

ALPHAMAX® TRIALS FOR SEA LICE CONTROL ON SALMON FARMS

BACKGROUND:

The New Brunswick salmon aquaculture industry has responded to a number of fish health challenges throughout its history, including the control and management of sea lice. Salmon farmers have a detailed knowledge of salmon husbandry and are attentive to the day to day living conditions of their fish and of the surrounding environment. All farms in the Bay of Fundy are monitored on a regular basis for fish health by private veterinarians, fish health biologists and New Brunswick Department of Agriculture and Aquaculture (NB DAA) fish health staff. In addition to disease surveillance, sea lice levels are also monitored.

Sea lice occur naturally in the Bay of Fundy, the Gulf of Maine and the Atlantic Ocean and do not pose a human health risk. There are several species of sea lice that are parasites to many species of wild fish. One of the benefits of farming in our region is that the cold winter waters of the Atlantic deter the growth of sea lice while bay management and fallowing practices help to break the cycle of this parasite when it occurs.

It is essential for industry to have access to a broad range of tools to optimize fish health management in the prevention of disease and to control parasites. This is a fundamental principal in an effective integrated pest management approach and helps to ensure that all treatments deliver optimal results. Currently, in Canada, SLICE® or emamectin benzoate, is the only treatment available through Health Canada's Veterinary Drugs Directorate for the control of sea lice while other salmon farming countries have access to up to four different treatment options.

CURRENT SITUATION:

The New Brunswick Department of Agriculture and Aquaculture and salmon farming industry have been working closely with the Federal government in order to access an alternative for sea lice control. Several options used in other salmon farming jurisdictions around the world were investigated. AlphaMax®, with the active ingredient deltamethrin was selected. The Department of Agriculture and Aquaculture applied to Health Canada applied for access to AlphaMax®, a product utilized globally, to provide safe and effective control of sea lice and to enable the introduction of an integrated pest management approach on salmon farms. The approval of pesticides such as deltamethrin for use in Canada is the responsibility of the Pest Management Regulatory Agency (PMRA) of Health Canada. The PMRA considered the value and safety of Alphamax before permitting the limited use. The assessment included a scientific review, with a risk assessment, on both health and the environmental impacts. Approval for the limited use of the product has been received subject to a series of monitoring and surveillance studies being conducted concurrently with treatments. These studies were a condition of the authorization issued by the PMRA in order to minimize any potential environmental risks. In addition, The New Brunswick Department of Environment provides additional measures of safety through the issuance of a Provincial Pesticide Use Permit as well as certifying individual applicators.

An in-depth monitoring, surveillance and research program has been developed by the province in collaboration with Fisheries and Oceans Canada, Health Canada's PMRA, Environment Canada and the New Brunswick Salmon Growers Association to support the safe, responsible and effective use of AlphaMax® (see attached Table for an overview of this program). The monitoring and surveillance studies have been designed to ensure the proper use of the product and ensure early warnings of any potential adverse effects on the environment.

PRODUCT OVERVIEW:

AlphaMax® has Full Market Authorization (FMA) in Norway, and is also used in Scotland and Chile. AlphaMax® is a bath concentrate, containing the synthetic pyrethroid deltamethrin which is capable of blocking impulses in the nervous system of the sea lice resulting in mortality. This formulation of deltamethrin was developed as a fish bath and has been proven to be effective at treating infestations of all stages of sea lice (*Lepeophtherius salmonis*). Deltamethrin is currently a registered active ingredient in Canada and is used widely throughout the agriculture sector for treating crops.

Only certified personnel will administer treatments under the direction of a veterinarian.

TIMELINES:

Treatments of AlphaMax® are expected to start the end of June and continue until the first week in August Lime Kiln, Bliss and Back Bay areas and potentially two sites located in Beaver Harbour and Foleys Cove. Detailed research, monitoring and surveillance will be conducted in conjunction with treatments. It is expected that a meeting will be scheduled in July to update stakeholders on the outcomes of these monitoring and research projects.

CONTACTS:

For further information please contact:

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To schedule a meeting to discuss the above information please contact:

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Monitoring, Surveillance and Research in Support of the Emergency Registration of AlphaMax® (10g/L deltamethrin) for Sea Lice Control

The following monitoring, surveillance and research projects have been developed in collaboration with Fisheries and Ocean Canada, Health Canada, PMRA, Environment Canada and the New Brunswick Salmon Growers Association to support safe, responsible and effective use of AlphaMax® in the treatment of sea lice on salmon farms. All research will be guided by reputable scientific personnel and all results will be made public.

Activity #1: Dispersal of Deltamethrin

Purpose: To determine the direction and concentrations of the deltamethrin downstream after release from treated cage.

Expected Outcomes: The results will provide real time data on the dilution of deltamethrin in sea water based on local conditions.

Activity #2: Vertical Mixing

Purpose: To determine the concentration of the deltamethrin in the water at specific time intervals before, during and after treatments within a treated cage.

Expected Outcomes: The results will provide real time data on:

- the mixing of the deltamethrin in the cage
- the validation that the target dosages (3ppb) are being met
- confirmation that the concentration of active ingredient leaving the cage after a 40 minute treatment is significantly less as the deltamethrin is expected to bind to organics within the cage
- the concentrations of the deltamethrin from time zero in the cage to 12 hours after release

Activity #3: Sentinel Organisms

Purpose: To determine the impact of deltamethrin on non-target organisms.

Expected Outcomes: This activity will provide data on the impact of the deltamethrin on species located in the top 4m of the water column and species located near or on the benthos

Activity #4: Integrated Multitrophic Aquaculture (IMTA)

Purpose: To determine the effect of deltamethrin on mussels located on IMTA sites.

Expected Outcomes: This project will provide information what effects, if any, the product may have on mussels.

Activity #5: Laboratory Lobster Studies

Purpose: To determine sub-lethal end points and pulse dose effects of deltamethrin on as many life stages of lobster as possible.

Expected Outcomes: This information will provide us with the LC-50 values as well as validate research previously completed on crustaceans. It will also determine the effects, if any, regarding pulse doses.

Activity #6: Field Lobster Studies

Purpose: To determine effect of deltamethrin on lobsters of 3 different size ranges in locations surrounding treated site. Lobsters will remain at these locations for the duration of the treatment.

Expected Outcomes: Information from the lab studies will be validated through this field study. It will provide real time field data on the effects of pulse doses of deltamethrin on lobsters.