SUMMARY

5 summARY AND CONCLUSION

Study of some Engineering and Environmental Parameters to Compost Production

The main objective of this work is to compare the quality of produce compost using two different methods. A another objective is to evaluate the need for sieving the compost and its influence on the quality.

The experiment was carried out at Training Center for Recycling of Agricultural Residues (TCRAR) at moshtohor. During 2006 season to examine some of the factors affecting the engineering rapid production process and quality of compost and study the effect of sifting process on the quality of final compost product. Two sieves granules (2 and 10 mm) were used throughout turned and static compost experiments.

The obtained results can be summarized as follows:

1- Comparisons between two types of composting processes turned and static.

2- Study the effect of sifting process on the quality of final compost product.

Materials:

1: compost:

input compost been working compost using farm waste, which is the remnants of livestock and plant residues was the

rice straw as an essential and remnants of maize stalks and sewage sludge treatment and analysis were as follows :

Organic Materials / Characters	Cattle dung	Maize stalks	Rice Straw	Sewage sludge
'Iota! Nitrogen %	1.53	1.09	**0.49**	3.14
Total Organic Carbon%	44.95	46.58	44.94	37.68
C/N Ratio	29.37	42.73	91.71	12.00
Total Phosphorus `)/0	7.3	0.067	0.34	1.046
Total Potassium "A,	1.43	0.284	0.52	0.433
Bulk Density kg/m^3	1128.4	54.03	72.16	420.82
Moisture Content %	81.08	7.55	5.34	4.40

2: Experimental procedure:

Six piles were carried out at Training Center for Recycling of Agricultural Residues (TCRAR) at moshtohor and prepared using rice straw, maize stalks, sewage sludge and Cattle dung. The amounts of each of the previous materials were calculated to give a mixture of C/N ratio about 30:1 by Compost Recipe Calculator (Fig 1).The materials of each pile were thoroughly mixed and stacked in several layers at site area of about 2.25m(W) x 12m (L) x 1.70m (H). The previously mentioned mixture of organic materials was used in preparing compost by two different methods, i.e. static and turned. For sifting evaluate one objective of the works is study the effect of sifting process on the quality of final compost product. Two sieves grades (2 and 10mm) were used throughout turned and static compost experiment .Compost quality parameters used in this investigation were its content of elements and organic matter.

3-Results:

3-1 Compost **Production:**

3_1_1_ The physical and chemical changes:

Recorded temperatures showed higher rates during thermophilic phase which began two days after the compost and lasted for about 50 days in static compost, and about 30-35 days in turned compost, which rose temperatures reaching a maximum (60-70 °c) during the first twenty days of the beginning composting of all pile.

- Mesophilic phases continue more than one day of the experiment and then start back again after the end of the thermophilic phase and lasted for about 40-45day in static compost, while 28 days in turned compost, which had temperatures of less than 45 °c higher than 30 °c.

- Carbon dioxide was more valuable than 15% in static compost, but in the turned went up 19% or more before turning then dropped both at the end of the manufacturing process to be close up to 2%.

- EC salinity: increased the (salinity of compost) increased with time elapsed of showing 11.34 dS /m in turned compost and 7.04 dS /m in static compost inhabitant at the end of the maturity.

- pH arrived in turned compost to 7.94, while that of the static compost to 8.06.

- The CEC Increased from 36.11 at the start of the experiment to 88.98 and 68.93 Meq/100g compost for both turned and static compost respectively at the stage of maturity.

- Carbon / nitrogen ratio was in low values where declind from 29.88 to 14.51 and 13.44 in both static and turned compost maturity respect.

3-1-2: changes in the concentration of elements:

3-1-2-1 - Concentration of ammonia decreased by increasing of time period of compost from 481 to 48 and 31 mg / kg at the end of the manufacturing phase of static, turned compost, respectively.

3-2-5. C/N ratio:-

Organic carbon content (OC%) during sifting process decrease from 27.72% for the final static compost to 26.67,26.24,26.69% and 26.75% for granules less than 10mm, granules less than 2mm compost reject for 10mm and compost reject for 2mm respectively. On the other hand in turned compost the organic carbon content was 23.09% for the final compost and decreased to 22.56,22.31,22.78% and22.94% for granules less than 10mm, granules less than 2mm compost reject for 10mm and compost reject for 2mm respectively during sifting process.

3_2_6. Changes in total nitrogen:-

Total nitrogen percent (TN %) during sifting process, indicated that a significant decrease from 1.91% for the fmal static compost to 1.68,1.01,1.41% and 1.76% at Granules less than 10mm, Granules less than 2mm compost reject for lOmm and compost reject for 2mm respectively. On the other hand in turned compost the total nitrogen content was 1.72% for the final compost and decreased to 1.42,0.82,1.32% and 1.491% for granules less than 10mm, granules less than 2mm compost reject for lOmm and compost reject for 2mm respectively during sifting process.

It is clear that sift process to remove granules greater than 10mm in this granules mines containing part-Degradable or humus and organic matter and the main reason to reduce the quality and content of the fmal elements in the final product.