



Conservar, Produzir e Inovar

Development of a protocol to produce triploid tambaqui *Colossoma macropomum* with the use of pressure shock in fertilized eggs

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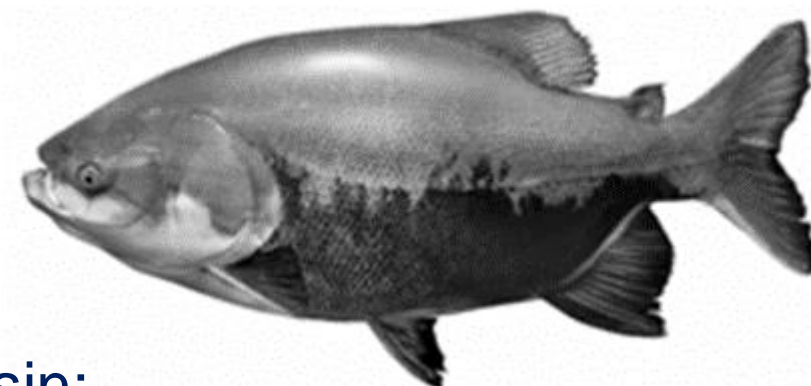


AquaVitae



INTRODUCTION

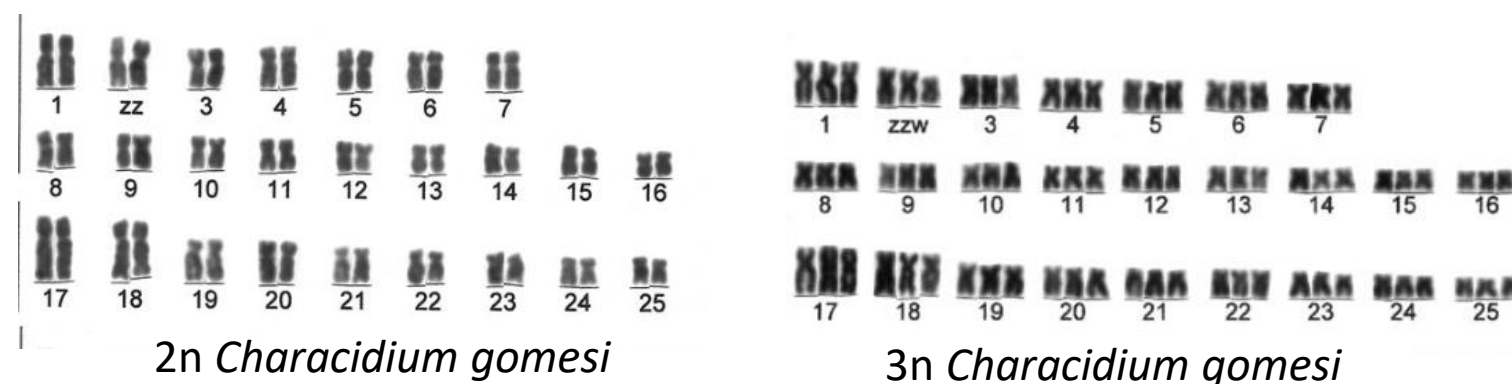
Tambaqui *Colossoma macropomum*



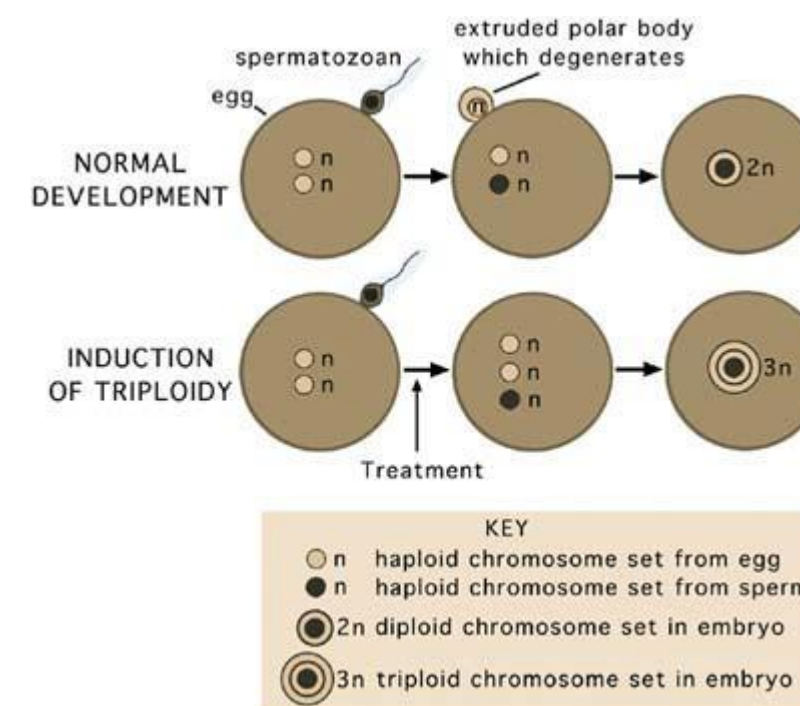
- ✓ Native characid fish from the Amazon basin;
 - ✓ First native species on the Brazilian aquaculture industry
 - ✓ Farmed in all regions of Brazil, as pure or hybrid.
 - ✓ Responsible for 90% of the fish farms in the North of Brazil.
- However... production still based on traditional knowledge, with low level of technology.

