## Waste Reduction in Packaged Fresh Food Supply Chain Planning

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Sustainability has a high priority for all actors in modern supply chains, and food waste issues attract significant political, market and media consideration. Many retailers have setup programs aimed at tackling it, while the food industry has also launched programs including waste reduction among their main goals. Indeed, food waste is already a crucial theme, and its importance is growing in these years. In the last decade, retailers have achieved relevant progresses in reducing the amount of food wasted in their stores as well as along distribution networks. Nevertheless, there is still room for further improvements: better forecasting, more careful assortment and order decisions, suitable policies promoting products' freshness, and shelf life management can yield significant waste reductions. Besides, retailers can help to reduce waste along the supply chain through closer collaboration with other upstream actors. This study considers methods and models devoted to waste reduction in fresh food supply chain operations to be included in a Decision Support System, and presents a case study on a real supply chain dedicated to fresh and perishable packaged products, involving a set of retailers with both small and medium sized stores located Southern Italy. Optimization is a crucial issue in such a context and the main criticalities are related to the uncertainty on future sales and in the different characteristics of products. This study proposes an integrated, flexible and robust approach that accounts for demand forecasting and order planning. The aim is to support the decision makers to determine operations plans -for each individual item-store pair- with respect to waste reduction and other different criteria, such as shortage, freshness and residual stock of products. Results are reported and discussed enlightening both quality of forecasting and its effects on the order planning activity. The results show the potential benefits of the proposed approach to pursue the waste reduction in the distribution and the retailer supply chain and the possible extensions to contribute to the recovery of fresh food surplus.