Abstract

This study has been carried out to investigate the quality of organic domestic waste (compost) available in the West Bank local market and farmers' acceptance of its use in Hebron district in Palestine. In Hebron district, there are about 530,632 dunums of agricultural land, planted with crops, vegetables and olive trees. Hebron district was selected for this study because of its large agricultural area which requires large quantities of compost, in addition to the environmental problems in this area related to solid waste which causes air, water and soil pollution.

A questionnaire was used as a tool for data collection from farmers, as 321 questionnaires were analyzed. Compost samples were analyzed in the laboratory of the Palestinian National Agricultural Research Center (NARC), Qabatiya - Jenin. The quality of compost was checked for some of the physical and chemical parameters (pH, EC, C/N, OM, TN, TC, TP and the concentrations of Cl, Ca, Mg, Na).

The surveyed sample distribution was analyzed based on different socio-economic variables. 90% of the surveyed sample was living in urban areas, 54% of respondents live in a house where the number of members in the household is (5-8) members, 82% of respondents were living in independent house, and 67% of respondents have a monthly income in the range of 1501-3000NIS.

Regarding the trends of farmers, 97% believe the need to improve Solid Waste Management (SWM), 51% believe that source separation is needed for improving SWM, 80.7% believe that recycling should be the mean for disposing SW. The highest percentage of respondents (54%) who have higher education, believe that compost is better than chemical fertilizer because it produces healthy food without chemicals compared with other levels of education.

There was also a statistically significant relationship ($p < 0.05$) between the type of household and the believe that compost is better than chemical fertilizer because it contains useful substances. The highest percentage of farmers who live in independent houses (36 %) believed in that. Regarding the type of crop, it is found that the highest percentage (95%) of farmers who believe that compost is better than chemical fertilizers farmers was those who grow vegetables in their farms.

Fourteen compost samples were tested to verify the physical and chemical quality of compost. Out of the 14 tested samples, only two of them exceeded the recommended range of pH which is between 6.9 and 8.3. The content of organic matter in six compost samples was greater than the lowest critical threshold level of 30%. As an indication for maturity, the C/N ratio of 18.6 indicates a maturate compost in all samples. The EC was well beyond the recommended one indicating high concentration of salts that may affect the biological activity. Ten of the tested compost samples contained adequate amounts of TN and all of the tested compost samples contained sufficient amounts of available NO_3-N. The concentration of available PO_4-P was found to be quite low in the all tested compost samples. Only two compost samples contained sufficient amounts of calcium required for plant growth, but concentration of calcium for twelve samples was found to be quite low and below the lower threshold level 0.08% dw. Eight of the tested compost samples contained the typical range concentrations of magnesium, however in six samples have been contain magnesium below the lower threshold level (0.02% dw). The average of the C/ N ratio for the compost samples was calculated to be 9.99%, which is below the recommended limit of 25 stipulated by the EPA. So monitoring of the feedstock and the composting process should be carried out in order to achieve a stable compost with its parameters within the recommended limits.