# USE OF BIOFLOCS GROWN AT DIFFERENT SALINITIES AS A FEED FOR *Artemia* IN LABORATORY CONDITIONS

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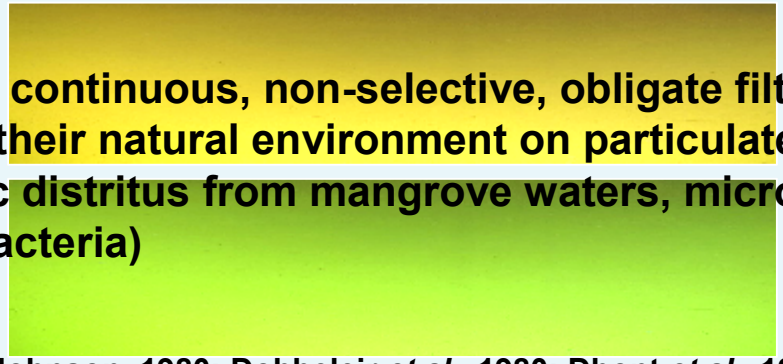
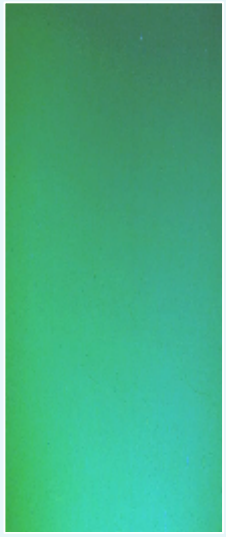
# Introduction



Diatom
Chloro.
Cyano.





***Artemia*** **is a continuous, non-selective, obligate filter-feeder and feed in their natural environment on particulate matter (*e.g.* organic distritus from mangrove waters, microscopic algae and bacteria)**

**(Reeve, 1963b; Johnson, 1980; Dobbeleir *et al.*, 1980; Dhont *et al.*, 1992)**

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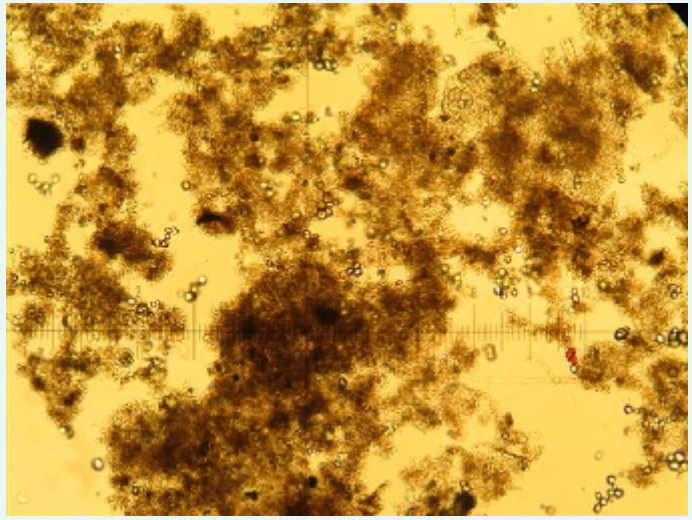
# Introduction

***Rice-bran (C source) is applied as supplementary feed***

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# Objectives

**Evaluate the use of bioflocs grown at different salinities as a feed for *Artemia* that can contribute to provide diversification of feed sources in *Artemia* culture**

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# Experimental set-up

**Four different salinity treatments were set-up in the plastic tanks to create biofloc as feed for *Artemia***

Treatment 1: 35 ppt

Treatment 2: 60 ppt

Treatment 3: 80 ppt

Treatment 4: 100 ppt

Chicken manure and tapioca were supplied in the experimental tanks every 3 days (C:N ≥ 10) to stimulate biofloc formation

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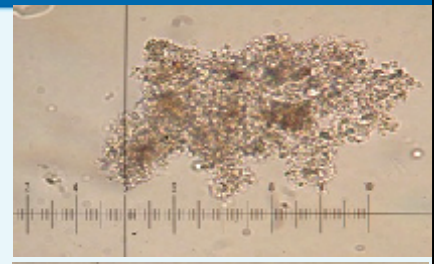
# C, N contents of chicken manure and tapioca (% dry-weight)

