

## Importance of rendered by-products in sustainable feeding

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The rendered products of animal fats and proteins are used worldwide as a feed ingredient for farmed and companion animals. The products derived from poultry products (poultry proteins, feather meal and poultry oil) as well as blood meals are especially used in aquaculture. Other animal proteins and fats can also play an important role in fish feeding and make a huge contribution to a sustainable aquaculture.

Rendering raw material is obtained during the slaughter process and meat processing and are removed from the food chain either due to inedible nature of the material, economic reasons based on a changed eating behaviour (e.g. offal, edible bones and fats) or simply due to the fact that they are not edible like bristles, feathers, hooves, horns etc. Instead of disposing these by-products they are rendered into valuable fats and proteins which can be used as feed, fertiliser, for biodiesel production or oleochemical purposes. The fact remains that the raw material used for rendering is sourced directly from animal processing to produce animal proteins and fats whereas vegetable proteins and oils must be farmed for purpose. This circumstance makes rendered products to be one of the most sustainable feed ingredient. American studies even showed that rendering itself captures more CO<sub>2</sub> than it releases. Any inclusion of rendered products in animal diets can reduce the carbon foot print and increase the sustainability.

Animal proteins can be used for a wide variety of fish and can thus replace other protein sources. Dominique Bureau, University of Guelph, researched with in-vivo-tests that the apparent digestibility is much higher than formerly acknowledged. This led to new calculations of the price/ digestible protein- ratio. On this basis animal proteins belong to the most cost-effective proteins worldwide.

Recent results from Jesse Trushenski, Southern Illinois University, also support research that other rendered fats than poultry oils can be used efficiently in fish diets without any deficiencies or loss in performance. Interestingly, even the hard saturated fats perform very well in all different kinds of aquaculture: warm/cold and fresh/sea water.

Finally, animal products can not totally replace vegetable or fish proteins and oils in animal diets. As they are made from by-products it is evident that they are limited resources. Animal rendered products are a viable alternative protein and fat source with excellent properties with regard to digestibility, nutritional value, cost-efficiency, sustainability and carbon foot print.