

# An oasis of aquaculture research



Milkfish



AQUACULTURE IS A RAPIDLY GROWING SECTOR, ESPECIALLY IN DEVELOPING COUNTRIES IN ASIA. CHRISTIAN LÜCKSTÄDT VISITED THE ONLY UNIVERSITY IN GERMANY THAT CONDUCTS RESEARCH FOR THESE TROPICAL REGIONS TO FIND OUT WHAT THEIR AIMS ARE IN FISH NUTRITION.



Tilapia

The aquaculture research institute is part of the Centre for Agriculture in the Tropics and Subtropics, based at the University of Hohenheim in Germany. In order to intensify agricultural research at the University this Centre was established in 1982 based on a decision by the Government of the federal State of Baden-Württemberg, Germany. The objective of the Centre is to improve food security and living conditions in developing countries in a sustainable way. It comprises four core institutes covering Animal Production, Plant Production and Agricultural Ecology, Agricultural Economics and Agricultural Engineering and is responsible for teaching and research exclusively in tropical and subtropical countries.

## GROWING SECTOR

Animal production is a vital source of income and subsistence in developing countries. It can provide farmers and their families with a continuous income, even between harvests, and can serve as a capital reserve for times of scarcity. Industrialised farming systems are not

part of the Centre's mandate, but sustainable aquaculture is a main focus, due to its world-wide importance. Around one billion people are dependent on fish as their main protein resource, and this number is likely to increase further, since the world population is increasing at an estimated annual rate of 2.0%. Aquaculture now provides more than 22% of consumable aquatic products. Most aquaculture production occurs in developing countries and mainly in Asia. Since 1984 aquaculture has grown with a yearly growth rate of more than 10% according to FAO figures, while livestock meat and fisheries have grown yearly only by 3% and 1.6% respectively. Aquaculture is at present the only growing sector within the fishing industry and is also reputed to be the fastest growing food production sector in the world. The Institute for Animal Production in the Tropics and Subtropics, Department of Aquaculture Systems and Animal Nutrition is the only institute available in Germany which carries out research and development in the field of aquaculture in tropical regions, the region with the fastest growth in aquaculture.



The Department of Aquaculture Systems and Animal Nutrition has two separate wet-laboratories including recirculation systems for fish and shrimp.

### RESEARCH EMPHASIS

In the institute, great emphasis is placed on the development of conventional and novel methods for use in animal nutrition of herbivorous filter feeding fish such as Tilapia and Milkfish. Example of priorities in the field of aquaculture scientific research are anti-nutrients and their positive and negative effects on fish, and new

techniques for studying feed intake and nutrient cycling in aquatic environments.

Further research aims are oriented on quantifying nutrient fluxes in integrated aquatic animal production systems. Aims of specific interest are the physiological effects of these substances, if animal protein is substituted by plant protein in fish nutrition and the development of qualitative and quantitative methods to describe stock flow in aquatic systems (using stable isotopes  $^{13}C$ ,  $^{15}N$ , resp. models of stomach content to quantify daily feed intake) The department is well equipped with two separate wet-laboratories including recirculation systems for fish and shrimp. The labs include furthermore two flow-through respiration measurement units for the determination of oxygen consumption data as well as a system to change the partial pressure of dissolved oxygen in the water column in order to simulate dissolved oxygen fluctuations in pond systems, as they often appear in semi-intensive aquaculture.<-

*If you want to know more about the research activities of this German University, a wide range of publications (papers in refereed journals, PhD thesis etc.) can be retrieved from several authors from the department at [www.uni-hohenheim.de](http://www.uni-hohenheim.de)*



Dr. Christian Lückstädt's background in fisheries and aquaculture stems from his upbringing on the Baltic coast of Germany. It continued through to his Ph.D. in feed intake and utilisation of commercially raised juvenile milkfish in the Philippines, which he completed in 2004 at the University of Hohenheim. Since 2003 he has been employed with Biomin Deutschland as product manager, responsible for the acidifier Biotronic.