Biochar Research at Russell Ranch

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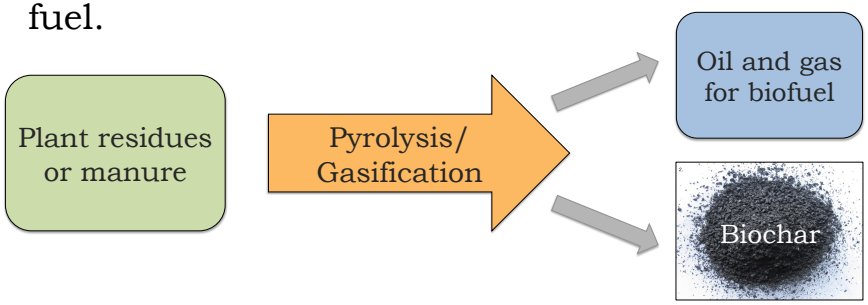
How is biochar made?

- Plant residues or manure are burned at 200-900°C under either no O_2 (pyrolysis) or low O_2 (gasification).
- These processes yield a char product that can be applied to soil.
- Oil and gas by-products can also be used as fuel.



What are the properties of biochar?

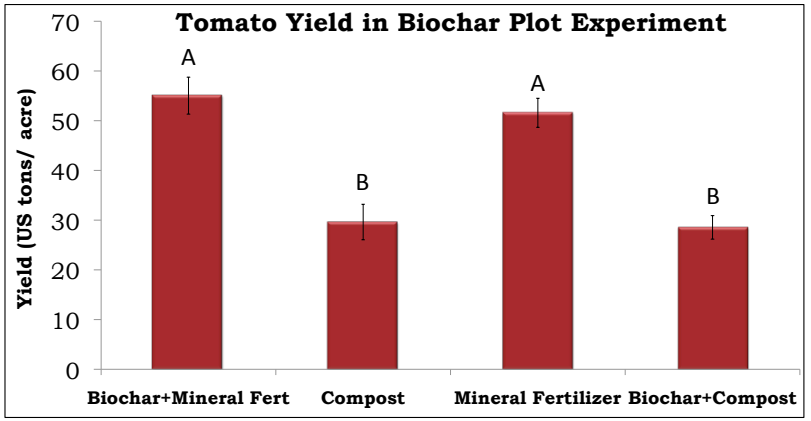
- Biochar's properties can vary greatly depending on feedstock and production method
- However, common characteristics that may make it beneficial to the soil include:
  - High surface area
  - Alkaline pH
  - Stable C structures
  - High cation exchange capacity

Russell Ranch Biochar Experimental Plots

- Established in Spring 2012 and planted in tomatoes
- Used walnut biochar from Dixon Ridge Farms, Winters, CA
- 4 treatments replicated 4 times

The experimental treatments were:

Biochar + Mineral Fertilizer	Compost	Mineral Fertilizer	Biochar + Compost
4.5 tons/acre biochar; 145:45:45 lb/ acre N:P:K	4.5 tons/acre	145:45:45 lb/ acre N:P:K	4.5 tons/acre of each



Mean ± SD. Different letters indicate statistically significant differences.