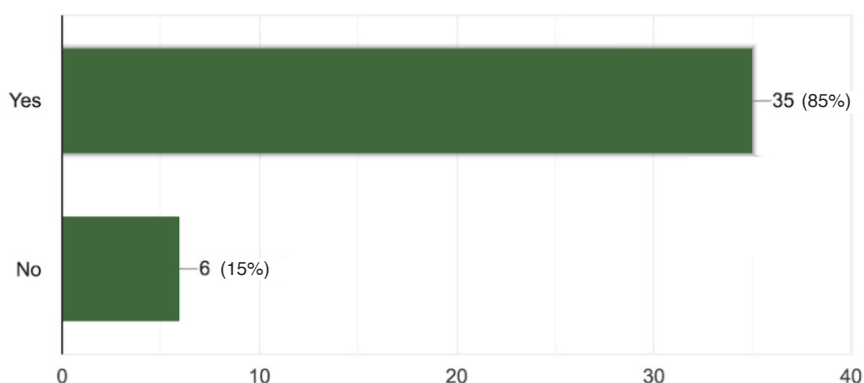
"USCC absolutely needs to have an education track around best practices for composters accepting compostable products."

"Need to keep in mind consumer education in all of this, if considering multiple standards, etc. (which I wouldn't support, for the reason that consumers have a long way to go on knowledge in this area)."

"Integrating compostable products education in composter training should not be limited to successful examples. Training should cover the successes and failures and why."

Proposed Action Item Responses - Operational Support For Composters

Fund composter ability to modify processing conditions to better process compostable products.



Proposed Action Item Selected Comments - Awareness & Education

"I answered no to the above because I'm just not sure the technology exists. I'd rather see funding going into R&D to figure out what equipment/process changes will be needed to be successful."

"Funding needs to be relevant to successful processing of compostable packaging. Funding for screeners and de-packagers and other equipment meant to get rid of compostable packaging should not be included."

"I'd love to see EPR-style support from manufacturers, though understanding that modifications are expensive!"

"Funding could take the form of a grant pool funded in an EPR format. There could also be advocacy for government-sponsored subsidies for qualifying composters (i.e. a composter could receive funds for setting aside a portion of their site to process compostable products, the funding would account for their having to run a longer cycle or sell into non-organic markets)."

"If certain composters and facilities need to upgrade their systems and processes to expand their composting capabilities, they should do so if the return is to have more organics coming in. Municipalities and Industry partnerships should help funding to upgrade the composters and thus expand acceptance."

"This must be in the interest of broader acceptance to grow the industry. Not just funding pre-screeners to allow composters to just take these materials out on the front end like 1383 seems to imply."

"Composters have to be profitable, and this should not be at the expense of rejecting compostable materials. Waste diversion is a part of the necessary pathway forward to offset climate issues. This must be figured out, as efficiently and effectively as possible with a collective effort. Composters must be supported."

PART THREE

Toward A Roadmap And Action Plan

Based on the responses to the proposed action items, and all of the other comments and feedback received throughout the process three new barriers and future states were generated to encompass the full range of projects likely to be identified as outputs of the workshop. The complete list of six barriers and future states is as follows:

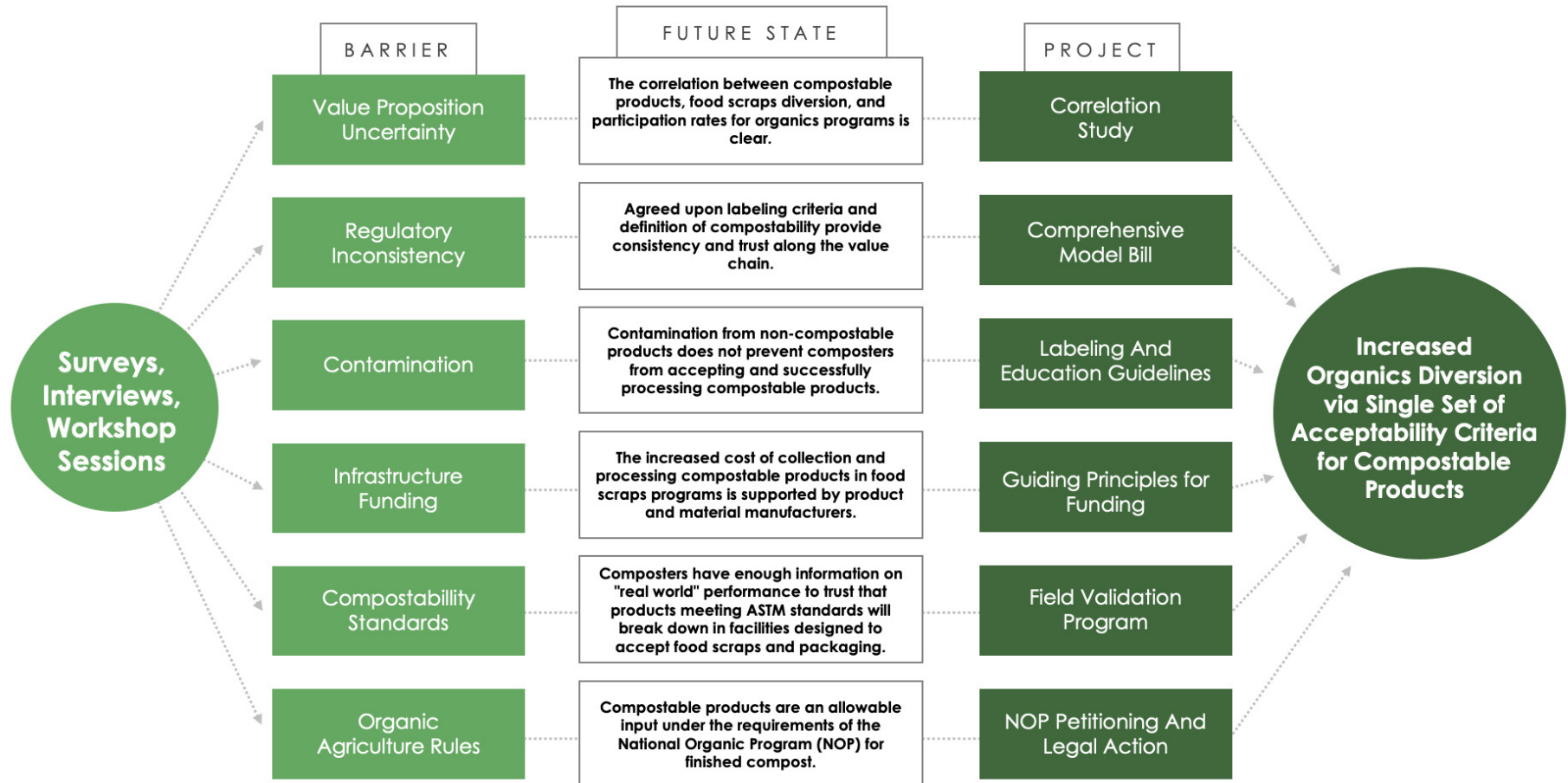
BARRIER	FUTURE STATE
Value Proposition Uncertainty	The correlation between compostable products, food scraps diversion, and participation rates for organics programs is clear.
Regulatory Inconsistency	Agreed upon labeling criteria and definition of compostability provide consistency and trust along the value chain.
Contamination	Contamination from non-compostable products does not prevent composters from accepting and successfully processing compostable products.
Infrastructure Funding	The increased cost of collecting and processing compostable products in a food scraps program is supported by product and material manufacturers.
Compostability Standards	Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging.
Organic Agriculture Rules	Compostable products are an allowable input under the requirements of the National Organic Program (NOP) for finished compost.

For each barrier and future state, a unique project and scope of work reflecting the natural starting point for work were generated. Those six projects and their corresponding scope of work descriptions are listed below:

PROJECT	SCOPE OF WORK
Correlation Study	A data gathering exercise around whether or not the use of compostable products leads to increases in food scraps diversion, and what the relationship is between the use of compostables and participation in organics programs.
Comprehensive Model Bill	A multi-stakeholder informed model bill that lays out certification and labeling requirements for compostable products, supported by field validation and industry standards for labeling.
Labeling and Education Guidelines	Consumer and end-user testing of labeling techniques for compostables to inform model bill and labeling guidelines, combined with messaging direction for all stakeholders.
Guiding Principles for Funding	Establish criteria for regulatory-driven, mandatory funding programs, as well as voluntary funding programs, that align with best practices for organics diversion, and include the compostable products industry.
Field Validation Program	Launch field validation program to integrate with existing data sets on performance of compostables in a diverse mix of real world environments, making data available to composters and others through online portal and annual reports.
NOP Petitioning and Legal Action	Continue engagement with NOP, establish coalition with composters and other partners to either file a petition with the NOSB or pursue a rule change with the NOP.

Roadmap

The graphic below shows the results of the workshop process - barrier confirmation, future state articulation, and project identification.



