

Sanyu Co., Ltd.

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Kyowa Kako Group

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Hyperthermophilic Composting System



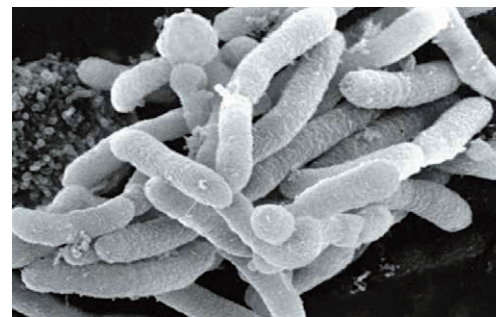
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Hyperthermophilic Composting System for various biodegradable waste.



YM bacteria are registered and patented microorganisms belonging to genus Bacillus. Since 1992, more than 15 species were bacteriologically identified, characterized and deposited at NITE Patent Microorganism Depository center, AIST. Kyowa Kako Co., Ltd. keeps an exclusive license of these patent held by Sanyu Co., Ltd.



Hyperthermophilic Bacteria



Burst of steam from hyperthermophilic compost.

Advantages of our composting technology

Biodegradable wastes are rapidly decomposed due to high temperature and aerobic conditions.

In this system, since the biodegradable wastes are rapidly decomposed, the fermentation period is relative short (usually 45 days). Independent of substrates properties (such as water content, type of materials) and geographical location, the composting process is carried out steady.

Addition of water content adjusting materials are unnecessary

Since the composting process starts by mixing the substrates with finished compost, in which water content is around 30%, addition of adjusting materials such as sawdust and rice straw are unnecessary.

Suppressing the bad odor

Because biodegradable wastes are decomposed at aerobic conditions, this system has low emission of bad odor.

Fertilizer with safety.

Since plant-pathogenic microorganisms and weed seeds are killed due to high temperatures during fermentation processes, the resulting compost is very safe for agricultural use.

The Composting Plant does not require expensive machinery

Main equipments necessary to this composting system are aeration blowers and wheel loader.



The director's message about YM bacteria

Until recently, people in our modern society misunderstood that air and water are free. Now the situation has been changed, and the environmental issues are most serious and most urgent fundamental subjects for durability of humankind, and it is now unnecessary to explain how and why it is important to keep our environment. Environment of our planet has been maintained and changed mainly by mankind and microorganisms. However, the roles of microorganisms in maintenance of environment has not been clarified yet and basic researches are essential.

Fallen leaves dropped on the ground in autumn disappear before one is aware. Empty shells of cicada found inside of the fallen leaves also disappears. In fact, they are not disappeared, but they are transformed into rich soil which sustains growth of plants and flowers in the coming Spring and Summer. This transformation is a result of actions of microorganisms in garden soil. Today population has been increased rapidly and our rich varied modern life produces more and more waste. As a result, it is impossible to waste until the waste disappears naturally as life of our ancestors in the past. Today we need to find good microorganisms which actively digest waste produced our daily life, and to actively use these microorganisms to keep our society.

Institute of Environmental Microbiology aims fundamental researches on useful microorganisms to decompose waste from city life and develop new technologies for waste treatments, and wishes to contribute to creation of sustainable society. Though the institute is modest size and operated by only several researchers, we have attempted to pursue high-value researches. A Japanese proverb says "Even a worm will turn." We wish your kind support for our research activities.

Tairo Oshima, Ph.D., the Director

Professor of Emeritus, Tokyo Inst. Tech.
Professor Emeritus, Tokyo Univ.
Pharm. & Life Sci.
Institute of Environmental Microbiology
Kyowa-kako Company
Machida, Tokyo, Japan

