

## News Review



**Issue Seventy-Four**

**May 2018**

Each month we review the latest news and select key announcements and commentary on feedstocks used in the bioeconomy.

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# Foreword

Welcome, subscribers, to May's Feedstocks News Review.

Back in December of last year, we reported on a new tool an interactive map had been published showing, at the greatest ever resolution, all of the world's available cropland. This at the very least provided an interesting representation of the global food situation (and some fun in the NNFCC office). The tool's developers used it to determine that there was 20% more available cropland on Earth than previously thought, providing hope for future agricultural developments, both for food production and the bioeconomy. One other kind of land classification that hasn't been so meticulously studied is marginal land; this kind of land is difficult to define, but is broadly accepted to be land that is not easy to directly profit from. Marginal land has often been touted as the solution to the land-use change debate. By growing biomass crops on marginal land, we don't interfere with food production. A study published last year found that US biomass needs could be satisfied utilising only 3% of available cropland, with 80% of this being marginal land. However, the issue is more nuanced. Marginal land is not necessarily useless land – it may provide important services for maintenance of biodiversity and ecosystems, and support to subsistence farmers in developing countries. It is with this in mind that a Horizon2020-funded project is seeking to develop a tool that shows Europe's marginal land – with the aim of determining how much could be available for biomass cultivation. The results are expected in December of this year, and will hopefully provide some clarity on a potentially key future issue for the bioeconomy.

This month, there are also several pieces of news from the feedstocks markets, as some interesting market situations have arisen. Analysis by AHDB has found that over 50 years of continuous growth in wheat productivity has allowed yields to double over that period, while keeping the crop area stable. This has created a situation whereby global cereal production has become dependent on these high yields, meaning if disaster strikes, and particularly harsh weather events occur, then there could be significant impacts on global markets given the significant supply and demand interconnection between countries. Currently, thanks to high production levels, surplus levels are at their highest ever. However, use continues to grow at a faster rate, meaning any significant drop off in yield will see prices increase significantly. Elsewhere, there is concern from European sugar manufacturers that with current low sugar prices, the market will be unable to sustain itself, with prices falling below production costs. No solution appears to be immediately forthcoming, and so the industry has made a plea to the European Commission and Member States to consider ways to minimise the ongoing and potentially irreversible damage to farmers, workers, and sugar manufacturers.

Read on for the latest news.

# Policy

## Variety in European biowaste collection



*Flickr*

From 2023 onwards, separate collection of bio-waste will be mandatory across Europe in order to increase the overall amounts of separately collected waste and to help meet the ambitious recycling targets set out in the new EU waste rules. Yet, the separate waste collection systems (including for bio-waste) still vary widely among the 28 EU Member States, and the contamination of organic waste streams by non-compostable plastics is high and constitutes a real problem for composting facilities.

The Italian Composting Council (CIC) presented the results of tests that have been conducted in 27 composting plants in Italy, which found that the contamination of organic waste reaches up to 4.9% on average in these facilities. The contamination mainly consists of non-compostable plastics caused by misthrows. The situation is similar in many other European countries.

The Austrian compost and biogas association KBVÖ (Kompost- und Biogasverband Österreich) reported that 80-90% of impurities in the organic waste collected from households are conventional, non-biodegradable bags. To tackle this problem and reduce impurities, KBVÖ plans to launch an initiative aiming to only market single-use carrier bags in Austria that are compostable according to the European standard for industrial composting EN 13432. Combined with a consumers' information campaign, the compostable bags are intended to be re-used to collect and dispose organic kitchen waste. This way, more bio-waste will be separately collected and diverted from other recycling streams, while, at the same time, the contamination of the collected organic waste with conventional, non-biodegradable plastics will be reduced.

Bio-waste represents 40-50% of the municipal waste streams in Europe, but only about 25% are separately collected and organically recycled at the moment. Around 100 million tonnes annually are 'wasted' across the EU and lost as a valuable resource. This shows how crucial both, an efficient technical waste management infrastructure as well as mandatory separate collection of biowaste, are in order to reach the recycling targets set out in the EU waste package. The higher the volume of separately collected organic waste, the higher the incentive to set up systems to treat the waste in an efficient manner and to achieve the best economic and environmental outcomes.

