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Amendment of poor soil substrate by carbon-rich soil additives (biochar, Tera-preta, Perlhumus) for sustainable production of relevant Palestinian and German crop plants *Solanum lycopersicum L.* and *Hordeum vulgare L.*

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Historic example - biochar"Terra Preta" Amazon region (de Gisi et al., 2014)

Motivation: Problems VS sustainable solutions

Agricultural status in Palestine:
Soil salinity and pollution, and drought and water scarcity.

Marginal Lands improvement for crop production

Marginal lands in Palestine

Marginal Field Lab Germany

Solutions: Soil conditioners to improve poor soil properties and support plant growth: carbon-rich soil additives (biochar, TerraPreta, Perlhumus)

Biochar application (65.4g /bin)

Terra-preta (186.5 g/bin).

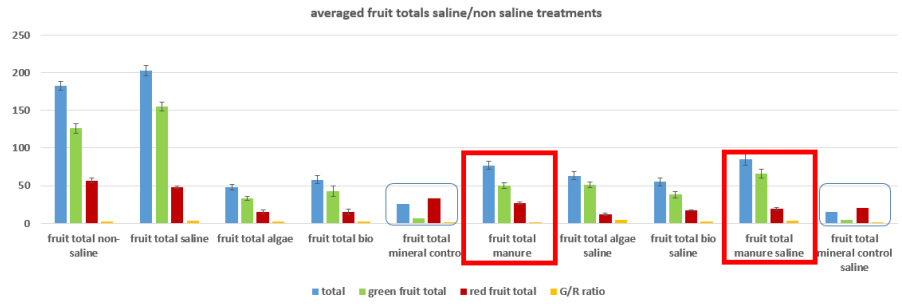
Perlhumus application(94.5g/bin)

Effects studied by :

1. Pot experiments in Greenhouse

2. Scaled-up experiment, bins next to crop garden

Output: Saturated Biochar with biofertilizers (pig-manure) positively affects plant performance (e.g. more Tomato fruits), especially in stressed environments



The effect of saturated Biochar with (mineral and organic fertilizer (Algae, manure)) on Palestinian tomato (*Solanum lycopersicum* L. 'Hebron') fruits number