# REDUCING POLLUTING EMISSION BY CONVERTING PLANT WASTE INTO CHARCOAL

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**Abstract:** *Burning or decomposing natural vegetable waste lead to increased emissions of greenhouse gases. This paper proposes the construction of a facility that used in a household individual plant to turn waste into charcoal. It can be used to improve the model soil "tera preta".*

**Key words:** *"tera preta", processes pyrolysis, pollution, volcanic eruptions*

## GENERALITIES

Pollution is the contamination of the environment with materials that interfere with human health, quality of life or function of natural ecosystems (living organisms and their environment). Even if sometimes environmental pollution is a result of natural causes such as volcanic eruptions, most of the pollutants from human activities.

Urban air pollution is known under the name of "smog". Smog is generally a mixture of carbon monoxide and organic compounds incomplete combustion of fossil fuels such as coal and sulfur dioxide to fuel impurities. While smog react with oxygen, sulfur and organic acids is condensed in the form of drops, mist escalated. Until the twentieth century smog had become a major threat to health.

Pyrolysis of organic waste

Most organic substances are unstable at high temperatures, they can be decomposed in an atmosphere without oxygen or low oxygen content in solids, liquids and gases.

In contrast to the combustion toward processes pyrolysis based thermal decomposition, which differ greatly from technologies used to date.

This orientation was caused primarily by lack of increasingly higher raw materials and energy, and on the other hand came to the fore the need to observe the requirements of increasingly tougher on environmental protection.

The basic principle of pyrolysis is long known. Experiences obtained from the distillation of wood and coal were not sufficient for pyrolysis of solid waste compositions very heterogeneous and due to this fact, in industrial developed countries were undertaken extensive research in this area. They also sought solutions that can solve not only the problem of polluting the atmosphere by storing waste, but their exploitation as raw materials or energy sources, obtaining final products while easily stored and transported.

Terra preta

Terra Preta is the Portuguese name of extremely fertile soil areas (black earth) discovered in the Amazon Basin by Portuguese explorers. Following extensive

process is strongly exothermic, endothermic pyrolysis is a process, so some materials are burned to produce the heat necessary for the pyrolysis.

In recent years, research done for recovery of household waste were directed studies it was found that the composition of the earth are found in large quantities of organic carbon (charcoal) shredded remnants of burnt bones, and the organic fertilizer (manure).

Fig.1

On the left is the photo section of a soil without nutrients of organic nature; On the right, photo-enriched soil substances listed above, because that turned into terra preta. It is important to note that in literature only insist on recovery processes volatile fractions resulting from the pyrolysis process, without insisting on enriching the soil with charcoal process known under the acronym "tera preta". Charcoal is a highly porous with large surface area for absorption, known as activated charcoal technique.

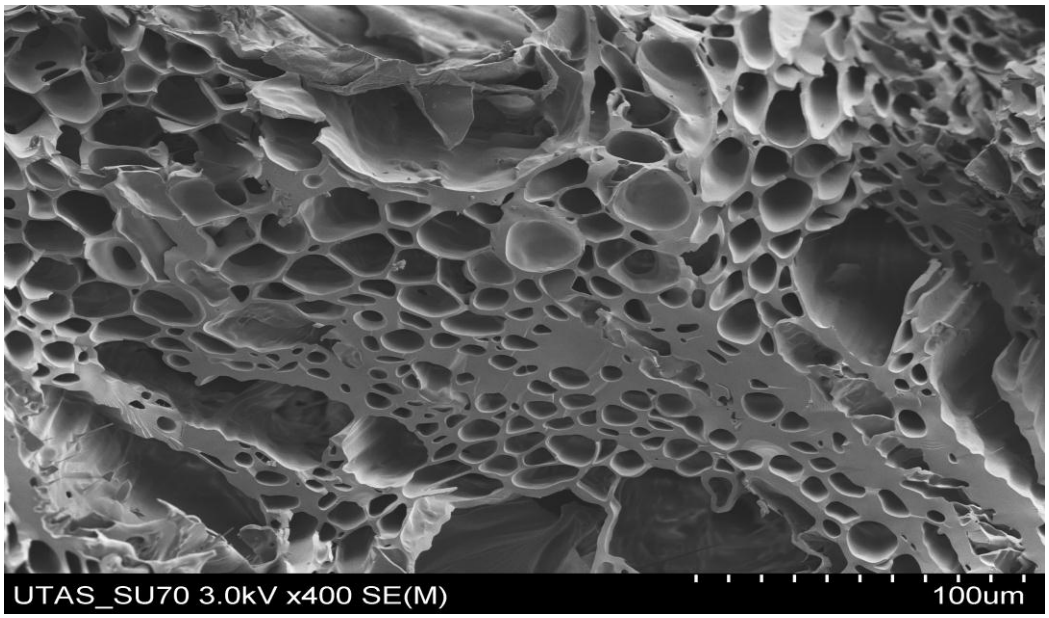


Fig.2

Electron microscopy was measured average pore size in the sample of charcoal: about 100 microns.

The pores are ideal for development of microorganisms, since all conditions heat, darkness, moisture, and their decomposition products arising from becoming food for plants.

Equipment for charcoal production in the household

The plant consists of a tin barrel processed in the following way: Laun was practiced end cap to allow loading of organic waste; the other end was fitted a crank to rotate the barrel on a metal goat, over a flame.

Fig.3. Assembly shown generally barrel is observed, load capacity, rotating crank goat metal barrel support

Fig.4. Conduct of pyrolysis process

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