Outlets for Animal By-Products Derived Products

Factsheet FABRA-FS-008

PRODUCTS DERIVED FROM ABPs

Animal by-products (ABPs) can be processed by rendering, anaerobic digestion (AD), composting, combustion or incineration.

The derived products and their applications are subject to strict legislative controls, relating to the risk category of the ABP and the species of the source material (see factsheet *Animal By-products – Regulatory Controls*[1]). Other factors influencing or restricting product outlets include market or commodity prices and consumer perception. Possible outlets for animal by-products are summarised in Table 1 (see over).

RENDERED PRODUCTS

Rendering is a cooking or drying process that destroys pathogens and stabilises animal by-products, removing the moisture and separating the fat (tallow) and protein meal (PAP) components into a range of marketable products. The fat and protein meal products have several low carbon uses, depending on the Category of the source ABP material (see Figure 1).

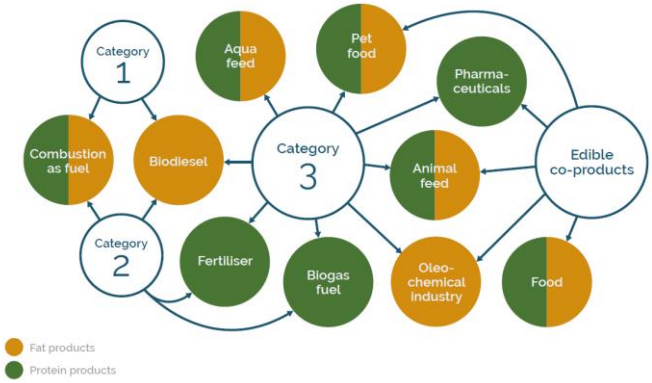

Figure 1 – Applications for rendered products

APPLICATIONS FOR RENDERED PRODUCTS

Category 1 ABPs

The protein derived from Category 1 material is referred to as meat and bone meal (MBM) and it is either incinerated or used in combustion processes as a fuel e.g. in combined heat and power plants or cement kilns. The ash from these processes can be used as a fertiliser if it has an end of waste approval from the Regulators.

Category 1 tallow is used as a raw material for biodiesel which can then benefit from Renewable Transport Fuel Certificates (RTFCs) as a renewable fuel. Some renderers have scope to burn tallow in their on-site combustion plant as an alternative to gas if commodity prices make this a viable option.

Category 2 ABPs

The availability of Category 2 ABPs is restricted by the BSE risk status of the UK countries. Under a *Controlled Risk* designation more material from the carcass is identified as specified risk material (SRM) i.e. at risk of infectivity if the animal was infected with a transmissible spongiform encephalopathy (TSE) disease, and therefore more material is downgraded to Category 1. However, under a *Negligible Risk* designation some SRM material may be potentially utilised in edible co-product applications. See Factsheet - *What are Animal By-products* [2]

Category 2 ABPs are currently downgraded to Category 1 at UK rendering sites for several reasons, including the low value of derived products and low volumes of material making it unfeasible to install dedicated Category 2 lines. Many slaughterhouses choose not to segregate Category 2 material from Category 1 material because the costs associated with energy and water consumption required to operate gut cleaning equipment, effectively make the process uneconomical.

Category 2 derived protein products include fertiliser and fur feed products, and Category 2 tallow has fuel and biodiesel applications.

Category 3 ABPs

The protein derived from Category 3 material is referred to as processed animal protein (PAP) and it and the tallow have many more applications than products derived from Category 1 and 2 materials. Applications include petfood, biodiesel, oleochemicals, fertiliser and fish feed.

Note that biofuels derived from Category 3 fat are not classed as a renewable fuel so do not qualify for RTFCs.

The Regulations relating to ABPs prohibit the use of many derived products in animal feed, including a ban on intra-species recycling (feeding material derived from a species to a creature of the same species) and the feeding of catering waste to farmed animals. There are also bans on feeding ruminant based animal proteins to animals.

