



# From Ocean to Pasture

## A Potential Sustainability Option for Cattle and Dairy Farmers

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Seaweed is gaining attention as a sustainable livestock feed alternative. Red seaweed, rich in bromoform, is especially effective in reducing enteric methane emissions, helping mitigate cattle farming's environmental impact. However, its integration into feed presents challenges. This infographic highlights both the benefits and obstacles of using seaweed in cattle diets, based on current research, and its potential role in sustainable agriculture and climate change mitigation.

### Seaweed for Cows: A Sustainable Solution – Pros & Cons



#### PROS



**1. SUPPLEMENTING FEED** with seaweed has the potential to mitigate greenhouse gas emissions caused by livestock enteric methane emissions<sup>1-3</sup>.



**2. Red seaweed** (*Asparagopsis armata*) effectively **REDUCES METHANE EMISSIONS** due to its high bromoform content<sup>1,2, 4, 5</sup> without impacting edible beef products<sup>4, 6</sup>.



**3. Seaweeds** are rich in protein, carbohydrates, and dietary fibers, helping meet the **PROTEIN AND ENERGY NEEDS** of livestock<sup>1-3</sup>.



**4. Including Asparagopsis** in cattle feed **DOES NOT AFFECT** the sensory traits or overall enjoyment of the meat<sup>6, 7</sup>.



**5. Cultivation** of sustainably grown seaweed for the cattle industry has the potential to **INCREASE JOBS** in the seaweed aquaculture industry<sup>8</sup>.



#### CONS



**1. LOGISTICS:** Handling and transporting large quantities of seaweed is challenging due to the difficulties in drying and managing logistics<sup>9</sup>.



**2. SUPPLEMENTATION:** Seaweed can contain heavy metals, iodine, and other minerals that can pose animal health risks, requiring continuous monitoring to prevent toxicity<sup>10</sup>.



**3. PROCESSING:** Large scale seaweed cultivation may contribute to environmental degradation due to an increase in energy consumption<sup>7, 11</sup>.



**4. COST:** High prices related to possible shortages of seaweed may prevent farmers from utilizing seaweed as a feed source for cattle<sup>12, 13</sup>.



**5. LIVESTOCK USE:** Although farmers are interested in lowering methane emissions from cattle, the high cost and lack of sufficient incentives make them less likely to adopt it<sup>14</sup>.

### US Consumer Willingness to Pay for Sustainability - Opportunities for Premiums from Processors in the Future



**1. The average premium of 4.6% FOR LOW-EMISSION BEEF AND 62% FOR LOW-EMISSION MILK** among informed consumers suggests that reducing emissions and educating consumers can drive economic gains for producers<sup>15</sup>.



**2. An 85% REDUCTION IN CARBON EMISSIONS** for "Low-carbon beef" could lead to an additional premium of \$4.23 per pound compared to production with no reduction in carbon emission among environmentally conscious beef consumers<sup>16</sup>.



**References:** 1. <https://doi.org/10.3390/ani10122432> 2. <https://doi.org/10.3390/jmse8080559> 3. <https://doi.org/10.1016/j.rser.2022.112222> 4. <https://doi.org/10.1371/journal.pone.0247820> 5. <https://doi.org/10.1016/j.jclepro.2019.06.193> 6. <https://doi.org/10.1016/j.jclepro.2020.120836> 7. <https://doi.org/10.1111/jpn.13509> 8. <https://doi.org/10.1080/09670262.2017.1365175> 9. <https://doi.org/10.3389/fvets.2020.597430> 10. <https://doi.org/10.1016/j.anifeeds.2015.09.018> 11. <https://doi.org/10.1016/j.algal.2015.06.018> 12. <https://www.fao.org/4/i3344e/i3344e.pdf> 13. <https://scholarworks.uvm.edu/fsmpr/36> 14. <https://doi.org/10.1017/S1742170523000157> 15. <https://doi.org/10.1177/0169796X241255272> 16. <https://doi.org/10.2139/ssrn.4707090>

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