Advantages

- ✓ Higher production rates
- ✓ Better growth performance
- ✓ Does not alter filet quality or resistance to diseases
- ✓ Sterile fish
- ✓ No fights, no dimorphic and/or reduced growth, no contamination of wild stocks etc.



Centofante et al., 2001 DOI: [10.1080/00087114.2001.10589233](https://doi.org/10.1080/00087114.2001.10589233)



Species-specific protocol:

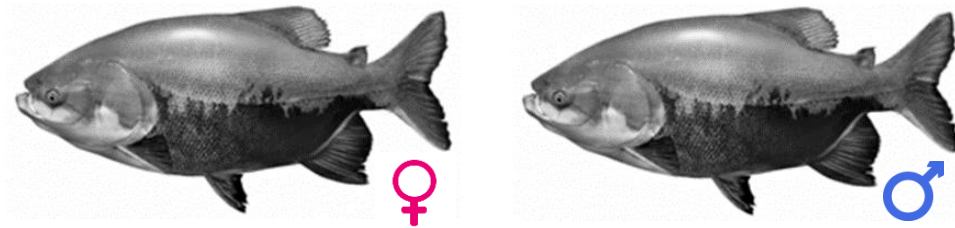
1. WHEN?
2. HOW MUCH?
3. FOR HOW LONG?

Triploid fish

- ✓ Not a new technology
- ✓ Commonly used by the industry of salmonids in Canada, USA, Japan, Spain and France

