



Ruditapes decussatus LARVAL DEVELOPMENT IN FLAT BASE AND CONICAL BASE STOCKING TANKS

J. López¹, J.F. Carrasco², C.Rodríguez¹ and S. de la Uz¹

¹Centro de Experimentación Pesquera, C/ El Muelle s/n, 33760 Castropol, Principado de Asturias, jacobolr@yahoo.es

² Centro de Experimentación Pesquera, Av. Príncipe de Asturias, 33212 Gijón, Principado de Asturias

Introduction

The grooved carpet shell, *Ruditapes decussatus* (Linnaeus, 1758), is one of the most prized species of bivalve mollusks and one of the less abundant. Its production is limited by the shortage of seed and their cultivation difficulty. Although biological knowledge and technology allow seed production in hatcheries, it is essential to improve certain aspects of this technology to increase production and lower costs (Pérez Camacho *et al*, 2002). Among these aspects susceptible to improvements, the type of tank used for larval culture could occupy a prominent place. This is a variable rarely taken into account but it could be decisive in the outcome success at this stage of the process.

Experience of larval culture was performed in two different types of tanks. Larval development was compared between conical fiberglass tanks, usually used, and cylindrical tanks with high density polyethylene flat bottom, both with 50l of capacity.

Materials and methods

The breeders were caught in the Eo estuary (Asturias, Spain) and conditioned to bring forward sexual maturity. Spawning was induced by thermal shock and a controlled fertilization was achieved. After 24 hours of embryogenesis well developed larvae were selected to start the experience. We use two types of tanks for the experience. A tapered tank, fiberglass and central drained, these being the most common for these types of crops, and a cylindrical flat based tank, made of expanded polyethylene and without draining, so the emptying was made by siphoning. Larval culture was performed using the method usually used in the hatchery of the Fishing Experimentation Center: initial larval density of 5larvae.ml⁻¹ with the temperature maintained at 20±0.5°C with 300W power heaters. The salinity was 33.5±0.5‰. Slight aeration was provided by a glass rod. The water was filtered through 20, 10 and 5µm cartridge filters and sterilized using ultraviolet light. The water was changed every other day. The food dose was 80cells.µl⁻¹ per day: 30 *Isocrysis galbana*, 30 *Chaetoceros gracilis* and 20 *Tetraselmis suecica* (Lopez *et al*, 2011). The food was supplied in flasks (6l of capacity).

Results

After 25 days of culture larvae were in the pediveliger state of, with fully formed foot and prepared for settlement, so that the larval period was considered complete. The results of survival and length achieved at this stage are shown in Table I:
Table I: Size and survival of larvae according to the tank housing.

	Fiberglass Conical Tank	Polyethylene Flat Tank
Size (µm±sd)	239.5±9.7	241.5±9.5
Survival (%)	44	90

he larval polyethylene flat base culture tank provides significantly better results than the fiberglass conical tank. The survival rate of 90% (very high for this species) versus 44% (value considered normal for this species) along with a growth 2µm above the average, make these type of tank advisable to carry out larval cultures.

Discussion and conclusion

The differences in larval growth between tanks may be due to several reasons: design, material and management of tanks. The conical base favors concentration of larvae at a point where the air is being supplied, which may cause them stress. In tanks with flat base this does not happen. Fiberglass has porosities that hinder cleaning and favors bacterial settlement can cause significant mortality. The smooth surface of polyethylene tanks is easy to clean, ensuring the highest aseptic culture. The central drain used to empty the fiber tanks can cause damage to the larvae because they may be hit against the sieve when the water flow is high. Polyethylene tanks emptied by siphoning produce a lower flow, causing less stress on the larvae that are retained on the sieve. In conclusion, in small-scale larval culture, flat base polyethylene tanks offer notoriously higher outcomes in larval culture than tapered fiber tanks. However, the use of this type of tank at industrial scale may be difficult. It would be necessary to determine whether these good results are maintained and they are confirmed as a more advantageous alternative.

References

López, J.; F.C. Carrasco y C. Rodríguez. 2011. Tasa de ingestión y desarrollo de las larvas de almeja fina (*Ruditapes decussatus*) en función de la concentración de alimento suministrado. *XIII Congreso Nacional de Acuicultura*. Castelldefels, Barcelona.
Pérez Camacho, M. Delgado y M. Albentosa, 2002. Influencia del tamaño y la concentración de alimento sobre las tasas de aclaramiento e ingestión de la almeja *Ruditapes decussatus* (Linnaeus, 1758). *Boletín Instituto Español de Oceanografía*, 18 (1-4). 2002: 315-320.

