INTERNATIONAL FRESH PRODUCE ASSOCIATION

IFPA Policy Position on Extended Producer Responsibility (EPR) Laws Affecting Fresh Produce

Executive Summary

The International Fresh Produce Association (IFPA) represents the entire fresh produce supply chain, from input providers and manufacturers, to grower/shippers of fresh fruits, vegetables and florals, to retailers and food service establishments, globally. IFPA recognizes the growing interest among states, provinces, and local jurisdictions in adopting Extended Producer Responsibility (EPR) laws and regulations. IFPA supports practical and effective environmental policies, including approaches that advance recycling, composting, and circular economy objectives.

However, fresh produce supply chains are uniquely sensitive to packaging changes because packaging plays a critical role in preventing food waste, ensuring food safety, maintaining traceability, preserving product quality, and supporting affordability and food access[1].

Because fresh produce supply chains are highly perishable and operate on thin margins, EPR laws affecting fresh food packaging should be evaluated not only through an environmental lens, but also as food policy and supply chain policy. Policies should balance environmental progress with the operational realities of food production, packaging performance, and consumer access to affordable fresh foods.

Why Packaging Matters In Fresh Produce Supply Chains

IFPA is concerned that EPR laws impose new financial and administrative burdens on fresh produce supply chains, from growers and distributors to retailers and consumers[2]. EPR laws and associated fees increase the cost of packaging, which is essential for reducing food waste, ensuring quality and compliance with federal food safety standards, and labeling and traceability legislation and regulations. These added costs and potential constraints on appropriate packaging would likely increase food loss and waste, disrupt efficient supply chains, and ultimately undermine food security by raising prices and reducing access to fresh, nutritious

---

[1] Caleb O.J. et al., 2013. Modified atmosphere packaging technology of fresh and fresh-cut produce and the microbial consequences - review. Food Bioprocess Tech 6:303-29; Kasza, G., et al., Conflicting issues of sustainable consumption and food safety: risky consumer behaviors in reducing food waste and plastic packaging. Foods, 2022. 11(21); Cutter, C.N., Microbial control by packaging: a review. Crit Rev Food Sci Nutr, 2002. 42(2): p. 151-61; Zahra, S.A., et al., Food packaging in perspective of microbial activity: a review. J Microbiol Biotech Food Sci, 2016. 6(2): p. 752-757; Karanth, S., et al., Linking microbial contamination to food spoilage and food waste: the role of smart packaging, spoilage risk assessments, and date labeling. Front Microbiol, 2023. 14: p. 1198124; Yam, K., P. et al, Intelligent packaging: concepts and applications. J Food Sci, 2005. 70(1): p. R1-R10; Poyatos-Racionero, E., et al., Recent advances in intelligent packaging as tools to reduce food waste. J Clean Prod, 2018. 172: p. 3398–3409; Golan, E., et al. Traceability in the U.S. food supply: economic theory and industry studies. Research in Agricultural and Applied Economics, 2004.

[2] Satyajit, B. 2022. Economic impacts to consumers from extended producer responsibility (EPR) regulations in the consumer packaged goods sector. Columbia Academic Commons https://doi.org/10.7916/n2af-vv87; Lakhan C., Modeling impacts on consumer packaged goods pricing resulting from the adoption of Extended Producer Responsibility in New York State. York University Report.; McKinsey and Company, 2025. Sustainable packaging 2025: top barriers for packaging purchasers.

foods. Policies that significantly increase the cost of protective packaging or restrict its use may reduce the availability of fresh produce and could unintentionally exacerbate food insecurity in communities already facing limited access to fresh produce.

