

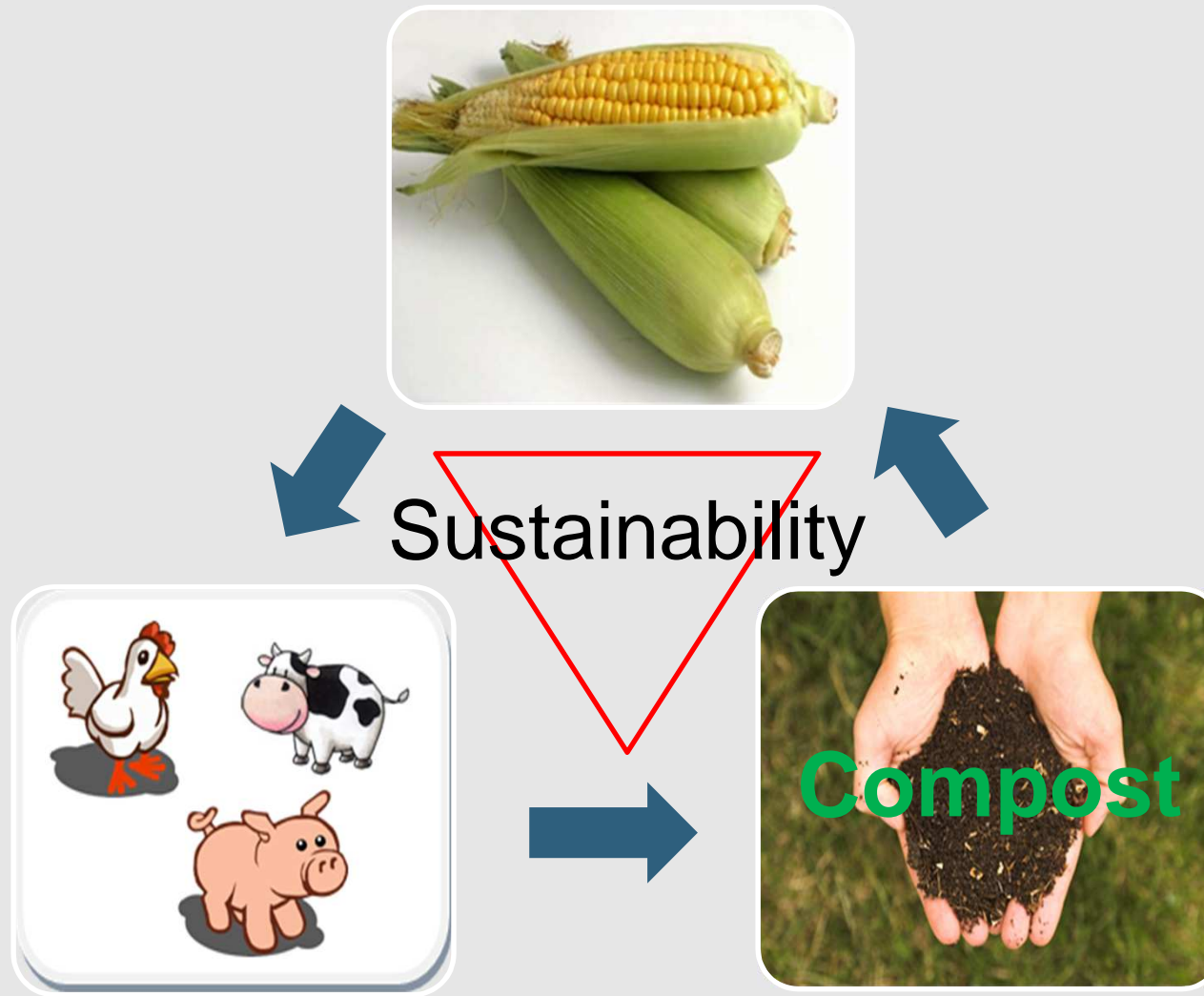
INDUSTRIAL SYSTEM

OF

COMPOSTING TREATMENT



# SOLUTION



# About us



**Founded: 1972**  
**Location : Aichi, Japan**  
**President: Yuzo Sumiya**  
**Manufacture of compost machinery (Organic Fertilizer) and machinery for livestock**