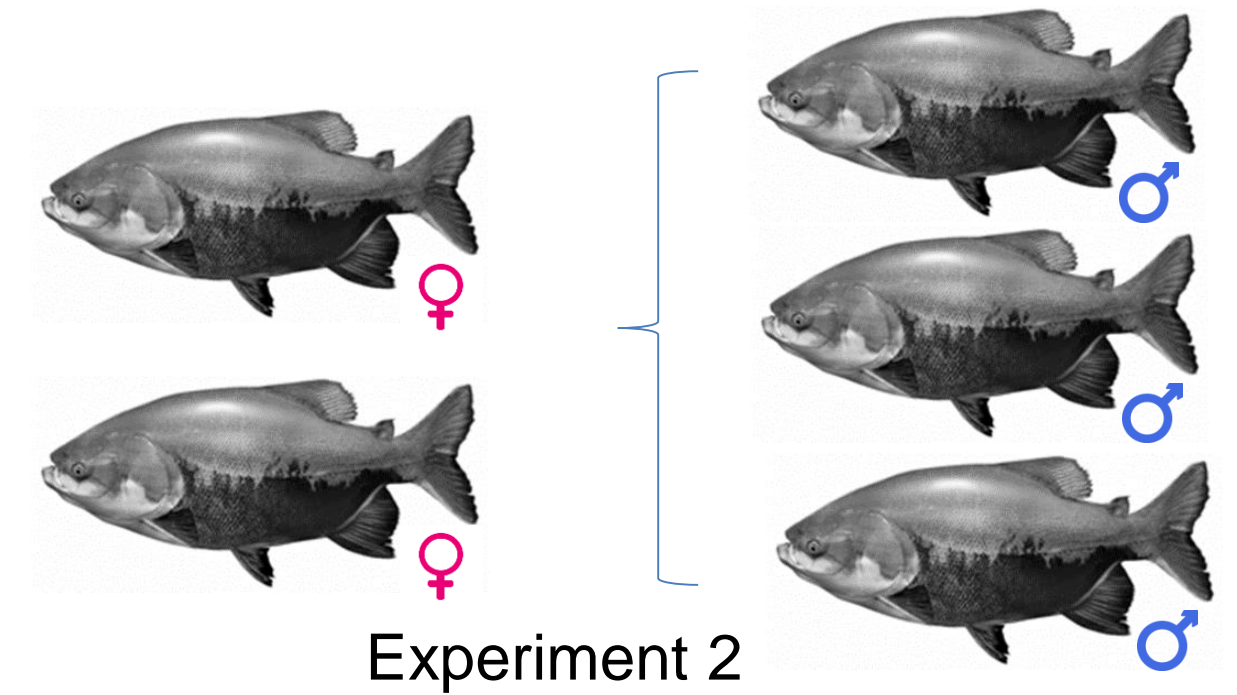
Main goal

To develop an efficient protocol for large-scale production of triploid tambaqui *C. macropomum*.



Experiment 1

METHODS



Experiment 2

1. WHEN?

