

# AquaExcel at Wageningen University

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## Publications Metabolic Research Unit (WU-MRU)

The MRU is available for transnational access (TNA) within AQUAEXCEL.

**How the WU-MRU can be used in research is described in:**  
**(1) the material and methods of presented publications.**  
**(2) the material and methods of PhD thesis**

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## **Publications WU-MRU:**

### ***Nile Tilapia***

**Control of voluntary feed intake in fish: a role for dietary oxygen demand in Nile tilapia (*Oreochromis niloticus*) fed diets with different macronutrient profiles (October 2012).**

*Authors: S. Saravanan, I. Geurden, A.C. Figueiredo-Silva, S.J. Kaushik, M.N. Haidar, J.A.J. Verreth and **J.W. Schrama**.*

*British Journal of Nutrition* **108**, 1519-1529.

*Link to this article: [http://journals.cambridge.org/abstract\\_S0007114511006842](http://journals.cambridge.org/abstract_S0007114511006842)*

### **Nile Tilapia**

**Dietary nutrient composition affects digestible energy utilisation for growth: a study on Nile tilapia (*Oreochromis niloticus*) and a literature comparison across fish species (July 2012).**

Authors: **J.W. Schrama**, S. Saravanan, I. Geurden, L. T. N. Heinsbroek, S. J. Kaushik and J. A. J. Verreth

*British Journal of Nutrition* **108**, 1519-1529.

Link to this article: [http://journals.cambridge.org/abstract\\_S0007114511005654](http://journals.cambridge.org/abstract_S0007114511005654)

### **Nile Tilapia**

**Feed intake, growth and metabolism of Nile tilapia (*Oreochromis niloticus*) in relation to dissolved oxygen concentration (April 2012)**

Authors: An Tran-Duy, A.A. van Dam and **J.W. Schrama** .

*Aquaculture Research* **43**, 730–744

Link to this article: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2109.2011.02882.x/abstract>

### **Nile Tilapia**

**PhD thesis: Modeling the effects of dietary carbohydrate and ambient oxygen concentration on feed intake and growth in fish. Ph.D.-thesis, Wageningen University, The Netherlands. (2008)**

Author : An Tran-Duy

Promotor: Prof Dr. J.A.J. Verreth;

Co-promotors: **Dr. Ir. J.W. Schrama** and Dr. Ir. A.A. van Dam;

Promotion committee: Prof. Dr. Ir. M.W.A. Verstegen (Wageningen Universiteit), Prof. Dr. Ir. J. Goudriaan (Wageningen Universiteit), Prof. Dr. D. Pauly (The University of British Columbia, Canada), Dr. S. Kaushik (INRA, Unité Mixte Nuage, St-Pée sur Nivelles, France).

Link to this PhD-thesis: <http://edepot.wur.nl/122037>

### **European seabass**

**Effect of dissolved carbon dioxide on energy metabolism and stress responses in European seabass (*Dicentrarchus labrax*) (2012)**

Authors: G.A. Santos, **J.W. Schrama**<sup>\*</sup>, J.Capelle, J.H.W.M. Rombout, J.A.J.Verreth  
*Aquaculture Research* **43**, 730-744

Link to this article: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2109.2012.03142.x/abstract>

### European seabass

**Effect of stocking density and feeding level on energy expenditure and stress responsiveness in European sea bass *Dicentrarchus labrax***  
(January 2010)

Authors: Lupatsch, I.; Santos, G.A.; **Schrama, J.W.**; Verreth, J.A.J.  
*Aquaculture* 298, 245-250.

Link to this article: <http://www.sciencedirect.com/science/article/pii/S0044848609009235>

### European seabass

**Chronic stress impairs performance, energy metabolism and welfare indicators in European seabass (*Dicentrarchus labrax*): The combined effects of fish crowding and water quality deterioration** (February 2010)

Authors: G.A. Santos, **J.W. Schrama**, R.E.P. Mamauag, J.H.W.M. Rombout, J.A.J. Verreth  
*Aquaculture* 299, 73-80

Link to this article: <http://www.sciencedirect.com/science/article/pii/S004484860900934X>

### European eel

**Gastrointestinal and metabolic effects of feeding schedule on voluntary feed intake and growth of European eel, *Anguilla anguilla***  
(April 2008)

