

## **VERMI-COMPOSTING**

The process of decomposition of organic matter by the earth worms is known as vermin composting.

### **EARTHWORMS:**

Earthworms are invertebrates which live in soil. Earthworms are hermaphrodites (bisexual) and most species reproduce by cross- fertilization. The two mating worms exchange sperms and later lay egg capsules (cocoon). Each cocoon contains 2-3 eggs. Earthworms can generate both anterior as well as posterior portions of their bodies. Posterior portion grows more readily. Clitellum formation indicates sexual maturity and adulthood in worms. Average life span of earthworms is about 15 years. Water constitutes 75-90% of the body weight of earthworms. (Water loss, therefore, could be a major problem for their survival).

In India, the earthworms are active in the rainy season of 4-6 months (June-Nov.) due to humid sub-tropical climate. The food for earthworms comprises of plant material, living protozoa, bacteria, fungi, other micro – organisms and decomposition remains of

animals. These are extracted from large quantities of soil that pass through the gut. The organic matter thus provides them necessary nutrition.

The earthworms mix the organic matter from the surface with the mineral matter of the soil and then eject this material as casts. The castes contain many enzymes which continue to disintegrate organic matter even after they have been excreted. They give rise to crumble texture of a fertile soil.

Temperature greatly influences the activity, metabolism, growth, respiration and reproduction of earthworms. At unsuitable temperatures they can migrate away from soil or deep into the soil. The rich humus of casting supports the growth and survival of micro-organisms. Chemical analysis of castes shows higher amount of magnesium, nitrogen, phosphorus and Potassium than any other form of organic compost. Fluid passed by them is rich in ammonia and urea.

### **COMPOST PREPARATIONS:**

#### **i. Site Selection:**

Shady and protected area should be selected as the worms prefer dark and moist conditions.

#### **ii. Construction of pits:**

The pits can be constructed of various sizes using different constructional materials. The construction of pit can be done in the form of

- Cement tanks (This is ideal for demonstration purposes). The ideal size could be 6'x4'x3' in outer dimension. It should have holes at the base for drainage of excess water and a bit higher in bottom in centre to prevent water logging.
- Soil pits (The depth should not be more than 3 feet)
- Stone lined pits
- Wooden boxes and
- Outstanding heaps (large scale)

#### **iii. Filling of pit:**

The bottom layer of upto 2 inches is filled up with broken bricks and topped with coarse sand to aid in drainage. Suitable soil where earthworms are found should be added to the pits as a second layer of 6-8 inches (hard clay or sandy soil should be avoided).

Large size adult worms are distributed uniformly in the soil bed. Fresh dung is then added over the soil layer and covered with straw or dry leaves. The pit is kept moist by periodic addition of water. Suitable material is put to cover the pit to protect from predators while allowing for aeration.

Water is added on alternate days in suitable quantities as per the water holding capacity of the soil. After about 2 weeks the earthworms adapt to the new environment. From this stage onwards 2 to 3 inches of waste materials comprising of fresh and dry leaves, vegetable waste and 10-15% of dung is added twice a week. After each fresh feeding the layers of feed must be turned for effective degradation and release of produced gases. This also helps in reducing temperature in the organic feed materials. The turning must be done carefully twice or thrice a week without disturbing the bed. The most suitable tool is

the long handled garden fork which would avoid injury to the worms during mixing.

#### **Harvesting:**

After about 2-3 months the pit gets more or less filled and the organic matter is well decomposed. Before harvest watering is stopped so that worms move to the soil bed. The decomposed waste is then transferred as a heap on a plain open surface under the sun. This allows the worms to move to the centre of the heap from where they are recovered and returned back to the pit. The compost is then dried and sieved through 3 mm mesh and then packed. The un-decomposed large matter is returned back to the pit and the process is thus repeated.

Prepared by:-

Athokpam Haribhushan Singh (SMS-S.Sc)  
Yanglem Kenedy Singh (SRF-NICRA)

Published by:-

Dr. N. Jyotsna  
Programme Coordinator  
KVK-Sylvan, Hengbung, Senapati District,  
Manipur-795129



#### **VERMI-COMPOSTING TECHNOLOGY**

“Use vermi-compost to prevent from ill effect on rapid use of chemical fertilizers”

(Published under NICRA project)



**Krishi Vigyan Kendra-Sylvan  
Hengbung, Senapati District,  
Manipur-795129**  
[www.kvksenapati.org](http://www.kvksenapati.org)  
**Email: [Sylvankvk@rediffmail.com](mailto:Sylvankvk@rediffmail.com)**