

Effect of rearing system intensiveness on biological features, culture performance and larval quality of meagre (*Argyrosomus regius* Asso, 1801) larvae

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Abstract

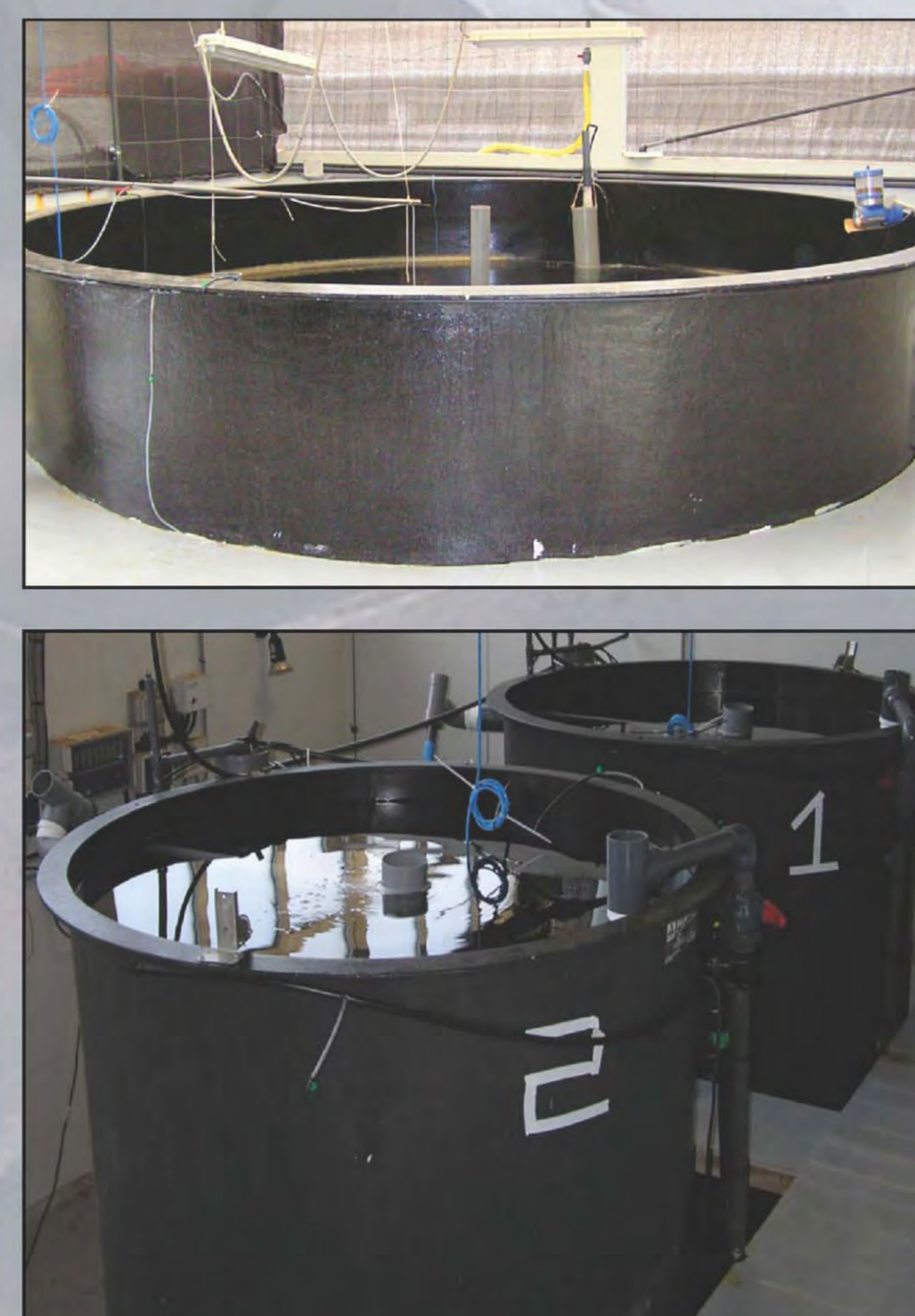
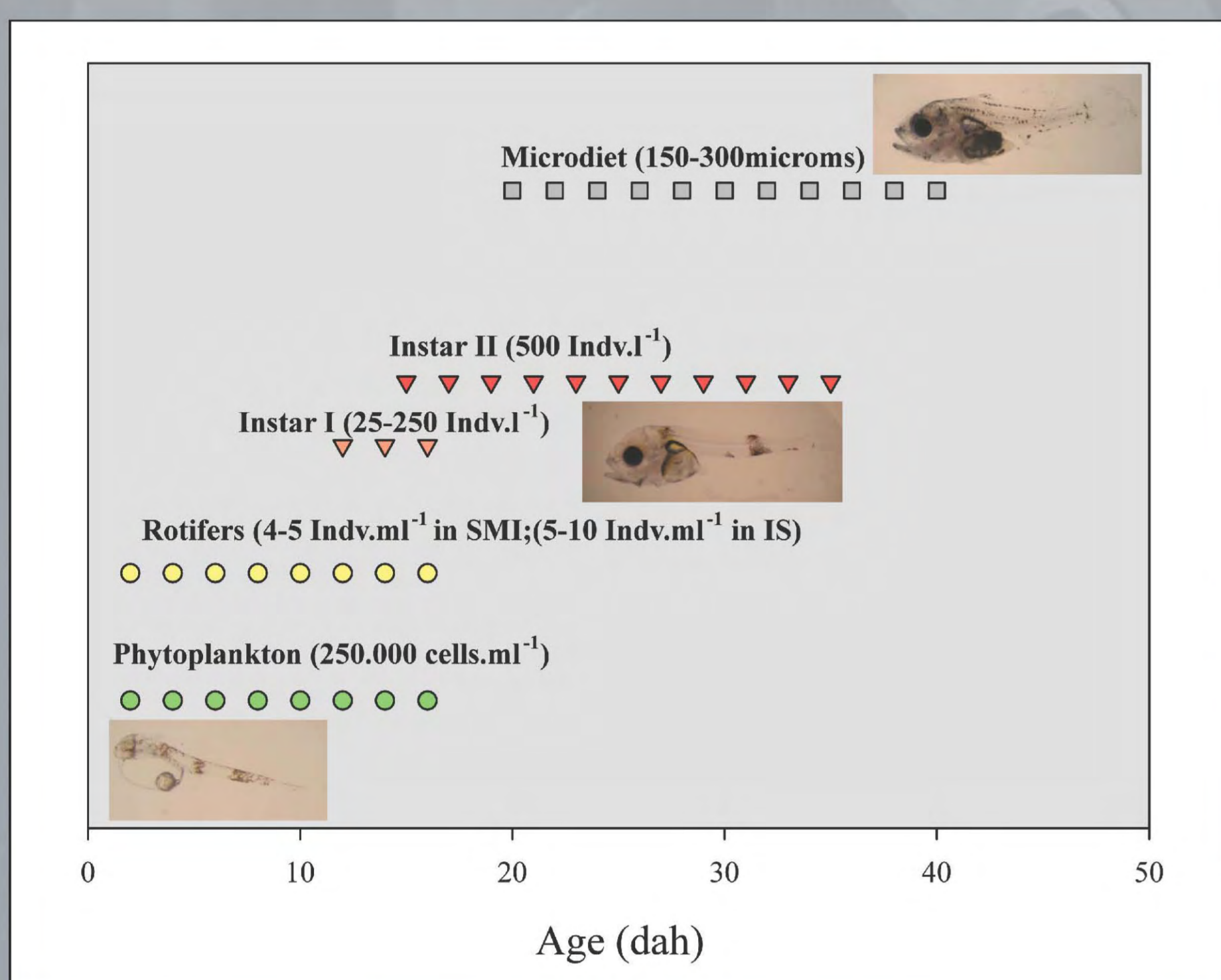
Meagre, *Argyrosomus regius* A., is a new species for aquaculture in south Atlantic and Mediterranean regions, that can reach a mean fresh weight of 8.02 ± 2.51 g. at 95dah. However, hatchery techniques must be improved to optimize culture performance and larval quality. Eggs of meagre were cultured under intensive (75 indv.l⁻¹ in 2m³ tanks) and semi-intensive system (7.5 indv.l⁻¹ in 40m³ tanks) to evaluate the effect of the intensification on biological

features, stress resistance and skeletal deformities. At 30dah, despite in semi-intensive system reared larvae a higher total length (19.08 ± 2.3 mm vs 16.00 ± 1.54 mm), dry body weight (13.09 ± 2.43 mg vs 6.46 ± 0.52 mg), and survival after the activity test ($75.0 \pm 13.8\%$ vs $53.3 \pm 11.5\%$) was found, the use of intensive systems were also very suitable and cost-effective for larval rearing of this species.

