

Responsible use of medicines in fish farming

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Scottish Salmon

Farming fish for food

- Water covers 71% of the earth's surface. Most usable land has already been fully exploited for food production.
- Globally, fish produced through aquaculture now exceeds the total wild catch.
- Both the human population and per capita consumption of fish are increasing
- Aquaculture production will continue to grow as wild stocks decline and management measures are introduced.



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Food producing finfish - dominated by salmon in the UK

➤ Salmon 2014

➤ 96 freshwater sites producing c.40m smolts. All smolts vaccinated.

➤ 257 active marine sites producing c.179k tonnes

➤ Rainbow trout 2014 c.15k tonnes

➤ Brown trout, Sea Trout & Halibut

Others

➤ Cleanerfish (wrasse & lumpfish)

➤ Various (cyprinids, eels, etc)

➤ Ornaments



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Salmon: health challenges

- **Sea lice:** *Lepeophtheirus salmonis* & *Caligus elongatus*
- Bacterial pathogens: e.g. *Aeromonas salmonicida* (Furunculosis) , *Vibrio* spp (Vibriosis)
- Viral pathogens: e.g. Salmon Alpha Virus (Pancreas disease)
- Pathogenic amoeba e.g. *Paramoeba perurans* (Amoebic Gill Disease)
- Pathogenic oomycetes / “fungus”: *Saprolegnia* spp (Saprolegniasis in eggs, fry, parr, smolts)
- Freshwater protozoon ectoparasites: e.g. *Costia* spp



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Salmon: medicinal treatments

- 10 licensed **vaccines** against bacterial and viral pathogens. Most injectable; some immersion; some multivalent.
- Licensed **sea lice medicines**: 1 in-feed; 4 bath treatments.
- 4 **antimicrobials** specifically licensed for use in salmon
- 2 **bath treatments** licensed for use against freshwater ectoparasites and oomycetes.
- Anaesthetics, products permitted under ATC, ATX, autogenous vaccines and products approved by VMD under SIC or STC



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Supporting responsible medicine use: non-medicinal intervention – sea lice

- Area management esp. Farm Management Agreements / single generation production
- Veterinary Health Plans and Biosecurity Plans
- Site and area fallowing
- Coordinated treatment
- Sensitivity testing
- Biological control - Cleaner fish
- Barrier technology
- Information sharing – small number of large companies



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Supporting responsible medicines use: good practice

The Code of Good Practice for Scottish Finfish Aquaculture

- Food safety and consumer assurance
- Fish health and biosecurity
- Managing and protecting the environment
- Fish welfare and care
- Feed and feeding

CoGP draws on RUMA guidance on

- Responsible Use of Antimicrobials in Fish Production
- Responsible Use of Vaccines and Vaccination in Fish Production
- Responsible Use of Anti-Parasitics in Aquaculture

<http://thecodeofgoodpractice.co.uk/>



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Environmental regulation and medicine use

- SEPA: responsible for regulating the discharge of medicines to fresh and marine water via the Water Environment (Controlled Activities) (Scotland) Regulations 2011 ('CAR')
- Regulation based around compliance with Environmental Quality Standards (EQS).
- Fate and behaviour of medicines modelled using dispersal models (bath medicines) and particle tracking models (in-feed medicines).
- EQS compliance can significantly restrict the nature and quantity of licensed medicines that may be used. Particular problem affecting some sea lice medicines.



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