

Abalone and Education in South Africa

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By Stephen Mcveigh

With rurally educated people (from previously disadvantaged backgrounds) looking for employment in South Africa, education levels skills and language are often barriers to their efficient employment. Abagold Ltd is the first abalone farm in the country to invest in basic education as the primary means of improving and maintaining a high efficiency level. As a result, both in the hatchery and on the farm, positive improvements have been achieved.



Spawning manager Elizabeth Mabuya holds female abalone that will be used for broodstock.

“The basic adult education intervention, introduced in 2005, has helped us offer employees an educational foundation, making it possible for them to access further skills development opportunities put in place by the company,” says van Dyk.

Because of their backgrounds, basic communication (literacy and numeracy) in English is vitally important, says van Dyk. All signs and production instructions are in English. “If you can’t read the instruction, you cannot understand it. If you cannot understand it, you cannot do your job correctly.” So, basic communication is vital, he says.

Each person is evaluated to determine their educational status, if they need ABET education and, if so, at what level should they come in on. This assessment is done by Media Works which designed and holds the license for the Agriseta programme. They also supply the course books and a pre-determined number of computers for

the educational training. Presently Abagold has 83 staff members in various stages of their ABET training, six dedicated educational computers and allow a minimum of two hours of ABET training for their staff per person per week. Since they began the programme in 2005 they had issued 148 certificates at various levels of the ABET programme by end of 2009.

“It works like this,” says van Dyk. “We make time allowance for our staff to do a minimum of two hours of ABET training a week. This does not include operational, technical, supervisory, safety and basic life skills training. This is staggered according to the person’s work responsibilities and the number of computers available. All training is initially done as an audio-visual lesson on the computer followed by a visual practical lesson completed in their training manual. The two are done in the same two hour session. Those lessons are checked by the ABET facilitator and myself and the results discussed with the staff member. If the person has not achieved a level determined by the programme designers they are required to sit that lesson a second time. There are also monthly classroom sessions in which the staff (both those learning and those training) actively participate.”

Abagold is one of three farms situated in the Hermanus abalone farming hub (on the south-western coast of South Africa) and has a production of around 240 tonnes of live abalone (*Haliotis midae*) a year. It is considered one of the top performing abalone farms in the country – as far as quality of product and reliable supply are concerned. This high-end product needs expert care and attention throughout its production cycle. It is important that staff understand what is required of them, says van Dyk.



Preparing a rearing tank with cones and ulva seaweed.

The ABET training programme gives the person involved a better education, improves their employment value and gives them a sense of self-worth, as aspects of their responsibility in their working and social communities are included in the programme.

With basic education developed the opportunity to look at the further education of section managers into such areas as management of human resources, occupational health and safety training, fire fighting, first aid and such like.

It is obviously difficult to determine an exact accumulated benefit that this training has had on the company and its staff in their personal capacity over the years, says Johan Hugo, financial manager for Abagold. This training has had a noticeable effect on the accuracy of their work, their efficiency and time-management, their communication (giving and receiving instructions) and even the improved caring and handling (basket and tank cleaning, feeding and sorting) of the animals on the farm.



Students in the Abagold adult education programme.

This applies to efficiency in the hatchery also, says Brendon.

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Hatchery manager Brendon Vice holds settlement plate with juvenile abalone.

The Abagold Hatchery

The Abagold hatchery produces around two million larvae for settlement of the local abalone (*Haliotis midae*) every two weeks. This is far more than the grow-out department of the farm needs (they require 140,000 juveniles a month).

In the South African abalone industry, brood stock for the hatchery are sourced from the area of the farm as they are already acclimatized to the water conditions.

In the wild the adult abalone are seasonal spawners. The eggs or sperm are released into the water through the pores with the respiratory current. This is known as broadcast spawning. The eggs hatch as microscopic, free swimming larvae. In the wild they drift with the currents for about a week, then the abalone larvae settles onto a suitable substrate, sheds its swimming hairs (cilia) and begins to develop the adult shell form. If suitable habitat is located it may grow to adulthood. The chance that an individual larva will survive to adulthood is very low. Fortunately abalone are prolific spawners as mortality in the wild is high.

At Abagold this whole process is controlled. Average mortality in the hatchery is very low. As a result far too many young abalone are produced and a strong sorting and culling programme has been put in place.

The male and female broodstock abalone are brought into spawning condition but held in separate tanks. The standard industry process of using hydrogen peroxide to trigger spawning is used. Spawning takes place over a period of four to five hours every two weeks after which the adults are allowed a six week recovery period. Adult abalone are used as broodstock and spawning manager, Elizabeth Mabuya, checks the quality of the eggs and sperm produced by the various brooding animals.

Once the females have spawned, the eggs and milt are siphoned off and mixed according to a hatchery protocol that has been developed over the years, and shown to be highly efficient. The eggs are continuously sampled and checked by Elizabeth to ensure cell division and development of the eggs is occurring as required. The eggs hatch within about eighteen hours. All water is filtered and sterilized and the temperature during the larval rearing stage is maintained constant. The water is also aerated to ensure adequate water movement. The larvae are ready to settle in five days.

Settlement is onto plastic plates seeded with diatoms. Once settled the juvenile abalone are put out into settlement tanks for three months where they continue to feed on diatoms. Water temperature in the settlement tanks is left unadjusted/ambient.

At about three months old, the juvenile abalone are transferred to weaning tanks where they live under cones and not settlement plates. They are weaned onto a more substantial diet of formulated artificial feed.



Abalone at seven months.

Once they reach eight months of age they are transferred to the grow-out section of Abagold where they are grown on for a further forty-eight months to reach about two-hundred grams before harvested and processed for export to various Far Eastern countries.

The education system has helped considerably in more efficient hatchery management, says hatchery manager, Brendon Vice. Without the initiative, Abagold may not have been a leading abalone producer in South Africa. – SM