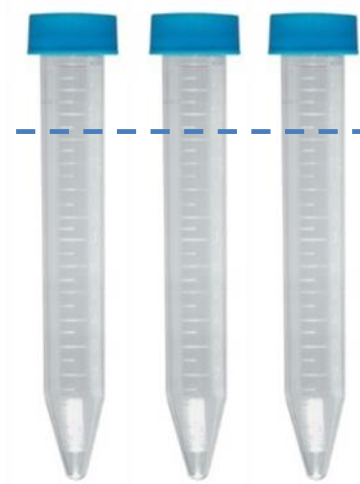
- T1: 60" PF
- T2: 90" PF
- T3: 120" PF
- T4: 150" PF
- T5: 180" PF
- T6: 300" PF

2. HOW MUCH?

8000 psi

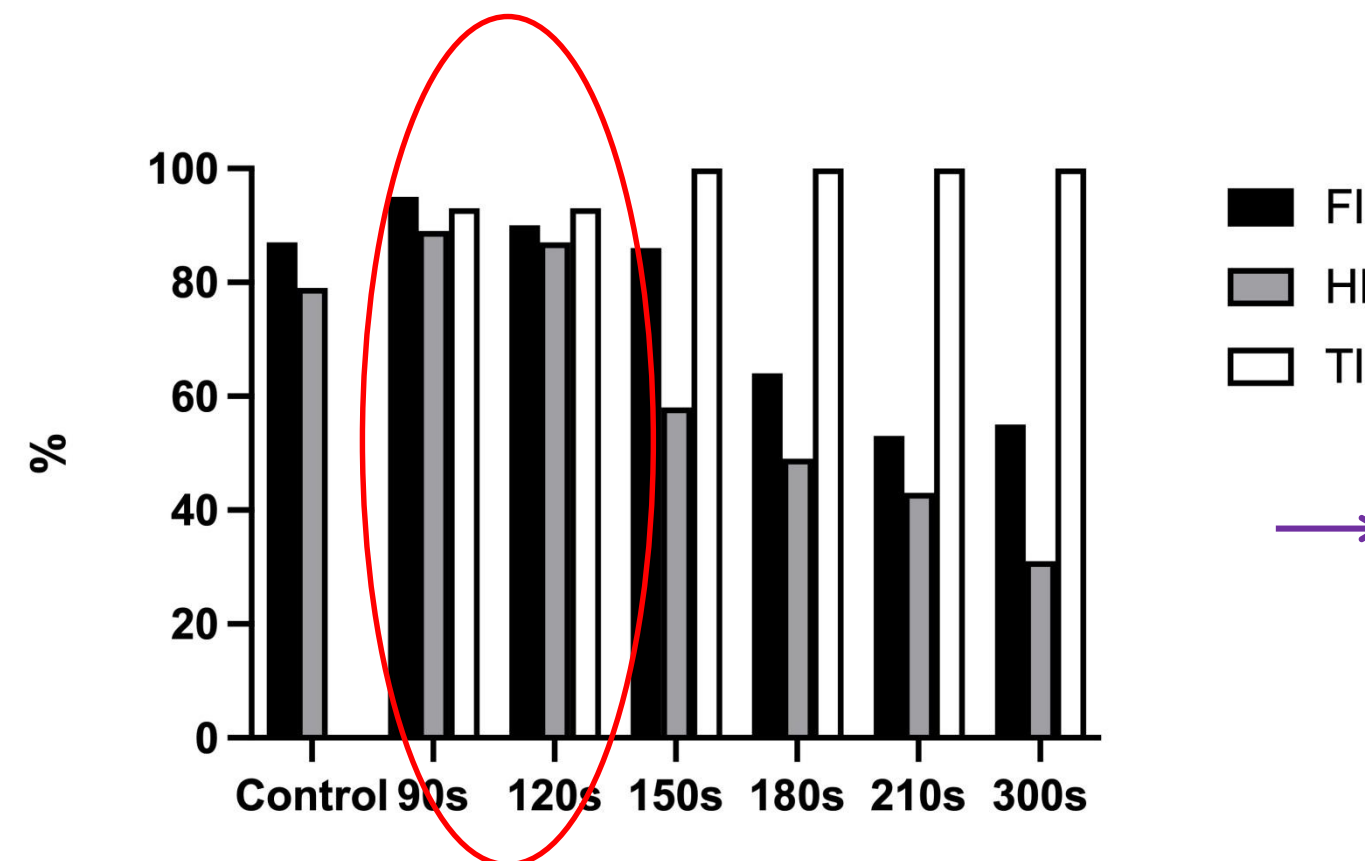
3. FOR HOW LONG?