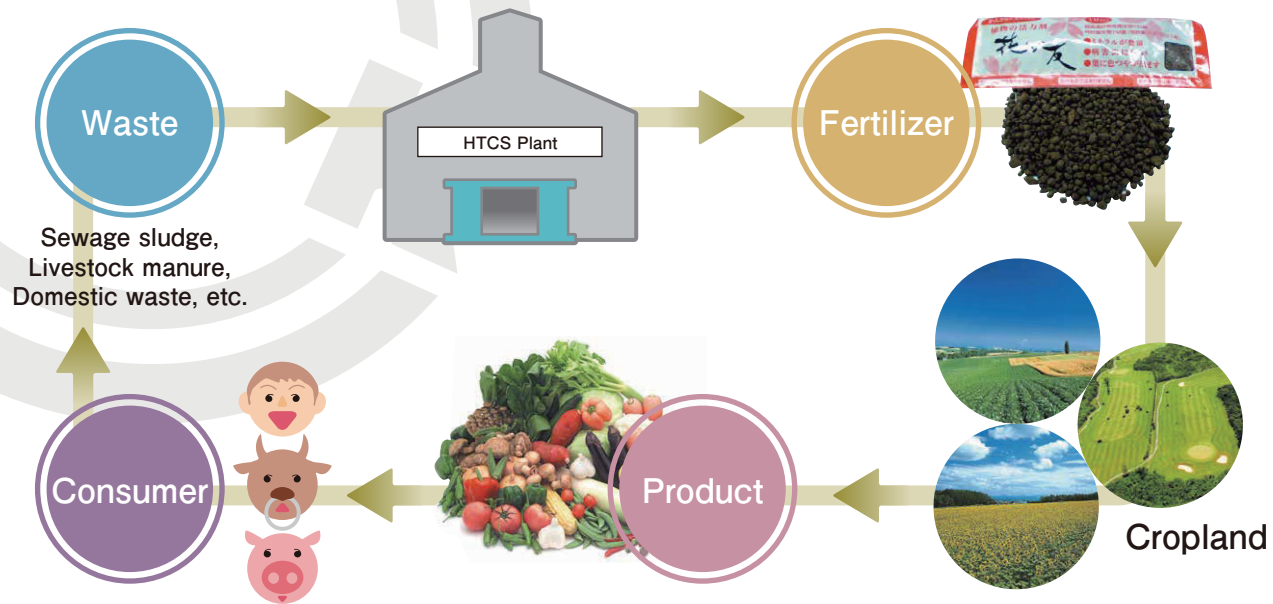
Short personal history of the Director

- 1935 Born in Tokyo
- 1958 Graduate the Faculty of Sci., Univ. of Tokyo
- 1963 Graduate Ph.D. Course, Univ. of Tokyo
- 1964 Assistant Professor, Univ. of Tokyo
- 1983 Professor of Biochemistry, Tokyo Inst.Tech.
- 1991 Faculty Dean of Life Sci., Tokyo Inst. Tech
- 1995 Professor of Tokyo Univ. Pharm. & Life Sci.
- 2005 Move to the Present Institute



Institute of Environmental Microbiology

In this system, all organic matter returns to the soil

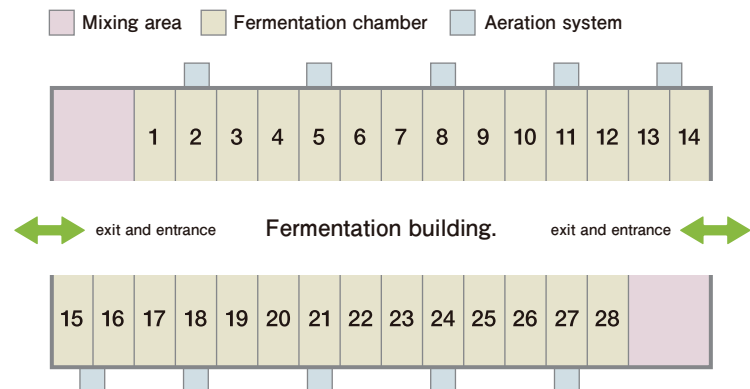


Hyperthermophilic Composting System Plant

Fermentation building.



