



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Partners in the profitable and sustainable development of
agriculture, fisheries, forests and minerals in New South Wales



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Benefits of Char in soil



What is soil health ?

"Soil health is the capacity of soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health."

Doran and Zeiss, 2000 (USDA)



Current studies on improving soil health





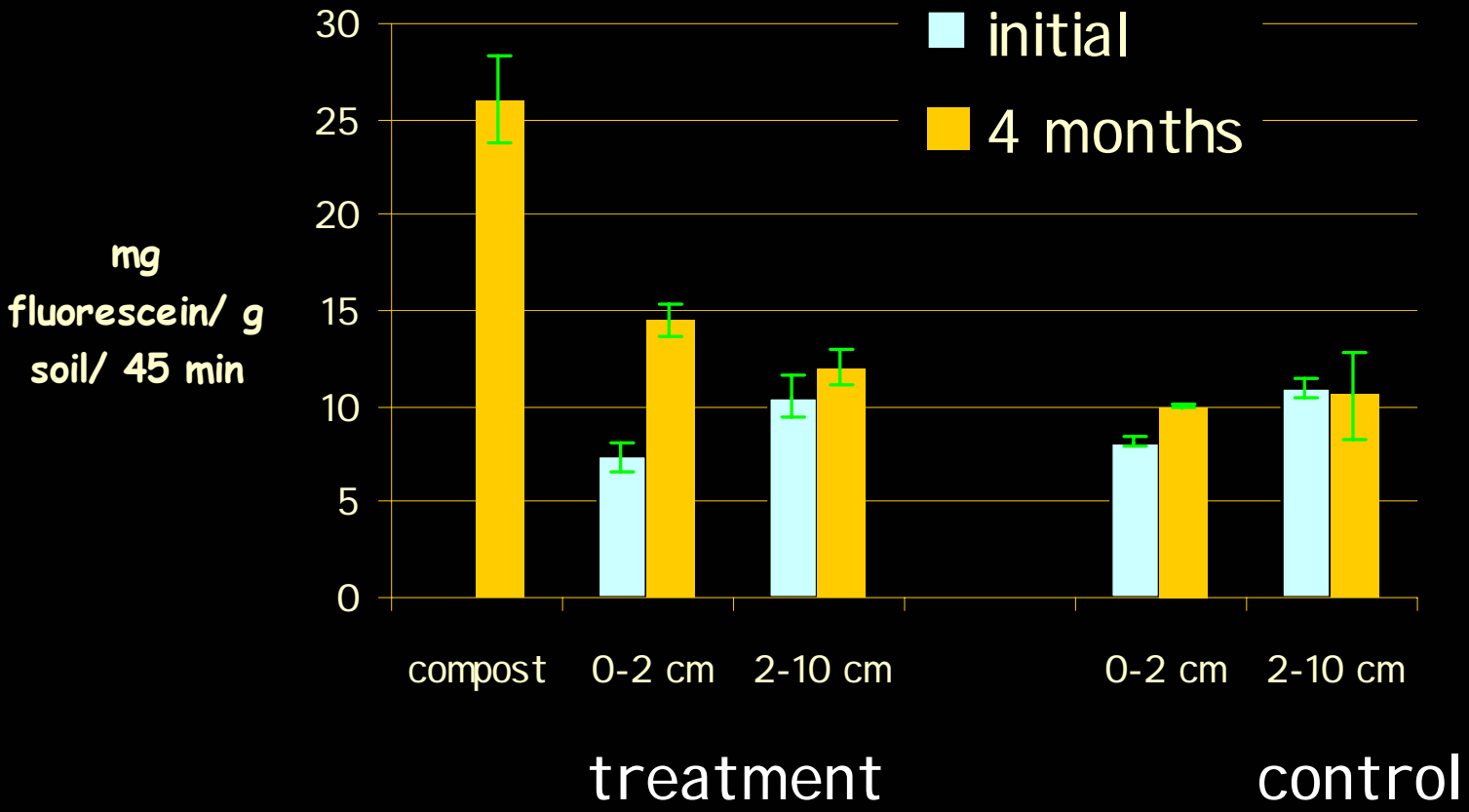








Compost improves soil microbial activity



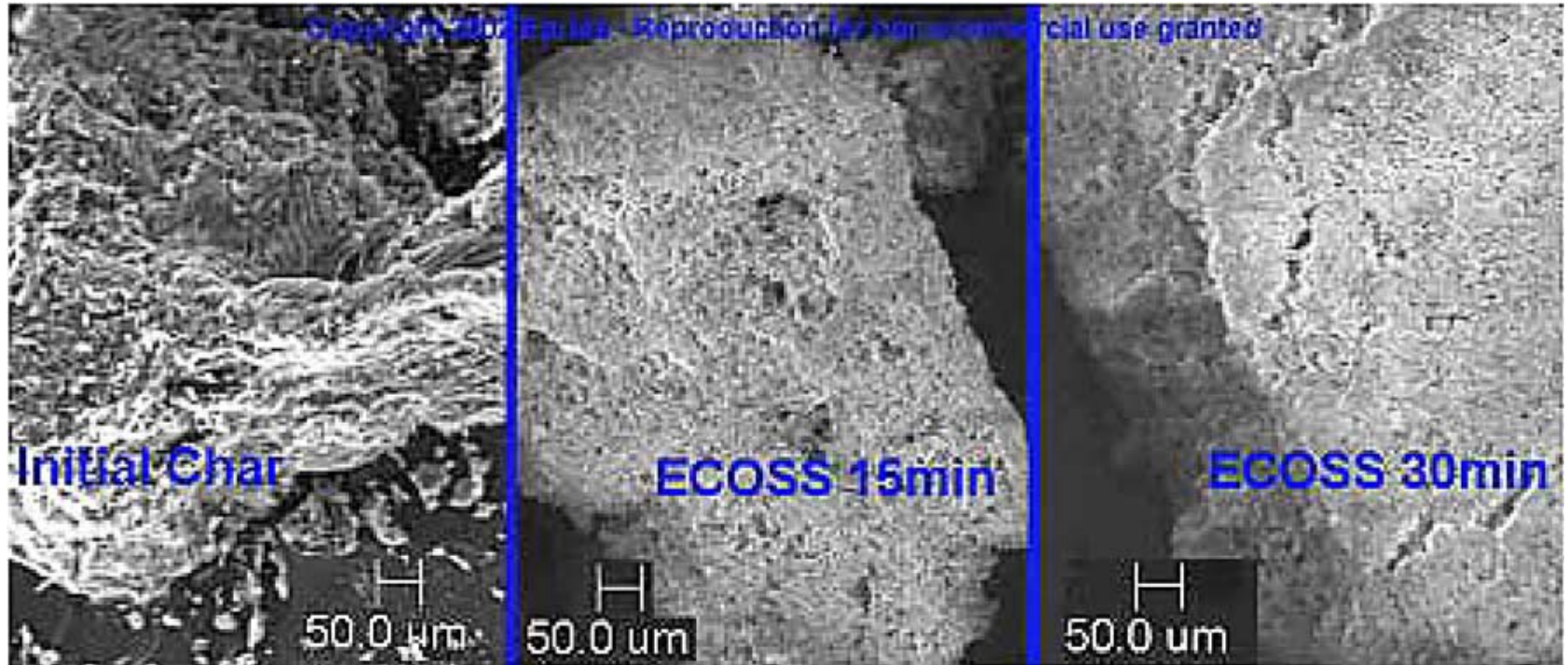


How is Char produced?