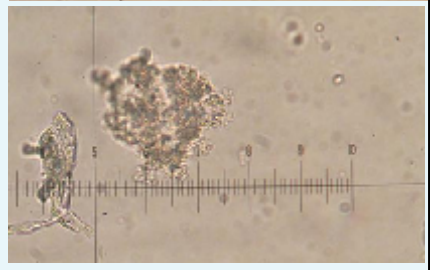
| | Moisture | P | C | N | C:N |
|---|---|---|---|---|---|
| **Tapioca powder** | 10,92± 0,45 | 0,41 ± 0,11 | 72,14± 1,81 | 1,32± 0,09 | **54,61± 4,91** |
| **Chicken manure** | 23,72± 2,04 | 4,25± 2,27 | 14,83± 2,06 | 1,88± 0,57 | **8,23± 2,05** |

# Collection of biofloc for feeding *Artemia*

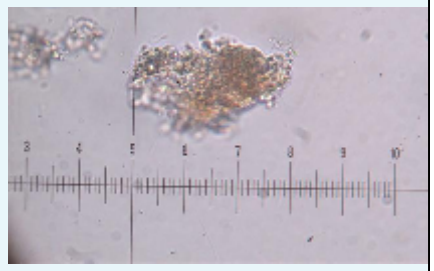
Biofloc_35 ppt



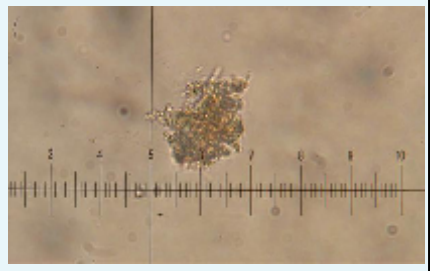
Biofloc_60 ppt



Biofloc_80 ppt



Biofloc_100 ppt



The harvested bioflocs were filtered through the net with mesh size of 50μm before feeding *Artemia*

*1 scale = 2.6 um*

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# Overview of experimental system

Biofloc tanks

Stock culture of Artemia to sexual maturity for survival & growth (3 replicates)

Culture of individual couples for reproductive characteristics

(30 replicates)

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# Parameters

**Culture conditions** → **T°: 26-28°C** | **Salinity: 80 ppt**

**Data collection** → **Survival** & **length**: day 7 & 14

**Reproductive characteristics**: until all female death

| | |
|---|---|
| Pre-reproductive period | Total offspring/female |
| Reproductive period | Total offspring cyst |
| Lifespan of *Artemia* female | Total offspring nauplii |
| Total broods/female | No. brood cyst |
| Brood interval | No. brood nauplii |

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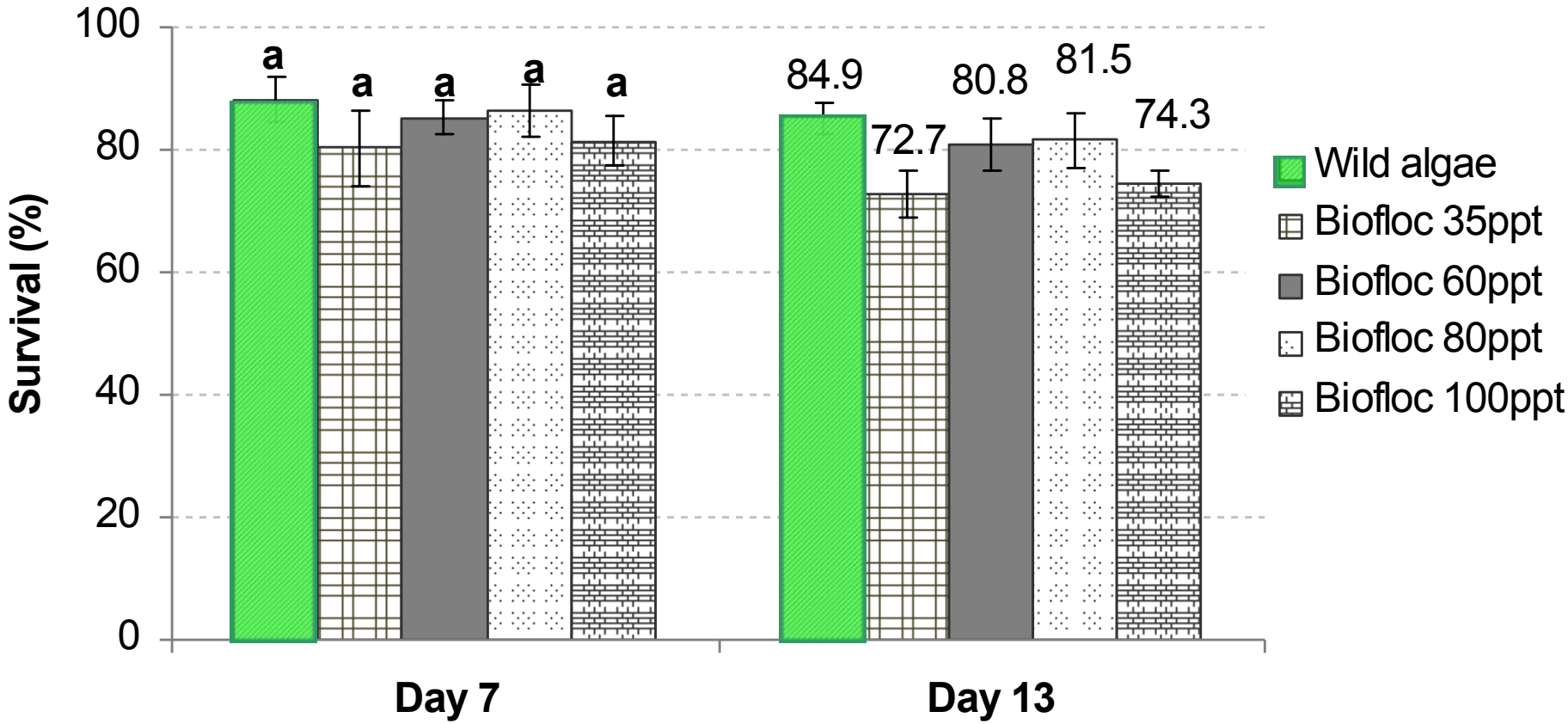
# RESULTS & DISCUSSION

