

Basic Information of Sara Buri Center

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General Information:

Sara Buri Kyusei Nature Farming Training Center was established in 1988 in Sara Buri Province, and is located 120 km away from Bangkok, Thailand.

Year of Establishment	1988
Total Area of the Center	76 ha
Number of Staff in the Center	90 (the staff include staff assigned to farms, office, machinists, cooks, etc.)
Managing Director	Mr Kanit Muangnil

Common EM Technology Terms Used:

EMAS: EM activated solution (EM microbes activated using the EM1 or EM base solution)

EM Bokashi: Organic matter fermented with EM

EM FPE: EM Fermented Plants Extract

EM 5: A combination of vinegar, alcohol, molasses and EM.

Operations:

Upland Cropping

Paddy, Corn, Pumpkin, Pineapple, Squash, Bitter gourd, Loofah, Eggplant, Chili, Okura (Lady finger), Tomato, Melon, Watermelon, Cucumber, Cabbage, Morning Glory, Sweet potato, Celery, Spinach, Onion, Chinese Cabbage, Kale, Lettuce, Carrot, Radish etc.

Orchard

Mango, Orange, Papaya, Jackfruit, Guava, Star fruit, Custard apple, Palm, Avocado, Tamarind etc.

Field Establishment

EM Bokashi 200 – 300g / m² – at least 3 days before transplanting or seeding
More than 200 – 300g / m² of EM Bokashi is applied 7days before transplanting or seeding

EM Bokashi	200 – 300g / m ²	} Insect control
Press mud	200 – 300g / m ²	
Charcoal	200 – 300g / m ²	

Procedure

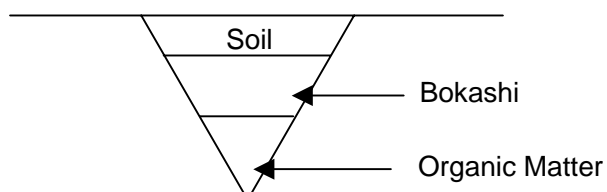
1. Bokashi 2. Mulching 3. EM diluted solution

Diluted EM solution should be sprayed into the fields after mulching with rice straw.

Straw – dripping effect

EMAS : Molasses : Water = 1 : 1 : 500

Mixed 24 – 72 hrs before using



A V-shaped, 30cm depth groove is dug in the center of bed and green manure, raw organic material or kitchen garbage treated by EM is applied on the bottom of the groove. EM Bokashi should be applied on the organic material. EM diluted solution

(1:500) is sprayed on the Bokashi and covered with soil.

One time application is good for around 4 months. This application method is very good for crops such as okura, eggplants, cabbage, Chinese cabbage, radish, carrot.

15 – 20 days after transplanting, diluted EM solution [EMAS 1 : water 500] should be sprayed – 1L / m² and 100g / m² of EM Bokashi can be spread on the field as additional organic fertilizer.

Application of diluted solution as EM original 1 : water 500, 1L / m² can reduce plant disease. After this application watering should be stopped for 2 – 3 days.

EM5 for insect.

Weekly application of EM FPE is very good to protect the plants from insect and disease.

Tomato – only EM FPE

Tubers – only EM5 every 3 days

Harvest

Plant residues should be returned to the same field. EM5 or EMFPE diluted with water 100 times [1:100](strong EM5 or EM FPE) is applied at 1L / m². The next field establishment can be started after 10 days.

For weed control management..... Manual labor

Paddy Field

Total Area	20rai [3.2ha]	
	17rai – one time in a year paddy, during the off season, watermelons are grown	
	3rai – 3 times in a year paddy	
Average Yield / crop	750 kg / rai	Thailand average ¹ 420kg / rai
	4687.5kg / ha	2625kg / ha
	(1 ha = 6.25 rai)	

¹Source: Agricultural Statistics of Thailand Crop Year 2000/2001 MOAC Bangkok Thailand

Land Preparation

Right after harvest, the field is plowed using a rotary machine to prepare for the next paddy usage. 20 – 50kg/rai (12.5 – 31.25g/m² = 125 – 312.5kg / ha = 50 – 125kg / acre) of EM Bokashi and 200L of diluted EM solution (1:100) / rai (125ml / m² = 1250L / ha = 500L / acre) can be applied in the field.

