

BAMBOO NEWS

Issue No. 122 BAMBOO NEWS September, 2020

EDITORIAL

This article deals with the Biochar which is a carbon product and has properties which are very different from the properties of charcoal which is used for thermal applications and is also different from activated carbon which is used for the removal of toxins and unwanted odour during processing of liquid products.

It is said, Biochar is obtained by carbonizing various types of biomasses to achieve properties which are suitable for remediation of degraded soils.

Research and field studies confirms that with the addition of biochar and biochar products which is biochar compost and other biochar based formulations to the soils, farmers can achieve 20-30% increase in crop yield and minimise the consumption of chemical fertiliser and use of chemical pesticides resulting in savings. This also helps farmers lesser usage of water compared to crops cultivated without the application of biochar or biochar products. Bamboo biochar is a newer product in the family of biochars. The Energy research centre of the Netherlands had claimed in 2015 that Bamboo biochar has better properties than other type of biochars. The popularity of bamboo biochar will lead to greater plantations of bamboos by farmers in the agro forestry mode which is being promoted by central and State Governments with the support of National Bamboo Mission. It is said that biochar products make a very good fertilizer for Organic Farming and Eco-agriculture, which are becoming popular in India. Biochar products will have substantial export potential. As India will continue to be competitive in this market. Bamboo Society of India compliments the writer for her attempts in enlightening the usage biochar.



Dr. K. Sundar Naik, IFS (Rtd)
Chairman,
Bamboo Society of India, Bengaluru

Published by : 'BAMBOO SOCIETY OF INDIA', 'Vana Vikas' (2nd Floor),
18th Cross, Malleswaram, Bengaluru - 560003. Ph: 23469153

Promoting Biochar Culture to Benefit Farmers

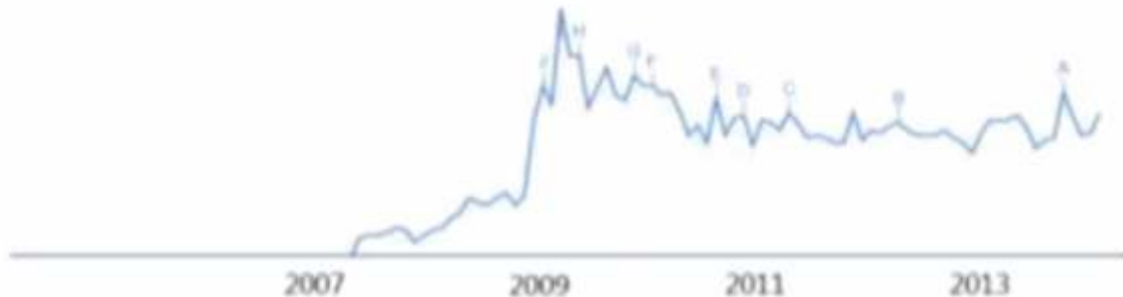
1) Biochar is obtained by carbonizing (Slow Pyrolysis) of various types of biomasses, to achieve properties, suitable for remediation of degraded soils. Research studies and field reports have confirmed that with addition of biochar and biochar products i.e. biochar compost and other biochar based formulations to the soils, farmers can achieve 20-30% increase in crop yield and minimize the consumption of chemical fertilizers and chemical pesticides resulting in savings for them. Also farmers need to use lesser quantity of water compared to the crops cultivated without the applications of biochar/biochar products.

2) Biochar is a carbon product and has properties, which are very different to the properties of Charcoal which is used for thermal applications and is also different than Activated Carbon, which is used for removing toxins and unwanted odour during processing of liquid products.

3) In Europe and USA popular applications of biochar, manufactured in the industrial mode, commenced in the year 2007 and consumption has seen a growth of about 19% per year with growing awareness as indicated in the graph below.

Biochar trends

The term 'biochar' has achieved popular use since 2007, as the statistics below from Google Trends reveal².



Picture 14 There is a growing trend and interest in biochar globally

As per LinkedIn statistics, biochar is becoming increasingly important, with 19% growth per year in profiles listing biochar as a skill. Biochar represents the primary industry Renewables & Environment.

