An overview of IPM principles in sea lice control

Sea lice: establishment of a multinational R&D initiative and respective activities
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Introduction

IPM
- What is it? + objectives
- The 5 critical steps / measures

The way forward?
Introduction

“IPM for sea lice” – a new/trendy concept?
Introduction: A paradigm shift?

Medicinal measures

Non-medicinal measures

Sustainable IPM
the integration of a number of control strategies and products, including biological, management, chemical and cultural, to provide a sustainable production system with minimum inputs

- combine good husbandry/management practices & biological control
- optimise the effectiveness of available medicines
- avoid resistance development
- prolong the market life of medicines
- minimise environmental inputs
- With focus on:
  1. Preventative measures
  2. Strategic and coordinated measures
IPM: The 5 critical steps/measures

1. Well defined and implemented SOPs /BPs. e.g.;

   • Lice counting and monitoring
   • Use of wrasse
   • Net cleanliness
   • Treatments
     - Tarpaulins and skirts
     - In-feeds
     - Wellboats
     - Product rotation
   • Other general biosecurity aspects
2. Identification and monitoring

- training/competent “lice counters”
- regular lice counting (stages and species)
- reveal the status of infection, identify impulses, waves of infection, temporal trends, predict peak infestation times…
- ensure threshold values not exceeded
- predict the need for, choice of, and timing of treatment
- determine the efficacy of treatments
IPM: The 5 critical steps/measures

3. Management by prevention

3.1 Good husbandry and management

- fallowing
- separation of year classes (single YC sites)
- single year class production areas
- proper management of fish densities
- clean nets that maintain good water circulation
- frequent moribund/mortality removal
- minimise stress (handling, grading, crowding, predators …)
- biosecurity plans
IPM: The 5 critical steps/measures

3.2 Biological approaches

- Wrasse (locally sourced & sustainable stocks, or commercially produced)
- Other spp.?
- Health feeds / supplements

3.3 Alternative technologies

- Traps?
- Pumps, suction…?
- Bioenergetics?
- …
4. Optimise medicinal control

- the appropriate product for the situation
  - product availability, lice population structure, weather, appetite, fish size, health status, discharge consent etc
- rotate products to reduce selection pressure & resistance development
- correct method of application and dose
- ensure applications do not result in sub-therapeutic doses
- treat whole sites in shortest possible time
- monitor efficacy of treatments
- do not use a product once efficacy begins to decline
- resistance monitoring with bioassays
5. Coordinated measures

- cooperation with other companies and stakeholders in operational areas/zones
  - production
  - health management
  - treatments
- agreement on common treatment windows / dates
- synchronisation of treatments
  - in zones
  - reduce overwintering populations
  - reduce spring settlements
  - during period of wild smolt migration
The way forward?

- We all know what an IPM strategy for sea lice should consist of
- Is there a need to update an IPM strategy, based on new knowledge, and tailor it to today's production systems and approaches, and make it sustainable?
- Do we need to start at Step 1 (well defined and implemented SOPs/BPs)?
- What improvements can be made at Step 2 (identification and monitoring)?
- What new knowledge exists to strengthen Step 3-5?
Thank you for your attention