**Resume - Samuel Appelbaum**

**Education:**

Ph.D. University of Hamburg, Germany, Department of Hydrobiology and Fishery Science and Department of Zoology, 1979

M.Sc. University of Hamburg, Germany, Department of Zoology and Department of Hydrobiology and Fishery Science, 1971

B.Sc. Hebrew University, Jerusalem, Israel, Department of Agriculture, 1966

Fellowship Recipient of a fellowship from the DAAD, 'Deutscher Akademischer

Austauschdienst' for highly qualified students, 1971

Fellowship Recipient of a fellowship from the 'Konrad Adenauer Foundation' for talented students, 1979

**Relevant Experience:**

**Research Interests:**  
Aquaculture, specifically in arid lands   
Integrated polyculture systems   
Numerical and analytical methods   
Fish/shrimp culture, nutrition, reproduction, behavior   
   
**Abstracts of Current Research:**

**Multiple use of geothermal, brackish water in the southern part of Israel:** Two thirds of Israel is covered by desert, which is inhabited by only 2-3% of the population. Beneath this desert are large aquifers containing huge quantities of fossil, geothermal saline water. For the last 30 years this brackish water has been successfully used for irrigation of agricultural crops (e.g., tomatoes, melons, wheat, cotton, olives, etc.). In the past ten years, investigations have shown the significant potential of the geothermal, brackish water for the successful culture of aquatic organisms (fish, crustaceans, algae, etc.).In order to improve the economic viability of both sectors - aquaculture and agriculture - it is obvious that a chain of users of the desert water is needed. Ramat Negev Highlands is a district in the Israeli desert with a community of 4000 inhabitants and a current use of 4.5 million m3 brackish water per annum. Seven drillings, to a depth of between 550-1000m, supply the brackish water at a salinity of between 2680-4360 TDS, at temperatures of between 39-41°C for aquaculture/agriculture. A practicable, efficient chain of users is illustrated below: Several wells, possibly linked, continuously supply brackish water to both first users - greenhouses (for heating) and thermal baths (medicinal or recreational). Water from the first two users runs to an environmentally controlled fish polyculture system. Water, rich with suspended organic material, leaves the fish culture system and enters a reservoir which stores the water to meet the demand of the next user - irrigation of agricultural crops, which supply, among other items, fodder for dairy cows, sheep, ostriches etc. Furthermore, a proportion of the original saline water can be cost-effectively desalinated and used as freshwater for human consumption. Our efforts are being directed towards optimization of such models, for maximizing economic viability.

**Growth of indoor reared shrimps (Peneaus Vannamei) under high stocking densities in brackish, desert water:** The growth and survival of 31-day old juvenile marine shrimps Penaeus vannamei were compared in the laboratory for 70 days at stocking densities of 2000/m3 and 5000/m3. The experimental system was equipped with two 1400-liter polyethylene holding tanks (205 x 103 x 65 cm), one 700-liter polyethylene tank acting as settling tank and one 700-liter tank with gravel stones acting as a biological filter. The tanks were connected and formed a recirculation system. Two floating mesh rearing tanks, into which thirty-one-day old P. vannamei shrimps were stocked for the experiment, were kept inside each of the holding tanks. Filtered water entered each mesh tank at a rate of 3 L/m. Air stones were placed in each mesh tank to ensure a dissolved oxygen level of >4ppm. The shrimps held at the lower density grew faster (p > 0.05) than those held at the higher density. Furthermore, the survival rate was higher (87%) in the tank stocked at the lower density than in the tank stocked at higher density (63.5%). The Specific Growth Rate (SGR) of the shrimps stocked at 2000/m3 and 5000/m3 were 7.3 and 6.82 respectively. In the course of the experiment, the shrimps at the lower density gained 5.79 g in weight, while those at the higher density gained 4.15 g at the same time. The 70 day density experiment showed that the lower stocking density (2000/m3) is preferred over the higher (5000/m3) for culture of P. vannamei in tanks Published data indicate growth of P. vannamei in sea water ranges between 0.3 - 1.4 g/week, depending on densities (45 to 6000/m3): survival rates range between 67-90%. Our data on growth and survival of P. vannamei in brackish, desert water can be compared with the favorable results of these data.

**Scientific Publications:**   
  
**International Journals**

**Appelbaum, S** and A. Jesu Arockira Raj (2008) Effect of Canola Oil and of Beef Fat Coated

Commercial Extruded Diets on Growth Performance of Hybrid Red Tilapia (Mutant Pink Nile Tilapia niloticus ♂ X Wild Blue Tilapia aureus ♀) Juveniles. Malaysian Journal of Sciences 27 (2): 33 – 38.

Jesu Arockia Raj, A., M.A. Haniffa, S. Seetharaman and **S. Appelbaum** (2008) Utilization of

various dietary carbohydrate levels by the freshwater catfish Mystus montanus). Turkish J. Fish. Aquat. Sci. 8 (1): 31 – 35.

Jesu Arockia Raj., A. Victor Suresh, K. Marimuthu and **Samuel Appelbaum** (2008)

Probiotic performance on fish fry during packaging transportation stress and post-transportation condition. J. Fish. Aquatic Sci. 3 (2): 152 – 157.

Jesu Arockia Raj, A., M.A. Haniffa, S. Seetharaman and **S. Appelbaum** (2007) Effect of

Dietary Lipid Levels on Survival and Growth of the Threatened Freshwater Catfish Mystus Montanus. J. Fish. Aquat. Sci. (Turkey) 24 (1-2): 51 – 54.

**National Journals**

**Samuel Appelbaum** and A. Jesu Arockia Raj (2008) Utilization of canola oil and beef fat

coated commercial diets by African catfish Clarias gariepinus juveniles. Animal Nutrition and Feed Technology 8 (1): 73 – 79.

**International Magazines**

Jesu Arockiaraj, A., S. Seetharaman, **S. Appelbaum**, M. Dhanaraj, C. Muthu Ramakrishnan,

S.V. Arunsingh and M. A. Haniffa (2008) Conservation of endangered yellow catfish by captive breeding. Infofish International 4: 13-16.

**Appelbaum, S** and A. Jesu Arockira Raj (2008) Brackish water sea bream success. Fish

Farmer International 35 (8): 35.

**Samuel Appelbaum** and A. Jesu Arockia Raj (2008) Israeli researchers test viability of

using brackish inland waters for rearing gilthead sea bream. Hatchery International 9 (4): 22-23.

**Samuel Appelbaum**, A. Jesu Arockia Raj and Ch. Iman Raj (2008) Cultivation of gilthead

sea bream (Sparus auratus L.) in low saline inland water of southern part of Israel desert. Aquaculture Asia 13 (4): 33 -36

**Samuel Appelbaum**, A. Jesu Arockia Raj and Ch. Iman Raj (2008) Promoting the culture of

gilthead sea bream (Sparus auratus L.) in low saline inland water: A novel way to farm saltwater fish in freshwater. Fish for the People 6 (1): 40 – 44

**National Magazine**  
  
Jesu Arockia Raj, A., M. A. Haniffa, S. Seetharaman, **Samuel Appelbaum**, P.S. Allen

Benziger, M. Dhanaraj, C. Muthu Ramakrishnan and S.V. Arun Singh (2007) Observation of sibling cannibalism in 'Thai Panyas' Pangasius sutchi. Fishing Chimes 27 (9): 10 – 11.

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