

FY2021 Project for Establishing Infrastructures for Enhancing Efficiency of Distribution and Creating Value Added

Project for Food Waste Reduction Taking Advantage of IoT Technologies

Overviews of the Demonstration Tests

January 2022

Consumer Affairs, Distribution and Retail Industry Division

Overviews of the Demonstration Tests

FY2020 Demonstration Tests*

We will **trace** fruits and vegetables **individually** using electronic tags from production areas to consumer's homes. Information on the temperature and humidity will be obtained during the distribution process and converted into freshness scores, then online grocers will **sell fruits and vegetables while using dynamic pricing that changes based on their freshness scores**. We will provide a **service that allows consumers to view their home inventory** by linking purchase data to an app that manages food inventory for the consumer's home.

* FY2020 Project for Establishing Infrastructures for Enhancing Efficiency of Distribution and Creating Value Added Therein (Activity for Food Waste Reduction Taking Advantage of IoT Technologies)

Communicating freshness as a value can change the way consumers shop

There is still a large amount of information on fruits and vegetables that are not utilized

Demonstration Test 1



Reduction of food waste by promoting new value of fruits and vegetables

METI will conduct sales promotions in stores to provide consumers with new value by utilizing seldom-used information on fruits and vegetables, on which there is various information, and examine the effects on the reduction of food waste.

Dynamic pricing can provide consumers with a variety of shopping options

Effectiveness must be confirmed in the store, i.e. the main location where food is sold

Demonstration Test 2



Reduction of food waste by promoting the sale of all available items using dynamic pricing

METI will introduce dynamic pricing using electronic shelf labels and examine their effects on the stores' operational efficiency and reduction of food waste.

Allowing consumers to view their home inventory can make them more conscious of food loss reduction

A service that lets consumers manage their home inventory more actively is necessary

Demonstration Test 3



Reduction of food waste by supporting the purchase, cooking, and storage of food for a healthier diet

METI will utilize data on purchases, consumption, and disposal to provide a consumer service that supports the purchase, cooking, and storage of food for a healthier diet, and examine its effect on reduction of food waste in the home.

Details of the demonstration tests

Demonstration Test 1  

Reduction of food waste by promoting new value fruits and vegetables have to offer

Demonstration Test 2 

Reduction of food waste by promoting the sale of all available items using dynamic pricing

Demonstration Test 3  

Reduction of food waste by supporting the purchase, cooking, and storage of food for a healthier diet

Location	Ito-Yokado Hikifune Store		Participants' homes
Period	From January 12 (Wed.) to January 31 (Mon.), 2022		
		From February 9 (Wed.) to February 28 (Mon.), 2022	
Target products	Aiko tomatoes (Chiba) Nameko mushrooms (Fukushima) Spinach (Gunma)	10 SKUs from items delivered daily* Pastries and confectionaries Tofu	All products
Operators	Ito-Yokado Toppan The Japan Research Institute, Limited	Ito-Yokado SATO The Japan Research Institute, Limited	Ito-Yokado, Imamura Shoji SATO, SIRUTASU, Hitachi Solutions West Japan, and the Japan Research Institute, Limited
Partners	IY Foods IY Foods' suppliers and partnered production areas	—	—
Participants	General consumers	General consumers	Approximately 100 men and women in their 20s to 60s

* The products chosen are placed on the same shelves as parts of the same SKU and have varying expiration dates

(1) (From the production area to retail store) Reduction of food waste by promoting new value fruits and vegetables have to offer

Focus of Demonstration

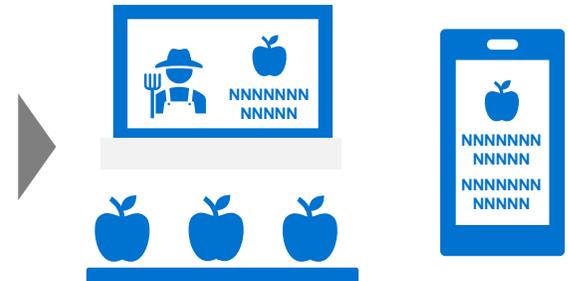
1. Promotion using a variety of information on fruits and vegetables
 - We will examine whether we can expand consumers' product selections by communicating a variety of information on fruits and vegetables, such as their shape and color and the conditions at the time of their harvest to consumers in a timely manner.
2. Promotion based on responses to real-time distribution
 - We will examine whether we can promote sales (in stores and on smartphones) while utilizing IoT to track product distribution in real time and responding to distribution conditions.



