



SOFTENGINE WHITEPAPER SERIES

Food Companies Move Toward Environmental & Economical Model

In US households, an average of 150,000 tons of food is thrown out each day. That equates to about one pound of food per person (1)! As the global leader in food waste, the United States discards a staggering 40% of food, reaching nearly 40 million tons (a whopping 80 billion pounds) of waste food each year (2). This is especially appalling when you consider the fact that 54 million people (18 million of which are children) are facing food insecurity (3) and the Food and Agriculture Association estimates that with the global population set to grow 30% by 2050, food production will need to increase by 60% from 2005 to 2050 (1). Just a 25% reduction in food waste can feed all the world's hungry (1)!

These astonishing figures serve as a major wake-up call to our own sustainability practices, but perhaps even more surprising is the fact that the bulk of food discarded does not even reach consumers. Food waste occurs at every stage of the distribution chain, from agricultural harvesting, to processing, to packaging, to retail, to in consumer households. It is estimated that 75% of the world's food waste occurs at the production level, prior to reaching retail stores and consumers (4). And food is wasted in every sub-industry! Approximately 38% of grain products, 50% of seafood, 52% of fruits and vegetables, 22% of meat, and 20% of milk are lost (3).

"ReNu Medical, Inc. is an environmentally safe and sustainable medical device reprocessor, delivering the most cost-saving, environmentally beneficial 'green' reprocessing programs to hospitals and healthcare facilities nationwide, while maintaining the highest quality and safety standards.

With SAP Business One we found a streamlined, more environmentally responsible solution that was in alignment with our core values as a company — one that would support our green business model and create production efficiencies, capture strategic data points and expedite the turnaround time of reprocessed medical devices for our customers."

- Amy Long, Director, ReNu Medical

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The Impacts of Food Waste

The effects of food waste are astronomical. Besides wasted resources not reaching individuals who are in desperate need, the food waste poses a threat to the environment. Most discarded food ends up in landfills; as the largest single component taking up space in US landfills, food makes up 22% of all municipal solid waste (2). This has irreversible environmental consequences, including wasted water and energy used to produce the food, greenhouse gases like methane and carbon dioxide that contribute to global warming, and nitrogen pollution. In fact, food waste accounts for 7% of the world's emissions and the production of wasted food in the US is equivalent to the emissions of 37 million cars (2).

The economic impacts of food waste are also substantial, with Americans discarding \$161 billion worth of food annually (2). 75% of this food discarded at the production level during production/growing, postharvest handling, manufacturing, and storage (4). That is over \$120 billion worth of food wasted before it even reaches grocery shelves! Reducing waste would result in significant cost savings for small and midsize food manufacturers and distributors. Waste has a multi-level cost to businesses, including purchasing raw ingredients, processing food, and disposal. On average, for each ton of garbage it costs \$30 to recycle, \$50 to send it to landfill, and \$75 to incinerate it (5). With millions of food waste occurring at the production level annually, imagine how quickly these costs add up!

Manufacturers and Distributors Look to Reduce Food Waste

With new legislation, pressure from consumers to create sustainable food products, and overall corporate responsibility, reducing waste is an issue that small and midsize food and beverage companies must address. However, according to Gartner, 35% of companies still lack formal corporate supply chain sustainability goals, while another 49% of respondents said their companies did have such goals (6). The future of sustainability is looking brighter as supply chain professionals are beginning to see the financial benefits. Most of them plan to invest in waste reduction, ethical sourcing, water-efficiency improvements, and carbon emission reduction over the next 18 months, with waste reduction and water-efficiency improvements seen to have the greatest fiscal benefits (6).



We must all do our part as individuals to address the food waste epidemic, but to truly make an impact, manufacturers and distributors have a responsibility to reduce waste. This will also result in drastic cost savings, benefitting consumers, the company bottom-line, and the planet. While this may seem like an arduous task, simple strategies and business planning technology can help.

Identify Areas of Waste

To reduce waste and create more sustainable food production processes, you must first appropriately identify areas of waste and their causes. Running process or operational audits can help you pinpoint inefficiencies that may be leading to excess waste, as well as using technology that gives you a complete picture of your business practices. There are multiple types of waste in the food and beverage industry, and many times waste in one area creates waste in another.

Types of Waste:

- **Inventory waste:** Inventory waste occurs when food processors or distributors have too many raw ingredients, overproduce a particular product, items become outdated, or manufacturers do not have use for certain items. A leading cause of inventory waste in the food and beverage industry is spoilage. This may be due to the inability to use or sell items on time or improper storage methods, including during the shipping process. Inventory waste has multiple costs to manufacturers, including the cost of the items, the cost of production, storage costs and the cost of disposal.
- **Overproduction:** Overproduction waste occurs when too much of a particular product is made for the level of demand. This type of waste is especially common in the food and beverage industry, where products that are not used on time may spoil at the plant, at the retail stage, or in a consumer's household.
- **Time & labor:** Overproduction, rework, and inefficient processes can all lead to wasted time and labor. This not only affects your bottom line but also has an impact on employee satisfaction and retention.
- **Defect waste:** Mistakes in production or poor-quality control can result in defective products. In the food and beverage industry, defect waste often occurs when products are accidentally contaminated by allergens or bacteria. This creates waste and may even result in product recalls, which involve even more time, money, and labor to conduct.

