



HOSOYA
Fermentation System

From poultry
manure
to high-quality

HOSOYA

Poultry Manure Fermentation Systems and the Fertilizer

The economical
solution
with future



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Treatment of raw poultry manure that occurs in large quantities every day in running poultry business is one of the major tasks. It is no exception for Hosoya holding an egg collection poultry farm, and Hosoya's fermentation processing system was developed while repeated trial and error as a countermeasure for it.

Based on experiences accumulated at Hosoya's poultry farm such as use of actinomycetes to promote fermentation and twin rotor blade type with few breakdowns, after sales began in 1989, the achievements in the domestic market have accumulated and the customer is accumulated for about 20 years.

Starting exporting to overseas since 1994, we have accumulated a lot of equipment installation experience in Europe and Asia area. Its use as a fermentation system has experience not only for poultry manure but also for treatment of cow dung and pig feces.

Organic fertilizer called "Farm King" produced by Hosoya's fermentation system contains nitrogen, phosphoric acid and potassium suitable for plant cultivation.

1. Fermentation System F1, Performance: 200,000 birds & 24 Ton/day

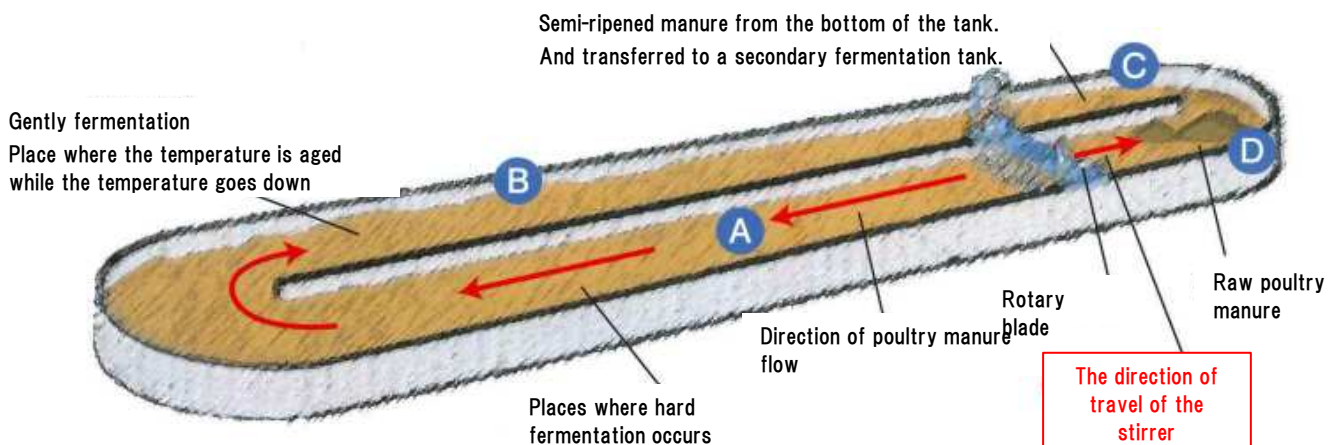
The fermentation system F1 (Phase-1 system) has a structure in which the rotary blade rotates through the fermentation tank. The rotary blade crushes poultry manure on the right half (side A) and stirs it, turns to the left side (B side), turns to the left while stirring the left half, moves to the end, moves to the right side, continues to rotate.

At this point (point C), 30 to 80% of the chicken manure that was issued and about 35% moisture is dropped to the floor and the remaining 20 to 70% is moved to (point D). Fresh poultry manure (moisture 60 to 78%) will be added by heavy machine (D point) so that the depth is 1 m (or the depth of the tank is 1.3 m by the specification).

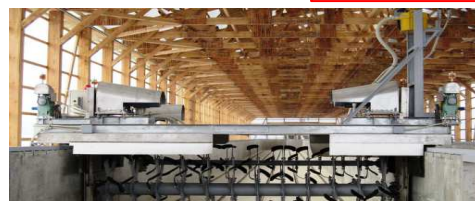
Raw poultry manure is mixed with return manure of about 35% moisture, the moisture content reaches about 60%, and a large amount of actinomycete acts immediately to cause hard fermentation and its temperature becomes about 70 ° C.