Click [here](#) for more information.

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## US proposes labelling for bioengineered food

A recent amendment to the Agricultural Marketing Act of 1946 requires the Secretary of Agriculture (Secretary) to establish the national mandatory bioengineered (BE) food disclosure standard. The Agricultural Marketing Service (AMS) is proposing a new rule that would require food manufacturers and other entities that label foods for retail sale to disclose information about BE food and BE food ingredient content. The proposed rule is intended to provide a mandatory uniform national standard for disclosure of information to consumers about the BE status of foods. AMS seeks comments on the proposed rule. This proposed rule also announces AMS' intent to request approval by the Office of Management and Budget (OMB) of new information collection and recordkeeping requirements to implement the proposed BE food disclosure standard.

Click [here](#) for more information.

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## Markets

### Veolia launches organic resource trading platform



*Veolia*

Veolia has launched an innovative online trading platform with the aim of making it easier to sell and buy organic resources. According to the company, the website could be of use to the anaerobic digestion and biomass industries as a way of trading resources.

Dubbed BioTrading, the new website will function as a sales and auction market place. The idea, according to Veolia, is to connect buyers to the rest of the value chain.

According to Veolia, the BioTrading site is aimed at 'anyone who has resources, or requires them.' This includes the anaerobic digestion, biodiesel and bioethanol industries, as well as the likes of farming, food and drink, and water companies.

Biodiesel and bioethanol residues, sewage and industrial waste, wood, and food waste are just some of the materials that will be available on the new website.

Veolia states that users of the site also be able to take advantage of haulage companies who've complied with the new initiative.

Click [here](#) for more information.

## High global wheat production leaves little room for market problems



*Wikimedia Commons*

Analysis by AHDB on the evolution of wheat productivity shows that global wheat productivity has increased threefold since 1960, with the global area harvested remaining fairly stable. Average global yields have more than doubled in the intervening period, driving most of the change. Today's cereal production is therefore highly dependent on high yields, which increases risks to supply from uncontrollable variables such as weather events. There have been few such interruptions to productivity in recent years and record surpluses have been built up from record years of production. However, the stock to use ratio (excluding China which has been building internal stockpiles) is declining and is forecast at 22% in 2017/18. This leaves little margin if problems are encountered in a major exporting country and prices will respond accordingly.

Click [here](#) for more information.

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## EU Sugar Market feeling strain



*Wikimedia Commons*

At 372 EUR/tonne in February 2018, the EU average white sugar price is currently at its lowest level since the establishment of the European Commission Price Reporting System in July 2006, and down by more than 25 per cent since August 2017. It is almost ten per cent below the white sugar reference threshold, the only objective benchmark that exists to monitor the health of the sector. And it is far below EU average production costs. Current sugar prices are not sustainable for beet and sugar production. This is confirmed by press reports that even the most competitive producers are sustaining heavy losses. Unfortunately, calls from the European Commission for the sector to regulate itself take no account of market realities. Sugar production is up because relative high world market prices at the end of 2016 and the abolition of quotas led to higher production. Higher production also allows for a greater distribution of fixed costs, increasing operators' competitiveness in a more liberal environment characterised by increased competition. Meanwhile, low world market prices are dragging down the EU market. Sugar exports, while greater than under the quota system, are restricted by current world market price levels, debasing a major outlet. Substantial zero- and reduced-tariff import quotas set up since 2013, along with complete market opening to the ACP/LDC, prevents the gap between EU prices and world prices from exceeding 100 EUR/tonne for any sustained period. But world market prices do

not reflect economic realities: as a residual dump market, world sugar prices are depressed in large part by subsidised production and exports from Brazil, Thailand, Pakistan, and India, and by excess production pushed onto the world market by a host of smaller players that is often sold at below cost. If the gap between current EU prices and those until September 2017 remains at the present level, the net transfer of wealth from the sugar sector (farmers and industry) to secondary processors and retailers will be at least 2 billion EUR by the end of 2018. The European Association of Sugar Manufacturers has urged the European Commission and Member States to take account of the escalating crisis in the sector, and to consider ways to minimise the ongoing and potentially irreversible damage to farmers, workers, and sugar manufacturers.

Click [here](#) for more information.

