

TARS 2024 Meeting Report



MEETING REPORT

TARS 2024: FINFISH AQUACULTURE - STEERING AN INDUSTRY INTO FOCUS

In its 13th year, **The Aquaculture Roundtable Series (TARS 2024)** focused on finfish aquaculture. The conference addressed challenges for tilapia, pangasius, and marine fish, including cyclic price lows, branding difficulties, and feed production issues. It stressed the importance of genetics, collaboration among stakeholders, education for small farmers, and market adaptation to enhance profitability and consumer perceptions. Additionally, the role of retailers in shaping consumer preferences and the necessity for industry pushback were discussed.

The meeting in Bangkok, Thailand on August 14-15 had 210 participants, including 72 from Thailand. The program featured 40 speakers discussing production and supply chains for tilapia, pangasius, and marine fish in Asia's farmed fish industry.

Asia produces nearly 58 million tonnes of farmed finfish, making it the world's largest producer. As global demand is expected to double by 2050, Asia's role is crucial. However, tilapia and pangasius face pricing challenges in the freshwater segment, impacting their position in the whitefish value chain. Despite leading US tilapia supply, both species experience low farmgate prices, with retail prices remaining in the low to medium range. These issues hinder the industry's growth and market positioning.



In the marine segment, the industry involves large quantities of lowvalue milkfish and small quantities of high-value species like groupers. This fragmentation makes it difficult to achieve economies of scale and slows research and development in areas such as genetics, feed development, and vaccines. In contrast, Europe focuses on a few key species such as the European seabass and salmonids, highlighting the challenges posed by Asia's multispecies culture.

Deputy Director-General of DOF, Praphan Leepayakhun welcomed attendees and highlighted Thailand's leading role in Asian seabass pond farming, producing nearly 50,000 tonnes in 2022. The focus is on genetics, similar to tilapia, where Thailand leads.

Key takeaways from TARS 2024

Retailers' influence on consumer preferences: Retailers play a significant role in shaping consumer perceptions and demands, as seen with the promotion of salmon in Europe. This influence can extend to other species, but it also raises concerns about retailers imposing costly practices on farmers.

Need for industry pushback: While retailers can drive positive change, like promoting sustainable practices, there is a need for the industry to push back when retailers' demands lead to increased costs or unfair burdens on small-scale farmers.

Quality and perception: Those for the pangasius and tilapia are influenced by factors like quality control and marketing. Poor practices can lead to a negative image, making it difficult to market these species, especially in regions where they are viewed as cheap or low-quality.

Importance of branding and negotiation power: Branding is crucial for improving the market position of less popular species. Only producers with strong negotiation power, can command higher prices and better market positions. Smaller producers in Asia have an unfair disadvantage.

Collaboration among stakeholders: More supply chain coordination, and collaboration among farmers, regulators, academia, and retailers is essential for improving standards, supporting small-scale producers, and enhancing the overall quality and marketability of fish species.

Education and support for small farmers: Educating small farmers on good practices is critical for preventing issues like disease and maintaining the quality of fish. Associations and cooperatives can help provide stability and fair pricing for these farmers.

Market adaptation and versatility: Species like pangasius can be marketed based on their versatility in flavour, catering to various consumer preferences. Adapting marketing strategies to emphasise these qualities can help improve their market appeal.

Changing consumer perceptions: There is a need for collective industry efforts to change negative perceptions of certain fish species, especially in regions where species like tilapia may have a poor image.

Product diversification through co-development: Better utilisation of the whole fish, improves profitability. Various products such as fish skin chips, can help diversify food options.

Importance of training farm workers: Better training of the farm workforce to ensure good farming practices, and better biosecurity, can improve fish health and performance throughout the production cycle.

Marine fish feed production: Feed millers are reluctant to produce feed for marine fish due to the continued use of trash fish, which lowers their volumes and profitability. Government intervention may be necessary to address this issue.

Low quantities hinder feed production for specific species: Low demand for feed for certain marine species, like for the grouper, makes it unprofitable for feed millers to produce specialised feeds, leading them to instead create a one-size-fits-all product.

Genetics and long-term investment concerns: On genetic improvement for the Asian seabass, once genetics s

election is settled for the first founder stocks, the cycle time for the next selection is manageable. Similar to salmon, the adoption of strategies to prioritise genetic selection, despite the initial delay, was suggested.

