

Improving productivity in the Colombian Tilapia Value Chain: Norad Strategic Partnership Project

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Supporting those who raise and care for fish



PHARMAQ Analytiq

Focused research, targeted analysis and innovative fish health solutions



PHARMAQ

Research, development and manufacturing of vaccines and therapeutics for aquaculture



PHARMAQ Fishteq

High quality vaccination machinery and vaccination services



Research, development and manufacturing of vaccines and therapeutics for fish

Norway, Nordic,
Chile, UK,
Canada, Faroes



Atlantic Salmon
Rainbow trout
Coho Salmon
Cleaner fish

Mediterranean



Sea Bass
Sea Bream

Vietnam



Pangasius

Brazil, China,
Indonesia, Latin
America



Tilapia

 = Developed markets

 = Emerging markets

~30
larger players



thousands of smaller farms

We have
25
antigens



in our portfolio

Supporting

8
species



innovating to support
new species and
markets

Our

35
fish vaccines



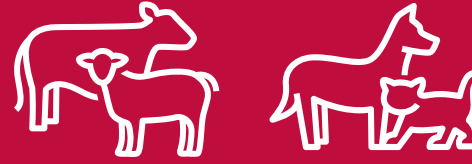
are custom made
with local strains
and local antigens



Our approach:
Hands-on problem
solving knowledge
and expertise

27 MANUFACTURING SITES

8 CORE ANIMAL SPECIES



\$6.3
BILLION
ANNUAL REVENUE



APPROXIMATE R&D COLLEAGUES

1,100

300 APPROXIMATE NUMBER OF PRODUCT LINES

WE PROVIDE
MEDICINES
VACCINES
DIAGNOSTICS
GENETIC TESTS
BIODEVICES
PRECISION LIVESTOCK FARMING

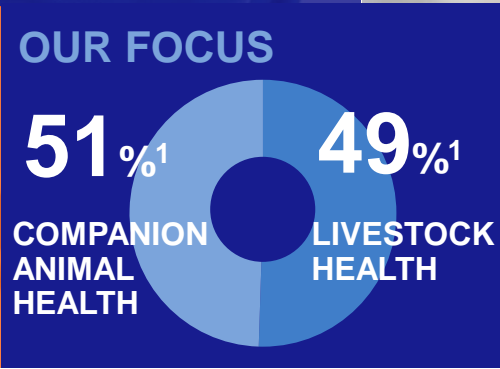


65+
YEARS OF EXPERIENCE

7 MAJOR PRODUCT CATEGORIES

MARKET PRESENCE IN
100+
COUNTRIES

APPROXIMATE COLLEAGUES WORLDWIDE
10,600



3,200
APPROXIMATE FIELD FORCE MEMBERS

Note: Facts and figures shown are as of Dec. 31, 2019 | ¹Excludes revenue associated with Client Supply Services, which represented 1% of total 2019 revenue.



PHARMAQ
part of zoetis



CNCC
Colombian Norwegian Chamber of Commerce



Pastoral Social
Caritas Colombiana



Caritas
Norway



Norad

PHARMAQ project deliverables

1. Field assessment of tilapia farming operations (identify partners for demo ponds)
2. Supply of vaccine and vaccination equipment
3. Follow up vaccinated production units (evaluation of production performance) - Demoponds
4. Training in fish Health Management
5. Disease surveillance in Colombian tilapia farm operations
6. Identification and development activities of vaccines relevant for Colombia



Outcome 1. Small, medium and large tilapia producers adopt Best Practices on Aquaculture Production and apply vaccination techniques in tilapia crops to improve their productivity and competitiveness.

Activity I.I. Implementation a vaccination training program with local stakeholders to facilitate technology transfer into the Colombian tilapia farming sector

- I. Theoretical and Practical training in fish vaccination
- II. Biosecurity and welfare in fish farming
- III. Tilapia; main diseases and diagnostic techniques

Output deliverable	Outcome (as of October 2020)
Local stakeholders trained on fish health management (FHM) and vaccination protocols (Y1 215 trainees & Y2 100 trainees)	<ul style="list-style-type: none"> • 215 different attendees at PHQ training workshops • 348 on-farm trainings
30 student that participate in two other CARITAS projects	<ul style="list-style-type: none"> • 15 students - March 2020
15 employees from Botero (Partner)	<ul style="list-style-type: none"> • 19 persons – July 2019
30 university professors Uniamazonia and Corhuila Universities	<ul style="list-style-type: none"> • 48 University professors (Sept 2020) • 29 University professors (Oct 2020)



Outcome 1. Small, medium and large tilapia producers adopt Best Aquaculture Practices and apply vaccination techniques in tilapia crops to improve their productivity and competitiveness.

Activity 1.3. Implement BPAP pilots in various farms targeting small and medium-sized tilapia farmers.

Locations	Vaccinated units	Ponds	Race-ways	Cages	Fish vaccinated
10	14	3	2	9	1,057,653

ASOPISHUILA total 245,000
 Botero total 810,000



Outcome 3: Research and Development focused on tilapia

3.1. Disease surveillance in Colombia tilapia farms operations

- 29 sites in Huila (ponds and cages); 34 visits performed in Y1 & Y2
- Screening and diagnostics (bacteriology, histopathology, PCR)
- Training, fish sampling (47 fish health managers) and tilapia diseases identification (301 farm employees)

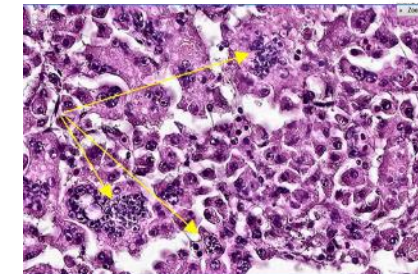
No. fish sampled	No. Bact. samples	No. Bact. positive isolates	No. Histo. samples	No. PCR samples	Nr. Frozen tissues (TilaV)
837	1,287	571	6,105	1,572	4

3.3. University professors from Univ. Amazonía and CORHUILA incorporate vaccines and fish health in aquaculture in their programme's curricula

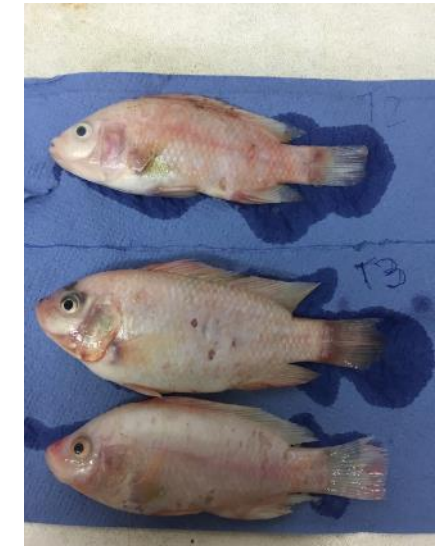
Virtual workshops:

- 48 University professors (Sept 2020)
- 29 University professors (Oct 2020)

3.2 Identifying and developing relevant vaccines for the Colombian tilapia farming sector



Syncytial cell formation-typical of TiLV



WE MAKE AQUACULTURE PROGRESS

