COMPARATIVE ANALYSIS OF PACIFIC WHITE SHRIMP Litopenaeus vannamei AND PINK SHRIMP Farfantepenaeus brasiliensis REARED IN BFT SYSTEM

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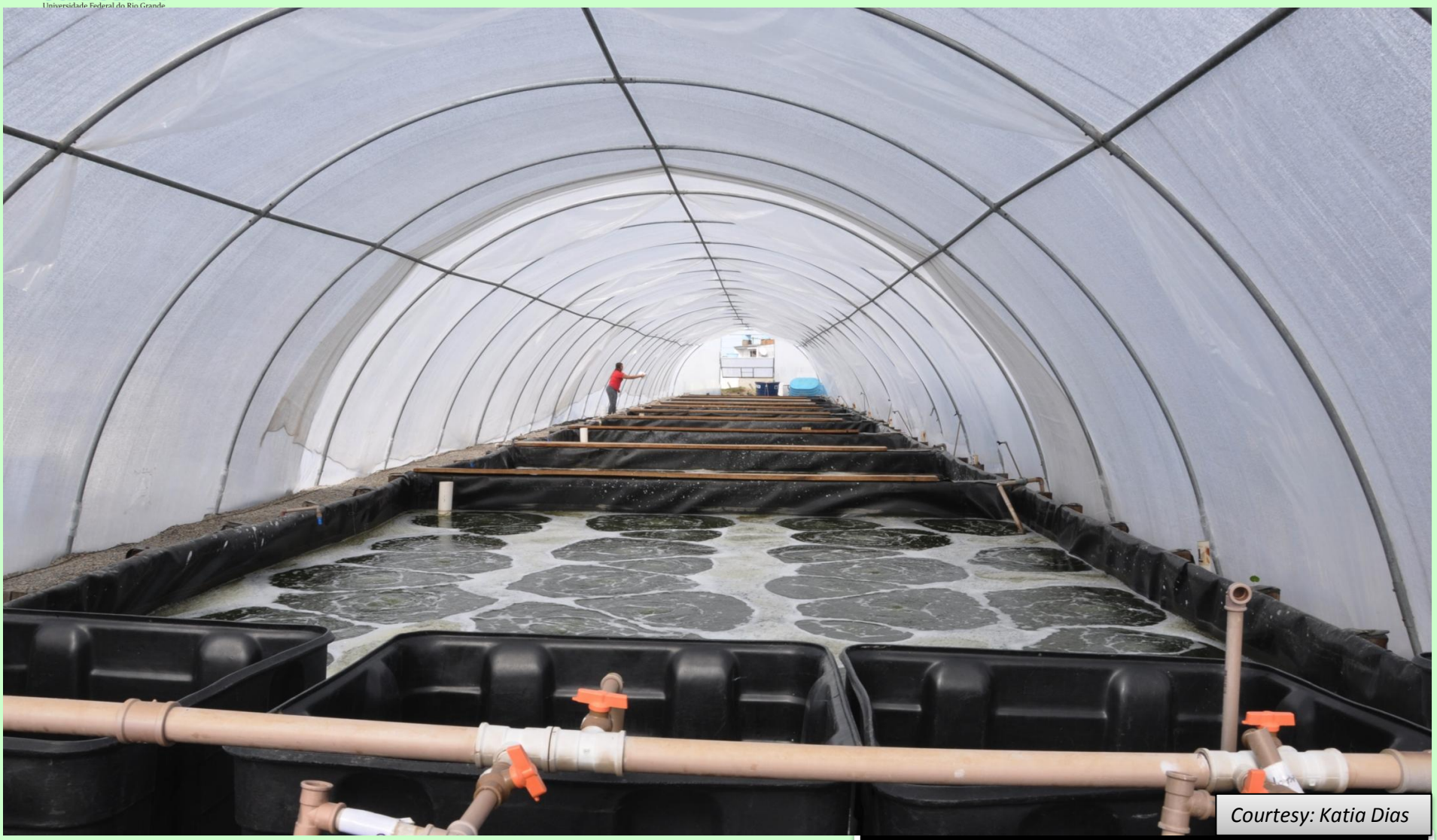
Rio Grande, Brazil