4) In Europe and US, the research labs and commercial organizations also discovered other applications of biochar, such as addition for animal feed (1%) and also additional for health products. The market potential for biochar products in USA for the year 2019 estimated by a company based in Florida is \$8.9 billion and consumption, domain wise is given below

Markets	Annual Biochar
Sales Potential	
Mercury removal from coal fired power stacks	\$2,000,000,000
Animal Feed Additive	\$2,000,000,000
Nutrient Pollution	\$1,000,000,000
Oil & Gas	\$950,000,000
Lawn and landscape	\$600,000,000
Waterway restoration	\$500,000,000
Plastic lumber	\$350,000,000
Specialty Ag (hemp, fruits, vegetables)	\$350,000,000
Biochar manure and fertilizer pellet	\$325,000,000
Drought relief	\$300,000,000
Mine Reclamation	\$250,000,000
Activated Carbon Replacement	\$150,000,000
Asphalt filler	\$100,000,000
Concrete filler	\$100,000,000
Total	\$8,975,000,000

5) In India a leading research organization, Central Research Institute for Dryland Agriculture (CRIDA-ICAR) along with other R&D institutes and universities have done research in the area of production and applications of biochar in rural regions, under the program 'National Initiative on Climate Resilient Agriculture' (NICRA). They had issued two bulletins one in 2013, titled as 'Use of Biochar for Soil Health Enhancement and Greenhouse Gas Mitigation in India' and the second one was published in the year 2018 and the title is 'Biochar Products and its Use in Rainfed Agriculture'. Both the bulletins have highlighted the potential benefits of using biochar and also suggested method of manufacture of biochar in rural areas and their applications.

They have also identified areas for further research. One of their strong recommendation is not to burn agri waste, but convert the same into biochar and also recommended that there is need to develop suitable technologies and processing equipment to manufacture biochar having smaller capacity, which can be deployed in rural areas.

6) In US and Europe professional societies have played important role in promotion of biochar products. The two organizations are 'International Biochar Initiative' (IBI) with head quarter at New York and 'European Biochar Organization' with headquarter at Switzerland.

These organizations are supported by the government agencies, biochar manufacturing industries, farmer organisations and other philanthropic agencies

The above organization issues quality certificate for biochar products manufactured in their countries for various applications.

Similar societies have been established in various other counties to promote the biochar culture.

7) Bamboo biochar is a newer product in the family of biochars. In the year 2015, one R&D organization i.e. 'Energy research Centre of the Netherlands (ECN)' had claimed that Bamboo Biochar has better properties than other type of biochars. They also reported the following yields from their pyrolysis plant during processing of the bamboo species being *Bamboosa Vulgaris*

Bamboo Biochar	30% of the input weight (bone dry basis)
Bio Oil	46% of the input weight
Syn Gas and other residues	24% of the input weight

8) The popularity of bamboo biochar will lead to greater plantations of bamboos by farmers in the agro forestry mode which is being promoted by central and state governments with the support of National Bamboo mission (NBM). It is possible that each biochar manufacturing unit can consume 5-10 tons of bamboo biomass per day, sourced from bamboo processing industries where it is available as processing waste and also consume B grade bamboo culms available from bamboo farms. Implementation of this concept will enhance the income substantially of the farmers

9) Biochar products make a very good fertilizer for Organic Farming and Eco-Agriculture, which are becoming popular in India. It is recommended that this segment can evaluate the benefits of using biochar, specially bamboo biochar.

Biochar products will have substantial export potential. As India will continue to be competitive in this market.

10) In India, a society "Bharat Biochar Initiatives (BBI)" has been established recently in the year 2020. The membership of BBI consists of agri professionals, R&D professional, agri entrepreneurs and progressive farmers. The prime objectives of BBI is advocacy with the policy makers and providing a platform for interaction between biochar manufacturers and biochar users i.e. progressive farmers from all parts of India.

One of the member of BBI, who manufactures pyrolysis plants, based at Mumbai has conducted laboratory test using biomass of Indian bamboos, to manufacture bamboo biochar and has reported similar outputs as mentioned in the report by ECN, Netherlands, mentioned in para 7 above.

BBI has also been able to convince a leading organization CSIR-IICT (Indian Institute of Chemical Technology) based at Hyderabad to offer testing services for various manufacturers of biochar.

BBI is committed to promote Biochar Culture in India for multiple benefits.

11) The author recommends establishment of a National Biochar Mission, with sufficient funds to promote the research required in this emerging sector. National Biochar Mission also needs to promote export of biochar products. It can support programmes for interaction amongst farmers from overseas who are successfully using biochar products. Mission needs to have action plan for the next 10 years.

by : **R.K Mehta,**
 Founder and Coordinator,
 Bharat Biochar Initiative (BBI),
 Mob: +91 98480 15828,
 Date: 13-07-2020

Book-Post

To

Published by :

BAMBOO SOCIETY OF INDIA

"Vana Vikas", 18th Cross, Malleswaram,

Bangalore - 560 003. **Ph : 080 23469153**

E-mail : bamboosocietyofindia@gmail.com

Web : www.bamboosocietyofindia.in