



Deutscher Tropentag, October 9-11, 2002, Witzenhausen
“Challenges to Organic Farming and Sustainable Land Use
in the Tropics and Subtropics”

**Nutritional Quality Evaluation of Moringa (*Moringa oleifera* Lam.)
Leaves as An Alternative Protein Source for Tilapia (*Oreochromis
niloticus* L.)**

NAHID RICHTER, PERUMAL SIDDHURAJU, KLAUS BECKER

University of Hohenheim, Department of Aquaculture System and Animal Nutrition, Germany

Abstract

According to FAO (1997) aquaculture as fastest growing sector of the world animal production has annual increase about 10% and to sustain such high rate of increase in production, a matching increase in fish feed production is imperative. The high cost and fluctuating quality of fish meal as well as uncertain availability have led to the need to identify alternative protein sources for fish feeding formulation. Therefore, in order to attain more economically sustainable, environmentally-friendly and viable production, recently the research interest has been directed on the evaluation and use of unconventional protein sources. However, only limited informations are available on the utilisation of these resources as fish feed.

Moringa oleifera LAM., a member of *Moringaceae* family, is fast growing plant widely available in tropics and subtropics with several economic importance for industrial and medicinal uses. The leaves are rich in carotinoides, ascorbic acid and iron. However, there is no information regarding the utilisation of moringa leaves in fish feed. Therefore, the present study was carried out to evaluate suitability of moringa leaves as partial protein replacement for fish meal in practical diets for tilapia based on its effects on growth performance and body composition.

Three experimental diets were formulated to contain 10%, 20% and 30% of total dietary protein with moringa leaves (diet 2, 3 and 4, respectively) and one diet (diet 1) as control was included only with fish meal as protein source. All diets were isonitrogenous (35% protein) and isoenergetic (20 kJ g⁻¹). A 7-weeks feeding trial was carried out in triplicate groups of 7 fish each (9–11 g) in 45-l aquaria connected to recirculating system. Daily fish ration was calculated based on 5 times level maintenance. Diets with higher inclusion of moringa leaves (diets 3 and 4) showed depressed growth performance. In diet 3 and 4, the relatively high total phenolics (0.7% and 1%), non-hemolytic saponin (1.5% and 2.3%) and phytic acid (0.5% and 0.8%) might have contributed to poorer growth performance in these groups.

Keywords: *Moringa oleifera* LAM., *Oreochromis niloticus* L.