Materials and methods

Rearing techniques

- Intensive System (75 eggs.l⁻¹) in 2m³ tanks.
- Semi-intensive System (7.5 eggs.l⁻¹) in 40m³ tanks.



Determinations

- Total length (n=25; 30dah).
- Dry weight (n=25; 30dah).
- Final survival (20, 30dah).
- Activity test (120 seconds air exposure at 30dah).
- Incidence of deformities (n= 500; 95dpe).



Results and discussion

Growth

Culture intensification reduce growth in TL and DW, (Table I). These results are in concordance with data reported for other species such as *Diplodus sp.* (Papandroulakis et al., 2004) or *Pagrus pagrus* (Roo et al., 2009b).

Table 1. Effect of culture intensiveness on growth at 30dah.

Treatment	Total Length (mm)	Dry Weight (mg)
Semi-Intensive	19.08 ± 2.30^a	13.09 ± 2.43^a
Intensive	16.00 ± 1.54^b	6.46 ± 0.52^b

Survival

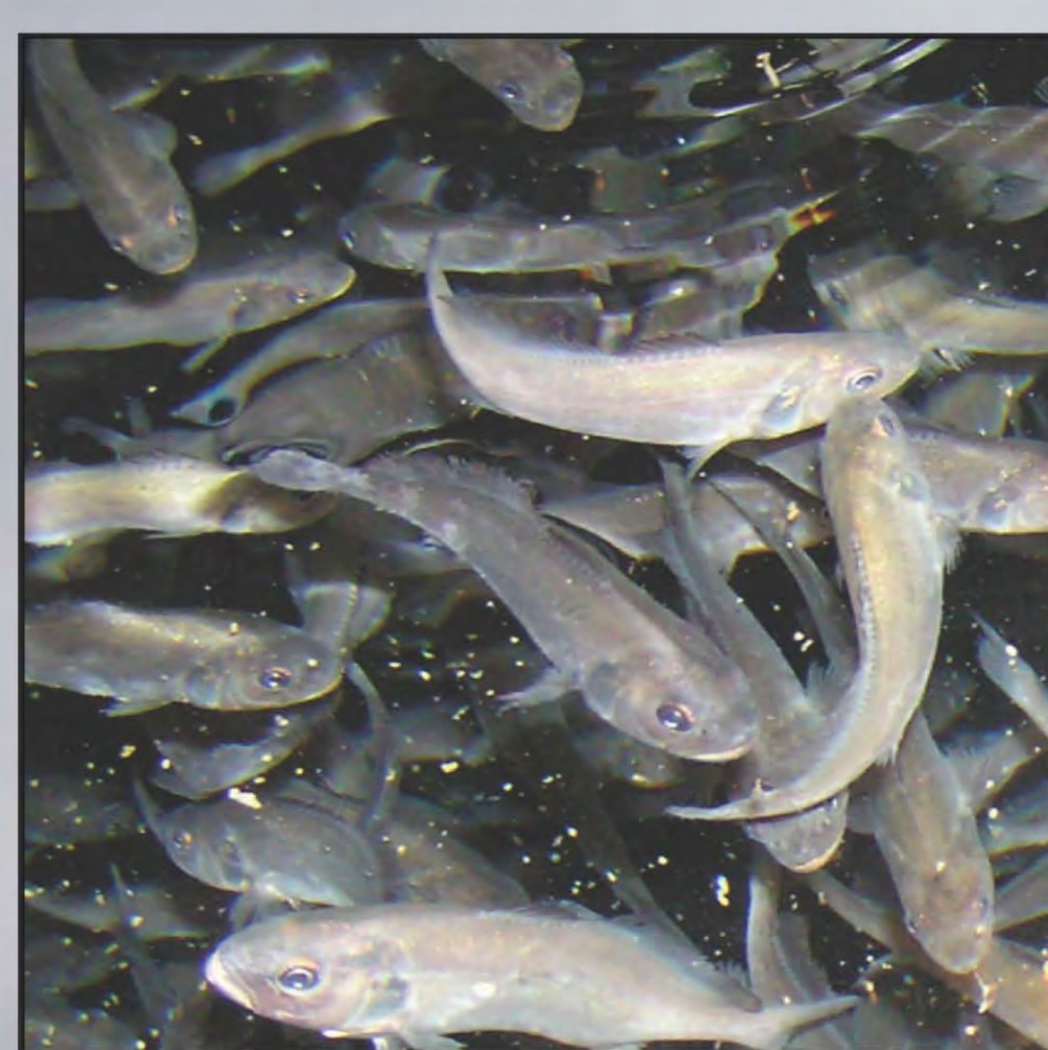
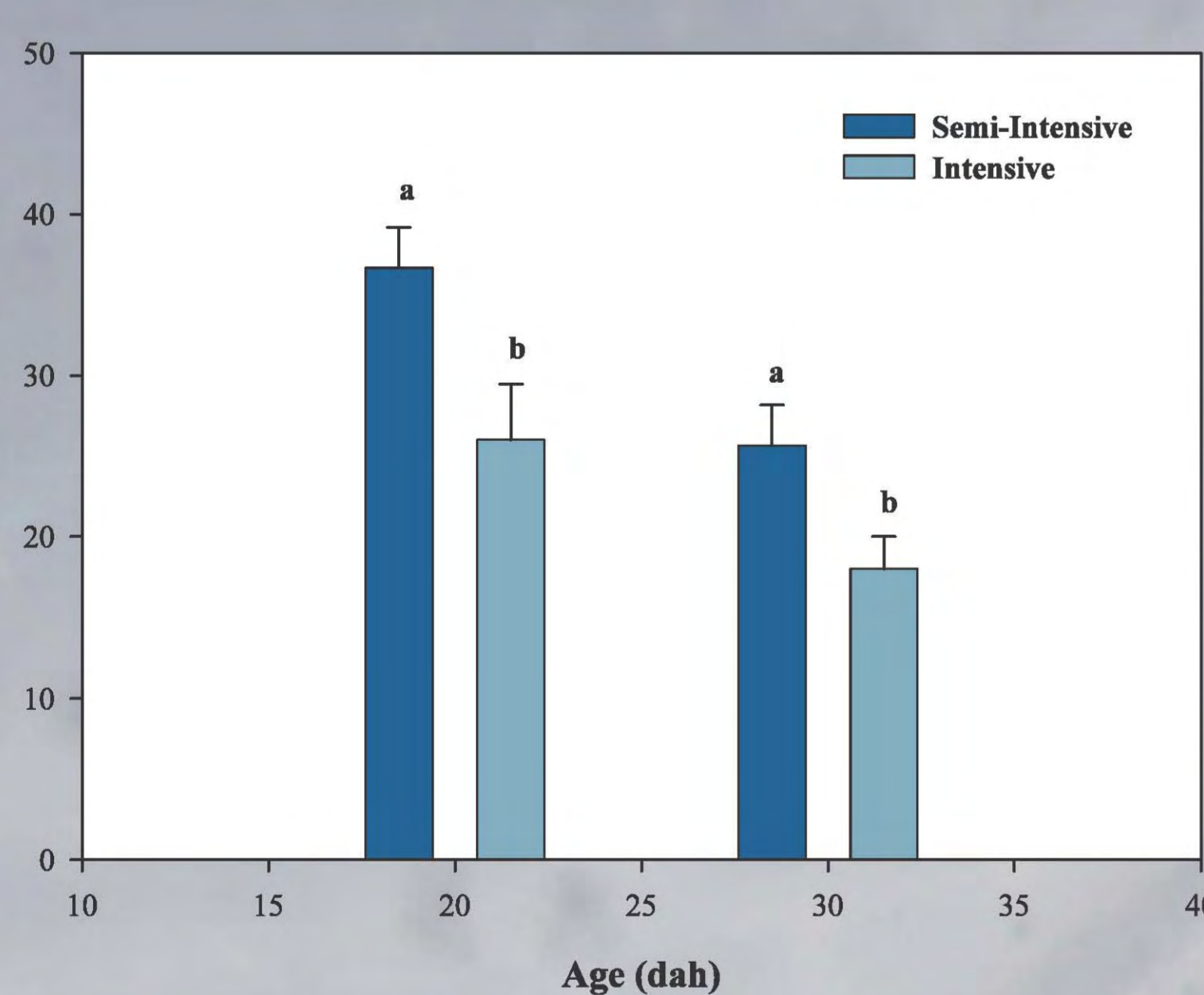


