


Aquaterra Advanced Omega-3

Supports Trending Consumer Preferences: New Research Reveals Sustainable Seafood Priorities

Pablo Berner – Nuseed Nutritional Aquaculture Lead



An underwater photograph showing a vibrant kelp forest. The water is clear and blue. In the foreground, there are large, dark green kelp fronds. A large school of small, silver fish is swimming in the lower left. Several larger fish, including a prominent dark one, are swimming in the upper right. The scene is illuminated by natural light from above, creating a bright and lively atmosphere.

Business Risk – Dependence on Marine Ingredients

- Unpredictable supply becoming a constraint for growth
- Climate concerns forcing a closer look at environmental footprints
- Public sentiment for Ocean Preservation increasing pressure for action

CURRENT MARINE OIL ALTERNATIVES

FISH TRIMMINGS

Benefits

- Decreases Fish Oil Dependency
- Creates Value from waste

Challenges

- Limited Supply
- Doesn't Eliminate Fisheries
- Higher GHG than fish oil reduction

ALGAL OILS

Benefits

- Provides LC PUFA
- Decreases Fish Oil Dependency

Challenges

- Expensive
- Not Energy Dense
- Questionable Scale; Requires Infrastructure
- Fermentation Requires Sugar Source

CANOLA OIL

Benefits

- Decreases Fish Oil – Currently 20% of Feed
- Easily Scalable
- Low GHG
- High Energy
- Ease of Use

Challenges

- No Long chain omega-3

– UNTIL NOW!

Aquaterra® Omega-3 Canola Oil

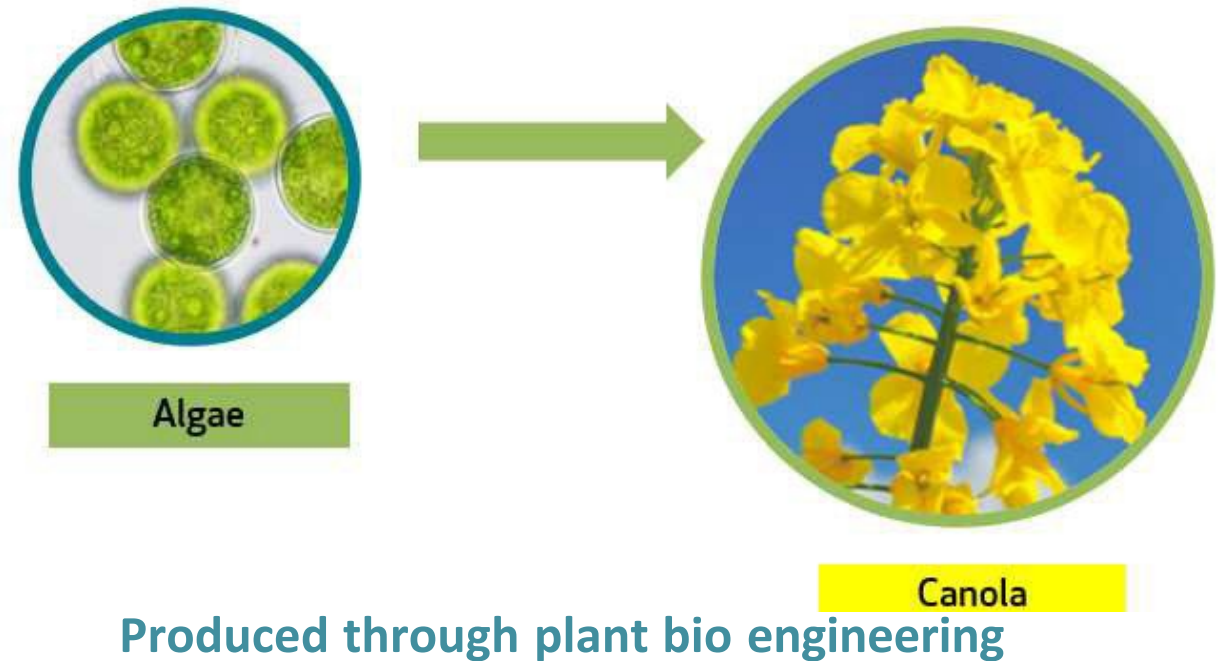
- 21st Century Plant Technology

Benefits:

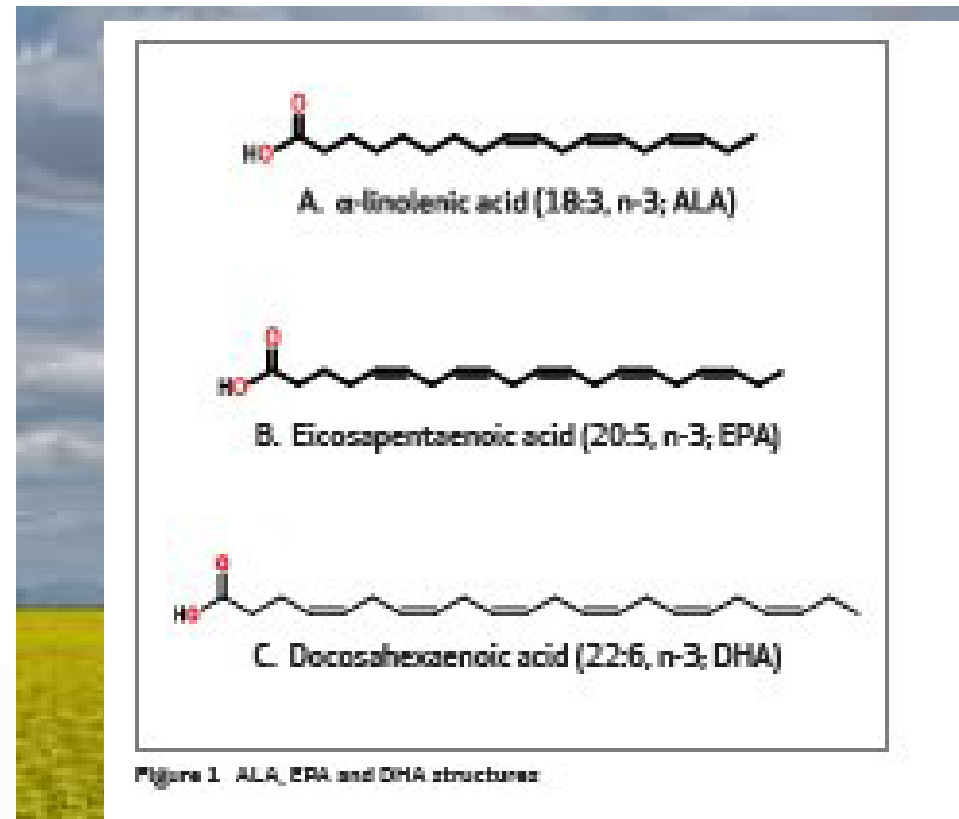
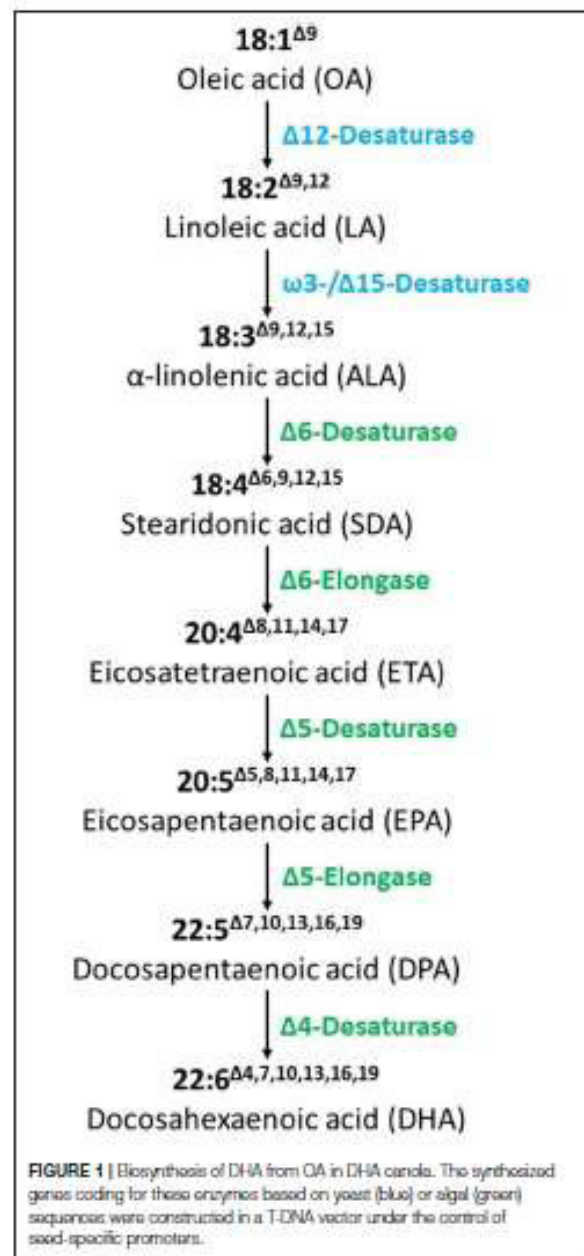
- Provides long chain omega-3 + energy
- Decreases Fish Oil Dependency
- Scalable with existing infrastructure
- No Deforestation
- Low Life Cycle Carbon Impact
- Not dependent on fermentation inputs

