



XIV FEIRA NACIONAL DO CAMARÃO - FENACAM'17 - Natal - RN

Melhoramento Genético em tilápias:

Principais características a serem trabalhadas

Carlos Antonio Lopes de Oliveira
Universidade Estadual de Maringá

Tilapicultura no Brasil

- **A espécie mais cultivada;**

Tilapicultura no Brasil

- A espécie mais cultivada;
- **Distribuída em diferentes condições;**

Tilapicultura no Brasil

- A espécie mais cultivada;
- Distribuída em diferentes condições;
- **Consumida de formas diferentes;**

Tilapicultura no Brasil

- A espécie mais cultivada;
- Distribuída em diferentes condições;
- Consumida de formas diferentes;

O que temos?

Onde queremos chegar?


Esforços de melhoramento genético de tilápias no Brasil

- **PMGT/UEM – TILAMAX - PR**
- **Aquaporto/Aquaamerica - Brasil**
 - **Aquabel/Aquagen - Brasil**
- **Royal Fish - Rei da tilapia - SP**
 - **DNOCS – CE**
 - **EPAGRI – SC**
 - **UFLA - MG**
 - **UFMG - MG**
 - **UFVJM – MG**
 - **COPACOL - PR**
- **SPRING Genetics – SP**

Características melhoradas

- **Velocidade de crescimento:**
 - Peso final;**
 - Ganho em peso diário;**
- **Sobrevivência:**
 - Adaptação às condições brasileiras de cultivo;**
 - Resistência a doenças;**
- **Qualidade do produto:**
 - Cor corporal;**
 - Rendimento de filé;**
 - Forma do Corpo;**

Genetic parameters for growth performance, fillet traits, and fat percentage of male Nile tilapia (*Oreochromis niloticus*)

André Luiz Seccatto Garcia¹  • Carlos Antonio Lopes de Oliveira¹ •
Hanner Mahmud Karim¹ • César Sary¹ • Humberto Todesco¹ • Ricardo Pereira Ribeiro¹

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Abstract Improvement of fillet traits and flesh quality attributes are of great interest in farmed tilapia and other aquaculture species. The main objective of this study was to estimate genetic parameters for fillet traits (fillet weight and fillet yield) and the fat content of fillets from 1136 males combined with 2585 data records on growth traits (body weight at 290 days, weight at slaughter, and daily weight gain) of 1485 males and 1100 females from a third generation of the **Aquaamerica tilapia strain**. Different models were tested for each trait, and

Keywords Fillet yield · Genetic correlations · Tilapia · Meat quality

Introduction

The Nile tilapia production system has focused on improving growth rate and reducing age at harvest to enhance production efficiency. Thus, the majority of Nile tilapia breeding pro-

Resumo dos resultados

	h^2	ΔG
Filé(%)	0.32 (0.11)	1.33

Hanner Mahmud Karim¹ · César  AQUA AMÉRICA¹ Ribeiro¹
genética superior

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	Corr_g
GPD vs Filé(%)	-0.40 (0.34)

 AQUA AMÉRICA¹ genética superior
production system has focused on improving
age at harvest to enhance production
efficiency. Thus, the majority of Nile tilapia breeding pro-



Correlated changes in body shape after five generations of selection to improve growth rate in a breeding program for Nile tilapia *Oreochromis niloticus* in Brazil

Carlos Antonio Lopes de Oliveira¹ · Ricardo Pereira Ribeiro¹ ·
Grazyella Massako Yoshida² · Natali Miwa Kunita³ · Gabriel Soriani Rizzato³ ·
Sheila Nogueira de Oliveira⁴ · Alexandra Inês dos Santos⁵ · Nguyen Hong Nguyen⁶

