DIFFERENCES BETWEEN SEMI-INTENSIVE CONVENTIONAL AND SUPER-INTENSIVE BIOFLOC *Penaeus vannamei* CULTURE

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INTRODUCTION

The semi-intensive culture systems in earthen ponds have been limited by several factors such as disease, weaknesses of the systems or competition by culture area with other industries. Several studies have focused on improving the new technologies necessary to increase shrimp production. The Biofloc Technology Culture Systems (BFT) in raceways is considered a revolutionary system in aquaculture, because its production of microorganisms helps in the maintenance of water quality, reduces feed conversion rates, and increases biosecurity, resulting in high production multiples crops. Additionally, BFT is considered environmentally friendly, with an ability to reuse the same water multiple times, thus avoiding pollution of coastal waters. Technological innovation permits increases in shrimp production capacity per unit area. The addition of new management tools such as air injectors (nozzles), artificial substrate, clarifiers and some procedures may allow unprecedented increases in the load capacity of these systems.

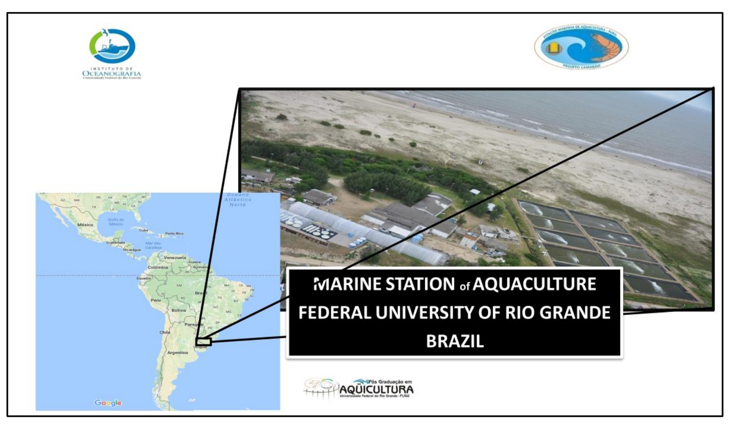
For example, the demand for dissolved oxygen (DO) by shrimp is one of the main concerns as culture systems intensify. In intensive or super-intensive culture of shrimp can be possible if the system's aeration devices can meet the organism's oxygen demand. The number of devices to be used will depend on the water's salinity and temperature, stocking density, shrimp size, and in the BFT systems the amount of suspended solids. For this reason, studies and evaluations of the support capacity of each new aeration technology is important to maximize its effect.

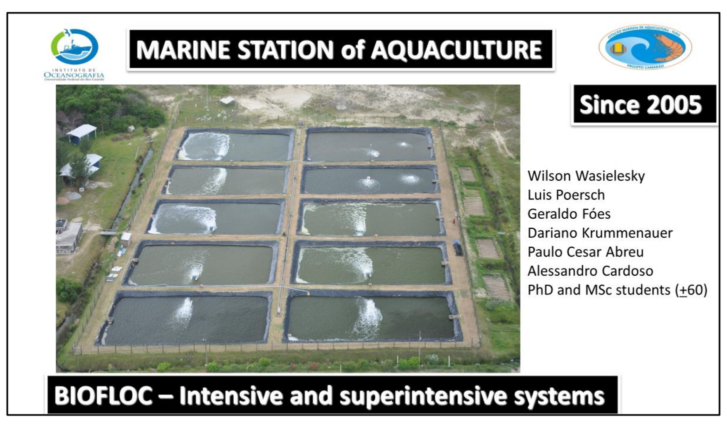
Therefore, several researchers have evaluated the influence of the limitation of different parameters and procedures. These are important challenges to overcome the production when working in BFT with high densities, and different devices and other procedures (Table 1), that can have significant impacts on shrimp development in super-intensive system.