Figure 1. Effect of culture intensiveness on survival at 20 and 30 dah.

Final survival (30dah) under intensive system ($18.00 \pm 2.00\%$) were significantly improved with the used of semi-intensive conditions ($25.67 \pm 2.51\%$) (Figure 1).

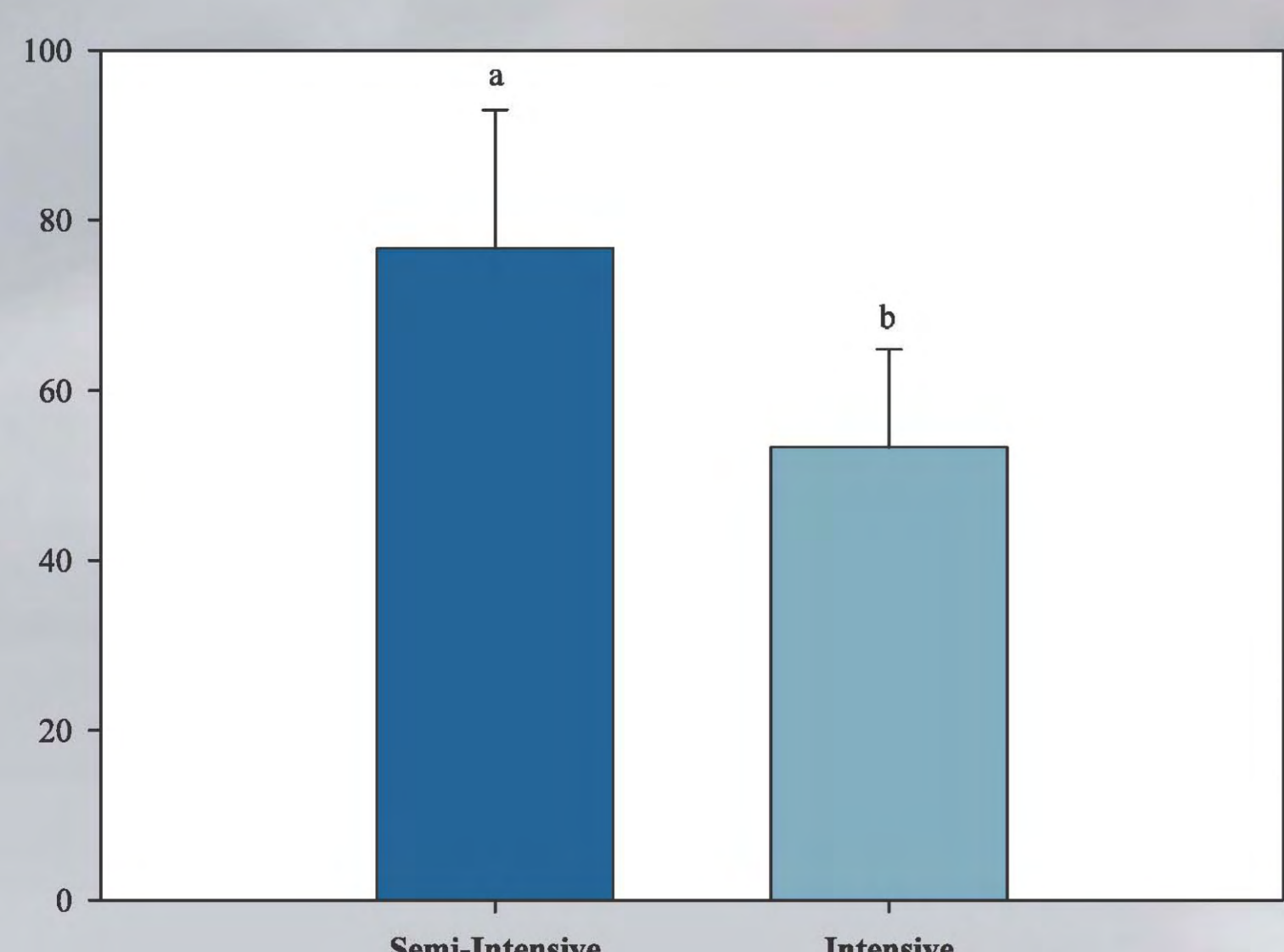


Figure 2. Survival after stress test at 30 dah.

The results of the activity test (Figure 2) suggest that larvae resist manipulation such as grading, that might reduce cannibalistic behaviour identified as the main cause of mortality from 20 to 30dah.

