

Introduction of food waste recycling from business activities in kitakyushu city



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MERRY Corporation

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1. Food waste recycling in Japan

(1) Food waste in Japan

Food self-sufficiency rate **39%**

Livestock feed self efficiency rate **26%**

Food waste **17,000,000ton/Yr**
(*Worldwide 1,300,000,000ton/Yr*)

including food that can be eaten
(**Dead stock, Expired, Leftover etc.**)

. **6,420,000ton/Yr**

Food wastes of a business establishment

. **6,410,000ton/Yr**

The recycling rate **48%**

Home food wastes **10,720,000ton/Yr**

The recycling rate **6%**

1. Food waste recycling in Japan

(2) Law of food wastes recycling

Act for Establishing a Recycling-Oriented Society

(Waste , recycling) AD.2000

- (a) **Law of food wastes recycling (2000)**
- (b) **Law of effective utilization promotion of resources**
- (c) **Law of container wrapping recycling**
- (d) **Law of recycling of home electrical appliances**
- (e) **Law of construction waste recycling**
- (f) **Law of car recycling**
- (g) **Law of environment consideration product purchase**

1. Food waste recycling in Japan

(3) the future of food recycling policy

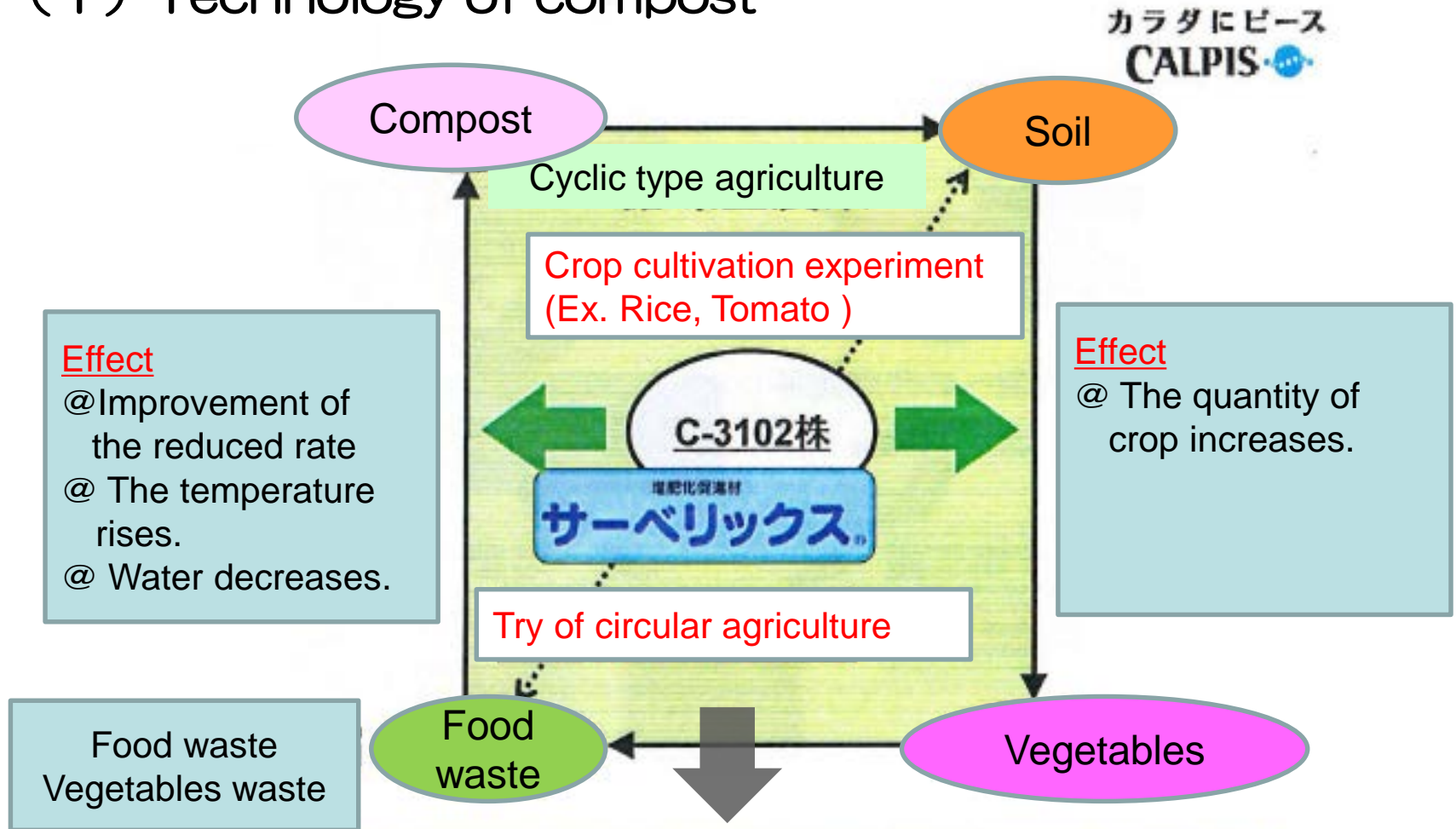
<http://www.env.go.jp/press/101285.html>

