



## Food waste reduction: Can packaging play a role?

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Food waste is a global issue that has gained much attention recently. The Food and Agriculture Organization of the United Nations has shown that roughly one-third of food produced for human consumption is lost or wasted globally. This amounts to about 1.3 billion tons per year. Food is lost or wasted throughout the supply chain, from agricultural production to household consumption. In Canada, \$31 billion worth of food ends up in landfills or composters each year, with 47 per cent of food waste happening in the home (Value Chain Management International, 2014 report). Countries all over the world are taking initiatives to reduce and divert food waste.

Composted food waste generates carbon dioxide. Food that decomposes in landfills in the absence of oxygen releases methane. Methane is a greenhouse gas (GHG) that is 25 times more potent than carbon dioxide, according to the U.S. EPA. Additionally, discarding food wastes water, oil and other natural resources that go into growing and delivering food.

Packaging can play a large role in preventing food waste throughout the supply chain. The package contains the product, protects and preserves the contents, and facilitates safe and efficient distribution and storage of the product. Under-packaged food can result in food damage and spoilage, but over-packaging can lead to additional costs and a negative impact on the environment. Designed properly, packaging provides longer shelf life and encourages consumer purchase.

Keeping food fresh is a key challenge for the packaging industry. Modified atmosphere packaging (MAP) and new packaging technologies such as active packaging (oxygen and ethylene scavengers) can extend shelf life. Modified atmosphere packaging substitutes air in the package with another gas mixture. Mixtures of carbon dioxide and nitrogen can deter microbial growth for commodities such as meats and poultry, ready-to-eat chilled foods and baked goods.

Active packaging changes the environment of the packaged food to extend shelf life. Ethylene scavengers can be embedded within the package. Absorption of the ripening hormone, ethylene, reduces premature aging and degradation, and has been successfully used to extend shelf life of bananas, strawberries and other fresh produce. Oxygen scavengers remove headspace oxygen and dissolved oxygen within the packaged food as well as oxygen permeating into the package. Depending on the product, reduction of oxygen within the package can prevent the growth of aerobic bacteria and moulds, or can prevent oxidation of the food.

The European Organization for Packaging and the Environment (EUROPEN) states that “Packaging prevents food spoilage, ensures food quality and safety along the supply chain and at home, informs consumers on how to use and store packaged food products, increases shelf-life and provides portion sizes answering the multiple needs of consumer lifestyles and demographic changes.”



Appropriate packaging results in longer shelf life, less food waste and a lower overall carbon footprint. The *How Packaging Contributes to Food Waste Prevention* study (by denkstatt GmbH in co-operation with the Austrian packaging recycling association) examined the life cycle of packaged and unpackaged fresh food such as meat, cheese and dairy products, vegetable and fruits, and baked products. The GHG emissions of production, transport, use and waste treatment of food and packaging were analyzed. The study found that although packaging contributes to GHG emissions, there are greater GHG emission savings from reduced food waste.

Packaging can be part of the solution to tackling the food waste issue. Packaging is able to extend product shelf life to prevent food waste. A quality package protects and preserves the product and delivers it safely to the consumer. Consumer awareness of food waste and packaging's value will go a long way to address the food waste problem. 🍎

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