

NOTICE OF PUBLICATION



AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Effects of daphnia (*Moina micrura*) plus chlorella (*Chlorella pyrenoidosa*) or microparticle diets on growth and survival of larval loach (*Misgurnus anguillicaudatus*)

Author(s): Youji Wang¹, Menghong Hu¹, Ling Cao², Yi Yang³, Weimin Wang¹
¹ College of Fishery & Key Laboratory of Agricultural Animal Genetics, Breeding & Reproduction of Ministry of Education, Huazhong Agricultural University, Wuhan 430070, Hubei, China
² School of Natural Resources & Environment, University of Michigan, Ann Arbor, MI 48109-1115, USA
³ College of Aqua-Life Science & Technology, Shanghai Fisheries University, Shanghai 200090, China

Date: December 12, 2008 Publication Number: CRSP Research Report 08-A01

The CRSP will not be distributing this publication. Copies may be obtained by writing to the authors.

Abstract: Culture performance beyond metamorphosis of larval loach (*Misgurnus anguillicaudatus*) was examined in a feeding experiment of the early development stage (20 days after hatch; DAH). Total length, dry weight, length- and weight-specific growth rate (SGR) and survival were monitored in different diet regimes. During 20 days, diet treatments included: microparticle diets (A); live daphnia (*Moina micrura*) (B); live daphnia plus live chlorella (*Chlorella pyrenoidosa*) (C); and live daphnia plus microparticle diets (D). Fish survival rates during 20 days were $21.23 \pm 4.2\%$ (A), $73.19 \pm 2.8\%$ (B), $90.76 \pm 3\%$ (C) and $91.46 \pm 3.1\%$ (D), respectively. Length- and weight-specific growth rate after 20 DAH (final mean SGR; % day⁻¹) were 5.36 ± 0.44 and 15.75 ± 1.52 (A), 9.29 ± 1.25 and 23.47 ± 2.23 (B), 9.42 ± 1.55 and 24.88 ± 2.9 (C) and 9.55 ± 1.23 and 24.40 ± 2.75 (D), respectively. Fish in treatments B, C and D displayed higher growth rates and were significantly longer and heavier than fish in treatment A by the end of the experiment ($P < 0.05$). Fish in treatment A had highly significant greater ($P < 0.001$) mortalities than in treatments B, C and D. There were no significant differences in any growth parameter between fish in treatments B, C and D, but the survivals in treatments C and D (90.76% and 91.46%) were significantly higher than in treatment B (73.19%, $P < 0.05$). The results demonstrated that enriched prey and co-feeding may serve as a potential feeding strategy for loach larvae, and the form of co-feeding reduces the costs and dependence on live foods to a certain extent. We concluded that larval loach should be reared over metamorphosis using either of the following methods: feed with live daphnia supplemented with microparticle diets or with live chlorella. However, a prolonged rearing period of loach larvae is needed to detect nutritional problems and observe remote effects of

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00 and by collaborating institutions. See the website at <pdacrsp.oregonstate.edu>.

Continued...

co-feeding on weaning in the future.

This abstract is excerpted from the original paper, which was published in *Aquaculture International* 16: 361-368 and online as DOI 10.1007/s10499-007-9150-x.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00 and by collaborating institutions. See the website at <pdacrsp.oregonstate.edu>.