Safe:

- Extensive studies conducted by NOFIMA and confirmed in commercial production trials with industry. Findings include fish health and fillet quality benefits due to DHA and high omega-3
- Approved for use in aquafeed in Australia, New Zealand, Canada, US and Chile
- Regulatory applications progressing in Japan, Korea, China, UK, and the EU / EEA



High n-3 canola oil



Typical FA profiles

	n-3 Canola	Normal Canola
FA profile,%		
N-6	7	19
N-3	34	9
N-6 : N-3	1:4	2:1
N-3 profile, %		
ALA (18:3 n-3)	20	9
EPA (20:5 n-3)	0.5	0
DPA (22:5 n-3)	1.5	0
DHA	10	0



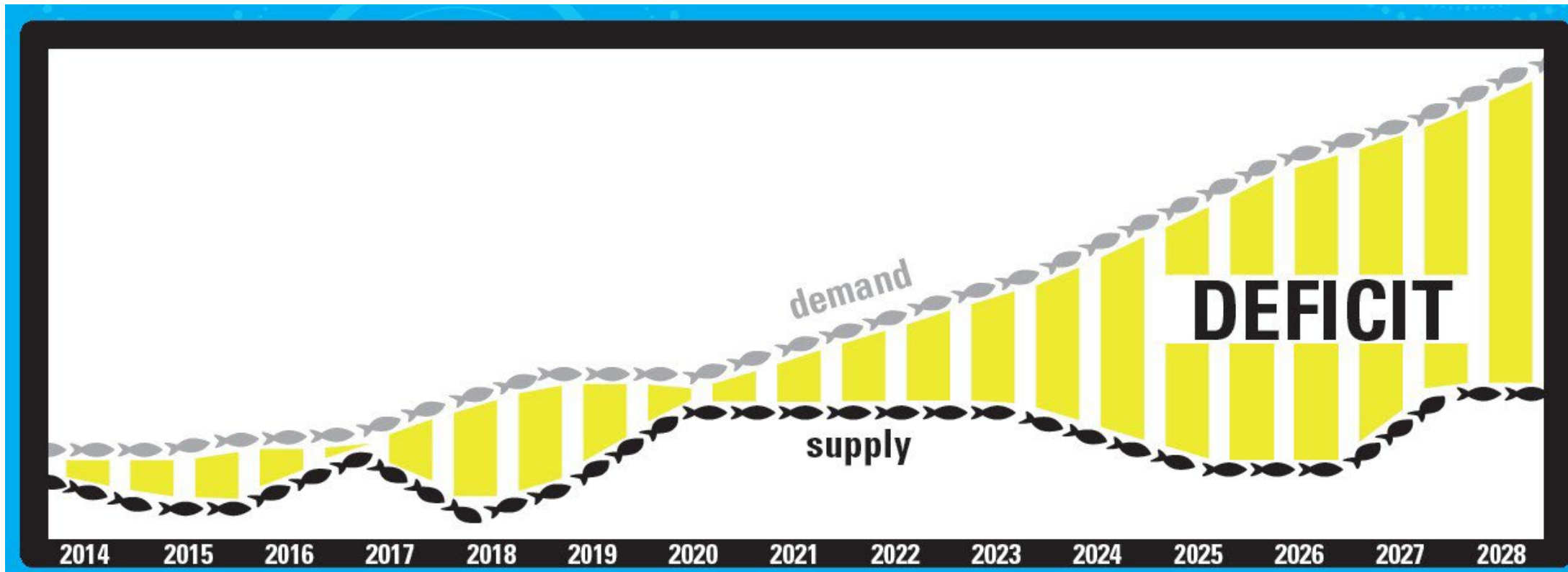


Why did Nuseed Develop Aquaterra?



