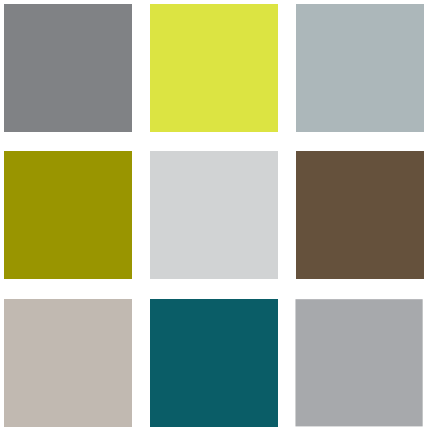
SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

The Art of Raising Yellow Perch Larvae Indoor

Impact Statement



SUMMARY

This study examined the effect of docosahexaenoic acid (DHA) and arachidonic acid (ARA) enrichment of live food on the growth, survival and swim bladder inflation of larval yellow perch. This experiment was conducted in two phases. The 1st phase was carried out in a recirculating system with 50-L conical tanks. Yellow perch larvae were stocked at an initial density of ~3000/tank and feeding began 5 days post-hatching. Live rotifers were provided at a density of 10 rotifers/mL for the first two days of feeding, then fish were transitioned to brine shrimp larvae for the remaining 8 days of the experimental phase one. In the 2nd Phase of 2 weeks, fish were transitioned to a commercial formulated diet.

SITUATION

Limited experience with live food regimes and fragmentary knowledge of nutritional requirements have been constrains to the indoor-intensive production of yellow perch larvae. Live foods enrichment with polyunsaturated fatty acids (PUFA) is a proven means of increasing the growth and survival of larval fish, but no studies to date have tested this method on yellow perch.

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RESPONSE

During the first phase marine microalgae and evaporated salt were added to the system to maintain a turbidity and a salinity of 3-4 ppt. The 2nd phase directly followed the 1st and was carried out in 60-L cylindrical flow-through tanks and tanks were initially stocked with 500 individuals/tank. During this phase, fish were fed live brine shrimp for 3 days then gradually transitioned to a formulated starter diet over an 11 day period. At the end of the first phase of this experiment fish fed with enriched diets were significantly larger than those fed an unenriched diet and the DHA-enriched fish were significantly larger than the ARA-enriched fish. Conversely, the ARA-enriched group showed significantly higher survival rates than the DHA-enriched group, but both groups had lower survival than the unenriched group. The enriched diet groups also showed a higher swim bladder inflation rate than unenriched group, but no significant difference was seen between the ARA and DHA-enriched groups.

IMPACT

In conclusion, live feed enrichment with polyunsaturates resulted in body lipids and fatty acid composition changes and these correlated with improved fish performance. These data suggest that PUFA enrichment of live food can be utilized to increase the success of yellow perch culture.

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