

WHAT: Comparing different growing techniques to achieve marketable shell shapes in fast-growing Sydney rock oysters (SRO)

WHO & FUNDING: Select Oyster Company (SOCo); University of Newcastle; Avondale College of Higher Education. Funded by the Australian Government Department of Agriculture. Special thanks to Bruce Alford & Keith Duggan for their support.

BACKGROUND: The Sydney rock oyster breeding program has made significant gains in oyster growth & disease resistance since it began in 1990. Two lines of mass selected SRO are commercially available: 5th-generation B2 and WMR lines, selected for fast growth & disease resistance. In some cases these can grow up to 30% faster than non-selected SRO, reaching market in 18 months. Some farmers have noticed differences in shell shape between selected and non-selected stock, noting selected lines growing flatter than non-selected wild oysters.

In the study, 4 month old B2 oysters were deployed & grown for 9 months on farms in the Hawkesbury River & Georges River. Oysters were grown in either trays, Stanway cylinders or floating baskets to test the effects of emersion & rumbling on shell shape. We also wanted to test if shell shape could be changed mid-cycle, so after six months we moved a set of oysters from their original units to both of the other two options.

To assess shape, we used an algorithm developed by NSW DPI that applies a score based on a shell height, width, depth ratio. A ratio closest to 3:2:1 is considered the most marketable shape. We also measured meat weight & shell imperfections, recognising that these are also important market traits.

WHAT WAS FOUND: Results show that estuarine-specific factors affected oyster growth characteristics. For example, our best shaped oysters in the Georges River were those that remained in cylinders throughout, while in the Hawkesbury River, oysters moved from trays to cylinders had the best shape. Oysters that started in cylinders, then moved to trays or baskets had comparably the worst shapes in both estuaries. But despite differences between estuaries, generally, oysters that were finished in cylinders had better shapes, fewer imperfections and higher meat to overall weight than oysters that were finished in other methods. These results indicate that shape can be improved, or ‘corrected’ mid-growth cycle by moving oysters into cylinders.

However, shell shape came at a cost of shell size. Oysters that were finished in cylinders were the smallest in terms of shell height. Rumbling appeared to play a key role in shell shape and this study is the first of its kind to confirm and quantify differences in motion between trays, cylinders and baskets using HOBOT Pendant® G Data Loggers. As expected, oysters in cylinders experienced significantly more movement than oysters in trays and baskets. But our results suggest that other environmental factors impact shape, therefore disentangling the interacting impacts of motion and environmental factors on shell shape is what we wish to explore next. We also want to find if there’s a critical level of motion that’s ideal for good shell shape.

HOW WILL THIS HELP THE OYSTER INDUSTRY: These results are valuable for farmers who wish to effectively utilize their dynamic lease environments to target better shaped oysters or larger oysters for example. Such experimental techniques will also prove important in future studies which apply to the emerging and imminent commercial family breeding program.

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