Atlantic Salmon production required 395,000 MT of fish oil in 2021.
Demand is expected to reach 600,000 MT by 2030.

Changing Import Regulations
Plant Technology to Address Complex Environmental Challenges



Atlantic Salmon production required **395,000 MT** of fish oil in 2021.
Demand is expected to reach **600,000 MT** by 2030.



Omega-3 canola oil can replace ALL of the fish oil by 2030 on just 1.5 million of 37 million current hectares.

That's less than 5% of current canola crop land.

Traceable Production

excellence  through
STEWARDSHIP

Closed Loop Production System (seed to oil)

- Designed for identity preservation
- Satellite and in person field monitoring
- Borders maintained between fields
- Three years hiatus before planting non-omega-3 canola

Extensive quality testing throughout supply chain

Grain grown harvested and produced in US – only oil is exported

No DNA present in oil



Biotechnology powered by rain and sunshine

Biotechnology Products are Ubiquitous

Health Care

Vaccines

Rapid COVID Tests

Custom Gene Therapies

- Cancer Treatments
- Cured Sickle Cell Anemia
- Skin Tissue for Burns

Environmental

Drought Tolerant Crops

Compostable Plastics

Bio Fuels

Increased Grain Yield

- Prevents Deforestation

Food Supply

Livestock Feeds

Plant Based Proteins

Improved Nutrition

- Golden Rice (Vit A)

Consumer Preference

- Non-Browning Apples

US consumer research on omega-3 canola oil indicates.*

67% identify ocean health as a top concern in sourcing omega-3

4% identify biotechnology as the most important feature of this oil

* Qualtrics survey conducted with 1200 US consumers in 2021



Consumer Research and Sentiment

Summary of Consumer Research



Providing Total-Omega-3 in one dose and no harm to oceans are top attributes for omega-3s to have

- Ocean health is a concern for over two-thirds of respondents
- Providing Total Omega-3 in one dose and no harm to oceans were the top two most important attributes for omega-3s to have



Plant-based is a more preferred omega-3 and those who prefer plant-based are most interested in Omega-3 Canola

- 40% respondents would prefer plant-based omega-3s
- Preference for plant-based increased up to 64% after reading the new product description – a 24% increase



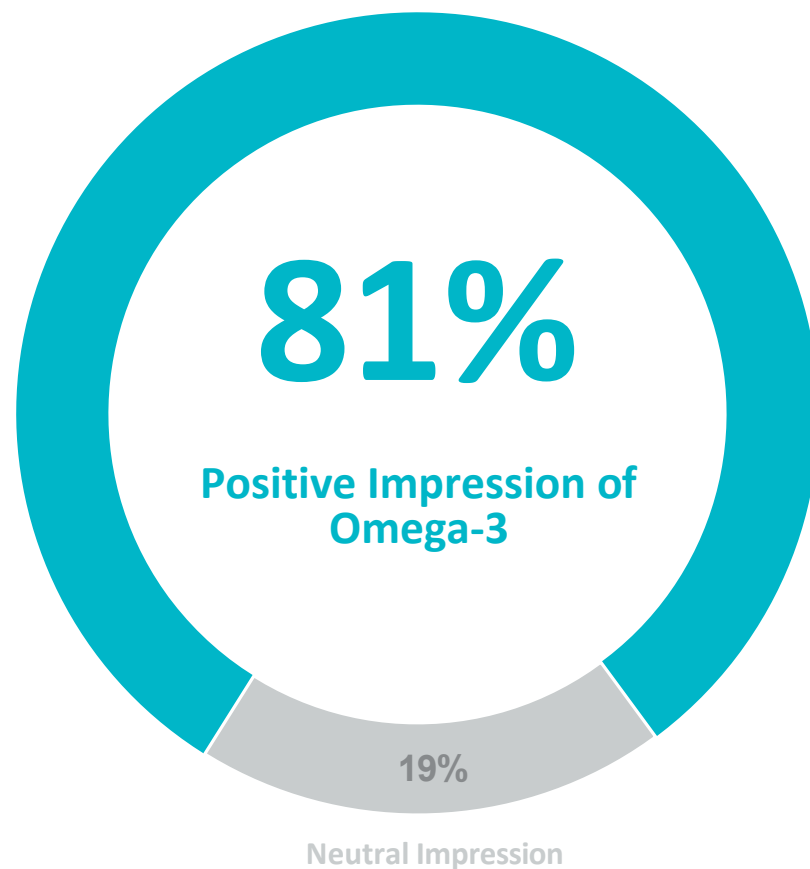
Likelihood to try this new product is very high and there are recognizable advantages over fish or algae sources

