

# Connecting Ethical Dining to the Future

## ~What We Can Do to Reduce Food Waste~

Kado Seminar  
Department of Business and Communication  
Shikoku University Junior College

Ami Takaoka

Nanako Tadakawa

Haruna Tani

Kokona Taniguchi

Ryuku Nakano

Mio Nakamura

Nanami Noda

Suzuna Hiroishi

# Communication between Producers and Consumers

## ～A Study of Local Production for Local Consumption at the Tokushima Marche (Market)～



# 【Theme】

## Connecting Ethical Dining to the Future ~What We Can Do to Reduce Food Waste~

1

The Current State of Food Waste

2

Context and Causes of Food Waste

3

Proposals for Solutions (What We Can Do)

4

Social Issues  
(Urgent Issues Faced By Local Communities)

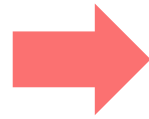
We conducted an awareness survey among the youth, mainly university students, to understand the current state of food waste.

Survey period: October 1 – October 31, 2024

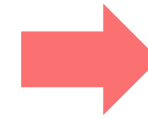
Number of survey responses: 106



Youth



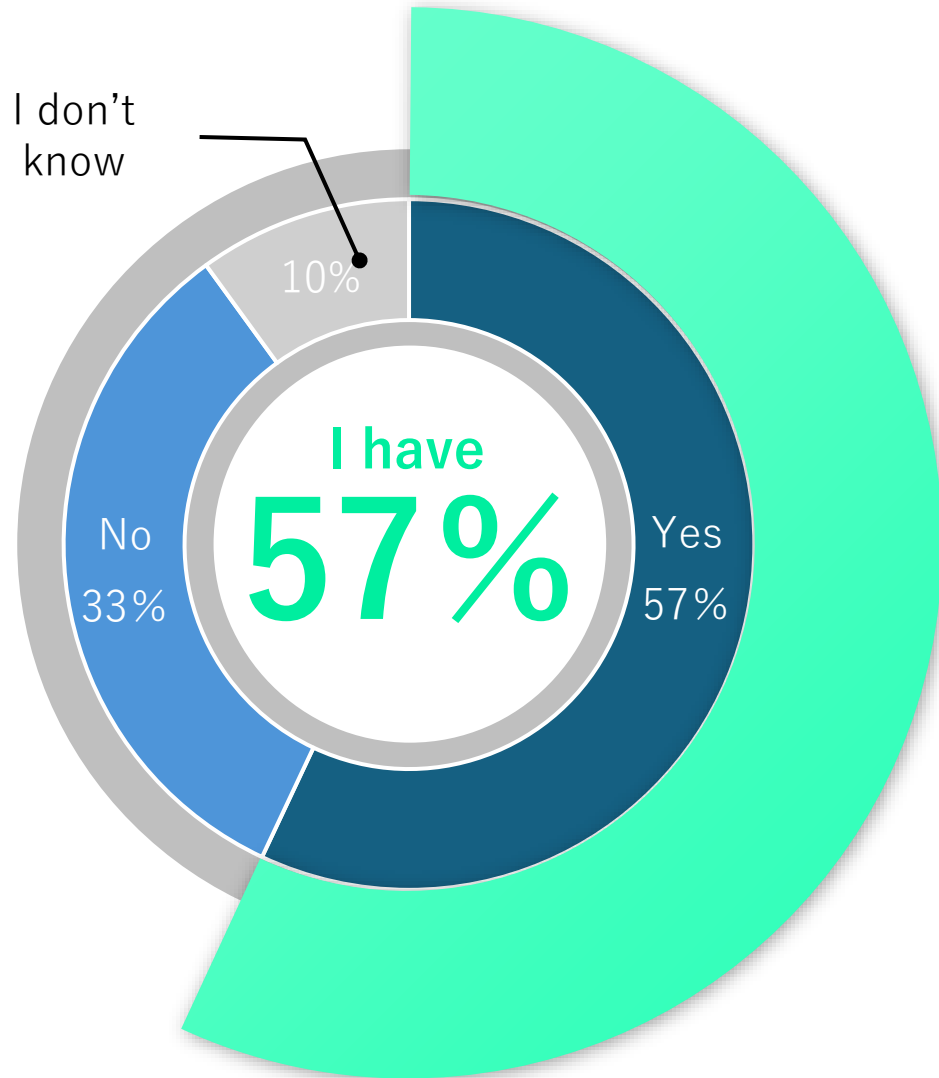
Survey



Results  
Summary

Q1

Think back over the past week. Have you thrown away something that was still edible?



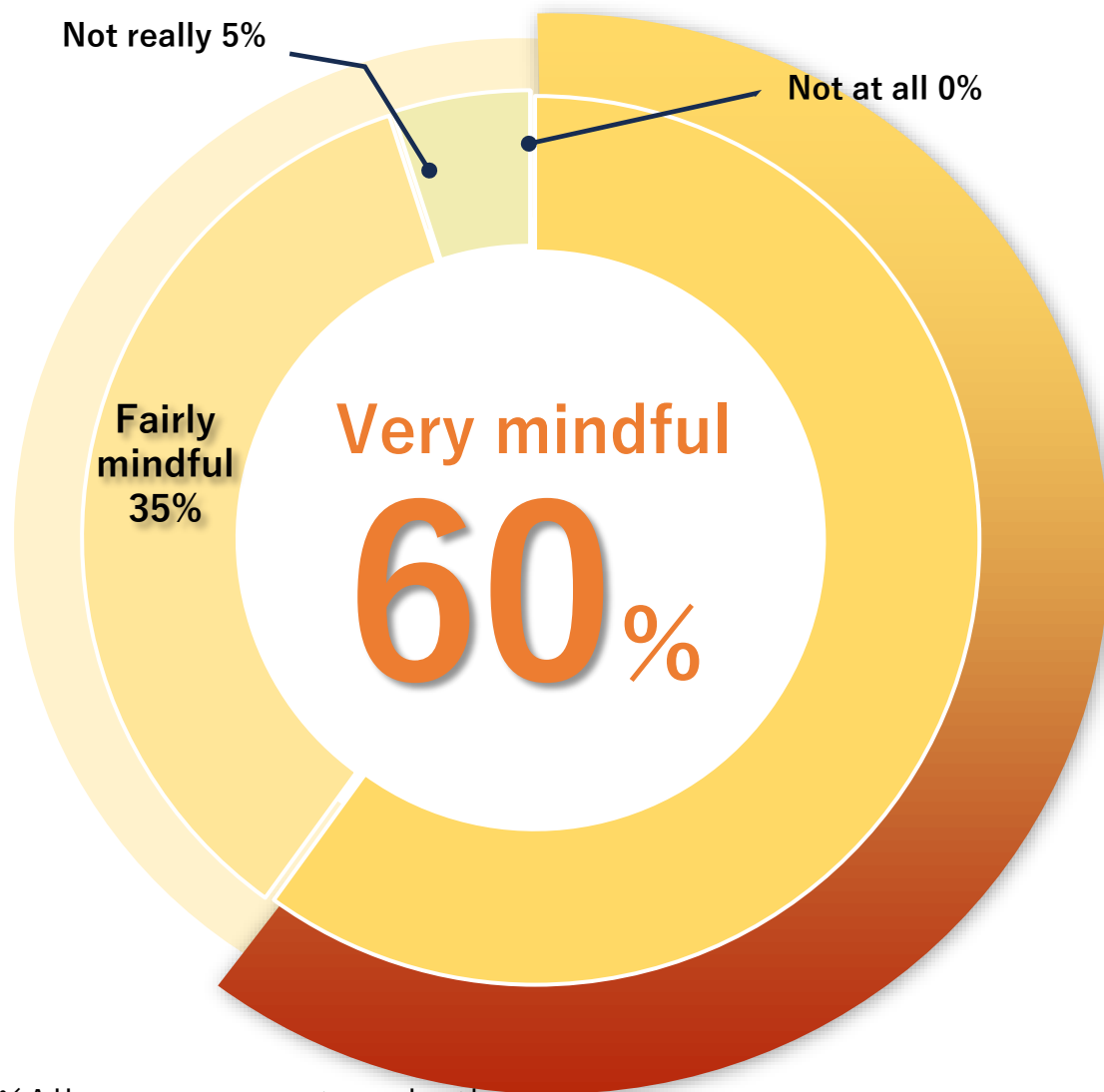
- ✓ About 60% have thrown out food
- ✓ Those who answered “I don’t know” may not have been aware of it because they left the cooking to their parents or guardians





Q2

When you eat out, are you mindful not to leave any food on your plate?