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## **Strong demand for biomass in Asia**

Hawkins Wright have undertaken a detailed assessment of the market potential for biomass in Asia, now available as a client report.

The report highlights Asia's demand for biomass is growing rapidly. Wood pellet imports into South Korea and Japan have grown exponentially in the past few years. In 2017 South Korea imported 2.4 million tons (Mt) of wood pellets, 20 times more than was imported in 2012. Japan is currently a smaller market, but its growth has also been impressive. Japan imported over 500,000 tons in 2017, a seven-fold increase from 2012. PKS consumption has risen at a similar rate, to 1.5 Mt in 2017.

South Korea's biomass demand is supported by the Renewable Portfolio Standard, which aims to achieve a 10 percent renewable electricity share by 2024. To satisfy their RPS requirements,

obligated companies can either generate their own renewable electricity or purchase Renewable Energy Certificates (RECs) from other renewable electricity generators. However, much uncertainty currently surrounds the Korean subsidy system. Changes to the REC weightings of certain technologies, including wood pellets, could reduce their value significantly.

In Japan, the market is supported by a feed-in-tariff (FIT) scheme which provides a 20-year subsidy to firms producing renewable energy. Biomass has proved hugely popular. By March 2017 almost 12GW of biomass projects had been approved under the FIT scheme, far exceeding the quantity envisaged under Japan's Best Energy Mix 2030 scenario of 2.7-4GW. This has forced the Japanese Ministry of Economy, Trade and Industry (METI) to act to curb the growth of biomass power, and from 2018 new biomass applications >10MW have been removed from the main FIT and switched to a new bidding system.

The huge scale of this potential growth in biomass demand has, understandably, drawn a lot of attention. Biomass producers and users worldwide are looking keenly to Asia and wish to understand how the growing market may impact on existing global trade flows. The outlook for Asian biomass demand is far from certain and a wide range of variables could feasibly constrain its growth.

Click [here](#) for more information.

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# Research & Development

## Paper seeks to improve wood properties

A multi-omics quantitative integrative analysis of lignin biosynthesis can advance the strategic engineering of wood for timber, pulp, and biofuels. Lignin is polymerized from three monomers (monolignols) produced by a grid-like pathway. The pathway in wood formation of *Populus trichocarpa* has at least 21 genes, encoding enzymes that mediate 37 reactions on 24 metabolites, leading to lignin and affecting wood properties. We perturb these 21 pathway genes and integrate transcriptomic, proteomic, fluxomic and phenomic data from 221 lines selected from ~2000 transgenics (6-month-old). The integrative analysis estimates how changing expression of pathway gene or gene combination affects protein abundance, metabolic-flux, metabolite concentrations, and 25 wood traits, including lignin, tree-growth, density, strength, and saccharification. The analysis then predicts improvements in any of these 25 traits individually or in combinations, through engineering expression of specific monolignol genes. The analysis may lead to greater understanding of other pathways for improved growth and adaptation.

Click [here](#) for more information.

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## Funding for seaweed-to-biofuel project



*Flickr*

A Colorado State University project to grow and harvest ocean macroalgae for biofuel production has received support from the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E).

ARPA-E has poured over \$22 million into their Macroalgae Research Inspiring Novel Energy Resources (MARINER) program, with the aim of establishing the U.S. as a leader in biofuel production.

The ambitious CSU project involves a high-tech, three-mile-long recycled carbon fibre cable adrift in the open ocean. The cable will be automatically seeded and set afloat equipped with buoys and GPS sensors. The ultimate goal is to develop a new, economically sound method for producing and harvesting seaweed for biofuels.

Quinn will work with Pacific Northwest National Lab, Reliance Laboratories, Composite Recycling Technology Centre and Marine Agronomics. The diverse team of public and private entities will begin their work through integrated design and sustainability modelling. Next, they will develop their NOMAD (Navy Oceanographic Meteorological Automatic Device) buoy to record and track data. Then, they will develop their macroalgae seed line and harvester equipment.



At all stages, Quinn will conduct techno-economic analysis to gauge the economic feasibility of the project. Quinn will also complete a life-cycle assessment to determine the carbon savings and environmental impact of their method. The team aims to float their macroalgae-harvesting-cable off the coast of Washington within three years.