from website of the Ministry of Environment

- promote activities and achieve a generation control target of determined **26 categories** of business
- reduce food waste in cooperation between public sector and private sector
- promote activities through acquiring cooperation from local authorities
 - set an adequate target on **general waste management plan set by cities, towns and villages**
 - submit a regular **report by prefecture**
- priority of recycling method
recycling into feed, fertilization, energy reduction such as methanation
- promote activities related to **school lunch**, etc.
- promote dietary and environmental education forward
- promoting generation control and reuse of food wastes can contribute to revitalization of local community, reuse of biomass, improvement of food / livestock feed self-sufficiency rate, promotion of organic agriculture, environmental and dietary education, etc.

2. food waste recycling from business activities in kitakyushu city

(1) Technology of compost



2. food waste recycling from business activities

- (1) Technology of compost (1st compost) [1Week]
Microorganisms resolute food waste into water and CO₂ and reduce its quantity at 40°C.



2. food waste recycling from business activities

(1) Technology of compost (2nd 3rd compost)

[2Months]

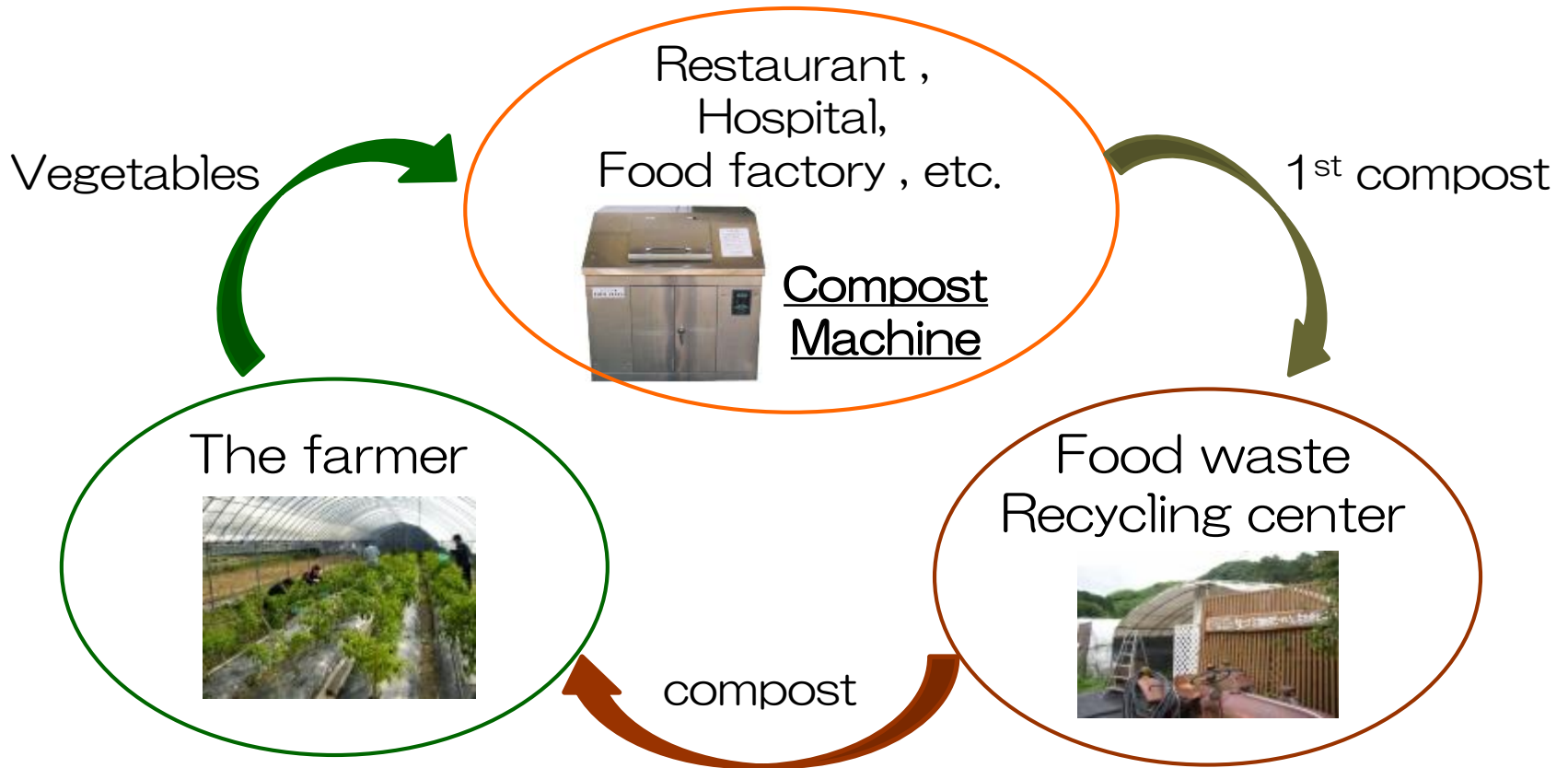
Microorganisms ferment food waste thirdly at 80-40°C.