## Survival of *Artemia* fed biofloc grown at different salinities



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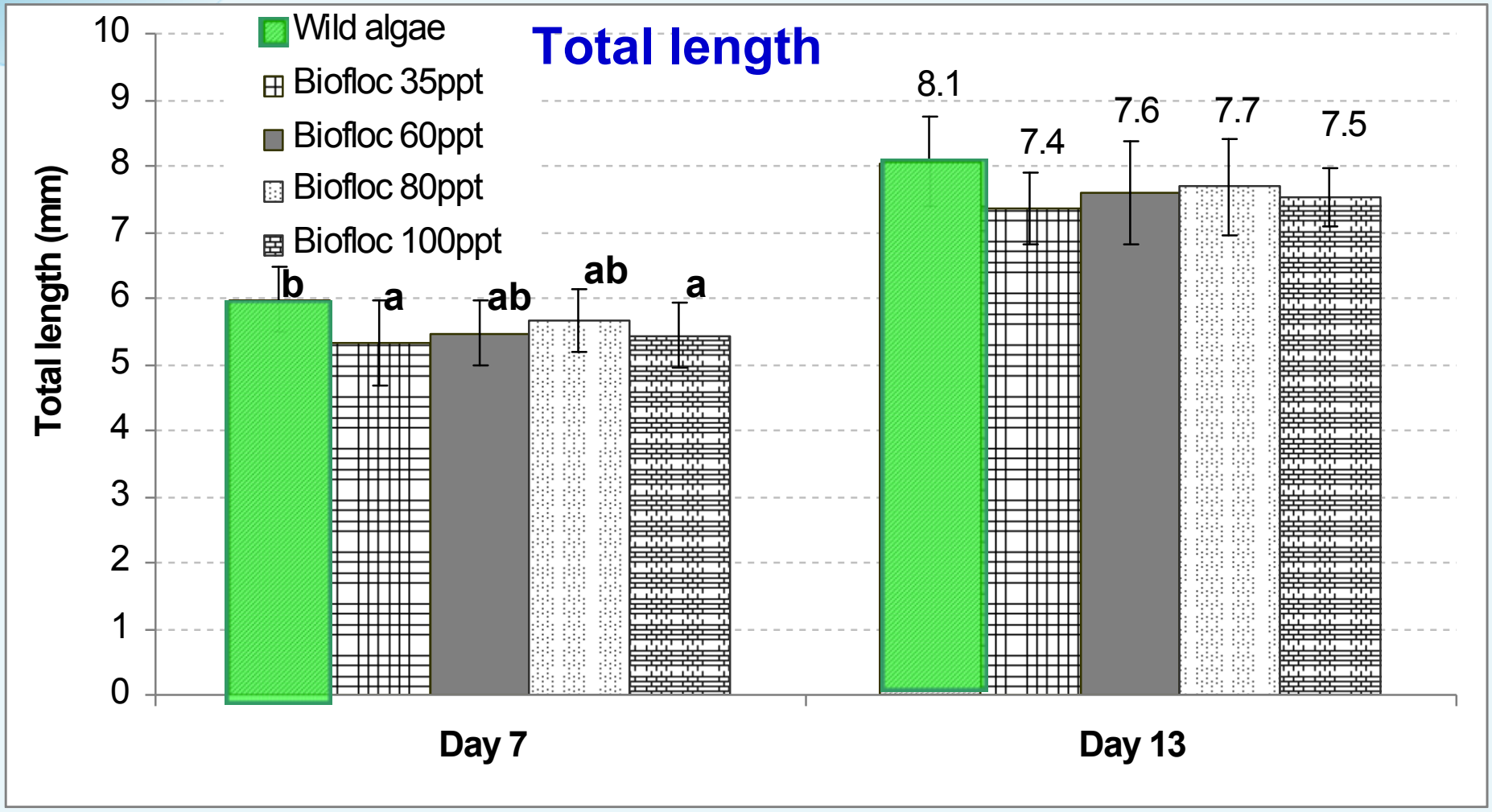

