

NEWSLETTER

AUSTRALIAN SEAFOOD INDUSTRIES

WINTER 2017

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ASI is on track with the CRC-P milestones, including producing 19 oyster families at SARDI as a part of the South Australia node of our breeding program and deploying them in Cowell and Smoky Bay.

ASI IS DELIVERING BUT LEVY SITUATION NEEDS TO IMPROVE

By Len Stephens ASI CHAIRMAN

This month has seen ASI once again deliver on industry's expectations. Detailed information about the level of POMS resistance in the next generation of YC15 oyster families has been provided to hatcheries and arrangements have been made to supply each hatchery with the brood stock they require. The best families have POMS resistance of more than 90 per cent as 1 year old animals. You can read a lot more about this in the article by Peter Kube later in this edition.

In June, a new method of collecting the ASI spat levy will commence based on new supply agreements signed with all the hatcheries. After six months of negotiation, the hatcheries have now agreed to invoice their customers on behalf of ASI. This will make the system more efficient, will save collection costs and clears up any doubt about the legality of the ASI charges. During the negotiations it became obvious that a system based on mutual respect and trust between ASI and the hatcheries would work better than rigid legal contracts. The agreement we have with each of the hatcheries commits them to collecting the funds that are needed to keep ASI afloat. But it is the responsibility of the whole industry to ensure the system works.

The Industry Technical Reference Group that guides ASI's breeding strategy met last month in Adelaide. Attendees from each state were treated to presentations by Matt Cunningham and Peter Kube that explained the continually increasing resistance to POMS in each generation of ASI oysters.



There was active discussion on a range of issues around the breeding program such as spat shortages in South Australia, oyster mortalities, translocation of oysters to NSW, and progress of the new CRC-P program resulting in a series of recommendations by ITRG which have been adopted by the Board.

The lack of supply of spat in SA is a major concern to all of us, and we applaud the efforts being made by commercial hatcheries and SARDI to fill the gap. Nineteen ASI oyster families with good POMS resistance were bred by SARDI over the summer and the resulting broodstock will be released to hatcheries early next year. SARDI are contracted to breed additional 71 families next year.

Now that the breeding season is over, ASI staff are spending more time on farms checking the progress of family lines. If you have any questions or comments about the performance of ASI stock, I encourage you to get in touch with Matt Cunningham to get the most up to date information.

Dr Len Stephens
Chairman

POMS RESISTANCE CONTINUES TO IMPROVE IN ASI FAMILIES

By Peter Kube CSIRO

The thing that drives any breeding program is the data that comes from family trials – it has been said that the data is the “fuel” that produces genetic gains. I start with this point of trivia because, over the summer of 2016/17, ASI has had the largest set of trials and the best ever period of data generation in my entire experience with the program.

All these data has been for the single purpose of selecting for POMS resistance. To give you the high-level stats for this summer: Five field trials have been conducted over two year classes and in two States; three laboratory challenge trials have been run at EMAI in NSW; and a total of about 60,000 oysters have been measured.

This adds to our pre-existing data set giving a grand total of six year classes; 13 field trials; 395 families; and 170,000 oysters – all measured for POMS resistance. That is a very good and sound basis for resistance breeding.



There have been many learnings from the data collected this summer, combined with all previous data, and still some questions. But for now, let's focus on two main points.

Firstly, and most importantly, the data collected from trials over this summer has again demonstrated that there is a very strong response to POMS resistance breeding, and that resistance continues to accumulate and improve with every year of breeding.

The 2015 year class was tested over three sites, one in NSW and two in Tasmania, and these data has shown that we now have an elite group of families with POMS survival of more than 80% as one year olds. This is shown diagrammatically in Figure 1, where the family performance is shown for each year class from 2011 to 2015. The blue bars are the expected survival for each family, and the increasing height of those blue bars over each year class shows how that resistance accumulates with each year of breeding.

The year class to focus on is 2015. The top families from this year class will be those available for commercial production*.

