

Maintaining and increasing carbon in the managed landscape

Time and budget constraints are inherent in every landscaper's decisions as are the needs of the property owner. The sweet spot is to find the most effective "tricks" you can add to your information arsenal that will effect positive change for carbon stabilization if not sequestration in each landscape that you manage and leave a positive legacy behind you as the property moves on through other managers and owners.

First – and – Last... Compaction is the enemy of all aspects of carbon and water management and carbon and water are linked. Do everything you can to minimize your contribution to compaction. That's much harder than it sounds because it means running the mowing rigs slower in turns, NOT mowing or working over the land if wet (and climate intensification makes this much harder – when we're dry, we're very, very dry and when we're not we're mud). Delayed installations and maintenance cost money....and clients rarely understand the subtleties of soil dynamics – even when they're interested and most aren't.

Growing plants really well – any kind of plant – is the key to both stabilization and sequestration. The healthier the plant, the more diverse and chemically complex the root exudates are and the more likely you are to be feeding fungi and not just bacteria. The more diverse the plant palette grown well – the even greater the diversity of exudate and microbial population...AND PLANTS DON'T LIE – they're either healthy and energy positive or they're not. Use tools to test the plants and soil until your eyes and other senses can tell you the plant's story.

Here's a possible order of materials to add to your work arsenal in order of ease of access and positive results

Available anywhere

Molasses:

Basic sugar easily added to water and used as a drench for any weakened plant system

Liquid Soap:

Any liquid soap – even the cheapest stuff from the dollar store can be mixed with water (1 cup/3-5 gallons water – more concentrated if the soil is totally compacted) and drenched into compacted or drought stressed soil. If you have the money and the access, yucca is superb, but trickier to work with – read the label!

Mix the two for even better results...

Available with a little research

Alfalfa meal:

Meal not pellets!! In a pinch, you can use alfalfa cubes soaked overnight (50lbs cubes per 32 gallons water makes a nice slurry) – using the slurry as an underlay in a mulch situation. Both organic and conventional meals are available. Per usual -the organic meals are brutally expensive, but better. I use the organic in my general planting mix but use conventional alfalfa meal for broad landscape application. There are GMO alfalfa fields now, but they are not yet as ubiquitous as soy and corn GMO fields.

Rock dusts, raw minerals:

Azomite, Dynamine, Flora-stim, Mt Tom basalt (local stone dust). Raw minerals feed the soil system better than concentrates if your trying to build a diverse microbiology and that diversity is key to carbon stabilization/sequestration. I've use Azomite for years and have just bought a load of Mt Tom to experiment with.

Compost teas/Inoculants:

Huge explosion of information in this category over the last 10 years. A true, well brewed compost tea with protozoa and amoeba is the gold standard – and like all gold standards – not always achievable. There's been a huge influx of inoculant options due to the marijuana industry's need for the highest quality plants – drugs are secondary plant metabolites that take A LOT of quality plant to produce - so find out what's easy for you to get and experiment with. Look for Glomus sp on the label as these fungi are the best at holding onto carbon.

Direct Carbon sources

Sugars:

Any sugar – even the much-maligned white sugar – can be used to get a quick bacterial surge started in a very weak soil setting. This truly is the candy bar scenario, but it does have some value in an emergency – power bar anyone???

Compost:

The classic carbon-based application that almost everyone uses. It all comes down to the feedstocks – what makes up the compost – and how it's shipped and stockpiled – does it go anaerobic during that time? In an ideal world you should get the compost tested. In the real world, try and get into a good conversation with the supplier you'll be using and determine the best you can the history of the load you are buying. The other problem with compost is that the carbon is actively being used by microbes and, is therefore, mostly being released back to the atmosphere as CO₂. It takes very careful handling of decaying plant material to actually trigger humification and not mineralization in a compost pile. Doesn't mean don't use it but does mean it's only a step or two above sugar...

Leonardite and its derivatives (fulvic and humic acids):

This is the core of immediate carbon supplementation at the moment. It's essentially a soft brown coal like substance that is stable humates that can be liquefied into humic and fulvic acids – the closest thing you'll find to magic in your arsenal. You can see improvements in plant strength within hours, although it won't sustain without further work with the plant's entire soil system, but as a Band-Aid it just cannot be beat. Ground leonardite can be used as a soil amendment and is stable through time.

Biochar:

The new carbon kid on the block with a very ancient pedigree (the Terra Pretta soils of the Amazon). If you can get your hands on this for anything like a reasonable price – this is the way you want to go. It supports all aspects of soil life and is totally resistant to breakdown. It does have issues with fuel stock and access but....

Other products that might be helpful

Commercial Organic Fertilizers:

Like North Country Organic's line, Fertrell's line (the two best) but there are LOTS of other companies getting into the field -read the bags carefully...

Non-medicated Chicken Layer Mash (not pellets):

Not organic (way too cost prohibitive!!) but outrageously effective at waking up a totally damaged soil system if you have 6-8 weeks (min) between using the mash and planting. Causes a complete explosion of bacteria and rapid integration of all other minerals added to the space. I try and get this down in November for spring planting on sites that I know are a real challenge. Weird but it works...

Keep the ground covered – always – and in whatever way the client will allow

These should be self-explanatory. It's more what the client will allow rather than what's best although leaves and straw are probably best biologically...the only one not worth much is bark mulch but that's the one that most clients think of as "real". If that's the lemon you're stuck with then use other information (like alfalfa slurry and layer mash) to make lemonade.

Mulches

Bark

Straw

Shredded leaves

½ worked compost

Wood chip

Ground covers and cover crops:

Part of design more than anything else so not commented on here...

Tools

This is a personal list – find what works best for you

Potato puller/cultivator:

I can use this for hours integrating minerals into existing gardens

Broad fork:

I don't use this but have several friends who swear by it

Sprayers/drenching tools tied to irrigation:

I love my push button watering cans (bought from England!!- but worth it!!); I use the Chapin professional hose end applicator and the Hudson hose end applicator as well. I also have a 50-gallon drum and a sump pump for some sites.

Mantis tiller:

Used only in the initial stages of garden development and then never used again on that garden (unless essentially starting from scratch again). Only rototiller that doesn't create a hardpan – very unique teeth and can till stone (almost!). Can rip into unbearably compacted soil though and leave room for life to return – you will feel it in the shoulders and hands though ☺

Refractometer and penetrometer:

The first one measures plant sugars -the more sugar in the leaf, the more carbon the plant is capturing and the healthier the system will be. The second one measures compaction – and it's daunting to use it and find out just how much resistance there is in the soil's you are managing...