2. food waste recycling from business activities

(2) On-site processing

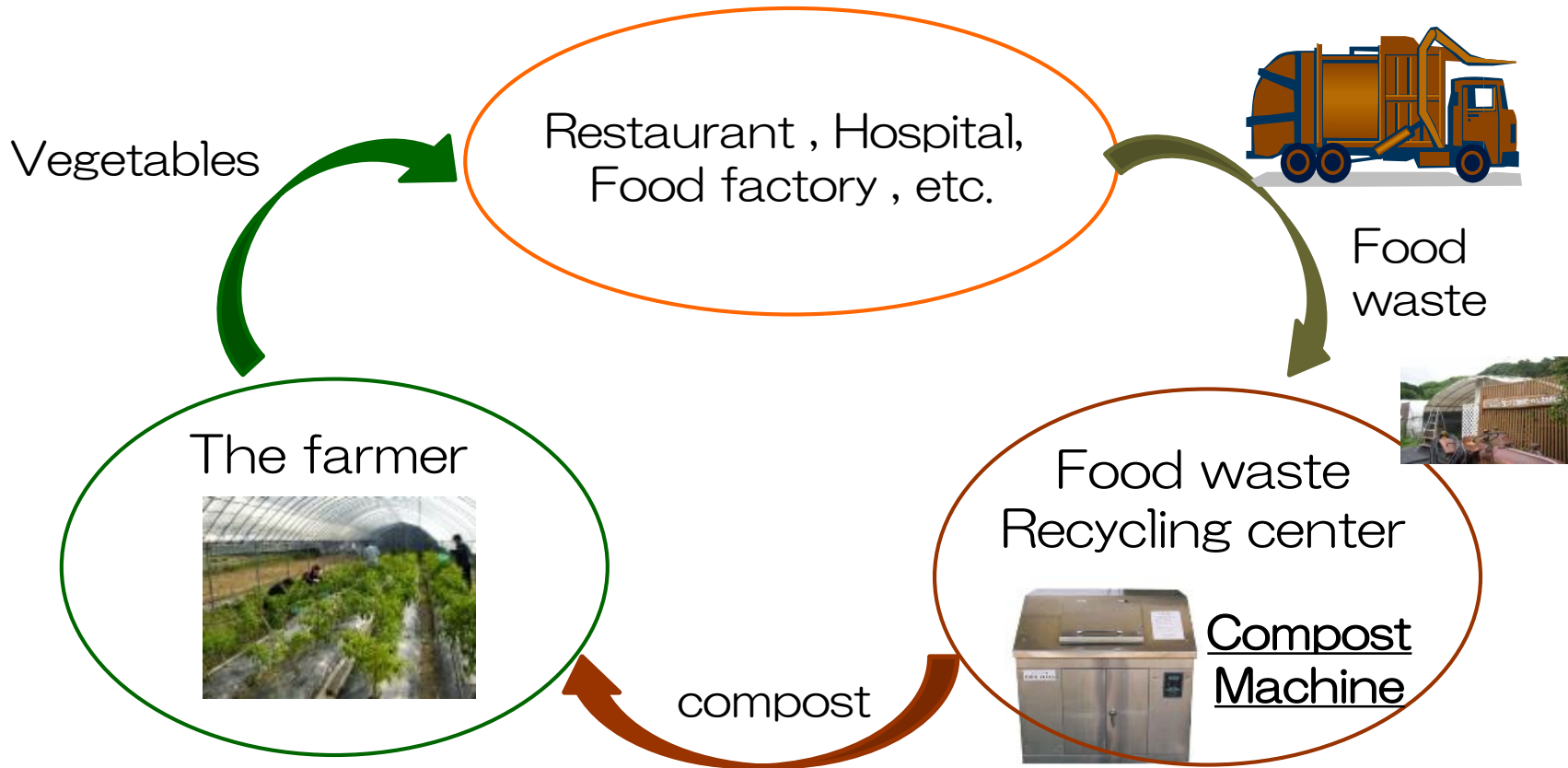
first fermentation at the place food waste generates



