RESULTS

► A total of 219 juvenile cuttlefish (one month old), weighing on average 1.40 ± 0.11g were used. Two densities of 16 and 75 cuttlefish m⁻² were tested with 3 replicates each. In the first experiment, dead cuttlefish were replaced by similar weight ones, and in the second part of the experiment, no dead cuttlefish were replaced, to determine the effect of density on mortality. All cuttlefish in every replicates were weighed every two weeks, until start of egg laying. Cuttlefish were fed live grass shrimp (Palaemonetes varians), almost ad libitum. Data collected was used to determine mean instantaneous growth rate (IGR), feeding rate (FR), food conversion (FC), mean cumulative mortality and biomass index (BI) according to Domingues et al. (2001).

► Eggs were collected on a daily basis and one third of them were weighed every day. Fecundity (eggs female⁻¹) and relation between female and egg sizes were determined. 9 replicates of 100 eggs each were used in separate baskets, for each density, to determine fertility (hatching percentage).

CONCLUSIONS

► Cuttlefish cultured at the lower density grew larger (137 ± 21.6g) than those cultured at the higher density (91.8 ± 12.3g). It is likely that bottom areas, besides temperature, have an important effect on growth obtained. In fact, Sykes et al. (2003) indicates that bottom areas play a major role in density studies for this species, which is bottom oriented. This could explain the considerably larger growth rates obtained here, at similar temperatures, compared to Forsythe et al. (2002).

► Results obtained for female fecundity and fertility indicate that egg quality by females cultured at the lower density was almost half of the ones cultured at high density (hatching rate for the high culture density was higher than almost all generations cultured in our laboratory until the present (Domingues et al., 2001, 2002) or the ones reported by Forsythe et al. (1994).

► Results from this experiment indicate that growth is directly related to density. Culture densities up to 4 Kg m⁻² seem to be adequate to grow this species, and possibly higher biomasses can be used. Nevertheless, lower culture densities should be used to optimize reproductive potential. The correct balance of males and females in the tanks should be further studied in order to optimize fertility, and improve reproductive potential as well.

ACKNOWLEDGEMENTS

The authors which to thank the Fundação para a Ciência e a Tecnologia from the Portuguese government, and the Agência de Inovação (project AQUASEP) for the financial support for this research.

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