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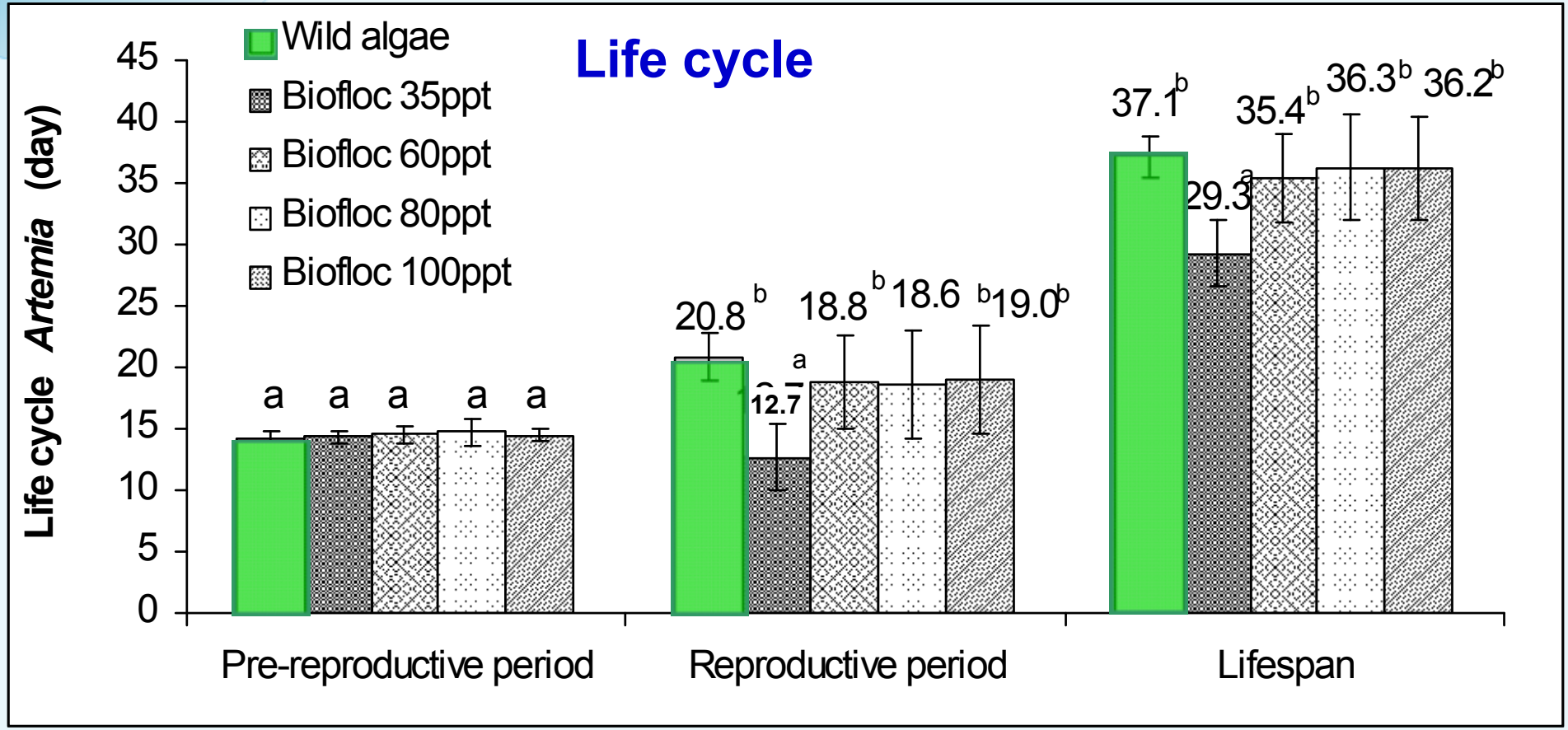