Authors: L. T. N. Heinsbroek, B. J. Goedegebuur, G. Bloemhof, R. B. Flach and G. D. C. de Jong  
*Aquaculture International* 16, 93–108

Link this article: <http://link.springer.com/article/10.1007%2Fs10499-007-9128-8?LI=true>

### European eel

**Effects of feed composition on life history developments in feed intake, metabolism, growth and body composition of European eel, *Anguilla Anguilla*** (July 2007)

Authors: L. T.N. Heinsbroek, P. L.A. Van Hooff, W. Swinkels, M.W.T. Tanck, **J. W. Schrama**, J. A.J. Verreth  
*Aquaculture* 267, 175-187.

Link to this article: <http://www.sciencedirect.com/science/article/pii/S0044848607002852>

## **European eel**

### **Bioenergetics and nitrogen balance of the European eel (*Anguilla anguilla*) fed at high and low ration levels (November 1998)**

Authors: S. F. Owen, D. F. Houlihan, M. J. Rennie, J. H. van Weerd  
Canadian Journal of Fisheries and Aquatic Sciences 55, 2365-2375  
Link this article: <http://www.nrcresearchpress.com/doi/abs/10.1139/f98-119>

## **African catfish**

### **Size distribution in African catfish (*Clarias gariepinus*) affects feeding behaviour but not growth (May 2005)**

Authors: C. I.M. Martins, M. Aanyu, **J. W. Schrama**, J. A.J. Verreth  
Aquaculture 250, 300– 307  
Link to this article: <http://www.sciencedirect.com/science/article/pii/S004484860500373X>

## **African catfish**

### **PhD thesis: Dietary L-carnitine and energy and lipid metabolism in African catfish (*Claria gariepinus*) juveniles (November 2001).**

Author: Rodrogo Ozório

Promoters: Prof. Dr. E.A.Huisman, Prof. Dr. J.A.J. Verreth, Prof. Dr. Ir. M.W.A. Verstegen

Co-promotor: **Dr Ir. J.W. Schrama**

Promotion committee: prof. Dr. M. Rodehutschord (Halle Universiteit, Duitsland), Prof. Dr. M.Muller (Wageningen Universiteit), Dr. V.V.A.M. Schreurs (Wageningen universiteit, Nederland), Dr. G van den Thillart (Leiden Universiteit)

Link to this PhD thesis: <http://edepot.wur.nl.ezproxy.library.wur.nl/121266>

## **African catfish**

### **Effects of dietary carnitine and protein energy:nonprotein energy ratios on growth, ammonia excretion and respiratory quotient in African catfish, *Clarias gariepinus* (Burchell) juveniles (March 2002)**

Authors: R. O. A. Ozório, T. H. B. Van Eekeren, E. A. Huisman, and J. A. J. Verreth  
Aquaculture research 32, 406-414  
Link to this article: <http://onlinelibrary.wiley.com/doi/10.1046/j.1355-557x.2001.00031.x/abstract>

### **African catfish**

#### **Metabolic costs of changing the cation-anion difference in the diet of juvenile African catfish *Clarias gariepinus* (Burchell) (March, 2000)**

Authors: D.Y. Dersjant-Li, J. A. J. Verreth, P. A. T. Tijssen, R. Booms, M. W. A. Verstegen and E.A. Huisman

*Aquaculture Nutrition* 6, 39-45

Link to this article: <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2095.2000.00126.x/abstract>

### **African catfish**

#### **Impact of dietary cation difference in fish and pigs: a comparative study (September, 2000).**

Author: Yeuming Dersjant-Li

Promoters: Prof. Dr. Ir. M.W.A. Verstegen, Prof. Dr. E.A. Huisman

Co-promoters: Dr. J.A.J. Verreth, **Dr. Ir. J.W. Schrama**

Link to this PhD thesis: <http://edepot.wur.nl/192717>

### **African catfish**

#### **Balance trials with African catfish *Clarias gariepinus* fed phytase-treated soybean meal-based diets (1999)**

Authors: J.H. van Weerd, KH.A. Khalaf, F.J. Aartsen & P.A.T. Tijssen

*Aquaculture Nutrition* 5, 135-142

Link to this article: <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2095.1999.00100.x/abstract>

