Multi-Functional Porous Carbon Beads

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The conversion of organic wastes into porous lightweight charcoals which are multi-functional produced physically with no chemicals and then carcbonised upto 400 ºC chemically and physically inert and stable diverse uses in horticulture water purification etc

Caracterização do Carvão Vegetal e Cinzas por Diferentes Métodos

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Amazonian soils are highly weathered with high levels of aluminum and low levels of calcium and phosphorus, which are the main factors limiting the productivity. The charcoal and ashes, when incorporated into the soil increase the availability of nutrients to plants. This work consists of the chemical characterization of charcoal and ash from the combustion of wood in the Amazon type furnace hot ass. The samples were subjected to four different methods: Methodology for analysis of soil, the levels of available phosphorus and exchangeable potassium were extracted by Mehlich 1, exchangeable calcium and magnesium extracted by KCl 1 mol L^{-1}; methodology for analysis of plant tissue, the levels of phosphorus, calcium, potassium and total magnesium were extracted by perchloric digestion; methodology for analysis of calcium carbonate, the Ca and Mg were extracted by the method quelatométrico EDTA; methodology for analysis of fertilizer, phosphorus, calcium, potassium and total magnesium were extracted by perchloric digestion. The chemical characterization of charcoal showed low levels of elements in all the methods analyzed. Chemical characterization of ash had low levels of nutrients to the methodology used for soil analysis, the methodology for analysis of organic fertilizer had higher levels of calcium, potassium, magnesium and phosphorus. This indicates that charcoal is more suitable as a soil conditioner and ash may be used as fertilizer.

Biochar Production Strategies and its Potentials for Utilization in Agriculture

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The application of biochar (biocoal, agrichar, or biomass-derived black carbon (C)) to soil is proposed as a fresh approach to ascertain a significant, long term, sink for atmospheric CO_2 in terrestrial ecosystem. Apart from optimistic effects of both reducing emissions and increasing the sequestration of green house gases, the production of biochar and its application to soil will convey immediate benefits through improved soil fertility and increased crop yields. conversion of biomass C to biochar C leads to sequestration of about 50% of the initial C compare to the low amount retained after burning (say 3%) and biological decomposition (<10 - 20% after 5 -10 years), consequently yielding more stable soil C than burning or direct land application of biomass. This great efficiency of C conversion of biomass to biochar, is highly dependent on the type of feedstock, but is not significantly affected by pyrolysis temperature range of between 350 ºC - 600 ºC. Existing slash-and-burn system cause considerable degradation of soil and release of green house gases. Opportunities now exist for conversion to slash-and- char (biochar) system. Global analysis shows that up to 12% of total anthropogenic carbon emissions by various land changes can be off-set annually in soil just by a switch from culture of slash-and-burn to slash-and-char. Agricultural and forestry wastes e.g. mill residues, forest residues, field crop residues, and urban wastes can be converted to biochar resulting in clean environment and reducing the pressure on landfills. Biofuels production using modern biomass can produce biochar by-products through pyrolysis resulting in sequestration of 30.6 kg carbon for each Gj of energy produced. Published projections of the use of renewable fuels in the 21st century, biochar sequestration could amount to 5.5-9.5 Pg C / yr if this demand was met through pyrolysis which would exceeds current emission from fossil fuels (5.4 Pg C/ yr). Biochar soil management system can deliver tradable C emissions reductions; and C sequestered, is easily accountable and provable.