



NATIONAL CAPITAL DISTRICT COMMISSION
Community & Social Services Dept.
Waste Management Division



Memo

TO : Manager- Waste Management

FROM : WMO- Raga

DATE : 1st of September 2014

SUBJECT : SHORT TERM TRAINING ON COMPOSTING AT FIJI-
(LAUTOKA, SIGATOKA & SUVA)

In reference to the above,

Please find attached detailed composting training at the above mentioned areas from the 25th- 29th of August 2014.

The short term study was purposely for me to know the different types of composting methods used by the above cities and town.

It was a good experience, and has helped in how best the composting can be done. Most techniques used were almost similar except for machinery used and micro environmental organisms used. Suva city council was the only organization to have their compost tested at a lab however, the Lautoka & OISCA do not.

LAUTOKA CITY COUNCIL- 25th – 26th August 2014

The day started at 9.00 am. After presentation made by Mr. Singh (Snr. Health Inspector), and discussions we took a walk down to the (Lautoka municipal market) to see the collection system used at the market.

The contractor is in charge of segregation of wastes at the market, which is a part of the contract agreement thus the contractor segregates all wastes from the market before disposing at the Vunato landfill.

The market is well organized with vendors divided into the types of vegetables sold. There is an area allocated for vegetables, processed goods, sweets and fish, in which bins are placed at selected areas within the market for disposal of wastes.

There are 2 bins allocated in each area. The green bin is used for green wastes and the blue bin is for other wastes, such as cartons, papers, plastics and etc.



Figure 1: Lautoka Municipal Market

Awareness

Awareness regarding segregation of wastes is done by the contractor. This is to ensure the wastes is properly segregated before disposal. However, there are some vendors who do not adhere to the awareness. Therefore the contractor does segregation again before final disposal at the Vunato landfill.

Segregation, Collection & Disposal of Market Wastes.

Segregation is done by the vendors however final segregation is done by the contractor before disposal is done at the Vunato landfill.



1.2 Bins used to segregate wastes. The Green bins are for green wastes only and the blue are for other wastes.



1.3 A vendor cleaning taro into the bin 1.4 Green bin for green wastes.

Composting Site

The compost is done at the Vunato landfill. An area is allocated near the entrance of the dump. They use a simple method of composting, in which all green wastes are put in piles. The pile is turned after two weeks thus the composting period takes more than 4 weeks before final product is packed and sold.



1.5 All green wastes taken to Vunato 1.6 The compost yard at the landfill



1.7 One of the compost piles



1.8 Mr. Singh explaining how the Compost is done and when it is ready.

Machines & Equipment

The Lautoka City Council does the transportation and composting. All wastes are taken to the dump site and are manned by 3R officers who are at the dump daily. The turning of the compost pile is done by using the backhoe as the pile is too heavy for the officers to turn.



1.9 Siever used to sieve the green wastes before packing

METHOD FOR COMPOSTING

1. Market wastes is transported to the landfill
2. Bed cover used (Wood Chips), are placed on the ground before putting the pile of compost on.
3. The compost is than covered with wood chips again and left and the next load put on until such time the wastes is seen to be enough for the next pile to be made.
4. The compost is turned after two weeks by using of backhoe until after three months, the compost is ready.
5. Once the compost is ready, the 3R officers then, sift the soil.
6. The end product is than packed and sold to residents/business houses who show interest.
7. Water is added, where need be.



1.10 An example of home composting.



1.11 Decomposition process in green wastes

OTHER ACTIVITIES

A contractor collects only tree cuttings and grass cuttings for composting for his beautification program.



1.12 A compost pile in the contractor's yard.



1.13 Compost placed in polythene bags for planting



1.14 Mr. Singh explaining how home composting is done to a resident who went to buy a compost Bin.



1.15 Public Place Cleaning.

SIGATOKA TOWN COUNCIL 27th OF AUGUST 2014.

Awareness

Awareness is done at the market by the market manager and the staff. Apart from verbal announcements made, posters are also put where the bins are located for the vendors and buyers to follow.

Although awareness are done, people still do not follow therefore the staff segregate wastes before the bins are transported to OISCA Fiji in Sigatoka.



2.1 Posters are placed above bins for segregation



2.2 Bins placed below the posters.

Composting

All market wastes are segregated and transported by the Town council to OISCA Fiji which is located about 1 hour drive from the city.

OISCA which is a non-profit organization employing youths who are unemployed, do the composting. It takes 2 months before the final product is made. However, the compost is not sold as they use it for their gardens and farms and also to fertilize the soil which the cows and the horses graze on.

Machines & Equipment.

No machine is used as they use manpower to manage the compost. The green wastes unlike Lautoka are placed in a shelter made of 3 compartments. The green wastes are moved from one compartment to another, as the decomposition process takes place. They use micro environmental organisms to prevent the bad smell from rising. They do not have any temperature gauge however use their palms to estimate the temperature.



