

Hatchery Production Research



OPTIMIZING PRODUCTION OF RAINBOW TROUT IN COLORADO'S HATCHERY SYSTEM

Hatchery Production Research Objectives

Colorado's hatchery system produces millions of rainbow trout annually. As new strains of rainbow trout, for example those resistant to whirling disease, are incorporated into the hatchery system, new challenges to rearing these fish arise. Experiments conducted at the CPW Fish Research Hatchery focus in optimizing the production of these strains. The results collected from these experiments will be used to reduce mortality of rainbow trout under hatchery conditions.



Dissolved Oxygen Tolerances of Rainbow Trout

This experiment simulated a hatchery electrical system failure during which the dissolved oxygen in the holding tanks was gradually reduced. The response to the drop in dissolved oxygen was monitored in the Hofer and Harrison Lake rainbow trout strains. Experiment results revealed differences between the strains. Additionally, this experiment identified the minimum dissolved oxygen concentration at which signs of low oxygen stress will occur during hatchery production, and the amount of time available to reverse these effects before mortality occurs.

Formalin Sensitivity in Hatchery-reared Rainbow Trout

Formalin is used for therapeutic and prophylactic treatment of fungal infections on fish eggs and external parasites in fingerling and adult fish. Colorado hatchery managers have observed that some strains of rainbow trout appear to be more sensitive to treatment with formalin, exhibiting higher mortality rates than others following the treatment.

A series of four experiments were conducted to examine the formalin sensitivity of various rainbow trout strains in multiple life stages. The first two experiments focused on the sensitivity to formalin of the different strains in both the egg and fingerling life stages. The second two experiments focused on the effects of hatchery rearing practices such as rearing density, water flows, and crowding on formalin sensitivity in rainbow trout fingerlings. Differences in sensitivity were observed among strains in both the egg and fingerling life stages. In addition, hatchery rearing practices, most notably rearing density and water flow, affected formalin sensitivity in rainbow trout fingerlings.



The results from this experiment will be used to inform future hatchery rearing practices and reduce mortality when using formalin to treat rainbow trout in Colorado hatcheries. Reduced mortality in the hatchery results in higher numbers of fish produced by the hatchery system, an increased ability to meet biologists' fish requests and, ultimately, provide more fish for Colorado anglers.