

Optimising biomass potential

JTS Group aims to address sustainability issues in agriculture industry with biochar

BY FATIHAH MANAF

N 2022, the Intergovernmental Panel on Climate Change (IPCC) released a report titled "Climate Change 2022: Mitigation of Climate Change," which explored the potential of biochar in mitigating climate change. The report highlighted that biochar, a form of charcoal derived from biomass, can sequester up to 2.6 billion tonnes of CO2 annually.

JTS Group is fully committed to tackling climate change as a corporation that greatly emphasises environmental sustainability. It recognises the significance of managing biomass resources sustainably and responsibly.

The Group's subsidiaries, Taiyo Biomass Sdn Bhd and JTS Optimax Sdn Bhd are dedicated to optimising the potential of biomass, with particular attention on resources generated by the agriculture industry.

Taiyo Biomass serves as a hub and ser-



Tridansh Bahadur Pandey and Ramkripal Pandey.



Tridansh Bahadur Pandey

vice provider for managing palm kernel shells (PKS), emphasising traceability and data collection. At the same time, JTS Optimax is the driving force behind JTS Group's research and development (R&D) initiatives, including the biochar project.

Tridansh Bahadur Pandey, JTS Group's Research and ESG Director, emphasised that the company's R&D efforts are primarily dedicated to exploring the potential of biomass and its conversion into valuable products such as biochar and other carbon dioxide sequestering products.

He noted that the sources of biomass generated from the agriculture industry vary depending on the region and the country. In Malaysia, biomass predominantly comes from cocoa, rubber, rice or palm industries.

"We have been focusing on biomass waste for a long time and exploring ways to address both the haze issue and climate change," said Tridansh.

"Dry biomass is a primary contributing factor for haze or forest fires, which can occur due to environmental conditions. Dry biomass can be from anywhere (dead forest vegetation or agriculture), and we want to reduce biomass burnt or generated by human activities from being one such source. Our research aims to develop a solution. We have worked on this for the past 15 to 20 years."

He shared that Ramkripal Pandey, the founder of JTS Group, was approached by the Department of Environment (DOE) to address the biomass issue in the early 2000s. After that, Ramkripal Pandey began researching and developing a partial solu-



tion before venturing into the e-waste

"This solution involved processing biomass into biochar, which was still in its nascent stage then, and there wasn't much development in this field yet. This was back when climate change or carbon credits were starting to come into focus," Tridansh added.

CREATING A GREENER AGRICULTURE INDUSTRY

Ramkripal said: "Looking at the statistics, the largest volume of biomass comes from the agriculture industry. We proceeded with handling the empty fruit bunches (EFBs). EFB is quite different from other biomass - very fibrous, containing 40 to 50 per cent water."

"Logistics is a big issue because we are transporting water, not only biomass. We tried to take the challenge, and we're still trying to solve that problem – hoping to help the palm oil industry become greener and to reduce its carbon footprints."

He pointed out that in newsreels or articles, agriculture biomass burning was often observed during the haze issue in Southeast Asia, making them one of the most challenging biomass to deal with. Despite working on it for 15 years, the Group is still searching for a solution to make it economically viable.

In the beginning, Ramkripal considered converting EFBs into fuel. However, if considering carbon sequestering, it was not a feasible option. Later, the current team discovered that biochar could be a viable solution.

He highlighted that biomass management, including EFBs, had become increasingly essential in the palm oil industry in response to new regulations and market demands for sustainability.

Ramkripal said: "The market wants to see a greener industry, demanding less clearing of rainforests, etc. Our target is to re-green the agriculture industry. Take the generated biomass, and put it back into the soil to make the soil better so that the yield becomes better. By making the industry greener, we can enhance the marketability of the final product."





Jason Cheng

BENEFITS OF BIOCHAR ACROSS THE INDUSTRY

"The added value of producing biochar is that it can benefit plantations and address environmental issues in the agriculture industry, regardless of the biomass source," said Tridansh.

In Southeast Asia, where the soil is predominantly acidic, adding biochar can help recondition and improve it.

He elaborated: "Treating biomass as important as any industrial waste, given its sheer volume, can help reduce the agriculture industry's potential involvement in health impacts, the haze or other environmental issues."

"Biochar can help restore and sequester carbon in the soil - reducing the amount

of carbon dioxide or methane released during the decomposition of biomass while improving carbon footprints. It can also be used to reduce the desertification of soil. The long-term benefit will be mitigating climate change and making the agriculture industry greener."

Jason Cheng, Research Advisor at JTS Optimax, added: "By using biochar in the soil, we can prevent the clearing of virgin forests and extend the life cycle of the soil that has been used for commercial agricultural purposes."

"The biochar contains soil conditioning properties. It promotes soil remediation during reforestation projects while increasing the amount of carbon sequestered."

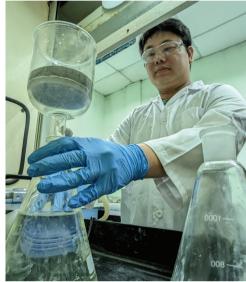
În his article on stratsea.com, Cheng highlighted that biochar could be a potential solution to three existential threats - climate change mitigation, food security and sustainable energy needs.

ADDRESSING CLIMATE CHANGE

Tridansh stated that climate change was a global issue, emphasising that any entity that emits carbon dioxide or particulate matter into the air will eventually affect everyone. He said it was an international issue that requires collective efforts to mitigate its effects.

"Crop burning has been a common practice since our ancestors' time. But the problem with it now is the increase in scale and size. Therefore, adding much more particulate matter and carbon dioxide into





the environment. We hope using this kind of biochar technology, we can mitigate this situation."

Instead of solely highlighting the negative impact of the agriculture industry on the environment, Tridansh said it was essential to explore and discover alternative technologies and policies that can provide solutions.

"The question remains – is there an alternative for the agriculture industry? How do we help the agriculture community to improve their environmental management without increasing their cost of production?

"These are the kinds of questions that the international community are working towards addressing. These issues will impact everyone involved, including the farmers and end consumers."

Ramkripal emphasised that: "Biochar functions as a sponge that may help reduce water loss and improve fertiliser usage in agriculture. It can also aid in reducing the carbon footprint of the palm oil industry, meeting stricter international standards and challenging developed countries' negative views on palm oil."

"Our goal is to mitigate biomass just like any other industry. To create a circular, sustainable, cleaner and greener agriculture industry," Tridansh added. – @Green

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Ramkripal

What is biochar?

BIOCHAR is a fine-grained, highly porous charcoal that helps soils retain nutrients and water. It is produced using pyrolysis by subjecting organic wastes to high temperatures in an oxygendeprived environment while generating valuable by-products to be used for electrical or thermal energy.

The end product has carbon as the main constituent, with other

plant nutrient chemicals in variable composition. Applying biochar to soil is a carbon-negative process since carbon in biochar is more recalcitrant than in the natural environment and will remain in the ground longer without adding to the atmospheric carbon dioxide.

The benefits of biochar applications include the following:

Reducing carbon: Reducing greenhouse gases and helping

to mitigate climate change.

 Reconditioning soil: Improving the quality of contaminated soils and/or improving soil conditions for cultivation

 Animal feed: Improving animal health naturally and reducing dependence on antibiotics

Farming: Increasing nutrients retention, creating sustainable fertiliser blends and increasing crop output and growth