2. food waste recycling from business activities

(3) Off-site processing

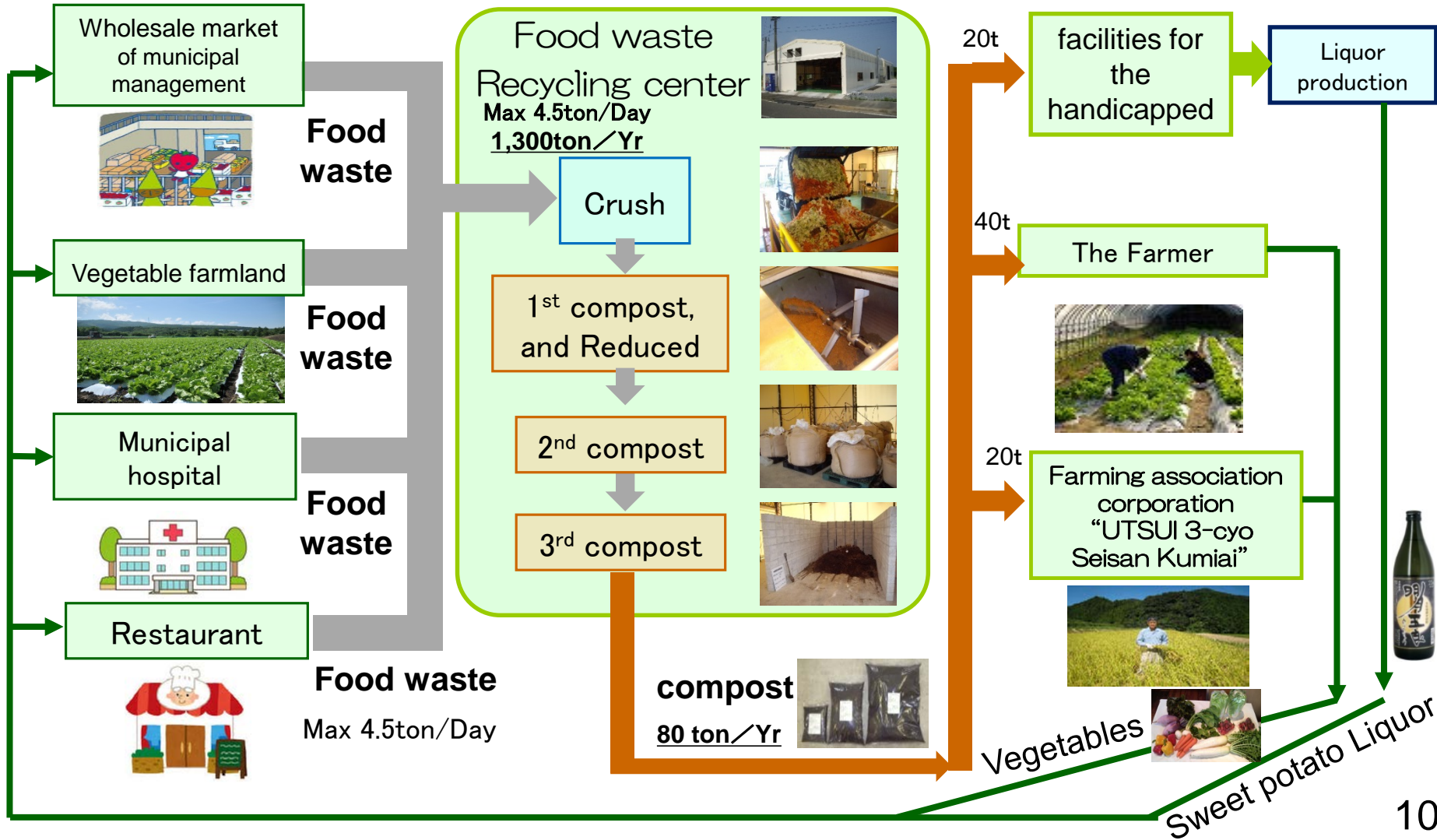
food waste is carried to a recycling center,
and, the first fermentation