The field is left for 15 days.

During this period, some weeds will germinate.

On the 16th day, the paddy field is irrigated up to a depth of 10cm and then plowed with a rotary machine again to remove the weeds.

After plowing, 200L of diluted EMAS solution (1:100) should be applied again per rai. [125ml / m² or 1250L / ha]

The field is left for 10 - 15 days again.

Transplanting

25 days-old seedlings are suitable for transplanting. Do not use EM Bokashi in the seedling plot

Method of Seed selection using a salt solution

First, put a fresh egg into the water in a container.

Then add salt into the water until the egg floats to the surface of the water.

The concentration of salt in the water can be decided using this method.

Put the rice seeds into the container and take out the floating seeds.

The seeds which sink in the salt water are soaked in hot water (whose temperature is around 60°C) for just 5 seconds.

This treatment can suppress the seed borne disease.

After soaking the seeds in hot water, next put the seed into the EM diluted solution (1:1000) for 24 hours then dry them all.

Seedling Stage

On the 10th day after seeding, EM diluted solution (1:1000) should be sprayed upon the seedlings. Their height will be about 3 - 5cm.

On the 25th or later, the height of the seedlings will be around 25cm. It is the time to transplant them to the field. Before transplanting, EM diluted solution (1:1000) should be applied to the

Broiler

45 days old, 2.2 – 2.5kg / bird > a market

3000 birds in 5 sheds

1 unit = 4 X 8m, holds 600 birds = 18.75 / m²

*average = 15 – 18 / m² in Thailand

EM shed preparation (4 X 8m sized shed)

EM5 : EMAS : EM FPE : Water = 1L : 1L : 1L : 100L

*Spray the solution on shed after removing chicken dung

*Leave the shed for 1 day – Drying

Spread rice husk on the floor – 3 inches thickness

Extended EM : EM5 : Water = 1 : 1 : 100 – prevent insects

*50L / shed = 0.5L : 0.5L : 50L

* Leave the shed for 1 day

Launching

1 box = 100 chicks

EM original : Water = 20ml : 1L

*Spray the mixture on chicks with hand mist sprayer on the chicks to make them healthy and to prevent diseases

Extended EM : Water = 1 : 100 Spray on the shed

*50L / shed = 0.5L : 50L

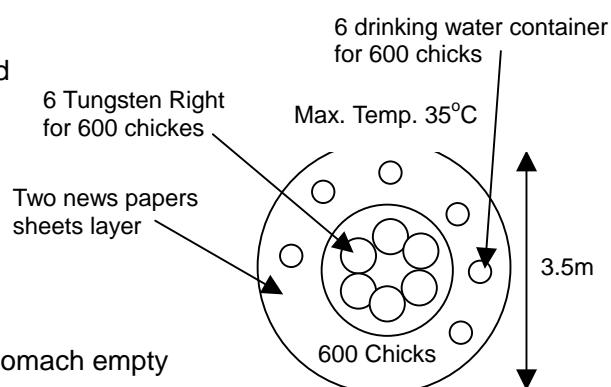
After 3 weeks

Feed Bokashi 1% mix with commercial feed

Mortality > 4 – 5% rainy season

1 – 2% dry season

one day before harvest... stop feeding... make stomach empty



Piggery

3 unit – 5 by 15m = 1 unit

No. of Boars 3

No of Sows 23

No of piglets within 1 month old: 27

No of pigs within two months old: 40

Sow Variety – Large white, Landrace

Boar Variety – Durock
Large white
Landraceheterosis –
(hybrid vigor)grow first, healthy babies
ADG – Average Daily Growth
FCR – Feed Commercial ratio
Meat quality OK