- Overall, over three quarters of respondents would be willing to try the new product
- Over 90% of respondents recognize at least one advantage of this new product over fish or algae sources

Overall Impressions of Omega-3

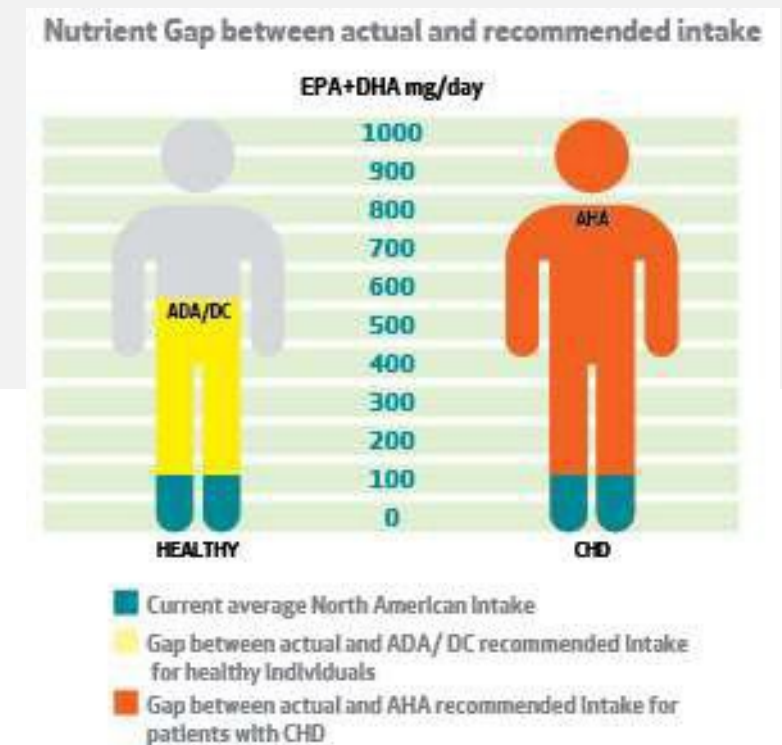
While respondents had to have a positive or neutral impression of omega-3 to qualify, overall impressions of Omega-3 **are very positive.**

Overall Impression of Omega-3



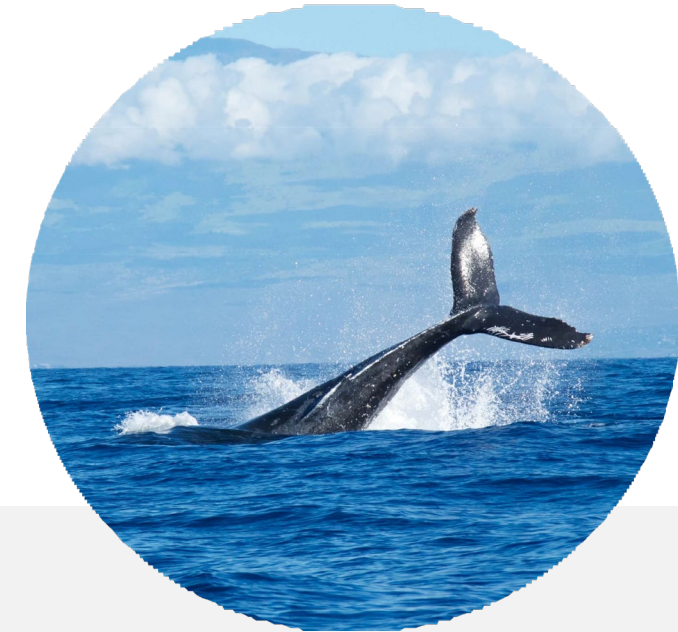
82% Deficient

Percent of Americans who are deficient in omega-3 because current sources do not meet their preferences..