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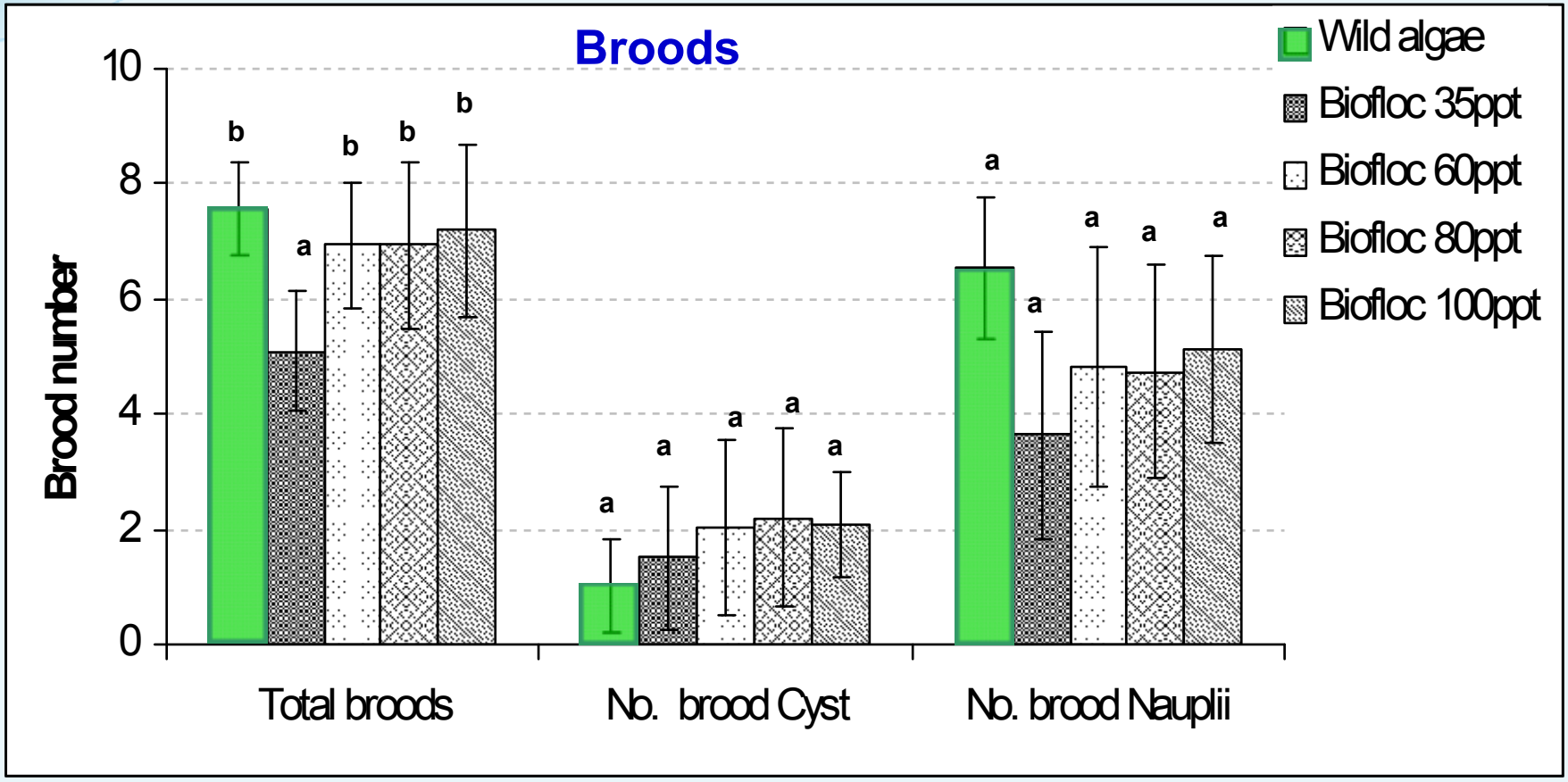