EM application

Drinking water > 1 : 1000

Feeding > Feed Bokashi 1% of commercial feed

Spraying of EM > Extended EM : Water = 1 : 100 Spray on shed – daily

EM5 : Extended EM : Water = 1L : 1L : 100L

Spray on the floor after cleaning pig dung

Average 12 – 15 piglets; max. 19 piglets

Kasetsart Univ. average 10 piglets

Dairy - Holstein

Milk production stage > 7 cows

Growing stage > 12 cows

70 – 80L / time – 2 times / day

EM application

Drinking water > 1 : 1000

Feeding >

Silage

Dry rice straw 1 package – 20kg

Rice bran 5kg

Feed Bokashi 250g – 1%

EM 50ml

Molasses 50ml

Water 30L

24 hrs fermentation in anaerobic condition

Spraying of EM > EM5 : Extended EM : Water = 1L : 1L : 100L

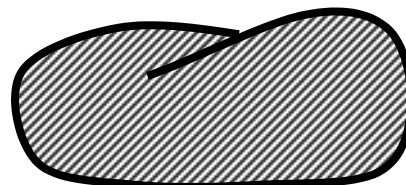
Spray on the floor after cleaning cow dung two times in a day

Feeding >

Concentrated pellets 1% of total feeding – 2 times in a day

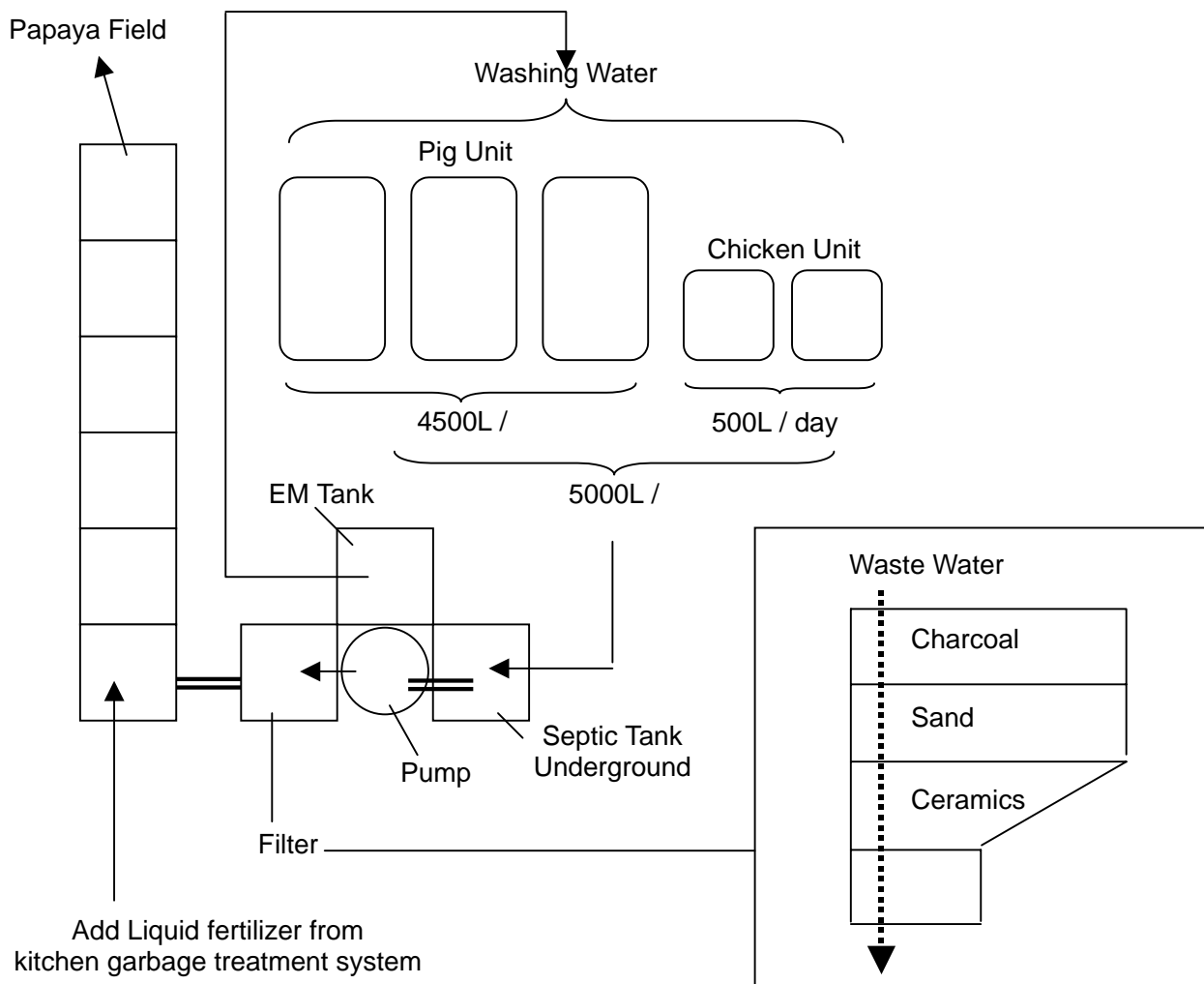
Grass – only rainy season

Silage – dry season



Plastic bag

Waste Water Treatment



Kitchen Garbage Recycling System

Content: Kitchen Garbage 200 – 500kg/day
(animal bone – 10%, plant material (garbage) – 90%)

Method

1. Separate organic waste and inorganic materials like plastic or glass.
2. Only organic material should be put into a machine and mixed with EM Bokashi whose ingredients are as follows-

Rice straw	1 part
Rice husk	1 part
Rice bran	1 part
EM : water	1:100

This kind of Bokashi which includes Rice straw can make organic waste smell well.
200g of the Bokashi should be mixed to 1kg of organic waste.

3. The mixture of organic waste and Bokashi should be put into a plastic container which can make anaerobic condition.
