Rancho Mastatal Updates

August 2009

Early morning at Leo's House

photo by Milan Vana

Rancho Mastatal UPDATE for the months of JULY and AUGUST 2009

More than halfway through the summer internship, we've hit a nice stride as old and new projects alike steam ahead. ETHAN has most recently gone on a building spree, cranking out shelves, workbenches and other accouterments for the soon-to-be ready tool storage shed. SOPHIE, amongst other projects, has the gardens looking as good as they have in years. Her green thumb has made a nice transition from the temperate climate from where she comes to the challenging conditions the Tropics present here. AMELIA and DIANA recently built an incredibly beautiful daybed now gracing its presence in the Hankey House, a wonderful addition to the evermore styled-out intern house. MAUDIE has been spending much of her time as of late creating a stunning mosaic depicting the biodigestor toilet process. MICHAEL just finished a handy router table, a long-awaited adjunct over at the ever-expanding and improved workshop. RORY, when not entertaining the rest of us with his talented guitar licks, has been heading up the work at the Cork and overseeing the finalization of the daubing up there. Lastly, GREG, as always, has his hands and head in countless projects all over the Ranch, the community and over at Tiburon's.

As we start to think about new projects for 2010, an off-the-grid music/recording studio seems to come up more and more often. Due to the fact that we receive so many amazing musicians at the Ranch every year coupled with the fact that they often times write and perform new songs sometimes inspired by their stay in Mastatal, we think that it's high time to seriously consider building a small, quiet, relatively low-tech spot for people to create, jam and record. Keep an eye open for our soon-to-be-released Rancho Mastatal CD.

Robin and I are simultaneously preparing for the fall interns and our upcoming departure to the United States for our annual visit. We're looking forward to a little rest after an incredibly busy, productive and sometimes stressful year. 2010 is already shaping up to be another exciting one here in Mastatal. But let's not get too far ahead ourselves. We're still only a bit over halfway through this year. Read on and enjoy!

This month's update includes:

RM Program News: **Lakeside**
We recently said our goodbyes to one of the most amazing groups of middle school kids that we ever had the opportunity to get to know. SANDY, TAMARA and YORAM, teachers from the Lakeside School in Seattle, WA, headed up the students visit with TIBURON and his company Tropical Adventures in Education. While here, the group stayed five nights with local families, made a garden at the elementary school, visited the Zapatón Indigenous Reserve, went to a number of spectacular waterfalls, worked tirelessly in the Ranch's nursery, and visited a nearby mangrove amongst dozens of other activities. We want to think Lakeside for their continued support.

Conservation Update: **Where Did MINAE Go?**
This is a question that many of us interested in the conservation of our region's forests are asking these days. It seems as if MINAE has disappeared from our town. If anyone locates them, please immediately call the Ranch so that we can report the ongoing poaching and contamination of our local rivers.

Building Report: **Biodigestor Gets First Deposits**
Flames created by our poop are now cooking some of the Ranch's food. Yep, you read that right. The "Meth Lab", powered by feces, is open for business as we bring online our newest renewable energy project to the Ranch's infrastructure. We are strongly encouraging all guests to the Ranch to use the new temporary toilet that feeds the biodigestor, even if it means pinching cheeks in the morning on the way to the Main House where the unit was built. If you were here to use it for yourself, the following is what you would find there to read while emptying your bowels into this amazing contraption.

Step One: The Toilet
By defecating here, you are helping the Ranch produce gas and fertilizer while reducing your impact on Mother Earth. Before using this toilet, there are a few EXTREMELY important facts and "to-dos" that you should be aware of. Please read the following carefully so as to maximize the efficiency of this wonderful, sustainable tool.

