



## Motivational Factors in Adherence to Act, Rules and Guidelines Given by CAA for Shrimp Farming: A Study from North Konkan Region, Maharashtra

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### ABSTRACT

The study was carried out to investigate the motivational factors in adherence to act, rules and guidelines given by Coastal Aquaculture Authority (CAA) in shrimp farming. Information was collected randomly from 108 shrimp farmers from North Konkan region, Maharashtra using interview schedule. The weighted average technique was used to understand various motivational factors in adherence to act, rules and guidelines given by CAA in shrimp farming. The study revealed that, the top motivating factors were practicing environmentally responsible and socially acceptable coastal aquaculture, minimize impacts on local water resources and minimize impacts on surrounding resource user. Reducing the risks associated with shrimp diseases, utilizing land and water resources for sustainable shrimp farming and following better management practices and maximizing economic returns on investment within a reasonable time frame was least motivating factor in adherence to sustainability. The motivation can be enhanced by conducting awareness among shrimp farmers about act, rules and guidelines given by CAA.

**Key Words:** Adherence, Motivation, Maharashtra, Shrimp farmers, Sustainable practices.

### INTRODUCTION

Aquaculture has been the world's fastest-growing food production system for decades and contributes to half of all global seafood production, reducing pressure on natural fishing, and maintaining an average growth rate of 4.5% per year in 2011–2018 (FAO, 2020; Pradeepkiran, 2019). However, a rapid growth of pond areas and lack of production area planning have led to undesirable environmental and social impacts (FAO, 2020). To minimize the adverse effects of harmful existing shrimp aquaculture practices, better management practices given in CAA guidelines have been implemented through the issuance of legal frameworks in India.

Globally, White leg shrimp *Litopenaeus vannamei* is considered as an important aquaculture species with high export potential and profit margins (Singh, 2020). Shrimp aquaculture farming system was selected as it is an important farm enterprise, contributing significantly to the nutritional, food security, employment and socio-economic development of coastal communities (Patil and Sharma, 2023).

Maharashtra is the third largest state in the country in terms of area and population, with a coastline of 720 km. Among all the coastal states, Andhra Pradesh ranks first with a total shrimp production of 7,88,708 MT followed by West Bengal with total shrimp production of 69,595 MT (MPEDA, 2022). Maharashtra ranked sixth in terms of cultured shrimp production with production of 4,777 MT during 2021-22 (MPEDA, 2022).

In 1997, the Global Aquaculture Alliance (GAA) was founded with the mission of fostering a sustainable future for the aquaculture industry. During an Aquaculture Industry conference in 1996, it was collectively decided that sustainability hinges not solely on production intensity, but rather on the quality of the site, effective management practices, and the compatibility of technology with both site conditions and management strategies. (Phornprapha, 2020). Geographic location, socio-demographic variables, institutional structures and other factors significantly influence a farmer's motivations which in turn may also affect that farmer's economic decisions (Meuwissen *et al.*, 2001).

## Motivational Factors in Adherence to Act, Rules and Guidelines

**Table 1** Motivational factors in adherence to act, rules and guidelines given by CAA for shrimp farming. (N = 108)

Sr. No.	Motivating factors in adherence to sustainability in shrimp farming	Weighted Average	Rank
1	Environmentally responsible and socially acceptable coastal aquaculture	1.46	I
2	Minimize impacts on local water resources	1.46	I
3	Minimize impacts on surrounding resource user	1.46	I
4	To ensure orderly development of shrimp aquaculture	1.44	II
5	Conserve sensitive aquatic habitats and ecosystem function	1.44	II
6	Avoid escape of exotic species into the environment	1.43	III
7	Responsible use of chemicals, probiotics and pharmaceuticals	1.43	III
8	Reduce the risk of shrimp diseases	1.41	IV
9	Use of land and water for sustainable shrimp production	1.41	IV
10	Follow Better Management Practices (BMPs)	1.41	IV
11	Maximize return on investment within a reasonable time frame	1.38	V

Therefore, present study was undertaken to understand the motivational factors in adherence to sustainable practices in shrimp aquaculture.

### MATERIALS AND METHODS

The state of Maharashtra includes seven coastal districts *viz.* Palghar, Thane, Greater Mumbai, Mumbai suburban, Raigad, Ratnagiri and Sindhudurg popularly known as 'Konkan region'. North Konkan region comprising Palghar and Raigad district were selected purposefully as these districts contribute significantly in the brackishwater shrimp production and has 198 operational shrimp farms. A total of 108 shrimp farms were randomly selected for the study comprising of 58 shrimp farms from Palghar district and 50 shrimp farms from Raigad district. The act, rules and guidelines given by Coastal Aquaculture Authority (CAA) was used as base to understand various motivational factors in adherence to sustainable shrimp farming practices by shrimp farmers.

In order to prioritize various motivational factors in adherence to sustainable shrimp farming practices by shrimp farmers, weighted average technique was carried out (Patil and Sharma, 2021). The weighted average score for every motivational factor was calculated by multiplying frequency of every motivational factor with

respective weight or score. The weights used for calculating the weighted average were agree = 2, neither agree nor disagree = 1 and disagree = 0. The following formula is used for calculating the weighted average:

$$\text{Weighted average score} = \frac{\text{Sum (X1. W1 + X2.W2 + X3. W3)}}{\text{Sum (W1+W2 +W3)}}$$

Where,

Frequency of the respective motivational factors is X1, X2, X3

Weighted values i.e., 2, 1, 0 = W1, W2, W3.

### RESULTS AND DISCUSSION

#### Motivational factors

This section covers the motivational factors in adherence to act, rules and guidelines given by CAA for shrimp farming and same is presented in Table 1.

The results revealed that practicing environmentally responsible and socially acceptable coastal aquaculture, minimize impacts on local water resources and minimize impacts on surrounding resource user was ranked as first motivating factor for adherence to sustainable shrimp farming practices. The second ranked motivating factors were ensuring orderly development of shrimp aquaculture and conservation of sensitive aquatic habitats and

ecosystem function. Preventing escape of non-native species into the environment and the responsible use of chemicals, probiotics and pharmaceuticals was ranked third motivating factor in adherence to sustainable shrimp farming practices.

Phong *et al* (2021) studied motivation of farmers to accept good aquaculture practices and reported that market pressures (expanding pond size and more stocking) drive the farmers to increase productivity in shrimp farming. He also reported that, provision of a consistent market for their output and the opportunity for price premiums can serve as strong motivation for farmers to adopt and maintain Good Aquaculture Practices. Insurance for aquaculture has the potential to motivate farmers to adopt Good Aquaculture Practices by reducing the level of risk they face (Hadnes and Czura, 2014; Pongthanapanich *et al*, 2019). Dewan (2011) reported that 70% respondents engaged in shrimp farming because they believed that it offered higher income potential compared to other agricultural activities.

### CONCLUSION

The study concluded that following better management practices was not top ranked factor of motivation in adherence to sustainability. It is very much important to understand the factors that motivate the farmer in adherence sustainability because this motivation plays an important role in enhancing both productivity and sustainability in shrimp farming. Additionally, this will help government in formulating new schemes or policies for the benefit of shrimp farmers. The study suggested that the motivation can be enhanced by conducting awareness among shrimp farmers about act, rules and guidelines given by CAA.

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## Motivational Factors in Adherence to Act, Rules and Guidelines

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