Advanced Resilient Biocarbon

Climate Restoration and Climate Repair

2024 NORTH AMERICAN BIOCHAR CONFERENCE — USBI — CALIFORNIA, USA

The Use of Biochar as a Component in Soil Amendment in Conjunction with Beneficial Soil Microorganisms and Organic Extracts and Teas.

February 2024

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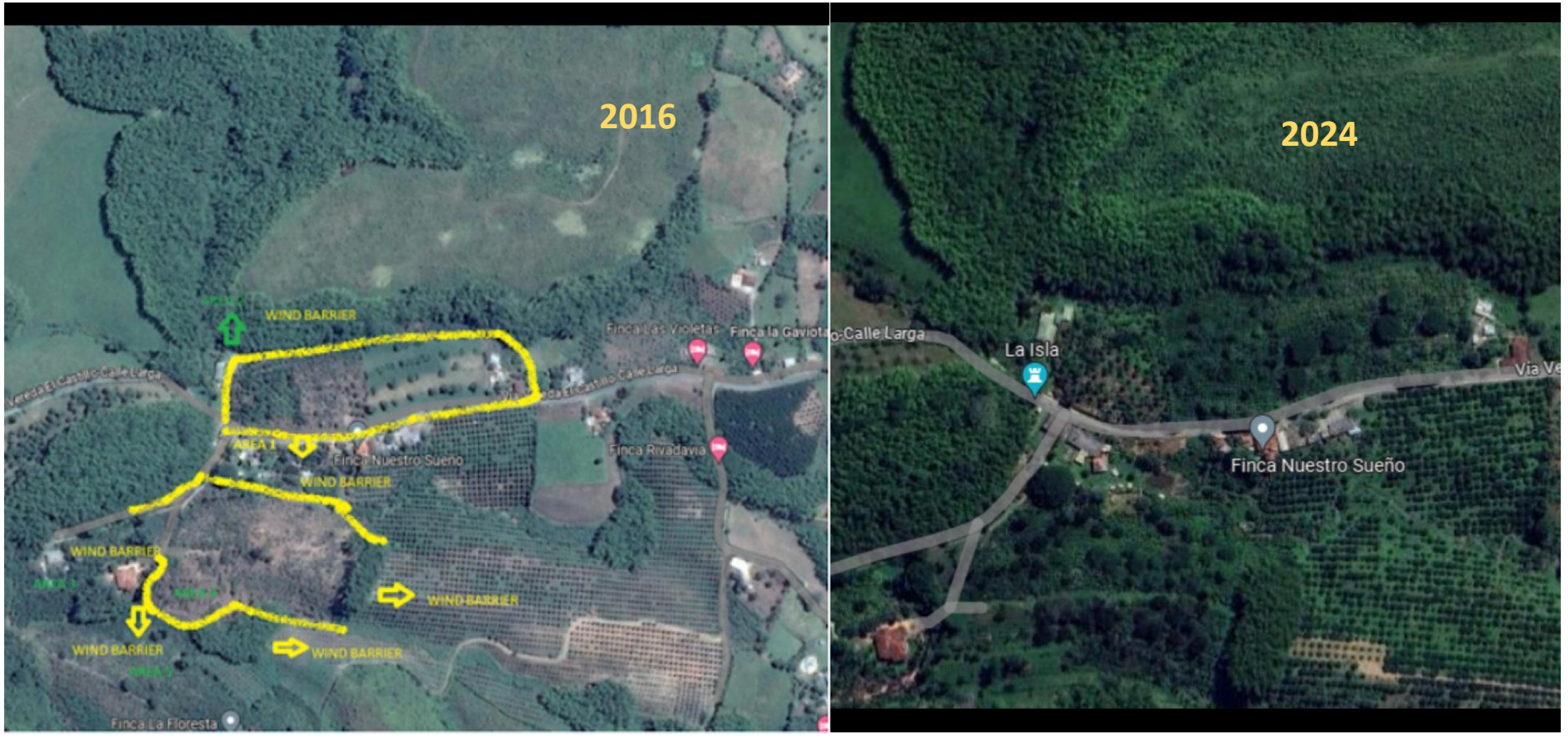
Transforming Waste Into Revenue

Regenerating the soil of our farm



Inspired by our grandfather's experience using biocarbon and inspired by Paul Anderson https://woodgas.com/, Dr. Elaine Ingham https://www.soilfoodweb.com, David Jhonson and Silvia Primavessi, we designed and applied biochar in our farm using this methodology.

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Palm Oil...

Carbon, macronutrients and micronutrients are lost. Yellowing and nutritional imbalances are seen with exhaustive nutrition programs. Phytophthora Palmivora devastated major areas in Colombian Palm Oil Plantations. Biomass is left to rot or burn. We solved it 14 years ago pyrolyzing the sick tissues, Improving C/N ratio: 24/1 microbial diet and Using soil amendments of organic matter and with biochar.