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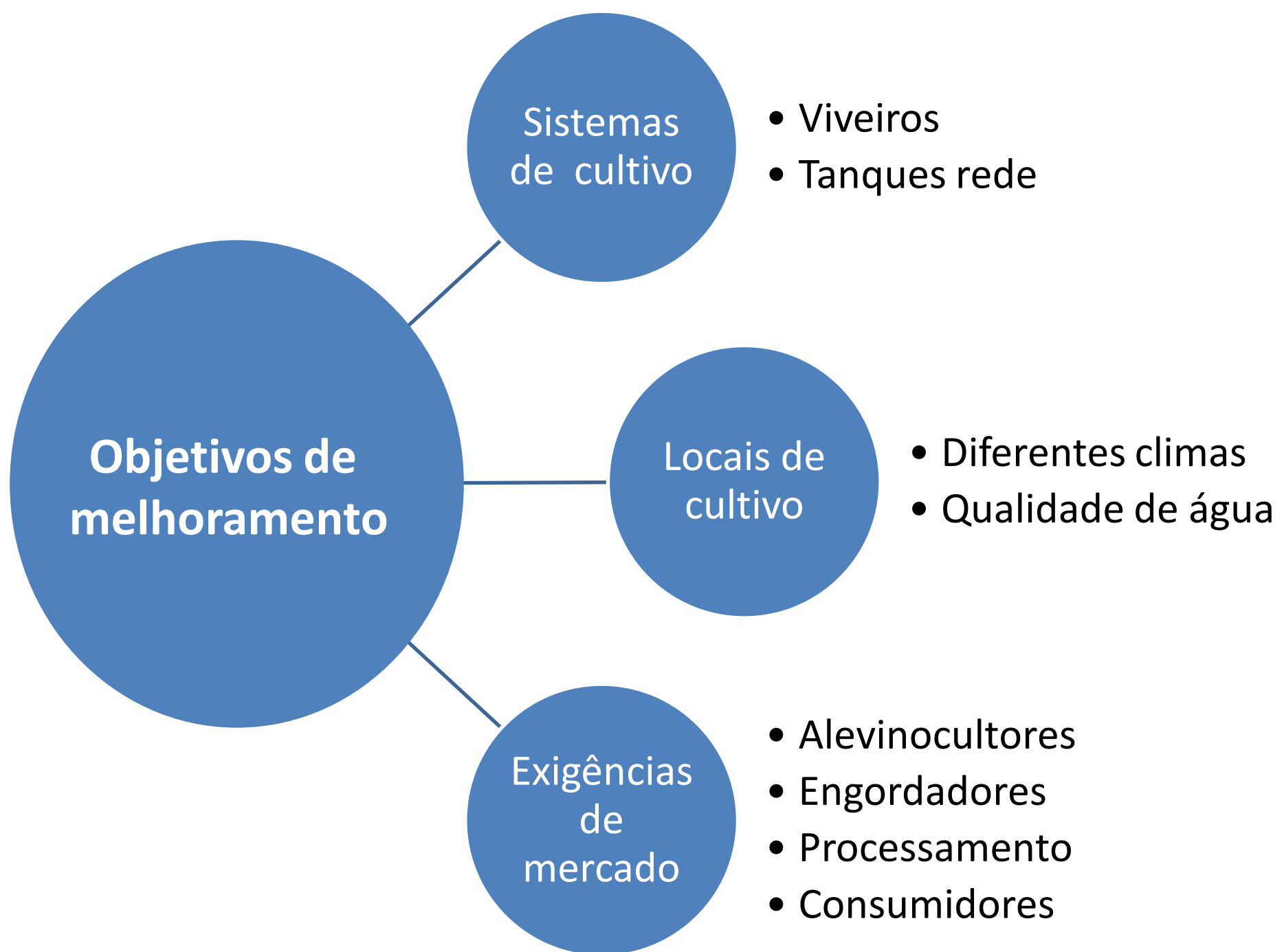
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Abstract Body shape is a commercial trait of great interest as it impacts profit and productivity of aquaculture enterprises. In the present study, we examined correlated changes in two measures of body shape (depth to length ratio, DL-R and ellipticity of mid sagittal plane, EL-H) from a selection program for high daily weight gain in a Nile tilapia population reared in freshwater cages in Brazil. Genetic parameters for body shape and its genetic association with growth traits (body weight and daily gain) were also estimated from 8,725 individuals with growth performance recorded over five generations from 2008 to 2013. Mixed model analysis showed that the selection program resulted in substantial improvement in growth performance (about 4 % genetic gain per generation

or per year) and also brought about trivial changes in body shape. The heritabilities ranged from 0.470 to 0.564 for growth traits and 0.180 to 0.289 for body shape. The common family effects were low for all traits studied, accounting for only 3–11 % of total phenotypic variance. The genetic correlations between body shape and growth traits were weak, i.e., -0.385 between EL-H and growth traits and 0.28 between DL-R and body weight or daily gain. Strong and negative genetic association was found between the two body shape traits ($r_g = -0.955$). Harvest body weight and daily gain are essentially the same traits, as indicated by the close to one genetic correlations between the two characters. Our results demonstrated that the selection process to increase growth rate had small, but slowly constant effect in body shape traits; and in the long term, the fish would have become rotund.