2. food waste recycling from business activities

(3) Off-site processing

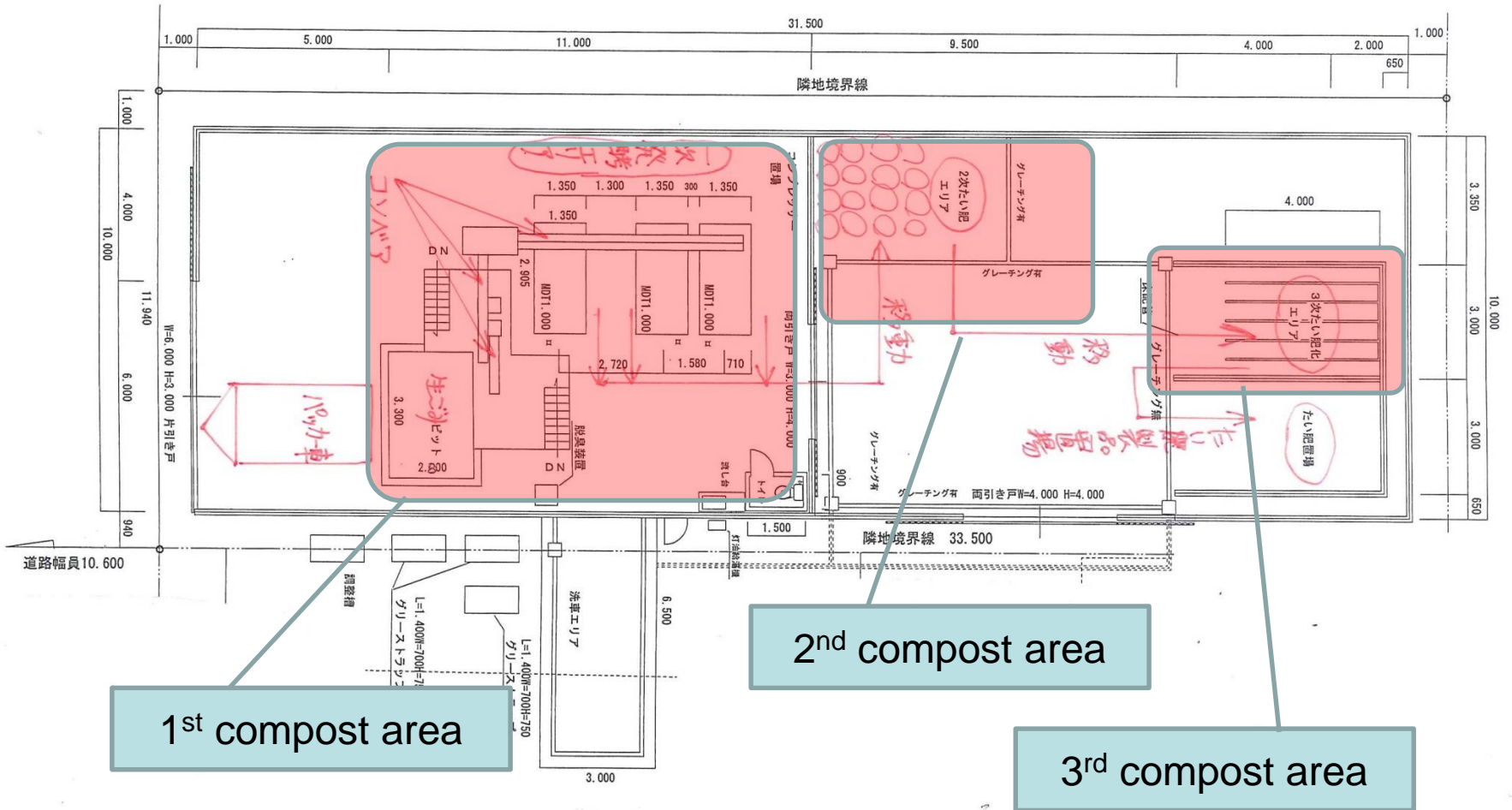
Food waste Recycling center in Kitakyushu ECO-Town