Market development and branding for marine fish: There is difficulty in developing a premium market for marine fish due to the need for significant investment in branding and marketing. This is particularly challenging when the top species keep changing frequently.

Consumer demand vs production capability: The moot point for discussion was whether the industry should focus on producing what the consumers demand, or dictate what they should consume, especially when dealing with multiple species of fish.

Cultural preferences and market expansion: There is a cultural preference for marine fish among coastal populations in China and the need to change consumer perceptions in inland areas to expand the marine fish market. It was suggested that promoting the benefits of marine fish, similar to how chicken breast became popular for its protein content, could help achieve this.

SOI on Navigating the dynamics of finfish aquaculture in Asia

Four presentations in the State of Industry and Challenges (SOI) session discussed the evolving dynamics of the farmed fish industry: views on the US market for the tilapia; the pangasius in Vietnam and the region; marine fish in China; and for the host country, Thailand, the focus was to increase production in tilapia via genetics and quality fry. <u>More https://online.flippingbook.com/link/859126/6/</u>

Decline in US tilapia market

Francisco Murillo noted the long-term decline in US tilapia consumption, with per capita consumption decreasing by 30% from 1.47 lbs/person in 2022 to 1.05 lbs/person due to reduced demand for frozen fillets and supply issues with fresh fillets. Tilapia imports into the US have decreased substantially, with frozen fillet imports dropping by 42% from China and 46% from Indonesia over the last decade, and fresh fillet imports projected to reach their second-lowest volume in over a decade at 20.3 million kg in 2024.

Challenges in tilapia production include disease outbreaks such as Streptococcus agalactiae 1a in key producing countries and FDA concerns regarding salmonella contamination. Additionally, perceptions of tilapia from China are affected by antibiotic use, environmental issues, and practices like carbon monoxide and tripolyphosphate usage, leading major US retailers to avoid these products. Efforts to address declining imports include increased vaccination efforts, boosting juvenile production, and certification initiatives; however, negative perceptions persist as a significant hurdle.



Speakers and an industry panellist at the State of Industry and Challenges session. From second left: Francisco Murillo, CEO of Tropo Farms Ltd, Ghana; Yufan Zhang, China Aqua BD Manager & SE Asia Technical Manager, Alltech; Mai Chung, APAC Regional Manager for Aquaculture Feed Additives, ADM; Amorn Luengnaruemitchai, Managing Director at Manit Genetics, Thailand, and Olivier Decamp, R&D and Business Development, INVE Aquaculture, Thailand. The session was moderated by Ronnie Tan (left).

Pangasius industry in Vietnam

Mai Chung detailed Vietnam's pangasius industry's growth from 50,000 tonnes in 2000 to 1.7 million tonnes in 2023, making it the top global producer. Despite low production costs of US\$1.1-1.3/kg, farmers earn little due to farmgate prices of US\$1.2-1.3/kg and high feed costs, comprising 86% of expenses. Negative perceptions in markets such as Europe and the US, along with US antidumping duties, have affected competitiveness. Diversifying markets and investing in branding, R&D, and value-added products like premium fillets are essential.

Tilapia production in Thailand

Amorn Luengnaruemitchai highlights tilapia's importance to small-scale farmers despite challenges such as high feed costs and fluctuating prices. While Thailand's tilapia production grows by 2% annually, exports include frozen fillets to the US and whole fish to Myanmar and Cambodia. However, climate change and rising feed prices have led to a 20% decline in production. Extreme weather has disrupted farming, increased mortality rates, and raised costs. The Tilapia Association of Thailand aims to enhance consumer perceptions by collaborating with chefs, securing airline contracts, and developing new serving styles.

Marine fish aquaculture in China

Yufan Zhang highlighted China's marine fish aquaculture, which produced 1.93 million tonnes out of 29 million tonnes of farmed fish in 2022, led by Fujian and Guangdong provinces. The golden pompano was the fastest-growing species, with over 300,000 tonnes produced. Profit-driven practices have prioritised immediate returns over innovation or sustainability, with coastal cage and pond farming prevailing despite their unsustainable nature. Aligning production with consumer demand and market dynamics is essential to fully exploit China's marine fish farming potential.

