



Biorenewable Insights: Cellulosic Feedstocks

Cellulosic Feedstocks is one in a series of reports published as part of NexantECA's 2021 Biorenewable Insights program.

Overview

Significant volumes (billions of tons) of low carbon intensity cellulosic feedstocks are available globally. These are predominantly residues from existing agricultural production or processing. Broad concerns about the future of the global economy and the environment have brought about a new goal for industries, consumers, and governments to strive towards in the 21st century: sustainability and the now tangible goal of becoming "net zero by 2050" is rapidly emerging as the consensus. To address these growing concerns, next-generation cellulosic biofeedstocks and the technologies to enable them are currently under development.

Technologies

The technologies used to process these biomass feedstocks have been classified as follows:

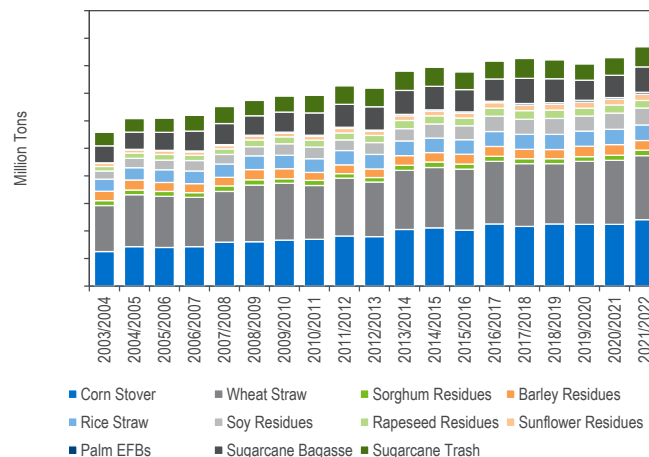
- First Generation (1G) technologies processing edible agricultural crops
- Second Generation (2G) technologies processing non-edible biomass, including residues and waste

Though there are different mixes of types of biomass feedstocks in each region, there are vast quantities available in all regions. These include the following:

- **Grasses** – Including on-purpose energy crops
- **Wood and Wood Wastes** – Including on-purpose production, forestry wastes and urban wood wastes (road and utility line maintenance, forest culling).
- **Agricultural Residues** – Including corn stover, wheat straw, and rice straw, sugarcane bagasse and field trash, as well as many others.
- **Milling Wastes** – Including sugarcane bagasse, oil palm empty fruit bunches (EFBs), and pulp and paper mill wastes.

Production

The report also shows the global volumes of the investigated crop residues and milling wastes by type:



Process Economics

The following cost of production models are provided:

- **US:**
 - Hybrid Poplar
 - Switchgrass
 - Corn Stover
- **Brazil:**
 - Sugarcane Field Trash
 - Energy cane
- **Western Europe**
 - Miscanthus
 - Wheat Straw
- **Asia:**
 - Rice Straw
 - Palm Empty Fruit Bunches (EFBs)



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- Trends in technology
- Strategic/business overviews and/or developer profiles
- Process Technology:
- Chemistry
- Process flow diagrams and descriptions of established/conventional, new and emerging processes
- Process economics – comparative costs of production estimates for different technologies across various geographic regions
- Capacity tables of plants and analysis of announced capacities
- Regulatory and environmental issues where relevant

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- Consultation time with the project team

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Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program, the Biorenewable Insights program (BI), and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

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