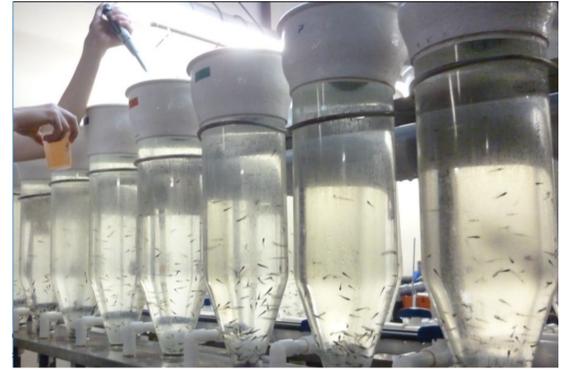


# BURBOT LARVICULTURE: TO ENRICH OR NOT?

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## Introduction

Burbot has a 60-days Artemia phase from which the last 40 days feeding is done with enriched Artemia. The higher cost of enrichment, due to extra labour and the enrichment product, has wondered farmers if this enrichment is necessary. A previous study (Adriaen et al. 2016) showed that larvae fed on non-enriched Artemia nauplii were bigger, but with lower survival than larvae fed on enriched Artemia instar II. However in this latter study the amount of prey, that could be a factor in cannibalism, per treatment was not expressly studied. In this trial we compare the feeding of burbot larvae with non-enriched Artemia nauplii versus enriched Artemia instar II with different prey quantity.

## Materials & methods

- 2640 burbot larvae of 45 DAH (11.7± 1.3mm; 2.5±0.5 mg) were stocked over 12 zugler-flasks of eight liter in RAS; density: 27.5 larvae/L
- Culture conditions: Water temperature: ±16°C; 100% O<sub>2</sub>-saturation; 24h constant light
- Prior to the experimental period larvae were fed first with Artemia nauplii and later combined with Enriched Artemia Instar II
- Four feeding protocols tested in triplicate:
  - A: enriched Artemia instar II
  - A1.5: enriched Artemia instar II at (1.5\*amount of A)
  - N1.5: Artemia Instar I nauplii at (1.5\*amount of A)
  - N2.5: Artemia Instar I nauplii at (2.5\*amount of A)
- Direct weaning after 28 days of experiment on 76 DAH
- Commercial feed used: with 200–300 µm Aglonorse
- Manual feeding, daily ratio spread over 3 feeding moments
- Salinity stress test on 75 DAH:
  - 12 larvae/replica exposed at 30 ppt salinity:
- At the end of experiment: grading of larvae (per flask) on 2.5mm-width

## Results

|                 | A            | A1.5          | N1.5         | N2.5         |
|-----------------|--------------|---------------|--------------|--------------|
| Length (mm)     | 17,1±2,0 (a) | 19,4±2,2 (a)  | 20,7±1,9 (b) | 23,5±2,2 (c) |
| Wet weight (mg) | 44,4±1,5 (a) | 59,1±1,6 (ab) | 64,5±,8 (bc) | 83,4±2,2 (c) |
| Dry weight (mg) | 6,4±1,0 (a)  | 8,4±1,6 (ab)  | 9,2±0,8 (bc) | 11,6±2,2 (c) |
| %(<2.5mm)       | 3,5±4,3      | 22,7±20,2     | 5,0±8,6      | 0,0±0,0      |
| %(>2.5mm)       | 96,5±4,3     | 77,3±20,2     | 95,0±8,6     | 100,0±0,0    |

Table I: Biometric parameters measured at the end of the trial, 86 DAH. (different superscripts are statistically significant)