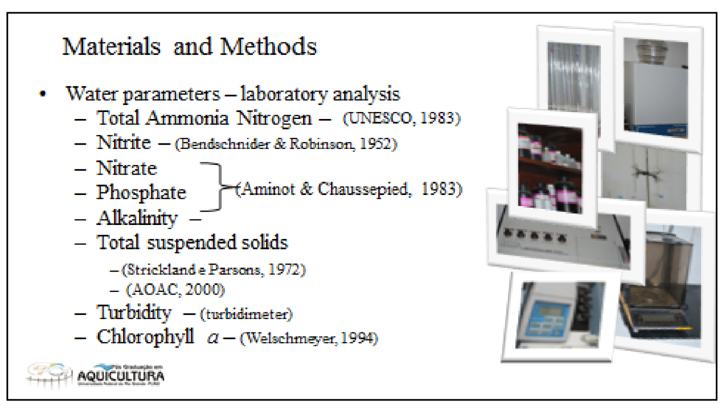
OBJECTIVE

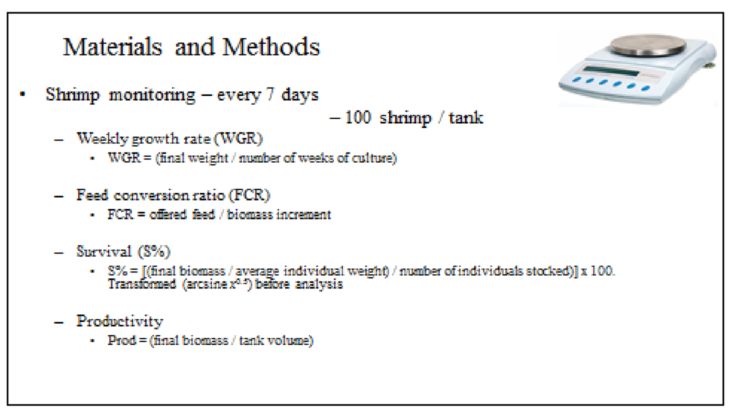
The purpose of this study was to evaluate differences between semi-intensive conventional and super-intensive biofloc *Penaeus vannamei* culture