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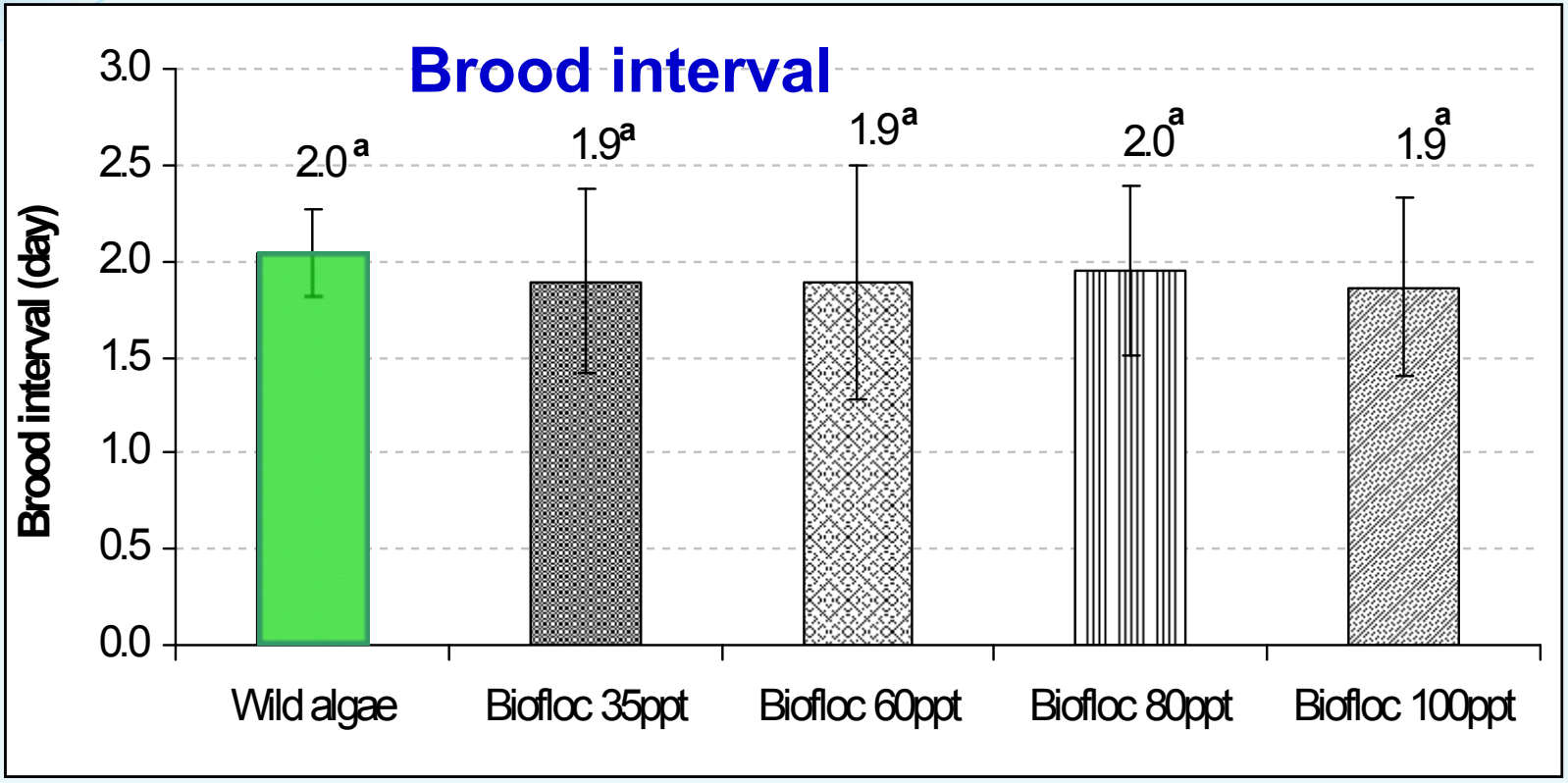