Perspectivas e/ou Desafios



Alevinocultores

- Crescimento inicial rápido;
- Sobrevivência ;
- Eficiência reprodutiva;

Engordadores

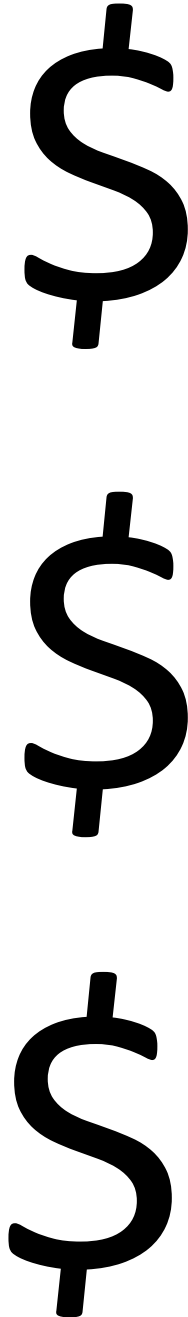
- Crescimento rápido;
- Sobrevivência;
- Eficiência alimentar;

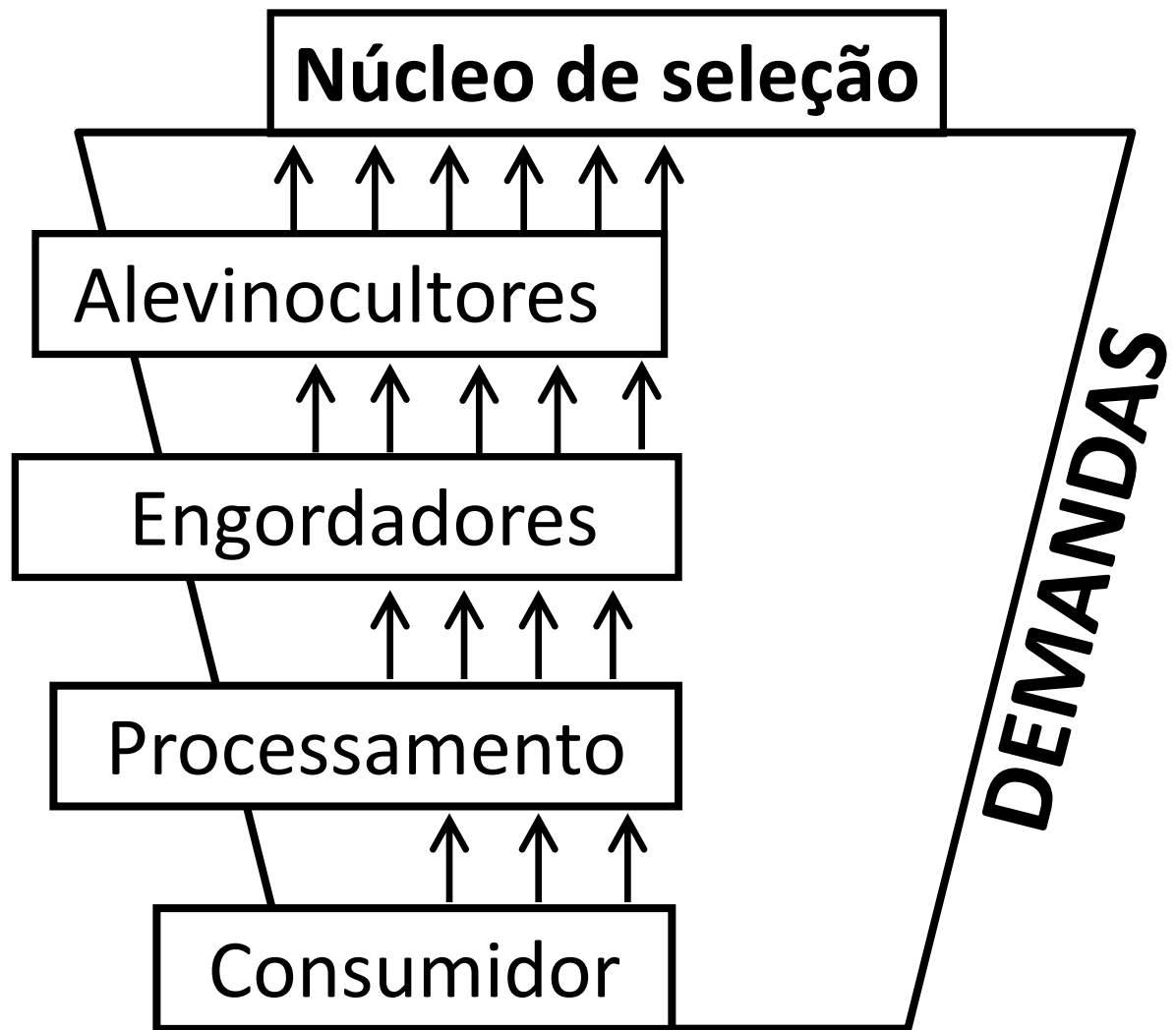
Frigoríficos

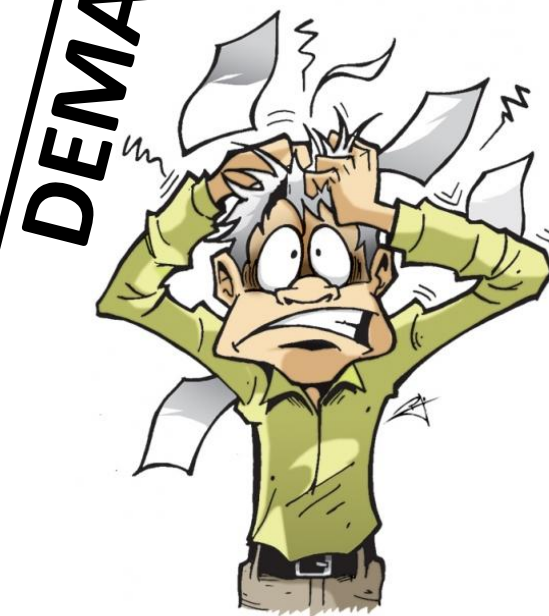
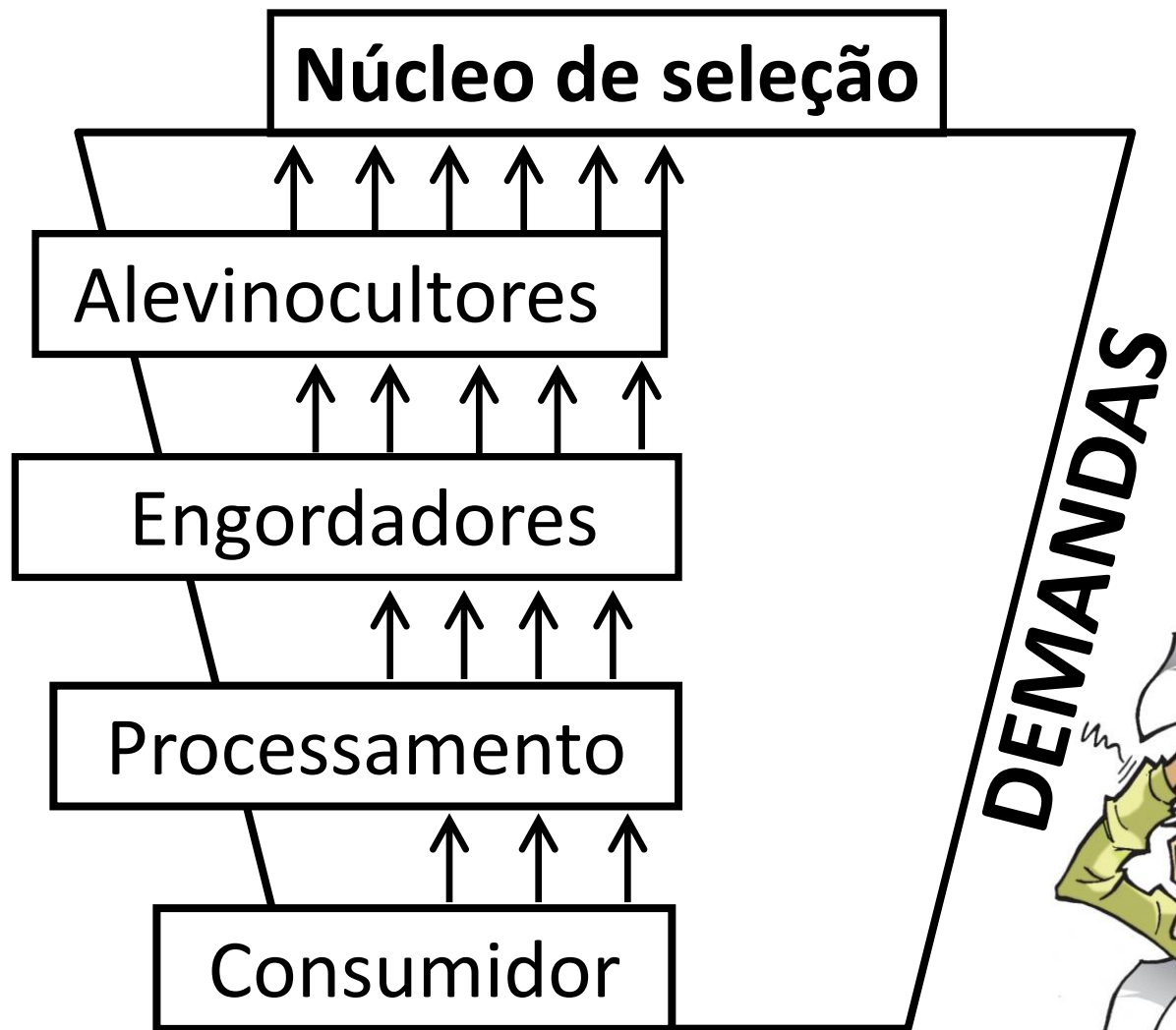
- Cortes comerciais;
- Qualidade e padronização do produto;