These added costs may affect food waste, compliance with federal and state food safety legislation and regulations, food affordability, and the stability of domestic food distribution systems. Lawmakers should also take into account the fact that packaging allows consumers to maintain integrity and quickly identify products that meet specific dietary and cultural needs, including organic, Kosher, and Halal, and vegan foods[3]. Fresh produce supply chains also play a critical role in supporting food banks and community nutrition programs that provide access to healthy foods for vulnerable populations[4]. Packaging that protects product integrity, extends shelf life, and enables safe handling and traceability helps ensure that donated produce can be safely distributed and consumed[5].

Therefore, in perishable food systems packaging policy should be designed to advance environmental goals while also supporting the reliability and resilience of food supply chains. Policies should be evaluated not only for their environmental impact, but also for their effects on food access, food safety, and supply chain stability[6].

Principles for Effective EPR Policy

Where states pursue EPR policies, IFPA believes policies should be carefully structured and material agnostic. EPR frameworks should encourage the use of recycled, recyclable, compostable, and novel, but proven, materials, while also supporting investment in the infrastructure necessary to recover those materials. At the same time, policies must preserve the functional performance of packaging that is essential to preventing food loss, maintaining compliance with food safety requirements, supporting traceability and regulatory compliance, communicating essential product information to consumers, and protecting supply chain efficiency and food affordability.

Effective EPR policy must balance environmental progress with the operational realities of post farmgate food loss and waste, food production, packaging performance, and consumer access to affordable fresh foods[7].

---

[3] Regenstein, J.M. et al., 2003. The Kosher and Halal food laws. Comp Rev Food Sci Food Saf. 2(3):111-127; Supian, K., Cross-contamination in processing, packaging, storage and transport of halal supply chain. Relig Cult Foods, 2018: p. 309-321.

[4] Oldroyd, L., et al. 2022. The nutritional quality of food parcels provided by food banks and the effectiveness of food banks at reducing food insecurity in developed countries: a mixed-method systematic review. Princ Nutr Diet. 35(6):1202-29

[5] Herzberg R. et al., 2023. Policy instruments to reduce fool loss prior to retail – perspectives of fruit and vegetable supply chain actors in Europe. Waste Management 170:354-365; Mossenson S., et al., 2024. Evidence for initiating food safety policy: an assessment of the quality and safety of donated food at an Australian food bank. Food Policy 123:102589

[6] Verghese, K. et al., 2015. Packaging's role in minimizing food loss and waste across the supply chain. Packag Technol Sci DOI: 10.1002/pts.2127; Shesh et al., 2025. Assessing the role of plastic packaging in food waste reduction in retail sector. Published by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

[7] Katare B. and Hodge K.L. 2025. Creating awareness and informing policy: implications of Buzby and Hyman's food loss estimates in the United States. Food Policy 137:102914

INTERNATIONAL FRESH PRODUCE ASSOCIATION

Key Policy Considerations

In the United States, the patchwork of state EPR laws continues to raise significant concerns under the Dormant Commerce Clause and Due Process principles. These varying state requirements can impose disproportionate burdens on interstate commerce, particularly for producers operating across multiple jurisdictions, while also creating challenges related to fairness, transparency and the reasonableness of regulatory obligations. This underscores the need for clear nationwide statutory guardrails and targeted exemptions to ensure EPR programs do not unnecessarily disrupt interstate food supply chains or impose arbitrary, inconsistent, or excessive burdens on producers of essential goods.

IFPA believes that legislative and regulatory approaches to EPR for fresh produce should:

- Recognize the critical role packaging plays in preventing food waste[8]
- Preserve compliance with the Food Safety Modernization Act and other applicable federal food safety laws and performance standards[9]
- Protect food affordability and food security by avoiding significant price spikes in low-margin perishable supply chains
- Avoid disproportionate impacts on perishable food systems and fresh food distribution networks[10]
- Minimize regulatory fragmentation across state lines
- Promote clear, predictable, and investment-friendly policy design
- Avoid imposing unreasonable financial burdens on producers, retailers, and consumers
- Support circular economy solutions, including the responsible use of recycled materials and investment in the recycling infrastructure needed to sustain those material markets
- Recognize environmental benefits of recycled content used in packaging materials
- Acknowledge that packaging also serves as a critical communication tool by providing consumers with information related to safe handling, traceability, storage, product origin, and other food safety, regulatory, and consumer protection requirements.