Although there are still post-BSE concerns about the safety of animal derived feeds, the EU now allows the use of pork protein to feed poultry and poultry protein to feed pigs. This approval requires suitable testing / control procedures to ensure no same species or

ruminant material is present in the feed. The UK is monitoring the situation to inform its policy on lifting the feed ban. See Factsheet *Lifting Feed Ban for Animal By-Products*[3].

ANAEROBIC DIGESTION PRODUCTS

Biogas is the output of an anaerobic digester and is a mixture of around 60% methane, 40% CO_2 and traces of other contaminant gases[4]. Biogas can be used to run Combined Heat and Power (CHP) units to produce electricity and heat for local use or in engines to generate electricity for feeding into the electricity grid. Biogas can also be cleaned up and fed directly into the gas supply grid.

AD plants are often built next to industrial or agricultural activities that generate waste streams to serve the AD plant and the heat and power derived from the biogas can be supplied back to the upstream activities.

The AD digestate, a black liquid residue can be used as a bio-fertiliser as a replacement for mineral fertilisers, reducing costs to farmers and minimising greenhouse gas emissions from cultivation. Food-based digestate contains high levels of nitrogen and useful amounts of phosphate and potash, together with small quantities of other nutrients to help maintain soil fertility.

COMPOSTING PRODUCTS

Composting is the biological decomposition, sanitisation and stabilisation of biodegradable waste that results in safe and stable compost that can be applied to land for the benefit of agriculture, horticulture or ecological improvement. Composts with suitable characteristics can also be used as an ingredient in growing media and manufactured topsoil[5].

Table 1 – Animal by-product outlets

Use or process → / Material ↓		Export to non EU countries	Export to EU	Import from EU	Incineration	Biomass fuels	Pet food	Farmed animal feed	Organic fertiliser	Compost / AD	Fur animal feed	Aqua feed	Oleo-chemicals
Category 3	R-PAP	✓	✓(e)	✓	✓	✓	✓	✘ (b)	✓	✓	✓	✘	NA
	NR-PAP	✓	✓	✓	✓	✓	✓	✘ (c)	✓	✓	✓	✓	NA
	Tallow	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓
Category 2	MBM	✘ (a)	✘ (a)	✓ (f,g)	✓	✓	✘	✘	✓(d)	✓(d)	✓(d)	✘	NA
	Tallow	✘ (a)	✓ (d, f, g)	✘	✓	✓	✘	✘	NA	NA	✓(d)	✘	✓(d)
Category 1	MBM	✘ (a)	✘ (a)	✓ (f,g)	✓	✓	✘	✘	✘	✘	✘	✘	NA
	Tallow	✘ (a)	✓ (d, f)	✘	✓	✓	✘	✘	✘	✘	✘	✘	✘

a. Export outside UK currently not allowed under Article 43 of ABP Control regulation.
b. Ruminant (R) - PAP cannot go into farmed animal feed due to TSE Regulation.
c. Non-Ruminant (NR) - PAP cannot go into farmed animal feed due to TSE Regulation. (EU allow pork PAP to poultry and poultry PAP to pork. UK has not amended Regulations to allow this but is considering it). Fishmeal can be used in NR feed and for feeding to un-weaned young ruminants.
d. If pressure sterilised using Method 1 first
e. Only if processed by Method 1 and originating in country with negligible BSE risk status.
f. GTH must be added during processing.
g. 3 year derogation for Rep of Ireland MBM ends 31st Dec 2023. No imports allowed from other EU countries.

REFERENCES

1. Animal By-products – Regulatory Controls, Factsheet FABRA-FS-006
2. What are Animal By-products, Factsheet FABRA-FS-001
3. Lifting Feed Ban for Animal By-Products, Factsheet FABRA-FS-010
4. The Official Information Portal on Anaerobic Digestion - http://www.biogas-info.co.uk/
5. REA – The Association for Renewable Energy and Clean Technologies - https://www.r-e-a.net/technologies/composting/