Determination of suitable high-density transport conditions for large rainbow trout (Oncorhynchus mykiss) seedlings using anesthetics

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Abstract For the commercial production of large rainbow trout (Oncorhynchus mykiss), a high-density transport test on female triploid large rainbow trout seedlings was conducted using the anesthetic FA100. The appropriate concentration of the anesthetic was previously considered to be 200 ppm for sedation over a short time and 100–120 ppm for accommodation in an anesthetic solution for 120 min. When rainbow trout weighing 40% of the tank volume, twice the normal volume, were housed for 120 min, the oxygen saturation immediately fell below 60% after storage without an anesthetic, and the ammonia concentration exceeded 5 mg/L after 120 min. Fish death (%) was examined and attributed to oxygen deprivation. However, when anesthetized with a 200 ppm anesthetic solution and then housed in a water tank filled with a 100 ppm anesthetic solution, the amount of dissolved oxygen did not decrease and no deaths occurred. Furthermore, when fish weighing 65% of the tank volume were housed using an anesthetic, no abnormalities were observed and there was no effect on breeding afterwards. These results show that it is possible to transport more than three times the number of rainbow trout currently transported through the existing transport systems, by using an anesthetic solution of 100 ppm.

Key words: rainbow trout, Oncorhynchus mykiss, anesthesia, FA100, high-density transport