

DEVELOPMENTS IN FISH CULTURE

Hydraulic Spawning of Rainbow Trout

Investigators

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Air spawning has been used routinely at the Ennis National Fish Hatchery for several years. This procedure involves the injection of compressed oxygen at 3 to 5 PSI into the body cavity of ripe female trout. This pressure forces ripe ova to be expelled. This procedure works well and is widely used by fish culturists. Two disadvantages have been noted with this system. Air spawning may increase the incidence of bacterial infection and air spawning does not discharge all ripe ova from the body cavity especially when individual females don't have much ovarian fluid.

Hydraulic spawning was tested to determine whether injection of a liquid instead of air would more thoroughly flush ripe eggs from the body cavity. Also, the incidence of bacterial infection might be reduced if the liquid contained a bactericide.

Objectives

1. Design and test prototype equipment for hydraulic spawning.
2. Compare egg removal efficiency and spawning time of hydraulic spawning versus air spawning.
3. Measure the effect of hydraulic spawning on fish health and post spawning mortality.

Methods

On March 24, 1999, 20 two-year-old Fish Lake strain of rainbow trout females (FLD-97) were spawned by the hydraulic method and 73 were air spawned using 5 PSI air pressure. During hydraulic spawning, 60 cc of 0.75% saline solution was injected into the body cavity of each female and then the eggs and fluid were expelled by hand pressure. Two methods of introducing the saline solution into the body cavity were tried. The saline solution was injected into five fish by inserting a small flexible plastic tube attached to a 60 cc syringe through the oviduct of the fish. The other 15 females were injected by attaching a 3/4" 14 gauge hypodermic

needle to the 60 cc syringe and inserting the needle through the body wall and into the body cavity. The hydraulic spawned fish were held separate for two weeks to assess post spawning mortality.

Results

Hydraulic spawning did not appear to be more effective than air spawning in removing more ripe ova from the fish. Both methods of hydraulic spawning were much slower than air spawning. Hydraulic spawning by injecting fluid through the oviduct was slower than injecting fluid through a hypodermic needle.

There was no spawning related mortality in either the hydraulic spawned or the air spawned groups during two weeks post spawning. A bactericide was not added to the injected solution because contact time would not be adequate to kill bacteria.

Conclusion

1. Hydraulic spawning was not effective in expelling more ripe ova from the body cavity than air pressure.
2. Hydraulic spawning was slower than air spawning.
3. There was no difference in post spawning mortality between the two methods.
4. Air spawning is the preferred spawning method.