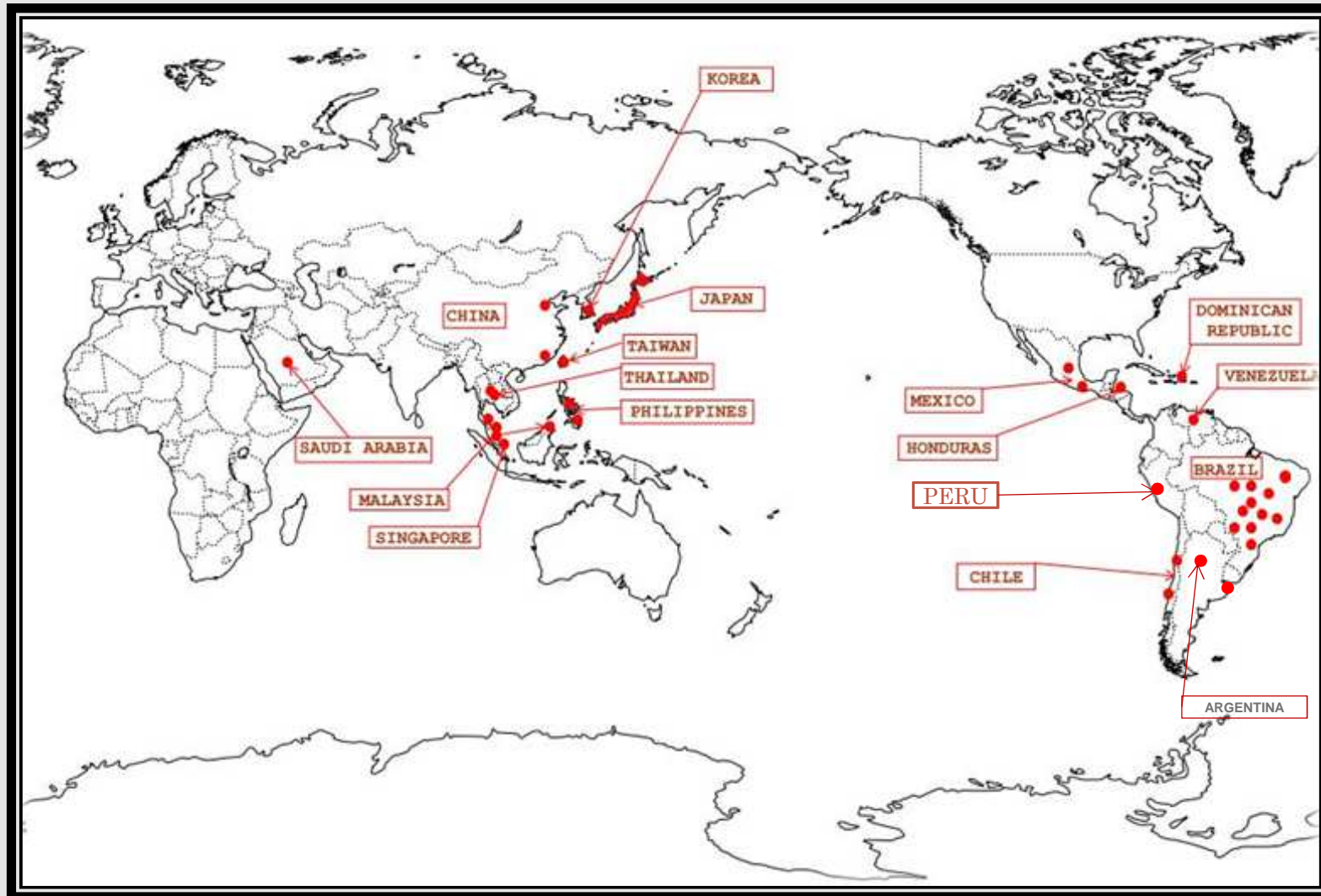


## Corporate mission:

We contribute in protecting the environment by offering the highest standards in technology.



# Our overseas market



# What do we do?

## **We can :**

- ◇ **Assist you in how to manage the raw manure**
- ◇ **Advise you how you can turn animal wastes into a product benefited**

# HOW?

# Compost

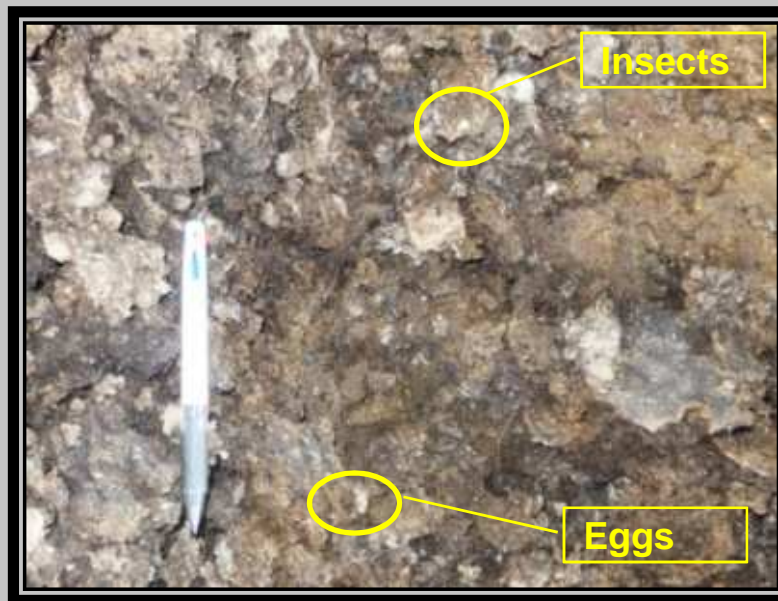


# Compost

## Method of processing animal excrements

**Animal Waste**

**Organic Fertilizer**





# Machinery Specifications



## KNLL-6000HW: Continues Method

Capacity: 29-58m<sup>3</sup>/day  
(58m<sup>3</sup>/day, in the case of 2 operations per day)

Model	Rotary Motor(Kw)	Running Motor (Kw)	Sliding Motor (Kw)	Hydraulic motor (Kw)	Running Speed (m/min) 60Hz
KNLL-6000HW	※11Kw x 2	0.2Kwx4	0.1Kwx2	1.5Kw	0.6~1.7m/min