Southern Brazil

Rio Grande do Sul State
(32°S)

MARINE STATION AQUACULTURE



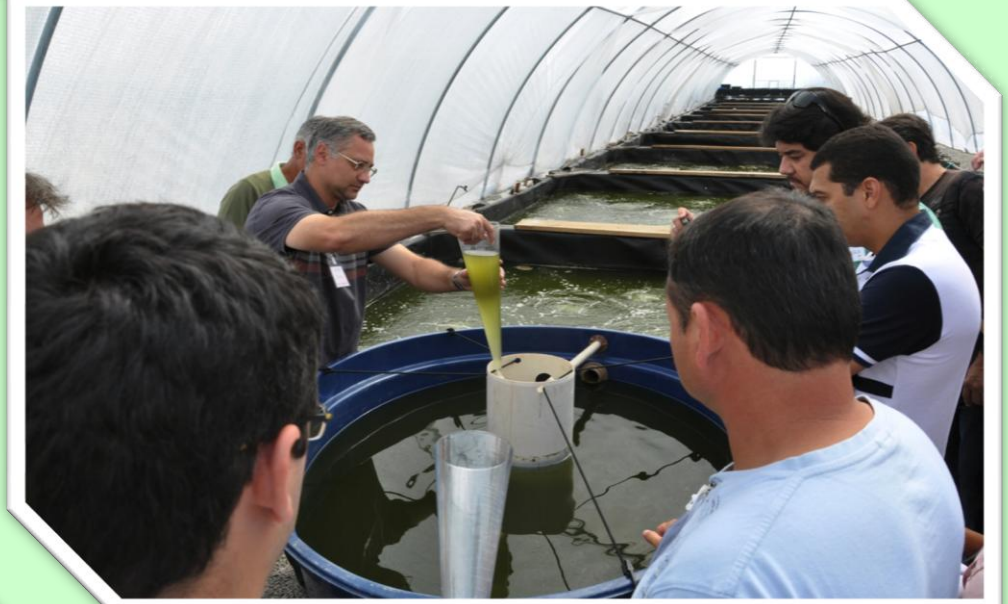
Courtesy: Katia Dias

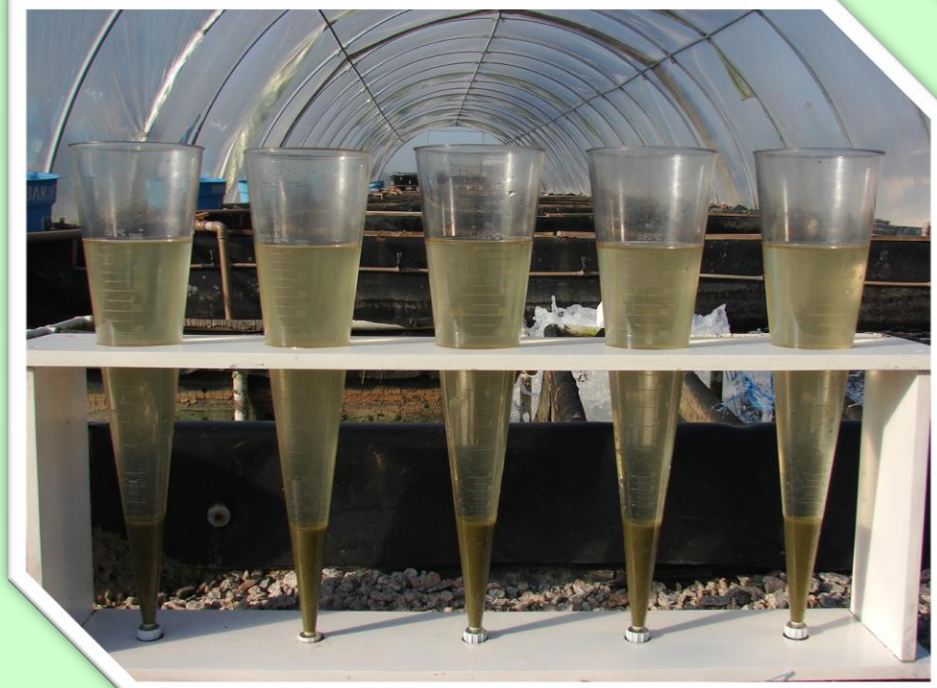
GREENHOUSE SYSTEM

INSTITUTO DE OCEANOGRAFIA
Universidade Federal do Rio Grande

MARINE STATION AQUACULTURE

ESTAÇÃO MARINHA DE AQUACULTURA - FURG





BFT SYSTEM

INTRODUCTION

- ✓ *Litopenaeus vannamei*
- ✓ Main species cultivated in the world
- ✓ Exotic species in Brazil
- ✓ Southern Brazil the growing season is limited by low water temperatures

Farfantepenaeus brasiliensis

✓ **Important commercial species in Brazil**

- ✓ **The culture potential of native pink shrimp *F. brasiliensis* must also be considered**

OBJETIVE

The present study was conducted to compare the rearing of Pacific white shrimp *L. vannamei* and Pink Shrimp *F. brasiliensis*, in BFT system

- ✓ **Location of Study:**
- ✓ Marine Station of Aquaculture
