THE UNIVERSITY OF SYDNEY

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Pacific Oyster Mortality Syndrome (POMS): Fact Sheet 1

Water treatments for hatcheries

Pacific Oyster Mortality Syndrome (POMS) is a serious disease of Pacific oysters that is caused by infection with *Ostreid herpesvirus 1* (OsHV-1). Research supported by FRDC, Oysters Tasmania and the Seafood CRC at the University of Sydney revealed that this virus can survive for 2 days in seawater[1] however, it is associated with particles[2,3] that can be removed from seawater by filtration or sedimentation/ageing of water[4]. This provides an opportunity for hatcheries to protect valuable stock. Ageing or filtration of seawater does not completely prevent exposure of oysters to the virus, but the level of exposure is reduced below the dose needed to cause the disease and mortality is thereby prevented. Recommendations have been validated only for spat[4]; recirculation advice provided below is generic.

Ageing and sedimentation of seawater

For incoming seawater, remove solid wastes by settling or using a coarse filter such as a sand filter.

Follow this by storage of seawater for at least 48 hours prior to use in a reservoir, which can range from an above ground domestic water tank to an in ground pond. Research data were obtained using plastic rainwater tanks and for this reason it is recommended that earthen ponds be covered with a plastic liner to minimise sediments. It is unknown whether ageing of the seawater, or sedimentation of the seawater, or both, result in removal of infectivity. For this reason the seawater should not be aerated or circulated during the 48 hour holding period.

Filtration of seawater

For incoming seawater, remove solid wastes by settling or using a coarse filter such as a sand filter.

Use an in-line filter, or series of filters, with the final filter being rated to 5 microns. Paper or fibre cartridge filters were used during the research trials[4]. Filters must be maintained in good order by regular cleaning and replacement. Filter pore sizes are as stated by their manufacturers.

Recirculation of seawater

Use seawater prepared by ageing or filtration as described above. Valuable stock may be kept under recirculation conditions with biofiltration using standard methods. This may be suitable for keeping valuable stock out of infected estuarine water over risk periods lasting for weeks to months. Feeding is not required for survival if oysters are in good condition when they enter the facility. Alternatively oysters can be fed to maintenance levels provided that biofilters have sufficient capacity to process nitrogenous wastes.

[1]Hick P, Evans O, Looi R, English, C, Whittington RJ 2016. Stability of Ostreid herpesvirus-1 (OsHV-1) and assessment of disinfection of seawater and oyster tissues using a bioassay. Aquaculture. 450, 412 – 421.

[2]Paul-Pont, I., Dhand, N.K., Whittington, R.J., 2013. Spatial distribution of mortality in Pacific oysters *Crassostrea gigas*: reflection on mechanisms of OsHV-1 transmission. Diseases of Aquatic Organisms 105, 127-138.

[3]Evans, O., Paul-Pont, I., Hick, P., Whittington, R.J., 2014. A simple centrifugation method for improving the detection of *Ostreid herpesvirus-1* (*OsHV-1*) in natural seawater samples with an assessment of the potential for particulate attachment. Journal of Virological Methods 210, 59-66.

[4]Whittington, R., Hick, P., Evans, O., Rubio, A., Alford, B., Dhand, N., Paul-Pont, I., 2015. Protection of Pacific oyster (*Crassostrea gigas*) spat from mortality due to *Ostreid herpesvirus-1* (OsHV-1 µVar) using simple treatments of incoming seawater in land-based upwellers. Aquaculture 437, 10-20.

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