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Kenaf Is the Key to Go Green in Environmental Crisis Era: A Review

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[Introduction]

9:42! It represents the 2021 Environmental Doomsday Clock. The closer a needle approaches midnight, the closer to catastrophe the environmental crisis is. The hour from 9~12 means 'risky.' Making peace with nature is the defining task of the 21st century. It must be the top priority for everyone, everywhere, said United Nations Secretary-General António Guterres. So, ecologically sustainable means of development is the key to support environmental homeostasis.

[Results and Discussions]

Pollution due to plastic waste is just one of the primary causes of climate change. So, one of our roles is to find bio-degradable resources that can be substituted for petroleum-based products to effectively abide by the natural viability. To counter the issues of deforestation and preserve biodiversity, it is necessary to produce a non-wood crop that can fulfill the requirement for raw material from which several products can be produced.

Kenaf is showing sufficient potentiality along this road-map. It has been used extensively in various fields for long, probably as early as 4,000 BC. Kenaf is a plant that most people may not have heard about but is used to produce many types of eco-friendly materials. The green tag is further associated with kenaf because it produces the largest biomass among crops and trees, and scavenges extensive amounts of carbon dioxide (CO₂) and nitrogen dioxide (NO₂) from the atmosphere, at a rate 3-5 times faster than forests. Over the past decades, kenaf has been used as provider of paper, plastics, fiber glass, block, biofuels, and activated carbon. For example, Toyota Motor Corporation has used sustainable material obtained from kenaf fiber to produce an electric vehicle, which has joined with Covestro. Israeli company Kenaf Ventures manufactures thermal insulating plaster, masonry blocks, and walls made of kenaf fibers for construction. Also, researchers and industries successfully yielded a wide range of biofuels such as bioethanol and biogas from kenaf. Recently, research with kenaf has been expanded considerably. The kenaf-based material was developed for supercapacitor, canister, and epoxy. And, kenaf can be used for the powdered form to absorb chemical spills and can be used as a potential crop to remediate heavy metal-contaminated soil and water. The results meet environmental goals and demand from end-users for more sustainable solutions. Hence, kenaf is an effective alternative of non-biodegradables, and can thereby alleviate the levels of environmental pollution.

In Korea, the idea of using kenaf as a replacement of synthetics has not yet developed. Scientific and industrial passion in this direction is the prime necessity for innovation and augmentation of the uses of this multi-faceted plant in this country. Kenaf can indeed play an important role in terms of sustainable environment and economy. So, it is time we adopt kenaf to implement the "Go Green" in the environmental pollution era.

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