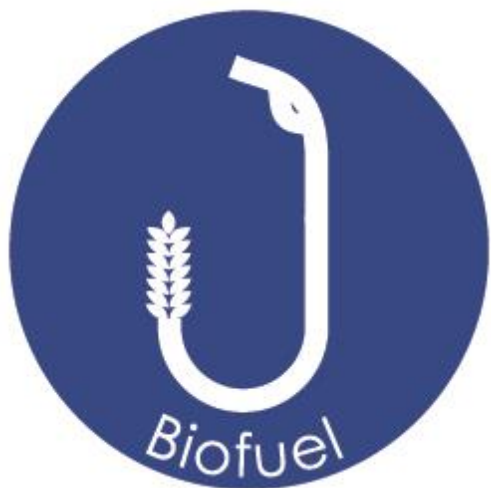


News Review



Issue Seventy-Seven
August 2018

Each month we review the latest news and select key announcements and commentary from across the biofuels sector.

Contents

Policy	4
Markets.....	6
Research & Development	7
Bioethanol	9
Biodiesel.....	9
Aviation Biofuel	10
Events	12
Price Information.....	13

Foreword

Welcome subscribers to the last NNFCC news review of August: biofuels.

There is plenty of news this month from Asia, particularly India. Currently, India has the third-highest level of crude oil imports in the world, costing the country over 70 billion US dollars per year. India's government has now decided that the solution to this problem lies in biofuels. To specifically tackle the issue, the government has pledged to invest in 12 biorefineries, looking to up the nation's bioethanol production to 4.5 billion litres annually. This is particularly significant as income levels are rising in India, leading to more citizens opting to drive cars and increasing petrol consumption. The government hopes that by making the switch to biofuels, petrol consumption will decrease, with the added effect of reducing the country's carbon emissions. India's target is to reach a 10% ethanol blend in its petrol by 2022, and 20% by 2030.

Further south, in the wake of being hit by the EU's restrictions on palm oil-based biofuels, Indonesia has opted to take the matter into its own hands. Rather than exporting the palm oil, it will be used domestically, with all of the nation's railways and electricity generators now being mandated to use 20% palm-based biodiesel in their fuel blends. This has the triple benefit of allowing Indonesia to make use of its increasing stockpiles of palm oil in the wake of the EU restrictions, but also to cut both its own carbon emissions and crude oil imports, much like India.

Back home here in the UK, there has been a negative response from MPs to the government's decision to delay the UK's switch to E10 biofuel. Instead, the government has opted to open another consultation into E10's introduction, as we reported last month. The consultation is open for responses until the 16th of September.

Read on for the latest news.

Policy

India to offset oil bill with biofuel usage



Pexels

India aims to increase the use of biofuels to cut its oil import bill by 120 billion rupees (£1.36 billion) by 2022 and reduce carbon emissions.

India is the world's third-biggest oil importer and consumer, and ships in about 80 percent of its crude needs, but is gradually building capacity to increase its output of biofuels.

The South Asian nation plans to build 12 bio-refineries costing 100 billion rupees to produce fuel from items including crop stubble, plant waste and municipal solid waste.

Building the bio-fuel refineries is said to create 150,000 new jobs, but no timeframe is given for when they will all be up and running.

India, a signatory to the Paris Climate deal, plans to reduce its carbon footprint by increasing ethanol content, a sugar by-product, in its gasoline to 10 percent by 2022 and to 20 percent by 2030.

Supplies of ethanol to fuel retailers have jumped to about 1.41 billion litres in the current sugar year, which ends in September, from about 380 million litres in 2013/14, helping the nation cut energy imports by 40 billion rupees.

India aims to ramp up ethanol production to 4.5 billion litres in the next four years, a move that could cut the country's gasoline consumption.

Use of gasoline in India has been growing rapidly as millions more households buy motor cars and motor cycles due to rising income levels and cheaper credit.

Click [here](#) for more information.