2.3 Mr. Vuratau explaining how composting is done at OISCA Centre Fiji



2.4 Compost heap in Cell 2.

METHOD FOR COMPOSTING

1. Market wastes is transported to the agriculture site (OISCA Fiji)
2. The green wastes are than placed in the first pile than left for a week before the employers turn the pile for aeration.
3. The compost is turned after two weeks by the staff and also adding micro environmental organisms to prevent bad odour.
4. As the decomposition process takes place, the wastes are moved from one cell to another.
5. The end product is than taken to the storage room for delegation to selected plots and areas for agriculture and livestock purpose.
6. Water is added, where need be.



2.5 One of the nurseries at OISCA



2.6 the micro Environmental Organisms used for reduction of smell of decomposition process

SUVA CITY COUNCIL – 28th & 29th AUGUST 2014

The day started at 9.00 am. Introductions were done by Mr. Robert Randolph before presentations were done. After the presentation, a trip to the Suva Market was done.

Awareness

Awareness is done by the Health Inspectors and the market staff. Segregation is properly done by the vendors. Thus it is easy for the 3R team to take the green wastes to its composting site. The green wastes are separated from the other wastes which are put in a skip bin for the contractor to collect on a daily basis.



3.1 Coloured bins placed for segregation.



3.2 Green wastes ready to be taken to the Compost Site.



3.3 Skip bins used for transportation for Other wastes to the landfill



3.4 Green wastes loaded to be taken to the Sambula compost yard.

Compost

The wastes are taken to the compost site (Sambula compost site), where the green wastes are chipped using a chipper. This is to ensure the decomposition process is faster. The wastes are then turned using man power, as the pile is manageable.



3.5 Compost yard, Suva City



3.6 The Compost Team & Yard at the back.



3.7 Bins lined for chipping.



3.8 The Chipper.



3.9 New pile of chipped (notice the leachate?)



3.10 Compost pile ready for packing.

METHOD FOR COMPOSTING.

1. Market wastes are segregated at the market by vendors. The green wastes are transported to the compost site, however, the other wastes are taken to the landfill.
2. Green wastes are then chipped using the chipper(The chipper not only makes the particles smaller which makes the pile smaller, it helps with a quicker process of decomposition process)
3. Green wastes are then placed in piles, than turned daily until ready after 3 months.

Other Activities

1. The Suva City Council have secured farmers who are interested in feeding their livestock with green wastes (vegetables and greens), thus the wastes are taken to the farmers by the farmers whilst the rest are taken to the compost site.



3.11 Green wastes piled at piggery



3.12 Feeding the pigs with green wastes.

2. They are also working with their Agriculture Department, to create a livestock feed made out of dried green wastes. This is due to the fact that it is expensive to import goods from other countries.



3.13 Some of the dried green wastes.



3.14 Dried cassava

Lessons learnt:

1. To have a base and cover such as wood chips, would help contain the moist and aeration, instead of having a cement floor bed. (saw dust was discouraged as the particles are too small)
2. It would be better if micro environmental organisms are used in order to prevent bad odour in the decomposition process.
3. To quicken the decomposition process, it would be better to have a chipper. (The chipper, Suva city council use was donated JICA). That is why I have proposed in the budget for manpower to be paid, as they will have to cut the bulky green wastes with bush knives and also turn the pile on a daily basis for aeration.
4. The compost heaps does not necessarily need a shelter, however, due to our unpredicted weather, I suggest a covering should be made available such as tarpaulins/canvas for same.

PEOPLE & PLACES

NO	DATE	PERSON IN CHARGE	AREAS VISITED
1	25 th & 26 th August	Mr. Shalend Singh. (Lautoka City Council, Snr. Health Inspector)	Lautoka Municipal Market, Vunato Landfill, public place cleaning, grass cuttings etc.
2	27 th August	Mr. Koki Takano (JOCV, Sigatoka Town Council)	Sigatoka Municipal Market, Sigatoka Dump, OISCA Fiji
3	28 th & 29 th August	Mr. Robert Randolph (3R officer, Health Inspector Suva City Council)	Suva Municipal Market, Sambula Compost Site, Agriculture Dept., Piggery.

I would prefer using the method the Lautoka City Council are using as it is cheap and does not produce a lot of leachate and bad odour. However, it would be better to have a chipper as it would shred the bigger pieces of green wastes to make the decomposition process quick and more manageable.

SUMMARY

ITEM	LAUTOKA	SIGATOKA	SUVA
Target Wastes	Market Wastes	Market Wastes	Market Wastes
Composting Location	Vunato Landfill	Farm (NGO)	Compost Site (Sambula)
Composting System (Equipment Used)	Open Windrows - Excavator - Sieve - Wood chips (Base & Cover) - Sell compost	- Bunker - Micro Env. Organisms - 4 weeks - Inhouse use	Open with shelter - Shredder - Weighing Scale - Separate wastes in 2. (depending on decomposition speed) - Selling
Issues (2&3)	1. Non shredding results in decomposition longer. 2. Market Segregation not perfect thus not only green wastes.	1. Leachate Problem 2. Odour	1. Leachate Problem 2. Amount of green wastes not so much.

For your information

NANAI RAGA