

ABSTRACT

This study has been carried out to investigate the feasibility of a windrow composting pilot for domestic organic waste recycling in Beit Liqia village – Palestine. In order to overcome the problems related to waste collection and disposal and their negative impacts on human and environment health. The study aimed to reduce the amount of waste to be landfilled, promote recycling, protect human and environment from pollution risks, restrict the excessive use of fertilizers and to find new job opportunities. Composting is a basic element of ISWM strategy which means the aerobic biological degradation of organic materials to produce carbon-dioxide, water, minerals and stabilized organic matter. The end product called compost. The study area was Beit Liqia village in the south western of Ramallah city, the village has a total area of 14000 dunoms. About 12920 dunoms are agricultural land, planted with crops, vegetables and olive trees. This village has been selected because it is suffering from SWM problems, like scattered garbage in the streets, odors, smog air and pollution of soil and water. Also this village has a large area of agricultural land, so large quantities of compost are expected to be consumed. Many tools were used for data collection included meeting with municipality leader and municipal waste management staff, and weighing domestic organic waste, and community survey using questionnaire. A pilot-scale compost pile of 400 kg of organic waste was erected. After six months samples of end product (compost) were analyzed at The Water and Wastewater Lab of Birzeit University. The quality of compost was checked through physical, chemical and biological parameters (pH, EC, C/N, OM, TN, TC, TP, and HM). Results analysis revealed that domestic organic waste generation equal to 0.55 kg/cap.day which can result of 4.3 ton.day⁻¹ for Beit Liqia village. The percentage of yield was 46.5%. Compost characteristics were compared with international standards. The compost content of heavy metals was within the acceptable range. A decentralized composting facility was proposed after a feasibility study through cost / benefit analysis. NPV= 310131 NIS, BCR = 1.32. The study concludes that initiating a national windrow composting program for domestic organic waste is a feasible waste management alternative, and this program will reduce environmental pollution, and improve soil properties and increase the farm productivity.