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Fry quality criteria

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Fry quality criteria

How do growers select healthy larvae to stock in ponds? This is important as growth and survival depend on the quality of the larvae.

For tiger shrimp

In the Philippines, a standardized fry quality criteria is used by the industry (figure below). The criteria is developed by DOLE Philippines and has been successfully correlated to pond performance.

Other practical methods of choosing good quality larvae:

- Choose larvae that are not reared in very high temperatures. Larvae is normally reared at 28-30°C for 26 days but using 34°C can shorten rearing to 22 days. This practice is advantageous only to hatchery operators -- faster turnover and higher production. However, larvae grow and survive poorly in ponds.

Fry Analysis Summary Report

C

Client: _____

Source: _____ Tank no.: _____ Pop.: _____

PL age: _____ Date received: _____

SAMPLES	Hepato-pancreas		BODY LENGTH	GUT			MUSCLES			GILL			ROSTRUM		APPENDAGES						
	MBV															RN+N		FBI		PI	
	D-INF	Rating		SHG	GN	Rating	MN	GMR	Rating	FBI/PI	N	Rating	RS	RN	N	RN+N/A	Rating	Degree	Rating	Degree	Rating
TOTAL	= ____		Ave.: ___ A/N = __	= ____			= ____			= ____							= __		= __		= __
																				Ave.: ____	
%	x 30%= ___		x20%= __	x 15% = ___			x 10% = ___			x 15% = ____								x 10% = ____			

Legend: D-INF, degree of MBV infection; SHG, swollen hind gut; GN, gut necrosis; MN, muscle necrosis; GMR, gut-to-muscle ratio; FBI, filamentous bacterial infestation; PI, protozoan infestation; N, necrosis; RS, rostral spine; RN, rostral necrosis; N/A, necrosis per animal.

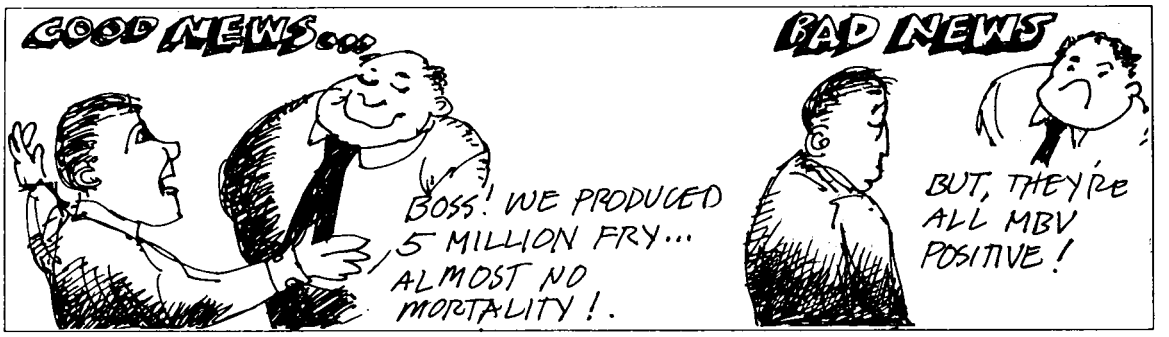
Total body length (tip of rostrum to tip of telson) = (actual body length - 6)/(theoretical body length - 6) x 100

TOTAL SCORE: _____

Remarks: _____

Analyzed: ___ Noted: ___

Reference: E Lamera. 1993. *The shrimp hatchery industry in the Philippines.* p. 83-87. In: CT Villegas, MT Castaños, RB Lacierda (eds). Proceedings of the **Aquaculture Workshop for SEAFDEC/AQD Training Alumni**; 8-11 September 1992; Iloilo Philippines. SEAFDEC/AQD, Iloilo, Philippines.



- Choose larvae that have not been excessively treated with chemicals, drugs, or growth hormones. These substances reduce the natural defenses of larvae to diseases. Although these chemicals have no apparent adverse effect while in the hatchery, shrimp larvae often become weak after stocking in ponds. The larvae are unable to adjust to changes in the environment and die.
- Get larvae from healthy spawners and from the first two batches of eggs after eyestalk ablation.
- Choose larvae that can withstand stress tests. Commonly used are salinity shock, temperature shock, and exposure to 100 ppm formalin (37% aqueous solution). Stress tests are performed in the hatchery, not in the pond.

  The salinity stress test exposes larvae to a salinity drop of 15-20 ppt. No mortalities should occur over 2 hours and PL should recover and resume feeding within 24 hours. This has been used on commercial scale in Ecuador, Philippines, and Thailand.

  In the temperature stress test, larvae are introduced to 22-24°C for 5-10 minutes. No deaths should occur and larvae should quickly recover. Larvae are normally reared at 28-32°C.

  PL can be subjected to 100 ppm formalin for 2 hours. Strong, healthy PL will survive.

References: ***C.P. Shrimp News***, Vol. 1, No. 2, 1993; ***AustAsia Aquaculture*** 8 (1), Jan-Feb 1994.

For marine fishes

Like in shrimps, a salinity stress test can evaluate the physiological condition of fish larvae. It may be assumed that weak fish will not survive in identical extreme conditions as healthy and more tolerant fish can. The differences in condition among larvae will be reflected in extended or reduced survival proportional to the capacity of larvae to bear stress. In this way, the survival time under stress of a small group of fish can be considered a good criterion for the actual physiological state of the fish population.

The stress test for *Lates calcarifer* can be made by immediate transfer of 25-day old larvae to 65 ppt from its rearing water of about 32 ppt. Mortality is monitored every 5 min. A "stress index" is obtained by adding the cummulative mortalities in the 5-min time intervals. This index is more useful than the mortality sequence -- (1) onset of mortality, (2) mortality rate, and (3) total mortality -- because it can reflect the condition of the fish by condensing the three parameters into one. The index can hence be used to test differences among different groups of larvae.

For *Siganus guttatus*, 30-day old larvae are subjected to a salinity of 70 ppt.

If the stress test is applied in nutritional studies, it seems that *Lates* needs fatty acids to combat stress. Additional fatty acids can be sourced from the *Artemia* food enriched with highly unsaturated fatty acids (HUFA). *Siganus*, however, do not benefit much from feeding HUFA-enriched *Artemia* if stressed.

Reference: P Dhert, P Lavens, and P Sorgeloos. 1992. *A simple test for quality evaluation of cultured fry of marine fish.* **Med. Fac. Landbouww. Univ. Gent** 57/4b.