- ✓ Institute of Oceanography, Federal University of Rio Grande, RS, Brazil

METHODS

Greenhouse

- ✓ 6 Raceways 35 m^2
- ✓ 2 treatments - 3 replicates
- ✓ Stocking density: 100 shrimps.m^{-2}
- ✓ Time: 70 days

Treatments:

L. vannamei* x *F. brasiliensis

(0.72 g) (0.78g)

METHODS

- ✓ Feed 38% CP (1.6 mm, Guabi®)
- ✓ Feeding rate was based on Jory et al. (2001)
- ✓ Belt feeder (12 hours)
- ✓ 10% of the feed was distributed in circular feeding trays

METHODS

- ✓ analysis of ammonia, nitrite and nitrate every three days;
- ✓ Shrimps were sampled weekly to check growth;
- ✓ Counting total number of shrimps in the end of the experiment to determine the survival;
- ✓ Results were analyzed by one-way ANOVA ($\alpha=0.05$)

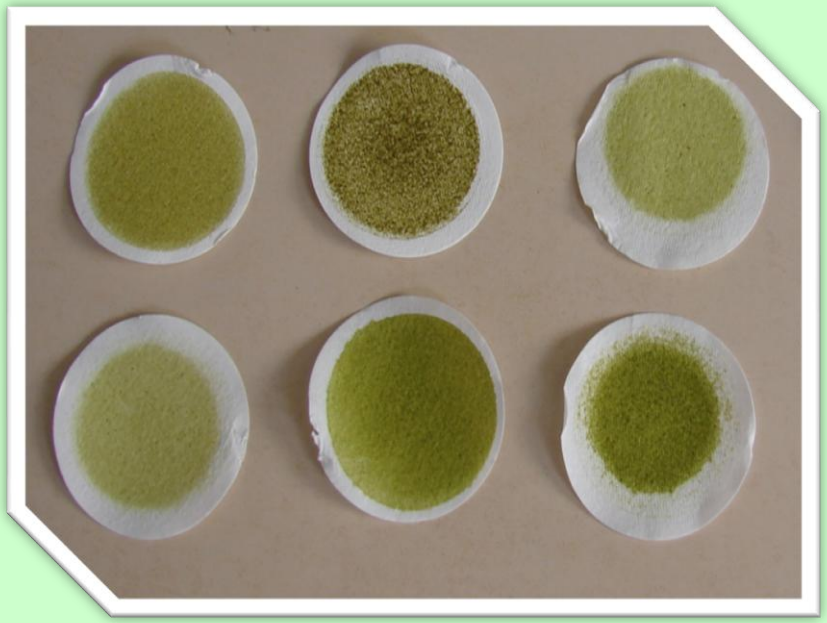
METHODS

- ✓ 10% inoculum of old Biofloc
- ✓ Fertilization based on Avnimelech (1999) and Ebeling *et al*. (2006)
- ✓ pH, temperature, dissolved oxygen and salinity were measured daily

