

Agnese Eizenberga¹, Liga Proskina¹

¹ Institute of Economics and Finances, Latvia University of Life Sciences and Technologies, Jelgava, Latvia

Contact information:

Address: Liela street 2, Jelgava, Latvia

Phone number: +371 27457863

E-mail: agnese.eizenberga@gmail.com

Climate change considerably affects air and water temperatures, impacting both open and closed fish farming systems that face increased production costs to maintain optimal breeding conditions. Important is collaboration between public and private sectors in developing adaptation and mitigation policies, advocating for more proactive engagement from public authorities. This necessitates a "bottom-up" approach that involves all stakeholders in aquaculture.

Introduction

Aquaculture is one of the fastest growing food production sectors, but the imminent impact of climate change puts aquaculture at risk.

In the production of aquaculture products in ponds, the production process is significantly affected by climatic conditions, in particular climate change resulting in changes in average air and water temperatures, rainfall, changes in the hydrological regime and groundwater levels.

The aquaculture industry in Latvia has been slow to adopt technological advances, impacting its overall competitiveness and sustainability

Methods

This study is based on data collected from 20 aquaculture fish farmers across various regions in Latvia.

A semi-structured interview method was employed, utilising a questionnaire designed to gather insights from the fish farmers.

The study utilised frequency distributions, mean ranks, and the Mann-Whitney U test for the analysis.

The Mann-Whitney U test was employed to determine if there were significant differences in perceptions between two sector groups regarding climate change-aquaculture interactions.

Results

Signs of Climate Change	Mann-Whitney U Test Statistic	Z Value	p Value
Water quality	17.0	-0.085	0.932
Water temperature	16.0	-0.260	0.795
Sea level rise	13.5	-0.316	0.752
Growth rate of fish / nutrition	7.0	-1.488	0.137
Extreme weather conditions	10.5	-1.159	0.246

Potential Impact of Climate Change on	Mann-Whitney U Test Statistic	Z Value	p Value
Fish growth performance	9.5	-1.418	0.156
Fish health	17.5	0.000	1.000
Feed conversion ratio (FCR)	16.0	-0.324	0.746
Reproductive performance	15.5	-0.428	0.669
Fish survival	14.0	-1.183	0.237
Weather conditions	17.5	0.000	1.000
Availability and price of fish meal / oil	17.5	0.000	1.000
Production costs	15.0	-0.845	0.398
Employment in the sector	11.5	-1.051	0.293
Community depending on the sector	12.0	-1.073	0.283
Competition for space	13.0	-0.959	0.337
Competition with fish substitutes	14.5	-0.586	0.558
Sustainability	17.0	-0.125	0.901
Market opportunities	17.5	0.000	1.000

Conclusions

The results show that no reveal no significant differences in climate change impact assessments between the participants in pond and recirculation aquaculture systems ($p > 0.05$). The participants generally agree on the direction of these impacts, regardless of species or sector, particularly regarding the potential effects of climate change.