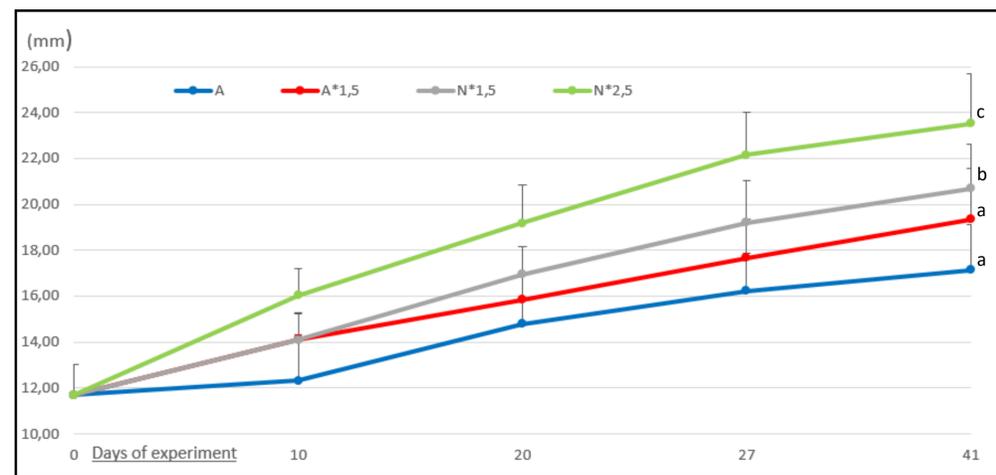


Figure I: Body length larvae during experiment (different superscripts are statistically significant)

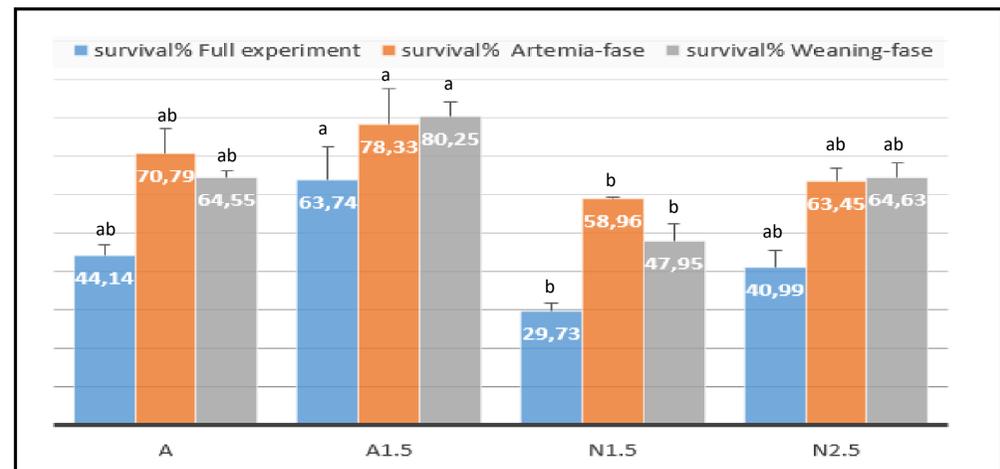


Figure II: Overall survival and at different period (different superscripts are statistically significant)

- No significant difference found in Stress index and Main response time between treatments during Salinity stress test

## Discussion & conclusion

- Larvae fed with Artemia nauplii (N1.5 & N2.5) showed higher growth, but lower survival.
- Grading results indicate that the higher ABW for N2.5 could be explained by the bigger heterogeneity with a higher amount of bigger larvae.
- Although length increased for all treatments after weaning, larvae of treatment N2.5 showed a decrease in WW and DW after weaning. This could indicate that feeding quantity was maybe not optimal. This could also have affected mortality.

>Treatment with enrichment would be advised for commercial production due to higher survival and more homogenous population.

- Naz M. and Türkmen M. 2009. The changes in digestive enzymes and hormones of gilthead seabream larvae (*Sparus aurata*, L 1758) fed on *Artemia* nauplii enriched with free methionine. *Aquacult Int* 17: 243-256
- Tonheim S.K., Koven W., Rønnestad I. 2000. Enrichment of *Artemia* with free methionine. *Aquaculture* 190: 223-225