● Fermentation building plan view



Plant inside view



Aeration system



Fermentation chamber



Wheel loader



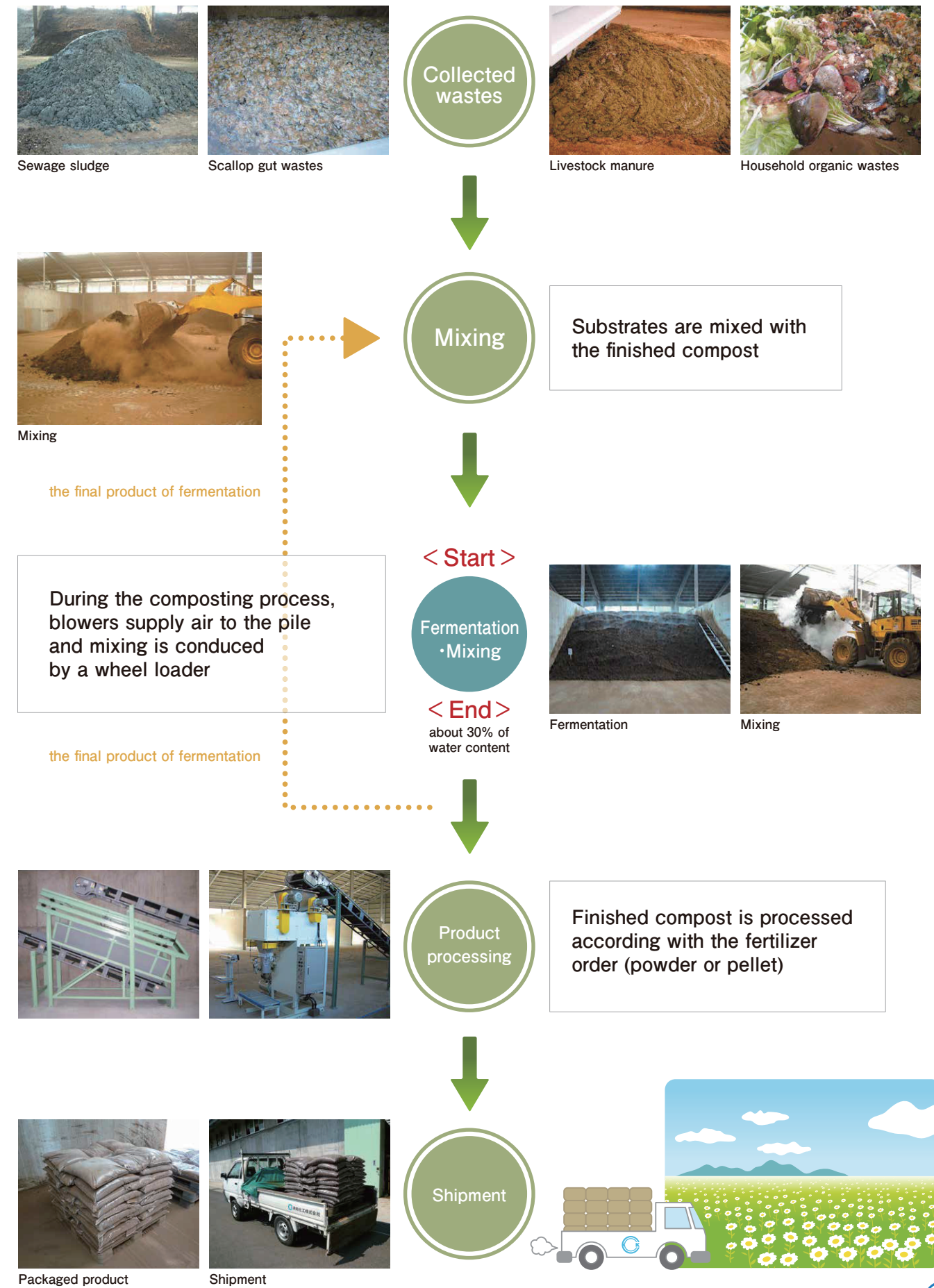
Curtain for deodorization



Biological deodorization building



Hyperthermophilic Composting System Flowchart



Hyperthermophilic Composting System Plants in Japan

● Kyowa Kako Co., Ltd. ● Sanyu Co., Ltd. ● Composting Plant with technological partnership ● Composting Plant with research partnership

- 1 Kyowa Kako (Toyama)**
 - Operation start : 2004
 - Treatment capacity : 50tons/day
 - Treated material: Industrial sludge, Sewage sludge, Food waste.
- 2 Kyowa Kako (Kochi)**
 - Operation start : 2005
 - Treatment capacity : 50tons/day
 - Treated material: Industrial sludge, Sewage sludge, Fishery waste.
- 3 Kyowa Kako (Hokkaido)**
 - Operation start : 2006
 - Treatment capacity : 50tons/day
 - Treated material: Scallop gut wastes and Sewage Sludge
- 4 Kyowa Kako (Hokkaido)**
 - Operation start : 2000
 - Treatment capacity : 30tons/day
 - Treated material: Sewage Sludge, Plant and Animal wastes
- 5 Kyowa Kako (Saga)**
 - Operation start : 2009
 - Treatment capacity : 30tons/day
 - Treated material: Sewage sludge
- 6 Kyowa Kako (Nagasaki)**
 - Operation start : 2014
 - Treatment capacity : 80tons/day
 - Treated material: Sewage Sludge, Plant and Animal wastes
- 7 Kyowa Kako (Miyakojima)**
 - Operation Start: 2013
 - Treatment capacity: 30t/day
 - Treated material: Livestock manure, Food wast

- 8 Sanyuu (Kagoshima)**
 - Operation start : 1981
 - Treatment capacity : 110tons/day
 - Treated material: Sewage sludge
- 9 Sanyuu (Kagoshima)**
 - Operation start : 1989
 - Treatment capacity : 100tons/day
 - Treated material: Sewage sludge, Livestock manure, liquors production wastes



② Kyowa Kako (Kochi)



④ Kyowa Kako (Hokkaido)



⑬ Hokkaido



⑧ Kagoshima-shi Sewage Sludge Composting Center



- 15 Hokkaido**
 - Operation start : 2006
 - Treated material: Sewage Sludge, Household organic waste, Plant and Animal wastes
- 16 Miyazaki**
 - Operation start : 2007
 - Treated material: various types of sludge
- 17 Hokkaido**
 - Operation start : 2007
 - Treated material: Sewage sludge, Fishery waste
- 18 Hokkaido**
 - Operation start : 2007
 - Treated material: Household organic waste
- 19 Wakayama**
 - Operation start : 2007
 - Treated material: Septic tank sludge
- 20 Yamaguchi**
 - Operation start : 2007
 - Treated material: Sewage sludge
- 21 Mie**
 - Operation start : 2008
 - Treated material: Sewage sludge, Industrial sludge
- 22 Shimane**
 - Operation start : 2009
 - Treated material: Livestock manure
- 23 Tottori**
 - Operation start : 2013
 - Treated material: Household organic waste
- 24 Nagano**
 - Operation start : 2013
 - Treated material: Industrial sludge, Animal and Plant wastes
- A Animal Resource Science Center, The University of Tokyo**
- B Mitsuke-city, Niigata**

⑦ Miyakojima