US Senators seek increase in biofuel targets

U.S. Sens. Patty Murray, D-Wash.; Roy Blunt, R-Mo.; Heidi Heitkamp, D-N.D.; and Chuck Grassley, R-Iowa, led a bipartisan group of 35 other senators urging the U.S. EPA to increase volume obligations for biomass-based diesel and advanced biofuel and ensure any small refiner economic hardship exemptions are appropriately accounted for in its final rule for the Renewable Fuel Standard. The EPA's June 2018 proposal would raise the biomass-based diesel volume for 2020 to 2.43 billion gallons and increase the advanced biofuel volume for 2019 to 4.88 billion gallons.

As the senators noted in their letter, every 500-million-gallon increase in biodiesel production supports an estimated 16,000 jobs.

Click [here](#) for more information.

Indonesia introduces tougher biofuel mandates

Indonesia will widen a biofuel mandate to cover railways and power plants starting next month as the world's largest palm oil producer seeks to trim stockpiles and save billions of dollars in fossil fuel imports.

The railways and electricity generators will need to use fuel blended with 20 percent palm biodiesel from Sept. 1. The government had earlier said the

expanded mandate will also include military and mining vehicles. The mandate will help the country cut crude oil imports worth about 50 trillion rupiah (\$3.5 billion) annually.

Indonesia is battling an emerging-market selloff and a deteriorating current-account deficit, prompting President Joko Widodo to consider options to boost foreign-exchange earnings and stem a rout in its currency. The push for increased use of biodiesel will also help cushion the impact of soaring costs for subsidizing fuel and electricity after Widodo pledged not to raise tariffs ahead of next year's general election.

Southeast Asia's largest economy may consume 4 million kilolitres of biodiesel this year with the expanded mandate and it may jump to as much as 6.2 million kilolitres next year. The government will directly appoint suppliers and distributors to boost availability of the blended fuel across the archipelago, instead of auctioning the quota to fuel retailers.

Click [here](#) for more information.

Delay of UK E10 introduction criticised

A cross-party group of UK MPs has slammed the Government for delaying the introduction of E10 petrol.

The criticism followed the Department for Transport's decision to launch a consultation on whether E10 should be introduced.

Nic Dakin, Labour MP for Scunthorpe and chair of the All Party Parliamentary Group for British Bioethanol, commented: "As usual the Government is failing to take the initiative and lead the way on tackling climate change and air pollution, choosing instead to delay vital decisions and thereby putting thousands of jobs in my region at risk.

"E10 is a quick and easy way to tackle the most pressing environmental problems from transport, which is the largest single contributor of greenhouse gas emissions. While the Department

for Transport have set out E10's benefits, they've failed to provide a realistic workable solution for its introduction.

"Numerous consultations, select committees and working groups have already recommended E10, we gain nothing by going through the motions of yet another call for evidence, but we stand to potentially lose a major industry and employer in the North East."

The PRA has said its members are strongly opposed to the introduction of E10 until and unless it is mandated by the Government.

Click [here](#) for more information.

US corn farmers fighting to save market in face of ethanol policy



Flickr

American farmers became casualties of President Donald Trump's trade wars when China raised tariffs on their soybeans. Now they are fighting to save another market: corn.

Under Mr Trump, the federal environmental regulator has been watering down a government mandate for biofuel use, corn advocates say. The actions could suppress fuel ethanol companies' demand for the yellow grain just as farm profits slide.

"Everything relative to ethanol has really been an uphill battle for us," said Mark Recker, a farmer and president of the Iowa Corn Growers Association. "Although President Trump talks a lot about ethanol and wanting to build that industry

and help corn farmers out, we've encountered a lot of things that have really worked counter to that."

Mr Recker travelled to the Iowa State Fair last week to press his case at a meeting with Andrew Wheeler, acting administrator of the US Environmental Protection Agency. Underlining the farm lobby's political clout, he was joined by Iowa's governor, Kim Reynolds, and one of its congressmen, David Young. Both Republicans are in competitive races in the November elections, where the mandate is a critical issue for rural voters.

