

BMP for broodstock supplier

Good quality broodstock is the necessary condition for the success of a postlarvae production cycle. While there have been completely depend on the provision of wild fishing, it should be very careful to handle during transportation and and trade progress to keep broodstock with the minimum of stress, damage and infection disease pathogens

1) General guidelines:

- Minimise handling of broodstock and maintain saturated oxygen levels
- Sea water used in whole progress of transportation and acclimation should be filtered and sterilised through UV light or ozone machine
- Individual broodstock holding or small group if possible. This should be done also during transportation, even for transportation for short distances
- The all of necessary equipments (tanks, buckets, air line & stone, nets...) have to be disinfected carefully before and after each use. PE bags is used one time only
- Keep the record of the progress (including the source of the broodstock).
- Keep aeration continuously to ensure a stable oxygen level of over 5ppm.



2) Broodstock Selection:

- Size : Although difficult, wherever possible, female broodstock should have a total length of >28 cm and weigh in excess of 200 g
- Gross examination: healthiness, good and bright color (not red or with black spots), clean gill and body, intact appendages and without any damage.



3) Transportation (only applied for long-time transportation)

- Do not feed the broodstock for 12 hours prior to shipment and only transport the hard shell ones, place rubber tube over the rostrum of the shrimp
- Transport at the cooler time of day and minimise transportation times as much as possible
- Density: a shrimp per bag or maximum is 2 ones per bag but (< 500g/ 10litres) in case they were checked free of disease
- The used transportation water is added 10ppm EDTA (for heavy metals) and 1g/l activated charcoal (to control NH_3 , NO_2) and 10ppm tris HCL buffer (to stabilize pH)
- The double layer PE bags is in polystyrene box and maintain at 18-22°C for transport time > 6 hours, refilling oxygen during shipping if transport time > 24 hours, avoid directly sunlight at all times



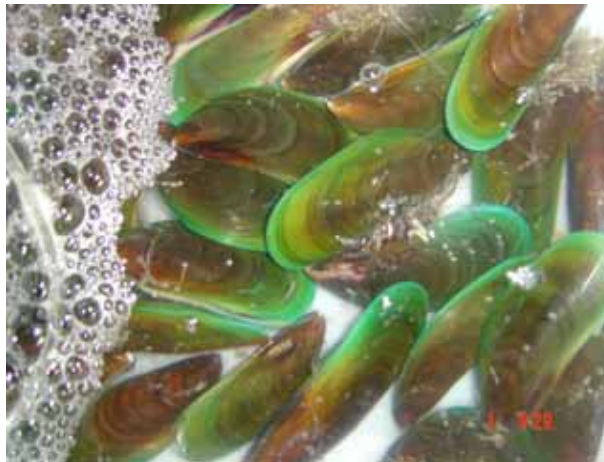
4) Acclimation

- Separate broodstock holding area from the other unit of hatchery, in the broodstock facility try to incorporate a quarantine unit in which new animals are held until tested for pathogens
- Prepare the quarantine tanks one day before arrival to match transport condition.
- Float closed bags in the tanks for 30 min, then open the bags and aerate and slowly fill the bags with water from the tank for 30-60min
- Gently take each broodstock from the bag to bath in 100ppm povidine iodine for 1 min, then put into the tank
- Offer high quality feed to demand immediately (only necessary for long-time transportation)
- Gradually increase the temperature in receiving tanks to match ambience at a rate of <2°C/hour

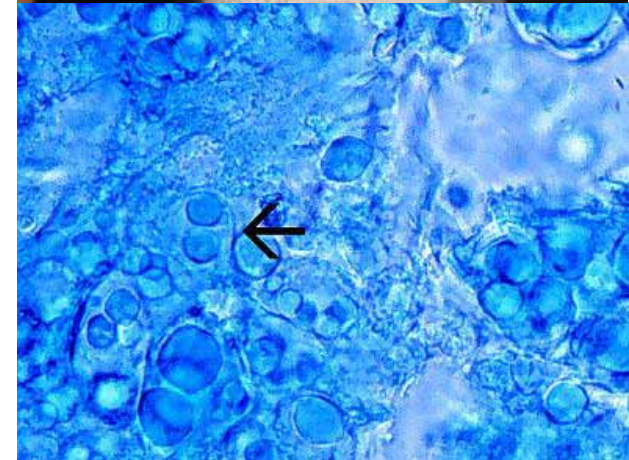
5) Broodstock holding

- Keep 2-3 ones/m² if they are free of disease in case of impossible to individual broodstock holding
- Water exchange rate is 200-300%/day by flow-through and then add 10-30 ppm EDTA

- Maintain water parameters at desired conditions : temperature at 27-29°C, salinity at : 30-35ppt, and NH_3 & $\text{NO}_2 < 1\text{ppm}$
- Feed shrimp with fresh and high quality feed including polychaete, squid, bivalve molluscs, enriched adult artemia (with vitamine mixture A,C,D and astaxanthin (or paprika) and dry broodstock diets. Hermit crabs are the best feed of broodstock but they are also high risk of transferring pathogens. The amount of feed is 20-25% weight shrimp and is divided into 6-8 times per day. Eliminate uneaten feed before new feeding
- Frequently monitor broodstock health status, and treat in an hour aerated bath treatment with 30-50 ppm formalin immediately when fouling or black gills are found
- Immediately discard (or separate) any shrimp has serious black melanized lesions on the body, large areas of white muscle or bright red body
- If shrimp begin dying after a few arrival day, it may be useful to bath them in 10 ppm of 10ppm oxytetracycline or feeding diets containing 1-2,000ppm oxy-tetracycline or probiotics in 5-7 days continuously.



A piece of pleopod (or telson) was preserved in alcohol 90° (should not use color alcohol) to check WSSV (the cutting place should be disinfected by povidone iodine liquide); and broodstock faeces in sterilised sea water were used to check MBV(and HPV, BMNV either)



6) Further testing

At present, it's extremely difficult to have broodstock tested before purchasing. However, broodstock free from the pathogens (at least MBV and WSSV) is important to ensure good quality seeds produced.

Following methods can be implemented: