

# Suspended culture of *Ostrea edulis* in the Calich lagoon (North western Sardinia, Italy): preliminary results

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## ABSTRACT

Suspended culture is a widespread farming method used for many bivalve species such as mussels, oysters and scallops. In the Mediterranean, this technique is mainly practised in lagoons or in sheltered coastal areas using floating lines from which molluscs are suspended in several ways. In this study, the European flat oyster (*Ostrea edulis* Linné, 1758) was grown in suspended lantern nets in the Calich lagoon (Sardinia, Mediterranean Sea) from March 2004 to March 2005. Two distinct groups of 6 lanterns each were hung to longline ropes near the mouth (station 1) and in the central portion of the lagoon (station 2). In each lantern (diameter=50cm; height=30cm), 90 *O. edulis* specimens were grown and, in order to ensure good water circulation inside the lantern net, fouling organisms were removed every month. Overall mortality, shell length (anterior-posterior axis), shell width (maximum distance on the lateral axis, between both valves of the closed shell) and total wet weight of a 180 specimen oyster sample (30 from each lantern) were recorded every 2 months at each site. In addition, water temperature, salinity, dissolved oxygen, and pH were monitored monthly by means of a multi-parametric probe at both sites (between 10a.m. and 12p.m.). One-way ANOVA was used to test for differences in oyster final mean morphometric characters recorded at the 2 growing stations. Chi-square test (with Yates correction for continuity) was performed to compare survival rates at the end of the trial. From an initial mean shell length of 49.5±4.6mm, *O. edulis* growth rate showed a similar trend at both the stations. Nevertheless, ANOVA detected significant differences ( $F=7.10$ ;  $p<0.01$ ) in final mean oyster length values (83.7±6.5mm at station 1 vs 81.7±7.6mm at station 2). Significant differences ( $F=9.74$ ;  $p<0.01$ ) were also found in final mean oyster width (28.4±3.1mm at station 1 vs 27.5±2.8mm at station 2) and weight ( $F=4.00$ ;  $p<0.05$ ) values (91.4±16.7g at station 1 vs 87.7±18.3g at station 2). Moreover, chi-square test revealed a significantly different survival rate ( $\chi^2=10.04$ ;  $p<0.01$ ) between the 2 groups (57.4% at station 1 vs 47.6% at station 2). Water temperature, salinity, dissolved oxygen, and pH monthly values recorded at the 2 growing stations were almost identical. Thus, the observed differences in oyster growth and survival seemed not to be due to the hydrological variables considered. Instead, they could probably be related to mechanical and chemical effects of water renewal by coastal waters, which may have led to different seasonal seston food supplies at the 2 sites. The suspended culture of the European flat oyster described in this paper can increase the mollusc production of the Calich lagoon by growing a valuable bivalve species which is naturally scarce in this biotope. In fact, our preliminary results showed good survival and growth rates of *O. edulis* especially near the mouth of the lagoon. Furthermore, this farming technique could be a possible source of economic benefits for local fishermen and, above all, a low impact aquacultural activity compatible with the environment.