

Marine minerals – from sea to shore, and onto UK dairy units

Full-circle sustainability

We joined an AB Vista/Celtic Sea Minerals study tour to Iceland to find out how calcified seaweed is harvested and processed, using environmentally friendly and sustainable techniques.

text **Rachael Porter**



1 Seaweed is fast becoming a key ingredient in cow rations across the UK – and the rest of the world. There are three types of seaweed – brown, green and red. And it's the red, in particular, that's making a nutritional impact on UK herd health and productivity. Celtic Sea Minerals (CSM) makes Acid Buf using calcified red seaweed (lithothamnion), harvested from the sea just off the coast of northern Iceland. Red seaweed is unique because, as it grows, it absorbs 74 different minerals from sea water and it calcifies as it does so, with the tips of the plant becoming increasingly brittle. Eventually these tips break off and this 'dead' material is harvested by the company – not live plants. It is this growth process that forms a unique plant calcium structure, which allows Acid Buf to offer slow release rumen conditioning. This is why Acid Buf is so effective at managing acid levels in the rumen. The live plants cling to the coastline, away from the harvesting sites. CSM has a licence to harvest 50,000 tonnes per year – a small percentage of the 21 million tonnes of calcified seaweed on the sea bed. The company also runs an ongoing programme of 'reseeded' live material in the area, which further enhances the sustainability of the production process and business. Three-month's worth of calcified seaweed is harvested at a time, using a large boat and GPS mapping that follows a strict grid pattern, so ensure strict control. This technique harvests the dead calcified material from the sea bed and a 'slurry' of this, combined with sea water, is pumped onto the boat. Water drains back into the sea and the slurry is screened before being deposited at the rear of the factory, based at Bildudalur on Iceland's north coast.

2 The seaweed is then washed and screened again. And the calcified seaweed that's left is then fed into a dryer. Depending on the initial moisture content, which can vary, around 10.5 tonnes of wet material is processed per hour.

3 The dryer takes the calcified seaweed moisture content from 29% to less than 1%. It's heated to 65°C for 40 minutes. The rotating drum dryer can handle 240 tonnes of calcified seaweed every 24 hours. Water is evaporated at a rate of 2.5 tonnes per hour. The company is looking at recycling water and heat but energy is cheap to produce in Iceland, using geothermal and hydro technology.

4 Computer driven and manned by four employees at any one time, the plant operates 24 hours a day, seven days a week.

5 After drying, the calcified seaweed is then ground to an effective and consistent particle size, which is continuously monitored in the plant's on-site laboratory.

6 Large 1,100kg sacks are pre-filled with air to check for leaks and to ensure an even fill.

7 Batches of 4,000 1,100kg bag are shipped from Iceland to Cork in Ireland. From here, smaller bags are filled and distributed to feed mills and suppliers across the UK and the rest of the world.