2. food waste recycling from business activities

(3) Off-site processing

Food waste Recycling center in Kitakyushu ECO-Town



2. food waste recycling from business activities

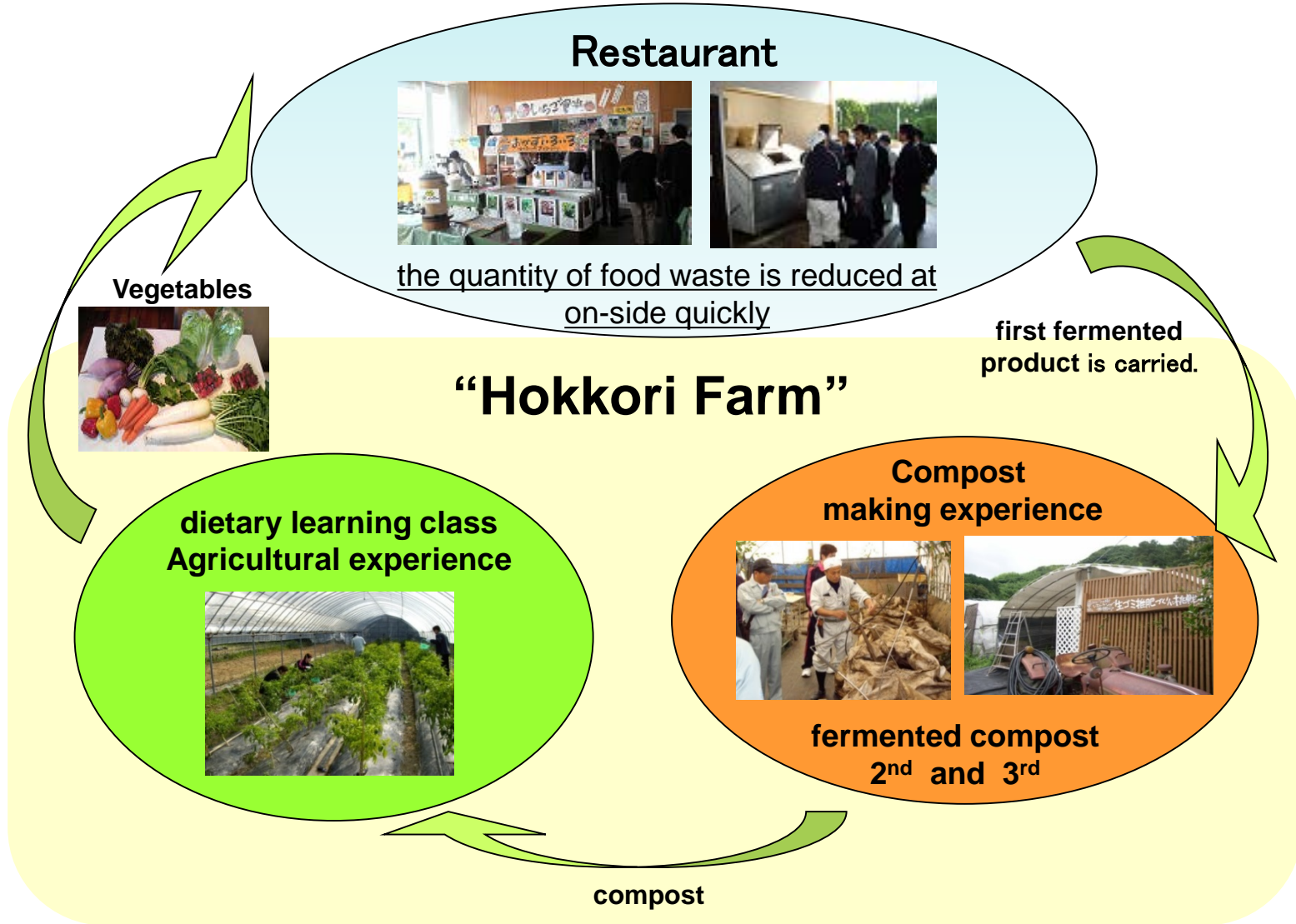
(3) Off-site processing

Food waste Recycling center in Kitakyushu ECO-Town

Please see the movie.

Recycling loop (Restraint)

“BUDOU-NO-KI” group



Recycling loop (Supermarket)

“Tanoshii-sancyoku Ichiba” market



Recycling loop (The Farm)

High value-added rice

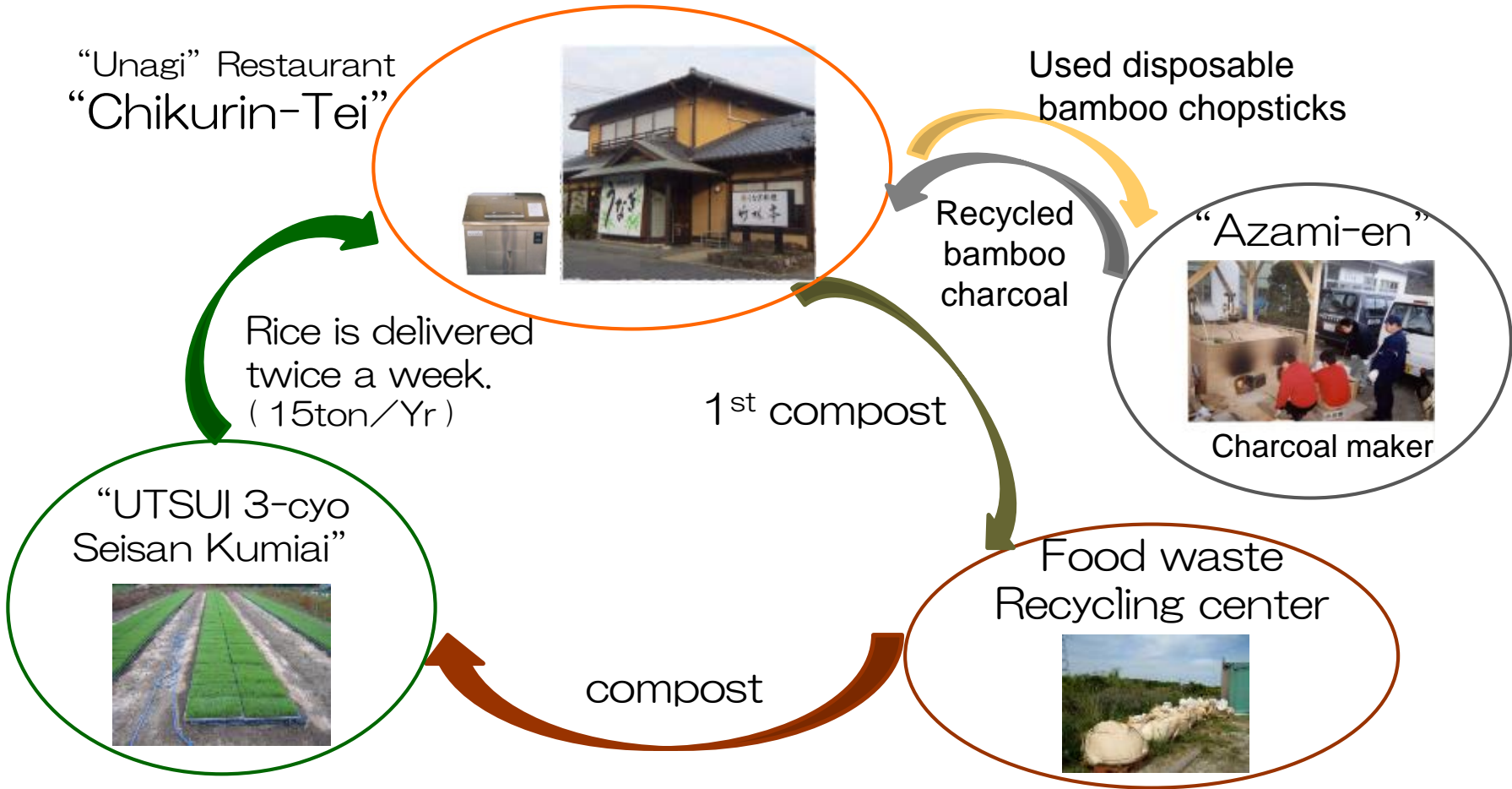
Farming association corporation “UTSUI 3-cyo Seisan Kumiai” makes
“ECO 50” certified by Yamaguchi Prefecture.