1. Do not put ANYTHING down the toilet besides what comes out of your body.
2. Toilet paper should go into the bucket/basket labeled "PAPER ONLY/*SOLAMENTE PAPEL*". We will compost this separately.
3. All garbage/non-compostable material should go into the bucket/basket labeled "GARBAGE/*BASURA*". It is critical to the success of the system that nothing goes down the chute that should not.
4. After finishing using the bathroom, please take the hose and THOROUGHLY wash your deposit down the hole. Spray for 5-10 seconds until the box/bowl is clear of any feces.
5. Please do not sit or set anything on the black, fiberglass dome in front of you. It is fragile. If it breaks, the system will not work.
6. Please let us know if you have any questions or suggestions on how we can improve this system.

Step Two: The Biodigestor
While this may be a new process to most of you participating, it is a sustainable answer to the age old question of, "What the hell do we do with all this shit?" As we learned as children, everybody poops, and it has to go somewhere.

The Western answer that most of us are accustomed to sends human waste to a septic tank or a wastewater treatment plant. In the latter scenario, the feces is chemically treated before it is released into local waterways. This process relies on toxic inputs and releases chemicals into the environment. It represents a broken cycle. Another negative is that our way of currently dealing with human waste is extremely water intensive. One flush in a conventional toilet uses at least 1.6 gallons and as much as 5.0 gallons of drinking

water! In some households this accounts for 40% of annual water use. If this is your only option at home we suggest following the decades-old rule, "If it's brown flush it down, if it's yellow let it mellow". You may also consider displacing some of the water in your tank with a brick or other object so as to reduce the amount of water per flush.

The conventional process used in most "developed" countries cannot work in many other parts of the world due to its cost and complexity. As a result, people's of "developing" countries needed to think about waste management in terms of what they had and what they needed. The first recorded biogas plant was built by a leper colony in Bombay, India in 1959. This community had little access to materials and were shunned from the world but they still needed to do something with their poop and of course they needed to eat. Their initial ideas have evolved into three common types of biodigesters. The type that you see in front of you is a modification of the floating-drum plant. An identical design is used on Jose Luis Zuñiga's coffee farm but utilizing pig feces instead of yours. A second type is the balloon plant. You can see examples of this style at Don Mario's house and at the Iguana Chocolate. The third type is the fixed-dome plant. The basic science making all of these biodigestors work well is the same.

To better clarify what's happening to your "deposit", let's take a walk through the process.

1. Your "deposit" or "slurry" (feces, urine, organic material) and water enter an intake pipe underwater. Our digestor is the shape of an igloo, built from bricks, and underground.
2. While in this chamber the slurry goes through an anaerobic (without oxygen) breakdown over many days. This process is enhanced by heat from the sun.

The process produces two byproducts; sludge (what comes out of the outlet pipe) and methane (the black dome that you see rises as gas is produced).

Byproduct One: Sludge
The anaerobic process retains more nitrogen by converting some of the slurry to ammonium ions that fix themselves to plants. This essential element is converted to ammonia gas or nitrate run-off when only composted. The sludge contains nitrogen, phosphorous, potassium, and small amounts of metallic acids.

When the sludge comes out it is pretty watery (supernatant refers to the watery extract) and can be applied directly to crops. When done this way it maximizes the nitrogen content. When the sludge dries some of the nitrogen is lost. 93% of potential pathogens are "killed" before leaving the biodigestor. This is a relatively safe level, much safer than what comes out of a septic system, but to be 100% sure that no pathogens are being transferred to your food, you should compost the waste before application in your gardens. The sludge is also good for hydroponic growth and for tilapia fish.

Byproduct Two: Methane or Biogas
Natural gas (CH_4) occurs widely in nature but has only recently been utilized for energy production. You see methane production in bogs, swamps, fens, and even landfills. All places where organic matter is anaerobically being broken down. There are a multitude of uses for natural gas. It is used for heating homes, lighting, cooking, and in modified internal combustion engines. Methane released into the atmosphere is a potent greenhouse gas. As a species we are served by keeping as much of this gas out of the atmosphere as possible.

