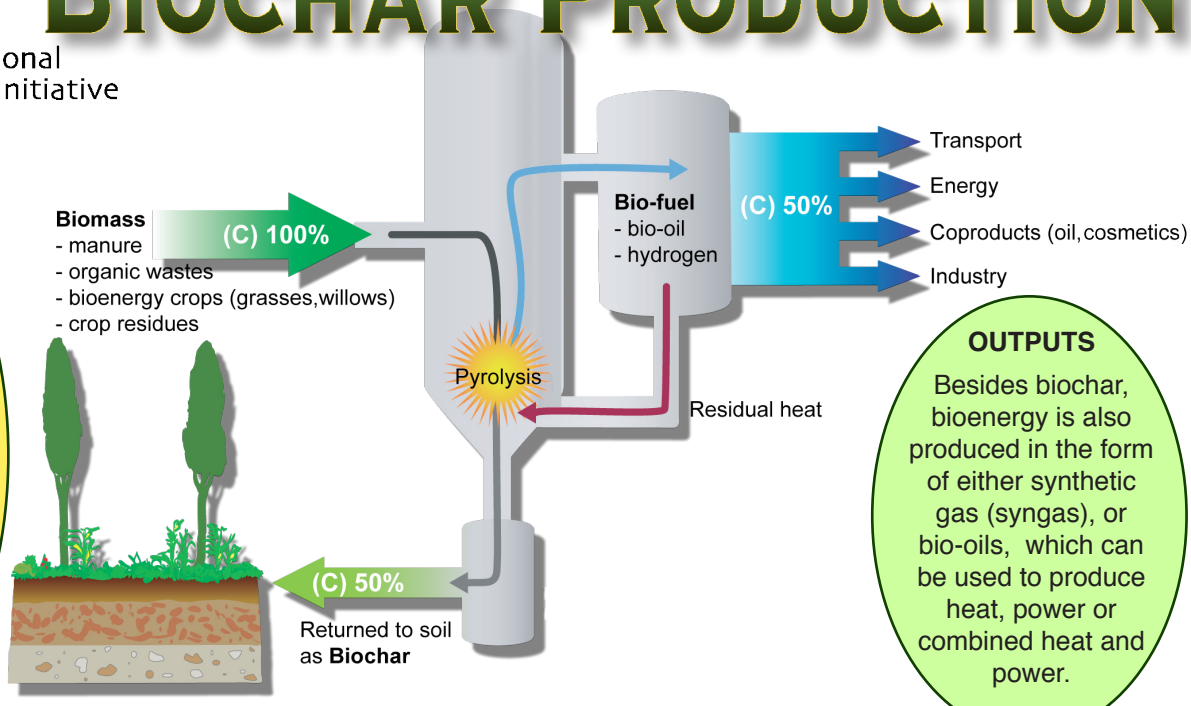
BIOCHAR PRODUCTION

International Biochar Initiative

FEEDSTOCKS

Biochar production processes utilize cellulosic biomass such as wood chips, corn stover, rice and peanut hulls, tree bark, paper mill sludge, animal manure and most urban, agricultural and forestry biomass residues.



OUTPUTS

Besides biochar, bioenergy is also produced in the form of either synthetic gas (syngas), or bio-oils, which can be used to produce heat, power or combined heat and power.

PRODUCTION TECHNOLOGIES

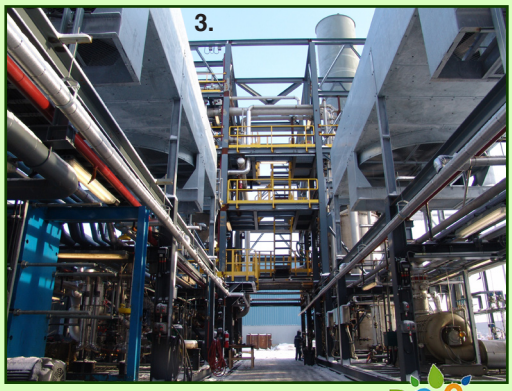
BIOCHAR can be produced by pyrolysis or gasification systems.

PYROLYSIS systems produce biochar by baking biomass largely in the absence of oxygen. The process can become self-sustaining as the syngas produced is combusted, releasing heat. There are two types of pyrolysis systems in use today: fast pyrolysis and slow pyrolysis. Fast pyrolysis tends to produce more oils and liquids while slow pyrolysis produces more syngas. Biochar production is optimized in the absence of oxygen.

GASIFICATION systems produce smaller quantities of biochar in a directly-heated reaction vessel with air introduced.

Gasification and pyrolysis production systems can be developed as mobile or stationary units. Small scale gasification and pyrolysis systems that can be used on farm or by small industries are commercially available with biomass inputs of 50 kg/hr to 1,000 kg/hr. At the local or regional level, pyrolysis and gasification units can be operated by co-operatives or larger industries, and have processed up to 8,000 kg of biomass per hour.

Photos below courtesy of Stephen Joseph and Thayer Tomlinson.
1. Batch Slow Pyrolysis (China)
2. Gasifier (United States)
3. Dynamotive Fast Pyrolysis Plant (Canada)



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