



Fakulta rybnářství
a ochrany vod
Faculty of Fisheries
and Protection
of Waters

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice
Czech Republic

Review of USB FFPW PhD thesis

First name(s), surname, titles of the PhD student: Jinfeng Zhao, M.Sc.	First name(s), surname, titles of supervisor: Assoc. Prof. Dipl.-Ing. Martin Kocour, Ph.D.
Title of PhD thesis: Broader insight into mutual genetic and phenotypic relationships of production-related quantitative traits in common carp	

REVIEWER:

Surname: Komen	Institution: Wageningen University, Wageningen, Netherlands
Name: Hans	
Titles: Prof.	E-mail: hans.komen@wur.nl
Please describe your professional relationship to the PhD student: No relationship- external reviewer	Please describe your field of expertise: Breeding programs for aquaculture

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (extent ¼ – ½ page):

The work presented in the thesis is the results of a unique set of experiments, conducted within the framework of FISHBOOST. This is not stated in the thesis (as far as I remember) but is important to understand the context. The research is of very good quality, leading to novel insights in a lesser studied but important aquaculture species. What I found particularly novel and interesting was the fact that the correlations between a large suite of traits was studied, ranging from production traits to product quality traits and disease resistance. This is not often done; most studies restrict themselves to reporting heritabilities and a limited set of correlated traits. The results presented in this thesis can be (should be!) used to significantly improve the breeding efforts in this species, and will be of importance to the wider community working on carps, the largest cultured species group in terms of volume.



Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (extent ¼ – ½ page):

The Thesis is well structured, and the ordering of the chapters logical. It seems to me this thesis reflects the workpackage in fishboost, and recapping some of the objectives, and considerations leading to the design of the experiments would have been helpful. It would have helped the reader to provide a diagram that shows the overall set-up of the experiments, and their relationships. In many cases (all?) siblings of the same group of parents were used in the different chapters. The general introduction provides a comprehensive state of the art in the literature pertaining to the studied traits. What I missed was a bit more background on the strain of carp used, and why? The general discussion summarizes the main findings, but unfortunately does not give clear directions on how to proceed with the obtained results in terms of the actual design of a breeding program. Overall, I enjoyed reading the thesis; the text was clear and well written, and the thesis as a whole was nicely presented.

OVERALL COMMENTARY ON THE PhD THESIS

Please write in the box specific comments concerning the PhD thesis in extent of 1-2 pages:

What I found difficult is to assess the contribution of the PhD candidate himself. He faithfully records his contributions to the chapters, and in two cases, it is 5%. I therefore focussed on the papers to which he had a larger contribution, and particularly assessed the general discussion. As stated above, the papers are of very good quality, published in good journals. The work is very interesting and provides a lot of new insights, particularly in the correlations between the different groups of traits: production, survival, product quality, and KHV resistance. This is rather unique. Together, they offer the possibility to come to a more comprehensive view on the relationships of these traits and how selective breeding would affect them, or vice versa, how they can be used to set up a balanced breeding program. This latter aspect is unfortunately not very well developed. The general discussion tends to stay close to the subject, and “fails” (a strong word by lack of better) to present “the helicopter view”.

Yet, there are a number of things that could have been elaborated on more, and better. Fat is the most important one. It is clear that muscular fat and abdominal fat reserves have different roles, and are probably different (think of human “brown and white” fat). Understanding the difference between them, and detailing their relationship with body size and survival would have helped in outlining how breeding could help to improve one and reduce the other.

The relationship with dimensions and product yield is also complex, and again could have been elaborated more. It is not clear to me why he comes back to using a Fulton's index (used in fisheries, but not in modern breeding) when he shows that better measurements are available.



The last chapter is exiting as it seems to offer a quick and reliable way to improve yield, yet the troubling positive correlation with fat is reported but not explained.

A last point comes back to the strain used. For someone who is not an expert on carp strains (I relied on my knowledge from 30 yrs back), the AMUR carp has no meaning unless it is described in more detail, e.g. origin, breeding history, current importance, and perhaps genetics.

Overall assesment: good, but falling a bit short on (on one hand) deeper understanding of results, and (on the other hand) putting the results in the context of a breeding program.

FINAL RECOMMENDATION

PhD thesis can be recommended for defence

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Date and place

16-7-21

Name and signature

J. Komen 