Rapid Diagnostic Tools in Aquaculture

AQUAFARM
Pordenone, 15-16th February 2018
Local focus, global expertise

- > 85 veterinarians and fish health professionals across 8 countries
- Many years experience in global aquaculture & diagnostic histopathology
- Unique ability to identify and consult on aquaculture disease worldwide
BENCHMARK HOLDINGS
- LOCAL PRESENCE, GLOBAL REACH -

24 countries and customers in over 70 countries
85% business currently in aquaculture

- Animal Health
- Sustainability Science
- Technical Publishing
- Breeding and Genetics
- Advanced Animal Nutrition
BALANCED HEALTH APPROACH

BENCHMARK’S APPROACH

RESILIENCE

SUSCEPTIBILITY

NUTRITION

IMMUNITY

GENETIC RESISTANCE

ON FARM DISEASE CHALLENGE

INCREASE

DECREASE
Disease is the largest hurdle for the sustainability and growth of the aquaculture industry

- Poor performance
- Animal welfare
- Mortalities
- Product downgrading
- Cost of treatments
- Environmental impact
- Public perception
When do we use diagnostic tools?

- Surveillance programme
- Health monitoring
- Disease investigation

What do we expect from a diagnostic tool?

- Reliable
- Fast → early diagnosis is key
- Contribution to decision making
Approach to health assessment & disease diagnosis

**On site:**
- Farm and environmental data
- Clinical examination
- Fresh smears
- Quick tests: e.g. agglutination

**At the lab:**
- Bacteriology, virology
- Histology
- PCR
- Immunological tests
- Clinical chemistry, etc.
Need for more farm-based, rapid and improved tools

- Digital histopathology
- Mobile cPCR
- Lateral flow cassettes
Histopathology

- Gold standard for disease investigation
- Health status overview
- Contribution to decision making
- Not just pathogen identification but characterization of the pathology, severity and time course of the disease
- Key for emerging, non-infectious, multifactorial and unknown aetiology diseases
Digital histopathology

- Quicker and remote access (24h service)
- Easy sharing and consultation
Digital histopathology

- Image analysis and scoring systems: more sensitive evaluation for farm trials (e.g. treatment, feed, genetics)
- Training / education
- Enhanced service
Farm test kits - mobile cPCR -

- On-farm testing of known pathogens
- Detection of non-culturable pathogens
- Very rapid turn-around (1h)
- Easy training – simple workflow
- Non-lethal methods available for certain pathogens (i.e. gills swabs, blood, fin)
Farm test kits
- mobile cPCR -

- Presence/absence
  - Complementary to bench qPCR
- Capacity 6 samples
- Sensitivity: $10^2$ (100 copies)
Farm test kits
- Lateral flow cassettes -

- On-farm testing NNV
- Time to result 5-10 min
- Capacity 1 sample
- Sensitivity: $10^5$ TCID/ml
- Diagnosis/confirmation clinical outbreak
- Development ongoing to increase sensitivity and specificity
Grazie per la vostra attenzione!

www.fishvetgroup.com

www.benchmarkplc.com