This severe high-temperature fermentation finishes only on the right side (A side) and after shifting to the left side (B side), the poultry manure is gently fermented and aged (point C), pulled out, the first fermentation process is over and the second fermentation it is transferred to the tank.

The stirrer is agitated very gently by a pair of special rotary blades with a diameter of 1.28 m (special specification is 1.56 m) and 0.65 m.



F1 (Phase-1 system), total length 25 to 70 m, depth 1.3 to 1.5 m, width 8.3 m



F1 (Phase-1 system), stirrer twin rotor rotary blade

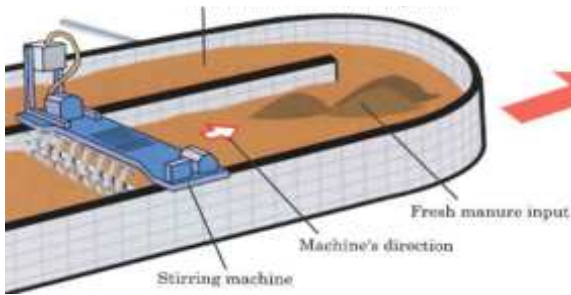
Drying System

The Phse-2 & 3 Process to produce organic fertilizer

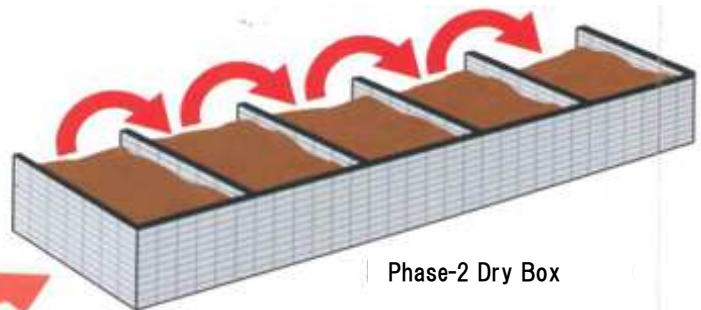
2. Secondary fermentation box

The semi-ripened poultry manure delivered from under the floor of the phase-1 system tank is left to stand in one of the secondary pahse-2 fermentation sedimentary layers partitioned into 5 to 6, and fermentation is continued.

Poultry manure is sequentially transferred to the next tank every 3 days, and the turnover is done at this time. 1Thus in four compartments 3 days X 5 cells = 15 days, that is, about 15 days, it becomes fermented poultry manure with a moisture amount of about 20%.



Phase-1 Tank



Phase-2 Dry Box



Gas Washing System

Simple water washing system

3. Gas Washing System (Deodorization system)

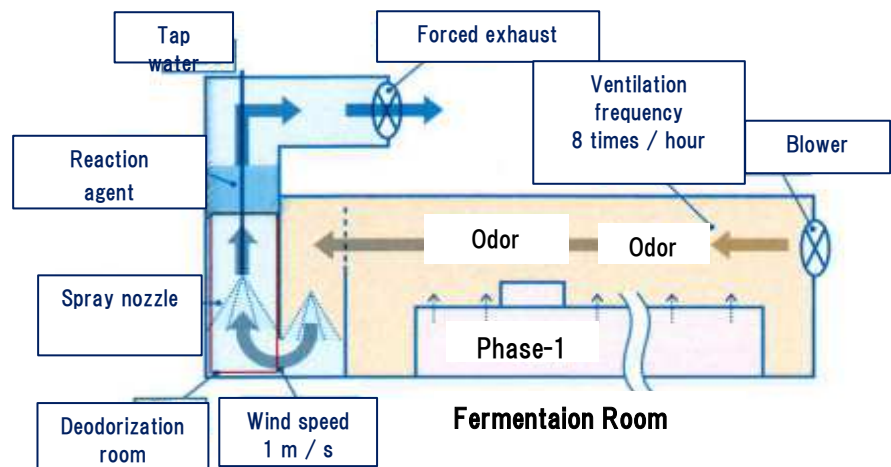
Environmental problems caused by animal husbandry management are in a situation where they are getting worse due to scale expansion and progress of mixing.

Environmental measures are increasingly important for sustainable livestock farming, such as the occurrence of complaints and stricter regulations on environmental conservation.