MATERIALS AND METHODS

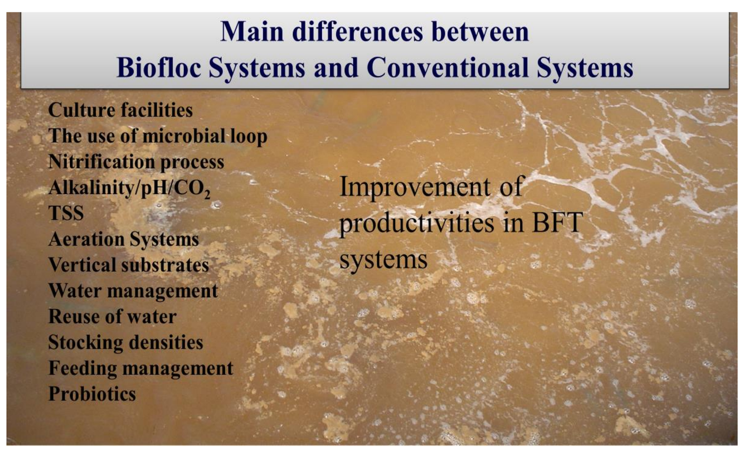




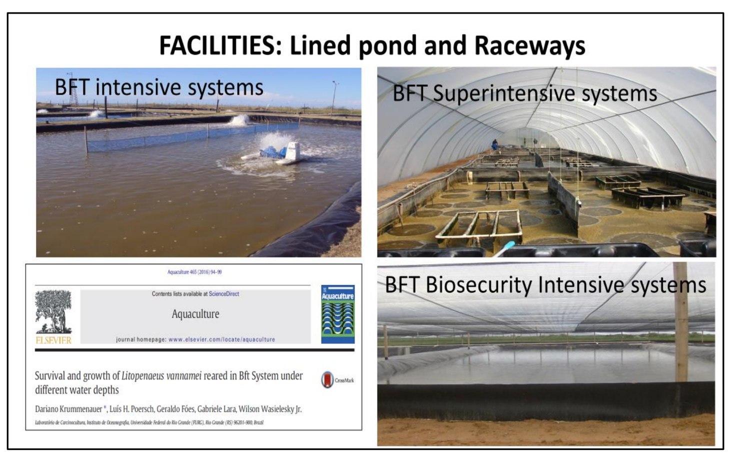




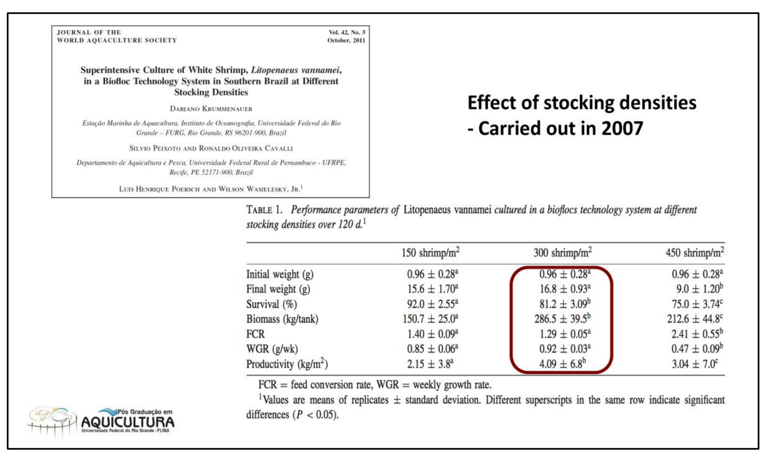
RESULTS

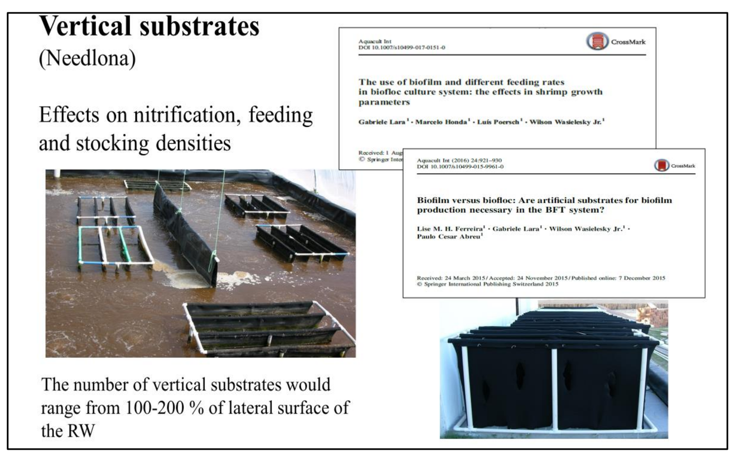


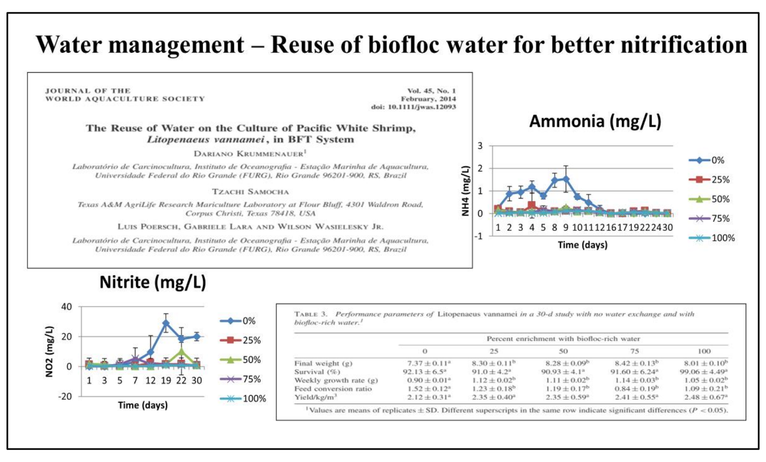
Different facilities used in shrimp BFT culture