BPI Action Plan

BARRIER	FUTURE STATE	PROJECT	SCOPE OF WORK	BALLOT ITEM(S)	TIMING	PROJECT LEAD
Value Proposition Uncertainty	The correlation between compostable products, food scraps diversion, and participation rates for organics programs is clear.	Correlation Study	A data gathering exercise around whether or not the use of compostable products leads to increases in food scraps diversion, and what the relationship is between their use and participation in organics programs.	Specific project identified and discussed in Session 1	2021	BPI Staff
Regulatory Inconsistency	Agreed upon labeling criteria and definition of compostability provide consistency and trust along the value chain.	Comprehensive Model Bill	A multi-stakeholder informed model bill that lays out certification and labeling requirements for compostable products, supported by field validation and industry standards for labeling.	Contamination / Regulatory 1 Compostability Standards / Regulatory 1, 3	2021	BPI Legislation & Advocacy Committee
Contamination	Contamination from non-compostable products does not prevent composters from accepting and successfully processing compostable products.	Labeling and Education Guidelines	Consumer / end-user testing of labeling techniques for compostable products to inform model bill and labeling guidelines, combined with messaging direction for all stakeholders.	Contamination / Product Labeling 1, 23 Contamination / Awareness, & Education 1, 2	2021	BPI Communications Committee
Infrastructure Funding	The increased cost of collecting and processing compostable products in food scraps programs is supported by product and material manufacturers.	Guiding Principles for Funding	Establish criteria for regulatory-driven, mandatory funding programs, as well as voluntary funding programs, that align with best practices for organics diversion programs, and include the compostable products industry.	Contamination / Operational Support for Composters 1 Compostability Standards / Operational Support for Composters 1	2021	BPI Board Task Force
Compostability Standards	Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging.	Field Validation Program	Launch field validation program to integrate with existing data sets on performance of compostable products in a diverse mix of real world environments, making data available to composters and others through online portal and annual reports.	Compostability Standards / Field Validation of ASTM Standards 1	2022	BPI Composter & Municipality Committee
Organic Agriculture Rules	Compostable products are an allowable input under the requirements of the National Organic Program (NOP) for finished compost.	NOP Petitioning and Legal Action	Continue engagement with NOP, establish coalition with composters and other partners to either file a petition with the NOSB or pursue a rule change with NOP.	No ballot items were introduced for Organic Agriculture.	2026	BPI Staff

Conclusion

Over the course of three workshop sessions, multiple surveys, interviews, and numerous email exchanges, a diverse group of stakeholders lent their collective expertise and perspectives to the challenges and opportunities that compostable products create for the scalable diversion of organics from landfills. What started as a list of three core barriers grew to include three additional specific challenges. All six barriers deserve their own places in a comprehensive Roadmap and Action plan designed to move us toward increased organics diversion driven, at least in part, by a single set of acceptability criteria for compostable products.

Accordingly, all six of the projects that form the foundation for the Roadmap and Action Plan belong in any conversation about the right next steps in the process:

The "Correlation Study" project will generate data on the connection between food scraps, compostable products, and organics program participation that has long been missing.

The "Comprehensive Model Bill" project will yield multi-stakeholder approved language that regulators can use when addressing compostable products and organics diversion goals through the legislative process..

The "Labeling and Education Guidelines" project builds on work BPI started last year with the first edition of its Guidelines for the Labeling and Identification of Compostable Products and Packaging, and will add a vital consumer / end-user research component along with formalized guidance for all stakeholders on messaging that extends beyond the product level.

The "Guiding Principles for Funding" project will explore how compostable products and material manufacturers can best support strategic growth in composting infrastructure through voluntary and regulatory-driven programs.

The "Field Validation Program" project will leverage new and existing data to generate a robust database of test results for certified compostable products available to all composters wishing to determine how products meeting the ASTM compostability standards are likely to perform in their own facilities.

The "NOP Petitioning and Legal Action" project will broaden the effort to change NOP rules that are making it nearly impossible for some composters to accept compostable products without screening them out or significantly altering their operations.

BPI wishes to again thank all of the participants for their time, energy, and honesty through the process. Much gratitude is also owed to Nora Goldstein who lent her expertise and keen eye to all aspects of this project, and without whom any progress made would not have been possible. Lastly, BPI would like to thank in advance all future collaborators on the projects identified here, and those that are still yet unnamed. There is plenty of work to go around, and we look forward to seeing you at the table down the road.

Appendix

Pre-Workshop Participant Survey Results

Thank you again for taking the time to participate in our workshop. The purpose of this survey is to help BioCycle and BPI design a program that will make maximum use of our limited discussion time. The focus for each set of questions is on barriers to the acceptance and processing of certified compostable products, and there is a specific set of questions for each of our four audience groups - Composters, Municipalities, Manufacturers, and Operators. Just so we are totally clear on who is who here:

COMPOSTERS process organics into finished compost and sell it.

MUNICIPALITIES manage residential and organics collection programs.

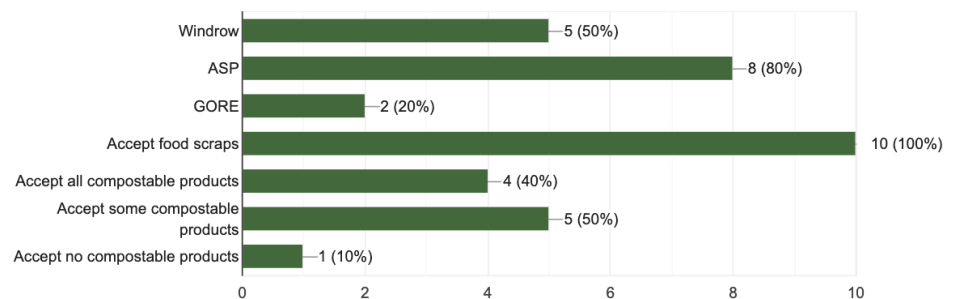
MANUFACTURERS produce and sell compostable products and packaging.

OPERATORS collect organics in their foodservice operations for the purpose of composting them.

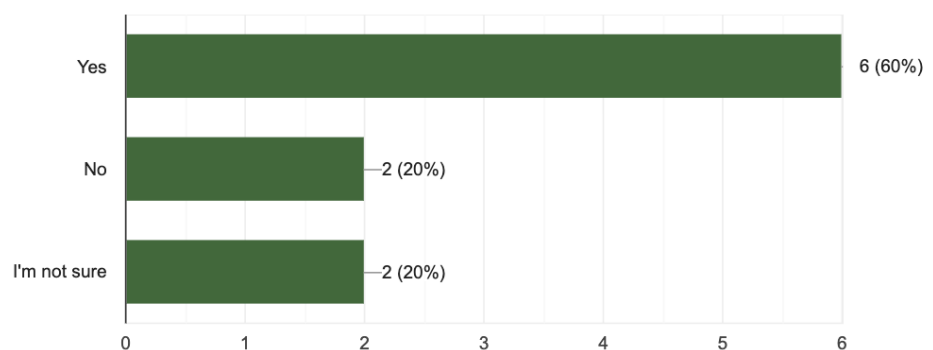
If your organization does not fit neatly into one of these audience groups, please choose the one that matches your experience best. If there is not a close enough match for your organization, please schedule a phone interview so we can record your feedback on these topics without skewing the data.

Composter Questions

For COMPOSTERS,
check all that apply



Do you think
compostable
products help
you process more
food scraps?



Please explain your answer to the question above.

We have been accepting food scraps since 1998, and have years of tracking data to prove that more food scraps are captured when the venue uses certified compostable products than on any other single use disposables.

I believe that there is potential to capture more food that may adhere to compostable products but I don't have proof this is a significant enough amount to classify it as moving the needle much more than a small percentage point when allowing us to process more food scraps.

Makes it easier to work with customers by taking compostable products. Its a must for special events, offices, and food service operators

The divert more food scraps, that is they relate to processing more

The current suite of compostable products include materials that often don't break down in commercial composting operations and/or can't be easily identified at scale from non-degradable products. As a result, often food scraps that could be recycled are often thrown out prior to being composted, and the overs from the process that could otherwise be recycled are required to be

disposed. When consumers find out the impact of the products, it undermines confidence.

Because food is often discarded in packaging, yes, we believe that a large volume of food is diverted from the landfill and prevented from contaminating the recycling stream by composting it, along with the food packaging it was contained in.

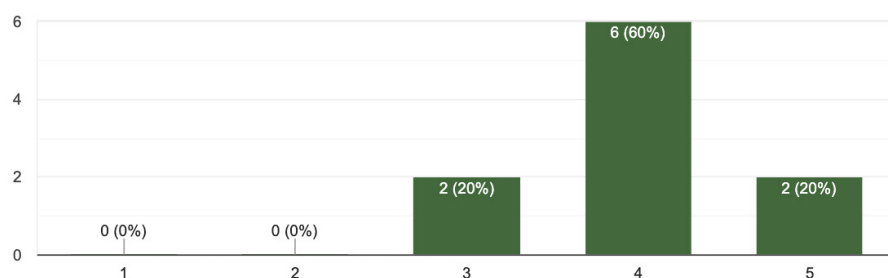
I don't think there is a benefit to adding compostable products

Bags are critical to getting full commercial and residential participation. Food service ware makes it simpler to get all food scraps from restaurants, events, etc.

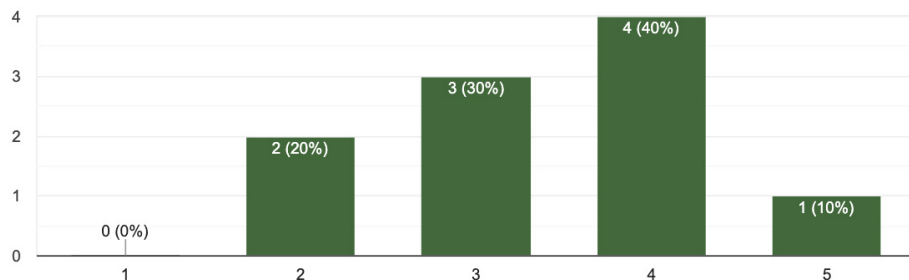
Liner bags yes. Everything else probably allows for additional food scraps, but the increase is likely minimal and seems to be mostly in our more contaminated loads (schools, restaurants, cafeterias vs. grocery, manufacturing, back of restaurant, etc)

To clarify, we accept all CERTIFIED compostable products currently. Compostables help our customers adapt to physical constraints, volume of need, ease of operation while still maintaining their sustainability goals.