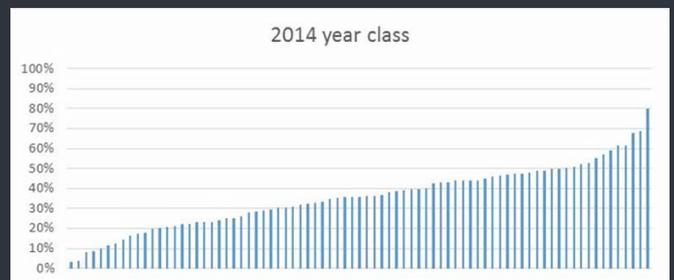
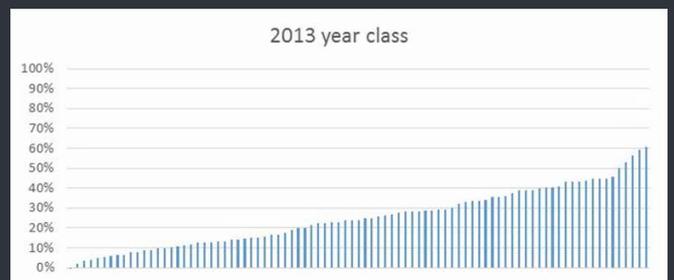
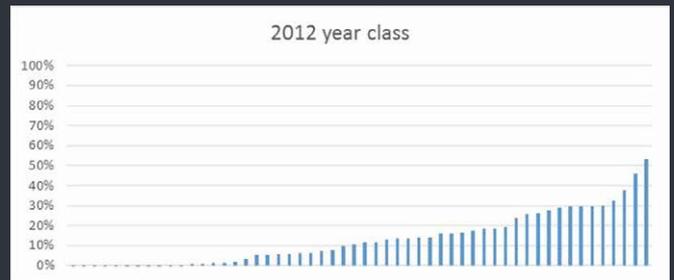
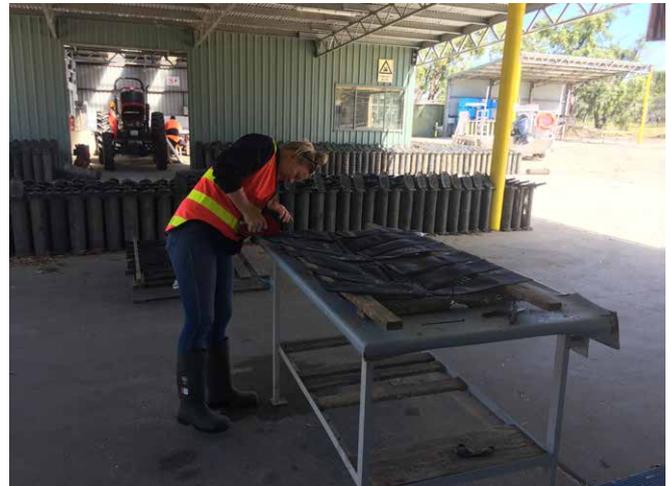


Figure 1: POMS resistance for each ASI family across all year classes. The blue bars are the individual family performance, and the increasing height of those blue bars over each year class shows the accumulation of resistance with each year of breeding.

Another way of demonstrating the accumulation of POMS resistance is the annual genetic trend which is shown in Figure 2. This indicates that, with the present ASI breeding strategy, resistance improves by about 10% per year. Importantly for Tasmania, this increases to at least 15% per year from 2015 due to the ability to breed from survivors of POMS.



The challenge for us is that the mortality rates of spat are still much higher than those for one year old stock. This effect can be seen in Figure 3, which is a bar chart that follows the same format as Figure 1, where each bar is a family from the 2016 year class. The average survival for these trials was 16% and the survival of the best families were 40%, which is much less than we see for one year old stock. We expect to see a much higher survival when these same families are tested as one year old but we will not have that data until late next summer.

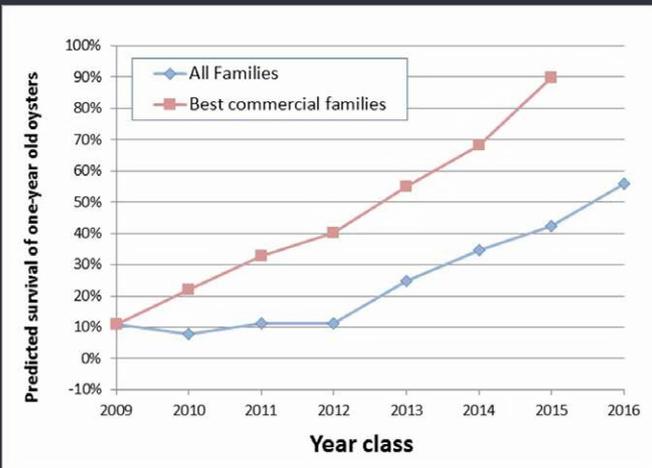


Figure 2: POMS resistance genetic trend. The blue line represents the average performance over all families within a year class for one year old animals. The red line is the performance of the best families which are made available for commercial production*.

A “first” for the summer of 2016/17 has been the success of spat trials, which is the second of my main two points. These trials used the 2016 year class families and were done in Pipeclay Lagoon, Tasmania.