Agricultural chemicals and Chemical fertilizer are reduced 50 % and more than an ordinary rice field.



Recycling loop (Restaurant and The farmer)

Restaurant and “UTSUI 3-cyo Seisan Kumiai”



Recycling loop (Home for the aged and The farmer)

Home for the aged and “UTSUI 3-cyo Seisan Kumiai”

“First Life” Corporation

★Lafine ★ITOZU-no-mori ★minami-oji sakura-kan



Rice is polished every day.



1st compost

A food waste disposer is installed in the facilities.
The first composted processing is done at the place.

1st compost

delivered with brown rice



“UTSUI 3-cyo Seisan Kumiai”

Agricultural chemicals and Chemical fertilizer are reduced 50%

Circulation sweet potato “shochu” Liquor
“Meigetsu-Goryou”
Completion-celebrating ceremony souvenir



Sweet potato is grown without agricultural chemicals by plowing a field with adding compost at welfare facilities, etc. Sweet potato shochu is made at Akashi sake brewing.

compost



Food waste Recycling center

compost

Project built with the distilled spirits in which I cooperated with a welfare facility

the harmony of "environment" and "economy" and "welfare"



< 5 hou-yoshi >

- It's good for a consumer.
- It's good for a producer.
- It's good for society.
- It's good in the earth.
- It's good for offspring's.

- @ To a customer, offer of distilled spirits
- @ Install food waste disposer
- @ Cooperate in recycling disposable bamboo chopsticks.

May/2014 The farm (Sweet Potato)