※ The capacity of the motor can be changed depending on the type of waste

# Three factors an efficient compost requires

## The 3 FACTORS

**1. Ventilation**

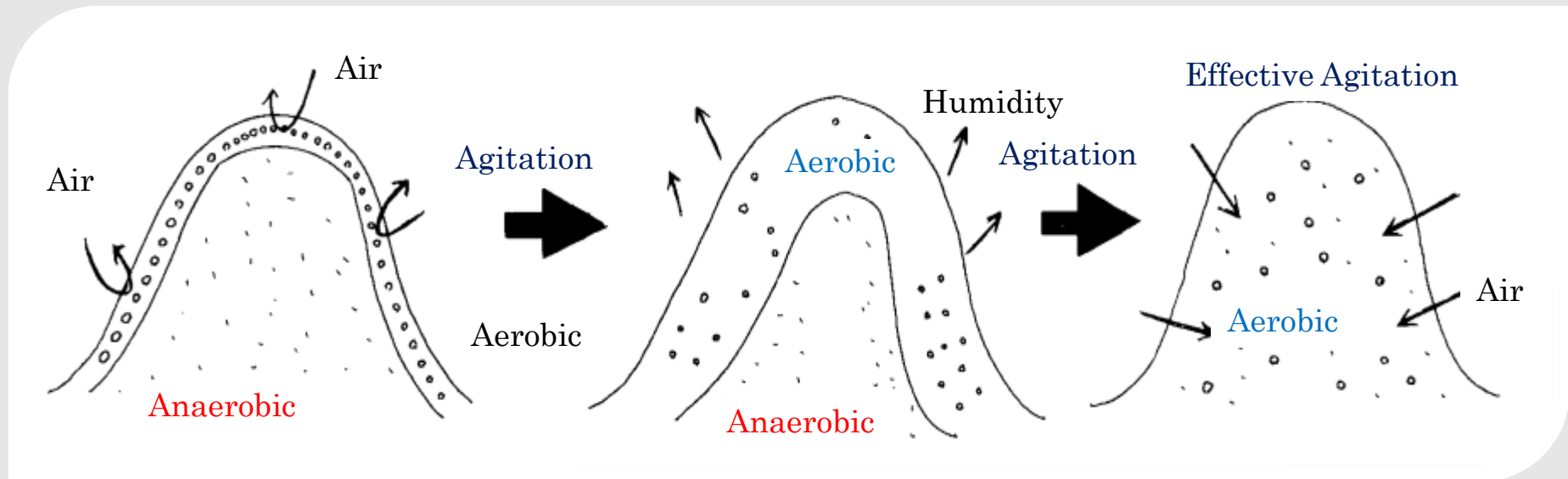
**2.Environment  
Temperature**

**3. Humidity**

## Three factors an efficient compost requires

# 1. Ventilation

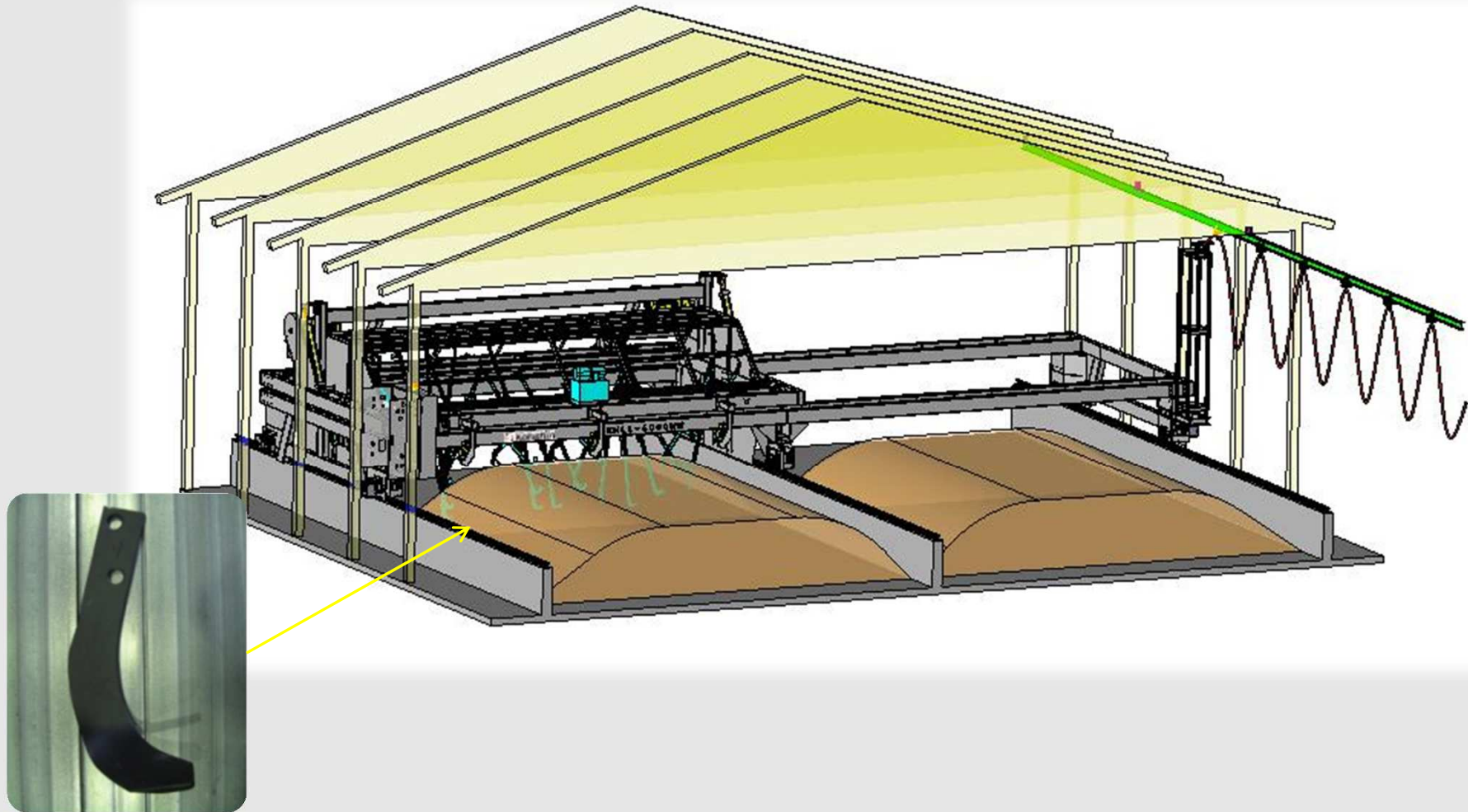
# Air Requirements



Necessary Air:  
120 ~ 200L air/minute 1m<sup>3</sup>

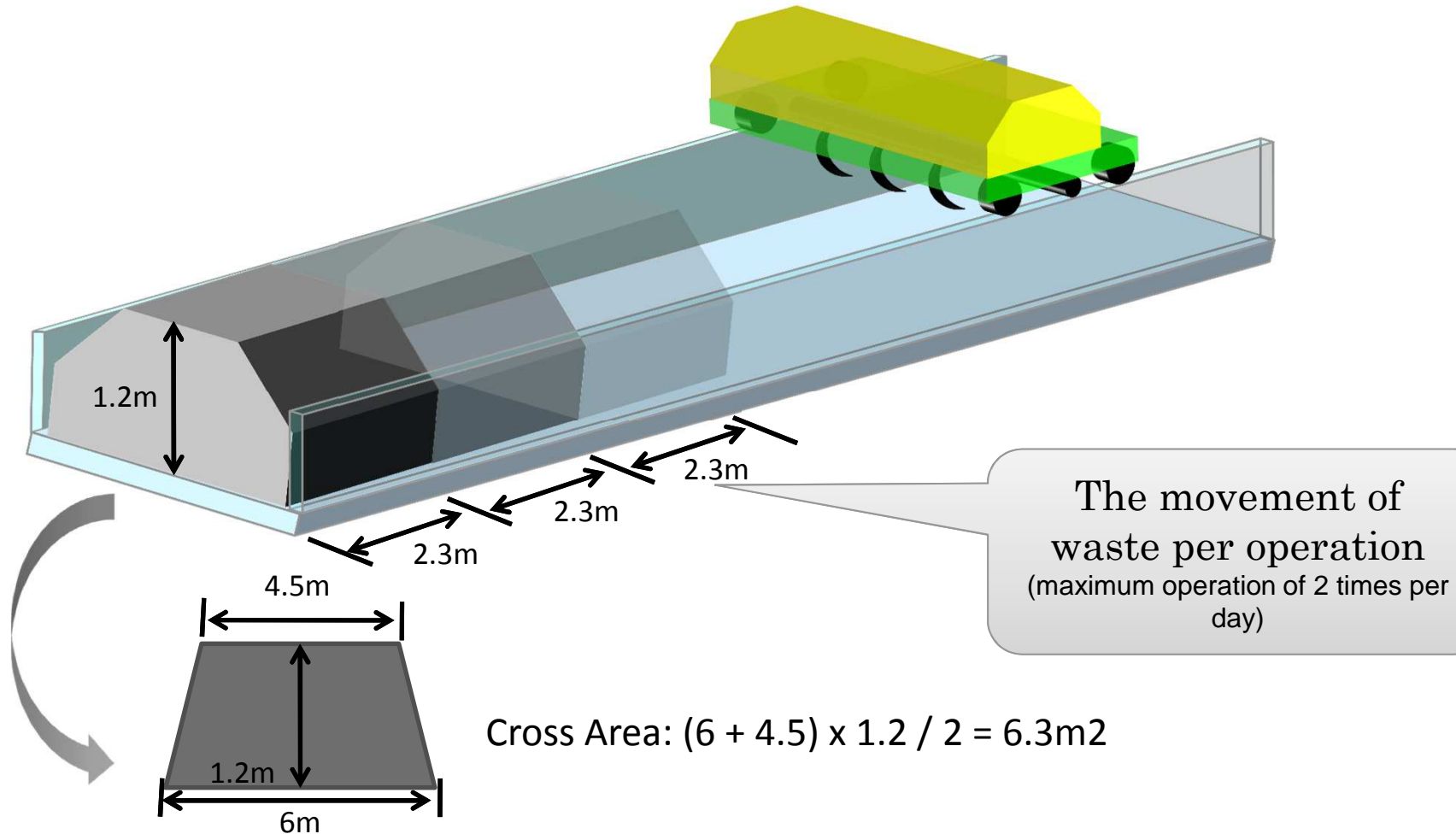


# Machinery type KNLL-6000HW



Here comes your footer

# KNLL-6000H



An efficient compost depends on three factors

## 2.Environment Temperature

# Temperature Control



Ensure the green house sides are open in order to have good air circulation.

Close the sides with curtains to adjust the temperature.



The ideal temperature to keep bacteria activated  
Minimum Temperature:  $-5^{\circ}\text{C}$   
Ideal Temperature:  $20 - 30^{\circ}\text{C}$



## Three factors an efficient compost requires

# 3. Humidity

# Steps of processing

1



Raw manure with over 80% humidity

2



Raw manure

3



Mixing of raw manure with carbon

4



Placement of humidity adjusted raw manure into the machinery



# Compost flow process



**Raw manure + Carbon**

Here comes your footer





**Out come after one operation**





**One week later**





**Two weeks later**

Here comes your footer





**Three weeks later**

Here comes your footer





**Final Product**



# The advantages of utilizing the compost machinery

**1. Homogeneous final product**

**2. User friendly shape**

**3. Extinction of harmful bacteria and grass seeds**

**4. No smell and poison in final product**

**5. Improvement of soil (Saving chemical fertilizer)**

# Compost of chicken manure





# Compost mix of banana stalk & chicken manure





# Compost of pig excrement



Here comes your footer

# Extinction Time

Kohshin machines process over 20 days with 60-70°C; therefore, all Disease and grass seeds will be extinct.