Future directions for farmed fish industry

Panellists agreed that the farmed fish industry must adapt to changing global consumption trends, address negative perceptions, and focus on innovation and strategic adaptation. Important areas include sustainability certifications, value-added products, branding, and R&D to position farmed fish as high-quality products. Challenges such as climate change, disease outbreaks, and trade protectionism require tailored solutions for regions, seasons, and species. Aligning production metrics with consumer demand is essential for growth and profitability. <u>More https://online.flippingbook.com/link/859126/36/</u>

A good start with genetics and hatchery/nursery management

Morten Rye from Benchmark Genetics, Norway discussed advanced breeding technologies for improving aquaculture sustainability and production in Asian finfish. He explained that the domestication of aquaculture species offers opportunities for genetic improvement and that selective breeding programs can modify traits in these species. The genomic toolbox is expanding with over 30 species having access to off-the-shelf SNP arrays, which aid in genomic selection and parentage analysis. Bespoke SNP array design and sequencing for SNP discovery are also available. Investing in selective breeding for aquaculture is crucial for sustainable production. Molecular tools, now more affordable, enhance genetic gains through improved selection methods.

Kim Young Chul from INVE & SFA Hatchery Technology Centre, MAC in Singapore, demonstrated how European practices in aquaculture enhance juvenile fish production by improving survival rates and productivity. Robust juveniles exhibit lower disease risks, better growth, and fewer deformities. Implementing these practices boosts quality and efficiency. A well-designed early live food program further enhances survival, growth, and feed efficiency, leading to greater productivity and profitability.



The panel, second left: Morten Rye, Director, External Services and International Strategies, Benchmark Genetics, Norway; Young Chul Kim, R&D Trial Manager (MAC), INVE Aquaculture, Singapore; Christopher G. Co, Vice President, Oversea Feeds Corporation, Philippines and Lan Hsiang Pin, Asia Marine Aquaculture Specialist, U.S. Soybean Export Council, Taiwan. The moderator was Dr Krishna R. Salin, Aquaculture Program Chair, Asian Institute of Technology, Thailand.

Precision fish nutrition for feed efficiency

The key message from **Dr Brett Glencross**, Research Director at IFFO and Honorary Professor at the University of Stirling, Scotland is the significance of precision nutrition in aquaculture, focusing on understanding the dietary requirements of fish at various growth stages and sizes. He highlighted:

Nutrients: Modern diets prioritize digestible energy (DE) and digestible protein (DP) over crude measurements, as digestible supply directly impacts performance.

Ingredient Assessment: A structured four-step approach ensures comprehensive evaluation of feed ingredients, including characterization, digestibility/palatability, utilization/growth, and omics responses.

Changing Requirements: Nutritional needs vary with fish size and growth stages, making species-specific formulations essential.

Sustainability: Ingredient assessment now includes environmental footprint considerations, aligning with sustainable practices. Overall, Brett highlights that precision nutrition and effective ingredient management are critical for improving feed efficiency, growth, and sustainability in aquaculture.

The presentation from **Dr Sofia Morais**, Innovation AQUA Team Leader at Lucta S.A, Spain focused on taste and palatability in aquaculture productivity. Taste is the final sensory system determining feed consumption in fish and plays a crucial role in guiding dietary choices and ensuring feed intake. *Palatability challenges* arise with reduced fishmeal in diets, which can lead to issues. Specialty ingredients such as hydrolysates, krill meal, and sensory additives are used to enhance feed intake and performance. Enhancing feed intake with specialty ingredients reduces feed waste, supporting sustainability in aquaculture. Sofia emphasized the importance of understanding fish sensory systems and using palatability enhancers to improve feed intake, efficiency, and profitability in aquaculture. <u>See article in Aqua Culture Asia Pacific</u>

https://online.flippingbook.com/link/516424/26/

Dr KP Chan, Regional Technical Team Lead for Vitamins & Carotenoids, Asia Pacific, BASF Animal Nutrition, Singapore emphasized the critical role of astaxanthin in finfish aquaculture, highlighting its importance for pigmentation, growth, reproductive performance, and stress management. Astaxanthin functions as an antioxidant, reducing oxidative stress and lipid peroxidation to support overall fish health. For tilapia, a dosage of 150mg/kg feed is optimal for growth and feed utilization; exceeding this can cause oxidative stress and harm performance. Micro-encapsulation of astaxanthin improves stability, bioavailability, and ease of handling.