120"



Fertilization and hatching indexes;
DNA content by flow cytometry

- T1 - 90" PF
- T2 - 120" PF
- T3 - 150" PF
- T4 - 180" PF
- T5 - 210" PF
- T6 - 300" PF



1. WHEN?

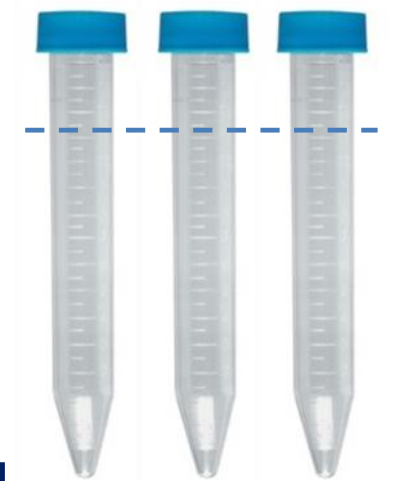
- T1: 60" PF
- T2: 90" PF

2. HOW MUCH?

8000 psi

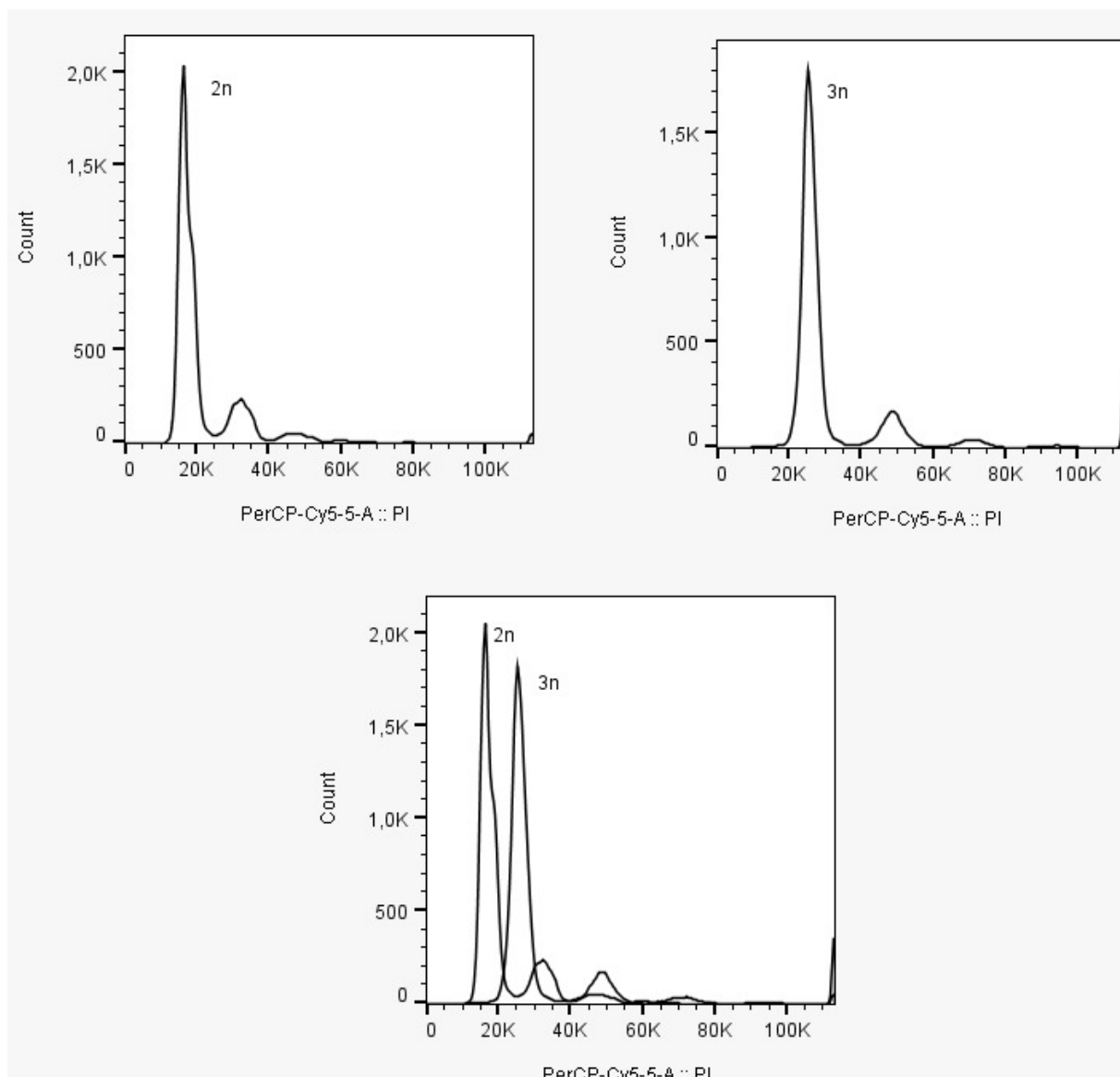
3. FOR HOW LONG?