Extinction time of disease germ for human body  
And parasite

Species	Temp. (°C)	Time(min.)
Typhoid	55-60	30
Dysentery	55	60
Staphylococci	50	10
Bacillus Coli	55	60
Round Worm (Egg)	60	15-20
Cryptosporidium	60	30
Salmonella	60	20

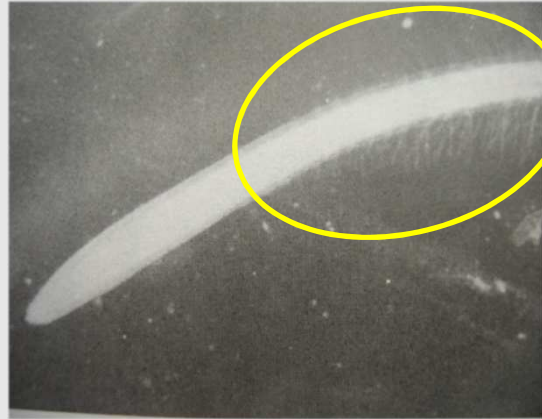
Germination rate of grass seeds (Unit:%)

Species	Less 50°C	60°C (2days)
Crabgrass	96	0
<i>Nobie</i>	72	0
Galingale	56	0
<i>Ooinutade</i>	8	0
<i>Inubiyu</i>	68	0



