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ANN ARBOR, MICHIGAN

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September 30, 1932

Report 176

TREATMENT OF TROUT EGGS TO PREVENT SPREAD OF FARUNCULOSIS

The seriousness of farunculosis and its apparent tendency to increase and spread in America, calls for attention to work being done in Europe on combating this disease of trout. The treatment of fingerling or adult trout is very difficult, since the bacteria responsible for the disease are internal (through the spleen, heart, etc.).

A recent paper by Isobel Blake (I. J. F. Williamson), of the Bacteriology Department of the University of Edinburgh, deals with the important problem of "The external disinfection of fish ova with reference to the prophylaxis of farunculosis". This work was done for the Fishery Board for Scotland, and was published in their "Salmon Fisheries" report, 1930, No. II (published in 1931, 10 pp.).

The method proposed in this paper has, we understand, been used with very good success in the hatchery of the large Seigniority Club, at Lucerne-in-Quebec, Quebec <sup>by Mr. N. J. Atkinson.</sup>

He regards the acriflavine (1/2000) treatment as a very good prophylactic against the spread of farunculosis and probably of other diseases.

The following are quotations from the publication cited above (details omitted):

I.—Introduction

"Salmon and trout ova may be regarded as a possible vehicle for the spread of furunculosis. Bacillus salmonicida has been isolated from the ripe ovaries of experimentally infected trout by the writer (Report of the Furunculosis Committee, 1930), but has never been found in the interior of ova (Plehn, 1911; Williamson, 1929; Report of Furunculosis Committee, 1930). Ova may be contaminated before extrusion, if the female parent is infected, or afterwards by contact with contaminated implements, water, or the hands of workers who have been dealing with infected fish. Although there is no evidence that fry hatched from ova thus contaminated are themselves affected in any way, yet it is clear that the organism of furunculosis may be carried externally on the ova, and later

disseminated by the water from the hatchery into which these are put. The danger of this is evident, since in many cases the outflow of water from hatcheries is utilised for supplying ponds of stock fish. Thus, treatment of the surface of the ova with suitable disinfectants is indicated. Experiments have been undertaken to find a germicide which would destroy B. salmonicida and at the same time be non-injurious to ova."

"....."

"In the experiments, the lethal concentration for B. salmonicida of the germicide to be tested was first ascertained, and that concentration was then applied to ova. The initial tests of resistance of ova to treatment were carried out in the laboratory, and when acriflavine was demonstrated to be especially suitable, treatment of ova on a commercial scale at a hatchery, was undertaken and proved satisfactory."

"....."

IV. PRACTICAL APPLICATION OF ACRIFLAVINE AS A DISINFECTANT

OF OVA

" All ova brought into a hatchery from abroad, from other parts of this country, or derived from fish suspected of harbouring infection, should be disinfected before being laid down.

"In most cases, the ova to be treated will be "eyed," at which stage they are easily handled, but "green" ova may also be disinfected with safety if the treatment is carried out on the day of fertilization a few hours after that process is complete.

"The ova to be treated should first be washed with clean water, then drained, and placed in suitable vessels such as enamelled basins. A solution of acriflavine in well aerated water (1 to 2000) should then be poured over them, in the proportions of at least 3 1/2 fluid ounces to each 1000 ova. The quantity of the germicide applied does not increase mortality amongst the ova, and the volume mentioned may be increased without danger, but should not be diminished, or there will not be sufficient to ensure complete disinfection. The disinfectant should be left in contact with the ova for twenty minutes as a minimum, and treatment may be prolonged to 30 minutes without undue mortality ensuing. The vessel containing the ova under treatment should be gently agitated from time to time to ensure perfect contact between the germicide and the ova. After treatment the ova should be washed in clean water before being laid down in the hatching boxes.

"When "eyed" ova are subjected to disinfection with acriflavine, it may be noticed that some of the ova appear to be killed immediately. On close observation it will be seen that these are the infertile ova, which would reveal themselves in any case after handling.

"The disinfection of the ova is not the only precaution to be taken. All packing accompanying them should be burnt; all washings disposed of through channels having no connection with the supply of water to fish ponds, streams, etc.; and all utensils employed in contact with the ova should be sterilised (boiling is a simple method of sterilisation).

"Acriflavine can be obtained through a chemist, the cost of sufficient to treat 100,000 ova being 10s [about \$2.00]. The price of the chemical is lower when bought in large quantities. It is recommended that the solutions be made up by a chemist

"[that is, druggist] to ensure correct concentration."

"....."

"

V. SUMMARY

"(1) Ova may be regarded as a possible means of spread of furunculosis.

(2) B. salmonicida, if carried by ova, is on the surface and not in the interior of the ova.

(3) Ova may be disinfected without injury by the application of certain germicides.

(4) Acriflavine has been found to be a suitable disinfecting agent. At a concentration of 1 in 2000, this substance destroys B. salmonicida and is practically non-injurious to ova, when applied for 20-30 minutes.

(5) The germicidal effect of acriflavine is not greatly diminished by the presence of organic matter in the water.

(6) Disinfections by acriflavine is easily carried out, and the cost is relatively small."

We would suggest that this method be given a good trial.

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