The results on the left chart show that a majority of the respondents, **95%**, were strongly and moderately mindful of finishing their food.

Among them, **5%** were not mindful of it.

Possible reasons for not being mindful of finishing food they order



- They paid for it so it's fine
- They are not sure of how much they can eat

On the other hand,

for those who are mindful...

Many people said they wanted to get their money's worth because it is an all-you-can-eat buffet, or are conscious of leaving food uneaten because of the penalty system, and also that it would be a waste!!!

I don't want to pay for  
left over food...

I want to get my money's  
worth!!!

✂Some stores do  
not have these  
systems

That's too wasteful!!!



# Possible hypotheses from this survey

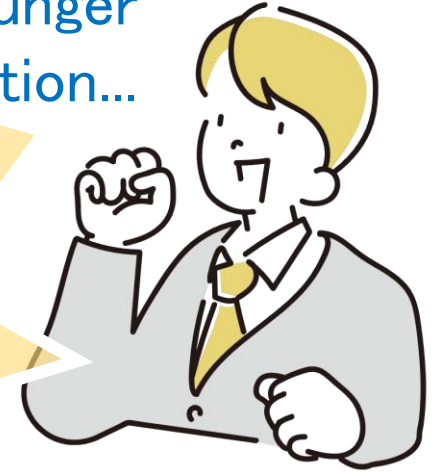
## Adults...

- have a fixed stomach capacity
- cannot eat much
- do not have much energy to eat
- heartburn...



have no heartburn!!!  
have the energy to eat!!!

In contrast, the younger generation...



This survey targeted the younger generation, primarily students. This allowed us to find a somewhat interesting result: a contrast between the younger generation's strong stomachs and frank feelings of "not wanting to incur losses" and the adult generation's declining physical strength and appetites!



Q3

What types of food waste (ingredients) does your household produce (or yourself, if you live alone)?

Cabbage, lettuce

32

Bread

31

Rice, milk

30

Cheese

25

Meat

22



## Hypotheses ①

Since **this survey was conducted mainly among students**, it is likely that many of them are so **busy with part-time jobs and schoolwork** that they inadvertently forget the expiration dates of food items and throw them away.



## Hypotheses ②

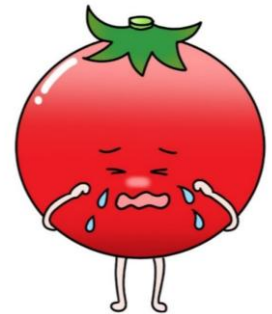
It is possible to make dishes by cooking the top items from the survey, but many students may not know how to make use of such ingredients or may be too busy to cook them.



## Hypotheses ③

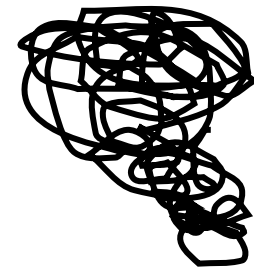
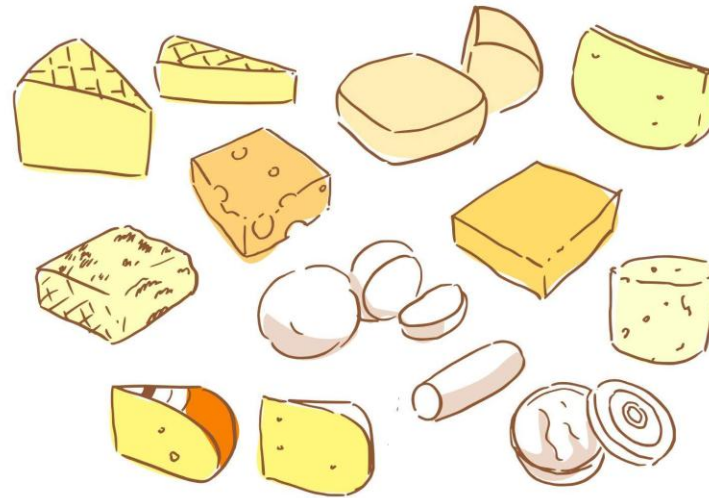


Many people don't want to eat shriveled vegetables or don't know how to store them properly, so they end up throwing away cabbage and lettuce, which are easily damaged.



## Hypotheses ④

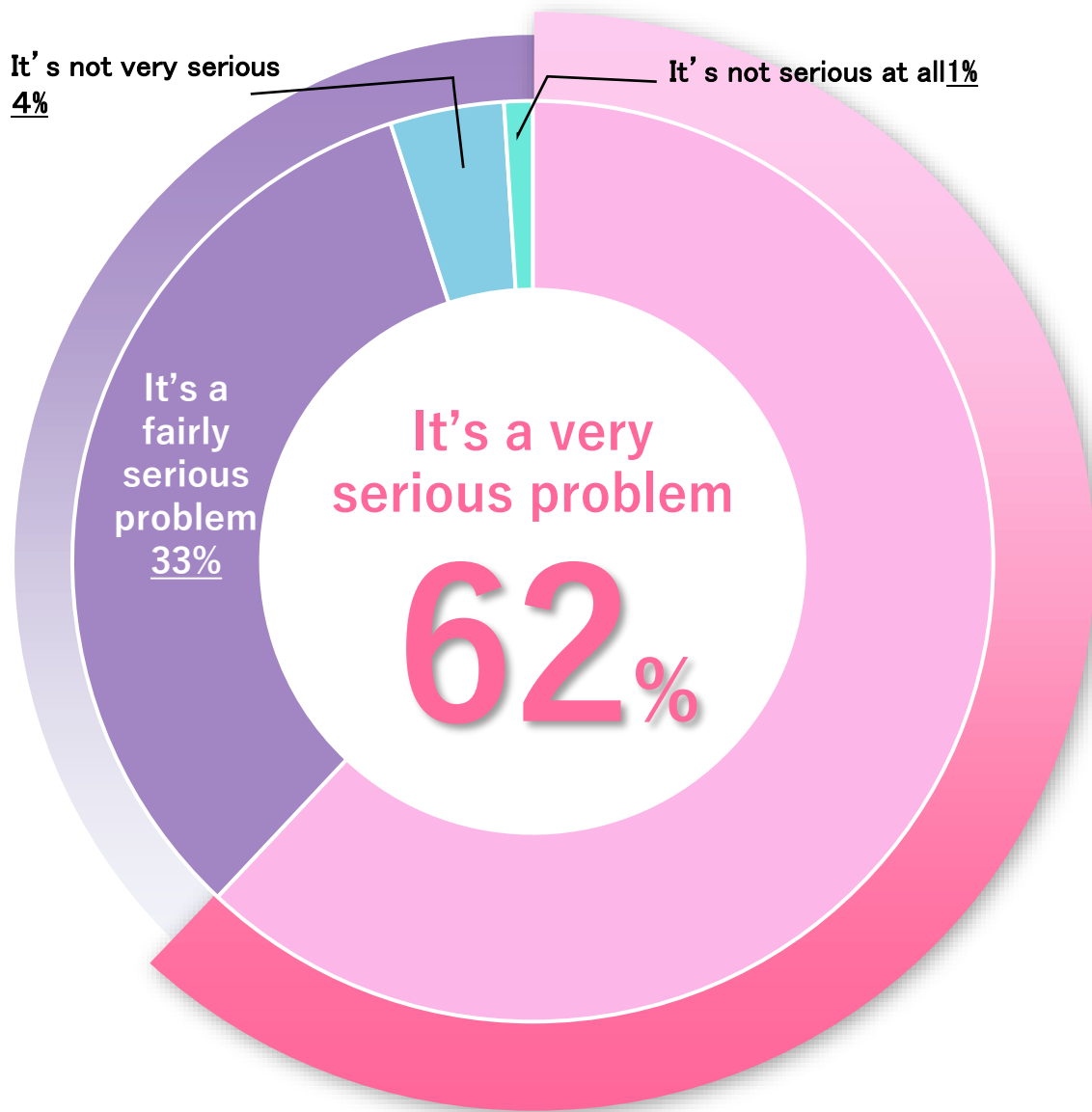
Cheese has a long expiration date, so people tend to be careless about checking the expiration date, thinking that the cheese is still good, and end up throwing it away after it has expired.





