Vermiculture in India

In the past ten years an organization in India has prompted over 2,000 farmers and institutions to switch from conventional chemicals to the organic fertilizer, vermicompost. Noted for its ability to increase organic matter and trace minerals in soil, vermiculture has been the primary focus at Maharashtra Agricultural Bioteks in India, an organization which has initiated both commercial and educational ventures to promote vermiculture.

In 1985, Maharashtra Agricultural Bioteks was formed and established a small plant to manufacture vermicompost from agricultural waste. Those involved believed that a successful commercial venture based on regenerative principles might convince others to adapt sustainable practices.

The organization currently produces 5,000 tons of vermicompost annually. Its real achievement, however, has been in raising awareness among farmers, researchers and policy makers in India about regenerative food production methods. The group is directly responsible for 2,000 farmers and horticulturists adopting vermicomposting. These converts have begun secondary dissemination of the principles they were taught.

In 1991-92, Maharashtra Bioteks and the India Department of Science and Technology promoted the adoption of vermicompost technology in 13 states in India. The group has also established a vermicompost unit with Chitrakoot Gramodaya University, Madhya Pradesh which produces five tons of vermicompost per month.

Education and Demonstration

Nearly 1,000 farmers have reduces their use of chemical fertilizers by 90% by using vermicompost as a soil amendment for growing grapes, pomegranates and bananas. Similar work is underway on mangoes, cashews, coconuts, oranges, limes, strawberries and various vegetable crops.

The organization has devised methods to convert biodegradable industrial waste like pulp waste from paper mills and filter cake and liquid effluent from sugar factories into vermicompost. These wastes are commonly regarded as pollutants, but three facilities are already producing thirty tons of vermicompost each month from this waste.

The organization has also created a program which trains housewives and home gardeners to produce their own vermicompost from household and garden waste. The aim of this work is to increase awareness about regenerative practices. To this end, vermicompost kits have been developed and distributed and in one year 100 housewives were trained to use the kits.

Through its programs with farmers, institutions and at the government level, Maharashtra Agricultural Bioteks is convincing people that vermicompost presents a healthy alternative to chemical fertilizers.

Contact:

Dr. Henamgee Jambhekar Maharashtra Agricultural Bioteks B/9 Shivai Housing Society Near Sane Guruji Smarak Pune, 411 030, INDIA Fax: 91-212-431983

What is Vermiculture?

Through the simple act of eating, earthworms promote bacterial growth, enhance soil structure and hasten the decomposition of organic matter. However, due to different feeding habits, not all earthworms are suitable for vermiculture.

Earthworms are divided into two groups: humus formers and humus feeders. The first group dwell on the surface and feed on nearly 90% fresh organic materials and 10% soil. They are generally red in color, have a flat tail and are also called epegic or detritivorous worms. It is these worms that are harnessed for vermicomposting. The second group, the humus feeders, are deep burrowing worms that are useful in making the soil porous and mixing and distributing humus through the soil.

Preparing Vermicompost

Materials- Breeder worms, a wooden bed and organic wastes. The bed should be 2 1/2 ft. high x 4 ft. wide x any length desired. Plan on applying two parts worms for every part waste.

Sieving and shredding- Decomposition can be accelerated by shredding raw materials into small pieces.

- Blending- Carbonaceous substances like sawdust, paper and straw can be mixed with nitrogen rich materials such as sewage sludge, biogas slurry and fish scraps to obtain a near optimum C/N ratio of 30:1/40:1. A varied mixture of substances produces good quality compost, rich in major and micro nutrients.

- Half digestion- The raw materials should be kept in piles and the temperature allowed to reach 50-55OC. The piles should remain at this temperature for 7 to 10 days.

- Moisture, temperature and pH- The optimum moisture level for maintaining aerobic conditions is 40-45%. Proper moisture and aeration can be maintained by mixing fibrous with nitrogen rich materials. The temperature of the piles should be within 28-30OC. Higher or lower temperatures will reduce the activity of microflora and earthworms. The height of the bed can help control the rise in temperature. The pH of the raw material should not exceed 6.5 to 7.

After about a month the compost is ready. It will be black, granular, lightweight and humus-rich. To facilitate separating the worms from the compost, stop watering two to three days before emptying the beds. This will force about 80% of the worms to the bottom of the bed. The rest of the worms can be removed by hand. The vermicompost is then ready for application.

Jambhhekar, Hemangee. Maharashtra Agricultural Bioteks training material.