

Curriculum vitae

Nhu Van Can was born on 18.5.1969 in Thanh-hoa, Vietnam. He obtained a degree of BSc. in Aquaculture since 1997 at the University of Fisheries (Vietnam). In 1999, he received a MSc. Degree in Aquaculture and a Diploma of the Postgraduate Research and Training Program in Marine Aquaculture – Co-granted by the University of Fisheries and the Norwegian University of Science and Technology (Norway). In 2005, he started his PhD at the Laboratory of Aquaculture and Artemia Reference Center (ARC, Ghent University) under a mixed PhD program granted by the Belgian Technical Cooperation (BTC/CTB, Belgium).

In 1999, he began his professional career as a researcher of the Research Institute for Aquaculture No.1. He has working experiences in the fields of marine fish aquaculture and has been involved in several R&D projects of marine fish larviculture and mariculture.

Nhu Van Can is author of several research articles in the national and international peer-reviewed journals. He also participated in several international conferences relating to aquaculture with oral or poster presentations.

Promoter

Prof. dr. Patrick Sorgeloos

Department of Animal Production, Faculty of Bioscience Engineering, UGent, Belgium.

Local promoters

Dr. Tran Mai Thien; Dr. Le Thanh Luu

Research Institute for Aquaculture No.1, Vietnam

Examination committee and reading committee*

Prof. dr. Herman Van Langenhove, Chairman

Department of Organic Chemistry, Faculty of Bioscience Engineering, Ghent University, Belgium

Prof. dr. ir. Guy Smagghe, Secretary

Department of Crop Protection, Faculty of Bioscience Engineering, Ghent University, Belgium

Prof. dr. ir Peter Bossier

Department of Animal Production, Faculty of Bioscience Engineering, Ghent University, Belgium

Prof. dr. Patrick Sorgeloos

Department of Animal Production, Faculty of Bioscience Engineering, Ghent University, Belgium.

***Prof. dr. Dominique Adriaens**

Department of Biology, Faculty of Sciences, Ghent University, Belgium

***Dr. Alireza Shiri Harzevili**

Agency for Nature and Forest, Ministry of Flemish Government, Belgium

***Prof. dr. Yngvar Olsen**

Department of Biology, Norwegian University of Science and Technology NTNU, Trondheim, Norway

Dean

Prof. dr. ir. Guido Van Huylenbroeck



FACULTY OF BIOSCIENCE ENGINEERING



INVITATION

Public defense of the doctoral thesis of

Nhu Van Can

Dec 04th, 2009

On behalf of the Rector of the Ghent University you are kindly invited to the public defense of the doctoral thesis of

Nhu Van Can

Title of the thesis:

Optimization of the larviculture of the tropical fish cobia *Rachycentron canadum* in Vietnam

Optimalisatie van de larvale kweek van de tropische vis cobia *Rachycentron canadum* in Vietnam.

The public defense will take place on **Friday Dec 04th, 2009**, at **13h30 in the Multimedia-room, DICT, Building S9, Campus Sterre, Krijgslaan 281, 9000 Gent**

After the defense you are kindly invited to the reception.

Abstract of the thesis

Cobia is a potential fish species for marine aquaculture due to its rapid growth and succulent flesh. However, shortage of high quality fingerlings remains a bottle neck for further propagation of the species. This PhD thesis aimed to study the effects of feeds, feeding frequency and rearing density on the performance of cobia larvae and early juveniles, with focus on the co-feeding and weaning stage.

During weaning, growth and survival of cobia juveniles were affected by the rearing density, but not by the feeding frequency. A commercial dry feed (NRD[®], INVE Aquaculture SA) showed its advantages in comparison with the use of the home-made moist diet or minced trash fish in terms of growth and survival improvement. The study results also revealed the acceptance of the dry diet of cobia juveniles during weaning stage.

Cobia larvae grow very fast and they may need high amounts of nutrition from the onset of exogenous feeding onwards. Use of umbrella-stage of *Artemia franciscana* (UAF) revealed that cobia larvae are able to ingest and digest UAF since the first feeding. Replacing enriched rotifers by UAF as starter food for cobia larvae had very little effect on larval growth by 8 dph and appeared to have no significant negative effect on larval quality, growth or survival by 18 dph.

In order to balance and improve the nutritional condition of the larvae, early co-feeding of Proton[®] from 8 dph was conducted and resulted in better growth. The use of the experimental diet with a higher n-3HUFA content and DHA/EPA ratio, compared to Proton[®] or NRD[®], significantly improved growth and survival of cobia at the stage of 20-38 dph, but was not appropriate for early co-feeding at the stage 8-23 dph.

Cobia larvae retain DHA rather than other fatty acids in their body: the content of DHA and other fatty acids in the larval tissues decreased according to their age (0-12 dph), but the DHA/EPA ratio increased. Higher levels of dietary DHA and DHA/EPA ratios resulted in a better growth and survival of cobia juveniles (12-30 dph). Levels of DHA and DHA/EPA ratio in the juvenile tissues and in the diets could not be correlated, but the best survival in the transportation test was recorded in the treatments fed high dietary DHA content and DHA/EA ratio.

In conclusion, our study revealed that cobia larvae are able to ingest and digest UAF from first feeding onwards. Growth, survival and quality of cobia juveniles can be improved by manipulation of early co-feeding of formulated diets, appropriate rearing density and feeding frequency as well as appropriate dietary DHA and DHA/EPA ratio. More researches for further improvement of UAF and formulation of the appropriate weaning diets were suggested.