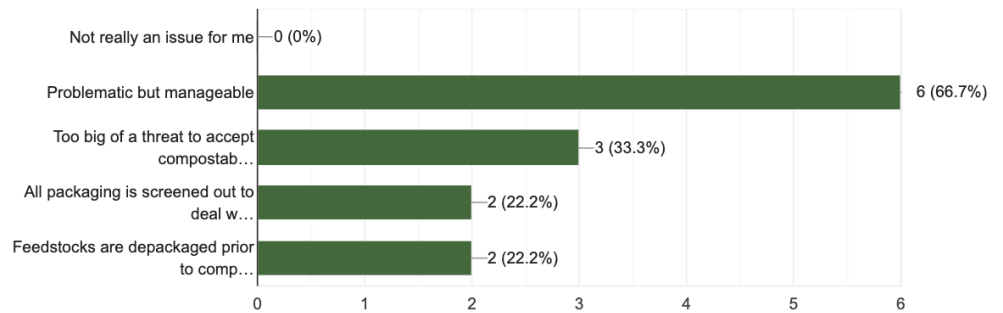
How challenging is contamination from non-compostable products?



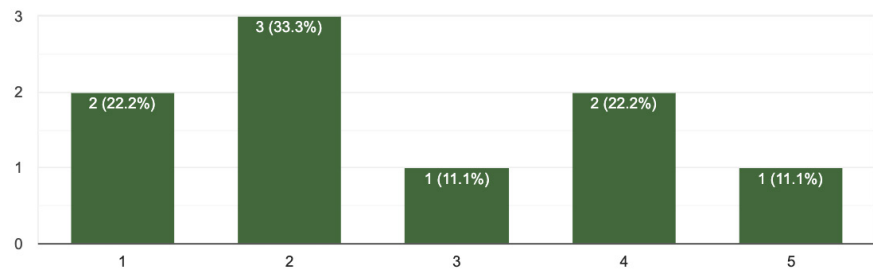
How big of a role does on-product labeling and identification play in your contamination challenges?



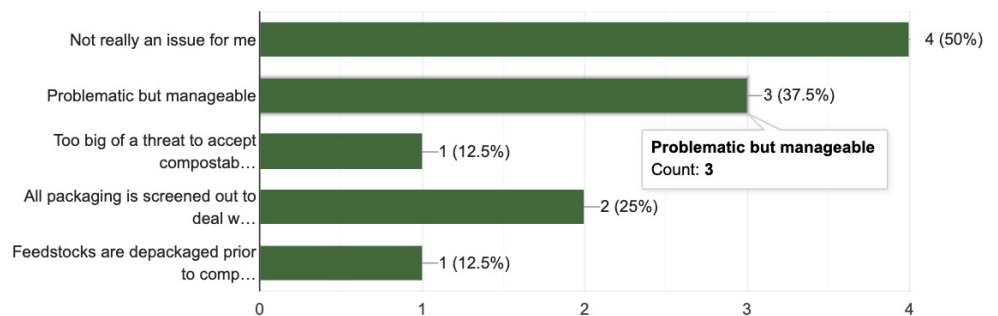
For contamination, check all that apply



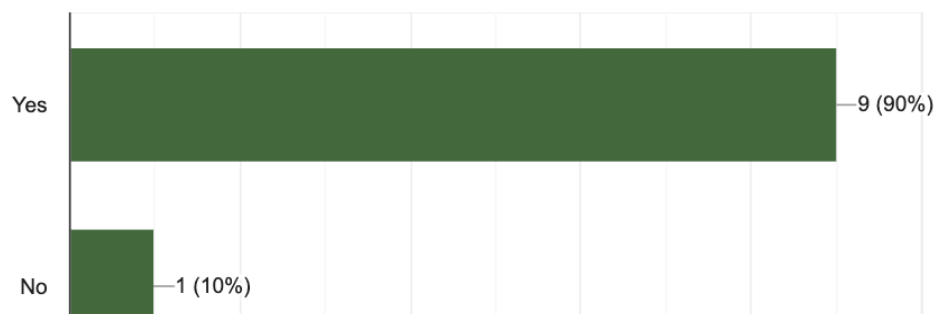
How challenging is the issue of compostability standards as it relates to products meeting ASTM standards not breaking down fast enough?



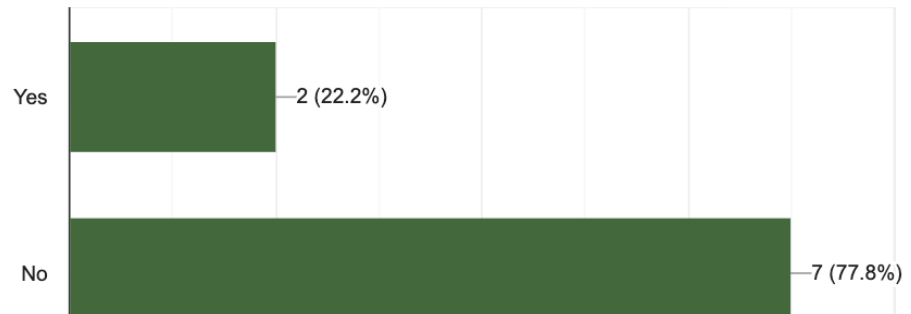
For compostability standards (products meeting ASTM standards not breaking down fast enough), check all that apply.



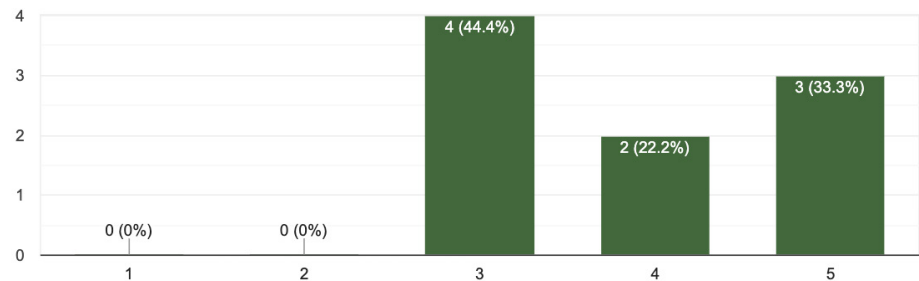
Have you done specific testing of compostable products (outside of what you observe in your day to day operations) in your facility to determine how long it takes them to break down?



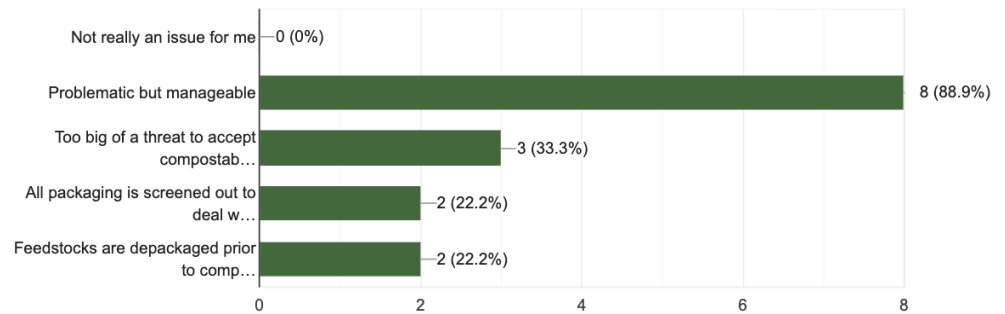
Would you be willing to anonymously share testing results that document time frames and operating conditions?



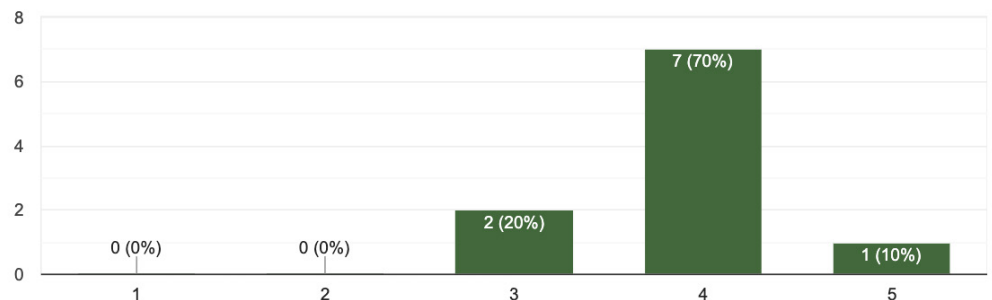
How challenging is the issue of Organic Agriculture standards limiting end market opportunities?



For Organic Agriculture, check all that apply



How challenging is the lack of consumer and end-user education around compostable products and how they should be disposed of?



What other issues do you see as primary barriers to accepting and composting certified products?

Lack of support from the manufacturers of compostable products stressing the value of composting over landfilling.

Contamination is the biggest, PFOA & Micro-plastic concerns are also problematic, then end use of finished compost materials

Poor labeling makes it hard to sort on tip floor.
Greenwashing by brands also makes it confusing for consumers

Lack of commercial and technology specific verification of compostability

Inability to discern between compostable and non-compostable products at scale, difficult to manage ratios (c:n, bulk density, nutrients) for the compost process, inadequate product degradability, transportation economics due to low load weights, impact on product marketing due to organic product certification limitations, blowing litter issues, consumer confusion on product labelling (biodegradable, compostable, meets ASTM standards, bioplastics, etc).

