AquaVitae

Case study 10 – Optimisation of freshwater fish production in Brazil

KEYWORDS

Arapaima, tambaqui, reproduction, finfish, freshwater, production, Brazil

SPECIES

- *Arapaima gigas* (pirarucu, warapaima, paiche)
- *Colossoma macropomum* (tambaqui, cachamã)

GEOGRAPHICAL BOUNDARIES

Case study on the optimisation of freshwater fish production will take place in two states of Brazil (Tocantins and Amazonas). Scientific collaboration among Brazilian research institutions (EMBRAPA and UNESP) and Norwegian (NOFIMA) are in place. In addition, three farms (SMEs) and the national association (PeixeBR) take part in research activities.

GOALS

- Optimize protocols for the captive reproduction of pirarucu (*A. gigas*)
- Identify an optimal protocol for the large-scale production of triploid sterile tambaqui (*C. macropomum*)
- Characterize the early development of the intermuscular bones (IBs) of tambaqui (*C. macropomum*)

AT A GLANCE

- **Project period: 2019-2023**
- **Basic and applied studies on the reproduction of two Amazon finfish species: pirarucu (*Arapaima gigas)* and tambaqui *(Colossoma macropomum).***
- **Development and improvement of reproduction protocols for pirarucu, a candidate species for aquaculture development.**
- **Development of a protocol for the production of triploid tambaqui, the second most produced fish in Brazil.**
- **Understand the development of intermuscular bones in tambaqui, currently impeding fish processing.**
- **Collaboration among Brazilian and Norwegian institutions, and local farmers (SMEs).**

Main activities take place in Brazil and Norway.

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CHALLENGES

- Unrealiable reproduction of pirarucu in captivity.
- Environmental impacts of escapees from tambaqui farms and hybridation with other species.
- Intermuscular bones in tambaqui hindering filleting.

EXPECTED RESULTS

- Optimized protocol for captive reproduction of *A. gigas* pairs in earth ponds.
- Protocol of triploid induction in tambaqui (*Colossoma macropomum*) with optimal induction success.
- Predictive models to identify the type, number and length variation of intermuscular bones in tambaqui.

EXPECTED USERS

- Small and medium-sized enterprises (SMEs) that reproduce and commercialize tambaqui and pirarucu.
- Non-governmental organisations (NGOs) dealing with pirarucu conservation.
- Government organisations that regulate production of pirarucu and tambaqui fingerlings.
- Institutes researching tambaqui and pirarucu biology.

WORKPLAN

A series of trials will focus on the development of reproductive protocols for tambaqui and pirarucu. Regarding pirarucu, trials will aim to improve protocols for natural breeding of couples in earth ponds, and advance with novel protocols for gamete collection. The activity will take place in Tocantins (Brazil).

Trials on tambaqui will take place at two Brazilian states (Tocantins and Amazon) to develop a protocol (pressure shock) for production of triploid sterile individuals. Also, different families of tambaqui will have their early development characterised to understand the development of intermuscular bones using different techniques (X-ray and clearing-staining).

LINKS

Video:

https://bit.ly/av-finfish

TEAM

1. EMBRAPA (Brazil)
2. NOFIMA (Norway)
3. UNESP (Brazil)
4. PeixeBR (Brazil)
5. Piscicultura Fazenda São Paulo (Brazil)
6. Piscicultura Raça (Brazil)
7. Piscicultura Água Limpa (Brazil)
8. Piscicultura Hidrobios (Brazil)

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