Click [here](#) for more information.

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## **Tool aims to identify marginal land suitable for bioenergy crops**



*Goegraph*

For a long time, marginal lands have been considered a promising alternative for sustainable production of bioenergy. Free of conflict with traditional food production, exploitation of marginal lands for bioenergy can also improve ecosystem services. However, there is still a series of issues that needs to be addressed before actually determining whether a marginal land can sustain production on industrial scale or not.

The uncertainty arising from marginal land classification and quantification is the major constraining factor.

Land marginality is determined by dynamic characteristics in many cases and may therefore constitute a transitional state. Also, marginal land

should not be considered simply a dormant natural resource waiting for to be used, since it may already provide multiple benefits and services to society, relating to wildlife, biodiversity, etc.

The H2020-funded SEEMLA project addresses the need for tools to identify and assess the potential of marginal lands for biomass production, taking into account the interrelated land functions. It proposes an integrated approach, at European level, which evaluates physical, environmental, socio-economic and ecological factors through multi-criteria analysis and Geographic Information Systems (GIS).

The characterisation of marginal land includes assessment of soil quality, topography (slope) and climate (soil thermal & moisture regimes) factors, categorized as either basic or hazard indicators.

According to preliminary results 45 % of Europe is covered by marginal lands (220 Mha), however, only 13 % (63 Mha) is available for biomass production. Each crop also has specific ecological demands and constraining factors influencing its growth, allowing most promising species selection for identified land.

The GIS tool provides an overall estimation of marginal land that is available for biomass production for bioenergy purposes in Europe, considering also environmental impacts, as well as socio-economic aspects.

The tool will be finalized at the end of the project, in December 2018.

Click [here](#) for more information.

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# Wood & Crop

## UK pellet shortage explained



*Wikimedia Commons*

The UK pellet council has outlined why there has been wide scale pellet shortage across the UK since the turn of the year.

Fundamentally, there has been a European wide shortage of wood fibre (the raw materials pellets are made from) that has severely restricted supply and massively increased the cost of pellets at point of manufacture. As a net importer, the UK is affected by EU mainland prices. Availability remains patchy with high prices to remain until at least April.

The European wood fibre industry is in a critical situation - The Latvian Government has recently declared a disaster in the forestry sector due to flooding. Producers in Latvia have been able to trigger the Force Majeure provisions in their supply contracts to avoid non-supply penalties.

The unseasonably warm and wet weather earlier in the year led to timber operations in many European forests being halted. They rely on frozen ground providing access to their heavy machinery into the forests.

Most of the Eastern European producers from Russia across the Baltics and Ukraine and Belarus have suffered from similar challenges.

For the last few years the European pellet market has been in a position of oversupply. This winter, a number of biomass fuelled power stations in Europe came on line. These have created significant demand for the same raw material.

As a result, raw material costs have increased by as much as 90%, in others the raw material just isn't available, regardless of the price. The majority of pellet producers have therefore been running at reduced capacities. Some have simply ceased production until the raw materials are available again.

Click [here](#) for more information.

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## Project to develop polyamides from pulp waste

The "Camphor-based polymers" project, led by the Chair of Chemistry of Biogenic Raw Materials at the Technical University of Munich working with the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB along with research and industry partners, aims to develop technology that will make it possible to use residual materials from cellulose pulp production for the manufacture of polyamide plastics.

Castor (ricinus) oil is one biobased alternative to crude oil as a starting material for the production of polyamides; however, it has some disadvantages: processing is complex, and several synthesis steps are required to convert castor oil into relevant monomers.

The project partners are investigating the use of terpene camphor, which due to its chemical structure has a high potential for the production of biobased monomers for polyamides and polyesters. Moreover, in contrast to castor oil production, both the extraction and processing of camphor is unproblematic. The terpene is

produced in large quantities in China from by-products of the pulp industry and is therefore not only a sustainable raw material, but also readily available. In addition, only a single synthesis step is required to produce the targeted biomonomers.

Worldwide, pulp-based camphor production currently amounts to 17,000 tonnes per year, mainly produced by just five Chinese pulp manufacturers.

Click [here](#) for more information.