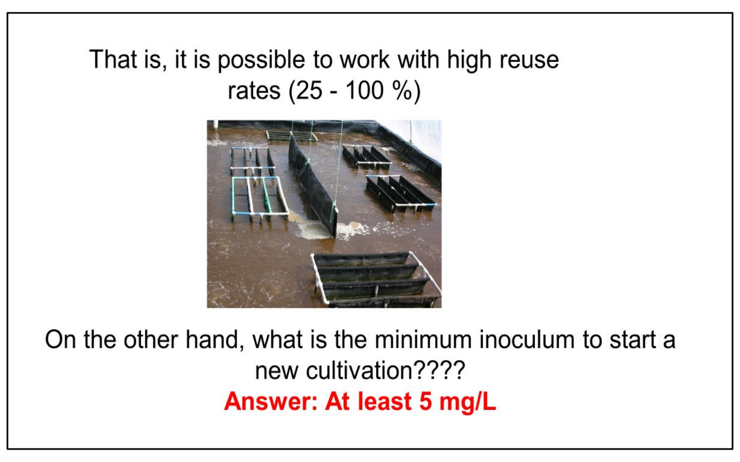


Resuklts obtained in different experiments for shrimp BFT culture



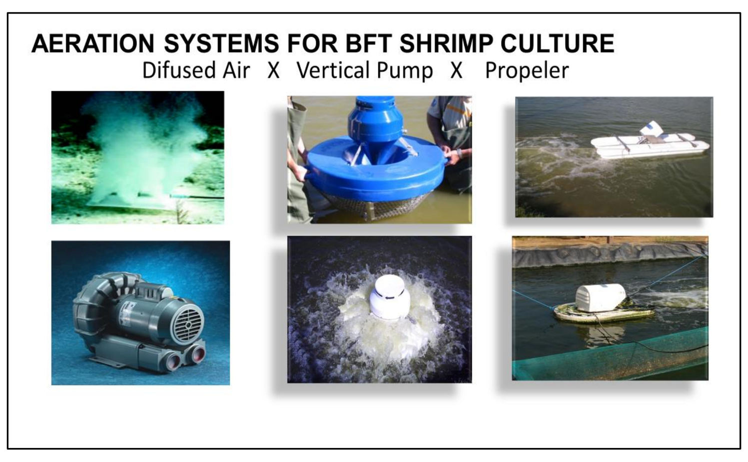


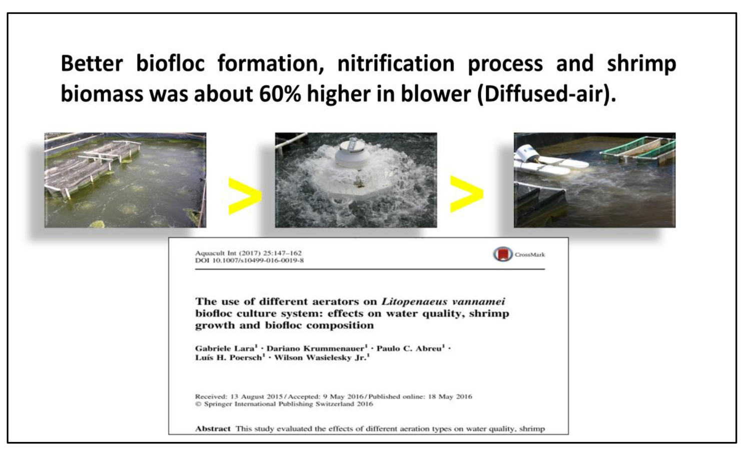


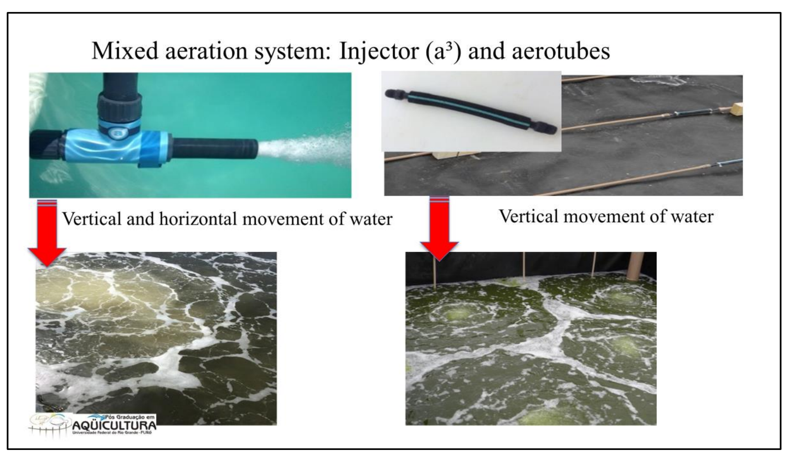


RESULTS

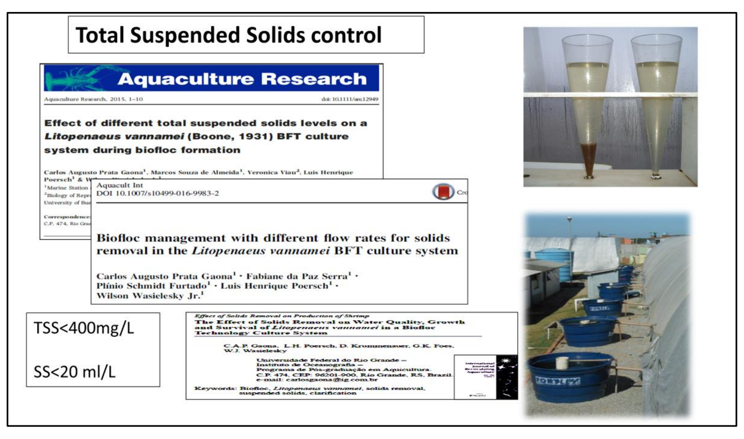
Aeration systems used in BFT Systems

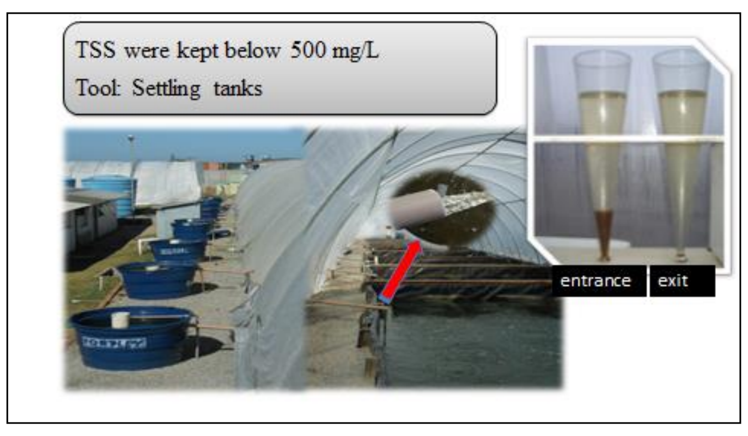


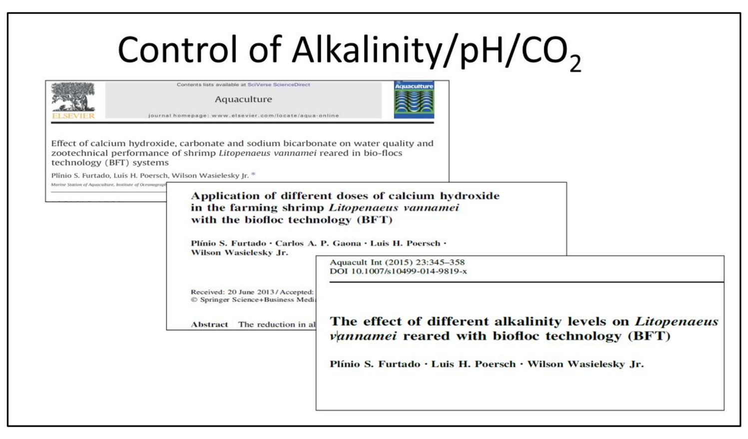


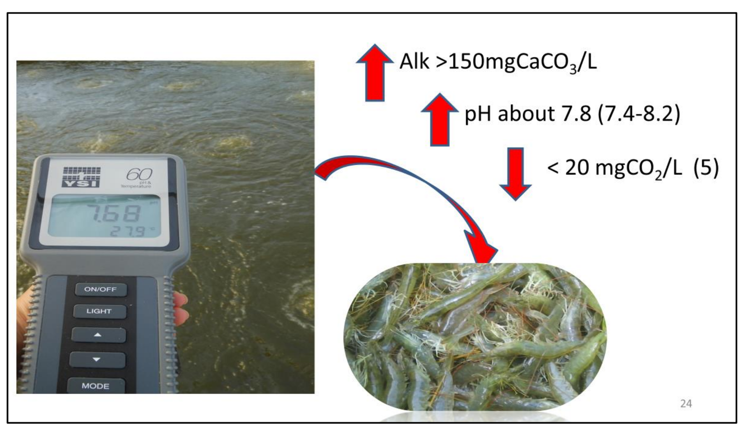


Water quality management in superintensive BFT system

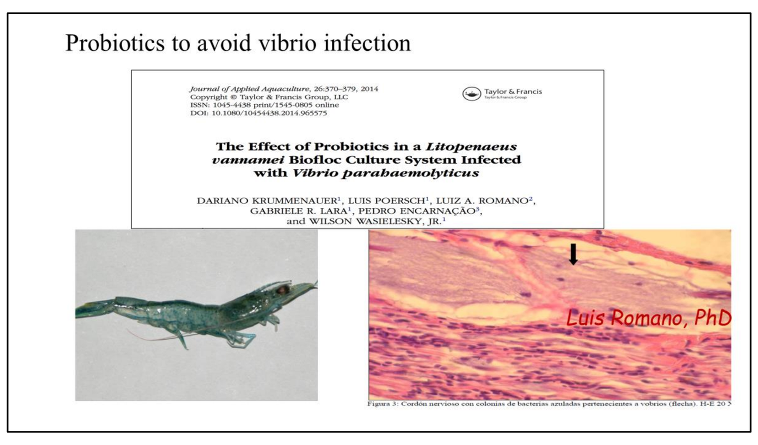


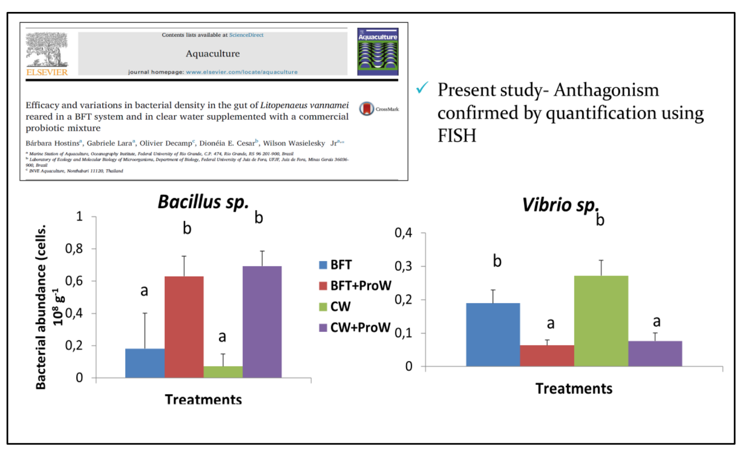






Probiotic for vibrio control in BFT superintensive system





Higher stocking densities in BFT superintensive system

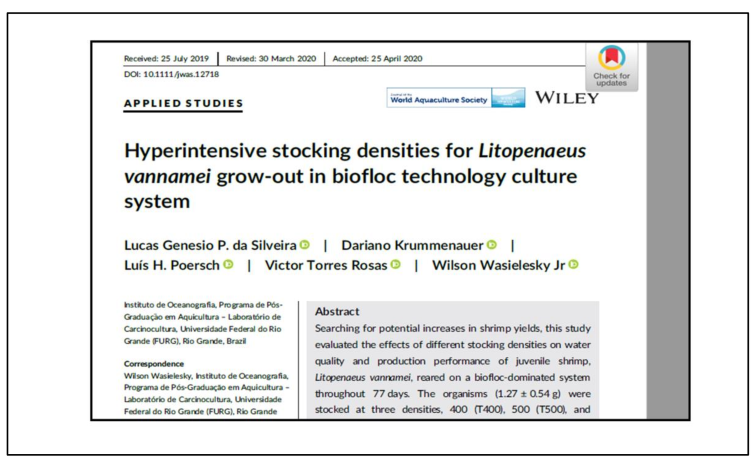