Iowa is the nation's leading corn and ethanol producer. It is also a swing state that voted twice for Barack Obama, a Democrat, and then backed the Republican Mr Trump in 2016.

It is hard to overstate the importance of the biofuels industry as a market for Midwest farmers' crops. About 38 per cent of the US corn harvest is sold to ethanol plants and a third of US soyabean oil is used to make biodiesel, according to the agriculture department. The US is the world's largest biofuels producer, with most petrol containing 10 per cent ethanol and diesel averaging nearly 5 per cent biodiesel, EPA figures show.

Click [here](#) for more information.

Markets

Indonesia seeks palm oil deal

Indonesia has asked for its companies to be allowed to build palm oil jet fuel plants in the United States and France as a condition for its airlines to buy Boeing Co and Airbus SE planes, its trade minister said.

This marks the latest effort by the world's biggest palm oil producer to find ways to help mop up output of the tropical oil, its second-largest export, that is increasingly unwelcome in the

European Union (EU) and United States given environmental and competitive concerns.

Home to the world's third-largest expanse of tropical forests, Indonesia faces pressure to limit destruction of forests, particularly growing on carbon-rich peatlands, that are at risk from rapidly expanding palm and mining sectors.

EU negotiators in June agreed to phase out use of palm oil in transport fuels from 2030 due to concerns over high indirect greenhouse gas emissions, while the United States in April placed an anti-dumping tariff of up to 341 percent on Indonesian biodiesels.

Click [here](#) for more information.



Pxhere

High production sees reduction in US ethanol prices

The premium for outright Chicago CBOB gasoline over Argo ethanol hovered at an eight-month high, boosted by a recent plunge in the benchmark ethanol market.

High production rates over the past several weeks coupled with higher-than-expected inventories are weighing on ethanol prices, sending Argo to its lowest levels since January.

S&P Global Platts assessed Chicago CBOB at a 75.42-cent premium to Argo ethanol, the highest level since November 2, 2017.

US ethanol production rose 1,000 b/d to average 1.073 million b/d, according to US Energy

Information Administration data. It reached its second-highest recorded level of 1.100 million b/d a week earlier.

Ethanol stocks, meanwhile, rose 242,000 barrels to 23.259 million barrels. Market participants had expected a draw on the Gulf Coast as a large export cargo was due to load and depart the region.

Benchmark Chicago CBOB, meanwhile, has rallied, widening the spread to ethanol. It was assessed at a flat price of \$2.0567/gal, up from \$2.0126/gal, according to Platts data.

Click [here](#) for more information.

Research & Development

Enzyme discovered that could boost biofuel production

Researchers at the Tokyo Institute of Technology report on an enzyme belonging to the glycerol-3-phosphate acyltransferase (GPAT) family as a promising target for increasing biofuel production from the red alga *Cyanidioschyzon merolae*.

Algae are known to store up large amounts of oils called triacylglycerols (TAGs) under adverse conditions such as nitrogen deprivation. Understanding precisely how they do so is of key interest to the biotechnology sector, as TAGs can be converted to biodiesel. To this end, scientists are investigating the unicellular red alga *C. merolae* as a model organism for exploring how to improve TAG production.

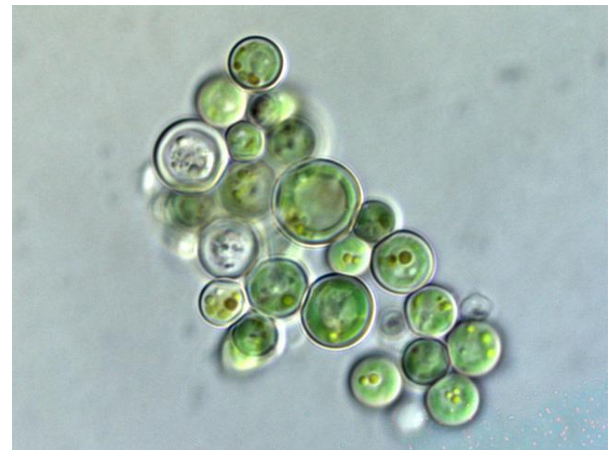
A study led by Sousuke Imamura at the Laboratory for Chemistry and Life Science, Institute of Innovative Research, Tokyo Institute of Technology (Tokyo Tech), has now shown that an enzyme called GPAT1 plays an important role in TAG accumulation in *C. merolae* even under

normal growth conditions—that is, without the need to induce stress.

