Discussion

We released 1000 earthworms to the vermicompost box. At 60th day of the start of experiment we observed the formation of vermicompost. We also observed that from 30th day the earthworms were starts to reproduce. As a result of which we observed numbers of earthworms at time of harvesting. These observations were consisted with many workers. In a report of MBM CARI, it was stated that within 2 months, 4-5 kg of worms can be produced from 10 to 20 numbers which can be utilized for farm scale vermicompost production. According to Pulikeshi et. al. (2006), *E. foetida* is the most efficient in waste processing. They also reported that *E. foetida* tolerates 0 to 35^0 C with optimum temperature of 30^0 C and moisture of 85%. Garg et al (2006) conducted a study (100 days duration) to evaluate the efficiency of *Eisenia foetida* for decomposition of different types of organic substrates and he found that *E. foetida* is suitable for the decomposition of different types of organic wastes. Edwards (2000) observed that the process of vermicomposting is successfully completed in 60 days if favorable growth conditions are provided to the earthworms. In his studies he provided a temperature range of 0-35° C, a moisture range of 60-90 percent, and a pH range of 5-9 to the earthworms of the vermicomposting bin. In a study, Verma (2011) observed that *E. eugenia* produced a depth of 63 cm of vermicast production on the 48th day.

In our experiment, our input was 35 kg in each of the boxes (35 kg for compost and 35 kg for vermicompost box). At the end of the experiment, the output of the vermicompost was 16kg (i.e., 45.71%); and the output of compost was 20kg (i.e.,57.14%). In OACC Manual of On-Farm Vermicomposting and Vermiculture, it was stated that in conventional composting 50% of the mass is lost, mostly as moisture and CO_2. Some N is lost as ammonia, but if the process is well managed the N loss is minimized (Rink et al, 1992). Of course, final weight and volume of product varies with original feedstock, bulking agent used, etc.

In vermicomposting or vermiculture operations, the high-C materials are used as bedding, while the high-N materials are generally feed stocks. Although similar processes are taking place in the bed (including conventional composting due to the action of micro-organisms), some systems encourage the addition over the course of the process of greater amounts of N relative to C than would be the case with conventional composting. Since some high-N materials (e.g., fresh food wastes) can be higher in initial water content than high-C bedding materials, weight losses during the vermicomposting process can be higher. Another factor reducing final output

quantities in vermicomposting is the amount of material converted into worm biomass. This material is largely lost to the final product because most of the worms are removed from the product prior to completion of the process. Alternatively, vermicomposting processes can also allow for higher amounts of overall C to be processed. For instance, in a report (GEORG, 2004) it was stated that shredded paper and cardboard can be converted into vermicompost with the addition of as little as 5% poultry manure, by volume. The result of this process is a product weight closer to 50% of the initial input weight. Another factor reducing final output quantities in vermicomposting is the amount of material converted into worm biomass. This material is largely lost to the final product because most of the worms are removed from the product prior to completion of the process.

In a report of TNAU AGRITECH PORTAL in organic farming, it was stated that the harvested vermicompost should be stored in dark and cool place. It should have minimum 40% moisture. Sunlight should not fall over the composted material. It will lead to loss of moisture and nutrient content. It is advocated that the harvested composted material is openly stored rather than packed in over sac. Packing can be done at the time of selling. If it is stored in open place, periodical sprinkling of water may be done to maintain moisture level and also to maintain beneficial microbial population. If the necessity comes to store the material, laminated over sac is used for packing. This will minimize the moisture evaporation loss. Vermicompost can be stored for one year without loss of its quality, if the moisture is maintained at 40% level.

Vermicompost has the ability to stimulate plant growth. We have found that the plants receiving vermicompost showed improved growth than the plants receiving compost. Many researchers have found that vermicompost stimulates further plant growth even when the plants are already receiving optimal nutrition. Atiyeh at al (2002) conducted an extensive review of the literature with regard to this phenomenon. The authors stated that: "These investigations have demonstrated consistently that vermicomposted organic wastes have beneficial effects on plant growth independent of nutritional transformations and availability. Whether they are used as soil additives or as components of horticultural soil less media, vermicomposts have consistently improved seed germination, enhanced seedling growth and development, and increased plant productivity much more than would be possible from the mere conversion of mineral nutrients into more plant-available forms."