

AGRICHAR TECHNOLOGY

The Utilization of Waste Biomass in SA as a Renewable Resource for Agriculture or Metallurgy

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At least 200,000 tonnes of waste biomass is produced in the mid north of South Australia each year. This biomass includes residues from agriculture, forestry, wood milling operations, and municipal green and domestic waste. The inherent value of this material can be recovered and utilised either as an organic soil conditioner, transformed into charcoal and utilised as a soil additive or as a coal substitute in metallurgical processes. The transformation of the biomass into charcoal using pyrolysis can provide a renewable supply of reductant to replace fossil based sources of carbon. The optimum use of the biomass will depend on various financial and environmental factors. In this work an estimate of the value of using biomass derived charcoal in metallurgical applications has been made and is compared to alternative uses such as soil additives and conditioners.

The Characterization of Pyrolysis Products Produced from Low Value Fractions of Mallee Gums

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Many potential benefits are available when charcoal derived from biomass is substituted for coal in metallurgical processes. These advantages include: lower ash and sulphur and higher reactivity and carbon content. CSIRO Minerals through the Centre for Sustainable Resource Processing (CSRP) is exploring synergetic opportunities for utilisation of the charcoal derived from Mallee biomass in metallurgical processes where high tonnages of low grade fractions could be used as a fuel and reductant. The approach not only makes the WA Mallee project more viable, it also reduces the net GHG from high temperature metallurgical processes. For example charcoal derived from these fractions has been shown to increase the reaction rate of solid state reduction processes such as ilmenite reduction in Becher Kilns. The chemical process which transforms the biomass into charcoal is called pyrolysis. This work highlights the characterisation of the pyrolysis products as applied to the Mallee tree leaf/twig fractions.

AGRONOMIC AGRICHAR RESEARCH AND FIELD TRIALS

Use of Charcoal, Chicken Manure, and Bone Meal in Guarana (*Paullinia Cupana* Var. *Sorbilis*)—Preliminary Results

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Guarana (*Paullinia cupana* hbk. var. *sorbilis*) is an important agricultural product for small farmers in the Amazonas, Brazil. Guarana belongs to the Sapindaceae family and is dicotyledonous, open-pollinated (mainly by bees); in forest it is a liana and in open field is a shrub. An experiment in a factorial design with confounding technique was installed on March, 2003 with the objective of evaluating the influence of levels of chicken manure and

