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Biofuel Production by Lignocellulosic Biomass Benefits for Future Prospects

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Abstract—Over the last few years, there has been a rise in research interest in the importance of bio-sourced lignocellulose biomass as a good alternative to petroleum-based fuels as a serious consideration of global economic and environmental pollution issues. Industrial biomass made up of lignocellulosic waste is a low-cost, sustainable, abundant natural resource that can be used to collect bioenergy on a wide scale and at a low cost. Other difficulties concerning processing steps in converting biomass to liquid transportation fuel, such as pretreatment, hydrolysis, microbial fermentation, and fuel production, are in addition to this logistic obstacle. To extend the range of natural bioresources, biotechnology's rapidly emerging tools will minimize conversion costs while also increasing the target yield of the desired product. In this context, green biotechnology appears to be a promising method for transforming most solid agricultural wastes, especially lignocellulosic materials, into liquid bio-based energy-fuels. Substantial progress has already been made in positioning cellulosic ethanol to compete with corn ethanol. The present summarized analysis work starts with a description of lignocellulosic biomass's Physico-chemical characteristics and composition. Other countries around the world have set their own goals for replacing petroleum fuel with biofuels to generate demand for renewable energy, so lignocellulosic biofuels take longer to enter the market. A brief overview of potential considerations follows the details on multi-step processing technologies for converting agro-industrial biomass to fuel ethanol. Other options are valuable tools for increasing and making the role of renewable fuels in global energy more significant.

Keywords—Lignocellulosic Biomass, Green Biotechnology, Environmentally Friendly, Bio-energy, Bio-ethanol, Industrial enzyme, Agriculture, Renewable Resource, Biomass, Biofuel