Table 2 - Means and Standard deviation of the *L. vannamei* zootechnical performance parameters during 78 days BFT grow-out with different stocking densities. Initial and final weight (g), final biomass (Kg tank^{-1}), weekly growth (g week^{-1}), feed conversion rate (FCR), survival (%), and yields.

	Treatments		
Parameters	T400	T500	T600
Initial Weight	1.27 ± 0.54	1.27 ± 0.54	1.27 ± 0.54
Final Weight	12.3 ± 5.53^{a}	12.2 ± 3.89^{a}	10.2 ± 3.49^{b}
Initial Biomass	17.78	22.22	26.67
Final Biomass	140.83 ± 1.91^{b}	162.97 ± 0.16^{ab}	174.35 ± 13.57^{a}
Weekly Growth	1.10 ± 0.11	1.09 ± 0.02	0.90 ± 0.08
FCR	1.79 ± 0.02	1.82 ± 0.02	2.09 ± 0.20
Survival	82.31 ± 9.13	76.67 ± 2.31	81.05 ± 11.08
Yield (Kg m^{-2})	3.52 ± 0.05^{b}	4.02 ± 0.06^{ab}	4.22 ± 0.40^{a}
Yield (Kg m^{-3})	4.39 ± 0.07^{b}	5.03 ± 0.08^{ab}	5.27 ± 0.49^{a}

(1)Different superscripts in the same row indicate significant differences according to the Tukey test (α = 0.05).

No significant differences between 500 and 600/m²

Advances of producing *L.vannamei* in superintensive BFT culture

Advantages of producing in a BFT system

- Shrimp production with greater biosecurity;
- Work with less water use;
- Water reuse;
- Less amount of effluents;
- High biomass production per unit area;
- It is possible to produce in relatively small areas;
- Production throughout the year;
- Produce close to the consumer market;
- Supply the market with fresh produce;

ACKOWLEDGEMENTS

CAPES | CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico | FAPERGS | FINEP Financiadora de Estudos e Projetos Ministério da Ciência e Tecnologia | all-aqua | Aquatec | Guabi Aqua | INVE Aquaculture | REVISAN