Q4

Do you think the “food waste problem” is a serious issue for us?



Similar to Q2, about 95% of the respondents, including those who answered ‘somewhat,’ view the situation as **serious**.

Of those, again, 5% do not see it as serious, which is the **current situation**.



## Possible reasons for people who don't think it's not that serious include:

Thinking their efforts won't make much difference.  
It's not their problem.



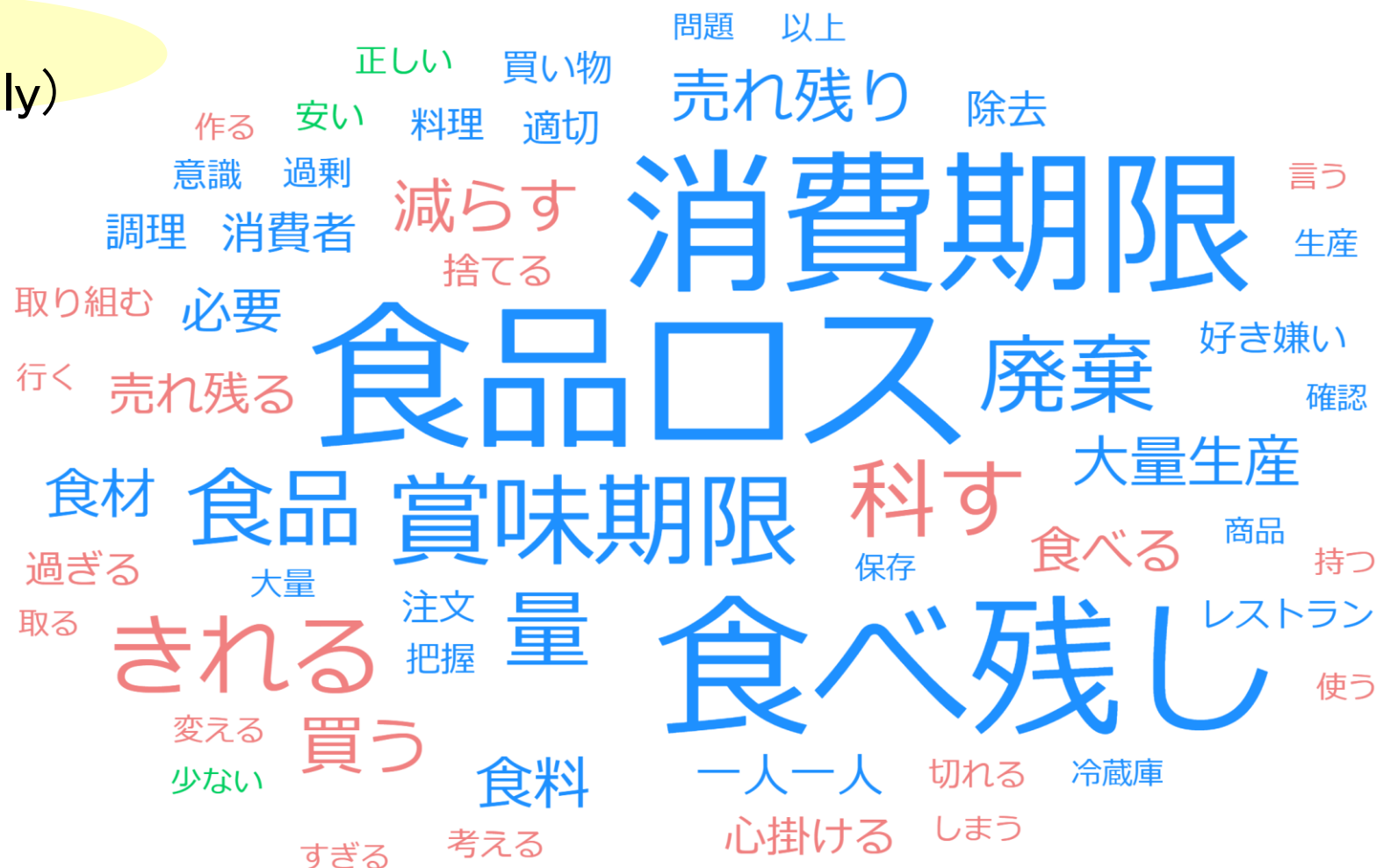
Thinking they can do whatever they want  
with the food they paid for.

People do not seem to consider other people's problems and individual freedom as something that affects them, but rather as something that happens in some distant world. We believe that our future task is to convey information about food waste to as many people as possible and promote their understanding through consistent activities, so that people can at least begin to see it as something that concerns them personally.

Q5

What actions are you taking to reduce food waste?  
Please give specific examples.

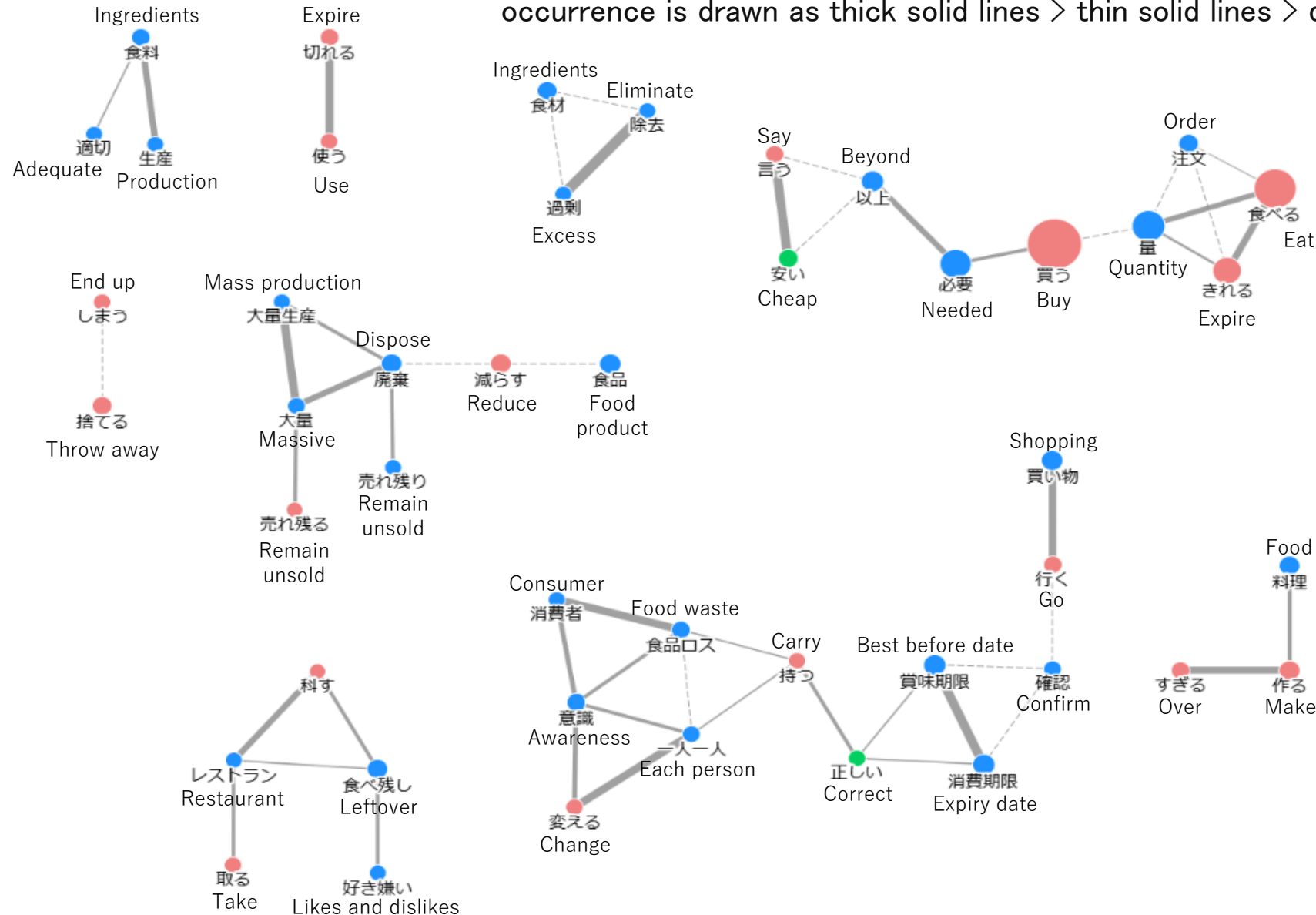
Word Cloud  
(Japanese Only)



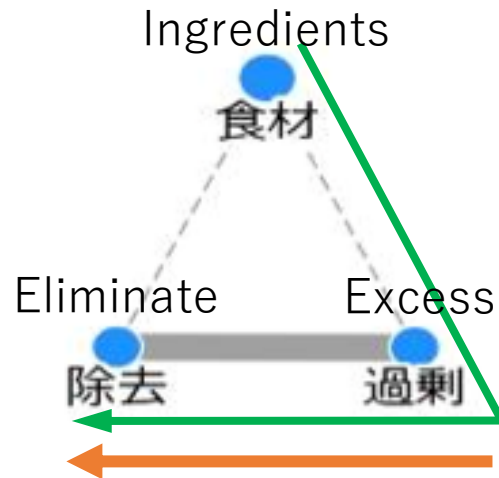
# Co-occurring Keywords

This is a diagram in which lines are used to connect similar patterns of occurrence of words that appear in a sentence.