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Coffee Plants in 2019

1,100 mts above sea level

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Cacao plants 2019

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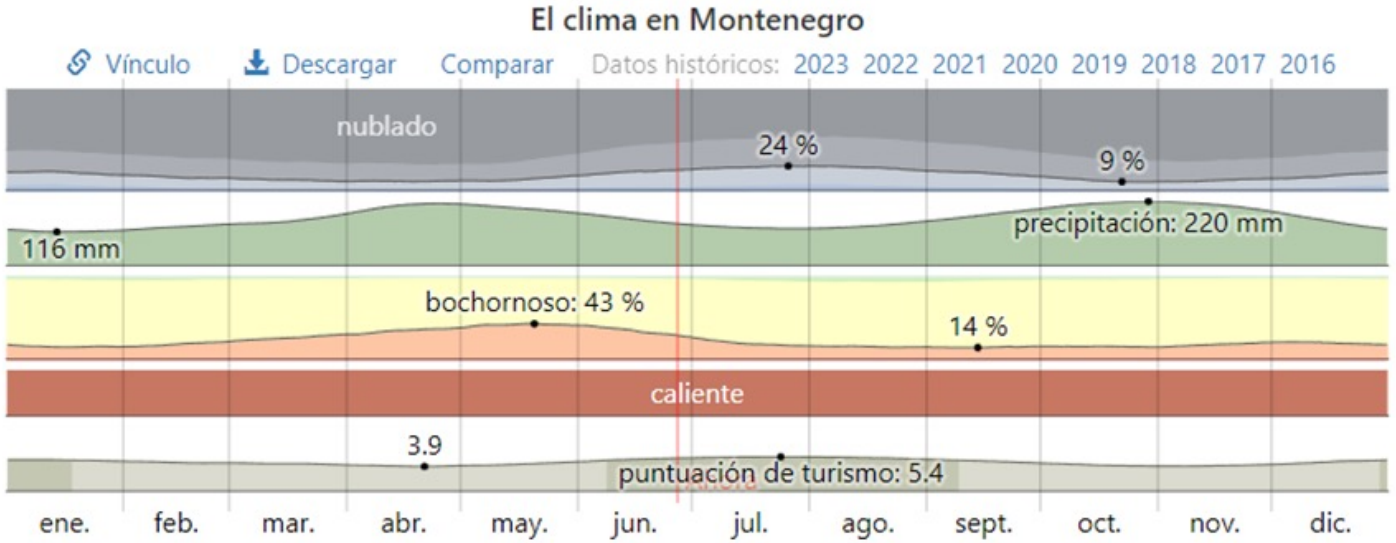
Extreme Temperature Patterns



- Temperature already reaching +3*C
- Heavy rains are followed by no rain periods
- High winds
- Hail

Take away: Experiencial evidence shows plants need to have a strong root system

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Soil Temperature

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Biomass Potential in Coffee & Cacao

Cacao: 12Tm/ha of pruning wood waste per year
Cacao husks: 70% of the production. If plantation has diseases it rises with rot pods.

Coffee: 20 Tm/ha coffee renewal by planting
Coffee: 15 Tm/ha coffee renewal by prunning
Coffee Pulp and parchment: 80% of production

Avocado: 150Tm /ha Avocado renewal by prunning

We monitor temperature, time and weight

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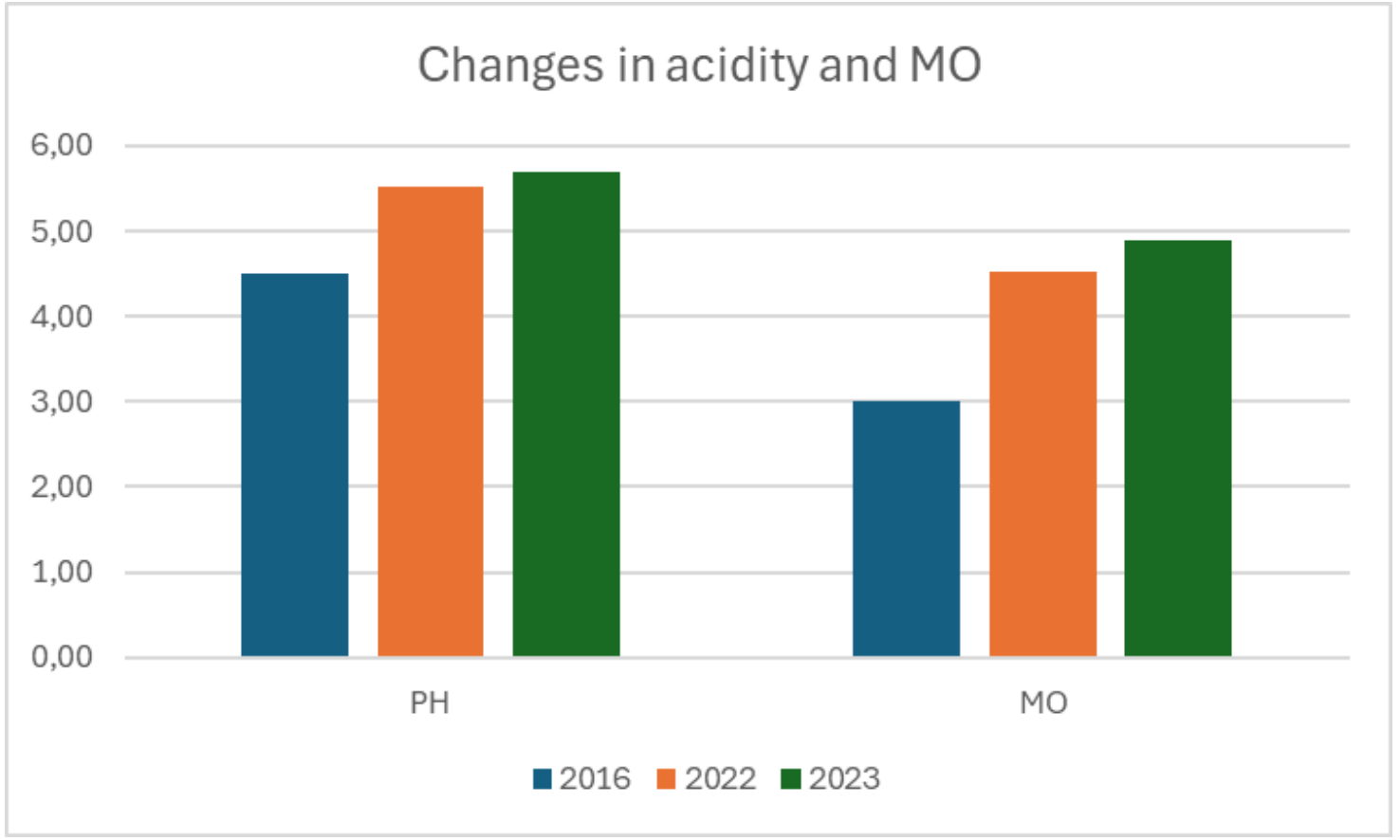
Acidity and MO



