TAKAKURA HOME METHOD (THM) COMPOSTING

SIBU MUNICIPAL COUNCIL
30 NOV 2010
Composting is the nature way of recycling organic matter. It is the process whereby biodegradable organic matter is broken down by microorganisms in the presence of oxygen.

The product of this process is compost, which benefits the environment as a natural fertilizer for gardening and farming.
Composting has many benefits. Some of the most important are:

- Benefits the environment by recycling valuable organic resources;
- Saves money on fertilizer for plants;
- Acts as an excellent soil conditioner and adds on to soil volume;
- Saves water by retaining moisture in the soil.

(Of course it helps Council in cost saving on refuse collection and extend life span of Dumping Ground)
Common Composting Methods

Pot Composting （花盆堆肥）

Plastic Bag Composting （塑胶袋堆肥）

Tower Tyre Composting （轮胎堆肥）

Compost Pits （埋洞堆肥）

Windrow (Batas) Composting (干谷堆肥)

Wire Hoop Composting （绕电线堆肥）

Heap Composting （堆积堆肥）

Bottomless Bin Composting （无底洞堆肥）
Pot Composting

Plastic Bag Composting
Tower Tyre Composting

Compost Pit
Wire Hoop Composting

Heap Composting
Steps in doing composting:

1. First layer soil
2. Kitchen Waste
3. Put grass
4. Put kitchen waste in
5. Composted
6. Completed
肥沃的堆肥 (Organic Fertilizer)
Stakeholders’ Participation

Taman Grand Height
Started July, 2008

SMK Agama
Started August, 2008

Taman Li Hua
Started April, 2008

SMK Teknik
Started October, 2008

Launching of Household Composting project in Sibu on 13 April 2008

Individual Household
Started in 2008
Slow in becoming compost;
Attracts insects and may have foul odour;
Occupies space.
WHY TAKAKURA HOME METHOD (THM) COMPOSTING??

(高倉弘二家庭式堆肥法)

LA21 & Health Education Unit,
SIBU MUNICIPAL COUNCIL
In the Takakura composting method, organic waste is broken down by micro-organisms that are cultivated from local materials. The method involves making a seed compost from fermented solutions and a fermenting bed. Organic waste is mixed with the seed compost and left to degrade in a ventilated container or basket.
Takakura Home Method (THM) – the innovative process for composting has been introduced by KITA (Kitakyushu International Techno Cooperative Association).

- In Surabaya, now 20,000 households have been implementing this composting method.
By implementing this method, in Surabaya...

1500t/day \rightarrow 1300t/day

=USD350,000/year (cost saving)

=RM1,228,500/year (cost saving)
**Statistics on Monthly Refuse disposed at “Kemunyang Sanitary Landfill”, Sibu from 2001 to 2008**

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Preparation for the “Takakura Home Method” Composting

Materials for the “THM” composting

Food waste + Seed compost + Composting container
Materials needed:

- Rice bran & rice husk
- Fermenting solution
Making Fermenting solution:

1. Making a fermenting solution

A. Sugar fermentation solution

Mix everything in an airtight container and leave for three to five days for fermentative micro-organisms to grow.

- 3 litres water
- 200g jaggery (gula merah)
- Tempe, one piece, cubed

Other fermented food can be used in place of tempe, such as yoghurt, tapai, miso paste or taucheong.
Making Fermenting solution:

B. Salt fermentation solution

Mix everything in an airtight container and leave for three to five days for fermentative micro-organisms to grow.

3 litres water
1 heaped tablespoon salt
Mixture of vegetable scraps and fruit peel

The fermenting solutions are ready when a layer of mould forms on top. The mixture should smell sweet-sour and of alcohol. If it smells strange or bad, discard and do again.
1) Mix brown sugar (or salt) and tap water inside the container.

*Adding excess sugar is also fine.
2) Add fermented food into the water, mix evenly;
3) Tightly close the container, keep it for 3~5 days. Completed fermented liquid has sweet and sour smell.
After 1 day...

From the left - Tempe, Taucu (bean paste), Yogurt and Ragi (traditional yeast)
After 5 days...

From the left - Tempe, Taucu (bean paste), Yogurt and Ragi (traditional yeast)
2. Making the seed compost

Mix equal amounts of rice bran and rice husk to form a fermenting bed. Stir in sugar and salt fermenting solutions bit by bit, adjusting the moisture level to 40% to 60%.

The moisture content is right if the mixture forms a lump without oozing out water when squeezed in the hand.

Store mixture in a covered carton box for three to five days. The box should feel warm. When the content is covered with white mould, the fermentation is complete. Let mixture dry out. The seed compost is ready for use.
Making of Seed Compost

- Rice Husks approx 1 cubic m
- Rice Bran approx 1 cubic m

Rice bran: Rice husks = 1:1

Seed compost for 40 to 50 households can be prepared using these ingredients.
Making Fermenting Bed (mixing rice bran, rice husk with fermenting solution)

The mixture should have moisture level of about 40 -60%
Add fermented liquid.

