Vermi-compost production to enterprise: case studies from Bangladesh

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Author's Background

Dr. Tanveer is a former scientist of Bangladesh Rice Research Institute. He has been awarded the Grand Prize of 'Organic Farming Innovation Award (OFIA)" in 17th IFOAM Organic World Congress 2011 in South Korea and presently serving as a Board Member of IFOAM Asia.

Summary

In recent years organic agriculture practices have been gaining support from both consumers and producers in Bangladesh. Considering the economic benefits and environmental advantages, one such practice vermi-compost, or worm based composting, is growing in popularity with small-scale households. In the program study area it is fostering entrepreneurship, and with proper guidance and monitoring, is demonstrating that it can be a profitable enterprise.

Background

Commencing in the 1960s the Green Revolution in Bangladesh promoted the indiscriminate use of chemical fertilizers and pesticides to obtain higher crop yields. However, over time, the persistent use of chemicals, without corresponding attention being paid to sustaining soil organic matter, has reduced the productivity of Bangladesh's tropical soils. Today there is a scarcity of cost effective alternatives available to farmers to rebuild their soil structure and nutrient balance. The most cost effective way for farmers to tackle such environmental degradation is to harvest unutilized organic biodegradable wastes in order to convert them into compost within a short period.

Vermi-compost, which is nothing more than the excreta of earthworms, can be used as an excellent and proven soil ameliorant. Vermi-compost is rich in humus and provides a wide range of essential plant nutrients. It has demonstrated an excellent effect on overall plant growth encouraging the growth of new shoots and leaves while improving the quality and shelf life of the final produce. Vermi-compost is easy to apply, handle and store and does not have any negative odours. Tests have shown show that vermi-compost generally contains 2.5-3.0% Nitrogen, 1.8-2.9% Phosphorus and 1.4-2.0% Potassium.

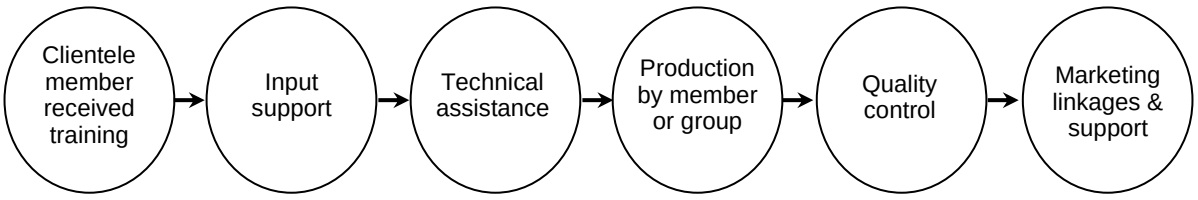
Since 2010 Friends in Village Development's Livelihood Enhancement Programme (LEP) has been promoting vermi-compost production to rural households and has also provided training to farmers. Vermin-compost is currently used at a limited scale in household vegetable production, but, our Participatory Action Research (PAR) has demonstrated the effectiveness of vermi-compost in larger-scale vegetable production (Hossain et. al. 2012). In 2012, a total of 148 producers generated 14,399 kg of vermi-compost, compared to a total of 43 producers who generated 2677 kg of compost in 2011.

Main Chapter

Vermin production to marketing:

The farmers combine locally available red worms (*Eisenia foetida)* with cowdung and banana stem in a suitably constructed container or 'ring' (Reinforced Cement Concrete, RCC), and have achieved high quality vermi-compost after only 40-45 days. FIVDB plans to eliminate poverty in extremely poor households by scaling up this technology through social skill development and training to improve the value chain in following way:

Value chain



It was observed that on average it cost approximately BDT1830 (USD 1 = BDT80) to establish a vermi-compost system including the two 'ring's, shed and the purchase of the earthworms (except banana stems and cowdung that locally available). Income generated from selling earthworms and vermi-compost averaged BDT 11250 per year. The average

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profit was BDT 9420 from two rings in addition to other environmental benefits. Detailed below are two case studies of vermi-compost production and enterprise development.

Case study 1:

Kumarshail is a small village in Borolekha upazilla of Maulvibazar district. Nooruddin is a member of the Community Learning Centre (CLC) established by FIVDB and operated by the local people. Nooruddin is a vegetable grower with 5 decimals of land. He used chemical fertilizer and pesticides for vegetable production. With such a small parcel of land Nooruddin could barely raise sufficient income for his family's subsistence. Nooruddin received training on commercial vegetable production from the CLC programme and became aware of the benefits of vermi-compost for crop production and soil improvement. In October 2011, he started vermi-compost production in two rings with 250gm of earthworms gathered from his neighbourhood. In December 2011 he commenced using vermi-compost on his vegetable field and observed the effectiveness of this organic manure. He has today ceased using chemical fertilisers completely. Today he is growing brinjal, tomato, okra and cabbage on 18 decimals of land, with the additional land leased from a neighbour. He has set up another brick-made shed (36 inch x 36 inch) to increase production of vermi-compost. From the two sheds he is harvesting 120kg manure each 45 days. He has harvested a total of 1,858kg of manure from two sheds in last 24 months (16 batch). Neighbouring farmers observing the methods used by Nooruddin were impressed and they also started vermi-compost production purchasing earthworms from him. He sold 7kg of earthworms valued at BDT800 per kg. Nooruddin is now planning to produce more vermi-compost by establishing more sheds and selling the compost in one kilogram packets at the market. He believes that the demand for vermi-compost will increase as will the profit from his business.

Case study 2:

Mr. Abdul Ali is a CLC member of Hajaripur village under Dirai upazilla of Sunamganj district. In September 2011, he received training on vermi-compost production and started to produce vermi-compost with two rings, with technical support provided by FIVDB. Until Sept 2013 he has harvested 354kg of fertilizer for commercial vegetable production on his 20 decimals land. Neighboring farmers were impressed by the performance of his vegetables and the vermi-compost shed. Neighboring farmer Mr. Ershad Miah acquired 2kg of compost from Mr. Ali and applied it to his household vegetables. After seeing the improved performance, Mr. Miah purchased 300gm earthworms from Mr. Ali at BDT 400 and started to produce vermi-compost in the two rings. Mr. Ali also sold earthworms to another three people. Both of them said that the performance of vermi-compost was superior to chemical treatments and the popularity of vermi-compost in growing rapidly in the surrounding area.

Core Messages and Conclusions

Results showed that vermi-compost can effectively enrich the fertility of soil and can be used as an alternative source of chemical fertilizer. The technology is very easy to adopt and has the potential to improve the crop production and livelihoods. The farmers benefit in two ways. The first is the availability of vermi-compost for their own domestic use, and the second from the sale of earthworms and compost to neighboring farmers and markets. This simple technology is already demonstrating effectively that it be used to lift very poor households from extreme poverty.

References

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