

CURRENT STATUS OF THE FRENCH INTENSIVE LARVAL REARING TECHNIQUES FOR SEA BASS & SEA BREAM

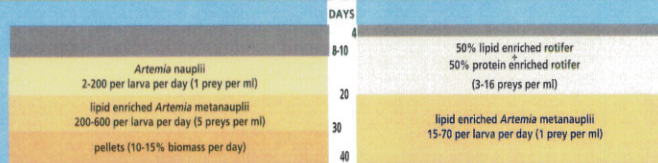
(*Dicentrarchus labrax*) (*Sparus auratus*)

LARVAL REARING

SEA BASS SEA BREAM

40 days	PERIOD	40 days
100 larvae per liter	INITIAL DENSITY	100 larvae per liter
5 mm / 15 mm	INITIAL / FINAL LENGTH	4 mm / 10 mm
0.4 → 2 liter per min	AERATION RATE	none
13-15°C	INITIAL WATER TEMPERATURE <small>(Spawning and incubation temperature)</small>	16-18°C
20°C	REARING WATER TEMPERATURE	20°C
Surface or Bottom	WATER ARRIVAL	Bottom
20 → 100 % per hour	WATER EXCHANGE	20 % per hour
<small>Closed recirculating water system providing "clear" sea water. (mean values of NH4 = 0.15 - N.NO2 = 0.012 - N.NO3 = 0.22 ppm - pH optimum between 6.5 and 8.5)</small>		
Black or White (no difference)	TANK BOTTOM COLOUR <small>(Black or White ?)</small>	Black or White (no difference)
• Vertical vision is 30° (20° up and 10° down).		
Black (growth +20% - survival +16%)	TANK WALL COLOUR <small>(Black or White ?)</small>	White (growth +13%) Black (survival x2)
• Lateral vision is 180°.		
9 hours (growth +30%) 24 hours (survival +30%)	PHOTOPERIOD <small>(9 hours or 24 hours ?) (12 hours or 24 hours ?)</small>	24 hours (growth +9% - survival x3)
Feeding behaviour : • Larvae never feed in the dark. • From day 11 to day 30, existence of a feeding rhythm despite continuous lighting. • Digestive transit time depends on prey density : 3.5 hours at 1 <i>artemia</i> per ml, 3 hours at 5-10 <i>artemia</i> per ml, 2.5 hours at 15 <i>artemia</i> per ml. Best assimilation is 1 prey per ml. Overfeeding (15 preys per ml) leads to poor assimilation. • Standard is 16 hours and a prey density < 5 per ml.		
50 → 500 lux (no difference)	LIGHT INTENSITY <small>(50, 100, 250, 500, 1000, 2500 or 5000 lux ?) (150, 300, 600 or 1500 lux ?)</small>	600 - 1500 lux (growth +15% - survival x2)
• 50=100=250=500=1000=2500=5000 lux • Accurate level may be below 50 lux (fish are able to eat at 0.5 lux). • 150=300 = 600=1500 lux • Light intensity enhances predatory activity but not predatory efficiency.		
"Industrial Light" (functional swimbladder 80-100%)	LIGHT QUALITY <small>("Day Light" or "Industrial Light" ?) (cold ray bulb, PAR 38, 120W G)</small>	"Industrial Light" (functional swimbladder 80-100%)
• "Day Light" does not allow more than 30% of functional swimbladder. Main difference between the two bulbs : lack of red and yellow wavelengths in "Day Light" bulb. • "Industrial Light" does not disturb swimbladder inflation. "Day Light" was not tested.		
Clean + dark (functional swimbladder 90%)	SURFACE REGIME <small>(Cleaned or not ?) + (1500 lux or dark ?) UP TO DAY 10 UP TO DAY 20</small>	Clean (functional swimbladder 80-100%)
• Under paraffin no functional swimbladder whatever the lighting condition : water surface must be cleaned to allow swimbladder inflation by air gulping. • Under 1500 lux functional swimbladder = 10% even with cleaned surface : bright intensity is noxious : larvae have a negative phototaxis. No influence of food quality, photoperiod or tank colour on swimbladder inflation.		

FOOD



SURVIVAL RATE : 50% (mini 35 - maxi 65)

SURVIVAL RATE : 25% (mini 10 - maxi 40)

NURSERY

SEA BASS SEA BREAM

60 days	PERIOD	70 days
10-15 larvae per liter	INITIAL DENSITY	10 larvae per liter
10 mg / 1 g	INITIAL / FINAL WEIGHT	5 mg / 1 g
7 mg per liter	OXYGEN LEVEL	7 mg per liter
20-22°C	REARING WATER TEMPERATURE	20-22°C
Surface	WATER ARRIVAL	Surface
30 → 100% per hour	WATER EXCHANGE	30 → 100% per hour
<small>Closed recirculating water system providing "clear" sea water (mean values of NH4 = 0.2 - N.NO2 = 0.3)</small>		
pellets (5-10% biomass per day)	FOOD	pellets (5-10% biomass per day)

SURVIVAL RATE : 80% (mini 70 - maxi 85)

SURVIVAL RATE : 90% (mini 80 - maxi 95)