Dorset Cleanerfish Ltd – a successful (small) RAS project

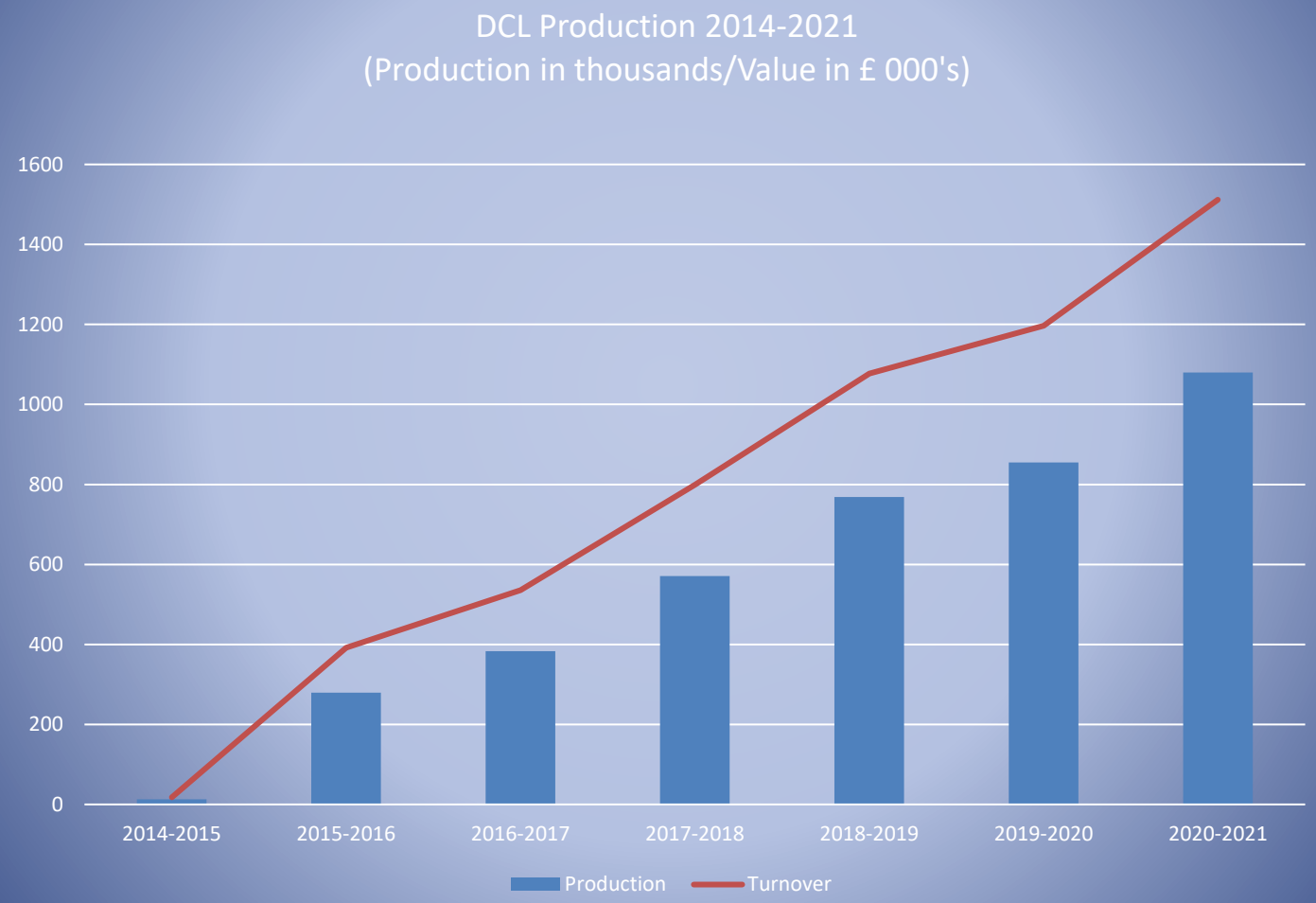
Richard Prickett, director
Dorset Cleanerfish Ltd

Aquaculture Common Issues Group January 26th 2022.

Company history

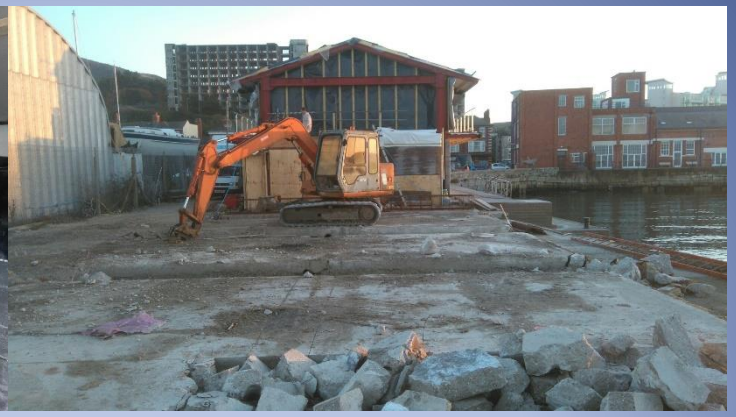
- 2013. Mowi ask Native Marine Centre (NMC) to collect mature lumpfish brood stocks as part of its cleanerfish programme
- 2014. Trial egg incubation and hatchery unit built in old MOD buildings in Portland Port using ‘recycled’ equipment.
- 2015. Nursery established at nearby Castletown in an old crabbing unit.
- 2016. Pre-nursery unit built in Portland Port. DCL company JV formed with MOWI
- 2017. New nursery unit completed at Crabbers wharf.
- 2018. Work started on holding facility in Portland Port.
- 2019. Building works completed. Capacity of farm approximately 1 million fish at 30g size with a market value of approximately £1.5M achieved
- DCL now employs 13 local workers full time. Only 1 graduate employed.