---

8 Wilson, M.D., et al., Innovative processes and technologies for modified atmosphere packaging of fresh and fresh-cut fruits and vegetables. Crit Rev Food Sci Nutr, 2019. 59(3): p. 411-422.; Sadhya, 2010. Modified atmosphere packaging of fresh produce: current status and future needs. LWT- Future Sci Tech. 43(3):381; Zhang, M., et al., Recent developments in film and gas research in modified atmosphere packaging of fresh foods. Crit Rev Food Sci Nutr, 2016. 56(13): p. 2174-82; Barbosa, C., et al., Fresh-cut bell peppers in modified atmosphere packaging: improving shelf life to answer food security concerns. Molecules, 2020. 25(10).; Lourenco, A., et al., Postharvest shelflife extension of minimally processed kale at ambient and refrigerated storage by use of modified atmosphere. Food Sci Technol Int, 2023: p. 10820132231195379; Schudel S. et al., 2023. Solutions roadmap to reduce food loss along your postharvest supply chain from farm to retail. Food Packag Shelf Life 36:101057

9 Caputo V. et al. 2025. The effect of the National Bioengineered Food Disclosure Standard (NBFSD) on consumer preferences and acceptance of bioengineered and gene edited foods. Food Policy 130:102770

10 Verghese et al., 2013. The role of packaging in minimizing food waste in the supply chain of the future. RMIT University Centre for Design, 3 (50 pp); Opara U.L. and Pathare, P.B. 2014. Bruise damage measurement and analysis of fresh horticultural produce. Postharvest Bio Tech 91:9-24

INTERNATIONAL FRESH PRODUCE ASSOCIATION

Policy Proposals for Legislative and Regulatory Consideration

1. *Performance-based food waste prevention credit*
Rationale:
Reducing food waste often delivers greater environmental benefit than marginal reductions in packaging material[11].

Policy options:

- Prioritize net environmental outcomes (including avoided food waste and associated environmental impacts), not just packaging weight/format reductions.
- Exclude packaging formats where credible evidence exists showing that the packaging reduces food loss/waste beyond a defined threshold.
- Exclude packaging that demonstrably reduces shrink/food waste compared to the lowest-material or unpackaged alternative used to market the same product, using field/retail data, or retail shrink data or results of shelf-life testing or accepted LCA methods that include food waste impacts.
- Expand EPR performance metrics to include food-waste reduction, not solely packaging weight or recyclability. Reduce EPR fees (or offer credits, rebates) for packaging formats known or demonstrated to reduce food waste, spoilage, shrink vs the lowest-packaging alternatives.
- Allow producers to use lifecycle assessments that account for food waste avoided, not just packaging disposed for the purpose of the reduction of eco-modulation fees. Also recognize that in-depth LCA assessments are both expensive and impractical for producers that deliver fresh produce using a variety of packaging formats.
- Exclude fresh produce packaging from EPR fees unless the State:
  - Demonstrates an LCA analysis proving that benefits of alternative packaging formats outweigh food loss/waste
  - Establishes that the removal/substitution of the packaging would not impact compliance with federal and/or state requirements (such as Food Safety Modernization Act, front of pack labeling, labeling of organic products, etc).
- Allow packaging that is known to reduce or demonstrably reduces food loss to receive:
  - favorable eco-modulation treatment
  - delayed compliance timelines
  - alternative performance pathways

2. *Guardrails for compliance with organic, labeling, bioengineered disclosure and food safety requirements, guidelines and performance-based outcomes*
Rationale:
Packaging reduction mandates ignore federal regulations on food safety and labeling for organic or bioengineered products and/or performance-based outcomes in these federal regulations.

---

11 Hemachandra S., et al., 2024. A scoping review of food packaging life cycle assessments that account for packaging-related food waste. Int J Life Cycle Assessm. 29:1899-1915; Siebler A., et al., 2026. Function meets environment – approach for the environmental assessment of food packaging, taking into account packaging functionality. Sustainability 18(3):1222; Shrivastava, C. et al. 2022. To wrap or not to wrap cucumbers. Front Sust Food Sys 6:750199

INTERNATIONAL FRESH PRODUCE ASSOCIATION

Policy options:

- Explicitly recognize packaging required to comply with federal food safety and quality regulations (such as FSMA, USDA Organic program, National Bioengineered Food Disclosure Standard) and performance-based outcomes set forth within them as a distinct category of exclusions within EPR statutes.
- EPR requirements and fees should not create incentives to adopt novel packaging formats that can materially increase food safety risk or undermine compliance with federal legislation or regulations or performance-based outcomes defined in these federal statutes.
- Allow exclusion for packaging that is:
    - expected under federal (e.g. FSMA) or buyer food-safety programs
    - demonstrably necessary to prevent contamination or spoilage
- Require States to conduct federal compliance reviews of EPR programs to evaluate packaging changes through a food safety impact lens

3. Eco-modulation guardrails and predictability

Rationale:

Unpredictable eco-modulation discourages long-term investment in sustainable packaging solutions[12].

Policy options:

- Establish statutory or regulatory guardrails on eco-modulation to ensure:
    - transparent fee-setting methodologies
    - advance notice of fee changes
    - 1% annual cap on percentage increases of material fees
- Require meaningful producer input into PRO fee structures.
- Expand eco-modulation criteria to include "other – 7" packaging formats with demonstrated environmental benefits

4. Recyclable Packaging Recognition and Infrastructure Alignment

Rationale:

Recycling and the use of recyclable packaging is essential to the success of EPR programs and achieving their environmental objectives. However, inconsistent definitions of recyclability create uncertainty for producers and may unintentionally penalize packaging formats that are technically recyclable but lack local access to the collection or recycling infrastructure. Policies that condition recyclability solely on local infrastructure availability risk creating a fragmented regulatory landscape where identical packaging is deemed recyclable in one jurisdiction but non-recyclable (and subject to higher EPR fees) in another. This approach increases compliance complexity, discourages innovation, and may ultimately increase packaging waste[13]. Instead, EPR policies should aim to support the responsible expansion of recycling infrastructure over time.

---

[12] Jukka, A et al., 2023. Market incentives for eco-design: the case for eco-modulation. Brussels School of Governance. CCEEL; Dey A. and Ashok S.D. 2024. Fuzzy logic based qualitative indicators for promoting extended producer responsibility and sustainable food packaging waste management. Env Sust Indicators 24:100534

[13] Oluwadipe S., et al., 2021. A critical review of household recycling barriers in the United Kingdom. Waste Manag & Res: J Sust Circ Econ 40(7):905-18; Roy et al., 2023. Barriers to recycling plastics from the perspectives of industry stakeholders: a qualitative study. J Integrative Env Sci 20(1): 2190379

Policy options:

- Establish nationally consistent definitions of recyclability for packaging materials covered under EPR programs.
- EPR policies should not penalize packaging formats that perform well in food protection but lack consistent collection systems for recycling.
- Avoid conditioning recyclability determinations on the presence of recycling infrastructure within municipalities or jurisdictions.
- Recognize packaging that is technically recyclable and compatible with established recycling processes, even where infrastructure is still developing.
- Recognize packaging that incorporates recycled materials or supports the development of stable end markets for recovered materials, including post-consumer recycled (PCR) content used in food-safe applications.
- Encourage investment in recycling infrastructure and end-markets rather than shifting financial responsibility solely onto producers within perishable food supply chains.