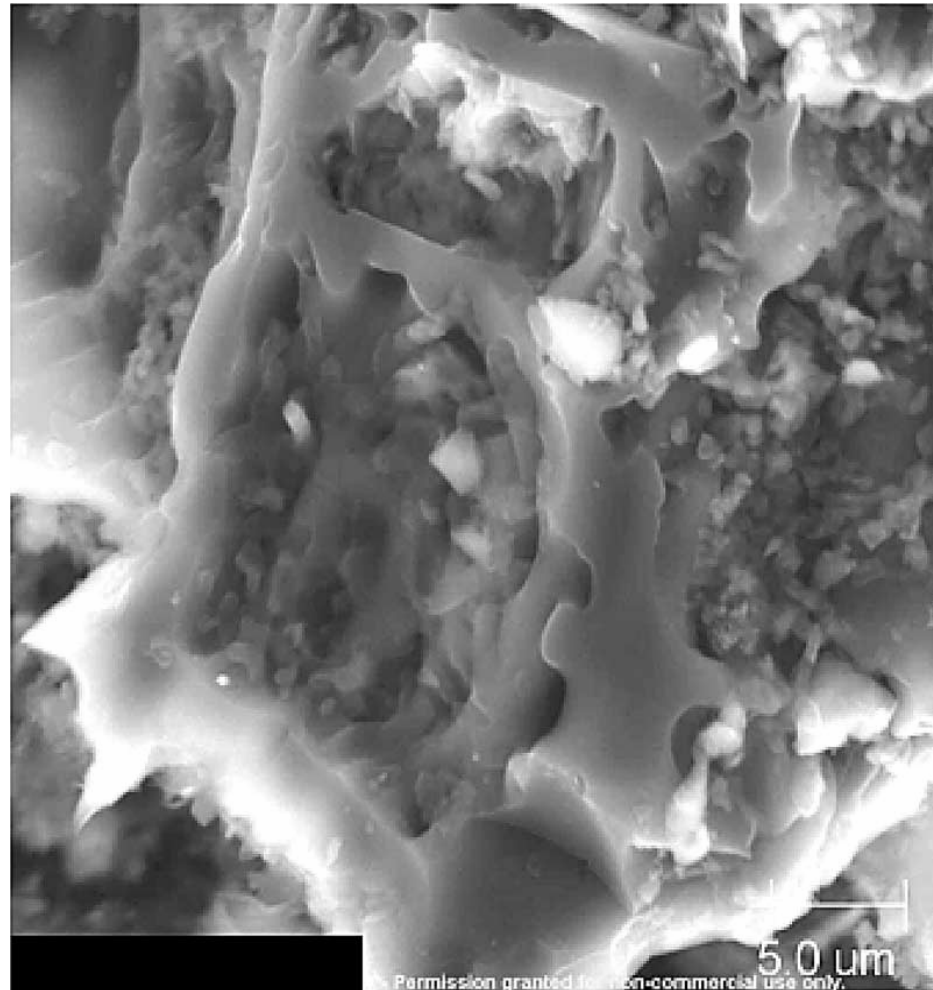


Images of char; initially, after 5-15 and 20-30 min in the fluidized bed.

Day et al. Energy (2005)



Images of the initial char, the enriched carbon, organic slow-release sequestering (ECOSS) 15 min material, and ECOSS-30 min material.



Hydrated ammonia molecules adsorbed into char

Day et al. Energy (2005)



Terra Preta soil





Terra Preta research, Brazil



NPK + charcoal

NPK



Effect of char application (10 t/ha) on growth of radish

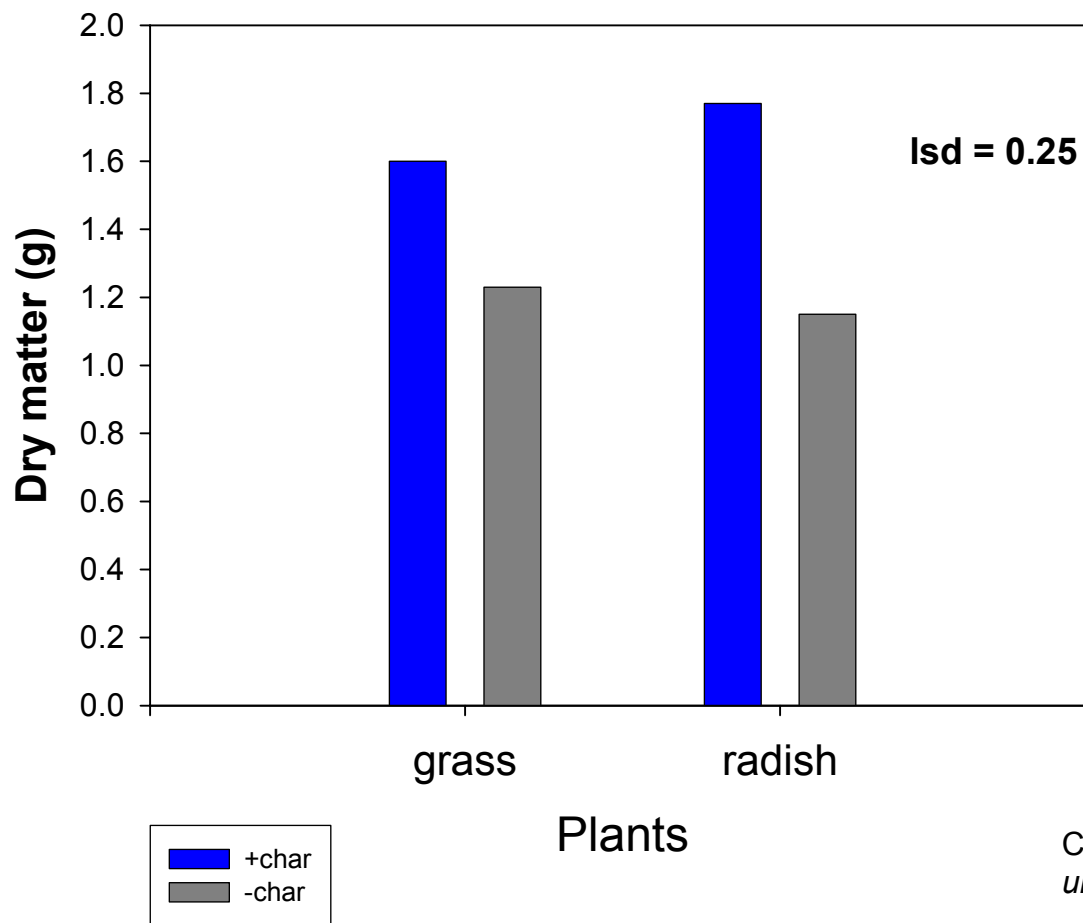


+ Char 10 t/ha

- Char

Chan, Joseph and Tyler,
unpublished data

Effect of char application (10 t /ha) on dry matter production of radish and ryegrass after 19 days



Chan, Joseph and Tyler,
unpublished data



Summary of benefits of Char in soil

- Long-term increases in SOC
- Improved (sometimes significantly) CEC
- Liming value
- Slow release and higher plant available NPK
- Improved water holding capacity
- Improved crop yields
- C sequestration
- Reduced off-site migration of agro-chemicals



Take home message

“Slash and char”, not “slash and burn”