We currently use our methane to cook with. Our hope is to lessen and if all goes well eliminate our consumption of propane, an imported gas that has to be transported to the Ranch. The gas coming out of the biodigestor is not pure methane. It is approximately 65% methane and 35% carbon dioxide with other trace gases. Methane is a "low-pressure" gas and obligated us to build a modified stove with larger openings than conventional propane stoves. Take a look at our biogas stove in the kitchen when you get a second. Methane

can "easily" be liquefied and compressed if desired.

Step Three: Food
Both of the aforementioned byproducts are used to grow and cook the wonderful food that you eat here at the Ranch. This ultimately closes the loop of production.

Now we hope that you take the time to use the biodigestor AS MUCH AS POSSIBLE so that we can continue getting these extremely useful byproducts that keep the Ranch running strong. This is one small part in helping us further our dream of sustainability.

Thank You,

Maudie Johnson, RM Intern Summer '09

Intern/Guest Gossip: **Mastatal, A Song**
So we go on to the coast
to get a little comatosed
some crashin' waves and brand new air,
when all along we had that here,

"ain't it funny how it feels this way
the years gone by they just slip away
time ticks on I try and catch it all
another day another night in Mastatal
and I want to tell you how good it feels
to be moving on these river heels"

At first glance such a masquerade
For the jungle moves in unfamiliar ways
But oh a chance to grow with you
To do the things we never knew
And all the rain it comes again
Applauding the words that I have said
For there's nowhere else this mind should be
Then right here feelin' free

"ain't it funny how it feels this way
the years gone by they just slip away
time ticks on I try and catch it all
another day another night in Mastatal
and I want to tell you how good it feels
to be moving on these river heels"

Well the hour has come and I must conclude
And I admit for once that I'm missin' you
Cause when my feet touch the sea
It feels my darlin' that you're right next to me
Oh when oh when will our hearts be one
Will I see you again in Washington

"ain't it funny how it feels this way

the years gone by they just slip away
time ticks on I try and catch it all
another day another night in Mastatal
and I want to tell you how good it feels
to be moving on these river heels"

To be moving on these River heels

Sole up and walking, June 2009

photo by Tim O'Hara

Community Facts/Stories: **New Batch of Kids Turn One**

One year has already passed since the flurry of births in our community. JASMINE, SEBASTIAN, BRITON and SOLE have all celebrated their first birthdays as they begin to run around their respective households and throughout our community. A big first Happy Birthday to all of them.

Comida Corner: **Korean Cucumber "Kim chi"**

This one comes from "El Chinito", Michael Munn, a current, badass intern at the Ranch. He's a master in the kitchen and this simple recipe is one of our favorites.

Ingredients:

Crushed red pepper flakes
Crushed sesame seed
Sesame seed oil
Lemon
Green Onion
Fish oil
Salt

Thinly coin cucumbers and liberally salt them in order to soften them. After roughly 30 minutes, wash and then squeeze them "dry". Michael's personal preference is to remove the cucumber seeds. Don't overload on sesame oil, fish oil, salt or lemon. Combine all the ingredients, mix, and enjoy.

Buen Provecho!

F?tbol Follies: **What a Year**

What a year it's been for Los Galácticos. Los amarillos can count on one hand the number of times that they've lost since we rang in 2009. In fact, I believe the number stands at four as we round out our seventh month of the year. With the most solid gringo presence in recent memory thanks to the likes of CHUCHA, ROJO, GRANDELON, TYLER and others and some incredibly stellar play by the local core, especially JORGE, ALEX and JUNIOR, Los Galácticos continue their unlikely run towards a much-prized reputation in the regional soccer world. In fact, one local statistician reports that the team has not lost a game in 25 games. And we all know how reliable the local gossip around town is. Call it a fact Jack.

Inspirational Impressions: **The Falcon Laughs**

The Falcon Laughs

What is sustainability?

First, imagine you're in the frozen food section of WalMart
Now, imagine you are as far away from there as possible.

W. Rogers

Uncle Bill was a recent student with a group from Hawaii Pacific University. He's an amazing guy.

Abrazos,

The Ranch Crew