Abung Simanjuntak, Technical Expert Manager – Aqua Region Greater APAC, dsm-firmenich addressed tilapia farming challenges using feed additives and sustainable practices. High stocking densities (over 200 fish/m²) increase stress and disease susceptibility, reducing survival rates to 60-70%, affecting productivity and profitability. Feed additives like essential oils, organic acids, and exogenous enzymes enhance feed efficacy, nutrient utilization, and digestibility. Phytase reduces phosphorus in the environment, lowering nitrogen levels and minimizing eutrophication and harmful algal blooms. Abung highlights the need for integrating feed additives, sustainable methods, and a holistic farm ecosystem understanding to improve tilapia farming outcomes.



Panel discussion led by Romi Novriadi (left) with, from right, invited industry player, Piet Vertstraete, Abung Simanjuntak, Sofia Morais, KP Chan and Brett Glencross.

The panel dived into palatability in aquaculture highlights its critical role in feed intake, performance, and health management. Palatability is essential for ensuring feed intake, especially under stress or challenging conditions, such as disease outbreaks, low temperatures, or during transitions (e.g., hatchery to grow-out cages. Specialty ingredients, additives, and palatants (e.g., krill meal, hydrolysates) are used to improve feed intake, particularly in diets with reduced fishmeal levels or unfamiliar ingredients like single-cell proteins or insect meals. Since during disease outbreaks, fish often stop feeding due to stress, p Palatability enhancers can encourage feeding, helping fish cope with stress and maintain energy levels, though proving their effectiveness experimentally is challenging. Overall, palatability is a key driver of feed intake and performance, requiring innovative solutions and precise evaluation methods to address challenges in aquaculture. <u>More</u>

A science and an art in disease management

Disease mitigation in marine fish and tilapia involves a combination of strategies, including early detection, vaccination, biosecurity measures, and improved husbandry practices. **Susan Gibson-Kueh**, Tropical Futures Institute, James Cook University, Singapore stated that there is seldom a secret remedy for diseases, and farmers need to focus on early detection and intervention.

Key points of her presentation included:

- Effective disease control requires accurate diagnosis (science) and experience-based management of the disease process in fish (art). Maintaining bacterial diversity in the gut and water through optimal nutrition and husbandry is more effective than targeting single pathogens.
- Scale Drop Disease (SDD) in Asian seabass causes skin and scale loss, dehydration, severe inflammation, and splenic infarcts. Moving fish to freshwater or lowering salinity can reduce mortality, but access to freshwater is often limited. Vaccination can prevent secondary bacterial infections.
- In Big Belly Disease, chronic bacterial enteritis and peritonitis in seabass lead to gut perforation and
- severe inflammation. Fish die due to dehydration in seawater, but moving them to freshwater reduces losses.

• Breaking the life cycle of parasites is critical. Coordinated farm-wide treatment and monitoring treatment effectiveness are necessary. Regarding monitoring and biosecurity, proper diagnosis and understanding disease progression are essential for effective management. Stress factors like cannibalism and recent transfers can exacerbate health issues.



The panel on Disease Mitigation and Innovation. From left: Jarin Sawanboonchun (moderator), with speakers: Susan Gibson- Kueh, Tropical Futures Institute, James Cook University; Roberto Cascione, Virbac Asia Pacific; Rishita Changede, Teora Pte Ltd and panellists; Jessica Kaye Turner, Nam Sai Farms Co Ltd, and Ei Lin Ooi, Adisseo Asia Pacific.

The spread of *Streptococcus agalactiae* serotypes (Ia, III, Ib) across Southeast Asia, Africa, and Latin America, along with the shift towards a multivalent serotype scenario, necessitates a comprehensive approach that includes understanding farming history, seasonal variations, weather conditions, temperature fluctuations, and clinical indicators for effective pathogen management, said **Roberto Cascione**, Virbac, Thailand. The proliferation of diseases can be attributed to factors such as globalization, climate change, fish movement, biosecurity breaches, and increased production. He further noted that higher stocking densities to meet production demands amplify the risk of disease outbreaks.

Vaccination significantly reduces mortality, with a 30% better survival rate in vaccinated fish during outbreaks. He urged regulatory changes for an open market for autogenous vaccines and easier access to commercial ones. Emerging pathogens like *Francisella noatunensis*, ISKNV, *Edwardsiella ictaluri*, and parvovirus are becoming more aggressive, affecting various production stages. Solutions include genetics for disease resistance, improved biosecurity, and customized approaches for specific farming systems. He emphasized the need for multiple vaccines to tackle the current multi-pathogen scenarios.