Deformities characterization

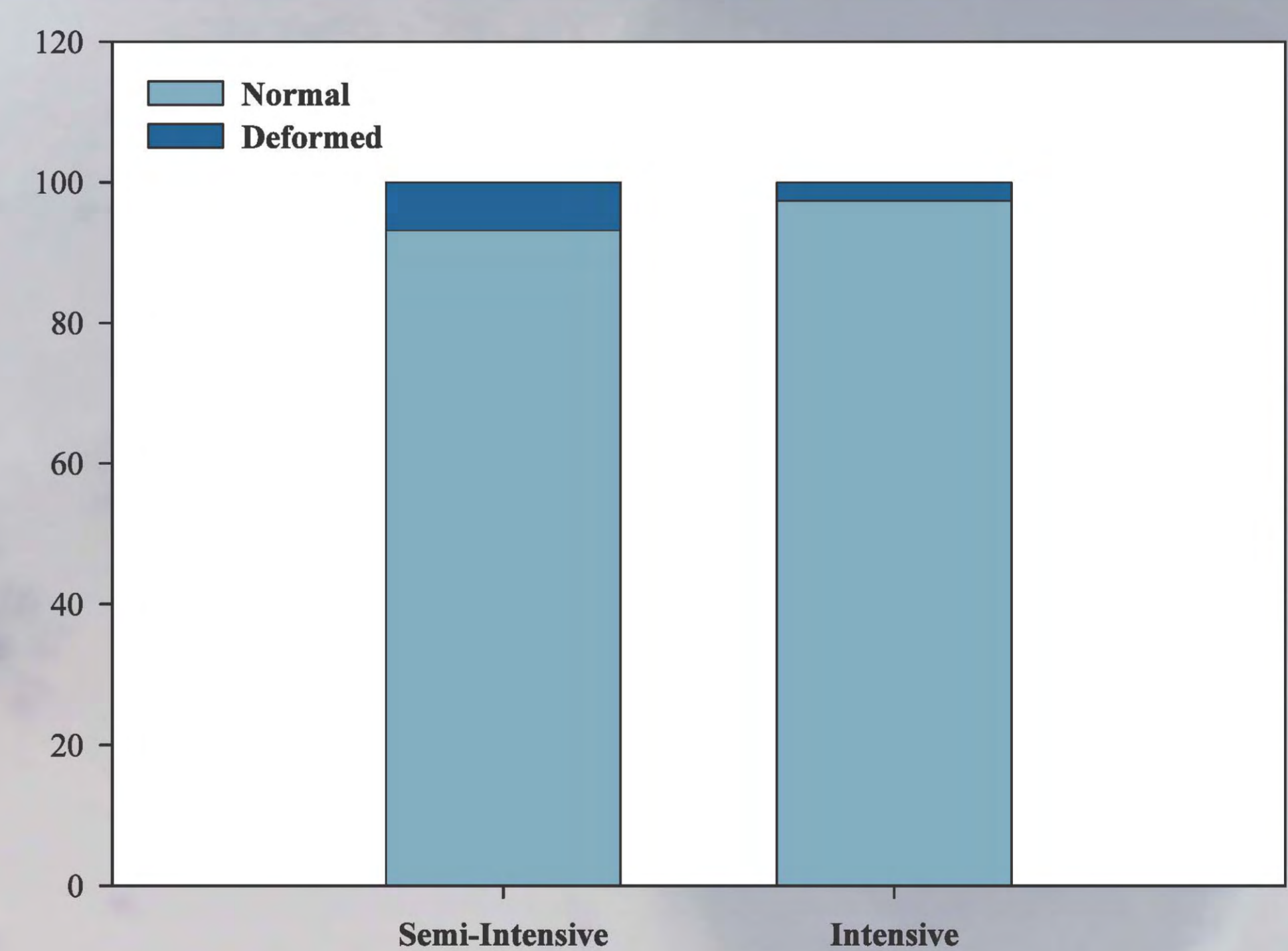
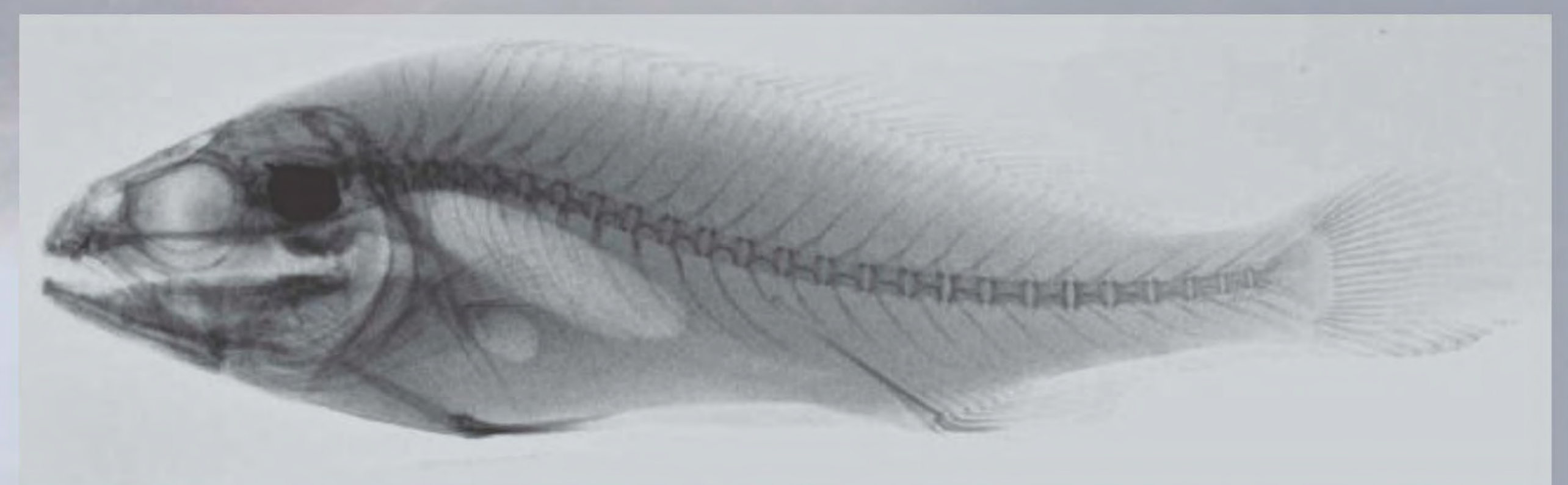


Figure 3. Fry quality according to the rearing system.

Regardless, rearing system over 95 % of the fry produced showed no skeletal deformities. Fusions affecting vertebrae 10 to 15, were the most frequent anomaly (Figure 3).

Table II. Comparison of feed quantities (per fry produce) and feeding costs according to the rearing system at weaning (35dah).

Treatment	Microalgae (ml)	Rotifers (Mill)	Artemia (Mill)	Microdiet (g)	Cost (€)
Semi-Intensive	37.07	18.2	8.2	0.051	0.020 ^a
Intensive	26.28	21.4	5.1	0.025	0.015 ^b

The use of intensive systems was also suitable and cost-effective for larval rearing of this specie (Table II). Thus, the feeding cost per fry produce at the end of the weaning period (35dah) were significantly lower under this type of system.

Acknowledgement

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