



For 5 years now, Mahogany Bay has been working on a composting program – a program which began with the sole purpose of reducing the volume of organic waste that was being sent to the Municipal garbage site. Because the Port has vast gardens, and more gardens were set to be planted at Mahogany Beach in 2014, the HES department drew up a plan to create compost heaps to produce material that could be used in new gardens and for continuous maintenance of older gardens.

For that purpose, a Power Point presentation was elaborated in Spanish so that the gardening department could better understand this new undertaking. The following are the topics covered in said presentation:

- Definition of compost
- Ideal materials used to make compost
- Advantages of making compost
- What organic materials are used to make compost
- What materials are considered to be used in limited manner
- What materials are not to be used in your compost
- The 4 processes compost heaps undergo
- Relationship between carbon and nitrogen within the compost heaps
- Steps to create compost heaps
- Where to use compost
- Suggestions on improving heaps
- Youtube links

After an initial introduction with the gardening team and showcasing videos of how composts are elaborated, a land area was chosen that had accessibility to it. We chose a section that is fairly flat and where we could access water. Our initial assessment was to build 10 compost heaps and thus, we began working on measurements for it.

HOW COMPOST HEAPS ARE BUILT:

- 1- Areas were built to separate the different materials needed to build the compost heaps. These are separated as follows:
 - Remains of leaves or any green materials like lawn clippings, brush trimmings
 - Old leaves, branches, twigs, dry grass



- 2- Two square areas of approximately 1.5 m x 1.5 m – one next to the other – are measured and on the first square, we place a wooden frame where the layering begins.
- 3- The process begins with digging the ground 10 centimeters under and mixing up the dig up material to create aeration.
- 4- After the ground has been dug up, branches and twigs are used to create a bed which makes the bases of the heap.
- 5- 25 – 30 centimeters of dry material are added to the heap, making sure the heap is growing with a balance and within the square mold used at the bottom. It is at this moment when a pvc pipe is inserted in the middle of the heap to create aeration and also, allow water to fall within the heap.
- 6- 15 – 25 centimeters of green material are added above the dry material.
- 7- 8 – 10 centimeters of manure are added above the green material.
- 8- A thin layer of ashes is added on top of the green material.
- 9- A final layer of 2 -5 centimeters of mature compost or top layer black soil is added.
- 10- The compost heap is watered enough to dampen all materials, especially on top layers. The heap must not be drenched with water. We seek to keep a 60% humidity rate.
- 11- Finally, the heap is covered with a plastic material.





Side notes of materials:

- We get chicken manure from a local chicken farm. We provide the sacks and the farm fills up 20 bags and we head out to collect it. We have also used cow manure and it works well with the process.

MAINTENANCE OF HEAPS:

When the heaps are ready, a maintenance calendar is drawn to keep track of turnings. Because we do not use organic materials such as kitchen leftovers or fruits, our process to turn our heaps is not as often as when you use kitchen residues. In our case, just for gardening materials, we are turning our heaps every 4 weeks (first turn) and afterwards, every 3 weeks. The following is a sample of the control sheets we use to keep track of the heaps' progression.

CONTROL SHEET - COMPOST HEAPS

HEAP	DATE CREATED	1ST TURN	2ND TURN	3RD TURN	4TH TURN	5TH TURN	6TH TURN	7TH TURN	8TH TURN	FINAL WEIGHT
Heap #1	20.09.2018	17.10.2018	12.11.2018	18.12.2018	15.01.2019	12.02.2019	13.03.2019			
Heap #2	14.08.2018	11.09.2018	03.10.2018	31.10.2018	21.11.2018	19.12.2018	13.03.2019			
Heap #3	06.03.2019	2.04.2019								918
Heap #4	26.11.2018	19.12.2018	13.02.2019	13.03.2019	10.04.2019					1203
Heap #5	06.03.2019	2.04.2019								1315
Heap #6	06.03.2019	2.04.2019								
Heap #7	25.12.2018	22.01.2019	18.02.2019	13.03.2019	10.04.2019					
Heap #8	25.12.2018	22.01.2019	18.02.2019	13.03.2019	10.04.2019					
Heap #9	7.03.2019	3.04.2019								1020
Heap #10	7.03.2019	3.04.2019								1135

Observation:

Dates of following turn for heaps:

Pila #3, 5, 6 - Abril 2

Pila #9, 10 - Abril 3

Pila #4, 7, 8 - Abril 10

Date of elaboration of new heap:

Pila #1, 2 - Marzo 19

Weight of finalized heap:

Pesadas el 7 de Marzo /2019

Pendiente: Pila 1 y 2

Description of control sheet:

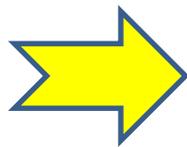
- Date the heap was elaborated – we normally create new heaps on a cruise ship day since our gardening team is limited on works that can be done on many areas. We try to build between 2 – 4 heaps on the same day to keep better track of progressions.
- 1st turn of the heaps is normally done approximately 4 weeks after they were elaborated.
- 2nd turn and all that come after are done every 3 weeks approximately.
- By the 3rd turn, we evaluate the heap to see if there are any delays in the process. This can be noticed when decomposition is slow, no presence of worms and other insects is noticed and when it is really dry. If any additional materials need to be added, it is at this moment. We sometimes have added more green material to the heap or have added more mature compost and ashes.

- As the compost heap advances, we get to a point where it is finalized and we proceed to weigh the total heap and place it in a bin to be used.

Recommendations:

- The heaps must be watered once a week. We normally water them on Tuesdays.
- Heaps must be covered at all times to protect them from exterior conditions such as rain or sun. The protective cover should be always in good conditions.
- We number all of our heaps and they have their proper signage to keep track of the heaps progressions.
- The area around the heap area must be cleaned constantly, trying to keep lawn low as possible.

COMPOST HEAP EVOLUTION:



A square wooden frame is used to begin the process of elaboration. Right next to it, we must leave an exact area since this area will be used to place the compost as we turn it every 3 to 4 weeks. The top layer of the main heap will be sent to the bottom and so on for each layer.



Final layer is placed with top soil or mature compost material. We sometimes have proceeded to place more freshly cut green material on top as top layer.



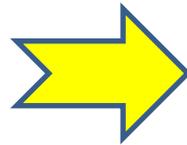
As we finalize the compost heap, we proceed to water it. It is important just to water it and not drench it. We then proceed to cover the heap with plastic material as seen in the following picture.

We then proceed to cover the heap with plastic material as seen in the following picture. At all times, while they are not being worked on, they must be covered.

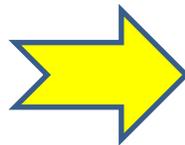


As heaps progress following the control sheet calendar, the heap begins to change into just dirt as seen below.





The compost heap is then weighed using sacks. The entirety of the heap is weighed in different sacks and then summed up to total. Approximately, our heaps weigh around 1000 lbs.



The end result is healthy dark brown or black organic material. We have used our compost in new garden areas, to replenish mature gardens and also in our ongoing reforestation program.



COMPOST PROGRAM TOTALS (approximately)

Date	Total in pounds	Total in metric tons
2018	18,000	8.16
2019	17,751	7.78
TOTALS	35,751	15.94