National Solutions that Do Not Consider Local Infrastructure, Education & Outreach
The desire for food packaging companies to provide national product solutions (for obvious reasons around economics, efficiencies, consistencies, branding, etc.) when composting and recycling are hyper local infrastructures with various local processing capabilities and widely varied education and outreach models, creates a disjointedness across the country where the options for recycling and composting products varies wildly. The negative outcome of trying to provide national products can include contamination for local processors and inflated prices for end users (i.e. paying for a compostable

product in a market that doesn't have a composting infrastructure).

Market Demand for Compostable Non-Food Related Products
There is an incongruity between the purpose of something being compostable as it relates to being a vehicle for food to be diverted from the landfill and the general desire (by businesses and consumers alike) to use composting as a mechanism for keeping consumer products out of the landfill (i.e. compostable diapers, toothbrushes, etc.). For composters, we are after the food that is contained in compostable food packaging but are not looking to become a landfill alternative for consumer products that never carried food. And feedstocks play a critical role in end market demand so it's important we consider inbound materials as it relates to being able to sell outbound materials.

Other Issues:

- BPI certified products that do not break down.
- Items that are not clearly marked.

contamination co mingled with compostable products

conventional plastic ruins everything and is always the biggest problem

Constantly increasing volumes (ratio of products:food keeps going up), visual distinction not possible in large loads regardless of labeling, increased potential for windblown refuse, continuation of single-use disposable mentality

Some products do take several cycles to breakdown but we have not identified them specifically, people thinking something is compostable because it looks similar or like paper but it is not, not being able to get OMRI listing is a barrier in expanding our acceptance of compostables at other facilities that are not currently doing so.

What other information would you like to share that would be helpful for these conversations?

The benefit we have seen by limiting acceptability to those products that have been field verified as composting in time limits used at our facility combined with the modifications made to the composting technology we utilize

In our experience, some of the manufacturers of the products are solely focused on product sales and not doing the required work to ensure the products are actually processable or processed in an efficient and economical way (e.g. compostable cell

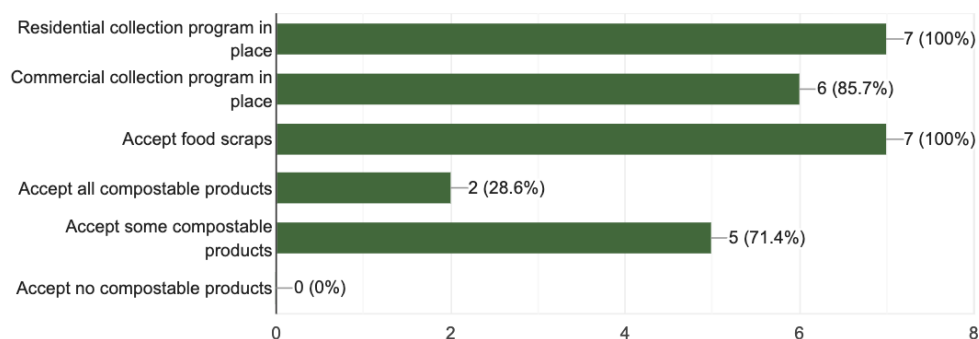
phone cases, sandwich bags).

Municipalities offering organics collection to businesses and residents need to work with their composters to determine what composts in their specific compost technology and what items can be included in their programs. Municipalities need to collaborate with their haulers and demand contamination enforcement and education on what composts and is accepted in the program. Residents need to expect to pay more to have a composting program and to divert materials from the landfill. Composters will do everything they can to take compostable products but there is a lot more at stake for them and it is a more complex and consequential decision than simply agreeing to accept them.

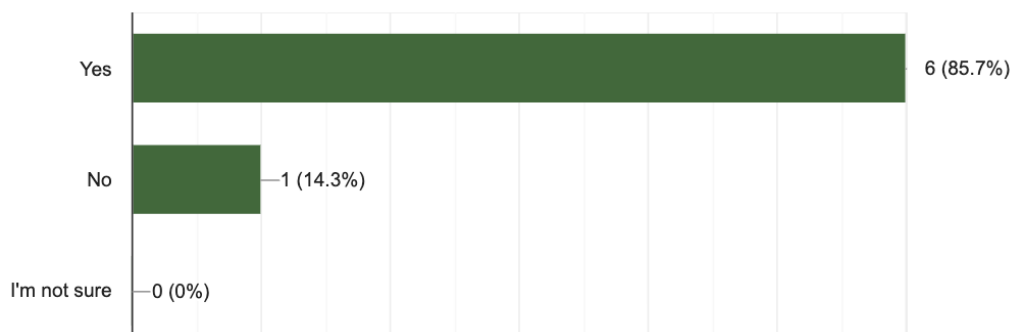
I would have phrased these questions slightly differently and given more of a text box to expand. These questions are hard to answer directly when we operate different sites with different feedstocks and streams.

Municipality Questions

For MUNICIPALITIES,
check all that apply



Do you think
compostable
products help your
program collect more
food scraps?



Please explain your answer to the question above.

There is food waste on and in compostable packaging and accepting that packaging gets that food which otherwise would be lost to landfill or contaminate recyclables.

We began using compostable products at special events because of the challenge of sorting food/ice from recyclable cups. It has since expanded to several foodware ordinances requiring compostable or recyclable foodware. We see that many

businesses chose to provide all compostable foodware so that the customer can directly compost all food scraps and leftover containers rather than sorting.

Compostable food-service items particularly help capture more food at events and in public spaces. To be frank - people are lazy and they won't take much time to learn how to sort materials, much less dump food out of a recyclable container - so food can contaminate the recycling, or if certified compostable, food-service items definitely have the ability to help capture more food scraps.

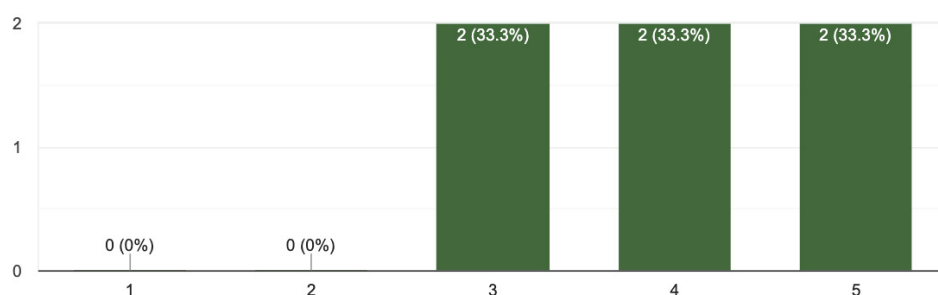
I think that compostable bags are a helpful carrier for food scraps to reduce the ick factor. Cutlery and plates/ bowls seem to create more confusion than anything by consumers. Our processing facilities tend to pre-process and remove all non-food whether or not compostable, so whatever gets through breaks down, but a lot of

compostable products still get disposed of as trash. And, we face pushback from loads that are majority compostable products with only a little food scraps as opposed to food scraps with only a little compostable products. The best understanding I have is that there is - at best - a tolerance for compostable products, but not a desire for them by processors.

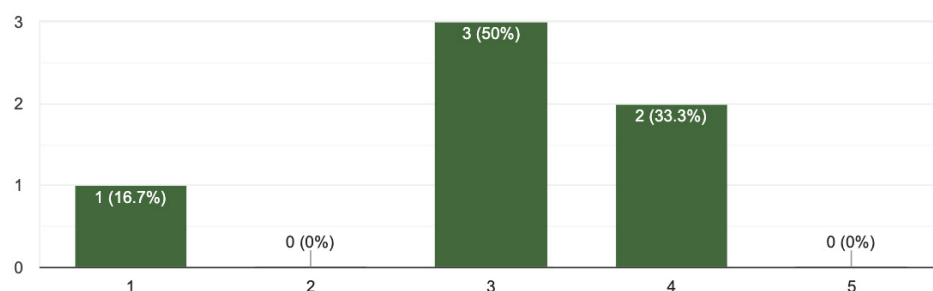
From what I've seen, yes, compostable products help collect more food scraps going in the bin, but if the composter screens out those products at the beginning of the composting process, then it doesn't matter. Any little bit of food gained is also lost because those bits of food stuck to the compostable products are discarded when the compostable products are screened out.

includes collection at events and in FOH and BOH food operations

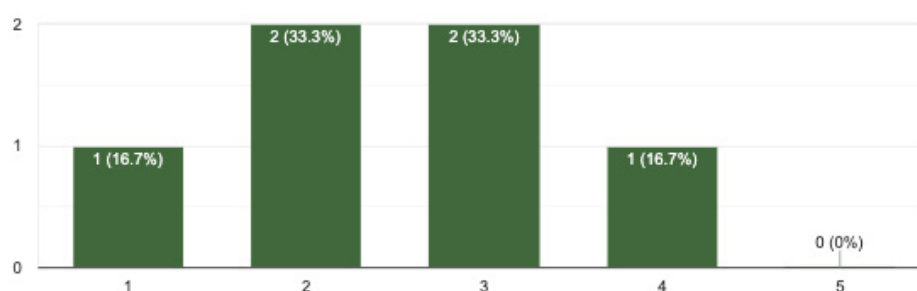
How challenging is contamination from non-compostable products for your program and the composters you work with?