- To check the amount of moisture, squeeze seed compost as hard as you can.
  - ...If water drips out of the compost and off of your hand the pile is too wet.
  - ...If no water appears the pile is too dry.
  - ...If water just appears, but does not drip, between your fingers and on the surface of the compost the moisture content is just right.
Making of Seed Compost
After 5 to 7 days, the seed compost will be ready, let it dry before use. (the entire surface becomes covered with white mould, indicates completion of fermentation)
3. Making a compost container

A container of 60-litre capacity is suitable. It should have holes at the sides to allow air ventilation. Suitable containers: plastic crates, laundry baskets or storage boxes; or wicker laundry baskets.
Line the inside of the container with thick paper carton or carpet to prevent spillage of compost and insect infestations.

Fill the container to 60% capacity with seed compost. Leftover seed compost can be kept for future use.
1) For compost container, you can use plastic waste basket (which is perforated), bamboo basket, laundry basket and so on.
2) Put cardboard or thick cloth (like carpet) inside of the composting container to prevent pests to invade.
3) Put seed compost into the cardboard box to two third of its height.
4) Everyday, put food waste and mix it well with seed compost by using a shovel. Then close the container.

The food waste will decompose after 1 or 2 days.
Cut up your kitchen scraps. This will speed up fermentation. Drain excess liquid from chopped waste, then stir into container of seed compost.

Maintain the moisture content of the seed compost at 40%-60%. High moisture content will inhibit fermentation, resulting in offensive odours. If mixture is too wet (this can happen with large amounts of vegetable scraps), add orange, onion or garlic peel or bits of paper.
Food waste:

• Put food waste into the compost and mix well everytime food waste has produced.

• Cut food waste into smaller sizes by using a knife or scissors.

photo courtesy of KITA
Cover container with cloth to keep mixture warm and protected from insects. Stir the mixture once a day to intensify fermentation and inhibit the growth of putrefying micro-organisms. The chopped waste should lose their shape in 1-2 days. Repeat the process until the container is full.

*If steam rises while the content is being stirred, it indicates that the fermentation is progressing well, with the temperature reaching 40°-50°C. Fermentation slows down if the temperature is low. To raise the temperature: place the container inside a cardboard box or polystyrene container with holes; or put a plastic bottle of hot water in the container.*
Implementing “THM”
Composting

- Mix well and cover with black clothing (prevent pest, absorb heat)
When the container is full, transfer the content into a cardboard box or sack, leaving behind an ample amount as seed compost for your next round of composting. Store the removed compost for two weeks to allow it to mature.

*Using semi-mature compost (which has not fully decomposed) can damage plant roots because the fermentative micro-organisms are still active and will emit gas and organic acids.*
5) Add food waste until the container is filled up to the **90%** of its height. Then you can take out 1/3 for use.

Put it in a cardboard box and keep it for **2 weeks** (to let all the food waste to complete decomposition).
Spread the compost on the field, and plough it to a depth of about 20cm.
Spread compost over soil, after planting crops.
Bury compost to a depth of 20cm around a tree.
1. Spread compost fertilizer all over the field. Turn in compost about 20 cm depth of the soil.
2. After planting a plant, mulch with compost.

→ Soil becomes soft.
  (Easy to plow.)
→ Prevent growth of weed.
3. Dig a ditch around the plant 10cm depth. Spread compost fertilizer the inside of the ditch.
COMPOSTING METHODS

Features:
1. Fast and less space requirement
2. No foul smell (not rotting)
3. Low-cost, low-tech and easy operation
4. Using only local materials
5. Active microorganism in compost enriches the soil
Now, city of Surabaya has greened with plants by the coordinated effort of the residents using compost fertilizer. Then the city become clean and green.

Let’s do “THM” Composting!
“THM” composting is the easy and inexpensive way to do composting.

By implementing this compost, we can reduce waste and can keep cleanliness of our surroundings.
Advantages of the “THM” composting

- Fast, easy and economy method;
- Hygienic improvements in our living environments;
- Elimination of foul odors & emission of methane gas;
- Reduction in organic waste generation (reduce global warming);
- Economic Benefits (for both Council & individual).
Takakura San
Collection of organic waste from Sibu Central Market
Collection of organic waste from Rejang Park Market
Important Pointers: -

- Stir the content once a day even no waste is put in (to supply oxygen);
- Treat your kitchen waste daily (do not leave over night);
- Cut your kitchen waste into smaller pieces (for faster decomposition);
- Do not add in bones, drain away gravy as well;
- Do not add in water as your kitchen waste already has moisture content;
- Do not place your basket under direct sunlight and avoid from rainfall.
TRY THM &
THANK YOU