Exploring Soil Health Management Practices for South Texas Citrus Groves

Aditi Satpute[a]
John Jifon[b]
Olufemi Alabi[c]
Mamoudou Sétamou[a]

[a]Texas A&M University-Kingsville Citrus Center, Weslaco
[b]Texas A&M AgriLife Research, Weslaco
[c] Texas A&M AgriLife Extension, Weslaco

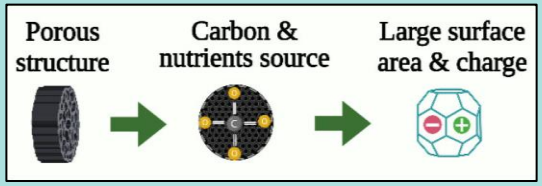
Promising Benefits of Citrus Grove Floor Management

- Improvement in Soil Ecology
- Regulation of Water: enhancing soil water retention in the root zone
- Build Up of Plant Nutrient Bank
- Increase in Soil Organic Matter
- Reduction in Soil Salinity
- Mitigation of Huanglongbing (HLB) damage to citrus
- Root Regeneration
- Increase in Fresh Marketable Yield

Implementing grove floor management in established groves through application of ***organic soil amendments and ground cover***

Compost (Comp)

Biochar (Bio)



Charcoal-like material prepared by burning organic biomass in depleted oxygen

Groundcover (GC)

Woven Plastic mesh with capacity of > 95% water infiltration

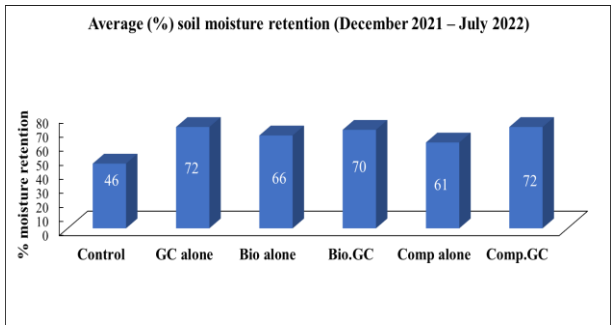
Application

Application under tree canopy and incorporating/disking into soil in established grove

Incorporate into soil bed before new planting

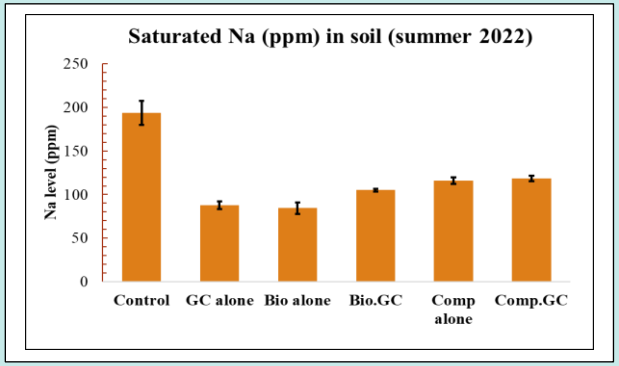
Use of fertilizer applicator or compost spreader

Improved Soil Water Retention



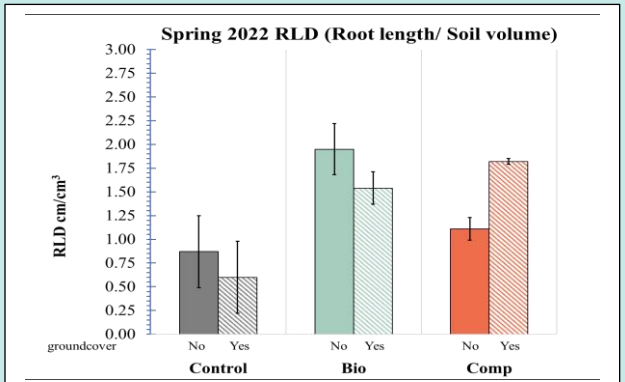
Increase in soil water retention in response to the groundcover (GC) deployment, organic soil amendments and their combination (Bio.GC and Comp.GC) at active root growth zone. Improved soil moisture leads to higher soil water holding capacity.

Reduced Soil Salinity



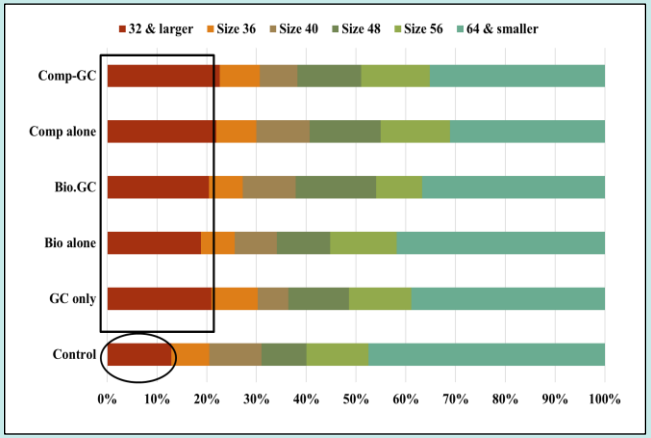
Generally, sodium (Na) dependent soil salinity is higher in summer. However, use of biochar, compost, GC and their combinations reduced the soil-Na levels in summer.

Improved Root Growth



Root length per unit volume of soil enhanced in biochar and compost treated root zone, suggesting improved uptake of nutrients and water.

Fruit Size; Higher proportion of Larger Size Fruit



In organic soil amendment and deployment of GC, the proportion of larger fruit (size 32 and larger) increased as compared to non-treated tree.