Consumidor

- Bem estar animal;
- Preço, qualidade e padronização do produto;







Demandas do setor



Objetivos do
melhoramento

Objetivos de melhoramento

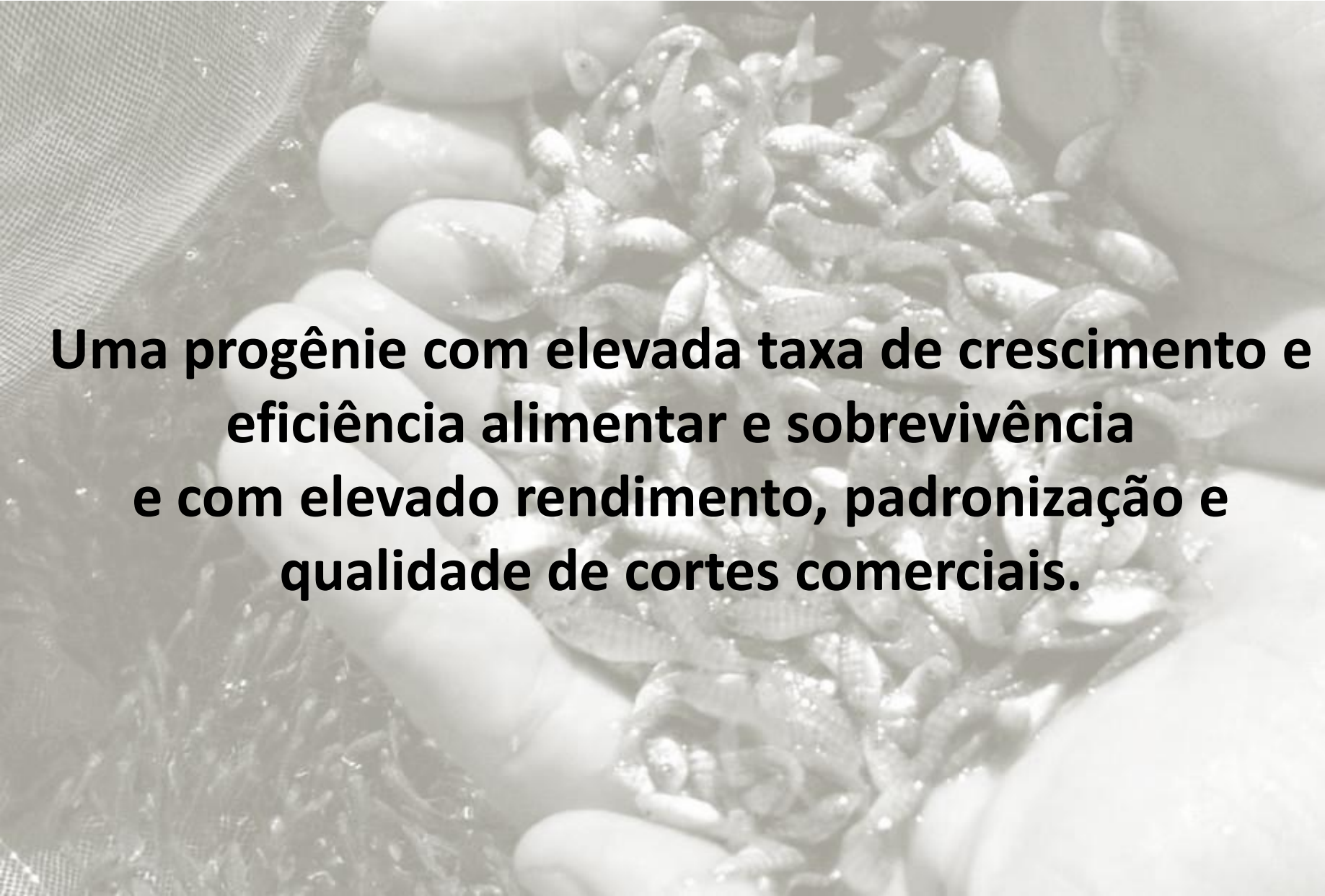
- **Velocidade de crescimento;**
 - **Sobrevivência;**
- **Rendimento de cortes comerciais;**
 - **Eficiência alimentar;**
- **Qualidade e padronização de produtos;**
 - **Eficiência reprodutiva;**
 - **Bem estar animal;**

