

Turid Rustad: Navigating the seas of seafood processing

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In this comprehensive discussion, Turid Rustad, professor at the Norwegian University of Science and Technology shares insights into her background in the realm of biotechnology and food science, the collaborative nature of her work, challenges in seafood processing, and her vision for the industry's future

Background and expertise

Rustad's academic journey commenced in Trondheim, where she pursued a master's degree in technology, specialising in chemistry and biochemistry. Subsequently, her path led to a Ph.D. focused on drying capelin mince.

Over the years, Rustad's research expanded to encompass various fish-related projects, including freezing, salting, and the intricate dynamics of seafood quality during stress and slaughtering procedures. Today, she holds a professorship in biotechnology, with a primary focus on food science.

The importance of collaboration across disciplines

One of the pivotal moments in Rustad's career was witnessing the collaborative efforts of biologists, biochemists, and technologists. This interdisciplinary approach emerged as a response to the realisation that events in the sea and during harvesting significantly impact post-harvest quality.

Rustad's current role allows her to continue her exploration of fish processing – both traditional methods such as drying, freezing, salting, but also new and innovative methods such as superchilling and their effects on the quality of fish, particularly salmon, which holds great significance in Norway.

Preserving nutritional quality

Pelagic fish, renowned for their nutritional value, pose a unique challenge due to their high perishability. Rustad provides pragmatic solutions based on her involvement in previous projects, such as the JPI (Joint programming Initiative) project, which explored the use of new preservation methods and use of antioxidants to preserve fish quality. Rapid chilling after harvest, especially by putting the fish in refrigerated seawater, becomes crucial. Rustad

is currently engaged in a project focusing on the use of rest raw material from lumpfish and tuna and, where preserving quality is a primary concern.

Innovations in processing and preservation when it comes to fish

Navigating the seasonal challenges of fish like mackerel and herring, Rustad provides a comprehensive overview of the practical intricacies involved in their preservation.

The emphasis is on efficiency, recognizing that delays in chilling and processing can compromise the quality of the fish. This urgency, particularly with highly perishable catches like mackerel and herring, underscores the hands-on philosophy that Rustad and her team bring to their research.

One of the notable techniques in Rustad's arsenal is superchilling – a method challenging the conventional freezing practices. By partially freezing pelagic fish, Rustad aims to extend their shelf life while maintaining a level of freshness that goes beyond what traditional freezing methods can achieve.

High-pressure processing, is also a method that has shown promise in maintaining the quality of pelagic fish.

The conversation seamlessly transitions to the exploration of emerging methods such as pulsed electric fields, and ultrasound. Rustad sheds light on the ongoing efforts in her research group and collaborating groups to evaluate the feasibility and effectiveness of these techniques in seafood processing. Each method brings its unique set of advantages, but also challenges which requires understanding of how these innovations can be harnessed to improve preservation outcomes.

As Rustad shares these insights, it becomes evident that her research is not confined to theoretical considerations but is deeply rooted in practical applications. The dynamic nature of her work reflects the continuous pursuit of solutions that address the real-world challenges faced by the seafood processing industry.

Utilising side streams

In the sustainable utilization of byproducts or side streams generated during fish processing, Rustad advocates for a strategic approach. Sorting these byproducts allows for the isolation of higher quality protein and lipid fractions. Rustad emphasises the importance of this sorting process, drawing from recent results from Sweden and Denmark that demonstrated the benefits of sorting byproducts, leading to better end products.

Balancing growth with sustainability within the seafood industry

As the demand for seafood rises globally, Rustad discussed the crucial need to balance industry growth with environmental responsibility. She calls for a holistic approach that goes beyond just using the main parts of the catch, emphasising the importance of viewing side streams not as byproducts but as valuable raw materials crucial for sustainability.

Rustad argues that true sustainability comes from using the entire catch, moving away from practices focusing only on the best cuts and leaving significant parts as unused byproducts. She advocates for a shift where side streams, often overlooked, are seen as essential contributors to the industry's overall sustainability.

Acknowledging the need for a paradigm shift, Rustad stresses that it's not just about technological innovation; there must also be efforts to communicate the nutritional benefits of processed proteins and lipids to consumers. Convincing the public of the value in using these components for human consumption, she argues, is crucial for the industry's sustainable future.

In places like Norway, where fish oil supplements are common, Rustad notes positive consumer perceptions of fish-derived components. However, she highlights the necessity for a broader societal shift in thinking, especially regarding proteins and lipids processed from side streams. Educating consumers becomes vital in connecting sustainable practices with their choices.

In conclusion, Turid Rustad's insights into balancing growth with sustainability provide a nuanced perspective on the evolving landscape of seafood processing. Her vision transcends the traditional boundaries of catch utilisation, advocating for a comprehensive approach that transforms side streams into valuable contributors to a sustainable and environmentally responsible industry. Ultimately, Rustad's perspective underscores the interconnectedness of technological innovation, consumer education, and environmental stewardship in shaping the future of seafood processing.

Future Visions and Research

As Rustad approaches retirement, her vision for the future of seafood processing remains centred on retaining the quality of lipids and proteins. Monitoring processing effects becomes crucial in ensuring that the industry embraces new preservation methods and optimises them for large-scale efficiency.

Rustad envisions ongoing research into the mechanisms and processes underlying seafood preservation. She anticipates a future where the industry adopts new and innovative methods, such as improved chilling or freezing techniques like super chilling and advanced packaging methods.

In closing, Turid Rustad's insights offer a comprehensive understanding of the challenges and innovations in seafood processing. Her dedication to sustainable practices, hands-on approach to preservation techniques, and anticipation of future industry trends position Rustad as a key figure in shaping the trajectory of the seafood processing industry.

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