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### **Increase in capacity for Immingham pellet-handling facility**

One and a half years after the start-up of the comprehensively extended pellet-handling terminal "Immingham Renewable Fuels Terminal (IRFT)", the facility now handles up to 130,000 t of pellets per week. The new crane systems on the quay enables up to 2,300 t of pellets to be unloaded per hour. Storage capacity amounts to 336,000 t. According to information from British Drax Group roughly 135m £ has been jointly invested in the port with Associated British Ports (ABP) since work on the extension began in 2013.

The terminal in Immingham mainly supplies biomass to the Selby power station, which Drax is switching from coal to pellet-firing in several stages. The pellets are transported the fifty miles from the port to the power station by rail using railway wagons specially developed for pellets with a payload capacity of 71.6 tonnes.

Click [here](#) for more information.

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### **Latest Enviva Track & Trace statistics**



*Enviva*

Enviva has released the latest data for its track and trace (T&T) programme. T&T records the geographic location, age, and forest type for all of Enviva's primary wood, so Enviva know how and by whom each tract was harvested, as well as the proportion of wood that was sent to Enviva versus other forest products industry consumers.

T&T is an important element of Enviva's Responsible Wood Supply Program, and it complements other third-party sustainability certifications.

The most recent data cover wood purchases from July 2017 through December 2017.

Wood was sourced from 1157 forest harvests in 76 counties in 5 southern US states. Forest tracts were an average of 37 years old. Of the wood sourced 50\* was hardwood and 42% softwood.

19% of the resource comes from sawdust, shavings or residuals from manufacturing, the rest from forest resources. The wood sourced by Enviva consists of undersized or "understory" wood that was removed as part of a larger harvest and tops and limbs, brush and "thinnings" that were removed to make additional room for planted pines to grow.

Click [here](#) for more information.

## Landmark land-use certification for UPM

UPM Biofuels' continuous efforts for a more sustainable supply chain and operations has been recognized by the world's first RSB (Roundtable of Sustainable Biomaterials) low ILUC (indirect land use change) risk certification. The certificate was received for crude tall oil, the feedstock used for UPM BioVerno renewable fuels production at the Lappeenranta Biorefinery in Finland, and for UPM's cultivation of the Brassica carinata oil crop in Uruguay.

The RSB low ILUC risk certification is an additional proof of sustainability for UPM Biofuels, showing that the company's use of crude tall oil and Brassica carinata oil for biofuels production has a low risk of causing indirect emissions elsewhere. The low ILUC risk RSB certification places UPM Biofuels' raw materials, crude tall oil and Brassica carinata oil in the category of most sustainable feedstocks.

Crude tall oil (CTO) is a residue of pulp production originating in sustainable forestry. The new low ILUC risk certification process, a voluntary addition to RSB certification, has confirmed that the amount of CTO required by UPM BioVerno for production can be used without diverting it from other uses.

The secondary cropping concept for Brassica carinata, a non-edible oilseed crop grown outside the main cultivation period, has been tested and developed by UPM Biofuels in Uruguay. This new certification verifies that Brassica carinata oil from UPM Biofuels' feedstock production in Uruguay has a low risk of causing indirect land use change emissions when used for biofuels production.

RSB is one of the world's most trusted, valued and peer-reviewed standards for biomaterials. It is one of the European Commission's approved voluntary schemes used to show compliance with the EU

Renewable Energy Directive's sustainability criteria. Additionally, RSB's is the first standard to utilise a low ILUC-risk module for biomass certification. UPM Biofuels' production has been evaluated against this low ILUC requirement, EU RED criteria and the 12 RSB principles, which have been approved by their many stakeholders, including NGOs and UN agencies.

Click [here](#) for more information.

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## Wood Recyclers Association calls for clarity on acceptable wood fuel

As figures released earlier this month by the World Health Organisation revealed the most polluted towns and cities in the UK, The Wood Recyclers' Association (WRA) has renewed its call to the industry to ensure good practice on the use of biomass fuel.

The Wood Recyclers' Association (WRA) is now renewing its call to biomass boiler and fuel suppliers to ensure only clean untreated pre-consumer waste wood or virgin wood is burnt in non-Industrial Emissions Directive (IED Chapter IV) compliant boilers.

