Research Title : The Study of Quality of Nutshell Charcoal from The Trees
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Year : 2018

ABSTRACT

The study of quality of nutshell charcoal from the trees aimed to produce charcoal from nutshell, to evaluate quality and to identify appropriate type of nutshell charcoal for utilization. Ten nutshells from the different trees were burned by pyrolysis process in a 200-liter tank fuel. The following qualities of the charcoal were evaluated: smoke, luster and spark. Also, heat energy production was studied using the Automatic Bomb Calorimeter.

The results showed that charcoal could be produced from nutshell of the trees. Nutshell charcoal had good quality in terms of little of smoke, except for nutshell charcoal form golden shower tree and bael fruit tree which had quite a large amount of smoke. Regarding luster, nutshell charcoal from red flame-trees had high shiny luster, where as charcoal from coconut and toddy palm had dull luster. For sparks, when nutshells charcoal were burned, all nutshells charcoal had little sparks. The highest heat energy production was found in nutshell charcoal from wood tree apple at 31.847 MJ/kg, follow by nutshell charcoal from toddy palm tree, bael tree, and makha tree, respectively. As well as, nutshell charcoal from golden shower tree generated the lowest heat energy at 20.212 MJ/kg. Regarding the quality of nutshell charcoal for utilization, charcoal from wood tree apple was suitable for heat production. On the other hand, when other factors were considered, nutshell charcoal from makha tree should be selected because of the availability and amount of resources.