Remarkably, the team demonstrated that TAG productivity could be increased by more than 56 times in a *C. merolae* strain overexpressing GPAT1 compared with the control strain, without any negative effects on algal growth.

Their findings, published in *Scientific Reports*, follow up previous research by Imamura and others that had suggested two GPATs, GPAT1 and GPAT2, may be closely involved in TAG accumulation in *C. merolae*.

Click [here](#) for more information.



Wikimedia Commons

Identifying barriers to biobased hydrocarbon production

Global climate change caused by the accumulation of greenhouse gases (GHGs) has caused concerns regarding the continued reliance on fossil fuels as our primary energy source. Hydrocarbons produced from biomass using microbial fermentation processes can serve as high-quality liquid transportation fuels and may contribute to a reduction in GHG emissions. Here, the authors discuss the barriers and opportunities for bio-based production of hydrocarbons to be used as diesel and jet fuels, and review recent advances in engineering microbes for production of these chemicals. There are two main challenges associated with establishing bio-based

hydrocarbon production from cheap feedstocks; lowering the cost of developing efficient and robust microbial cell factories and establishing more efficient routes for biomass hydrolysis to sugars for fermentation. We discuss how to develop novel systems and synthetic biology tools that can enable faster and cheaper construction of microbial cell factories and thereby address the first challenge, as well as recent advances in biomass processing that will likely lead to overcoming the second challenge in the near future.

Click [here](#) for more information.

"Two-Faced" membranes could see biofuels applications

Named for the mythical god with two faces, Janus membranes—double-sided membranes that serve as gatekeepers between two substances—have emerged as a material with potential industrial uses. Creating two distinct "faces" on these delicate surfaces, however, is a process fraught with challenges.

By applying a common high-tech manufacturing technique in an uncommon way, researchers at the U.S. Department of Energy's Argonne National Laboratory have discovered a new way to chemically deposit a second face, resulting in Janus membranes that are more robust and precisely structured than previous incarnations. Recently described in an article in *Advanced Materials Interfaces*, the patent pending technology could help optimize or enable a wide range of industrial processes, from treating wastewater to making biofuels.

Click [here](#) for more information.

Biofuel from forestry waste



Geograph

Rehap, an EU project, has found a way to produce 2,3-butanediol, a chemical building block used in a range of industrial applications, using sugars purified from forestry waste. The news demonstrates that 'recycled' sugars could be used as a viable alternative to sugars produced from standard processing methods. To develop the technology, Rehap is partnering with the investor Tecnia and its portfolio company Biosyncaucho.

The chemical building block is produced in two steps. First, starch-like residues purified from poplar, a waste product of woody material, are broken down into its constituent sugars. Then, a fermentation process is used to synthesize 2,3-butanediol from these simple sugars. The compound is usually produced using chemical hydrolysis, however, Rehap's approach gives a comparable product.

2,3-butanediol has a wide range of uses, from pharmaceuticals to cosmetics, food additives, plastics and flowering agents, and the industry is estimated to be worth around €3.5M. In 2016, Novamont an Italian biotech, opened the first industrial plant in Italy dedicated to the eco-friendly production of the butanediol from genetically engineered E.coli in Italy. By using forestry waste, Rehap's technology could provide a more sustainable addition to existing methods used to produce the chemical.

Click [here](#) for more information.