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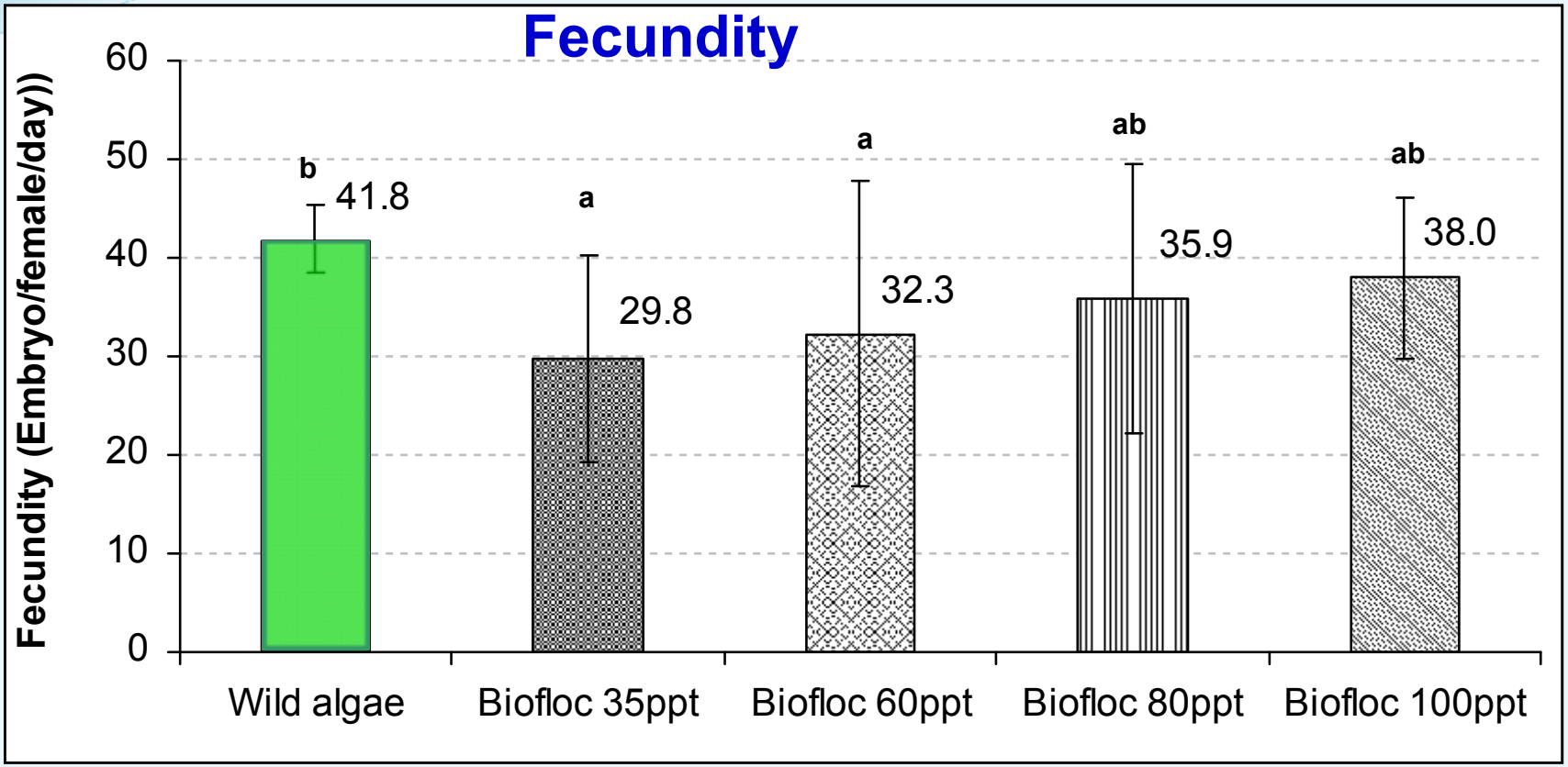