METHODS

Biofloc control:

- ✓ Total Suspended Solids (TSS)
- ✓ Bioflocs volume (Imhoff cones) (Three times / week)



METHODS

To control

INLET OUTLET

METHODS

MULTI-STRAIN COMMERCIAL PROBIOTIC

Water

- ✓ 0.5 ppm /week
- ✓ Distribute the mixture in several locations around the tank.

Feed

- ✓ 3 g/kg diet
- ✓ Mix with the feed and let dry
- ✓ Feed was distributed in several locations around the tank.

RESULTS

WATER QUALITY PARAMETERS

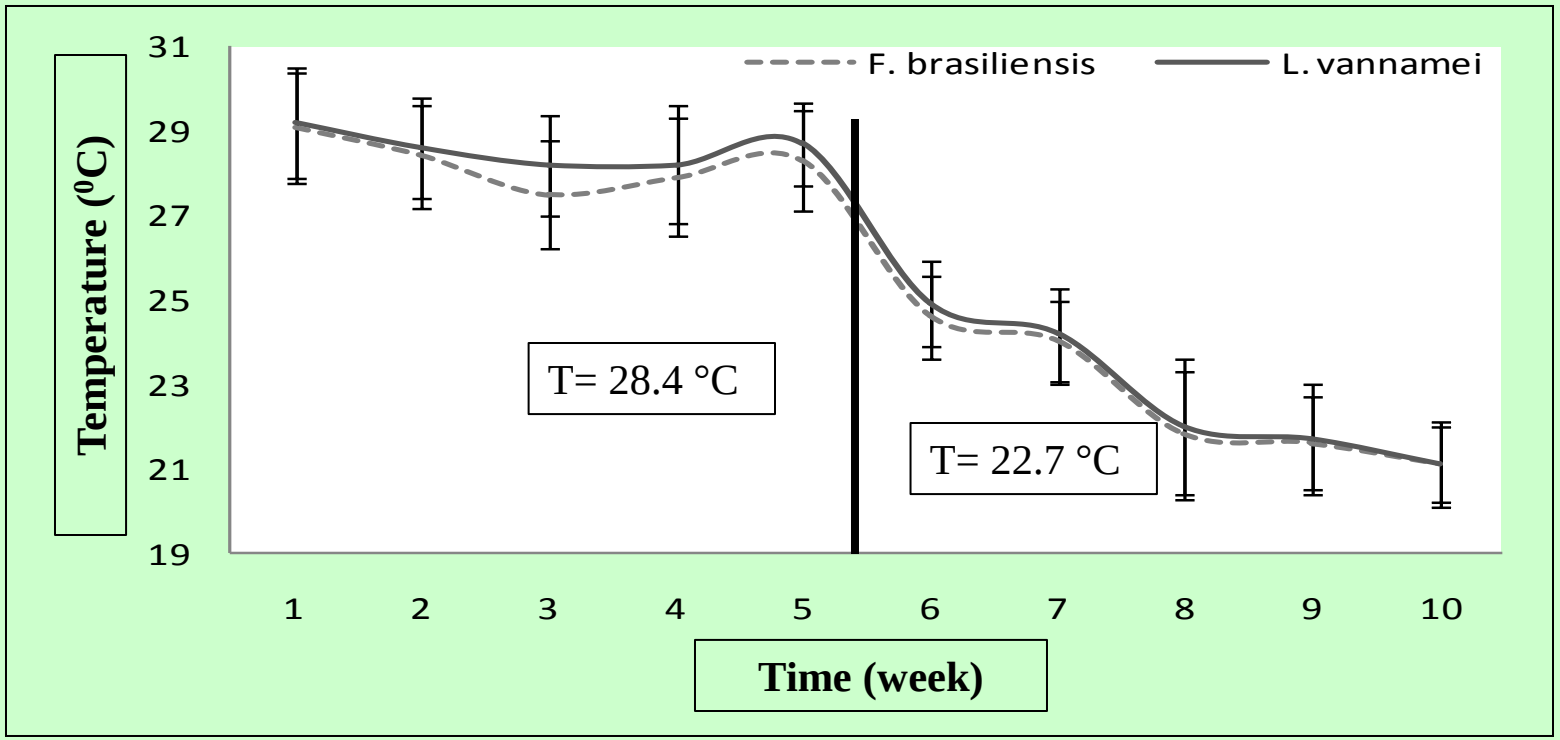
	F. brasiliensis	*L. vannamei*
Temperature (°C)	25.4 ± 3.1[a]	25.7 ± 3.2[a]
DO ($mg.L^{-1}$)	6.6 ± 0.5[a]	6.5 ± 0.4[a]
pH	8.1 ± 0.2[a]	8.0 ± 0.2[a]
Salinity	32.8 ± 0.7[a]	33.12 ± 0.82[a]
TSS ($mg.L^{-1}$)	298.57 ± 119.78[a]	299.76 ± 128.41[a]
Turbidity (NTU)	105.09 ± 83.93[a]	110.80 ± 90.26[a]
Secchi (cm)	19.64 ± 7.51[a]	19.31 ± 6.98[a]
Alkalinity (mg $CaCO_3.L^{-1}$)	157.70 ± 23.31[a]	143.56 ± 22.15[a]