Many of the complaints concern foul odor and water pollution, but countermeasures against foul odor from chicken dough fermentation drying treatment facility where ammonia gas reaches 1000 ppm have been a subject of intimacy. Hosuya noticed that ammonia gas is easily adsorbed by water, developed a deodorizing device of water washing type. The used water is an environment-friendly system without wastewater that is washed and recycled.

Deodorization system layout in the fermentation house

Forcibly make a flow of air inside the fermentation house with a blower, and send the air containing the odor gas to the water

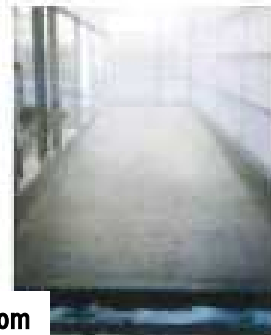


Gas Washing Room

Air containing odorous gas is rinsed and discharged outside the building.



Outside of room



Inside of room

Activated sludge tank

The sewage water adsorbed odor gas (mainly ammonia gas) is purified first by an aeration tank, then by an anaerobic tank by a biochemical reaction.

It is not necessary to drain outside the office and can be recycled as washing water.



Organic Fertilizer (Farm King)

High quality organic fertilizer

4. Organic fertilizer (Poultry manure fermented fertilizer)

Organic fertilizer made by poultry manure fermentation / drying system of Hosoya is an excellent organic fertilizer containing many effective chemical ingredients suitable for growing plants.

It can be classified into several kinds according to the size of the grain, and it can be used according to each purpose such as vegetables, fruit trees, golf course etc.

In addition, Hosoya's organic fertilizer is a fertilizer that is easy to handle without odor of the product owing to the agglomeration phenomenon of actinomycetes, the product is granular and easy to spread fertilizer, and it is manufactured by the process of high temperature fermentation



4~8mm size



2~4mm size



2mm > size

Organic substance:	65.0% - 70.0%
H ₂ O:	15.0% - 20.0%
N:	1.8 - 2.5%
P ₂ O ₂ :	6.0 - 6.5%
K ₂ O:	2.8 - 4.0%

Organic fertilizer (Farm King) test results

Experiments on actual vegetable cultivation were carried out using organic fertilizer "Farm King", made by poultry manure fermentation and drying system of Hosoya, and vegetable growth conditions were verified.

Organic fertilizer per 1 sqm. 1) 20 kg, 2) 10 kg, 3) 5 kg, 4) No fertilizer, 4 compartments, sowing Komatsuna on October 11 and germinating on October 16. The result of observing the growth situation on November 11 is shown in the right picture.

The 5 kg section had the best growth, and concentration disorder was observed in the order of 10 kg and 20 kg sections.

The non fertilizer compartment Komatsuna died and the necrosis of the stem interior became dead shortly after cotyledon development. From this strain pathogenic bacteria such as Rhizoctonia, Fusarium, others were observed under a microscope.

From the above results, it is considered that the use of this organic fertilizer suppressed pathogenic bacteria, and 5 kg and 10 kg districts grew healthily due to organic fertilizer nutrients.



APPLICATION OF THE ENDPRODUCT

HOSOYA- organic fertilizer made of poultry manure shows the following remarkable features:

- high content of organic substance, therefore, continuous fertility
- nutrient and permanent humus components, therefore, full biological activity
- compound fertilizer effect due to vegetable nutrients such as nitrogen, phosphorus, potassium hydroxide, lime and important activity
- strong swelling capacity, therefore, soil loosening and water-absorbent
- handy, dust-free granules which are easy to spread

Estimated amount of Fertilizer : 500g~1kg/m²

Compared with inorganic fertilizer, e.g. those which contain only certain nutrients (e.g. NPK), HOSOYA organic fertilizer contains all nutrients necessary for plants. Thereby, a compound fertilizer effect is achieved. Due to its high content of organic substance (of approx. 60-70%) there is a lasting increase in soil fertility.

HOSOYA organic fertilizer can be used everywhere in plant-growing. It is well-established in special cultivation such as vegetable, asparagus, and wine-growing. But HOSOYA also is a valuable compound fertilizer suitable for conventional agriculture.

RESUME:

HOSOYA organic fertilizer is fully biological and contains all necessary vegetable nutrients compared with inorganic fertilizers. Due to its high content of organic substance it improves soil which is poor in humus and therefore increases productivity

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