The more frequently occurring words are, the larger they are, and the order of strongest co-occurrence is drawn as thick solid lines > thin solid lines > dashed lines.



## Considering these 2 figures as examples:



● Ingredients ● Excess ● Eliminate

These three words are related.

—— has more relevance than -----.

● can be connected in any way, so from here,

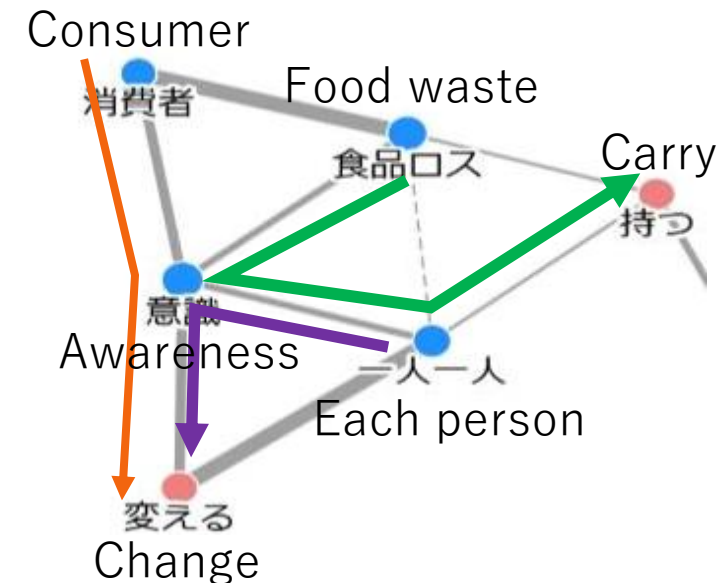
→ can be read as “**excessive elimination of ingredients**” or “**excessive elimination**”

● Consumer ● Food waste ● Each person ● Awareness  
● Change ● Carry

If the same is applied from the diagram above...

We can think of it as:

- Consumers change their mindset
- Each person should be aware of food waste
- Each person changes their mindset
- ...etc





## What can be inferred from these co-occurring words

- Do not **excessively dispose** food ingredients
- Prevent products from being **unsold** due to mass production
- **Use up** food appropriately
- Each consumer **should be aware** of food waste
- Consumers should change their **mindset**
- **Check** expiration and best-before dates **properly** before shopping
- Do not **cook too much**
- Impose **finest or penalties** for leftover food at restaurants
- Do not have **leftovers** because of likes and dislikes
- Order **only what you can eat**
- **Do not buy more than you need**



Other opinions included: not overstocking; *temaedori* (taking items in front of the shelf); eating food that is close to its expiration date first; storing food in plastic wrap effectively; and using your own containers.

# Expand your repertoire of recipes



### Recommended Sites for Time Efficient Recipes

- **ずぼらめし (Zuborameshi)**

Easy to do! Just mix!

You can do it even when you're busy!

### Recommended Culinary YouTubers

- **料理研究家リュウジのバズレシビ**

(Cooking Expert Ryuji's Trendy Recipes)

Few steps

Also recommended for beginners

# Know and practice proper storage methods



### Recommended Sites

- ・デリッシュキッチン  
(Delish Kitchen)

“The definitive guide! Preserving vegetables by freezing and refrigerating!” Comes with easy-to-watch videos!

### Recommended YouTubers

- ・まとめ買い主婦【みいかわ】  
(Bulk Buy Housewife【Miikawa】)

“【Freezing】 Just cut and freeze stock/bulk buying/bento preparation” is recommended! It’s also good that they include methods for things other than vegetables!

By the way, for cabbage...

## Storage methods vary depending on the size of the cut!

### How to store a whole cabbage

- ① Wet paper towel with water
- ② Hollow out the core and stuff with wet paper towel
- ③ Wrap in newspaper, place in a plastic bag, and close bag loosely
- ④ Store in the vegetable compartment

### How to store halves and quarters

- ① Make a slit in the core
- ② Wrap tightly in plastic wrap or bag and store in the vegetable compartment



★ Tip ★

Fill it with damp paper towel!

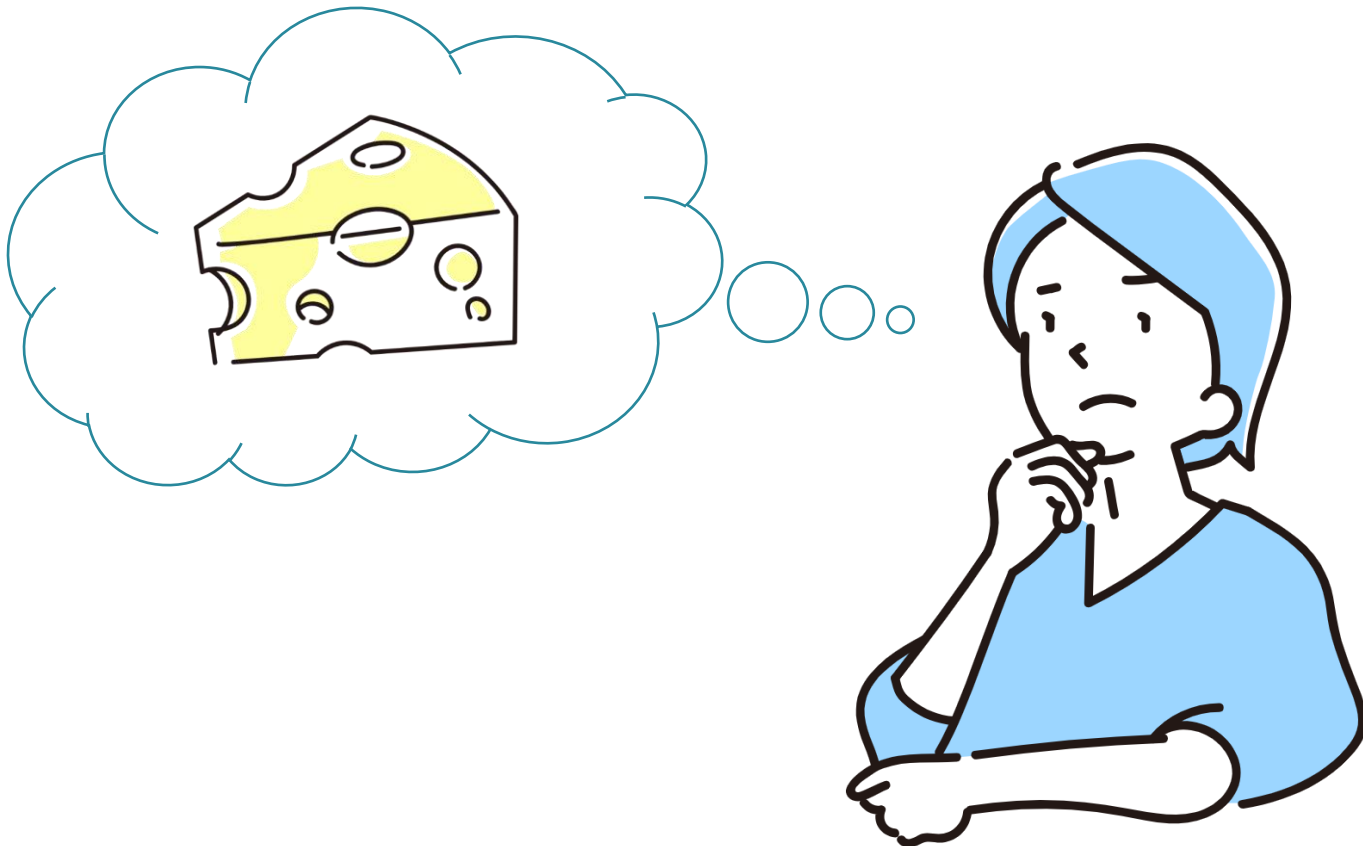
★ Tip ★

We also recommend sticking some toothpicks into the core!