- ✓ **No significant differences between treatments**
- ✓ **Remains in optimal range for *both species***

RESULTS

WATER QUALITY PARAMETERS

Except....



RESULTS

WATER QUALITY PARAMETERS

	F. brasiliensis	*L. vannamei*
TAN ($mg.L^{-1}$)	0.15 ± 0.11^{a}	0.20 ± 0.18^{a}
Nitrite ($mg.L^{-1}$)	0.29 ± 0.25^{a}	1.06 ± 1.30^{a}
Nitrate ($mg.L^{-1}$)	17.98 ± 8.87^{a}	19.11 ± 9.61^{a}
Phosphate ($mg.L^{-1}$)	1.43 ± 1.93^{a}	1.28 ± 1.05^{a}

- ✓ No significant differences between treatments
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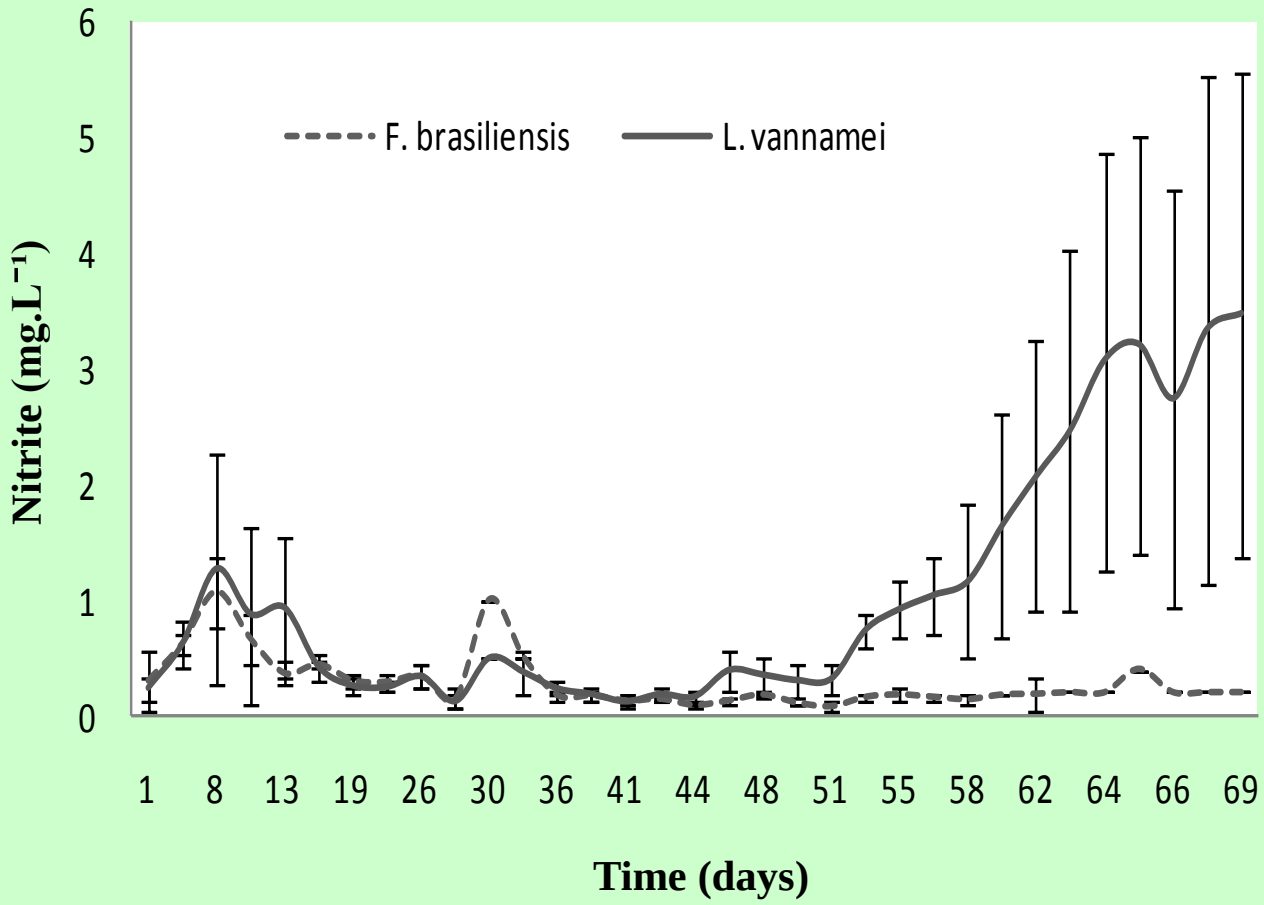
RESULTS