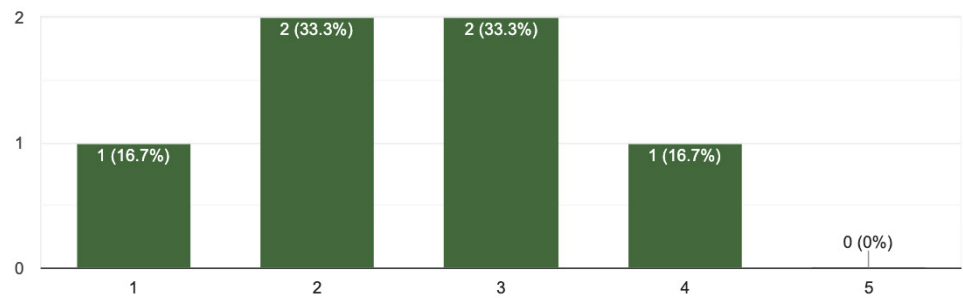
How big of a role does on-product labeling play in your contamination challenges?



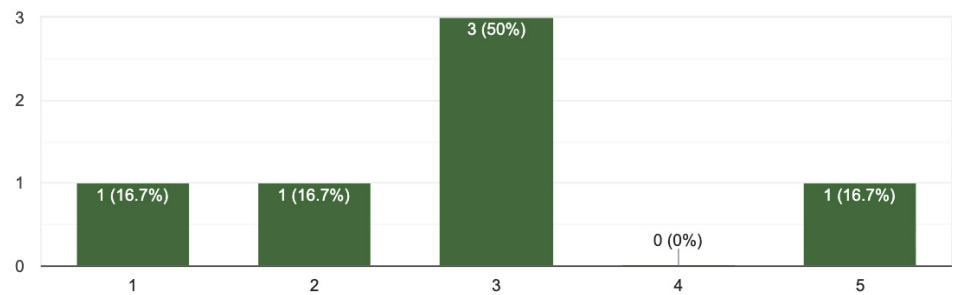
How challenging is the issue of compostability standards (products meeting ASTM standards not breaking down fast enough) for your program and the composters you work with?



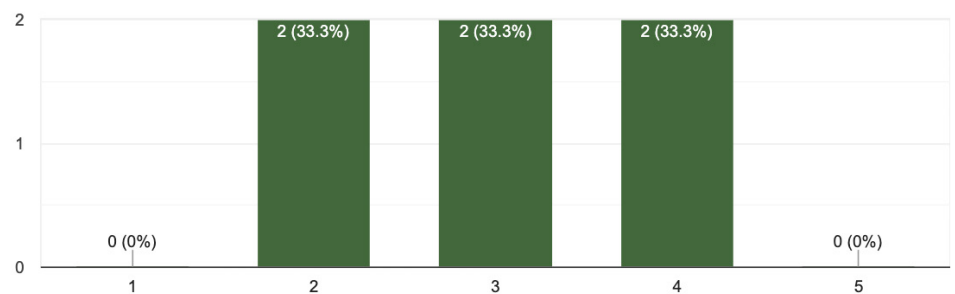
How challenging is the issue of compostability standards (products meeting ASTM standards not breaking down fast enough) for your program and the composters you work with?



How challenging is the issue of Organic Agriculture standards limiting end market opportunities for your program and the composters you work with?



How challenging is the lack of consumer and end-user education around compostable products and how they should be disposed of for your program and the composters you work with?



What other issues do you see as primary barriers to accepting and composting certified products?

Greenwashing and problems with non-compostable plastics, look alikes, lack of labeling, tinting etc. restrictions on non-compostable plastics.

Not currently able to design pre-processing that consistently distinguishes conventional plastic from compostable plastic. Not able to identify clearly enough.

I feel our composters have more challenges with items that are obviously not compostable (sometimes even not food-related) compared to those that are compostable food-service 'look-alikes'. Another challenge is the greenwashing of food-service items by manufacturers and food-service distribution companies. Companies want to do the right thing and are lied to by these organizations, only to find out from their customers / City / composter that they were duped into buying a non-compostable item. Having containers easily identifiable as BPI certified containers would be extremely helpful for residents, restaurants, distributors and composters.

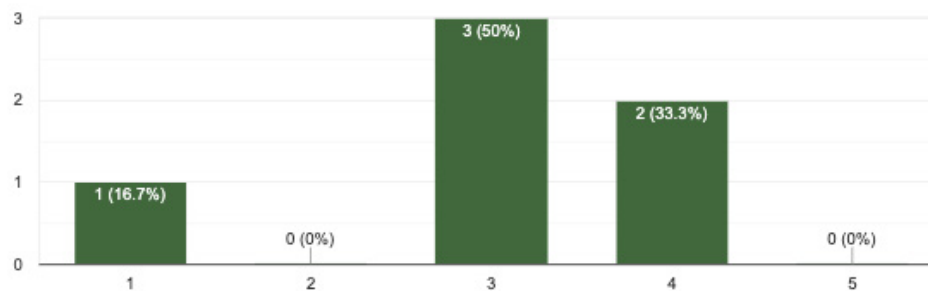
Field testing validation on top of astm standard is a MUST HAVE. Consumer education is going to continue to be a problem as long as consumer products - both compostable and not compostable continue to so widely varied and language describing products continues to be so widely varied. Impossible at this point for customers to make heads or tails of what is and is not acceptable.

The main issue really is the OMRI certification (CDFA in

California). That dictates the market for finished compost, and the risk of dropping the value of their product is not worth it for composters to gain just a little bit more in volume of food scraps. If CDFA accepted compostable products, I don't think we municipalities would have a problem educating residents and businesses on how to look for, buy, and properly sort compostable products. I know because I used to work and live in the Minneapolis Metro Area, where they accept all BPI certified products, and the compost facility there has very low contamination rates. That said, I think one of the big issues not addressed in this survey is the fact that compostable products are another kind of disposable product. We are trying to move to a zero waste economy with reduce and reuse at the forefront, and compostable products still promote a disposable culture.

costs of composting collection is biggest barrier to expanding programs; continue to battle confusion among retailers on what is compostable and how to buy the right products; concerned about establishments using compostable products but not offering composting; problems when businesses offer compostable products alongside recyclable or non-recyclable materials

How challenging is it to know for sure whether compostable products collected in your program are getting composted?



What other information would you like to share that would be helpful for these conversations?

We HAVE to have data that hasn't been collected. How much food is with the average composted package, like a clam shell, for instance. Not how much food in aggregate that was collected with a program that included compostable packaging. Also, contamination characterization studies of incoming, outgoing, and separated contamination at facilities that do and don't collect compostable packaging and products, and by Brand.

Sorts have not been conducted to identify what percentage

of food-service items put in organics carts from our (or other) programs in our area are BPI certified versus those that are not. Similarly, studies have not been done to determine what percentage of these items break down in the composting process versus those that may be screened out between the active and curing stages of composting.

Our residential curbside composting program is currently suspended until June 2022. But not fully cancelled, so advancing these conversations while on pause can only

help us restart with better tools and plans for compostable products.

A vast majority of compostable products end up in the trash, which is a failure at this point of the promise of these tools. We would like to leverage these types of tools to make collection easier, but haven't yet solved how to do this without most of the effort and expense being wasted.

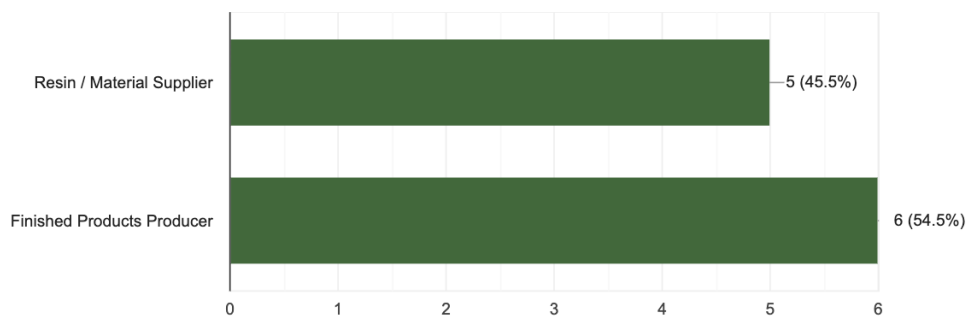
If BPI could work on getting legislation passed to ban greenwashed products (e.g., petroleum-based plastic bags colored green to look like a compostable bag), that would be a great help, but I still think the OMRI/CDFA certification is the crux of the issue. Also, I think compostable manufacturers should move away from trying to make

their products look like petroleum based plastics. It really is confusing for consumers whether to put a BPA cup in the recycling or in the compost. Even with distinct BPI logos, or specific labels that say "compostable", a clear plastic cup looks like a clear plastic cup. It doesn't matter if that plastic is corn or petroleum-based; recycling is a much more engrained in American culture than composting, and recycling already has a lot of contamination issues. Compostable product manufacturers who try to imitate petroleum-based plastic are just making it harder for us educators.