# Roots pictures

Fully  
Fermented  
Manure



◇ Fibril are coming out richly

Dried  
Chicken  
Manure



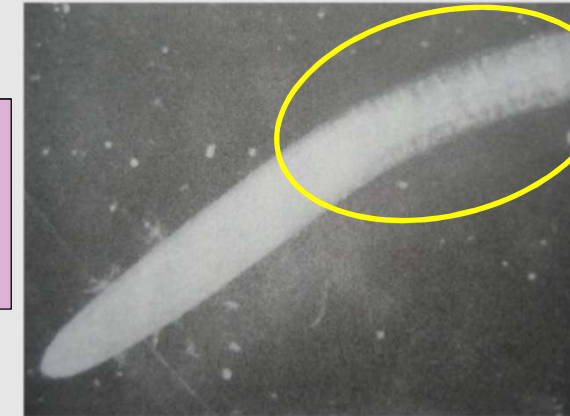
◇ Roots are rotten

Incomplete  
Fermentation  
of compost



◇ Twisting root, small count of fibril

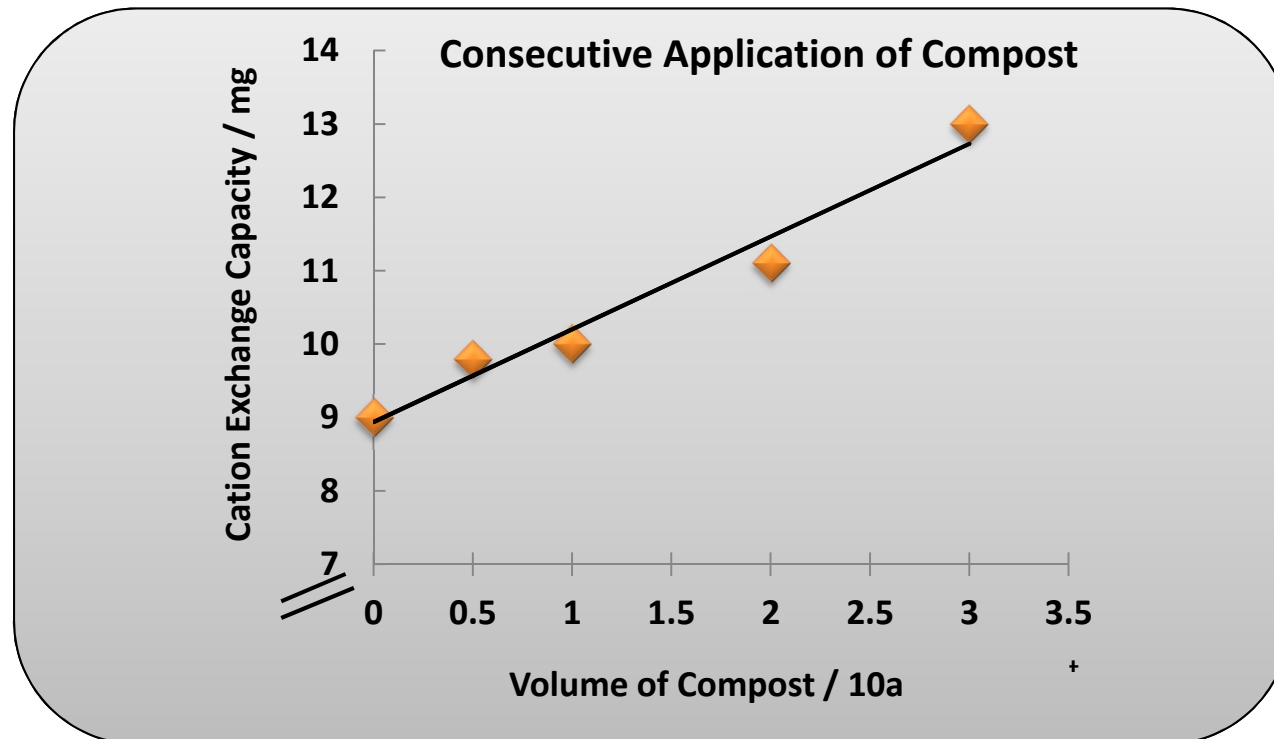
Raw Manure  
and saw  
dust



◇ No root hair or fibril

# Soil improvement

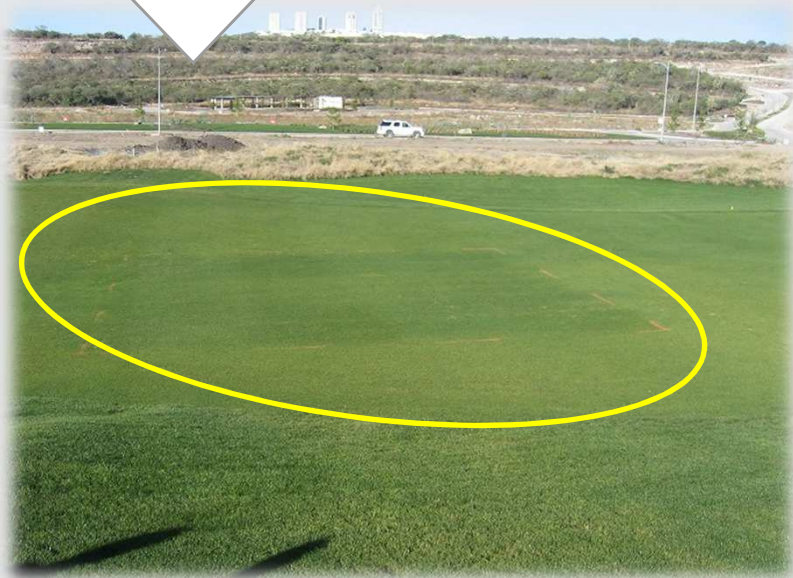
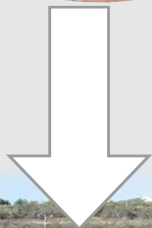
By applying with compost for consecutive years, the cation exchange capacity (CEC) of the soil will increase. Herewith the plus ion will exist  $\text{NH}_4 + \text{K} + \text{Ca}$  will not drain off in the soil making it easy for plants to absorb.



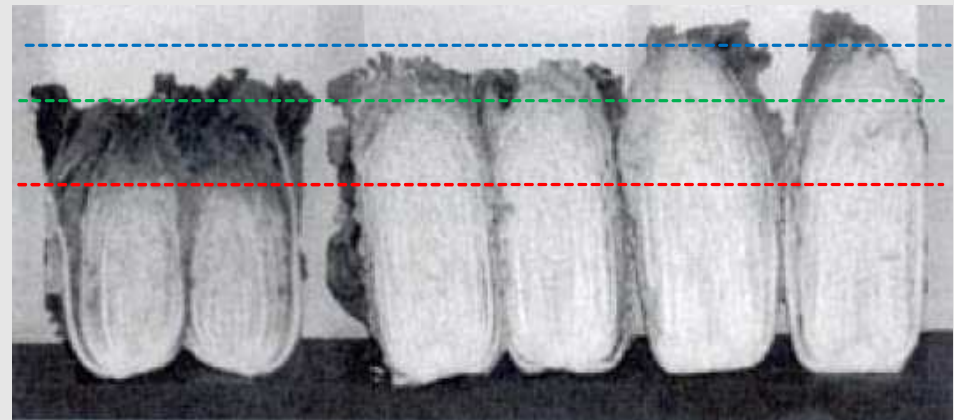
# Why Organic Fertilizer



This picture was taken 4 days after organic fertilizer was applied to its field as a test



## Results by aplying Organic Fertilizer



**Chemical  
Fertilizer**

**Organic  
Fertilizer  
2 years**

**Organic  
Fertilizer  
9 years**

(財) 日本土壤協会 専務理事  
猪股 敏郎



## Results by applying organic fertilizer from composter



At this vineyard, the customer applies the end product (organic fertilizer) produced from the composter.



By applying organic fertilizer, the bunch has grown larger than before, and the taste became more sweet.



