



AQUABEL

**Aquabel – A premium
tilapia brand with 25 years
of product development
in Brazil**

History of Aquabel

The Aquabel strain in Brazil is an inseparable part of the story of tilapia aquaculture in Brazil. The strain was originally formed when Nile tilapia broodfish of the Chitralada strain from the Asian Institute of Technology (AIT), was imported in 1996.

In 2016, the company formed a joint venture with EW Group, the largest animal genetics company in the world, and owner of some of the world's most important brands in animal genetics. Now as part of the GenoMar Genetics Group, the tilapia genetics division of EW Group, several innovations have been introduced in the Aquabel breeding program since 2017.

Broad sustainable breeding goals for better performance

From 1996-2016, the Aquabel strain was selected for growth performance which transformed the Aquabel fish into the fastest-growing tilapia strain in Brazil. The way we measure growth has however changed to capture the diversity of production systems in the Brazilian market. Thus, today our growth is a multi-faceted index where information from cage and pond is collected at various locations in Brazil for various market requirements.

Since 2016, the Aquabel strain is also being selected to increase the fillet yield, survival, and specific disease resistance for Streptococcosis and Francisellosis to increase the value of the product and profitability of the farmers (Figure 1).

Now, the breeding goal is a balanced combination of the following traits:

- **Growth in ponds and cages**
- **Fillet yield**
- **Robustness**
- **Specific disease resistance**

Using advanced technologies to accelerate the genetic gain

Since 2020, Aquabel has fully implemented genomic selection, which uses DNA information to separate the best candidates in the breeding nucleus, thereby providing a more accurate prediction of breeding values for traits that are not possible to measure on the candidate fish (Figure 2). This has allowed us to achieve a higher rate of genetic gain for the traits of commercial importance. For example, the genetic gain for body weight at harvest using family-based selection methods could be doubled by using genomic models.

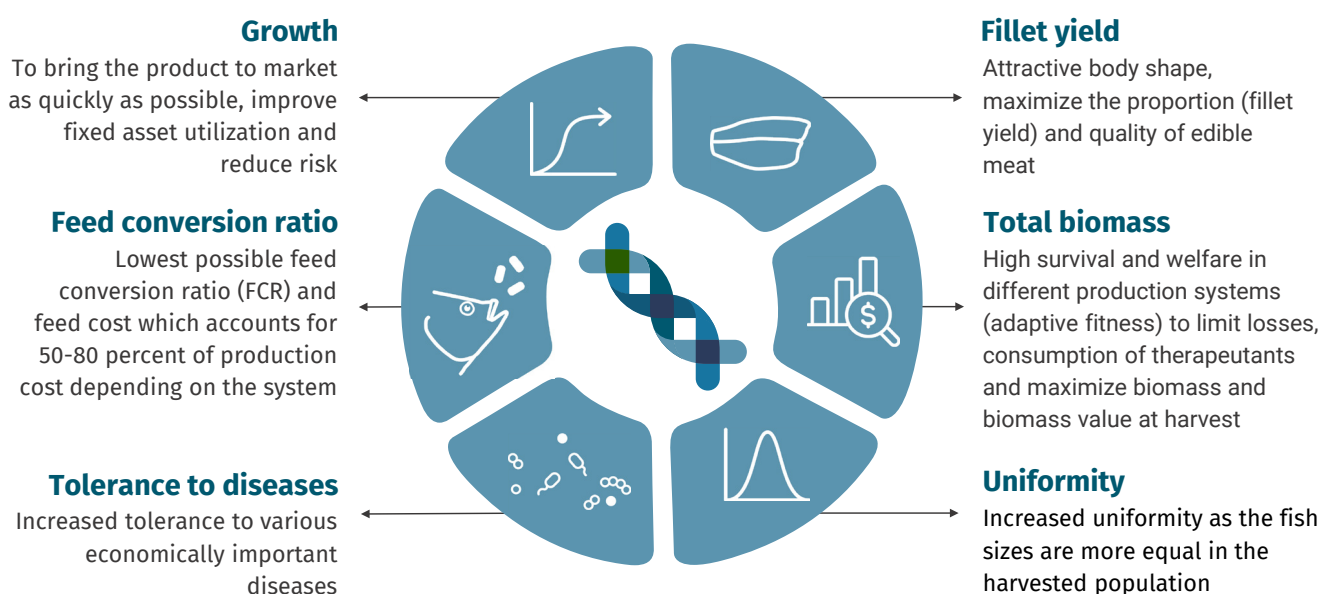


Figure 1. Characteristics of the Aquabel strain due to genetic selection.

Documentation of genetic gain

Aquabel aims to improve the performance of the key economically important traits in the broodstocks to quickly disseminate the achieved genetic gain to the farmers so they can reap the benefit. A field trial (common garden experiment) was performed in 2021 to compare the commercial fingerlings from two

contemporary generations of the Aquabel population under Brazilian tilapia farming conditions.

Fish from these two genetic groups (old and new generation) were individually tagged and distributed equally (randomly) in two cages, with each cage having fish from both generations.