The association is still waiting for the regulators to remove inconsistencies in guidance on what grades of waste wood are acceptable for small scale Renewable Heat Incentive (RHI) biomass boilers (non IED compliant), something it asked for last year after discovering confusing wording used in guidance to boiler manufacturers, fuel suppliers and users.

Click [here](#) for more information.

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# Events

## **RRB 14**

**Ghent, 30th May - 1st June 2018**

The 14th edition of the International Conference on Renewable Resources & Biorefineries will take place in Ghent, Belgium from Wednesday 30 May until Friday 1 June 2018. Based on the previous RRB conferences, this conference is expected to welcome about 350 international participants from over 30 countries.

Delegates from university, industry, governmental and non-governmental organizations and venture capital providers will present their views on industrial biotechnology, sustainable (green) chemistry and agricultural policy related to the use of renewable raw materials for non-food applications and energy supply. The conference further aims at providing an overview of the scientific, technical, economic, environmental and social issues of renewable resources and biorefineries in order to give an impetus to the biobased economy and to present new developments in this area.

The conference will provide a forum for leading political, corporate, academic and financial people to discuss recent developments and set up collaborations.

The three-day international conference will consist of plenary lectures, oral presentations, poster sessions and an exhibition. Companies and research organizations are offered the opportunity to organize a satellite symposium.

Click [here](#) for more information.

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## **International Conference of the European Industrial Hemp Association Köln, 12th-13th June 2018**

Specialists from all over the world will meet in order to exchange information regarding the latest developments in hemp applications for fibres, shivs, seeds and oil as well as cannabinoids. Applications are biocomposites in automotive and construction, textiles, food, food supplements and pharmaceuticals. We are expecting again more than 300 international participants from more than 40 countries – we are looking forward to the biggest event on industrial hemp ever!

Click [here](#) for more information.

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## **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.

# Feedstock Prices

**UK spot prices of bagged wood pellets, and wheat and barley straw. Arrows indicate rise ↑, unchanged – or fall ↓ from previous month.**

Date	UK Wood Pellets Delivered	UK Ex-Farm Barley Straw	UK Ex-Farm Wheat Straw
	(£/tonne, 5% VAT)	(D1000) (£/tonne)	(D1000) (£/tonne)
10 Feb	275-316 (↓-↓)	85-125(--↓)	75-100(--↓)

For wood pellets prices we considered UK pellet traders selling prices.

For details on straw spot prices, see <http://www.farming.co.uk>

**UK, French and US future prices for wheat, rapeseed, maize, and soybean. Arrows indicate rise ↑, unchanged – or fall ↓ from previous month's predictions.**

Date	UK (LIFFE) Feed Wheat (£/tonne)	MATIF Wheat (€/tonne)	MATIF Rapeseed (€/tonne)	CBOT Wheat (cnts/bsh)	CBOT Maize (cnts/bsh)	CBOT Soyabean (cnts/bsh)
May-18	151.8 (↑)					
Jul-18	153.0 (↑)			523.0 (↑)	406.5 (↑)	1036.7 (↓)
Aug-18			358.7 (↑)			1040.5 (↓)
Sep-18		179.5 (↑)		539.2 (↑)	415.2 (↑)	1042.2 (↓)
Nov-18	154.7 (↑)		364.0 (↑)			1045.5 (↑)
Dec-18		183.0 (↑)		559.7 (↑)	424.7 (↑)	
Jan-19	157.2 (↑)					1048.7 (↑)
Feb-19			367.5 (↑)			
Mar-19	159.3 (↑)	185.2 (↑)		576.5 (↑)	432.7 (↑)	1033.5
May-19	161.0 (↑)	186.5 (↑)	369.5 (↑)	587.2 (↑)	437.2 (↑)	
Jul-19	158.7 (↑)			590.0	441.0	
Aug-19			363.0 (↑)			
Sep-19		184.0 (↑)				
Nov-19	154.5 (↑)		365.5			
Dec-19		185.2 (↑)				
Jan-20	156.8 (↑)					
Mar-20	157.0 (↑)	185.7 (↑)				
May-20		186.5 (↑)				

For details on future prices see <http://www.hgca.com>

**Other biomass feedstock prices are available upon request, simply contact [enquiries@nnfcc.co.uk](mailto:enquiries@nnfcc.co.uk)**

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