Objetivos de melhoramento



Uso de pais geneticamente superiores que produzam...





Uma progênie com elevada taxa de crescimento e eficiência alimentar e sobrevivência e com elevado rendimento, padronização e qualidade de cortes comerciais.

Demandas do setor

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graph TD; A[Demandas do setor] --> B[Objetivos do melhoramento]; B --> C["Cr terios de sele o (Caracter sticas – alvo)"]
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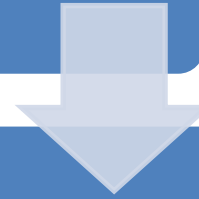
Objetivos do
melhoramento

Cr terios de sele o
(Caracter sticas – alvo)

Demandas



Objetivos



Medidas

Características alvo (Critérios de seleção)

- **Importância econômica;**

Características alvo (Critérios de seleção)

- Importância econômica;
- **Apresentar diferenças genéticas herdáveis;**

Características alvo (Critérios de seleção)

- Importância econômica;
- Apresentar diferenças genéticas herdáveis;
- **Acurada mensuração com custo razoável;**

Características alvo (Critérios de seleção)

- Importância econômica;
- Apresentar variação genética herdável;
- Acurada mensuração com custo razoável;
- **Correlação com os objetivos de melhoramento;**







Perspectivas/Desafios

- **Eficiência alimentar;**



Perspectivas/Desafios

- Eficiência alimentar;
- **Estresse/Bem estar**




Perspectivas/Desafios

- Eficiência alimentar;
- Estresse/Bem estar;
- **Qualidade de carne;**



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Introduction

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	h^2	ΔG
Gord(%)	0.20 (0.11)	0.35

André Luiz Seccatto Garcia¹   AQUAAMÉRICA
genética superior
Hanner Mahmud Karim¹ • César Sary¹ • Humberto Todesco¹ • Ricardo Pereira Ribeiro¹

	Corr_g
GPD vs Gord(%)	-0.09 (0.34)
Filé(%) vs Gord(%)	0.60 (0.19)

2585 data records on growth traits (weight at slaughter, and daily weight gain) were analyzed from 1100 females from a third generation of the AQUAAMÉRICA tilapia strain. Different models were tested for each trait, and the production system has focused on improving growth rate and reducing age at harvest to enhance production efficiency. Thus, the majority of Nile tilapia breeding pro-

Perspectivas/Desafios

- Eficiência alimentar;
- Estresse/Bem estar;
- Qualidade de carne;
- **Reprodução;**