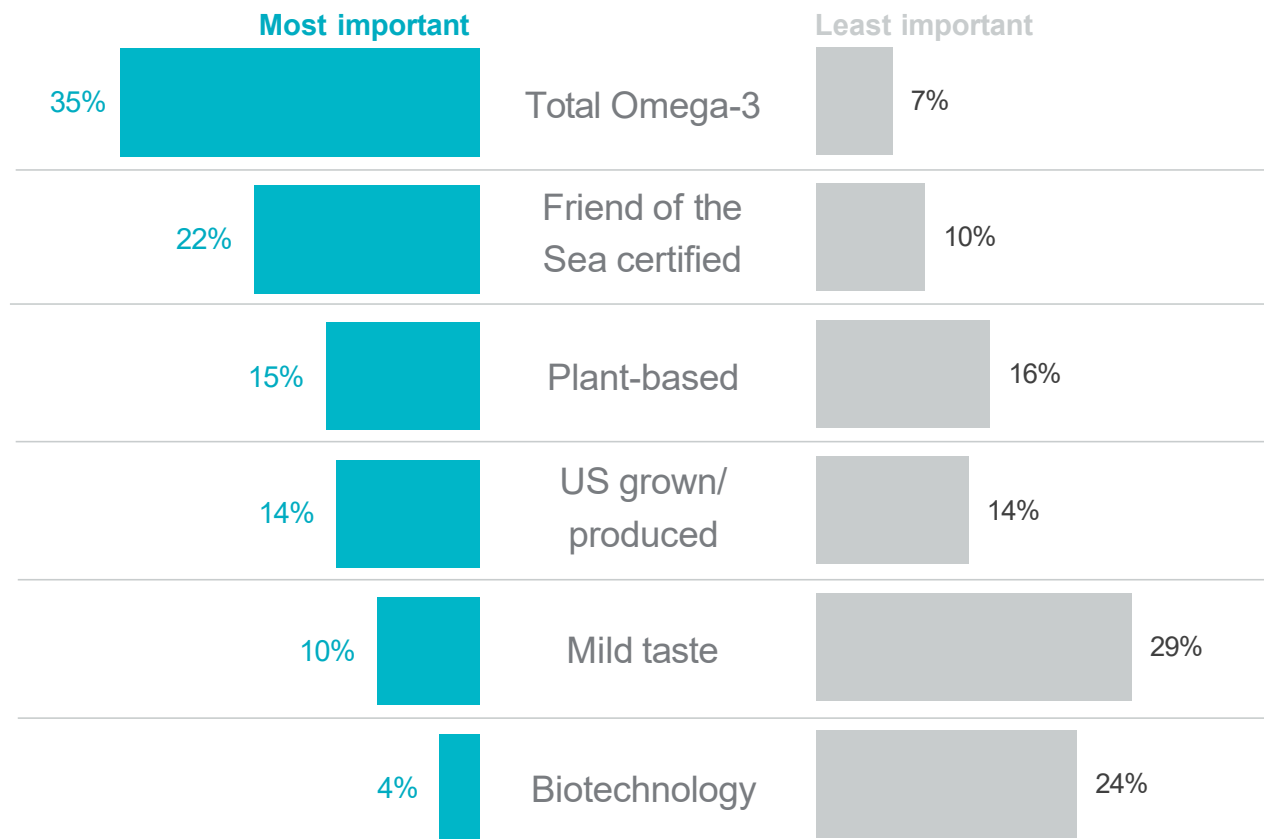


New Product Attributes

After reading the new product description, total omega-3 and being Friend of the Sea certified are the most important omega-3 attributes while having a mild taste and biotechnology are least important.