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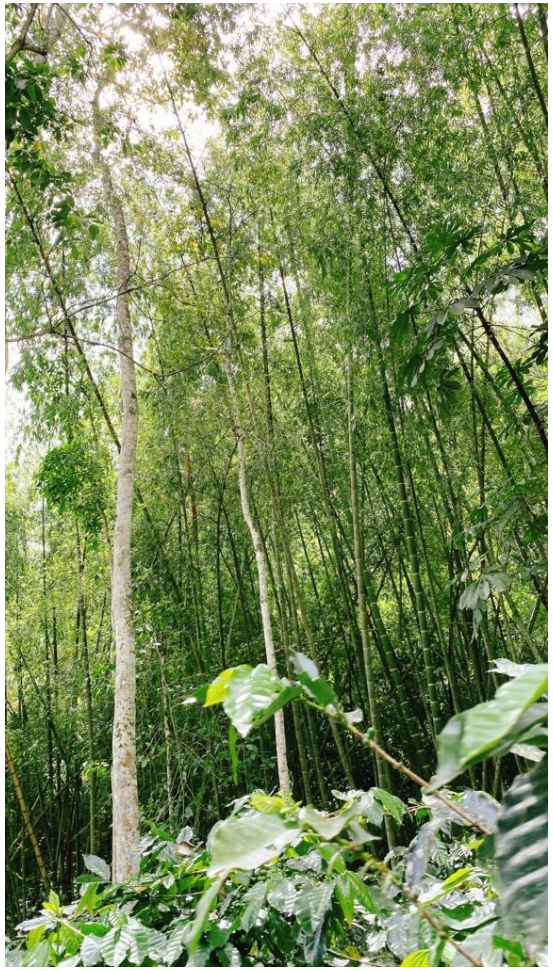
Extracts



We used compost extracts, compost teas, Beneficial native microbiology of the neighboring bamboo forest, wood vinegar and plant extracts.

molasses, cane syrup, fermented coffee wáter or fruit helps the multiplication of microrganisms.

“Organic matter, minerals, and microbiology.

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Biochar as a planting amendment

- High vigor and lower nutritional needs.
- Fewer reprocessing steps in planting due to dead or sick plants.
- Cover management; other crops, appropriate doses, and its use with compost extract will depend on the nutritional needs of the crop and the soil
- **Experiencial Evidence** Nitrifying and phosphorus-solubilizing microorganisms at the beginning here where many nutrients that became available in an inbalanced way (N,P)
- The weeds shifted to broadleaf cover without the need for planting. More carbon storage
- Strong and Deep root systems

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Biochar in production nutrition

- Defoliated and old trees regain vigor, allowing for extending renewals one year later
- Foliar recovery, presented homogeneous blooms; The grains are observed to have good shape and size.
- We had extra large grains that decalibrated the pulp machine
- We recovered the farm from rust outbreaks.
- In the hot “el niño” we have kept the amended trees vigorous without using irrigation or synthetic water-retaining polymers.
- The foliar application of fermented carbon extracts in a drought condition keeps the plants vigorous and the affected with heat stress recover.
- The farm continues to increase its production. achieving renewals by planting and pruning

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Healthy soil; happy plants

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