Provide information on fruits and vegetables, including shipping
Ship them in containers that have electronic tags



Use electronic tags to manage transportation in the distribution process



Provide information on fruits and vegetables through in-store digital signage and the smartphone app

(2) (Retail stores) Reduction of food waste by promoting the sale of all available items using dynamic pricing

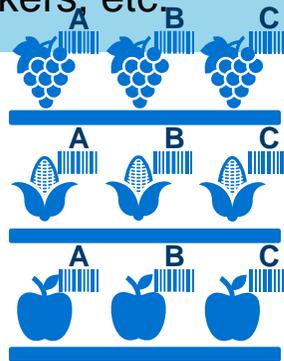
Focus of Demonstration

1. Enhancement of the efficiency of store operations

- We will examine the reduction of work hours spent on changing price tags and attaching discount stickers, which are necessary when the price of a product changes. We will do this by utilizing electronic shelf labels whose price displays can be updated remotely from the store's backroom.

2. Promotion of an effective and efficient sale of all available items

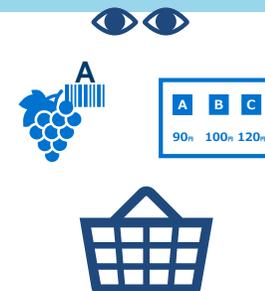
- We will conduct dynamic pricing that separates each SKU into multiple prices depending on the expiration date. In addition, we will examine whether there are increases in sales or gross profit and changes in periods for 100% sales by using electronic shelf labels and changing prices based on smaller intervals, which was difficult when using manually attached discount stickers, etc.



Products are given different labels depending on expiration date



Electronic shelf labels are utilized to display multiple prices

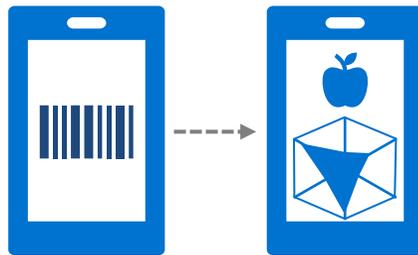


Consumers check the labels and prices on electronic shelf labels, then make purchases as they normally do

(3) (Retail stores to consumer) Reduction of food waste by supporting the purchase, cooking, and storage of food for a healthier diet

Focus of Demonstration

1. Support purchases by utilizing purchase data
2. Improve inventory management by obtaining data on consumption and disposal
3. Support cooking by utilizing data
4. Promotion of purchases by utilizing gamification strategies
5. Demand-type supply and demand forecasts based on data on consumption and disposal



While shopping, the self-scan app keeps data on products inside the cart, and after shopping, it keeps data on products that have been purchased. The app then links the data with the food management app

While the consumer is shopping, it recommends additional products, based on consumer's nutritional balance and home inventory



The app uses a weight sensor and Bluetooth tag to record data on consumption and disposal (some information must be entered manually)

By registering, the consumer obtains points that can be used within the app and coupons that can be used for shopping, and other bonuses



In addition to nutritional balance, the app recommends recipes and products by utilizing the approximate expiration dates of food and recorded data on consumption and disposal

(Reference) Details of the focus of demonstration

1. Support purchases by utilizing purchase data

- We will examine whether we can support consumers' purchasing behaviors by displaying product recommendations on their smartphones based on their shopping lists and nutritional balance.

2. Improve inventory management by obtaining data on consumption and disposal

- We will examine whether consumers can manage their home inventory by linking data on their purchases and the consumption and disposal of their products. Data will be obtained when products are consumed or disposed of by using Bluetooth® tags and weight sensors (they can also be entered manually).
- We will also examine whether we can promote the recording of data on consumption and disposal, by granting points that can be used for product purchases, etc.

3. Support cooking by utilizing data

- We will examine whether we can support prioritizing the consumption of food that is near the expiration date by recommending recipes based on consumers' nutritional balance, home inventory, and the expiration date of each food.

4. Promotion of purchases by utilizing gamification strategies

- We will examine whether we can promote and support purchases of healthy items by incorporating game elements (gamification) to encourage consumers to buy items with nutrients that they are lacking. We will do this by predicting consumers' health conditions from their purchase data and reflecting them in a persona.

5. Demand-type supply and demand forecasts based on data on consumption and disposal

- We will examine whether we can predict supply and demand by utilizing not only information that is typically used to predict supply and demand (number of customers, etc.), but also data on consumption and disposal, sources of data that are further downstream.