Most and Least Important Attributes For New Product



Top 3 Most Important Attributes

Those concerned with ocean health

32% Total Omega-3

26% Friend of the Sea

17% Plant-based

Those less concerned with ocean health

40% Total Omega-3

17% US Grown

14% Mild taste

Omega-3s Most Interested In Taking

Over 4 in 10 respondents are interested in *plant-based* omega-3s the most. Of those who are interested in plant-based omega-3, most said they would be most interested in *Omega-3 Canola*. qualtrics.^{XM}

Plant-Based Omega-3 Most Interested In

% ranked #1



Omega-3 Canola
(DHA+EPA+ALA)



Flax
(ALA)

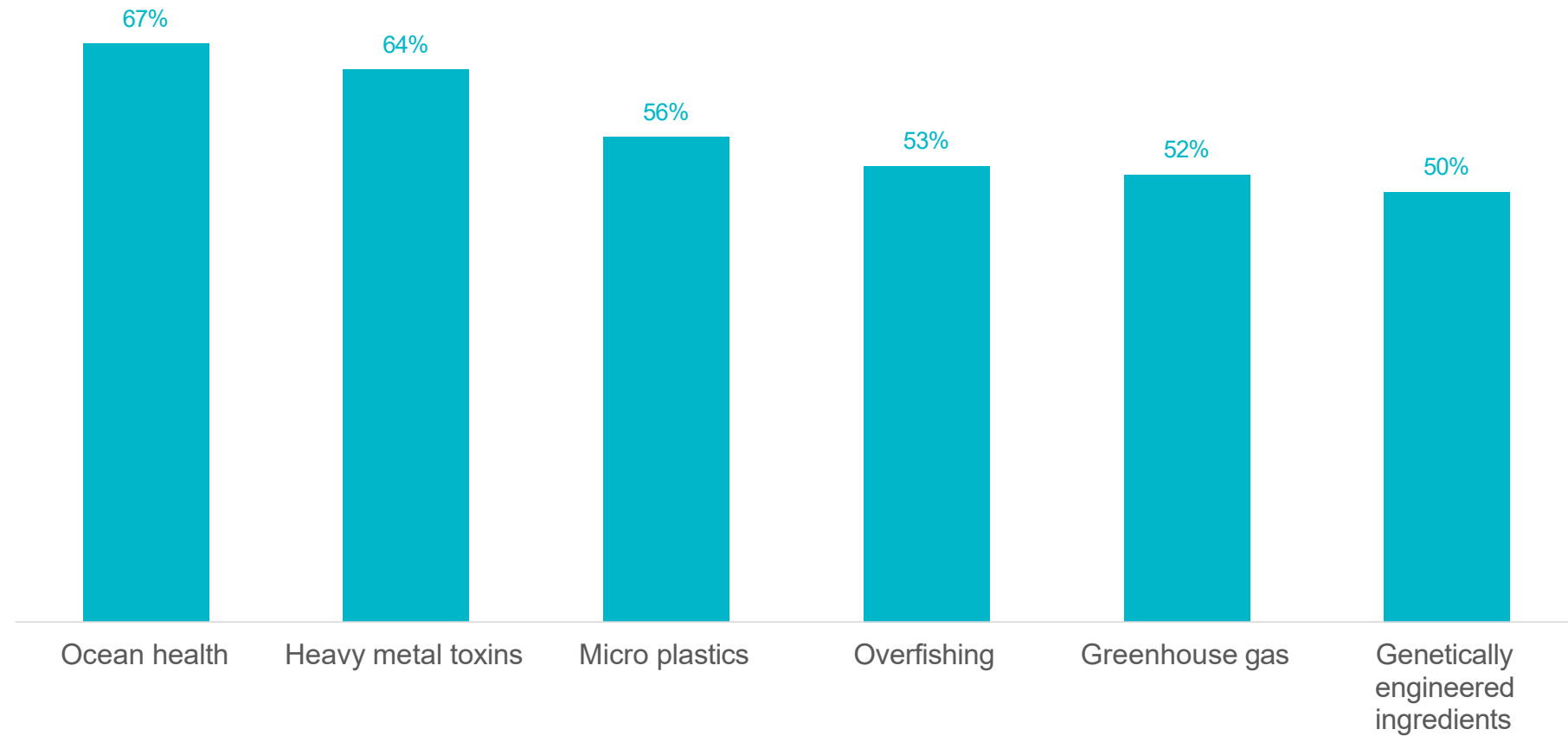


Algae
(DHA+EPA)

General Concerns

Ocean health and heavy metal toxins are the top concerns for respondents.
Genetically engineered ingredients is the least important across all respondents.