5. Compostable packaging alignment with infrastructure and organic systems

Rationale:

Where certified compostable packaging enables the co-management of unsold or expired food products through organics collection systems, EPR programs should recognize this function as both an environmental and operational benefit[14]. Policies should allow such packaging formats to qualify for favorable eco-modulation treatment or alternative compliance pathways, including in regions where composting infrastructure is still developing, provided the packaging meets recognized certification standards. EPR policies should not penalize packaging formats that perform well in food protection but lack consistent collection systems for composting.

Policy options:

- Compostable packaging should be eligible for eco-modulation fees regardless of the current availability of composting infrastructure in the jurisdiction.
- Align EPR compostability definitions with current certification standards
- Avoid penalizing compostable packaging in regions where composting is not yet scaled, or allow phased implementation.

6. Harmonization, Interstate Consistency and Predictable Compliance

Rationale:

Agricultural supply chains are inherently interstate, while state-by-state EPR frameworks function as de facto national regulation without national coordination. Fragmented definitions, reporting structures, implementer-driven decision-making, and misaligned timelines increase cost, create compliance risk, and disrupt perishable supply chains already subject to extensive food safety and quality regulation without delivering proportional environmental benefit.

[14] Cristobal J., et al. 2023. Management practices for compostable plastic packaging waste: impacts, challenges and recommendations. Waste Management 170:166-176

INTERNATIONAL FRESH PRODUCE ASSOCIATION

Policy options:

- State accountability and oversight. Require rigorous, transparent state oversight of third-party EPR implementers (PRO's) to ensure that policy direction, enforcement, and fee structures remain under the control of elected and accountable state officials.
- Standardized definitions and reporting. Adopt consistent definitions of "producer" and "covered materials," and align reporting structures, material categorizations, and data elements across states, with a calendar-year reporting framework strongly preferred to enable uniform, accurate, and auditable compliance.
- Predictable timelines and transition periods. Align compliance timelines, phase-in periods, and fee implementation schedules with realistic packaging redesign, validation, and operational planning cycles to avoid abrupt policy shifts that increase cost and disruption without accelerating environmental or public health outcomes.
- Encourage alignment between state EPR programs and federal regulations to ensure compliance requirements remain consistent across interstate supply chains.

7. Automation and Equipment Compatibility

Rationale:

Packaging materials used in fresh produce supply chains must remain compatible with existing packing and automation equipment. Significant investments in automated packing infrastructure mean that packaging redesigns may require extended transition timelines to maintain operational continuity.

Policy options:

- Provide extended transition timelines for packaging formats that require additional automated packing infrastructure.
- Incorporate equipment compatibility into eco-modulation criteria and regulatory impact assessments.
- Invest into R&D grants and pilot programs that support development of sustainable packaging solutions compatible with existing packing equipment.

INTERNATIONAL FRESH PRODUCE ASSOCIATION

APPENDIX

Specific Packaging Recommendations for Exclusion

Definitions

- Primary packaging: in direct contact with the produce or unit sold to consumers (clamshell, bag, film, tray, punnet)
- Secondary packaging: groups primary units for handling/display (case boxes, RPCs, shrink bundles)
- Tertiary packaging: shipping and palletization (pallets, stretch wrap, straps)

1) Primary Packaging — Proposed Exclusion Categories

Recommend eligibility for exclusion or preferred fee treatment for primary packaging used for any of the following functions:

(A) Food-contact packaging required to preserve or extend shelf life or prevent food waste:

- Modified atmosphere packaging (MAP) or equivalent shelf-life-protective films[15];
- Packaging formats that reduce moisture loss, bruising of the product[16]

(B) Food-contact packaging required to comply with federal food safety legislation or regulations or to comply with meeting traceability and/or labeling requirements

- Sealed or lidded containers for high-touch items and high-risk handling environments:
  - small fruit, fragile greens prone to rapid quality deterioration from repeated handling
- Tamper-evident or closed packaging for items sold in self-serve conditions where unpackaged handling increases contamination.
- Unit-level packaging that carries required identifiers (lot/date/traceability codes) where alternative marking is infeasible or increases waste.

