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## Advice on Aquatic Animal Health Care

# VISIT TO INTENSIVE VANNAMEI FARMS IN PERU

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On my first visit to Peru two years ago, only semi-intensive shrimp farming systems had been developed which were generally stocked at 5-15 PL/m<sup>2</sup>. When the severe outbreak of whitespot disease occurred, water and pond bottom qualities could not be efficiently controlled or managed due to the large size of shrimp ponds (1.6-8.0 ha). Recently, I had the opportunity to visit Peru again and I visited some shrimp farms at Tumbes on the border with Ecuador. I was surprised to see that over 80% of shrimp ponds were empty. These farmers usually stop their operation during this time of year (May 2002) due to the onset of the cold season, which causes high mortality by whitespot disease outbreak. This further confirms that severe outbreaks of whitespot always happen during the sudden drop of temperature in every country. I was very surprised to see that intensive ponds have been developed mostly in large farms (over 48 ha). Areas of 8-32 ha in these large farms have been converted to several small ponds (0.6-1.0 ha) with plastic lining. Groundwater from 80-100 m depth is used as the water supply to prevent the entry of viral pathogens into the pond.

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From interviews with farmers, I found that the traditional practices with semi-intensive culture in large ponds are now entirely impossible. Therefore many farmers have developed intensive ponds with plastic linings in sandy soil area to prevent seepage. This makes the total investment cost per 1 ha pond (including pond construction, aeration, water pumps, electricity and water supply system) up to US\$ 47,600. Therefore, only high stocking density (60-80 PL/m<sup>2</sup>) is feasible to support such a high capital investment. Last year, most crops were successful due to less temperature variation during the change of season. Some farms could produce 14 ton/ha of 15-18 gm size shrimp with 100-110 days culture period. This is more feasible than the production of 0.8-1.0 ton/ha in traditional system. However, most farmers have had to stop their operation since the recent price crisis early

this year, which also affected Thai farmers. Another reason is that most crops early this year failed due to the whitespot outbreak caused by an unusual low temperature (22-23C).

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The main causes for this whitespot disease outbreak were:

- Infected PL imported from Ecuador, which have higher degree of infection than PL from Columbia. Heavy mortality occurred within a month for ponds stocked with local wild fry, which have been fully contaminated.
- Decrease in water temperature and cloudy sky cause the collapse of phytoplankton, which always leads to oxygen depletion, later causing disease infection due to shrimp stress.
- During plankton collapse, pond water could not be changed in order to improve water quality and to remove the dead plankton due to the lack of reservoirs. The accumulation of dead plankton and left over feed will cause the release of toxic ammonia and hydrogen sulfide gases, which also cause shrimp mortality.
- Poor feed quality, which has less stability in water, causes accumulation of feed waste.

These factors are similar to those contributing to the outbreak of whitespot in *P. monodon* in Asia. Therefore, *P. vannamei* culture is not easy although it has less disease problems as some farmers expected. Although ponds were stocked with PCR negative PL imported from Columbia, which were 1.5 time more expensive than normal PL, whitespot outbreak still occurred during the sudden temperature drop. Therefore, farmers should be careful about the selection of high health PL and adopt efficient farm management practices to reduce water quality problems and toxic gases. Production cost, particularly high seed cost, should be also considered when production yields are low.