SOIL IS SEXY

Urban: soil regeneration without livestock!

What to do when you can't raise bison...


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Returning Organic Matter to the Soil

Livestock graze on grass, digest it, and release that organic matter back to the soil as manure - essentially creating a closed loop where biomass on the land stays there or, especially in the case of restoring degraded landscape, the overall biomass grows!

In lieu of livestock...

Mulch

Mulch introduces a source of organic matter that may have already been on the land in some capacity (think 'chop and drop' / flail mowing in gardening or chipping fallen tree limbs) or maybe the mulch comes from a resource brought in from somewhere else (straw, wood mulch, mushroom substrate, pecan shells, etc.) Either way, as mulch breaks down it similarly serves the role of returning organic matter to soil.

Ground-Up Organic Matter

"GOM": ground-up organic matter is what my colleagues and I call the "compost" that tends to come from industrial composting facilities or municipal programs.

I'm not a huge fan of GOM, but it can be a general source of organic matter and I'd only use it in conjunction with a truly biodiverse compost (more on that in a second).

To make the most of organic matter added to soil we really need microbes! Which brings us to...

Inoculating the Land

Livestock inoculate land via their manure and epic gut! They're providing both the organic matter *and* the decomposers to help return that organic matter to the soil.

In lieu of livestock...

Biodiverse Compost

Biodiverse Compost inoculates land with the microbes contained within the compost - the ones responsible for decomposing the organic matter that went into the initial composting system (and the very microbes we need functioning soils!)

A helpful thing to know here is a little biological soil amendment can go a long way - we can apply these composts as a liquid extract (think ~10 - 20 gallons / acre) to soil directly, to GOM or even mulch.

Important: what you may call compost and what I call "GOM" do *not* contain a diverse microbial community. If you're using GOM, I highly recommend also making or sourcing a small amount of biodiverse compost to apply as liquid extracts.

🔬 Most backyard composts I look at on the microscope are significantly better quality than the industrial composts I look at.

Did you catch that?! **You can make great biological soil amendments right at home / on-farm, and it does not have to be a huge undertaking (even if you have hundreds of acres).**

Stimulating Root Exudates

Did you know 5 - 21% of a plant's sugar production is released through the roots to feed it's symbiotic partners in the rootzone?! (Badri et al., 2013) This helps to support thriving microbial communities - the cornerstone of healthy soil.

Livestock stimulate vegetation to produce root exudates via grazing - as a grass or plant is chomped on, it becomes "motivated" so to speak to build even better partnerships with beneficial microbes so that it can grow back strong. This only occurs with a reasonable amount of grazing, as you can imagine overgrazing will weaken a plant entirely (like how we may push our bodies through exercise to improve our strength, but if we push too hard and get injured our health declines)

In lieu of livestock...

Pruning

Pruning can mimic grazing and stimulate plants to grow strong roots and relationships underground. Similarly, we don't want to overdo it (as is often the case with frequently mowing turf grass), but we also don't want to underdo it (as is often the case with landscaped plants that rarely get pruned).

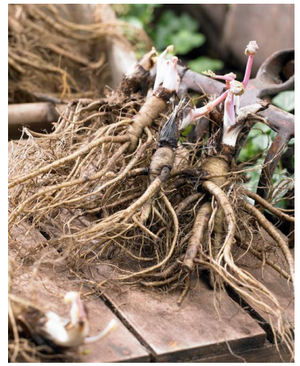
Personally, I am figuring out how much to prune or otherwise cut back / mow through trial and observation. I try to think like livestock before taking action - would they graze in the middle of a hot day? (probably not) Would they take every plant down to the same level or would it be varied? If anyone has experience/insights regarding pruning & mowing please comment!

Light Soil Aeration

Livestock lightly aerate soil with their hooves, of course if they're in one place for too long they can have the opposite effect of compacting the soil under their weight. But when managed holistically, their trampling actually helps incorporate organic matter into the soil.

In lieu of livestock...

Deep Root Perrenial Plants



Deep rooted perennial plants or tap rooted plants can help create channels in the soil for water and air to move through. Even just leaving a crops roots behind after a final harvest can go a long way (assuming that you don't then come in and till)

Aeration

Aeration via the occasional broadforking, plug aeration (common for turf) or in some cases dare I say a plow can help incorporate organic matter, air, and biology into the soil. Just as with livestock, these methods ought to be used very carefully and err on the side of rare occurrence, and our tendency is to definitely overwork the soil (so I hesitate to even mention these, ha!) Nevertheless, a little disturbance every now and then is a way nature maintains long-lived ecosystems.