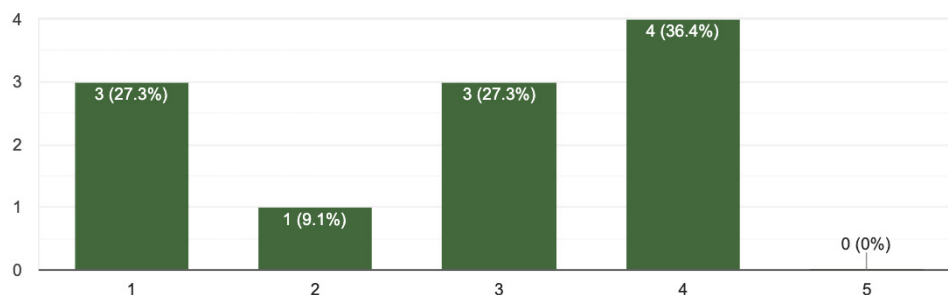
messages about how compostable is still single-use and should not replace or take priority over reusable foodware

Manufacturer Questions

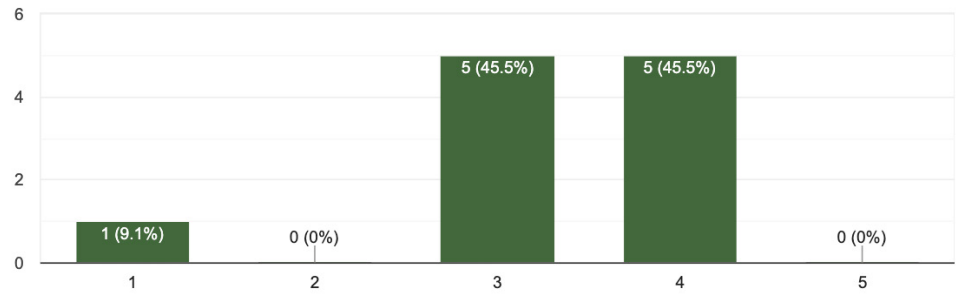
For MANUFACTURERS,
check all that apply



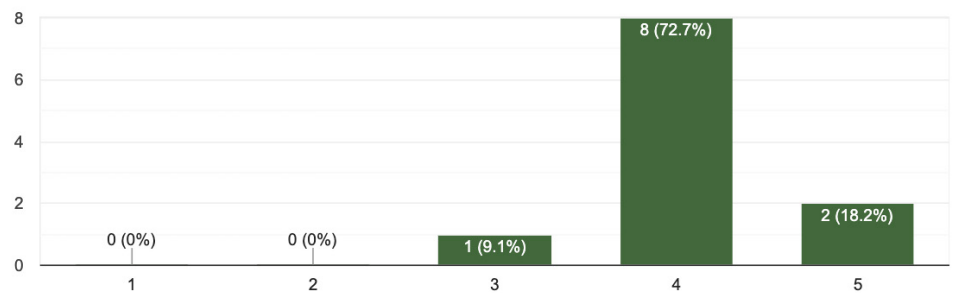
How challenging is cost
effectively labeling and
identifying compostable
products for your
organization?



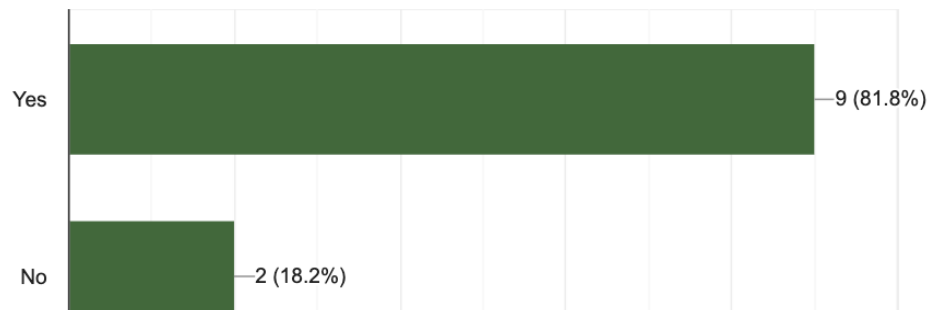
How challenging is labeling and identifying compostable products in ways that will work for brand owners and operators?



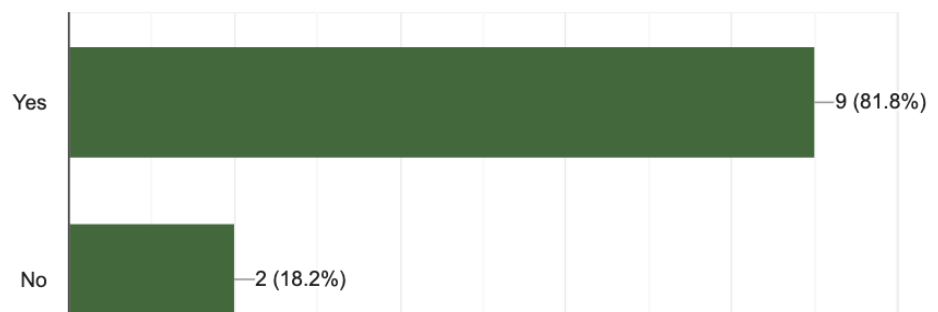
How challenging is the issue of compostability standards? (Products meeting ASTM standards not being accepted because they are thought not to break down fast enough.)



Have you done field testing on your products?



Would you be willing to share current or future field test results with BPI for use in an anonymous public database?



What other information would you like to share that would be helpful for these conversations?

For us the biggest issue is performance validation. As a national brand with broad and varied distribution, machinability, seal integrity, and shelf life performance cannot be compromised as this would result in product loss which is unacceptable. So again, our single biggest challenge in moving to compostable packaging has been identifying the proof of concept that meets performance demands of existing packaging. After that, the second biggest challenge appears to be cost. Last on the list is labelling. Because 1 and 2 are such a lift, we have spent years building cultural consensus and marketing is on board with labelling tradeoffs that will be required once we find a cost-effective proof of concept.

I think it would help to get some clarity on what products are not breaking down in a satisfactory manner and under what conditions this occurs. We see the science of the standards

as being robust and consistent in our applications.

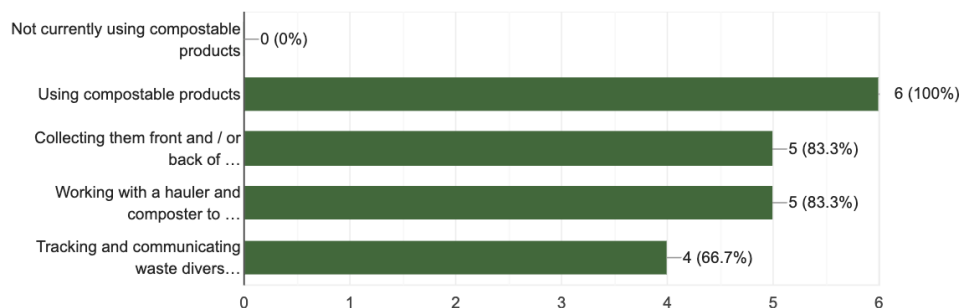
How can the industry work together to improve consumer education to improve proper disposal and reduce compost contamination?

As a company that works globally, we find varying standards across the world which make claims and understanding regulations quite a mess.

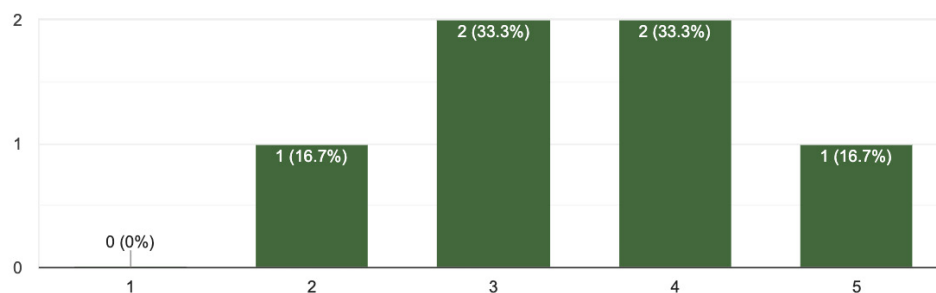
As a resin producer, and not a product manufacturer, the challenges for product labeling/identification and for meeting composting field standards do not impact us directly. However, we recognize these are issues for our customers and for composters, and in that way they do impact us. We have done field testing trials on a variety of products that our customers make with mixed results. We are willing to share our results provide it stays anonymous.

Operator Questions

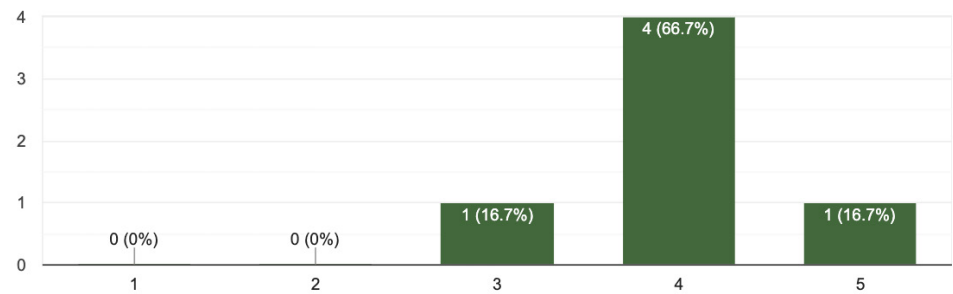
For OPERATORS, check all that apply



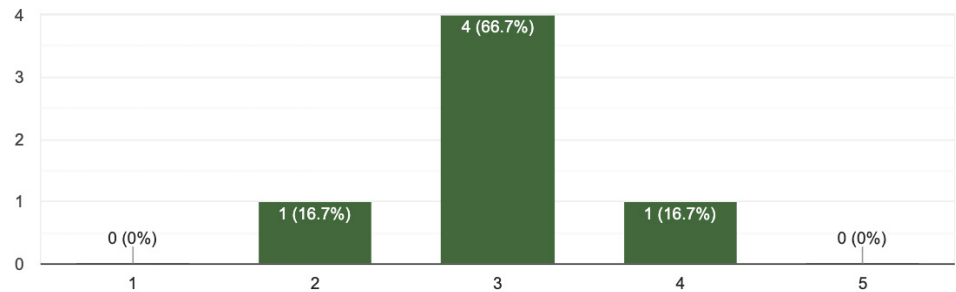
How challenging is the issue of product performance and availability? (Getting compostable versions of everything I need that perform their intended function.)



