

UC study shows positive impact of seaweed on methane emissions in beef cattle

By Jane Byrne [↗](#)

23-Mar-2021 - Last updated on 23-Mar-2021 at 14:27 GMT

RELATED TAGS: seaweed, bromoform, methane emissions, Beef

Seaweed in cattle feed could reduce methane emissions from beef cattle as much as 82%, according to a new paper from researchers at the University of California (UC), Davis.

"We now have sound evidence that seaweed in cattle diet is effective at reducing greenhouse gases and that the efficacy does not diminish over time," said Ermias Kebreab, professor and Sesnon Endowed Chair of the Department of Animal Science and director of the World Food Center. He conducted the study along with his PhD graduate student, Breanna Roque.



The findings were not a surprise, he told FeedNavigator. *"It was more of a confirmation of what was predicted based on what we already knew."*

The results were published last week in the journal **PLOS ONE**.

The type of seaweed used in the trial was *Asparagopsis taxiformis*.



Beef steers being fed seaweed supplement rations as part of UC Davis trial © Amy Quinton

Some red seaweeds are anti-methanogenic, particularly the genus *Asparagopsis*, due to their capacity to synthesize and encapsulate halogenated CH₄ analogues, such as bromoform and dibromochloromethane, within specialized gland cells as a natural defense mechanism, explained the team.

This website uses cookies. By continuing to browse our website, you are agreeing to our use of cookies. You can learn more about cookies by visiting our [privacy & cookies policy](#) page.

I Agree

consumed doses of about 80 grams (3 ounces) of seaweed gained as much weight as their herd mates while burping out 82% less methane into the atmosphere.

Their trial, they continued, demonstrated that the use of *A. taxiformis* supplemented to beef cattle diets reduced methane emissions for a duration of 21 weeks without any loss in efficacy.

The efficacy was highly correlated with the proportion of as neutral detergent fiber (NDF) in the diet, they added.

"Importantly, the use of A. taxiformis impacts dry matter intake (DMI) and not average daily gain (ADG), therefore increasing overall feed efficiency (FCE) in growing beef steers."

Bromoform residues

A recently published **Dutch study** flagged up the risks of feeding seaweed to dairy cows. Wageningen University's paper about the transfer of bromoform present in *A. taxiformis*, when added to the diet of dairy cattle, suggested that the active compound, which can be toxic for humans at certain levels, can end up in the milk and urine of the cow.

But Kebreab and Roque found supplementing *A. taxiformis* had no measurable bromoform residues, no detrimental iodine residual effects in the product, and did not alter meat quality or sensory properties.

Their work builds on the **earlier research** they did with *A. taxiformis* and dairy cattle.

"There is more work to be done, but we are very encouraged by these results," Roque said. *"We now have a clear answer to the question of whether seaweed supplements can sustainably reduce livestock methane emissions and its long-term effectiveness."*

Addressing pasture feeding, industrialization of seaweed farming

Kebreab told this publication that he is now going to study how seaweed supplemented feed could be delivered to pasture fed animals.

Commercialization is likely some three to four years off yet, said the UC Davis expert, when asked for a timeline on industrialization of a seaweed-based feed additive.

Scientists studying ways to farm the seaweed in future for broad application, said the team.

Next steps in that respect would be to develop aquaculture techniques in ocean and land-based systems globally, each addressing local challenges to produce a consistent and high-quality product.

"Processing techniques are evolving with the aim of stabilizing [the macroalgae for use in a] feed supplement. The

This website uses cookies. By continuing to browse our website, you are agreeing to our use of cookies. You can learn more about cookies by visiting our **privacy & cookies policy** page.

I Agree

“Transportation of the processed or unprocessed seaweed should be kept to a minimum, so cultivation in the region of use is recommended specially to avoid long-haul shipping,” stressed the researchers.

Kebreab and Roque collaborated with Australian federal scientific agency, the Commonwealth Scientific and Industrial Research Organization, the James Cook University in Australia, Meat and Livestock Australia, and Blue Ocean Barns, a startup company that sources, processes, markets and certifies seaweed-based additives to cattle feed. Kebreab is a scientific adviser to Blue Ocean Barns.

Support for the research came from Blue Ocean Barns, the David and Lucile Packard Foundation and the Grantham Foundation.

Source: *PLOS ONE*

DOI: <https://doi.org/10.1371/journal.pone.0247820>

Title: *Red seaweed (Asparagopsis taxiformis) supplementation reduces enteric methane by over 80 percent in beef steers*

Authors: B M Roque, M Venegas, R D Kinley, R de Nys, T L Duarte, X Yang, E Kebreab

Copyright - Unless otherwise stated all contents of this web site are © 2021 - William Reed Business Media Ltd - All Rights Reserved - Full details for the use of materials on this site can be found in the Terms & Conditions

RELATED TOPICS: **R&D**