4. After 7 days, take the liquid out from bottom of the container.
5. Solid waste after the above treatment can be dried or applied into any fields immediately as organic fertilizer.
 - The liquid from the container can be used as liquid type of fertilizer after 500 – 1000 times dilution with water. The storage period of the liquid is 7 – 14 day with anaerobic condition.
 - During the fermentation period, the temperature of the waste will be not so high, around 45°C is the best.
 - The most important things is to keep the container anaerobic condition through the fermentation period.
 - It is necessary to add more EM Bokashi when rotten waste was put into the container.
 - After 3 days from the above treatment, the waste in the tank will be covered with white mycelium.
 - We can use EM diluted solution [Extended EM 1 : molasses 1 : water 50] instead of EM Bokashi, however this is in emergency occasion only.

Catfish Cultivation

Sara Buri Center has 8 ponds – Tilapia and Catfish
Growth Period – around three months

Pond Preparation

Drain water from the pond

EM Bokashi 100kg / rai (62.5g / m²)

EM5 100L / rai (62.5ml / m² (bottom of the pond))

Leave 7 days

Put water

Leave 5 days more - Plankton will be increased

Launching – young fish

Fry (length of about 2.5cm) can be bought at 0.6 – 0.8 THB in a market. Density of 40 fish / m²

Feeding

Commercial feed 1 - 2kg / every day

Extended EM 200L / rai (125ml / m²) can be applied every week during the cultivation period

Yield

4800kg/rai (2 – 3kg/m²).

The cultivated catfish can be sold around 25 – 35 THB/kg.

The number of fish/kg = 3 – 4kg..... survival rate is around 30%.

No muddy smell and quality is good.