You can also use a plastic bag instead of plastic wrap!



### Make it easy to keep track of what is where



#### Place food in fixed location

- Put food near their expiration date in a visible place.

Excerpt from:

<https://wli-k.jp/report/1449/>

#### Make it easy to see what is stored at a glance

- Use transparent containers that allow you to see the contents even when standing up.

Excerpt from:

<https://wli-k.jp/report/1449/>



Extra

Other drinks

39

Other  
vegetables

34

Cabbage, lettuce

32

Bread

31

Rice, milk

30

Cheese

25

Meat

22

# Why many cited beverages ①

Cannot be closed  
once opened

Needs to be  
finished if  
opened outdoors

Cannot be placed  
horizontally  
once opened

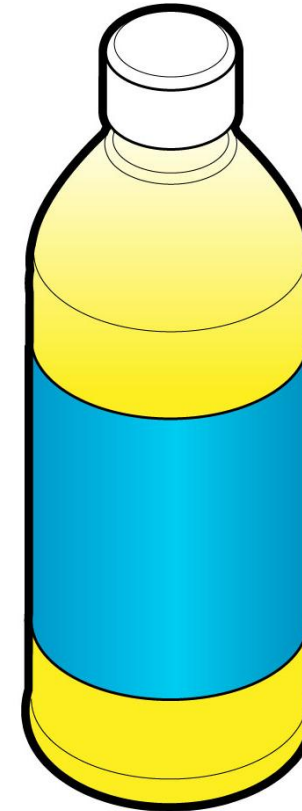
Carton drinks  
likely to be thrown  
away

- Milk



Cartons

For carbonated juice, the  
carbonation disappears and  
becomes just sweet juice



Pet bottles

Bottled drinks  
likely to be thrown  
away

- Carbonated juice that has lost its carbonation
- Those left at room temp. after opening

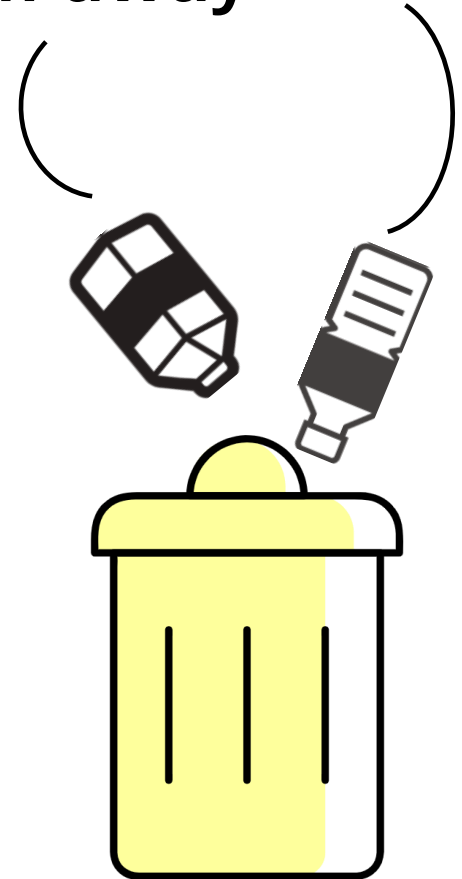
## Why many cited beverages ②

### Disposal pattern ①

Buying large quantities of discounted drinks close to their expiration dates then ending up throwing them away because you can't consume them on time.

### Disposal pattern ②

The expiration date is fine, but the drink is opened to drink until for later and accidentally left at room temperature. At the risk of food poisoning, it ends up being thrown away.



## Why many cited vegetables

There are **frozen and room temperature cut vegetables**, but they are **expensive** and not easily accessible, so people might be **buying the cheaper whole and end up not using up all of them.**



# What this tell us about the key challenges to reducing food waste

1

**Every one of us should strive not to leave food uneaten**

Keep track of how much you can consume.

---

2

**Use it up before the expiry date or best before date**

Always keep track of what you have in your house before shopping.

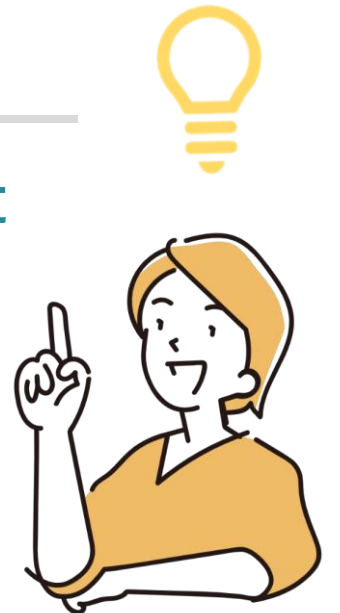
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3

**Keep track of how much you order at all-you-can-eat restaurants**

Finish what you ordered or put on your plate. Order again only if you think you can still eat after.

---





# What this tell us about the key challenges to reducing food waste

1

## Reduce waste caused by mass production (unsold items)

Change the way of production based on the provider's understanding of how many people need the product. (e.g., by offering discounts or points)

---

2

## Changing consumer awareness

Hold events where people can learn about food waste so that they can see it as a personal matter

---

3

## Measures against leftover food

Create a system whereby customers are awarded points for finishing what they order, which they can accumulate to earn rewards. Some menu items can be taken home, and penalties will be imposed for leftovers.

---



## Analysis Summary on the Current State of Food Waste

- ✓ **More people were concerned about food waste than we expected.**
- ✓ **Some people don't see it as their business**  
One reason for this is the social background of **people wanting to reduce the time they spend cooking as they spend more time on studies and work, and because they want efficiency, they buy products such as cut vegetables, that have parts thrown away, out of sight from the consumers.**
- ✓ **Recipes for leftovers and proper storage methods are not widely known** (only a few people do)



## Occurrence at the point of sale (Sellers)



Unsold items

Damaged  
items

Expired items

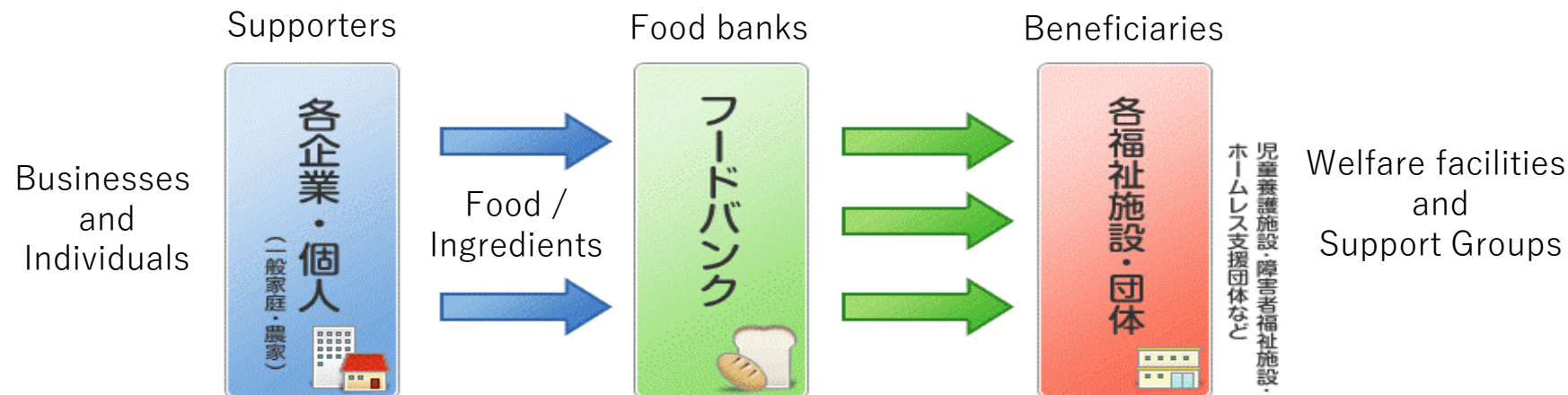
# Occurrence at the point of sale (Sellers)

