NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE | Nanyang Environment and Water Research Institute

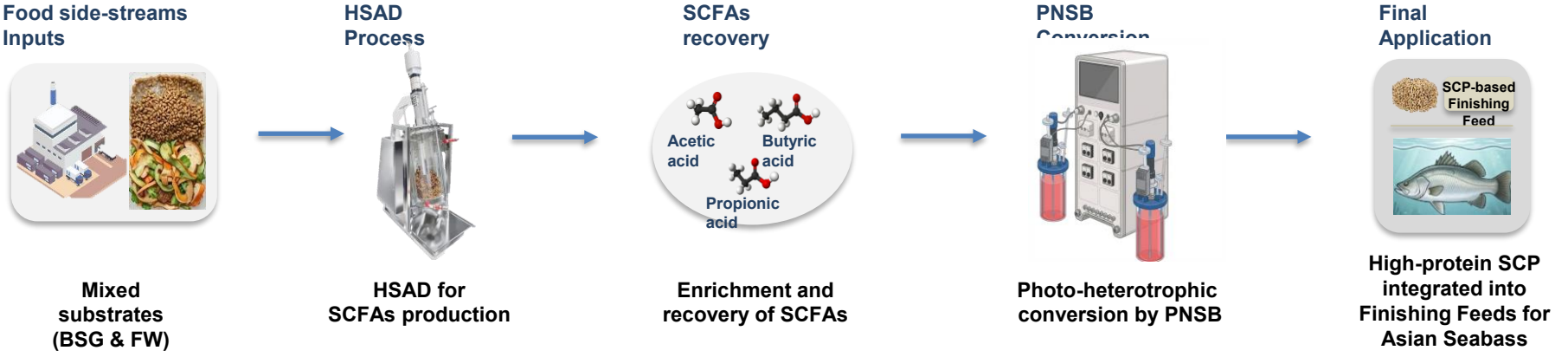
AQUAPOLIS PROGRAMME TRANCHE 1 R&D
Optimising Asian Seabass Research And Production In Singapore Through An Integrated Approach

Abstract:

The local aquaculture industry's competitiveness in production must be enhanced to realise Singapore's "30 by 30" vision for food security. This can be achieved by lowering production costs and raising market value of local produce, while strengthening the resiliency and sustainability of local farming activities.

This Research Programme brings together multidisciplinary capabilities from 8 IHLs and RIs to address three crucial production bottlenecks and cost drivers identified by local producers of Asian Seabass, the Singapore's main farmed fish species. These bottlenecks are (1) improving fish fingerling quality and robustness, (2) boosting survival rates at grow-out stage from diseases, and (3) achieving distinctive quality from imports.

Working together with local farms and scientists, the Research Programme primarily aims to reduce current production costs by at least 25% by ensuring the availability of superior fish fingerlings, achieving high fish survival rates at grow-out, and optimising feed functionality and utilization. Additionally, the programme aims to differentiate local Asian Seabass products from imports by raising the market value by 10% by enhancing the nutritional value and sensory qualities of fillets and promoting more sustainable production methods.



Advanced Valorization of Organic Side-streams for Sustainable Aquaculture

Developing a novel integrated refinery technology that couples high-solid anaerobic digestion (HSAD) with photo-heterotrophic bioconversion to valorize food side-streams. The purpose is to convert organic waste into short-chain fatty acids (SCFAs) for cultivating purple non-sulfur bacteria (PNSB), thereby producing sustainable single-cell protein (SCP) to replace fishmeal and reduce production costs. Key approaches include optimizing HSAD parameters for targeted SCFAs production, characterizing SCFAs recovery efficiency, and validating SCP nutritional value for Asian seabass.

PI Prof Zhou Yan

AskNEWRI@ntu.edu.sg www.ntu.edu.sg/NEWRI 1 Cleantech Loop, CleanTech One #06–08, Singapore 637141