Extremely or Very Concerned with the Following Issues



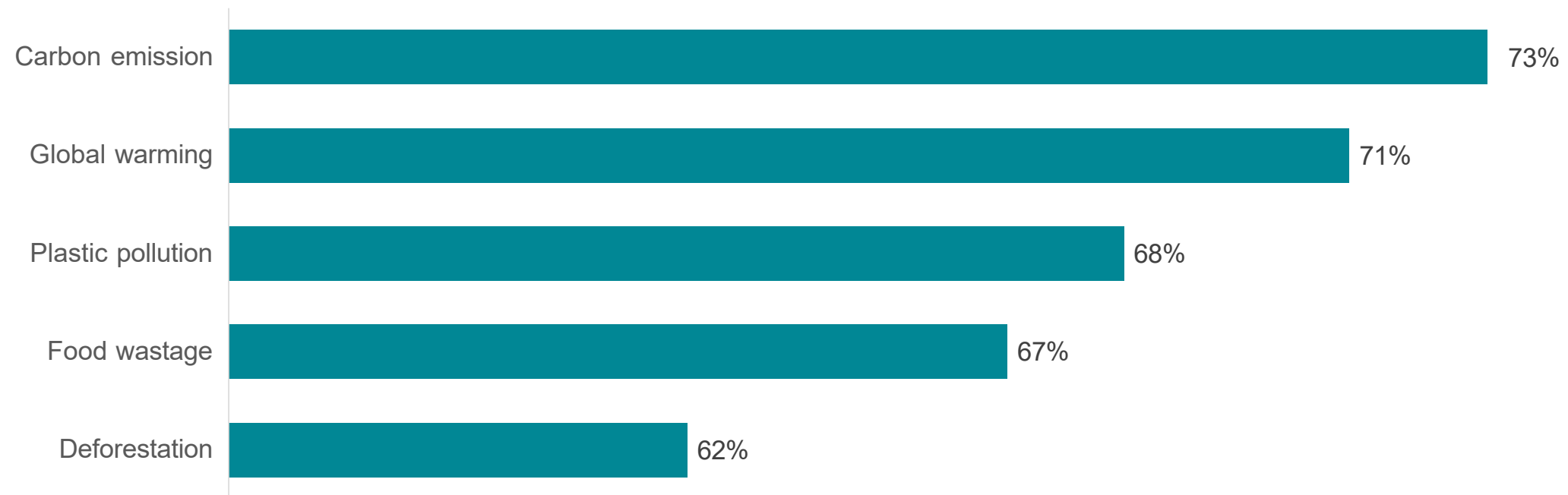


1. Path to Net Zero

Consumers expect companies to address climate change

Consumers are becoming more conscious about environmental issues such as carbon emission and food waste and are taking proactive steps to address this – expecting producers and retailers to mirror these actions.

Are you concerned about any of the following? 2020
Global – Top five concerns





Industry Response






British Journal of
Nutrition

Article contents

Increasing dietary levels of the *n*-3 long-chain PUFA, EPA and DHA, improves the growth, welfare, robustness and fillet quality of Atlantic salmon in sea cages

Published online by Cambridge University Press: 03 March 2022

Esmail Lutfi , Gerd M. Berge, Grete Bæverfjord, Trygve Sigholt, Marta Bou, Thomas Larsson, Turid Mørkøre, Øystein Evensen, Nini H. Sissener and Grethe Rosenlund ...Show all authors 

Show author details 

Article

Figures

Supplementary materials

Metrics



Save PDF



Share



Cite



Rights & Permissions

“Plant-based omega-3 can provide a stable source of these oils to secure the growth of the aquaculture industry.” — NOFIMA



Industry and NGOs embrace Aquaterra Advanced Omega-3



Meets requirements for ASC and BAP standards



Invited as Participatory Members



*First Biotech Product Certified by FOS
for Demonstrated Positive Environmental Impact*



Recognized for Facilitating Sustainable Industry Growth



THANK YOU