Rishita Changede at Teora Pte Ltd, a Singapore-based startup, provides advanced biotech solutions for disease management in aquaculture. The company's key offerings include nanopeptide-based vaccines administered orally through top coating at feed mills or farms, ensuring scalability and practicality for aquaculture applications. Trials conducted against Streptococcus iniae and SDD in Asian seabass demonstrated high survival rates and no negative impact on production parameters such as weight gain and daily growth.

The panel stressed the need for vaccination, biosecurity, modern farming methods, and biotech solutions to confront aquaculture diseases. They highlighted regional disease patterns in Asia, such as Streptococcus agalactiae serotypes, TiLV, ISKNV, and Francisella spp. Multiple infections require thorough diagnostics. The Thai model of low-density farming and recirculating aquaculture systems (RAS) were suggested to reduce disease risks and weather challenges. Future goals include regulatory adjustments to enhance vaccine access, development of multi-pathogen vaccines, improved genetics for disease resistance, and stronger immunity and preventive measures. More https://online.flippingbook.com/link/39062/36/

Future proofing fish aquaculture

Four presenters discussed future-proofing fish aquaculture in Asia with emphasis on food security, feed efficiency, and sustainability. **Rui Gonçalves** from Singapore Food Agency addressed challenges in food security, highlighting solutions like advanced aquaculture technologies and research on Asian seabass and red snapper to strengthen local seafood supply amidst import dependence and risks.



Daranee Seguin, Consultant, Thailand (left) led a panel of speakers and an industry leader who dived into selected areas in future proofing fish aquaculture. From right: Robert Redman, Market Development, Veramaris; Cameron Maclean, Aquaculture Management, Singapore; Rui Gonçalves, Singapore Food Agency; Linda Chen, Hatch Blue and Herve Lucien Brun, Jefo Nutrition.

Singapore's R&D in seabass and snapper aims to support neighbouring countries, establishing Singapore as a hub for Southeast Asia. Efforts in collaboration, R&D investments, and scalable production models contribute to developing a resilient and self-sufficient food system.

Linda Chen from Hatch Blue discussed innovations in aquafeeds, highlighting the shift from fishmeal to plant-based and alternative proteins for sustainability and cost reasons. Emerging ingredients such as corn fermented protein, fermented soybean meal, and barley protein concentrate show promise due to their digestibility, palatability, availability, low environmental impact, and competitive pricing. Linda stressed the importance of combining new ingredients with existing ones to create optimal feed formulations and meet the demand for sustainable aquafeeds.

Herve Lucien Brun from JEFO Nutrition Inc., Canada, emphasized the role of protease enzymes in enhancing feed efficiency, reducing environmental impact, and meeting certification standards demanded by consumers. He focused on digestible protein over crude protein to cut costs, boost fish growth, and lessen environmental impact. Protease enzymes improve protein utilization, enabling use of cost-effective alternative meals and reducing nitrogen output and pollution. Benefits include improved growth performance, feed conversion ratio (FCR), and profitability in species like trout, tilapia, snakehead, and pangasius. Protease applications also help meet certification criteria like protein retention efficiency (PRE) and feed fish equivalent ratio (FFER) for organizations like the Aquaculture Stewardship Council (ASC) and Best Aquaculture Practices (BAP).

Lake Toba produces 60,000 tonnes of tilapia annually, with 30,000 tonnes from corporate farmers and 20,000 MT from small-scale farmers. **Cameron McClean**, eFishery said that discussed empowering small-scale tilapia farmers in Indonesia through cooperative structures, market access, and certification for sustainable growth of industry around Lake Toba. Key Challenges include farmers typically grow fish to 300g, while efishery needs fish over 550g for export. There is a shortage of high-quality fingerlings, leading to lower growth rates.

Trust issues exist as farmers are cautious about changing off-take channels. Farm gate prices fluctuate around 2,000 Rupiah/kg, with slow upward trends due to feed costs. Farmers face challenges in accessing working capital and quality fingerlings to grow larger fish. The farmer benefits from certifications, business licenses, lower feed costs, access to quality fingerlings, and guaranteed off-take.