The good news is that we were able to collect POMS resistance data for the 2016 year class families within four months of spawning. That data will prove extremely useful for the next cycle of family production, scheduled for Spring 2017, and for short-listing the next batch of commercial broodstock to be chosen from the 2016 families.

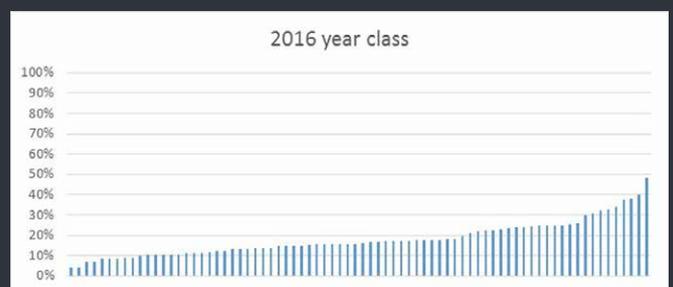


Figure 3: POMS resistance for each ASI family as spat in the 2016 year class. The blue bars are the individual family performance. Spat performance is inherently lower than that of one year old stock (compare to Figure 1).

Clearly we need to start shifting our emphasis to spat survival which will be our priority for coming seasons starting next summer. The spat trials have been harder to manage and we will be looking at ways to make improvements. It is more difficult to get precise measures of family differences in spat because, we suspect, there are many other non-POMS factors influencing mortality. Also 2 - 3 month old spat are difficult and tedious to assess, needing a magnifying glass to pick the dead and live oysters.

Nevertheless, we do have families that survive moderately well as spat, which is an important point of difference when compared to our first spat trials of the 2011 and 2012 year classes. In those early trials, all spat died very rapidly and before we could get data. We are confident that improvements in spat survival have been made and can continue with further selection.

Next summer the work will continue, and the ASI and NSW DPI crews will do another cycle of intensive measurements. The measurement crews may not be looking forward to all those assessments, but we are all looking forward to seeing the new data, and the new improvements that the data will show.

Peter Kube Geneticist CSIRO

* Please check with seed suppliers regarding the availability of any stock.



CRC-P UPDATE

ENHANCING PACIFIC OYSTER BREEDING TO OPTIMISE NATIONAL BENEFIT



The Future Oyster CRC-P is led by ASI, which has three programs; Better Oysters, Healthy Oysters and More Oysters. ASI is directly involved under the Better Oysters program where the target research outcome is accelerating genetic gain in POMS resistant oysters with an average survival of >80% (for diploids at 1-year-old) to be available to all Australian Oyster farmers by 2019.

It allows us to do breeding work in South Australia and undertake research in breeding from Tasmanian survivors. There are 7 objectives within this project and progress has been made, including the upgrade of the IMAS facility to achieve spat production from surviving animals, scoping trials on disinfection techniques (ozonation),

engagement of a consultant to undertake risk assessments and translocation protocols, laboratory challenges at EMAI, data collection on commercially produced ASI families and family YC16 production at SARDI. Whilst still in its early days progress on this project has been good.



SARDI FAMILY LINES HIT THE WATER

The 19 families produced at SARFI last February as a part of the SA breeding node have now been distributed into the field. The families have been sent to both Smoky Bay and Cowell and are performing well. The spat are now to a size that they are able to be sent to Coffin Bay for mortality assessments.

We know that mortality in young spat has been a huge issue in South Australia this year. From what we hear Coffin has been the worst for this. Spat will be sent down in the next couple of weeks and the survival rates will be measured. We will also be challenging these families against POMS in NSW later this year.

As with POMS, breeding for SA survival depends on the quality of the data and due to the generally good survival over the last couple of years it has been difficult to get good data in SA but that may be different this year.



BREEDING SEASON AND STOCK UPDATE

Since January this year, we have set up designed YC16 field trials to collect high quality POMS mortality data. These trials have allowed us to:

- (1) Measure the genetic effect in terms of POMS resistance
- (2) Eliminate any spatial influences
- (3) Fast track the breeding program

Multiple YC16 trials were promptly set up in Pipeclay to get a POMS hit on 2-3-month old animals within the POMS active window.

We were pleased with the results and thank Shellfish Culture for their support on the trials.

The rest of our YC16 stock produced in the IMAS biosecure facility have now been deployed in Pipeclay and Georges River. They've been managed in such a way for maximum growth especially on our top lines. The IMAS hatchery has now been shut down and in preparation for next season.



**FOR MORE
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