Once you have accurately identified areas where you create the most waste and opportunities where waste can be reduced, you can implement multiple strategies to help minimize waste.

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Know Your Customer

Understanding your customers and being able to identify their greatest needs and preferences helps manufacturers produce the right number of the right products. Overproduction and spoilage are major contributing factors to food waste in processing and manufacturing plants. Demand planning allows you to predict how many of each product you need to produce at what time. Business planning technology that allows you to pull from historic data, current market trends existing orders and more allows for better forecasting, so you can avoid overproduction. You can accurately schedule production and order the right number of raw materials, as well as see which products are not being purchased and decide if they are worth continuing to produce. This reduces wasted time, labor, inventory, and overproduction.

Optimize Your Inventory Management

Efficient inventory management is essential to reduce waste. To avoid overproduction or over-ordering, you need to know exactly how much of each item you have in your warehouse at any time. This will also help prevent excess raw materials that you have to store and spoilage if you cannot use the ingredients in time. Technology that allows you to pinpoint the exact location of each product batch, palette, and even single item allows you to organize your warehouse for easy navigation, which will save workers time when looking for raw ingredients. Material requirements planning (MRP) allows you to map exact quantities of each ingredient to each product, so you always order the right amount of raw ingredients. Automated purchase orders based on demand forecasting means you will have the optimum amount of each ingredient based on the exact quantities required by each recipe.

Repurpose and Recycle Waste Products

Most waste in food processing plants is generated when paring and scrapping edible portions, such as crusts, peels, and skins from food (7). Much of these discarded portions can be re-used or repurposed, including as animal feed or ingredients for separate products. Currently, about 33% of US food waste from manufacturing goes to animal feed, but even with this recovery over two billion pounds of food are wasted at this stage of food production (8). Identifying exactly how much of each by product comes from processing a particular item allows you to pinpoint opportunities for upcycling raw ingredients that may otherwise be wasted. For example, a common by-product in the dairy industry is whey, which you can conserve and use to create protein products or sell to a protein manufacturer. Either way, you will be able to reduce waste and create additional profits!

Furthermore, about one-third of the average dump is made up of packaging material like plastic, paper, and aluminum. Each ton of recycled paper can save 17 trees, 380 gallons of oil, three cubic yards of landfill space, 4000 kilowatts of energy, and 7000 gallons of water. This represents a 64% energy savings, a 58% water savings, and 60 pounds less of air pollution (5)! You can use electronic documents to identify suppliers with sustainable packaging methods and easily create new agreements. Food manufacturers can use technology to identify which materials result in the most waste when packaging is discarded, which by-products can be repurposed and how much of each is produced. This results in cost-savings and may even result in additional profits!

“BED|STÜ is a very environmentally conscious business, taking great care to only incorporate sustainable components and practices that generate minimal environmental impact into all of their products. With SAP Business One we now have paperless visibility into our inventory at every location is crystal clear and we have instant access to all of our sales, customer and production data. As a result, we can make better environmental decisions and better manage our growth process.”

-Nora Orozco, President, BED|STÜ

Enhance Production Visibility to Ensure Quality

In the food and beverage industry, product quality is paramount. Each stage of the production process must follow exact protocols to comply with rules and regulations set by organizations like the FDA and prevent costly recalls and wasted goods. Ingredients need to be stored appropriately to prevent potential spoilage of perishables, or cross-contamination of allergens (such as nuts). 350 million tons of food are estimated to be lost due to postharvest handling and storage (4). Defect products create waste for food manufacturers on several accounts. Raw ingredients, time, labor, machine degradation, and potentially lost customer orders and tarnished brand reputations can all occur due to poor production.

Improving your quality control processes will drastically reduce defective products, rework, and scrapped products. Technology that gives you full visibility into your supply chain and production processes helps you ensure that every product your plant produces meets the appropriate standards. You can also automate food processing steps that may be prone to manual error, including ingredient mapping. Business planning technology allows you to store recipes and process data in a single source of truth, to maintain consistency and quality across all your product. You can also see exactly which machines are used for processing each ingredient, to avoid cross-contamination of potential allergens. Furthermore, having visibility into all your production processes provides you with valuable insights to make improvements, such as lowering cooking temperatures, that may lead to more consistent output and less waste in the future.

Conclusion

Food manufacturers and processors have a tremendous responsibility to help resolve the food waste crisis we currently face. The pressure to create more sustainable practices has been steadily increasing as issues like climate change, pollution, and resource depletion are top-of-mind for legislation and consumers. Small and midsize businesses need to implement strategies to reduce the amount of waste created throughout the production process. Furthermore, there are untapped opportunities for cost savings and revenue increases by repurposing materials and decreasing overall spending on waste.

Sources

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