- 60"
- 90"



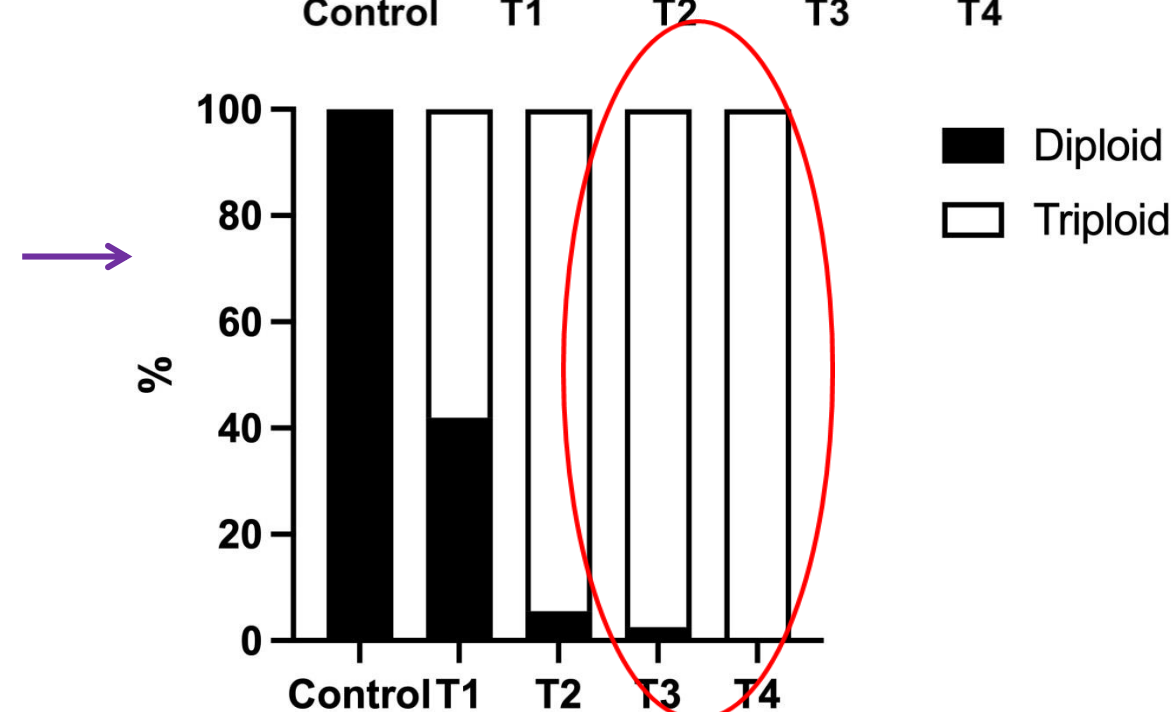
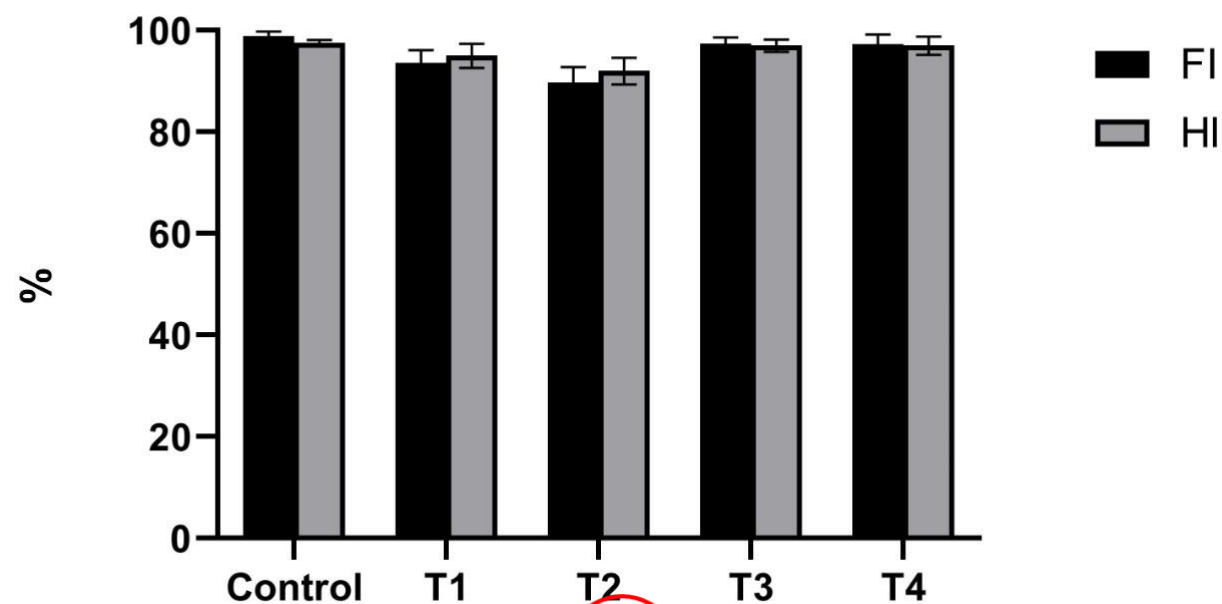
Fertilization and hatching
DNA content by flow cytometry

RESULTS



Flow cytometry histograms for the determination of the number of chromosomes (based on DNA relative content) of tambaqui larvae. The DNA value of control (diploid) cells was used as a standard.

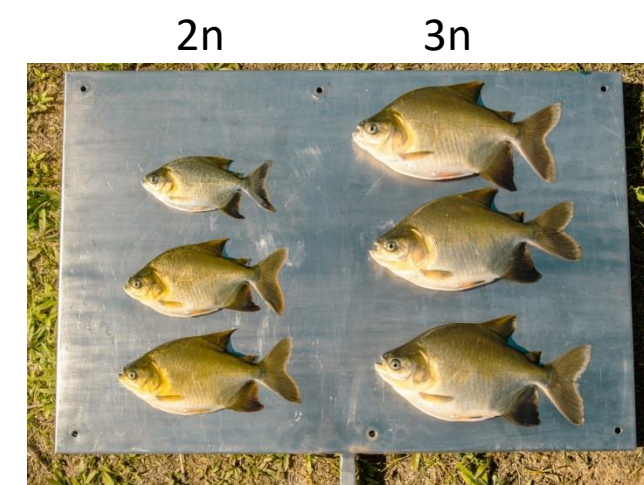
T1 - 60" PF during 60"
T2 - 60" PF during 90"
T3 - 90" PF during 60"
T4 - 90" PF during 90"



CONCLUSIONS

- ✓ Starting the hydrostatic shock 90 sec after fertilization does not reduce FI nor HI in tambaqui;
- ✓ The combination of starting an 8000 psi pressure at 90" after fertilization with the maintenance during 90" results in 100% triploid tambaqui.

FUTURE TASKS



- Evaluation of possible puberty and maturation;
- Growth performance;
- Survival rate (yield)