

BMPs for PL selection and transportation

1. General guidelines

1.1. Advices should be given to farmers by responsibility PL supplier

- Follow DOFI regulation on culture season
- Stocking PL where the preparations of pond is in good condition
- How to acclimate PL at grow-out farms

1.2. Things should be done

- Try to PL from hatcheries following better practices (i.e. produce the high quality of PL while reducing the use of chemicals)
- Where possible, check the seed during the hatchery production cycle
- Packaging separation for each PL tank
- All of necessary equipments for packaging (nets, airlines & stones, buckets, bowls...) have to be individual used for each tank and disinfected carefully before & after each use (by 30ppm of chlorine and then drying), disinfecting the means of transportation (boat, car, cano, buckets) as well
- PE bags is used for one time only
- Sea water used in whole progress should be filtered and sterilized
- Keep the record of the progress (including the source of PL)



2. PL select

There are three respects should be fulfilled

2.1. *Good broodstock* (it's prerequisite of high quality PL, specially for intensive farming)

- Although difficult, the size if possible should bigger than 200 g
- Spawning time is the 4th backward

2.2. Healthy: implement the checks of gross examination, stress test and (if possible) lab testing for vibrio and PCR sreening

- Gross examination : high High survival rate and high growth ratein PL stages, swimming activity, good colour (clear or dark, not red/white), Gut & Stomach: full and dark, intact appendages no fouling, muscle/gut ratio at the 6th abdominal segment is 3/1

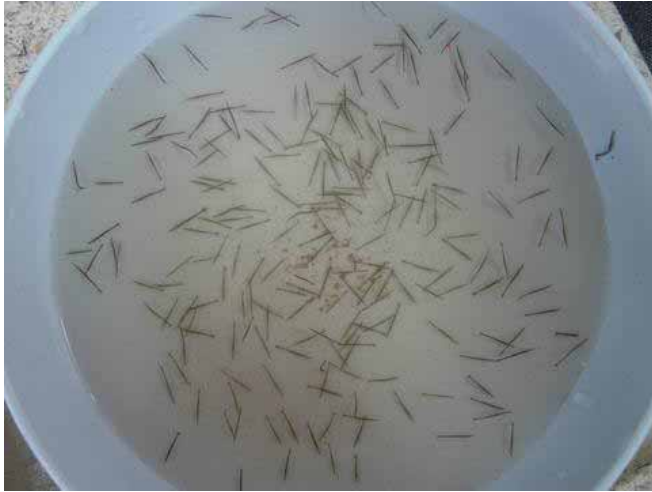
If possible, use a microscope to examine the PL more closely.



- Stress test : either salinity or Formalin stress, however, only applying 2-3 days before buying (or > PL₁₀)

+ Salinity stress test: reduce salinity to 50% of the tank water salinity, it is OK if after 3 hours the survival rate is 90% and over (the real healthy PL batch is able to pass the salinity test at nearly 0 ppt)

+ Formalin stress test: exposuring the PL in the 200ppm formalin solution , the PL batch is pass if the survival rate is from 90% onward after an hour



- Lab testing (where possible)
- Vibrio examination: a random sample of 100 PL from the tank sent to competent lab
- Virus testing: a sample of 150 PL (preferably the weakest out of a batch of salinity stressed shrimp) are taken from the tank to check at least WSSV and MBV

2.3. Size of PL

- The same size distribution of the PL batch
- PL batch reach PL₁₃₋₁₅ stage
- PL₁₅ batch are 12 mm in length

3. PL package

- Fill bags with Oxygen
- The difference of salinity between PL tank and arrival should not exceed 5ppt by adding fresh water to change salinity at < 3ppt/hour from 30-20 ppt, < 1ppt/hour from 20-10ppt and < 0.ppt/hour from 10-5ppt
- Salinity adjustment should be done 1-2 days before transportation and only from PL₁₀ onward
- Stock 1.000-2.000 PL/litre (depend on PL size and transportation time) or a maximum of 2.5g/litre

- Water use in PL transportation should be same salinity as in the larvae tank and chilled to desired temperature and added 1g/l of activated carbon to reduce NH₃ & NO₂ and 100mg/litre of tris HCl buffer to stabilize pH and 10mg/litre of EDTA as well as live disinfected and washed artemia nauplii at the rate of 15-20 /PL for each 4 hours of transportation.

4. PL transportation

- Should be done at night and/or cooler time of day
- Temperature reduction should not do for 1-2 hours of transportation
- Maintaining at 25-28°C for 2-6 hours of transportation, 20-25°C for 6-12 hours of transportation, and 18-23°C for more than 12 hours of transportation
- Avoiding directly sunlight on the PL bags



5. Acclimation

- No mixing of PL batches
- Floating closed PL bags in arrival tanks/ponds for at least 30 min, then opening the bags and slowly fill the bags with water from the tanks/ponds for 30-60 min and then sinking the bags to one side to allow PL releasing themselves out of the bags

Try to follow step 3 and 4 for packaging and transportation also when delivering PL to be stocked into the farm