Bioethanol

China reaffirms support for bioethanol

China's corn futures were on track for their biggest one-day jump since May after the central government said it would promote the use of ethanol in vehicles, its first public statement on its ambitious biofuel policy in almost a year.

China will promote the use of ethanol in 15 regions this year, including Beijing and Tianjin municipalities and Hebei province, said a post on the government's official website that summarised a Wednesday meeting of the nation's State Council.

The most-active corn futures on the Dalian Commodity Exchange were up 0.85 percent on Thursday at 1,892 yuan (\$275.24) per tonne, on track for their biggest daily jump in three months.

Beijing will lay out plans for grain-based ethanol production and accelerate the construction of cassava-based ethanol plants, the government posting said.

Click [here](#) for more information.

Novel seawater process developed for bioethanol production

Researchers have found that seawater can replace freshwater to produce the sustainable fuel bioethanol, reducing the need to drain precious resources.

The study - "The establishment of a marine focused biorefinery for bioethanol production using seawater and a novel marine yeast strain" - has been published in Scientific Reports and was carried out by researchers at the University of Nottingham. Their results showed that seawater can be used in bioethanol production along with a new strain of marine based yeast.

The research was conducted using seawater from the Lincolnshire coast and marine yeast samples

from various locations in the U.K., U.S. and Egypt. They were then put through a fermentation process.

Increased awareness of global warming and climate change, combined with petrol price rises, has led to the search for alternative sustainable sources of energy. Bioethanol has been considered one of the best fuel alternatives because it is a liquid fuel with similar characteristics to petrol and governments around the world are looking to increase its production.

Click [here](#) for more information.

Biodiesel

Rise in UK biofuel supplies over the past year



Geograph

UK renewable fuel supplies from April 15, 2017, to April 14, 2018, totalled 1.621 billion litres, a rise of 5.2% on the year, according to the latest Renewable Transport Fuel Obligation (RTFO) statistics released Thursday by the UK Department for Transport.

Biodiesel supplied in the UK over this period totalled 802 million litres, up 11.2% on the year, while bioethanol supplies totalled 744 million mt, down 1.9%.

Diesel and petrol supplies in the period amounted to 29.372 billion litres and 15.745 billion litres, respectively. For diesel, this reflected a 0.4%

increase on the year, while for gasoline this represented a 3.0% increase on the year.

Some 1.306 million litres of biofuel have so far been demonstrated to meet sustainability requirements, of which biodiesel comprised 48% (622 million litres), bioethanol 47% (613 million litres) and biomethanol 5% (61 million litres).

Used cooking oil (UCO) represented 40% of all biofuel feedstock, down from 41% in the 2016/17 year. The feedstocks for ethanol were more diverse, however, with corn taking 14% of the total biofuel feedstocks, wheat: 12%, and starch slurry had an 11% share.

RTFO statistics also report that 2.169 billion Renewable Transport Fuel Certificates (RTFCs) have been issued for fuel meeting the sustainability requirements, 79.3% of which were issued to double counting feedstocks.

All of the RTFCs issued for this period have been to biofuel that has a minimum of 50% GHG savings.

Of all the biofuel feedstock supplied to the UK for the year, 25% came from the United Kingdom (321 million litres), 13% from France (166 million litres), 12% from the USA (159 million litres), 8% from Ukraine (101 million litres), and 5% from China (69 million litres).

The UK currently has a blending mandate for biofuels of 7.25%, which increased from 4.75% in April.

Biodiesel demand in the UK is expected to rise to 690,000 mt for 2018, up from 613,360 mt, as a result of this increase in the biofuels mandate. Most of the rise in the mandate is expected to be met by biodiesel, and particularly UCOME (UCO-based biodiesel), rather than ethanol, as the double-counting system will remain in place.

Click [here](#) for more information.

Aviation Biofuel

India's first biofuel test flight



Pixabay

Budget passenger carrier SpiceJet successfully operated India's first test flight partially powered by biofuel. A concoction of biofuel mixed with aviation turbine fuel (ATF) powered a SpiceJet's Q400 flight. The flight took off from Dehradun to Delhi. It was received by Cabinet ministers and airline officials at the Indira Gandhi International Airport, Terminal 2. The Indian government will make an environment friendly aviation action plan till 2035, Civil Aviation Minister Suresh Prabhu said.

The development assumes significance as the high ATF prices have dented the Indian airline sector with almost all players reporting losses for the first quarter of 2018-19. Currently, fuel prices constitute 50-55 percent of the overall operations cost of domestic airlines. India's ATF prices are one of the highest in the world due to the addition of state levies and taxes. The fuel is not under the GST ambit like the bunker fuel used for the shipping industry. Accordingly, a cabinet note on the standardization, use and policy of biofuel blended with ATF will be prepared soon, said Road Transport and Highway Minister Nitin Gadkari at the media briefing after the arrival of the flight.

Click [here](#) for more information.

Neste unperturbed by cancellation of Geneva project

Biofuel producer and oil refiner Neste sees good opportunities for its renewable jet fuel despite a cancelled pilot project in Switzerland, a company executive said.

The Finnish company is hoping to get a boost for its biofuels business in the coming years from proposed reductions of CO2 emissions in aviation.

The pilot project was due to replace at least 1 percent of jet fuel used at Geneva airport with Neste's biofuel, until Swiss authorities told Neste they had decided not to back the scheme.

Neste had considered the Geneva project as an important step in ramping up its aviation business, but the head of its renewable products Kaisa Hietala told Reuters the cancellation would not affect Neste's plans.

Click [here](#) for more information.

Events

Biofuels International Conference & Expo Berlin, 10th-11th October 2018

Now in its 11th year, the acclaimed Biofuels International Conference and Expo will be taking place in Germany for the first time.

With regulations and markets constantly evolving, it's becoming increasingly important to stay informed on this ever-changing landscape.

Not only will attendees benefit from the fantastic networking opportunities available, but they will hear two-days of engaging talks from industry experts and discover the trends that will shape their biofuels plans for the near future.

Brought to you by Biofuels International, the leading international industry publication, this year's conference will be co-located with the International Biogas Congress & Expo as well as the International Biomass Congress & Expo, heralding this series of bio events as our largest gathering yet of bio related companies, giving participants unrivalled coverage.

Click [here](#) for more information.

International Biogas Congress & Expo Berlin, 10th-11th October 2018

Brought to you by Bioenergy Insight, the leading biogas industry publication, this two-day conference will bring together leading producers, stakeholders and companies within the biogas sector.

Expert international speakers will address a range of biogas related issues and topics within Europe and beyond. Co-located with the International Biomass Congress & Expo as well as the renowned Biofuels International Conference and Expo, this series of bio events will be our largest gathering yet of bio related companies, giving participants unrivalled coverage.

Click [here](#) for more information.