Perspectivas/Desafios

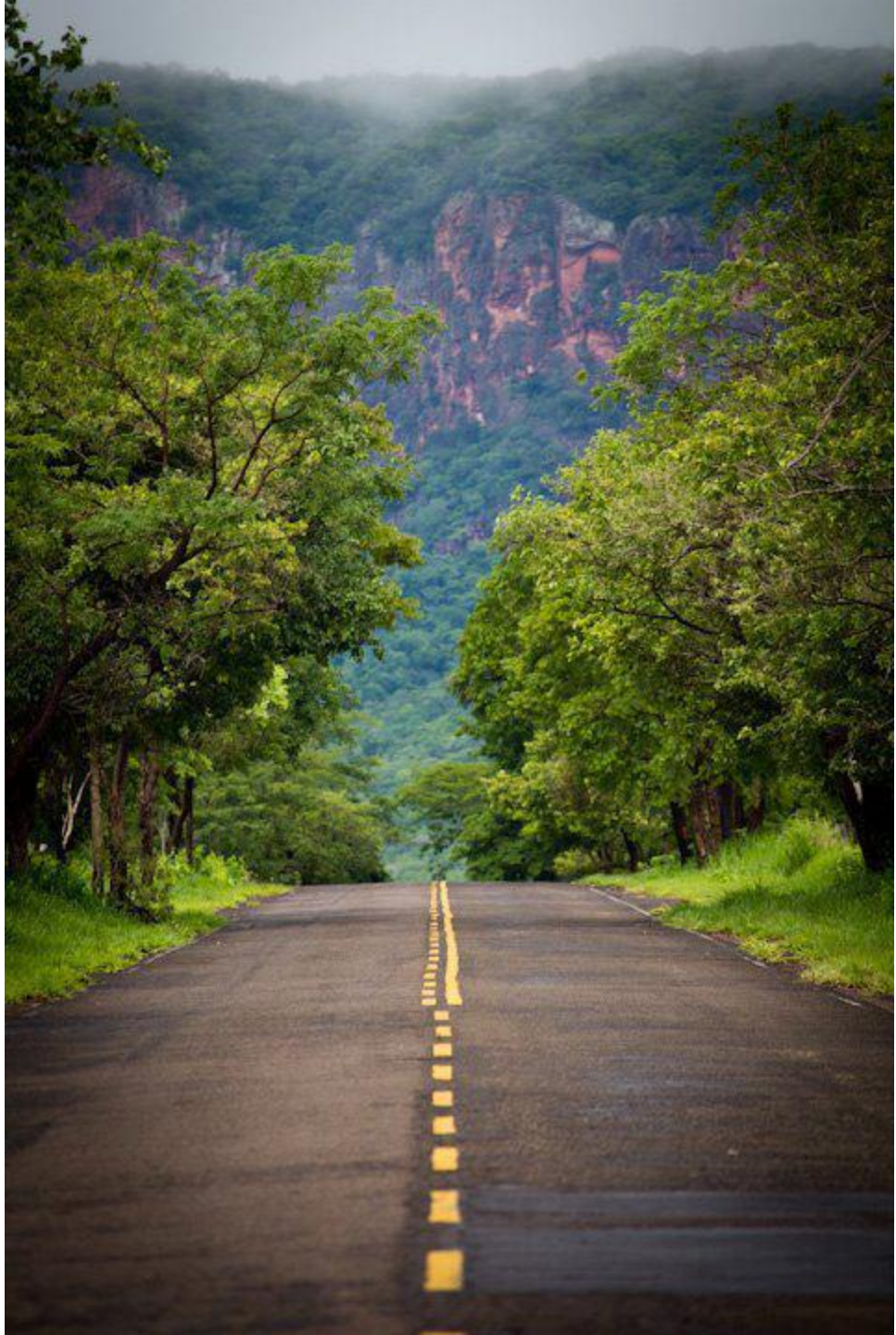
- Eficiência alimentar;
- Estresse/Bem estar;
- Qualidade de carne;
- Reprodução ;
- **Dimorfismo sexual**



Perspectivas/Desafios

- Eficiência alimentar;
- Estresse/Bem estar;
- Qualidade de carne;
- Reprodução ;
- Dimorfismo sexual;
- **Desempenho em condições emergentes/promissoras**







Muito obrigado

Carlos Oliveira - DZO/UEM

(044)-3011-8927

(044) -99154-4334

caloliveira@uem.br