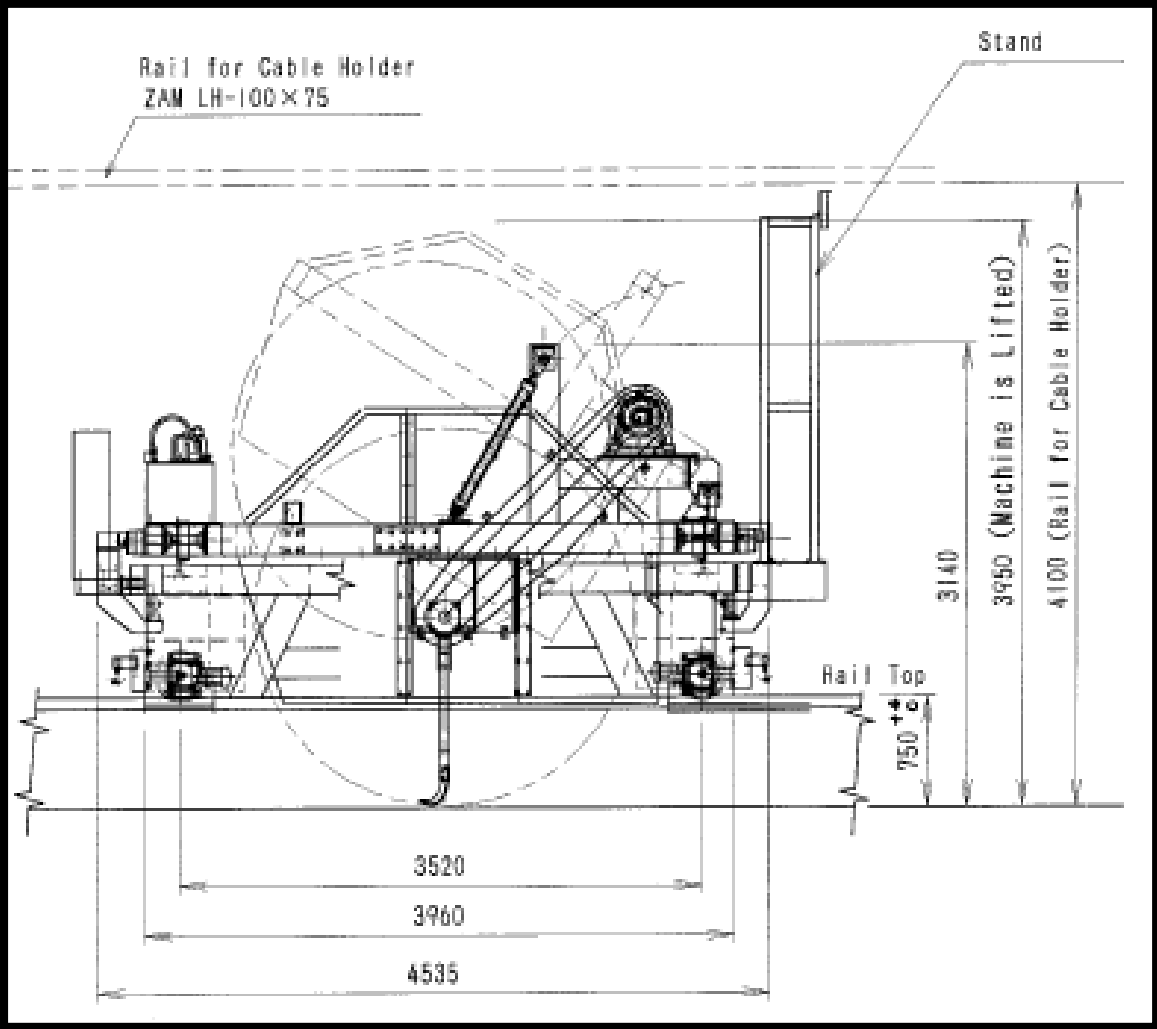
This year they have succeeded to grow the kernel up to 23mm, which was normally only 18mm till then. This was the largest grape to be cropped in their country that year.