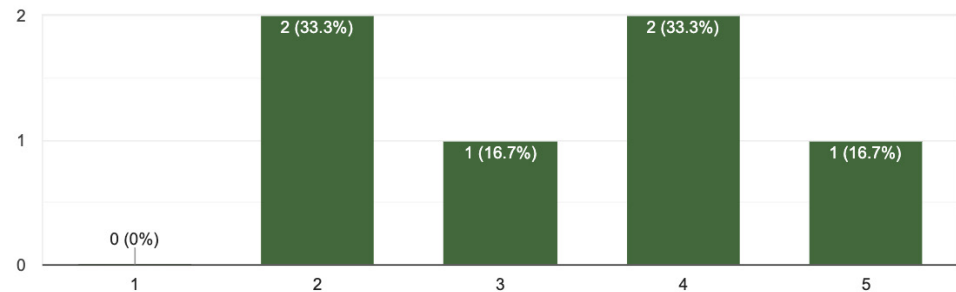
How challenging is it to manage contamination in your operation?



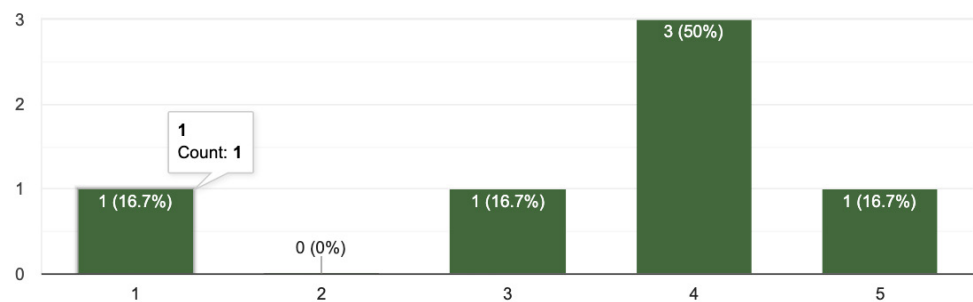
How challenging is product labeling and identification for you? (Products not labeled well enough for end-users, sorters, etc.)



How challenging is the issue of compostability standards? (Products meeting ASTM standards not being accepted because they are thought not to break down fast enough.)



How challenging is it to know for sure whether compostable products collected in your operation are getting composted?



What other information would you like to share that would be helpful for these conversations?

Greenwashing from companies mimicking PLA coloring or “biodegradable” products. We are unsure how much contamination is acceptable for our product.

First, one of our biggest challenges is to develop compostable packaging that meets current certification standards. Current standards are difficult to meet while ensuring packaging performs according to our food safety and quality standards.

Second, fragmented legislation* is diluting our development focus in an effort to provide compliant packaging for all our locations. This is causing inconsistent customer experience, fragmentation across our value chain and higher packaging costs.

*Fragmented legislation in certification guidelines and certifying bodies, labelling requirements and composting technologies/processes.

Third, customer unawareness is causing cross-contamination in our front of house bins systems, diluting our sustainability efforts.

We strive to develop sustainable packaging solutions that are not only universally compliant but also best for our Operations, Customers and for the Planet. With our scale, our hope is to contribute growing the compostable

infrastructure by creating packaging that performs to operational standards and disintegrates to its full lifecycle. Collaboration among legislators, certifying bodies, suppliers, composters and brand owners is imperative, and so we applaud your efforts to get us all working towards the same goal.

similar concerns with municipality answers--businesses buying the right products; mixing recyclable, compostable or nonrecyclable material; also increased interest from brands on bio-based or compostable non-food packaging and trying to voice concerns about composting infrastructure; part of several national conversations on plastics and role of bioplastics in reducing ocean pollution and fossil fuel use, seeing a lot of misunderstanding of how composting works and how compostable products are perceived and handled

While we require all the food and service operators to use BPI certified or reusable foodware, some have found it challenging to source products that can withstand hot soup, sushi items, and accessories such as splash sticks. Another challenge includes correct sorting by passengers/customers in front of house operations.

Welcome Letter

January 5, 2021

Happy New Year and thank you in advance for participating in the BioCycle / BPI Virtual Workshop series. We're still pulling together all of the details, and are in position to have a good dialogue on some of the issues that have dominated conversations about compostable packaging for years now.

The stated goals of the sessions are **1) to identify and confirm the top barriers to accepting and composting certified compostable products, and 2) to build consensus for a single set of acceptability criteria so that compostable products can be accepted and successfully processed by a broader set of composters processing food scraps.**

Given our extremely limited time together in the live sessions, the “identification and confirmation” of barriers was done through the survey and interviews. Through that process, two barriers have emerged as deserving the attention of the broader group: 1) Contamination, and 2) Compostability Standards (products meeting ASTM standards not breaking down quickly enough). These two broader barriers encompass others identified in the surveys and interviews. A third significant barrier, what we call “Organic Agriculture” (shorthand for the inability to sell compost as organic if it has compostable packaging as an input), is an important issue that we will address in an update to the group instead of discussing it during the limited session time.

With two sessions (Jan. 14 and Jan. 21), the plan is to devote the first to **Contamination** and the second to **Compostability Standards**. We could spend a whole day on each of these if we had the time (and ability to meet in person!), but instead we've essentially got a 30-minute breakout, a 45-minute large group discussion, and a quick survey to close each session.

The anchor document for each session is what we are calling a "ballot", which contains a desired "future state" for each barrier, and a list of proposed action items. We used the survey feedback and interviews to help define the future states and the proposed action items. For example, the desired future state for the contamination barrier is, **"Contamination from non-compostable products does not prevent composters from successfully processing compostable products."** The action items are divided up into different categories - **"Regulatory", "Product Labeling", "Awareness & Education", and "Operational Support for Composters."**

Draft versions of each ballot can be found in the same folder where you found this letter. We may tweak the wording on some of the proposed actions, but you'll get the idea of what we're after with the current drafts. The task for the 30-minute breakout sessions will be for each group to nominate three actions (or groups of actions) for discussion during the large group session. Each group will have a leader that will pass off the nominations to Nora, and she will structure the large group discussion accordingly.

After the large group discussion and before we conclude the workshop for the day, each participant will fill out a survey that lists all the proposed actions for each barrier, and asks the respondent to indicate whether or not they support BPI working on each action moving forward. This will be done through a google forms submission, or via PDF.

Over the next week and beyond we'll be populating the folder with resources that we think are helpful for the workshop discussions and the work to follow. This will include what we have been referring to as a "cheat sheet" for the sessions — a 2-3 page document that consolidates the crucial information we want all participants to have before and during the sessions. Please let us know if you have documents or other resources that you think would be valuable for this folder and we will include them.

That's all for now. Please let us know if you have any questions as the 14th approaches!

Best Regards,

The Workshop Team

Nora Goldstein, BioCycle (noragold@biocycle.net)

Rhodes Yepsen, BPI (exec.dir@bpiworld.org)

Wendell Simonon, BPI (wendell@bpiworld.org)

BioCycle / BPI Virtual Workshop "Cheat Sheet"

Workshop Goals:

- 1 Identify and confirm **top barriers** to accepting and composting certified compostable products
- 2 Build consensus for a **single set of acceptability criteria** so that compostable products can be accepted and successfully processed by a broader set of composters processing food scraps

Selection of Barriers

Based on the surveys, interviews, and previous experience, we decided to focus on two barriers for these discussions - one for each session. The first session will focus on Contamination and the second session will focus on Compostability Standards (products meeting ASTM standards not breaking down quickly enough in real world environments).

Future State Concept

We came up with simple statements to express the desired future state for each barrier as a way to clarify the objectives for proposed action items.

Contamination Future State

"Contamination from non-compostable products does not prevent composters from successfully processing compostable products."

Compostability Standards Future State

"Composters have enough information on "real world" performance to trust that products meeting ASTM standards will break down in facilities designed to accept food scraps and packaging."

Ballot Concept and "Voting"

The guiding document for each session is what we are calling a "ballot", which has a list of proposed action items for each barrier. The goal for the breakout sessions is to review these action items, and to nominate three for large group discussion. At the conclusion of the large group discussion and before the end of the session, every participant will privately "cast their vote" and indicate support or non-support for each proposed action item.

About BPI

During the interviews, we discovered there are some things about BPI and its Certification program that not everyone knows...

BPI has **strict eligibility requirements** for certification that extend well beyond passing the tests required by the ASTM standards. Here are three of the most important eligibility requirements:

- 1 Only products that are associated with the diversion of desirable feedstocks like **food scraps and yard trimmings are eligible**. This requirement is in place to protect composters from receiving products that will not help them collect more food scraps. BPI turns away a significant number of applications every year when products do not meet this requirement.
- 2 BPI requires that its **Certification Mark is used on all products and packaging** unless there is a category exemption in place. BPI is in the midst of a massive compliance effort with the Membership on this requirement to address contamination issues created by insufficient on-product labeling.
- 3 All BPI Certified products must provide testing to prove they are **under 100 PPM total fluorine (PFAS)**, and all companies must sign a statement indicating that there are **no intentionally added fluorinated chemicals in any certified products**. This requirement went into place on Jan 1, 2020 and resulted in the removal of over 2,000 products from the program.

