

Presidential address

Blue revolution and environmental sustainability: Are we in the correct path?

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The world population has reached 7 billion at present and it is estimated to reach more than 9 billion by the middle of the 21st century, pressing the world with many challenges including food security. FAO projections realize that it may be achieved by raising overall food production by around 70%; perhaps in developing countries this would be doubled.

A significant increment of crop production during the 1960s and 70s was observed mainly, due to the introduction of novel agricultural techniques and high-yielding crop varieties. This 'green revolution' has emphasized the importance of the application of genetically improved high-yielding crop varieties. The same scenario in the aquatic environment is also being contributed greatly for the human nutrition especially for the chronically malnourished people worldwide for their protein requirements. This 'blue revolution' happens greatly via farming of fish while protecting the wild fish stocks from detrimental commercial fishing and over harvesting. Novel aquaculture techniques, new breeds and domesticated species of fish or shell fish in both fresh water and Blue Ocean are being involved in the process. The research and technical developments for characteristics that need to improve traits of fish i.e. growth rate, fertility, food conversion ratio, resistance to disease, tolerance of cold and poor water have been shaped up the blue revolution.

In this Blue revolution, one of the major challenges highlighted is the sustainability of the environment and associated ecosystems. Well regulated countries however, have been able to mitigate many of the undesired environmental impacts. For example, waste minimization in the aquatic system has been achieved by the production of feed that are more digestible and that release less waste into the environment. The shrimp industry has been criticized for over three decades as an environmentally damaging practice. But, the firm indoor units have avoided the problems caused by the shrimp farms constructed in open environments. Moreover, some portable units using microbes as a method of waste removal and solar power to grow shrimps indoors have also been incorporated in the growing aquaculture sector and prevent further environmental degradation. All these efforts have been aligned with the market demands.

The question is that how far we have addressed this in Sri Lanka. Though Sri Lanka has a vast fresh and brackish water resources, the country does not feature a large scale aquaculture. Inland aquaculture and culture based fisheries in reservoirs

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are being continued with the aim of providing fish and enhancing livelihoods for rural poorer. Introduction of proper species, selecting suitable culture cycles and small scale practices have avoided negative environmental consequences at present. Brackish water shrimp culture and ornamental fish culture have been developed towards a commercial dimensions and the country has a great potential of culturing of coastal finfish, beche de mer, sea bass, crab and other potential culture species. The export of farmed shrimp has contributed to around 10 percent of the total export earnings from the fisheries sector in 2015. The decline of yield when compared with previous decades is due to the frequent disease out breaks occurred due to poor culture practices. Ecologically sensitive habitats, wild fish populations, access routes to fishing grounds and agricultural areas have been seriously affected by even this small scale shrimp farming operations especially along the north western coastal belt in the country and a significant area dominated by mangroves have been converted into shrimp farms. Further, the mitigation of negative impacts have failed due to the interference of some politicians.

When compared with global achievements in environmental sustainability through blue revolution, we have not achieved what it is expected. Technical developments, research priorities, broader government intervention through proper regulations together with proper hands on training must align with blue revolution of aquaculture. In this context, research institutions, universities and training institutions have a key role to play for the environmental sustainability.

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