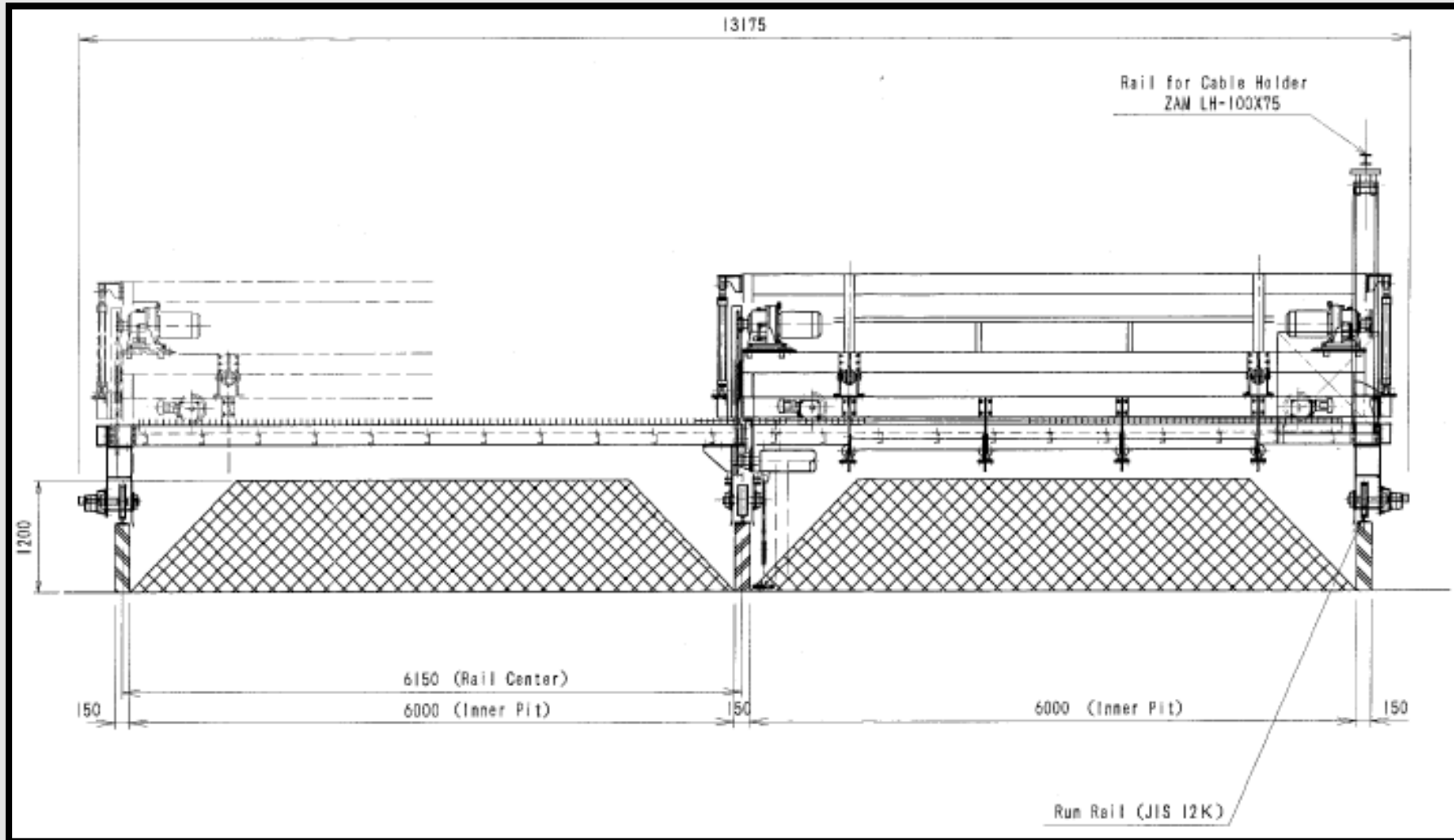
# Price of Compost

Country Name	Price of Organic Fertilizer (US\$/ton)
Bangladesh	100.00 (2009)
Brazil	100.00-120.00(2009)
China	100.00 (2009): 80.00-120.00(2010)
Dominican Republic	80.00 (2008)
Egypt	Dry manure 10.00(2010)
Greece	270.00 (2009) Pelletized and Packaging
India	100.00 (2009)
Indonesia	90.00 (2009)
Malaysia	100.00 (2008,2009)
Mexico	70.00 (2008): 80.00 (2009): 100.00 (2010)
Philippines	220peso/50kg(=USD100/ton) (2010)
Singapore	Compost:40.00 (2009) Dry manure:100.00 (2009)
Thailand	150.00 (2008) with bag



# Machinery Drawing





## Consumption of electricity and running costs of the Fermentator

<b>KNLL-6000HW (145m)</b>				
MOTOR	Kw (No.)	Kw Total	Operation Time	Kwh (2 Times of operation)
Rotary Motor (Kw)	11 Kw x 2 = 22 Kw	24.5 Kw	22Hrs (2Pit)	380 Kwh/Day
Running Motor (Kw)	0.2 Kw x 4 = 0.8 Kw			
Sliding Motor (Kw)	0.1Kw x 2 = 0.2 Kw			
Hydraulic Motor (Kw)	1.5Kw			

Kwh/day	Electricity Cost	Electricity Cost /Day
Approx. 380 Kwh/day	380Kwh/day x 90 CLP (Chile)	34.200 CLP(Chile) /day



A close-up photograph of a pair of weathered, brown hands cupping a small, vibrant green seedling with three leaves. The seedling is growing out of a mound of dark, rich soil. The background is a soft, out-of-focus grey. The image is framed with rounded corners.

Thank you very much for your  
attention!

# Integrant

## Ingredients that can be found in animal excrement

Raw Manure (Broiler)	7.1	6.38	4.94	15.1	2.07	2.31	4.1	0.74
Dried Manure (Layer)	-	-	-	26.8	6.41	3.01	11.09	1.41
Dried Manure (Broiler)	-	-	-	37.7	5.49	3.41	4.96	1.38
Fermented Manure (Layer)	8.5	8.3	3.2	28.7	6.5	3.5	14.3	2.1
Raw Manure (Pig)								
Fermented Manure (Pig)			3.5		5.6	2.7	8.2	2.4

Note: The above data was base on the data recorded by the Japanese goverment.

But the T-N of fermented manure which is 3.2 was reduced to about 2.0 after 40 days of fermentation after taking an actual test. It also varies depends on the kinds of feeds and the duration of fermentation process.

CEC is the number which shows how much positive ion can be held in the soil. Positive ion derived from Ca, K, and NK3, can be nutrition. Therefore, higher CEC soil can hold more nutrition.

### Difference in yield of tomato and nitrogen maintaining power base on CEC/10a

Field with:	Amount of maintain Nitrogen	Consumable amount of Nitrogen	Yield Tomato
<b>CEC10</b>	$10 \times 0.2 \times 14 = 28 \text{ (kg)}$	$28 \times 0.7 = 19.6 \text{ (kg)}$	$19.6 \div 5 = 3.9 \text{ (t)}$
<b>CEC15</b>	$15 \times 0.2 \times 14 = 42 \text{ (kg)}$	$42 \times 0.7 = 29.4 \text{ (kg)}$	$29.4 \div 5 = 5.9 \text{ (t)}$
<b>CEC20</b>	$20 \times 0.2 \times 14 = 56 \text{ (kg)}$	$56 \times 0.7 = 39.2 \text{ (kg)}$	$39.2 \div 5 = 7.8 \text{ (t)}$

0.2: Rate of nitrogen at the CEC

14: 1me Nitrogen Amount (Equivalent mg, mg/100g=kg/10a)

0.7=Rate of consumed Nitrogen

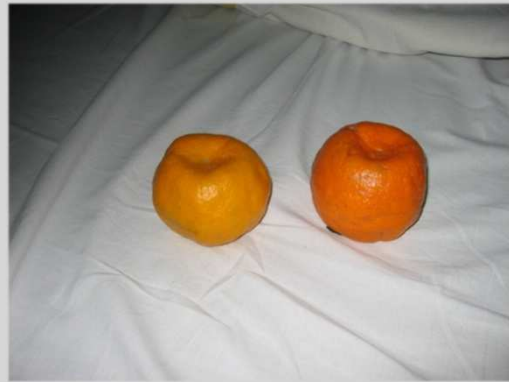
5: (kg) of nitrogen is necessary to harvest 1 ton of tomato



# Positive Effect

Left Side: Dried chicken manure  
Right Side: Fermented chicken

Taste and color become different



Using raw manure reduces sweetness and soft peel

Using fermented chicken manure  
Increases sweetness and firmer peel