## ① Unsold items

- Sell unsold food products as “clearance items” or “imperfect items”
- Limit the number of items (avoid putting out items that may not sell)
- Automatic discount system as expiration date approaches
- Donate to **food banks**



A system in which food is collected from donors and provided free of charge to welfare facilities and support groups for those in need



## ② Damaged items (items damaged during the process of logistics)

- Packing each product appropriately to reduce the occurrence of damaged items
- Introducing shock detection stickers and shock recorders
- Use stretch films for protection
- Review **logistics operations**



### Ways to reduce costs

- Implement a warehouse management system
- Create manuals
- Review warehouse layouts



Image Source: Sagawa Express International Logistics (Shanghai) Co., Ltd  
<https://www.sagawa-cn.com/jp/service/warehouse/logistics-operation/>

### ③ Expired items (best before date, expiry date) are removed from the shelves

- Promote through ads and flyers, and try to sell items before they expire
- Use recycling companies and inventory purchasing services
- Donate unsellable food that is still within its expiration date to food banks



# Occurrence at home (Consumers)



When shopping



When cooking



When dining  
out





## Occurrence at home (Consumers)

### ① When shopping

- Check the stock in your fridge to avoid buying more than you can eat.  
**Take notes and photos before you go.**
- Buy only what you need (using bulk, weighed, small qty. packs)
- Remember *temaedori* (taking what's in front)



The purchasing behavior of actively choosing products nearest their expiration date / best before date that are often in front of the shelf

Recently, more and more people are doing *temaedori* (taking from the front)

## ② When cooking

- Buy only what you can eat
- Freeze and store surplus ingredients
- Do not waste food by knowing the best-before and expiry dates
- Utilize **compost** to turn food scraps into fertilizer



Mixing household food waste with soil in a container where it turns into compost through the action of microorganisms in the soil

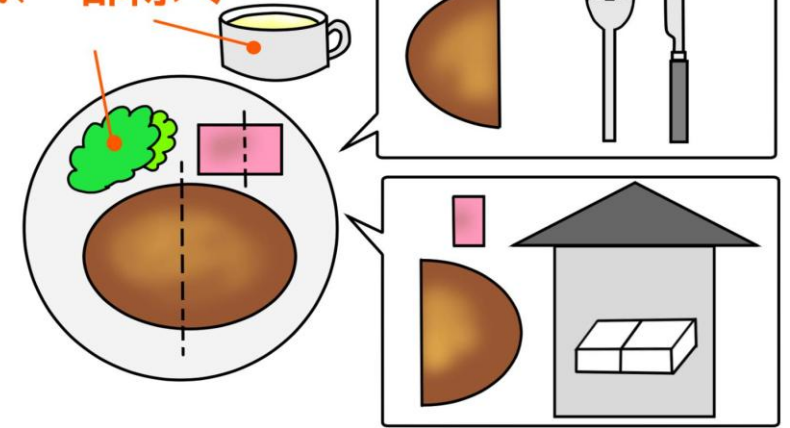


### ③ When dining out

- Order only what you can eat
- Help in using eco-friendly containers for take out



※ With some exceptions  
※一部除く



お持ち帰りできます  
Takeout available

### The pros and cons of using eco-friendly containers

**Pros:** Earth-friendly, reduces marine waste, and can be used repeatedly

**Cons:** Washing dishes is troublesome, and recycling takes a lot of work

- Choose restaurants that allow you to choose the amount of food you order, or take home any food you can't finish

### 3

## What We Can Do for Solutions

☆ Survey of children's likes and dislikes

→ Survey foods they dislike

→ Know the menu items and ingredients that lead to food waste

We hypothesized that likes and dislikes in early childhood (disliked ingredients and menus) could lead to likes and dislikes later in life, which could lead to food waste and cooking waste at home.

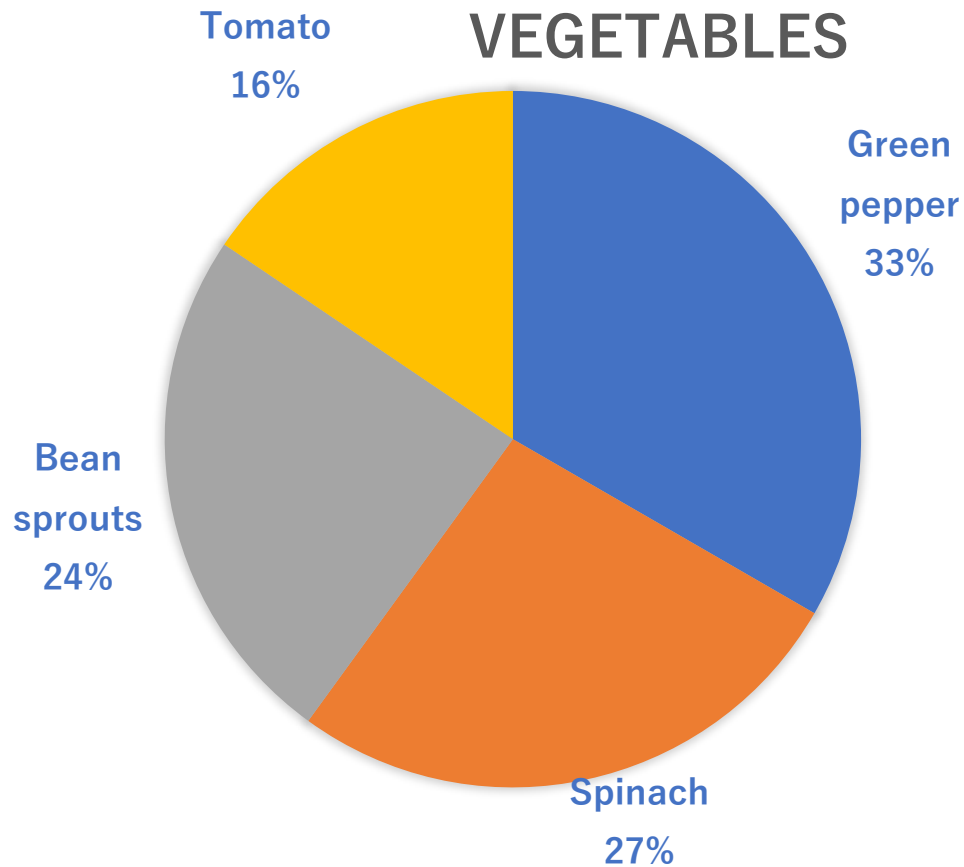
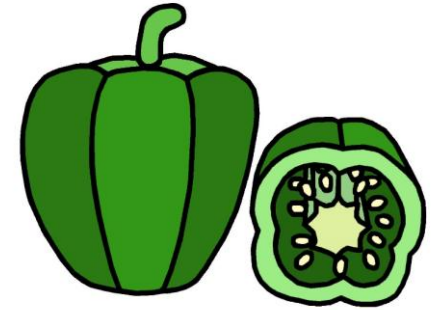


# Survey on kindergarten children's likes and dislikes (① Vegetables)

Sent to parents of Shikoku University-affiliated daycare centers

Survey Period: November 1–30, 2024

No. of Respondents: 25



According to the survey results,  
the overwhelming majority of children  
dislike vegetables



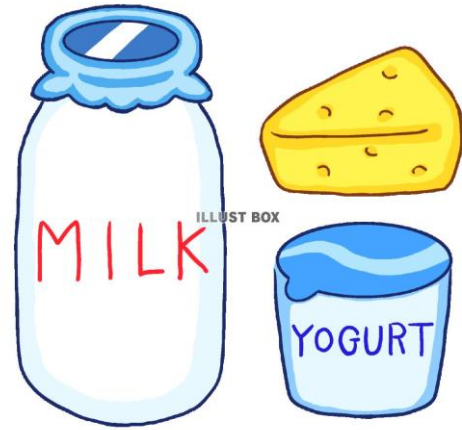
Therefore, they cut along the fibre  
(lengthwise) and add seasonings to reduce  
the bitterness

