

How welfare assessments of farmed white leg shrimp (*Penaeus vannamei*) can benefit the whole industry

FAI Farms

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The welfare of decapod crustaceans, the largest group of farmed animals worldwide, is gaining prominence in the aquaculture industry. Taking better care of the billions of shrimp farmed annually not only responds to certification standards and consumer demand, it is the right thing to do.

The shrimp industry is rapidly evolving due to emerging diseases, rising production costs, and unpredictable market dynamics. These changes have led to higher intensification, alterations in feeding and nutrition, and genetic improvements tailored to specific farming conditions. While shrimp producers strive to build successful businesses, one often overlooked aspect is animal welfare. Embracing a welfare approach has the potential to address current challenges in shrimp farming by providing insights into farming conditions and animal health, ultimately boosting production performance. Recording welfare data enhances transparency along the supply chain, ensuring that every actor, from hatcheries to shrimp buyers, understands the quality of the breeder, post larvae, or shrimp they purchase.

Scientific studies assessing the sentience (the ability to feel or perceive sensations) of decapod crustaceans are relatively recent but have led to regulatory changes in several countries and altered the perception of many retailers. We stand at a turning point. Shrimp farmers have an opportunity to gain a competitive edge by prioritising welfare.

Welfare assessment of white shrimp

In the recently published article by Pedrazzani et al. (2023), welfare indicators have been established for the different stages of production process: reproduction, larval rearing, transport, and grow-out. The indicators are categorised into four out of the five domains of animal welfare: environmental, sanitary, nutritional, and behavioural (Table 1). The indicators associated with psychological freedom were not treated as a distinct category since the other proposed indicators indirectly evaluated this aspect.

Drawing from the review of scientific publications, each of the welfare indicator is assigned a score from 1 to 3. Score 1 signifies adherence to the optimal range of variation for the target species. Score 2 encompasses variations within the acceptable limits typically tolerated by animals. Score 3 designates reference levels that exert an intolerable impact on the physiological, health, and behavioral well-being of animals, jeopardising their welfare and survival.

All indicators and scores are available on the publication “Non-invasive methods for assessing the welfare of farmed white-leg shrimp (*Penaeus vannamei*)” by A. S. Pedrazzani, N. Cozer & M. H. Quintiliano.

Scoring welfare helps farm technicians and managers to identify issues that would cause stress to the farmed animals. It helps them adjust farming practices and respond quickly to rising challenges during the production cycle.

Bringing knowledge on welfare to the industry

FAI Farms is working with industrial partners in Thailand and Vietnam to encourage shrimp farmers to perform welfare assessment. They are providing on-site and online workshop to educate farmers to have a different approach to farming and leverage farm data to document shrimp production to market.

For this purpose, FAI Farms has created a free online training course on shrimp welfare and invites all industry participants to obtain their “Shrimp Welfare Indicator” certificate:

- Enrol in the course: Shrimp welfare indicators:
<https://bit.ly/3uy5s4Z>
- Just want a peak? A teaser of the course is available at:
<https://bit.ly/3SREDml>
- More information on the course content:
<https://fai.academy/aquaculture/shrimp-welfare-online-courses/>

Additionally, FAI Farms is developing a mobile application designed for conducting welfare assessments on shrimp farms. This application will serve as both a tool for gaining deeper insights into farming conditions and addressing farm-related challenges. Simultaneously, it serves as a record that can validate a farm’s adherence to good farming practices.

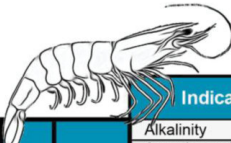
If you wish to learn more about the project and help shrimp farmers to have a different approach to farming, please visit <https://myshrimp.farm>. You can contact FAI Farms through this website.

References

Pedrazzani AS, Cozer N, Quintiliano MH, Tavares CPdS, da Silva UdAT, Ostrensky A. Non-Invasive Methods for Assessing the Welfare of Farmed White-Leg Shrimp (*Penaeus vannamei*). *Animals*. 2023; 13(5):807. <https://doi.org/10.3390/ani13050807>



Table 1. Domains and welfare indicators during the production process of white-leg shrimp, *Penaeus vannamei* (Pedrazzani et al. 2023).



		Indicators	PHASE			
			Reproduction	Larval rearing	Transport	Grow-out
DOMAIN	Environmental	Alkalinity	●	●		●
		Aquatic predators and interspecific inhabitants	●			●
		Stocking density	●	●	●	●
		Dissolved oxygen	●	●	●	●
		NH ₃ -Ammonia	●	●	●	●
		Nitrite	●	●		●
		pH	●	●	●	●
		Photoperiod	●	●		●
		Salinity	●	●	●	●
		Temperature	●	●	●	●
		Terrestrial predators	●			●
		Transparency				●
		Health	Antennae	●		
	Epibionts			●		
	Exoskeleton (cuticle)		●	●	●	●
	Eyes		●			●
	Gastrointestinal tract		●			
	Genetic Selection		●			
	Gills		●			●
	Health certificate			●		
	Hepatopancreas		●	●		●
	Invasive procedures		●			
	Luminescence		●	●		
	Malformations			●	●	
	Mortalities rates		●	●	●	●
	Motor appendages	●			●	
	Musculature	●	●	●	●	
	Rostrum	●			●	
	Sexual maturation	●				
	Uniformity of stages		●			
	Nutritional	Amount of food	●			●
		Analysis of gastrointestinal tract	●	●		●
		Composition/type of diet	●	●	●	●
		Distribution of feed				●
		Feed conversion rate				●
		Feed crude protein	●	●		●
Frequency of feeding		●	●	●	●	
Behavioural	Size of food		●		●	
	Anaesthesia	●				
	Escape behaviour				●	
	Phototaxis		●			
	Reaction to offered food	●				
	Stunning reflexes at slaughter				●	
Swimming behaviour	●	●	●	●		