Lumpfish Production 2014 - 2021



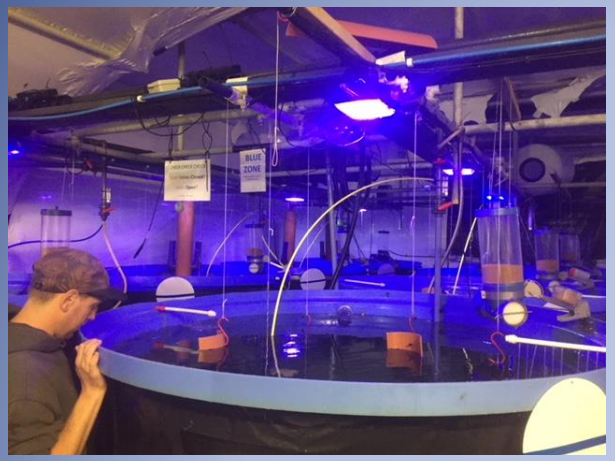
Early Days

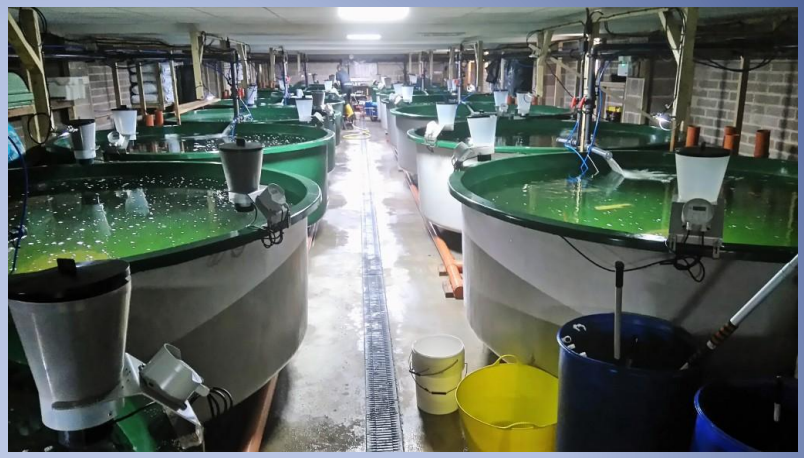
Construction Phase



Present day

Present Day





RAS Components at DCL

- Fish tanks with bottom and surface overflows
- Return pipework to drum filter
- Protein skimmers with ozone
- Moving bed bioreactor (MBBR) with high surface area to volume ratio
- Aerated trickle filter to remove CO_2
- pH control using NaOH
- Chillers on a loop (operating temperature 12C)
- Supply water to tanks via UV
- Sand/bag filters for egg and hatchery systems

Make up water treatment (20% per day)

- Room isolated from fish stocks for biosecurity
- Seawater pump operated on a float switch
- Sand filters with AFM media
- 10 micron bag filters
- UV treatment at 200 $\mu Ws/cm^2$

Technical lessons

- Belt and brace incoming water supply systems
- Change at least 10% of system water per day to avoid build up of toxins
- Try increasing salinity slightly with freshwater systems to improve efficiency of protein skimming
- Ideally maintain duplicate systems if production is continuous. Otherwise allow systems to be cleaned at least once per year
- Make sure design allows for easy cleaning
- Always make sure that oxygen can be added directly to fish tanks and use bottle/liquid gas.
- Hire/buy a back-up generator
- Duplicate alarm systems
- Go for 24/7 cover when in full production

Business lessons

- RAS technology works best for small species that are robust, high value and ideally have a short life cycle e.g. juvenile production.
- For new species start small and test systems before scaling up. Ideally start up in existing buildings
- Pay for quality when buying key items e.g. drum filters/ UV/ pH dosing systems etc.
- Hire practical people who understand the systems. This is farming not academic research.
- Be patient – aquaculture projects are rarely profitable in <4 years.
- Make sure investors know the risks and if possible are involved in the business.

Summary

RAS offers solutions for rearing some but not all species **BUT**

- There are more failures than successes (and stock insurance is very expensive)
- RAS production costs have to be competitive when compared to alternative supplies of the same species.

Thank you