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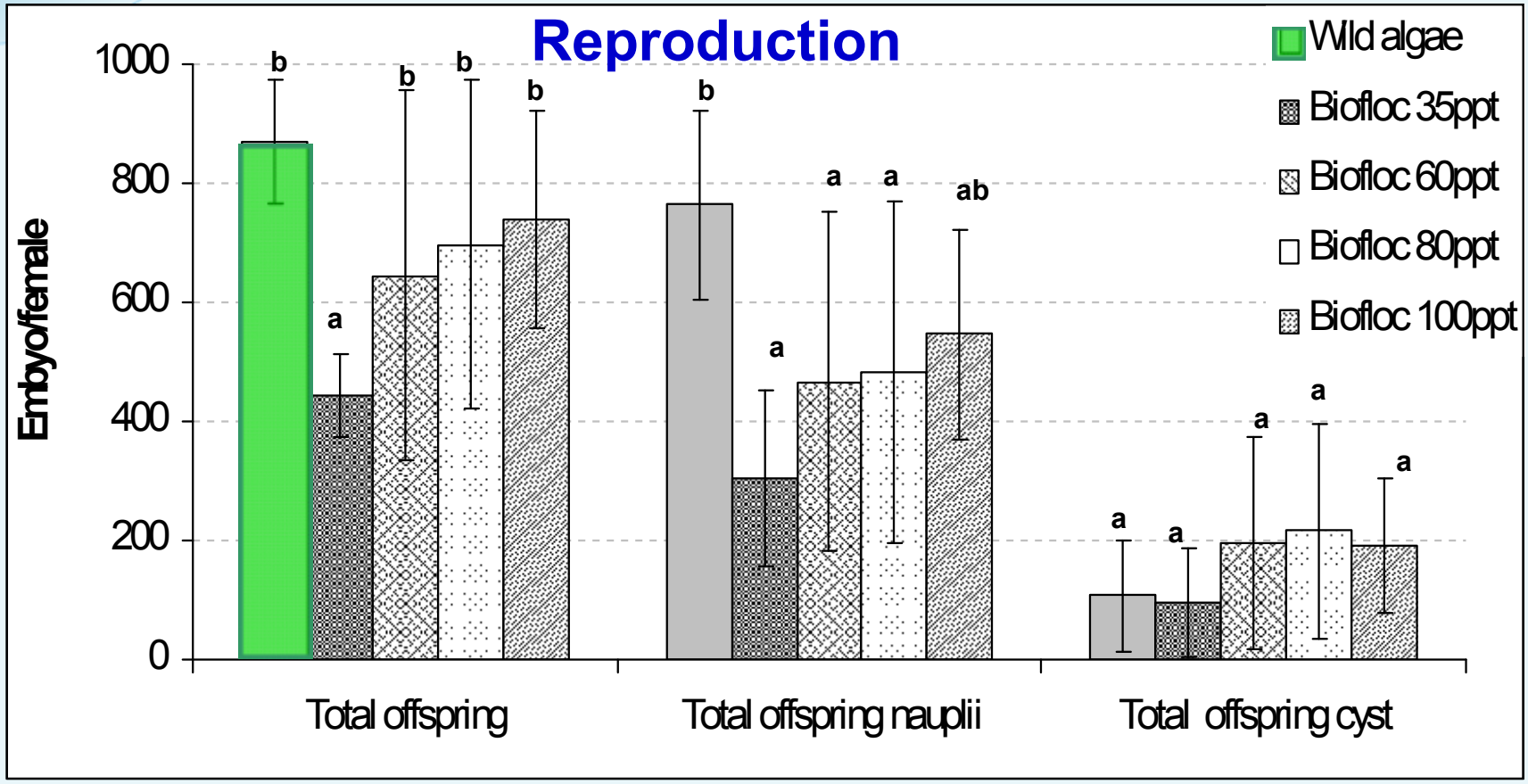

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# Proximate composition of *Artemia* biomass (% dry-weight) fed bioflocs grown at different salinities

| Treatment | DM | Protein | Lipid | Ash | Fiber | NFE |
|---|---|---|---|---|---|---|
| Wild algae | 10.23 | 57.04 | 10.89 | 14.94 | 0.17 | 16.96 |
| Biofloc_35 ppt | 11.24 | 56.27 | 10.35 | 18.98 | 0.15 | 14.26 |
| Biofloc_ 60 ppt | 10.13 | 58.99 | 11.21 | 19.42 | 0.16 | 10.22 |
| Biofloc_80 ppt | 11.50 | 58.71 | 10.33 | 19.66 | 0.18 | 11.13 |
| Biofloc_100 ppt | 11.41 | 59.16 | 10.40 | 19.42 | 0.11 | 10.92 |

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# Conclusion

- Survival and total length may not sig.
- Life cycle at biofloc35 lower than the others and the control
- Number of broods cysts < nauplii; Artemia fed with biofloc gave higher broods cysts than algae
- Higher Fecundity of females fed biofloc at higher salinity
- Biomass composition are the same and similar to the control
- Fed biofloc alone met > 50 % feeding requirement of Artemia

# Thank you for your attention

| | Pig manure | Rice bran | Soybean meal |
|---|---|---|---|
| Dry matter | 51.50 ± 4.55 | 84.43±1.57 | 87.72±0.96 |
| Carbon | 27.08 ± 6.43 | 46.77±3.41 | 58.89±2.87 |
| Nitrogen | 2.40±0.65 | 2.03±0.14 | 4.40±0.18 |
| C/N ratio | 11.35±0.68 | 23.07±0.94 | 13.39±0.59 |
| Total phosphorus | 2.18±0.60 | 1.84±0.21 | 1.00±0.10 |
| Lipids | 0.68±0.23 | 12.55±0.74 | 3.97±0.41 |
| Ash | 41.86±6.69 | 9.73±0.55 | 1.79±0.08 |
| Fiber | 14.89±4.87 | 13.14±1.35 | 1.67±0.06 |