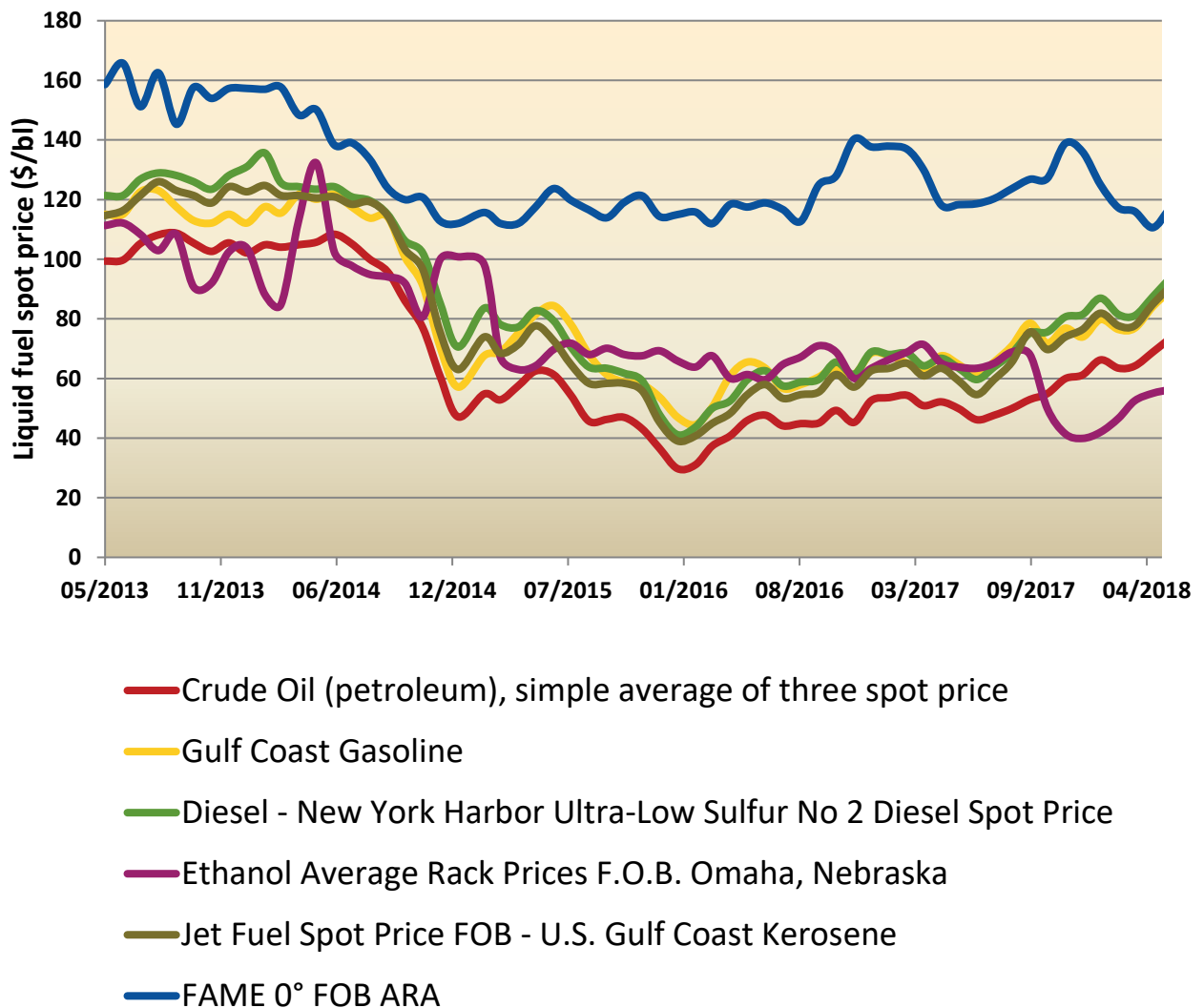
EFIB Toulouse, 16th-18th October 2018

Join over 650 bio-based leaders in 2018 for the 11th edition of EFIB in Toulouse, France, on the 16th, 17th and 18th of October.

Click [here](#) for more information.

Price Information

Historical spot prices of liquid fossil fuels and liquid biofuels. Five years prices and up to May 2018 are given in \$ per barrel.



Prices of Crude oil, diesel, gasoline, and jet fuel are recorded from www.indexmundi.com; Price of ethanol from www.neo.ne.gov; Biodiesel spot prices from <http://www.kingsman.com>

Credits and Disclaimer

NNFCC News Review is edited by Bob Horton for NNFCC subscribers. Feedback is welcome. The Review has been compiled in good faith and NNFCC does not accept responsibility for any inaccuracies or the products or services shown.



NNFCC

Biocentre, York Science Park

Innovation Way

Heslington, York

YO10 5DG

Phone: +44 (0)1904 435182

Fax: +44 (0)1904 435345

Email: enquiries@nnfcc.co.uk

Web: www.nnfcc.co.uk

Twitter: [@NNFCC](https://twitter.com/NNFCC)