During the panel, Robert Redman discussed aspects of the salmon industry such as marketing strategies, supply chain transparency, and cooperative models that assist small farmers and achieve economies of scale. <u>More. https://online.flippingbook.com/link/851653/48/</u>

Industry Challenges = Startup Opportunities =Venture Capital Investments

This year, industry dialogue participants included **Michael Sweeny** from Bluegrass, Hong Kong SAR; **Le Ngoc Tien** of Vinh Technology, Singapore; **Andreas von Scholten** of Grobest Group Holdings Ltd, Hong Kong, and former CEO of Barramundi Group, Singapore; and **Haydar H. Al Sahtout** of Blue BioEconomy Holdings, Saudi Arabia. Moderator Ronnie Tan, USGC's aquaculture consultant, asked why there's a lack of investment in finfish farming in Asia compared to salmon and Mediterranean seabass and seabream farming, and explored Asia's strengths. Asia's core fish farming industry can enter the mainstream investor portfolio by addressing several key challenges and leveraging opportunities.

Addressing Inefficiencies and Fragmentation: The industry must address inefficiencies from fragmented operations, inconsistent output, and disease management. Startups can help by introducing technologies, sustainable practices, and better farming methods.



Panelists at the industry dialogue, from second left, were Michael Sweeny, Bluegrass, Hong Kong SAR; Le Ngoc Tien, Vinh Technology, Singapore; Andreas von Scholten, Grobest Group Holdings Ltd, Hong Kong and Haydar H. Al Sahtout, Blue BioEconomy Holdings, Saudi Arabia. The moderator was Ronnie Tan, USGC.

Building fully integrated systems: Adopting integrated models, like in poultry and salmon industries, can streamline the value chain and enhance scalability. Large projects aiming for 100,000 tonnes of fish could transform the industry.

Enhancing branding and storytelling: The industry should showcase itself as a source of sustainable, healthy protein alternatives that benefit local communities and economies. Effective storytelling can draw investors by emphasizing food security and environmental advantages.

Concentrating on specific species: Refining production techniques and enhancing branding for particular species, such as barramundi, pangasius, and tilapia, can facilitate growth opportunities. Employing innovative strategies, such as producing sashimi-grade pangasius, can increase market attractiveness.

Insights from the salmon industry's success: The profitability of the salmon industry, achieved through cultural integration, strategic branding, and advancements in technology and genetics, provides a valuable model. Asian aquaculture can achieve similar success by stabilising production and adopting sustainable practices.

Attracting patient capital: Securing long-term investments and government support is essential. Investors who recognize the long-term potential of aquaculture and are prepared to finance innovative projects can significantly contribute to transforming the industry. <u>More https://online.flippingbook.com/link/39062/30/</u>

Hard Talk with Business Leaders: Marketing, Branding and Sustainability: A Global Exchange

The primary goal was to discuss the marketing, branding, sustainability, and future trends in Asia's finfish aquaculture industry, focusing on species like pangasius, tilapia, and Asian seabass. Industry leaders shared insights on overcoming challenges, scaling production, and leveraging innovation and strategic thinking to meet global demand for fish protein in a sustainable and competitive manner.

Takeaways from the conversation were:

Effective branding is essential for market differentiation, particularly for lesser-known species such as barramundi. Reliability is paramount for tilapia producers, who prioritize meeting retailer expectations over consumer-oriented branding. Sustainability and emotional engagement are fundamental components of successful branding strategies.

Sustainability is an essential component of contemporary aquaculture, influenced by certification bodies, social media, and consumer demand. Companies are required to implement environmentally responsible practices and maintain transparency to attract a younger, ethically conscious consumer base.



From second left: Nguyen Ngo Vi Tam, CEO of Vinh Hoan, Vietnam; Josh Goldman, Founder/CEO of Australis Aquaculture, USA; Lukas Manomaitis, Global Aquaculture Coordinator, U.S. Soybean Export Council, Thailand, Francisco Murillo, CEO of Tropo Farms, Ghana. The moderator was Ronnie Tan, USGC.

Vertical integration allows firms to control production, ensure reliability, and leverage by-products. Flexibility and innovation are crucial for staying competitive and meeting market demands.

Barramundi is considered a potential "tropical salmon" due to its sustainability and growth benefits. Other species such as pompano, snapper, and grouper also present potential. Scaling production and focusing on one species are important for profitability and market dominance.

Companies are transforming fish by-products into profitable items such as collagen, gelatine, fish meal, and biofuel to boost earnings and minimize waste.