(C) Food-contact packaging incorporating post-consumer recycled (PCR) content

- Packaging formats that incorporate verified levels of post-consumer recycled (PCR) content should be eligible for preferential fee treatment or eco-modulation credits where the use of recycled material supports circular material markets and does not compromise product protection, shelf life, or compliance with food safety regulations.
- Rigid containers incorporating food-grade recycled PET (rPET) or other approved recycled resins.
- Flexible films incorporating mechanically or chemically recycled content where permitted for food-contact applications.
- Packaging formats designed to incorporate recycled content while maintaining the performance characteristics necessary to prevent food loss and waste.

---

15 Caleb O.J. et al. 2013. Modified atmosphere packaging technology of fresh and fresh-cut produce and the microbial consequences – a review. Food Bioproc Tech 6(2):303-29; Zhang et al., 2016. Recent developments in film and gas research in modified atmosphere packaging of fresh foods. Crit Rev Food Sci Nutr 56(13): 2174-82

16 Fadiji T. et al., 2024. Impact of packaging on bruise damage of fresh produce. In Mechanical Damage in Fresh Horticultural Produce, pp. 311-326; Opara U.L. and Hussein, Z. 2024. Factors affecting bruise damage susceptibility of fresh produce. In Mechanical Damage in Fresh Horticultural Produce, pp 21-44; Li, Z., and Thomas, C. 2014. Quantitative evaluation of mechanical damage to fresh fruits. Trends Food Sci Technol 35(2):138-150; Aharoni N. et al., 2008. Controlling humidity improves efficacy of modified atmosphere packaging of fruits and vegetables. Acta Hortic 804:14

2) Secondary Packaging — Proposed Exclusion Categories
Recommend excluding secondary packaging that enables safe handling and reduces damage:

- Corrugated produce boxes and partitioning/inserts necessary to prevent bruising and leakage[17]
- Reusable plastic containers (RPCs) and other returnable transport packaging used in closed-loop systems and/or managed by a third-party pooling provider[18]
- Sanitary liners or pads used to prevent leakage/cross-contamination during transport[19]
- Secondary packaging that supports cold-chain integrity (e.g., insulating elements) when necessary to keep produce within safe temperature ranges[20]
- Secondary packaging materials that incorporate recycled content, including recycled fiber or recycled plastic resins, where those materials maintain the structural integrity necessary to prevent product damage during distribution.

3) Tertiary Packaging — Proposed Exclusion Categories
Recommend excluding:

- Reusable pallets and pallet pooling systems
- Pallet corner boards, straps, and load-stabilization materials used to prevent load shifts or damage
- Stretch wrap used for food-grade load stabilization — with preferential fee treatment for films incorporating recycled or post-consumer recycled (PCR) content

[17] Fadiji T., et al., 2016. Susceptibility to impact damage of apples inside ventilated corrugated paperboard packaging: effects of package design. Postharvest Bio Tech 111:286-296; Lin, M., et al. 2020. Effect of cushioning materials and temperature on quality damage of ripe peaches according to the vibration test. Food Packaging Shelf Life 25:100518
[18] Tua C., et al., 2019. Life Cycle Assessment of reusable plastic crates (RPCs). Resources. 8(2):110
[19] Kirtiraj, K. et al., 2019. Moisture absorbers for food packaging applications. 17: 609-628; Wilson, C. 2017. Influences of modified atmosphere packaging and drip absorbents on the quality, safety, and acceptability of fresh-cut cantaloupe. Busin Agric Food Sci: 11532281
[20] Ambaw A., et al. 2021. Thermo-mechanical analysis in the fresh fruit cold chain: a review of recent advances. Foods 10(6) 1357