



Biorenewable Insights: Natural Oil Feedstocks

Natural Oil Feedstocks is one in a series of reports published as part of NexantECA's 2022 Biorenewable Insights program.

Overview

Significant volumes of natural oils are available—and though high demand has greatly increased prices, the underlying costs remain relatively low, leading to high margins. Lower carbon intensity oils are in much higher demand and significantly limited supply.

On a global level, the majority of the consumption of natural oils is for food use (almost three-quarters). This includes oils used as food or for cooking. The bulk of the remaining natural oil consumption is used for biofuels and oleochemicals, which currently together make up almost equal parts of the majority of the industrial applications.

Technologies

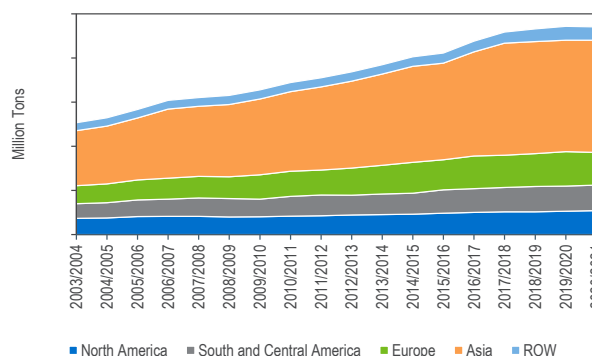
By far, the most abundant of the global biofeedstocks are virgin and refined vegetable oils. Despite being relatively expensive compared to other first-generation oils, vegetable oils are also the most predictably priced and readily available oleaginous feedstocks. These feedstocks are heavily used in fuel production, food products, and industrial applications, including oleochemicals and surfactants.

The major commodity oilseeds are the sources of the important virgin vegetable oil feedstocks. The highest volume virgin vegetable oils are palm oil, soybean oil. Following the successful growth and harvest of an oilseed crop, the oil must be extracted from the oilseed or fruit. Oil extractions can be broken into two broad categories, pressing and solvent extractions. Depending on the oilseed being processed, the two extraction techniques are often combined for higher oil yields. Pretreatment configurations will vary depending on the specific oilseed and the type of extraction.

Tallow, lard (rendered fats from cattle and swine, respectively), rendered poultry fats, and post-consumer ("waste") oils and greases (typically from frying operations) each have their own much different but often complex pre-processing requirements and byproducts. Collection and management of these resources are executed by an activity and industrial sector called "rendering".

Production

Oil production has grown at a steady rate globally. Asia remains the dominant region for oil production with a near-monopoly on palm oil production and significant production of soybean oil. This report presents production by oil, and by region.



Process Economics

Cost of production models are presented for the following:

- US:
 - Soybeans / Soy Oil
 - Canola / Canola Oil
- Brazil:
 - Soybeans / Soy Oil
 - Palm Fruit Bunches / Palm Oil
- Western Europe:
 - Rapeseed / Rapeseed Oil
 - Sunflower / Sunflower Oil
- Asia:
 - Soybean / Soybean Oil
 - Palm Fruit Bunches / Palm Oil



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- Strategic/business overviews and/or developer profiles
- Process Technology:
- Chemistry
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- 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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