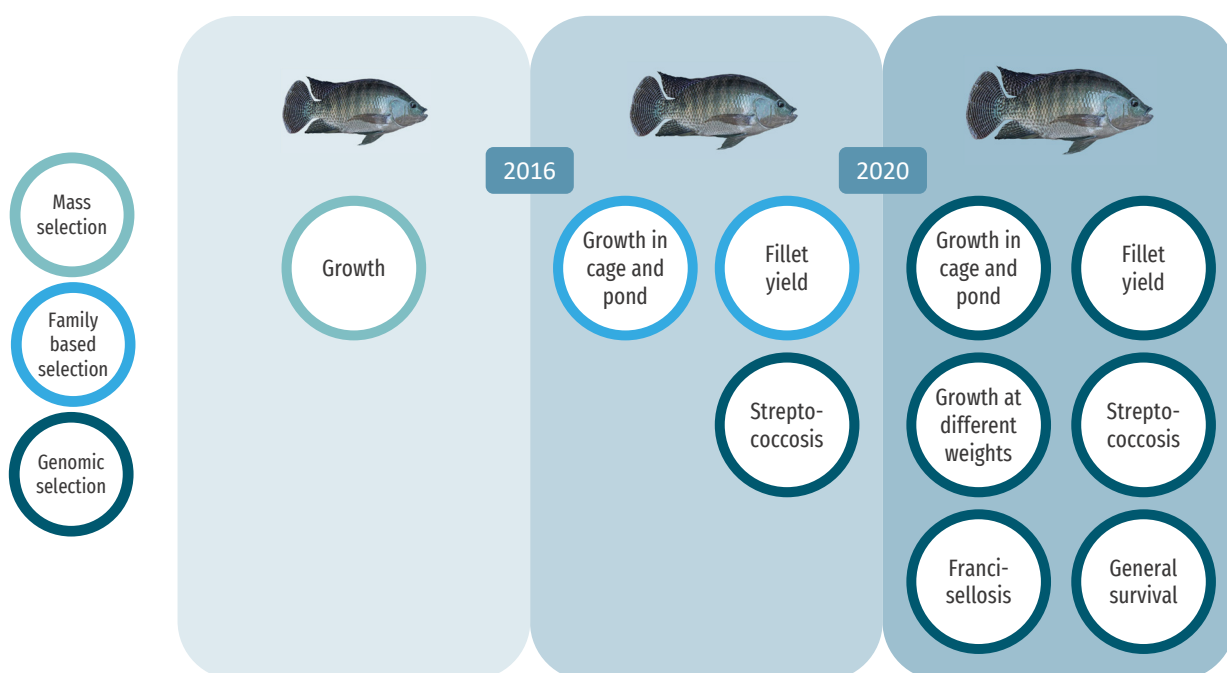


Figure 2. Traits selected for in the Aquabel strain from 1996 to 2020. The breeding technologies used have evolved towards more accurate methods to improve the genetic gain and profits for the farmer.

Statistical analysis was performed to separate the effect of the genetic groups from other effects like the cage in which the fish were reared and the weight of individual fish at the start of the experiment.

Improved growth, survival and uniformity from the old to the new generation

On an average, the fish in the new generation were significantly heavier by 8.0% than the fish from the old generation when the body harvest weight was $\approx 820\text{g}$ (Figure 3). These estimates are close to the genetic gain seen in the breeding nucleus for commercial products. Besides growth, the fingerlings from the new generation had higher survival (94.1%), compared to the fingerlings from the old generation (90.9%) during grow-out.

Similarly, a significant increase in uniformity for body weight was also obtained for the fish from the new generation (+14.1%), compared to the old generation.

This trial shows the genetic progress for key economically important traits like body weight, survival and uniformity at harvest, and the value obtained in one generation of the selective breeding process. It must be noted that the weightage for the growth in the final selection index was around 50% in the balanced breeding goal. Farmers can benefit more from using the latest generation of fingerlings from genetically selected Aquabel strain to increase the efficiency of production and viability of the activity.

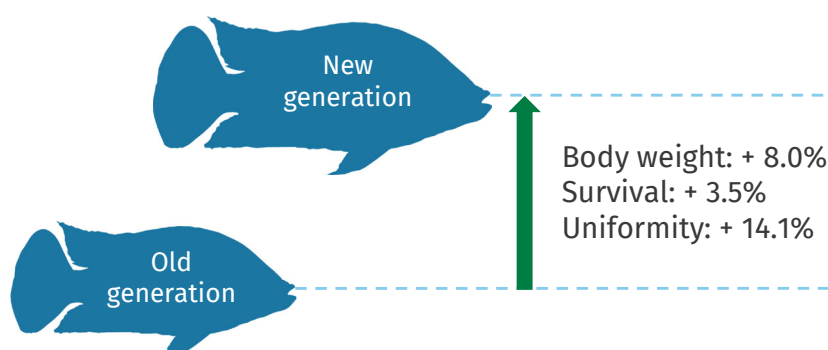


Figure 3. A field trial of commercial fingerlings from two subsequent generations of individually tagged tilapia under Brazilian cage farming conditions showing increased average weight, survival and uniformity compared to the old generation.



Aquabel

- Leading brand in the Brazilian market
- 25 years of genetic development
- Genomic selection technology
- Wide distribution network

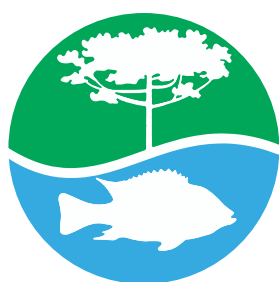
Product specification

AquaGenetics do Brasil delivers genetically improved fingerlings and juveniles of Aquabel to farmers for stocking directly into ponds or cages.

To achieve the best possible growth rate, the fish is produced as all male with at least 98% males.

Available sizes

Fingerlings:	0.25-2 grams
Juveniles:	20-40 grams



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Distributor of Aquabel in Brazil:

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