Interreg Caraïbes

CARNET'ADAPT

Regenerative Agroecological Soil Conservation

Caribbean Climate Responsive Agriculture FORUM

Regenerative Agroecological Soil Conservation

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New flower Regenerative Garden (NRG)

St. Lucia

Natural soil management

Presentation Topics:

- Learning from the Forest
- Agroecology and soil conservation
- Ecosystem Service Providers
- Regenerative soil management
- NRG Regenerative methods:
- NEXT STEPS

LEARNING FROM THE FOREST

Agroecological soil conservation begins with observing forest systems. Forests are the best models for building and conserving soil; as they are the most productive terrestrial systems.

In a regenerating forest, openings in the canopy provide a niche for plants to fill & protect the soil with a living mulch. Forest soils are never exposed.

LEARNING FROM THE FOREST

Larger trees begin to block sunlight, as their leaves mulch the soil:

- They add nutrients
- Potect the soil
- Reduce the ability of other plants and trees to compete

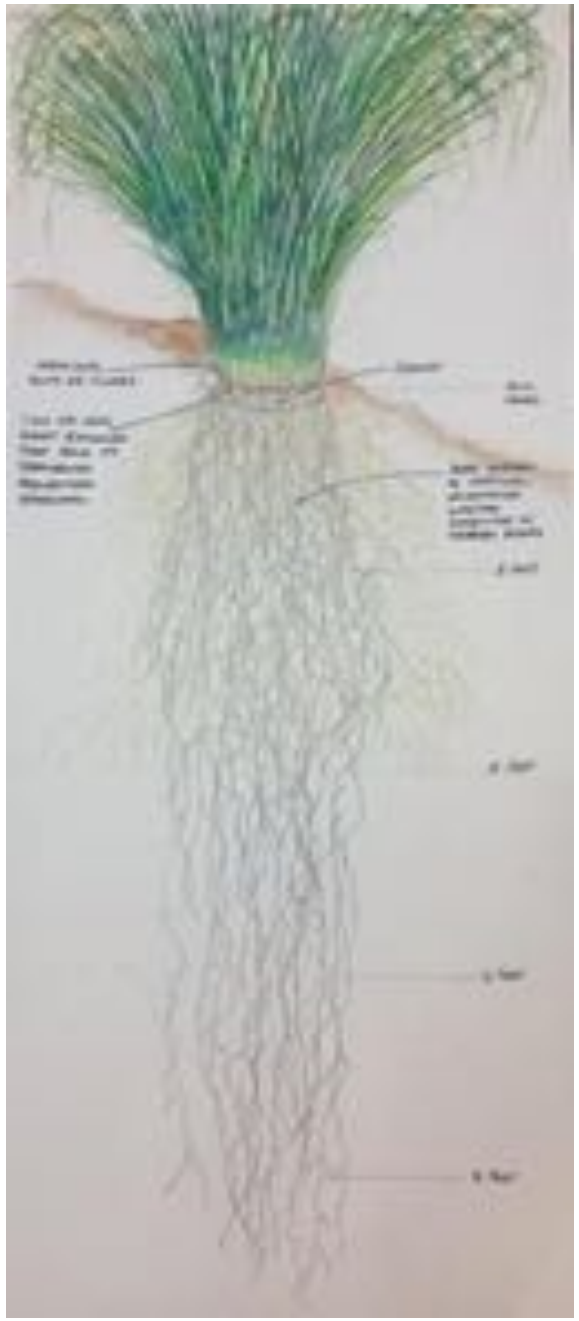
Agroecology and soil conservation:

Orchestrating Ecological niches: Guiding elements in a natural system to work in synergy together. The goal is to enhance productivity through diversity & intelligent design.

Agroecology and soil conservation:

Vetiver helps pineapple:

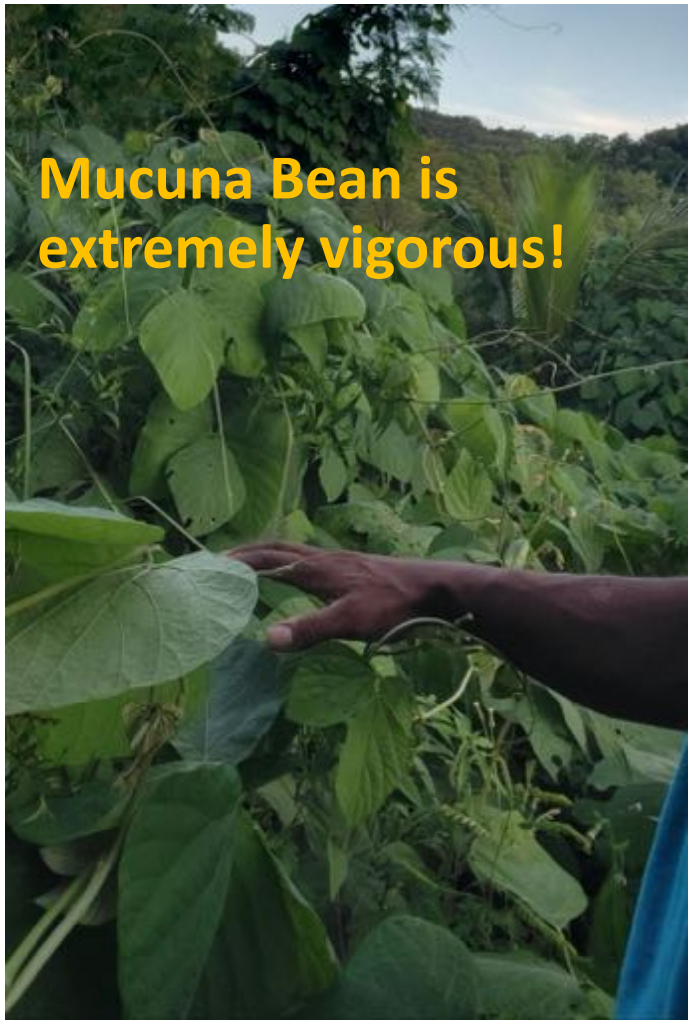
- Provides partial shade
- Wind protection
- 10 minutes cutting & mulching increases light to plant & material for weed & water control



Ecosystem Service Providers (ESP)

Even Stones can provide services to our systems!

Cover-crops, Green Manure



- **Amaranth (Callaloo) supports Mucuna**
- **‘Weeds’ add diversity & micronutrients**
- **‘Catching’ nutrients from previous crops**
- **Roots add more OM to system than leaves**

Regenerative Soil Management

- Preserving and adding Organic Matter (OM) into the soil
- Eliminating or reducing the exposure of the soil surface to the sun and the atmosphere
- No tillage or minimal tillage
- Enhancing soil life generally with special focus on the Rhizosphere (microbiology on plant roots)

Why care about soil Carbon & ecology?

Carbon rich soils with diverse ecological composition reduce the cost of production:

- Provides accessible nutrients to plants (less fertilizer required)
- Reduces fungal/bacterial disease outbreaks (less fungicides)
- Less frequent & intense pest outbreaks (less pesticides)
- Decreases noxious and persistent ‘weeds’ (less herbicides)
- Improves water infiltration & holding capacity (less irrigation)
- Better aeration (less cultivation labor)

Regenerative Soil Management: NRG method

- **Cover-crop & wild fallow allowed to grow for 4 months since last crop**
- **Material up to 1 m in height was cut with weed-eater and cutlas**
- **For better decomposition cut material should be piled immediately**

Collecting and Concentrating Energy

- **OM is the energy or currency of natural systems**
- **Concentrating OM on center of bed protects soil, conserves water, & creates a biological super-active zone**
- **More OM is better, so harvest & add from other areas if necessary**

Adding Nutrients and Bio-stimulants

- **Chicken manure is a great NPK source also full of bacteria**
- **Add more if cut plant material is already dry (higher in Carbon content)**

- **Wood ash is an excellent source of Potash (K), Calcium (Ca), & other micro-nutrients**
- **Pieces of char-coal (biochar) adds a long-term source of carbon, & increases water storage**

Benefits of Mulching with Vetiver

- Vetiver is the longest lasting mulch material
- Quick and easy to apply
- Using a cross or braided pattern prevents wind or rain from moving the material

- Mulching between beds conserves water, helps reduce compaction & pest & disease spread
- Weeds later placed between beds are also less likely to regrow

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Simple method to mulch with Vetiver

- 8 mature clumps of Vetiver covered this area (approx. 24 m of bed and path length)

- For better maintenance and safety:
- Stagger the harvest by cutting every-other-clump
- Cut Vetiver all the way down to the ground

- Plant Vetiver 1m – 1.5 m apart to ensure strong vigorous growth and re-growth

Putting your bed to sleep before planting

- **After mulching metal hoops were installed at <2M apart, & covered with 50% woven row cover**
- **Overhead irrigation was used to saturate OM**
- **This is done to increase humidity & further protect the soil from the elements**
- **Wait minimum 2 weeks before planting in the outer 2 rows of the bed**
- **Large seeds have been sown immediately with success!**

Some key points to remember:

- The more Organic Matter (OM) in the soil the greater the diversity of soil life
- OM builds stable soil aggregates the first step to breaking the compaction cycle
- The compacting forces of rain-drop impact MUST be mitigated before no-till soil preparation can begin to yield results
- Root system add much more carbon into the soil than slashing and mulching above ground growth
- Diverse communities of cover-crops are better than mono-crops, select for plants with different types of root systems
- As soil gets more fertile and aggregated, invasive and problematic weeds like nut-grass with underground runners will become less of a problem
- Natural system never (rarely) have exposed soil. Nature knows best!

Thank you for your attention!

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