Ex: Recipes using green peppers

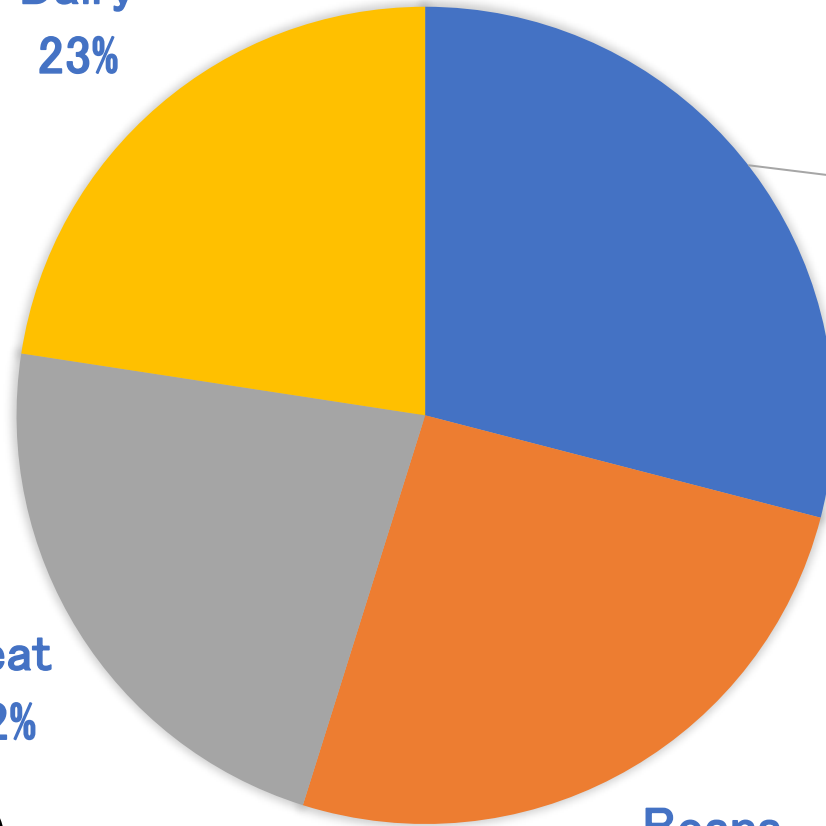
Potato cheese (with green peppers)

Infinite green peppers

## ② OTHERS



Dairy  
23%



Seafood  
29%

Sashimi and sushi are preferred, grilled and boiled fish are not

Meat  
22%

Hard meat might be a pass~

Beans  
26%





# Why children dislike certain foods

## Bean sprouts

Smells bad, no taste, becomes watery

## Tomato

Smell, sourness, texture, bitterness,  
inside of tomato

## Spinach

Bitterness, grassy taste, texture



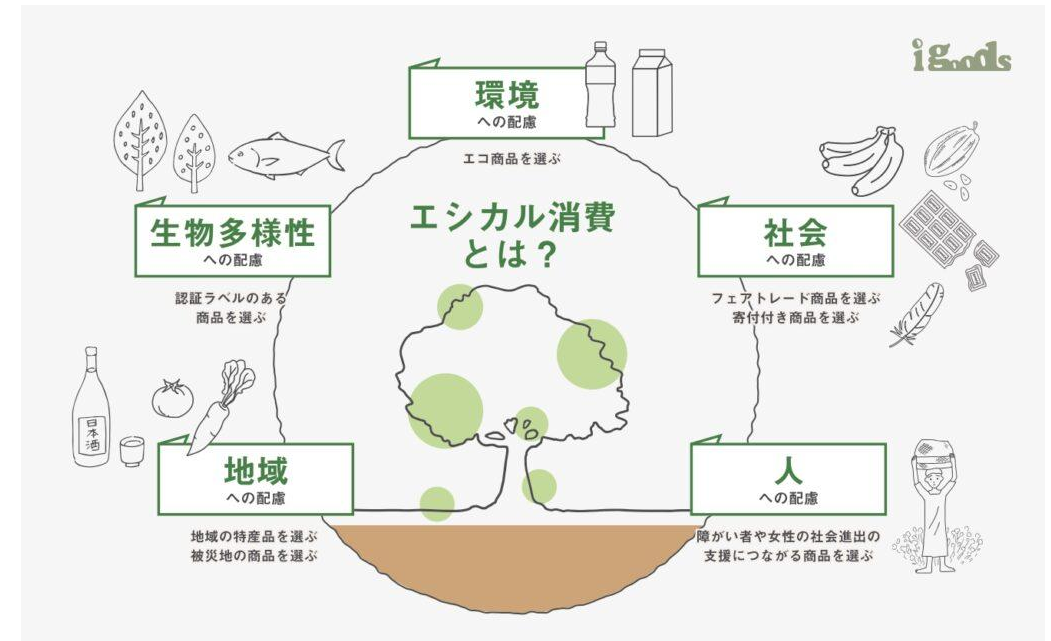
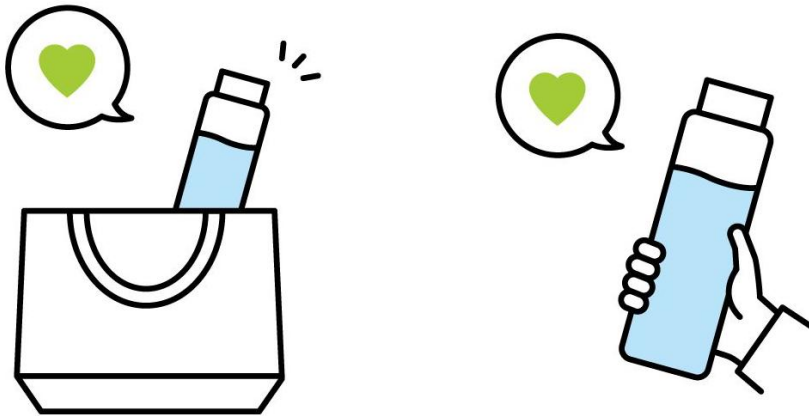
## People tend to not like lightly seasoned food

→ Since they have many opportunities to eat outside from a young age, they may become accustomed to strong flavors



# Ethical Consumption That University Students Can Easily Do

- ① Encourage *temaedori* (take what's in front)
- ② Bring your own drink containers and bags
- ③ Practice the 3Rs (Reuse, Reduce, Recycle)
- ④ Check the contents of the fridge before shopping
- ⑤ Save electricity and water



# 4

## Towards Solving Social Issues



# Towards Solutions ①

## Curbing the decline in farmers and securing successors

- Improvement of working environment and working conditions

Specific working conditions cannot be defined  
(routine work + non-routine work)

- Unstable income throughout the year
- Employment of foreign technical intern trainees
- ▪ Efficiency and labor savings through IT (smart agriculture)

Lagging behind in response to IT

- Aging of farmers



## Towards Solutions ②

### Improving the agricultural environment

Effective use of **abandoned land**

◆ Restore as farmland again

Eligibility for the Emergency Measures for Reclamation  
and Utilization of Abandoned Land Grants

Support from local government subsidies

◆ Efficient use aside from farming

Solar sharing system

→ stable income from not only crops, but also from electricity sales via solar power generation at the same time

Reduction in energy used for transportation through **local production and consumption**



## Towards Solutions ③

### Preserving food culture

- Use of menus that preserve traditional food culture in school lunches
- Volunteer work in the community to introduce and experience food culture
- Preservation and utilization of food culture based on cultural property ordinances and others
- Providing opportunities to deepen understanding of food culture by holding food-related events



Food culture heritage not only preserves local food, but also helps protect the region that has nurtured it.

By reexamining food culture, people can rediscover the good things about their region, and by becoming interested in food, we can support local food and the dwindling number of farmers.



