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ONE HEALTH APPROACH IN AQUACULTURE

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The One Health plan acknowledges the connections between the health of people, animals, and the environment through an integrated and interdisciplinary approach (Mackenzie & Jeggo, 2019). This strategy becomes especially pertinent in the case of aquaculture because of the intricate relationships that exist between farmed aquatic creatures, human health, and the local ecosystem. The aquaculture business may move towards a more sustainable, effective, and responsible model by embracing the One Health theory, which prioritizes the health of aquatic animals, farmed animals, and human consumers (Stentiford et al., 2020).

Some of the Key Aspects of One Health Approach in Aquaculture

1. Disease Surveillance and Management
2. Antibiotic Use and Resistance
3. Environmental Impact
4. Sustainable Feed and Nutrition
5. Collaboration and Communication
6. Research and Innovation

Disease Surveillance and Management: An essential component of the One Health concept in aquaculture is the monitoring and management of diseases (CAVALLI, 2015). Because aquaculture is so intensive, it can facilitate the transmission of diseases among cultured aquatic animals. In addition, certain illnesses, known as zoonotic illnesses, can be passed from animals to people. In order to detect and control potential disease outbreaks and stop their spread to humans or wild aquatic species, continuous monitoring and surveillance are crucial. We can reduce financial losses, maintain ecosystem health, and safeguard human health by quickly addressing diseases in aquaculture.

Antibiotic Use and Resistance: In aquaculture, antibiotic usage and resistance are major issues. Infections caused by bacteria are frequently prevented and treated with antibiotics in aquatic farm animals. However, the uncontrolled use of antibiotics might result in the emergence of germs that are resistant to them, endangering both the health of humans and animals. To reduce the emergence of antibiotic resistance and safeguard human health, the One Health approach promotes responsible antibiotic use in aquaculture (Velazquez-Meza et al., 2022). The use of antibiotics can be decreased by using sound aquaculture techniques, enhancing hygiene, and investigating non-antibiotic disease management methods including probiotics and vaccinations.

Environmental Impact: Another important component of the One Health approach in aquaculture is the influence on the environment. Large-scale aquaculture activities have the potential to harm aquatic ecosystems and human societies that depend on healthy water bodies by contaminating water and destroying habitat (Bashir et.al.,2020). Sustainable aquaculture methods like integrated multi-trophic aquaculture, which combines species in a way that generates a more balanced and less polluting system, should be pushed in order to reduce these effects. Adopting sensible waste management procedures and making sure that aquaculture farms are located in the right places can also contribute to environmental protection and long-term sustainability (Ozbay et al., 2014).

Sustainable Feed and Nutrition: The significance of taking into account the origins of aquaculture feed are another point made by One health. Fishmeal and fish oil, which are common traditional feed ingredients for farmed fish, are frequently taken from wild fish stocks, which causes overfishing and ecological imbalances. To lessen the strain on wild fish populations and preserve the general wellbeing of aquatic ecosystems, sustainable and alternative feed sources like plant-based feeds and insects are being investigated (Hasan et.al.,2023).

Collaboration and Communication: The One Health strategy in aquaculture relies heavily on cooperation and communication to be successful. To design and implement integrated strategies and policies, stakeholders from multiple sectors, including aquaculture producers, public health officials, environmentalists, researchers, and policymakers, must collaborate. An effective response to the complex relationships between human health, animal health, and the environment can be developed through knowledge exchange, the identification of possible dangers, and effective collaboration (Machalaba et.al.,2021)

Research and Innovation: Research and innovation play a significant role in advancing the One Health approach in aquaculture. To provide diagnostic tools, vaccinations, and disease management techniques that are beneficial to both aquatic species and humans, investments in research and technology are required. Continuous research can also support adaptive management practises by identifying new threats and challenges to aquaculture.

Priorities of One Health included by FAO

- Enhancing early warning systems for zoonotic illnesses at the interface of humans, animals, plants, and the environment (HAPE).
- Enhancing biosecurity to better manage zoonotic diseases, pests, and invasive alien species as well as pest and disease management in animals and plants.
- Fostering efficient emergency preparedness and response for proactive action on and response to food-chain emergencies, food safety issues, and other health events at the interface of people, animals, plants, and the environment
- Strengthening one Health approaches to AMR in the food and agriculture sector to improve AMR risk management at the national, regional, and international levels
- Strengthening contributions to one health, biodiversity, ecosystem services, environmental health, soil/land, water, food safety, and the sustainability of agri-food systems would improve one health systems.

Conclusion

The One Health approach in aquaculture recognizes the intrinsic connections between human health, animal health, and the environment. By promoting disease surveillance and management, responsible antibiotic use, sustainable feed and nutrition, and environmental protection, the aquaculture industry can thrive while safeguarding the health of ecosystems, farmed animals, and human consumers. Collaboration, communication, research, and innovation are the pillars that support the successful implementation of the One Health approach, leading to a more sustainable and resilient aquaculture industry for the future.

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