Social media, certification, and the demand for sustainability will drive industry practices. Innovation, reliability, and strategy are crucial for scaling production and meeting global demand.

Observations from other regions, like the Mediterranean seabass industry, emphasize the significance of efficient practices and private sector participation. Managing the entire value chain is essential for maintaining certifications and ensuring market access. <u>More https://online.flippingbook.com/link/859126/42/</u>

Fish Talk: Innovations and Adoption

Two industry experts deliberated on the challenges and applications of recirculating aquaculture systems (RAS) for sustainable marine fish farming. Meanwhile, next-generation entrepreneurs in pond culture of Asian seabass and fry production have discussed challenges related to cost efficiency, marketing, and the production of grouper fingerlings in the context of climate change.

Khoo Jia Zin from Sepang TodayAquaculture Centre, Malaysia, highlights the promise and challenges of Recirculating Aquaculture Systems (RAS) as a sustainable fish farming method that recycles water in a closed system, thereby reducing environmental impact. However, common challenges associated with RAS include poor design, species mismatch, overstocking, diseases, and high operational costs. Failures in these systems can be attributed to misjudged calculations for water flow and system dynamics, as well as a lack of technical understanding of engineering and biology. RAS requires significant capital investment and ongoing expenses for pumps, skimmers, oxygen systems, and biofilters.

Alex Lin of Aquaculture Technologies Asia Ltd in Taiwan has listed several advantages of RAS for all stages of grouper farming, including improved broodstock management through temperature control, enhanced hatchery and nursery integration for better water quality and biosecurity, biosecurity measures to prevent disease spread, and purging systems to remove off-flavours for market-ready fish.



Speakers, from second left: Alex Lin, Aquaculture Technologies Asia Ltd and Khoo Jia-Zin, Managing Director, Sepang TodayAquaculture Centre Sdn Bhd, Malaysia with young entrepreneurs, Ariq M. Irsyad, Manager, 266 Hatchery, Indonesia; Jinnawat Mahalao, Vice President, BoonSawang Farm, Thailand and Albert Lai, Vice President, Amazon International Co. Ltd, Thailand. The session was moderated by Zuridah Merican, Chair, TARS 2024 (first left).

Recent advancements in artificial intelligence (AI) and the Internet of Things (IoT) facilitate real-time monitoring of water parameters. However, successful implementation necessitates proactive utilization of data for predictive maintenance and informed decision-making. The panel agrees that while recirculating aquaculture systems (RAS) are appropriate for hatchery and nursery stages, they entail higher costs. <u>More</u>.

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Interactive Roundtable Breakout Session on How to Build an Integrated Enterprise in Finfish Aquaculture

The Asian fish aquaculture industry is fragmented. Participants were encouraged to collaborate as an integrated enterprise to form alliances and tackle shared challenges. In this 1.5-hour interactive roundtable, key issues like productivity, efficiency, and traceability were discussed. The objective is to improve the industry through discussions involving multiple groups.

There were three groups: A Better Tilapia (ABT); Pangasius: Traceable & Sustainable (PTS) Mass Market Marine Fish (MMF). Below are excerpts from their report. For the complete report, please contact the TARS organisers at conference@tarsaquaculture.com.

Group: Mass Market Marine Fish (MMMF)

Denny Leonardo and his team of roundtable leaders observed that ocean farming boosts production in land-poor countries and marine fish have a higher market value than freshwater fish.

Ocean farming encounters several challenges: high energy and hatchery costs, poor data collaboration, difficulties in genetic improvement for larger fish, zoning and species regulation limits, environmental impact concerns, and inadequate biosecurity protocols. It also presents opportunities such as substituting capture fisheries with mass export market species, producing high-value species like tuna, meeting consumer demand for onshore farming, and improving labour quality through RAS training programs. Threats include insufficient biosecurity protocols in controlled production systems and environmental challenges, such as disease risks and water quality issues.



Group Leader for MMMF, Denny Leonardo, Pandora Aquatech, Indonesia (left) and his team of 6 roundtable table leaders, from left: Lan Hsiang Pin, USSEC, Taiwan; Ho Gim Chong, LUCTA, Thailand; Benedict Tan, Hatch Blue, Singapore; Paul Seguin, Symrise Aquafeed, Thailand and Rishita Changede, TeOra Pte Ltd, Singapore.