SESSION 1 SPECIFIC RESOURCES

About Product Labeling

In September 2020, BPI released [Guidelines for the Labeling and Identification of Compostable Products and Packaging](#), a document designed to begin a conversation around industry standards for the labeling and identification of compostable items. The stated objective of the document is,

"To establish consistent, category-specific guidelines that **make it easy for consumers, composters and others** to identify compostable products and packaging, with the **goals of reducing contamination, facilitating food scrap composting programs, and decreasing landfill methane production.**"

A few things to note on the development of the document, what is in it, and where the project is going from here:

- A working assumption for the document is that the primary audience for on-product labeling efforts are **consumers and end-users**. (We make a distinction between these two, as we think of "consumers" as people who specifically buy compostable packaging, and "end-users" as people who are using the compostable packaging to eat, drink, sort waste, etc.)
- As such, the primary goal of on-product labeling is to **help consumers and end-users make the right decisions** at the point of disposal.
- The document was developed by BPI and a task force of its Board of Directors. Significant efforts were made to get feedback from non-manufacturing stakeholders (Brands and Composters mainly), but the document **still needs to be reviewed** by many stakeholders who have yet to weigh in.
- BPI created the document **without the benefit of research or consumer / end-user testing** on the recommendations for labeling and identification.

About the Washington Labeling Law (RCW 70A.455)

This law went into effect in July 2020, and is the most comprehensive legislation directly addressing labeling for compostable products and packaging in the United States. The bill:

- Forbids use of confusing terms like "biodegradable"
- Requires use of a third-party logo to verify claims
- Calls out specific approaches for labeling of compostable products
- Forbids use of those approaches on items that don't meet ASTM standards
- Does not mandate the use of compostables in food service environments

RCW 70A.455.04070A.455.040

Requirements for a product labeled "compostable."

(1)(a) A product labeled as "compostable" that is sold, offered for sale, or distributed for use in Washington by a supplier or manufacturer must:

- (i) Meet ASTM standard specification D6400;
- (ii) Meet ASTM standard specification D6868; or
- (iii) Be comprised of wood, which includes renewable wood, or fiber-based substrate only;

(b) A product described in (a)(i) or (ii) of this subsection must:

- (i) Meet labeling requirements established under the United States federal trade commission's guides and
- (ii) Feature labeling that:

- (A) Meets industry standards for being distinguishable upon quick inspection in both public sorting areas and in processing facilities;
- (B) Uses a logo indicating the product has been certified by a recognized third-party independent verification body as meeting the ASTM standard specification; and
- (C) Displays the word "compostable," where possible, indicating the product has been tested by a recognized third-party independent body and meets the ASTM standard specification.

(2) A compostable product described in subsection (1)(a)(i) or (ii) of this section must be considered compliant with the requirements of this section if it:

- (a) Has green or brown labeling;
- (b) Is labeled as compostable; and
- (c) Uses distinctive color schemes, green or brown color striping, or other adopted symbols, colors, marks, or design patterns that help differentiate compostable items from noncompostable materials.

About the Maryland compostable product labeling statute (§9-2101-§9-2105), established by HB1349, effective “on or after October 1, 2018”:

- Prohibits for sale in the State a plastic product that is labeled as biodegradable, degradable, decomposable, or with any other term to imply that the product will break down, fragment, biodegrade, or decompose in a landfill or any other environment.
- Prohibits for sale in the State a plastic product that is labeled as compostable or home compostable unless the plastic product meets the following standards:
 - 1 A plastic product labeled as compostable, the plastic product shall meet the ASTM D6400 standard specification or the ASTM D6868 standard specification; and must meet any applicable labeling guidelines in the federal trade commission's Guides for the Use of Environmental Marketing Claims.
 - 2 For a plastic product labeled as home compostable, the plastic product shall meet the OK Compost Home certification standard adopted by Vincotte; and any applicable labeling guidelines in the federal trade commission's Guides for the Use of Environmental Marketing Claims.
- A person that distributes or sells a compostable food or beverage product intended for sale or distribution by a retailer in the State shall ensure that the compostable food or beverage product is labeled in a manner that is readily and easily identifiable from other food or beverage products; is consistent with the federal trade commission's Guides for the Use of Environmental Marketing Claims; and has a certification logo indicating the compostable food or beverage product meets the ASTM D6400 standard specification or ASTM D6868 standard specification; or as compostable.
- Imposes penalties up to \$2,000 for violations

SESSION 2 SPECIFIC RESOURCES

About the ASTM Compostability Standards

Despite the fact that the ASTM standards for compostability have been in place for over 20 years, there is a lot of confusion about what the standards do and don't say about products that have been tested to their specifications. The biggest misconception is that because the testing is done in a lab environment, the test results are not relevant when trying to determine how the products will perform in a real world compost pile. There is also confusion about the two primary tests - **Disintegration and Biodegradation** - and which one is relevant for the conversation we are having about “real world” time frames.

Below is an overview of the 4 testing requirements for the ASTM standards.

Figure 4: Certified Industrially Compostable Materials Must Meet Four Requirements

✓ 1. Disintegration

“This is the physical fragmentation of the product... The ultimate goal is that the final compost contains no visible fragments of the biopolymer product.”

For industrial composting, also called aerobic (meaning in the presence of oxygen) composting, ASTM International[®] standards require that less than 10% of the product's mass may remain on a 2mm sieve after 12 weeks.

Pretreatment processes at an organics facility may accelerate this “by shredding or grinding the waste, which also increases surface area and allows for an even distribution of the biopolymer products in the compost pile. The combination of moisture, temperature, mechanical action and microbial activity...continues the disintegration process.”

✓ 2. Biodegradability

“Not only must the biopolymer product fully disintegrate, the biopolymer molecules must also truly biodegrade.”

A material must convert into carbon dioxide, water vapor and microbial biomass via microbial activity (bacteria and/or fungi), often resulting in humus in the soil. The biopolymers must not accumulate in the environment.

For industrial composting, greater than 90% of the organic carbon must convert to carbon dioxide within 180 days. Some biopolymers can completely biodegrade in industrial composting conditions in as little as 28 days.

⚠ 3. No heavy metals or fluorinated chemicals

The product may not introduce levels of heavy metals or fluorinated chemicals that exceed regulatory limits.

⚠ 4. No plant toxicity

The final compost may not contain byproducts that have harmful effects on plants.

ASTM International standards “require the full 12 weeks of AC in order to ensure stable, mature compost is obtained prior to beginning the plant trials. Shorter timeframes have shown negative impacts on both emergence and growth due to immaturity of the compost, so even if the test sample has fully disintegrated much sooner, the [industrial composting] period is not allowed to be truncated.”^b

b. This summary is adapted from a BioCycle article written by Norma McDonald: www.biocycle.net/biological-recycling-biodegradable-plastics/ For further reading and resources, visit BioCycle at www.biocycle.net.

The first key takeaway from above is that **Disintegration** is the test to focus on for real world composting and the time-frame conversation, not **Biodegradation**. The time frame for the Disintegration test is **12 weeks or 84 days**. The Pass / Fail nature of the test means that the results don't disclose if or when products reach the required 90% disintegration in less than 12 weeks or 84 days - only if they do or do not.

The **180 day** time frame for Biodegradation is commonly confused with the **12 week / 84 day** time frame for Disintegration, and is cited by some as a reason why the ASTM standards are out of line with the operational requirements of composters. Biodegradation is an invisible process where microorganisms eat the organic carbon, whereas disintegration is a visual and physical breakdown that can be measured in a field test.

Role of "Real World Composting" in Development of the ASTM Standards

Another common misconception is that because the ASTM standards rely on tests performed in laboratory environments, they do not provide relevant information on how products will perform in real world compost facilities. This is simply not the case. The report used to guide the development of the ASTM compostability standards took 5 years to produce, and is a 130-page compilation of compost test reports that includes a compost bibliographic database with more than 6,500 abstracts and references. The stated objective was "to determine the behavior of degradable polymeric materials in real disposal systems, and how those results correlate with laboratory results, in order to assure that such materials are safe for disposal and effectively degraded." There were a series of field tests in full scale facilities.

Three tiers of testing were used during the research phase:

- Tier 1: Rapid Screening Test
- Tier 2: Laboratory and Pilot-Scale Composting Assessment
- Tier 3: Field / Full Scale Assessment

For ALL materials tested, the degradation results obtained in a higher level test (LAB) equaled or exceeded those obtained in a lower level test (FIELD)

Field data is important to help increase composter confidence by demonstrating compostability in general, but it is not a reliable means for determining compostability for individual products, which requires a controlled environment for replicability. This is similar to why finished compost tests are done in a lab, versus requiring composts to be tested in each real world application for different soils on farms, green roofs, etc. A complete discussion of how the ASTM standards were developed is available in this presentation given by Rhodes Yepsen to ASTM members in 2017. What follows below is taken from the final "Conclusions" slide:

Role of Standards

- It is essential that compostable products and materials continue to be evaluated based on scientifically based standards, such as through the voluntary consensus process at ASTM.
- This is a well established system used worldwide, and reports like the ISR Guide show the extent of research that went into the development of the ASTM compostability standards
- Disintegration criteria used currently follow a traditional windrow composting system (12 weeks), and follow the logic of the original ISR study - the criteria are not intended to look like "real world" composting, but rather are to provide consistently replicable results on a conservative basis (e.g., no false positives, using a non-accelerated process).

Next Steps and Future Research

- While windrow composting may have been the predominant method in the 1990s, there are many facilities operating in accelerated conditions today.
- Similar to the ISR process, we need to **revisit data to build confidence in lab / pilot scale disintegration tests where results obtained are valid for real world conditions in a variety of systems**
 - A combination of existing field testing data from compostable products companies, and new research at universities
 - Field tests should be used to confirm the lab / pilot scale, not replace it