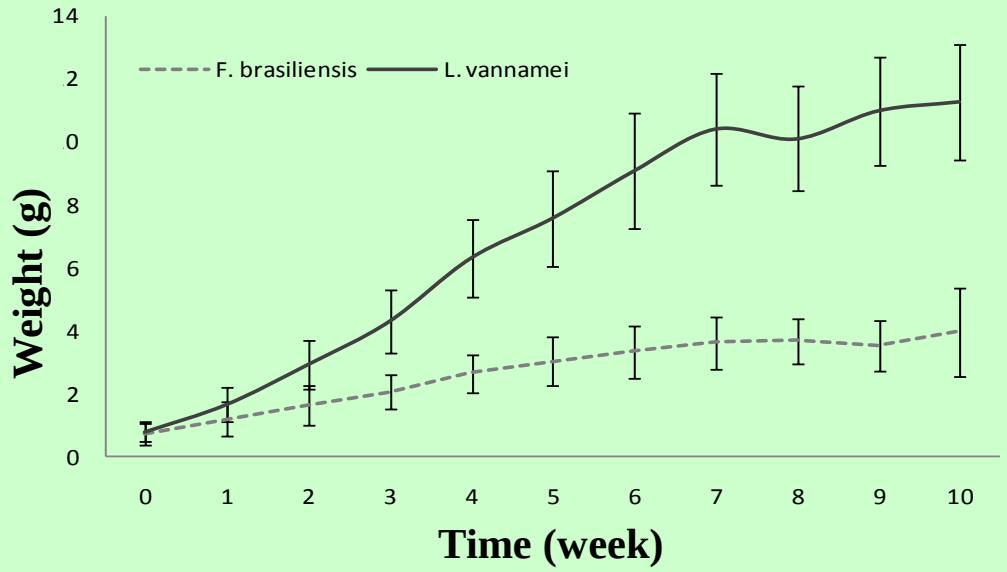
WATER QUALITY PARAMETERS

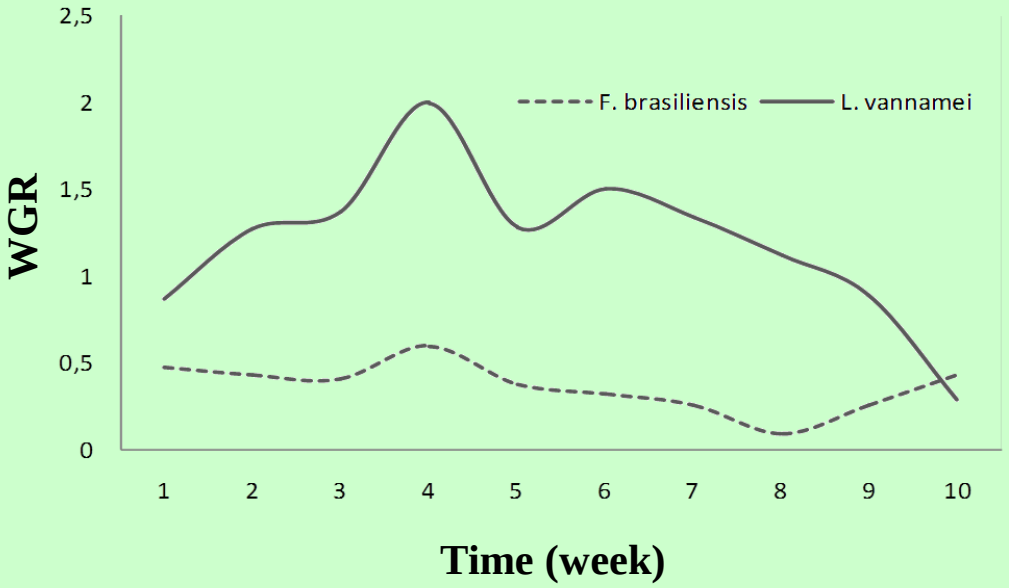


- ✓ **No significant differences between treatments**
- ✓ **Higher values in *L. vannamei***

ZOOTECHNICAL PARAMETERS

RESULTS





RESULTS

ZOOTECHNICAL PARAMETERS

	L. vannamei	*F. brasiliensis*
Initial weight	0.78 ± 0.29	0.72 ± 0.37
Final weigth	11.28 ± 1.83	3.96 ± 1.40
Survival	98.12±6.12	64.5±9.68
WGR	1.05 ± 0.62	0.32 ± 0.20
FCR	1.38 ± 0.06	5.22 ± 1.26
Final Biomass (kg)	39.27 ± 2.47	9.05 ± 1.62
Prod (kg m $^{-2}$)	1.12 ± 0.07	0.25 ± 0.05

✓ **significant differences between treatments**


Equipamentos p/ laboratório;
Vidrarias, acessórios e reagentes;
Artigos hospitalares.
Fone/Fax

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DISCUSSION

L. vannamei

- ✓ Specific feed in Brazil
- ✓ Adaptation to different culture systems
- ✓ Biofloc as an important diet supplement

F. brasiliensis

- ✓ Feed did not meet the nutritional requirements of the species
- ✓ Cannibalistic behavior
- ✓ Bioflocos not have worked as a food supplement

CONCLUSION

- ✓ The zootechnical parameters showed the best results for *L. vannamei*.
- ✓ We concluded that *L. vannamei* is the best choice for the BFT system in Southern Brazil.

ACKNOWLEDGMENTS

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Thank you!