Key takeaways include:

- Maximising fish value through co-product development: The discussion emphasised the potential for creating various products from the same animal, such as fish skin chips, which can help diversify food options and optimise resource utilisation.
- Training farm workers is essential for ensuring they can apply proper farming practices, maintain biosecurity, and enhance animal performance throughout the production cycle.
- Feed millers hesitate to produce marine fish feed due to the use of trash fish, which reduces volumes and profits. Government intervention might be needed to solve this problem.
- Low demand for specific marine species, such as grouper, makes it unprofitable for feed mills to produce specialised feeds. As a result, they opt for a one-size-fits-all product.
- Genetics and long-term investment concerns: There are challenges in genetic improvement for species such as Asian seabass due to their extended maturation period. Like salmon, it is recommended to implement genetic selection strategies early in the production cycle, despite initial delays.
- Marine fish market challenges: Developing a premium market for marine fish requires significant investment in branding and marketing, which is difficult due to frequently changing top species.
- Consumer demand vs. production: The industry must decide whether to produce based on consumer demand or influence consumption choices, especially with diverse fish species.
- Cultural preferences and market growth: There's a cultural preference for marine fish among coastal populations in China, and efforts are needed to change perceptions in inland areas to expand the market.

Group: A Better Tilapia (ABT)

Group leader Krishna R Salin proposed improvements for the tilapia aquaculture industry.

- High production costs and low profit margins affect small farmers, who lack knowledge and capital. Innovations in the industry need better integration and effectiveness.
- There is a lack of consistency in genetic development strategies while improved genetics can enhance robustness, feed efficiency, and disease resistance. More research is needed on saline tilapia and specific genetic strains.
- For the tilapia, feed quality and cost are significant concerns, especially for functional feeds. Improved digestibility and tailored feeds for different life stages are necessary. Reducing feed conversion ratio (FCR) is crucial as it increases after 100g size.
- Multiple pathogens and unpredictable crop outcomes pose challenges and non-antibiotic therapeutics should be explored to reduce reliance on antibiotics. Vaccines should be integrated into production systems but remains a challenge due to costs.
- Regulatory issues hinder the registration of vaccines, particularly autogenous types. Retailers significantly influence consumer perceptions and market dynamics. Consumer perceptions are influenced by retailer demands and marketing practices. Branding and education are needed to improve the image of tilapia.



ABT Group leader Krishna R Salin (right, standing), Asian Institute of Technology, Thailand and Roundtable Leaders, from right, KP Chan, BASF, Singapore; Cameron M Maclean, eFishery, Indonesia; Ei Lin Ooi, Adisseo Asia Pacific Pte Ltd, Singapore; Antonios Chalaris, Devenish, Scotland; Hervé Lucien-Brun, Jefo Nutrition, Canada; Abung Simanjuntak, dsm-firmenich, Indonesia; Morten Rye, Benchmark Genetics, Norway and Roberto Cascione, Virbac Asia Pacific, Thailand.



Group: Pangasius: Traceable & Sustainable (PTS) Key points presented by Romi Novriadi were:

- Water quality and growth performance: The quality of water, particularly the level of total dissolved solids (TDS), plays a crucial role in the growth performance of pangasius. Clean and pristine water, supported by effective water treatment systems, is essential for optimal growth.
- Holistic farming practices: Successful pangasius farming requires a comprehensive approach that considers multiple factors, including oxygen levels, bacterial presence, salinity, feed quality, genetic improvements, and the overall farm management.
- Public relations and image management: The pangasius industry faces challenges with its public image, especially in Europe. There is a need for a strong and unified PR strategy to combat negative perceptions and promote the improvements made in farming practices and processing methods.
- Processing standards: Standardizing processing methods and ensuring they meet international criteria is vital for improving the quality and reputation of pangasius products. The discussion highlighted the importance of humane killing methods and the potential for creating higher-value products, such as freshwater sashimi.
- Collaboration and industry representation: The need for better collaboration among industry stakeholders was emphasised, with a focus on creating platforms for communication and problem-solving. There was also a call for the establishment of industry groups to represent and defend pangasius producers, similar to models seen in other sectors like soy and shrimp.



PTS Group Leader Romi Novriadi, Jakarta Technical University of Fisheries, MAFF, Indonesia (centre), flanked by roundtable leaders Niran Warin, FutureFish, Thailand (left) and Sugania Vijayan, 3 Little Fish, Malaysia (right).

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