## Towards Solutions ④

### Promotion of 食育 *shokuiku* (food education)



【What is shokuiku?】

The basis of life, which should be the foundation of intellectual, moral and physical education

To acquire knowledge of food and the ability to make food choices, and to practice healthy dietary habits

### Basic Act on Shokuiku

Enacted in 2005

Eating alone, skipping meals, nutritional imbalance, and poor health caused by dietary habits are social issues



Promote shokuiku based on basic principles regarding food

It is important for consumers to acquire “food knowledge”

# Advantages of Learning Shokuiku and Disadvantages of NOT Learning Shokuiku

## 【Advantages】

Positive impact on health

Mental stability

Improved academic and physical fitness

Develop good eating manners

Learn about local food culture and cuisine

*Shokuiku* not only promotes nutrition and health, but also leads to inheritance of communication through food, appreciation of food, food safety, and local food culture

## 【Disadvantages】

Possible negative impact on health

Lack of appreciation for food

Difficulty in passing on the food culture of the family and community





# Towards Solutions ⑤

## Improving food self-sufficiency

Government: Goal to raise food self-sufficiency to 45% by 2030

\* How to increase food self-sufficiency

### a. Use of smart agriculture

- Cultivation using sensing technology
- Use of drones and robots to eliminate manual agricultural labor
- Promotion of IT and use of AI technology

### b. Efforts to prevent food waste

- Proactive donations to food bank work → Reduction of food waste
- Reduction of shipping losses → Shifting from the current idea of non-standard

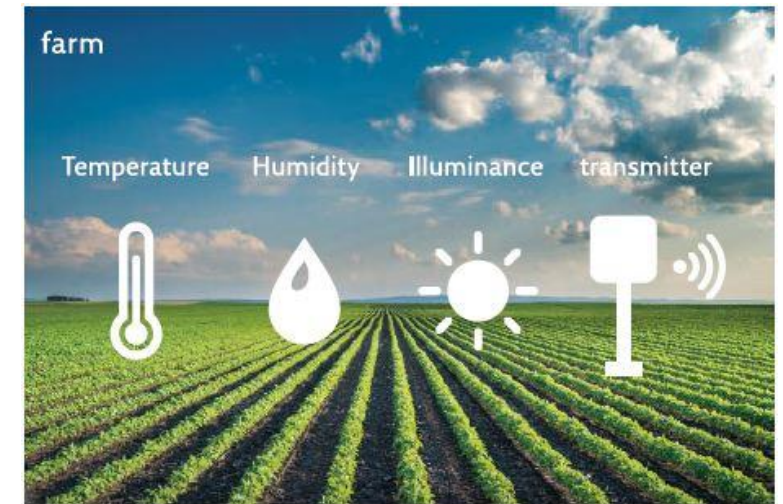


Image Source NISSHA : [https://www.nissha.com/english/news/2017/06/9rh\\_1.html](https://www.nissha.com/english/news/2017/06/9rh_1.html)

# Towards Solutions ⑥

## Promoting local production and consumption

### Advantages

① Short transportation distance, no transportation needed

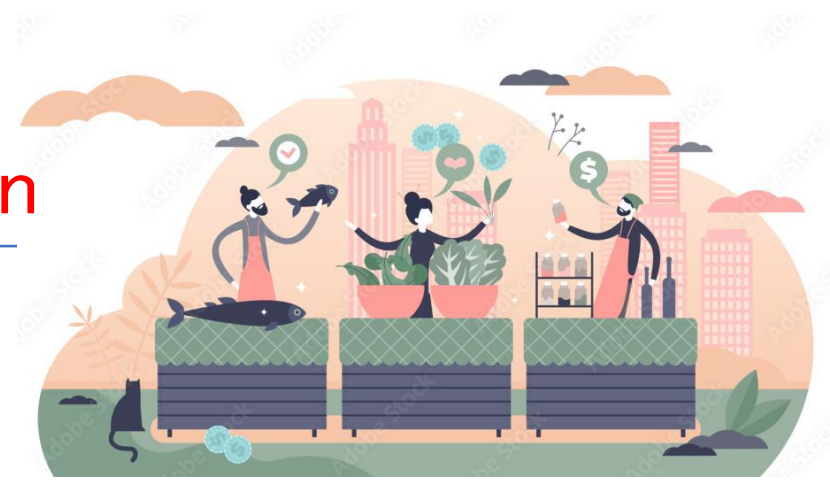
➡ Reduces deformation and damage, extends sales periods, and reduces the energy required for transportation.

② Support for local farmers and other producers

Example: Local production and consumption (serving local cuisine and specialties) for school lunches

⇒ Opportunity to learn about local foods and food self-sufficiency rates in Japan and the world

Seeing the faces of producers gives a sense of “security” and “trust”



## Reduction of pre-shipment losses

Non-standard vegetables → Many are discarded as is (left in the field without being shipped)

**Imperfect produce:** Organizations that handle non-standard vegetables

A service whereby “irregular” fruits and vegetables can be purchased from farmers and delivered to your home.



Available at a discount of 30–50% off what are sold in supermarkets, etc.

**Unica:** Products that are difficult to sell through regular sales channels can be sold directly to consumers

Online farmers market

Reviewing the definition of “non-standard” in production and distribution sites

Reassessing consumers’ concept of “non-standard”

# Towards Solutions ⑦

## Promoting the formation of local communities through food

「Food sharing」: Sharing of surplus food and cooked meals

Savings on food costs for buyers and revitalizing  
local communities

Available on websites and apps

☆Ensuring safety and progress nationwide

### 【Examples】

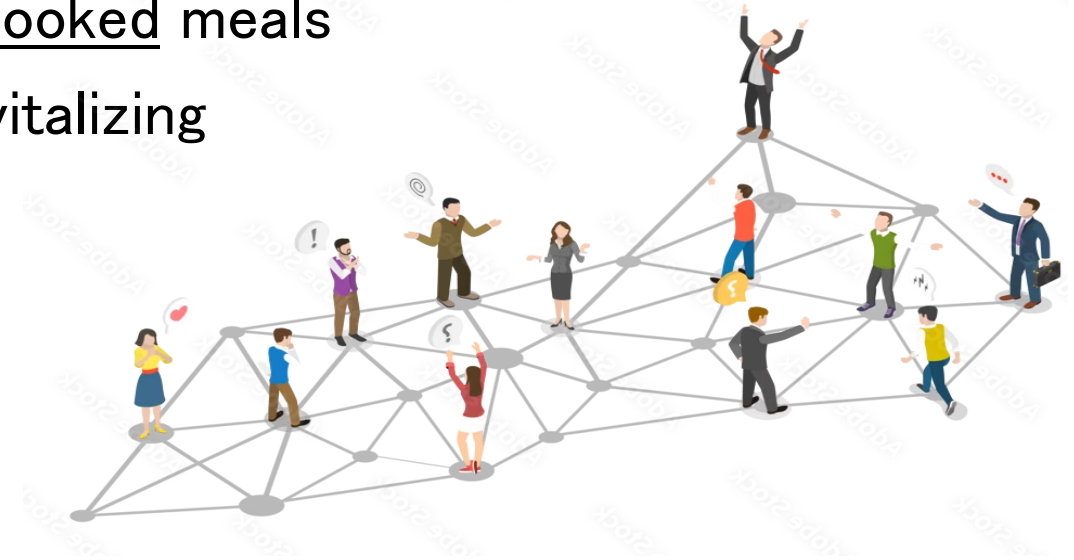
(1) Local government-led initiatives

Kameoka City, Kyoto Prefecture: The city provides leftover food from local restaurants to residents through its official app

(2) Stores and local organizations' partnership agreements

Shibuya Ward, Tokyo: Food Rescue

(Collected from supermarkets and restaurants → food banks and welfare facilities)



# Example of Food Sharing



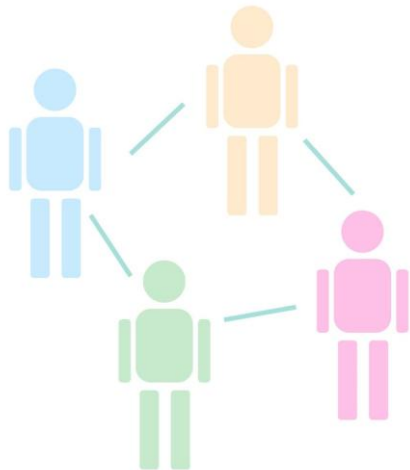
Image Source : TABETE

## TABETE

A service that connects individual users with restaurants and other establishments

Purchase from the app → Go to the store and show the purchase screen to receive your item

\* Current sellers include bakeries, cake shops, hotels, restaurants, supermarkets, etc.



We, as consumers living in a digital society, and as “working adults–to be” about to enter society, will pass on the local culture and history, and practice ethical consumption.

And to contribute to building sustainable local communities, we will support “local food” through our daily consumption activities.

Thank you.