★NPO “Imomushi”
Training center for
independence of persons with
disabilities

★”Nanairo-no-kaze”
Welfare service center for
persons with disabilities



★”Azami-en”
Welfare service center for
persons with disabilities

★NPO”KOUBOU Hazuki”
Job assistance center for
persons with disabilities



★OGURE Farm

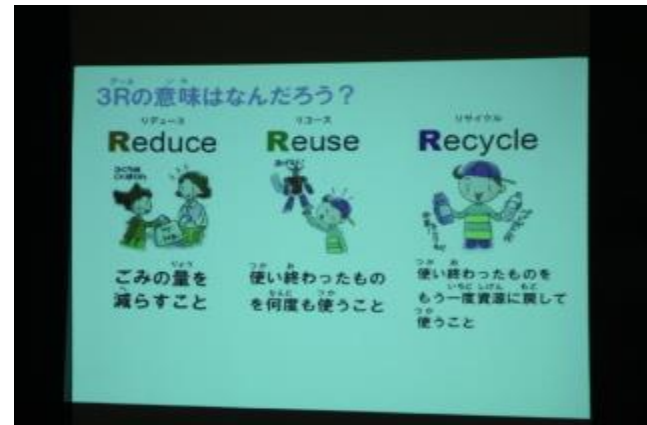
★HIROKAWA Farm



The social value

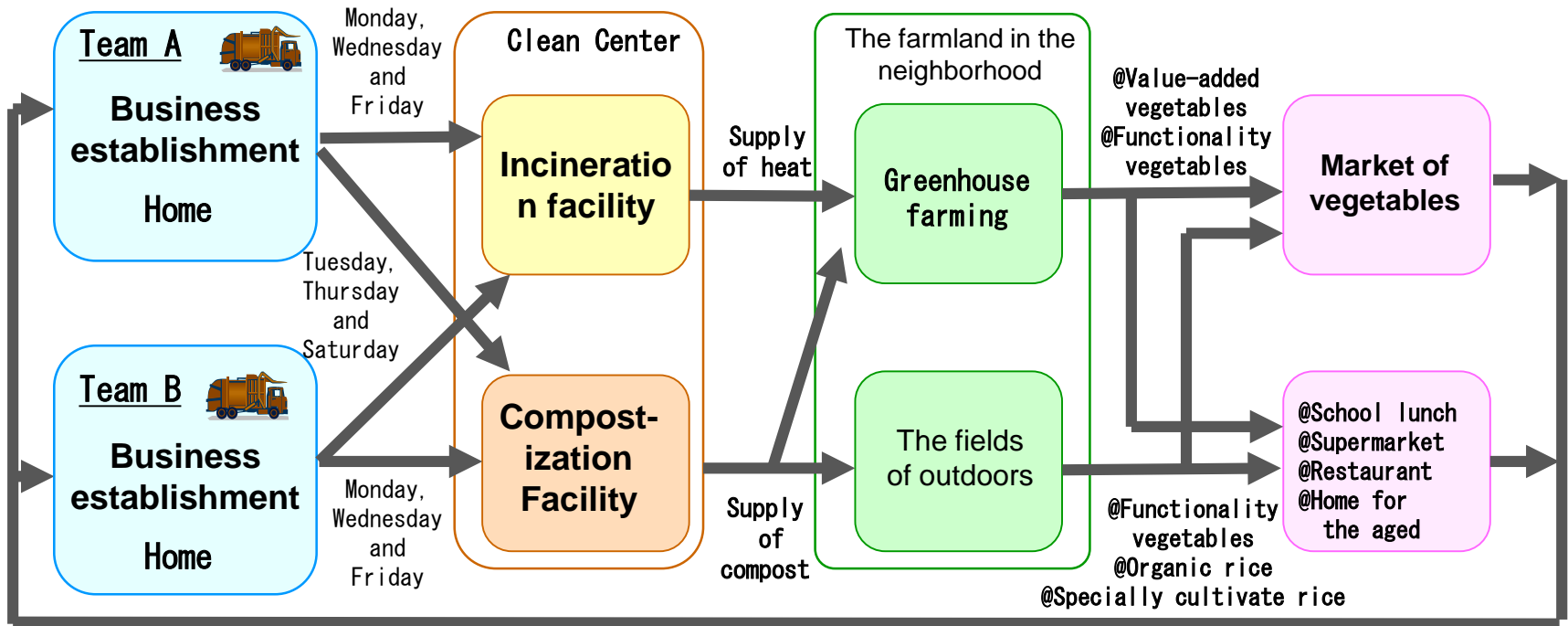
Efforts at an elementary school

“shokuiku” class at an elementary school and a nursery school
(Calpis company and our company “shokuiku” delivering class)



3. Business development in Japan

(1) Image of regional circulation deployment model in cooperation with an incineration facility



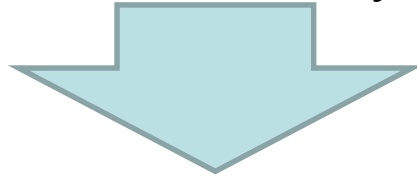
The expected effect

- ① reduce the quantity of waste
- ② reduce the cost by more than 30% compared to the incineration cost
- ③ reduce CO2 emissions by 40% compared to incineration
- ④ promote agriculture
- ⑤ create additional value by a recycling loop

3. Business development in Japan

(2) what to be considered regarding efforts to recycle food

create multi faceted usability and value such as waste reduction, formation of recycling society, agriculture development, and value creation by a loop



Results at Kitakyushu City's approaches

- (1) package service of construction, facility, technology, fund and operation to municipality
- (2) low-cost and less CO2 emissions recycling
- (3) Formation of a loop by a safe microorganism and a good compost
- (4) Offer of farm produce of high added value and an artifact

4. Introduction of a project in Fraser's Hill, Malaysia

Compost Area



- walls
 - shutters
 - windows
- were constructed.

4. Introduction of a project in Fraser's Hill, Malaysia

Food waste 17,711kg / 10Months (12/2015~9/2016)



4. Component of compost

Good condition

Sampling date: 23th July 2016

	Item	value
1	C/N	25
2	Total carbon (全炭素)	25%
3	Total Nitrogen (全窒素)	0.99%
4	Total Phosphoric acid (全リン酸)	0.43%
5	Total potassium (全カリウム)	0.27%
6	Moisture (水分)	41%
7	Chloride (塩化物)	0.16%
8	Oil (油分)	0.44%

Thank you very much.



M E R R Y C o r p o r a t i o n