### **African catfish**

#### **A dynamic simulation model for the growth of the African catfish, *Clarias gariepinus* (Burchell 1822). I. Effect of Feeding level on growth and energy metabolism (September, 1986).**

Authors: M.A.M. Machiels and A.M. Henken

*Aquaculture* 56, 29-52

Link to this this article: <http://www.sciencedirect.com/science/article/pii/0044848686902887>

### **African catfish**

**A dynamic simulation model for the growth of the African catfish, *Clarias gariepinus* (Burchell 1822). IV. The effect of the feed formulation on growth and feed utilization (January, 1987).**

Authors: M.A.M. Machiels and A.M. Henken

Aquaculture 60, 33-53

Link to this article: <http://www.sciencedirect.com/science/article/pii/0044848687903565>

### **African catfish**

**A dynamic simulation model for growth of the African catfish *Clarias gariepinus* (Burchell 1822)**

Author: Marcel Machiels

Promotor: Prof. Dr. E.A. Huisman

Co-promotor: Dr. F.W.T. Penning de Vries.

Link to this PhD thesis: <http://edepot.wur.nl/192717>

### **African catfish**

**Growth and production of the African catfish *Clarias lazera* (C& V)  
III. Bioenergetic relations of body weight and feeding level (1983)**

Author: H. Hogendoorn.

Aquaculture 35, 1-17

Link to this article: <http://www.sciencedirect.com/science/article/pii/0044848683900662>

### **African catfish**

**Growth and production of the African catfish *Clarias lazera* (C& V)  
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Authors: H. Hogendoorn.

Aquaculture 35, 1-17

Link to this article: <http://www.sciencedirect.com/science/article/pii/0044848683900662>

## **African catfish**

**Ph.D-thesis: The African catfish, (*Clarias lazera* C. & V., 1840) - A new species for aquaculture. Ph.D-thesis, Wageningen University Wageningen, The Netherlands, 135p.**

Author: H. Hogendoorn.

Promotor: Prof.Dr. E.A. Huisman, Co-promotor: Prof Dr.Ir. A.J.H. van Es.

Link to this PhD-thesis: <http://edepot.wur.nl/200656>

## **Rainbow trout**

**Nitrogen excretion and determination of nitrogen and energy budgets in rainbow trout (*Oncorhynchus mykiss* R.) under different feeding regimes (May 1995)**

Authors: J.H. van Weerd, A .M. Verastegui and P.A.T. Tijssen

*Journal of Applied Ichthyology* 11, 322-328

Link to this article: <http://onlinelibrary.wiley.com/doi/10.1111/j.1439-0426.1995.tb00034.x/abstract>

## **Bookchapters**

**Effects of body weight, feeding level and temperature on energy metabolism and growth in fish. In: Energy Metabolism of Farm Animals: Effects of housing, stress and disease. Verstegen, M.W.A and Henken, A.M. (eds.). Martinus, Nijhoff, Dordrecht, Boston, Lancaster. 478-500pp (1987)**

Author: Heinsbroek, L.T.N.

Link to this book:

<http://books.google.nl/books?id=KibnMj7oaRoC&pg=PA498&lpg=PA498&dq=Machiels+african+catfis+h+henken&source=bl&ots=O9j0DqvbAp&sig=U4xMBzRTHmWS2AGIQBCeey2oblM&hl=nl&sa=X&ei=rbDEULfWM5KZ0QXWxoGwDQ&ved=0CFkQ6AEwBQ#v=onepage&q=Machiels%20african%20catfis+h%20henken&f=false>

**Energy and nitrogen balance studies in fish. In: Fish Nutrition in Practice (Kaushik, S. & Luquet, P. eds.), pp. 375–389. INRA, Paris, France (1993).**

Authors: Heinsbroek, L.T.N, Tijssen, P.A.T, Flach, R.B., De Jong, G.D.C.

## **Symposia proceedings**

### ***African catfish and European eel***

**The effect of feeding level on the apparent digestibilities of nutrients and energy of a reference diet for the European eel, *Anguilla anguilla* L. and the African catfish, *Clarias gariepinus* (Burchell). Proc. 3rd Int. Symp. Feeding and Nutr. in Fish, August 28–September 1, 1989, Toba, Japan, pp. 175–188.**

*Authors: Heinsbroek, L.T.N, Van Thoor, R.M.H., Elizondo, L.J.*