

Biographical Information

NAME OF NOMINEE

Name	Modadugu V. Gupta
Most Recent Position	Assistant Director General, International Relations and Partnerships, WorldFish Center Research Coordinator, International Network on Genetics in Aquaculture (INGA)
Professional affiliation	WorldFish Center

Biographical Information

Date and place of birth	17 August 1939; Bapatla, India
Education	Ph.D. from the University of Calcutta, India

Positions held and professional affiliations

2003 – 2004	Assistant Director General, International Relations and Partnerships, WorldFish Center
1996 – 2002	Director, International Relations, WorldFish Center and Research Coordinator, International Network for Genetics in Aquaculture (INGA)
1989 – 1996	Senior Aquaculture Specialist/Officer-In-Charge WorldFish Center in Bangladesh
1986 – 1989	Fish Culture Specialist/Officer-In-Charge, Food and Agriculture Organization of the United Nations, Bangladesh
1985 – 1986	Senior Fish Farm Management Scientist and Project Leader, Mekong Secretariat, Lao PDR
1981 – 1985	Senior Aquaculture Scientist, Mekong Secretariat, Thailand
1977 – 1981	Fish Breeding Expert, Mekong Secretariat, Lao PDR
1971 – 1977	Scientist, Indian Council of Agricultural Research, Central Inland Fisheries Research Institute, Barrackpore, India
1962 – 1971	Indian Council of Agricultural Research, Research Associate/Assistant Research Officer Central Inland Fisheries Research Institute, Barrackpore and Central Marine Fisheries Research Institute, Tuticorin, India

Honors and Awards

- Certificate of Appreciation given by Asian Fisheries Society for dedicated service and contribution to the society;
- Recipient of medal from Indian Council of Agricultural Research (ICAR) in 1978 for outstanding team research in developing low-input, high output aquaculture technologies;
- Vice-President, Asian Fisheries Society;
- Fellow, Indian Association of Systematic Zoologists;
- Editor, Journal of Inland Fisheries Society of India;
- Editor, Aquabyte, NAGA;
- Member, Editorial Board, Tropical Aquaculture;
- Member, Board of Trustees, GIFT Foundation International (Non-profit Foundation established by WorldFish Center and its partners for continuation of Tilapia genetics research and commercialization of improved strain);
- Chaired/organized a number of international/regional conferences;
- Reviewer for a number of journals;
- Member of a number of fisheries professional associations;
- Examiner of Ph.D. theses for a number of Universities

Statement of Achievement

Bringing the Blue Revolution to the Poor

Dr Modadugu V. Gupta has been a prime architect in **bringing aquaculture to the rural poor in Asia**. He has achieved this through **research breakthroughs** and **leading the implementation**, 'hands-on', both in the field and at political levels. Now an estimated 1.04 million farmers/families practice these low-input aquaculture technologies.

Dr Gupta has had outstanding achievements in:

- **research to uncover new aquaculture technologies targeted at the situation of the poor** (using low input, low cost systems, recycling on farm and through polyculture). Dr Gupta was the first to break through the yield barriers and to do it with low-cost inputs. With significantly different agro-ecological environmental conditions, not only between countries but also within countries, the achievements have been technically remarkable. Furthermore over a million untapped water bodies in Bangladesh were identified in the research that has now been turned to productive use -Dr Gupta being the first to recognize the water bodies as a resource and to find ways to tap their fish-growing potential.
- **eliciting the involvement of non-government organizations** to reach and impact on as many communities as possible. In some countries like Bangladesh, these links were non-existent in this industry and Dr Gupta initiated and nurtured these relationships from the beginning. Now, non-government

organizations are extremely active in aquaculture development in Bangladesh.

- **initiating capacity building programs**. Dr Gupta has worked tirelessly to encourage and develop a critical mass of scientists, extension workers and farmers and to train them in aquaculture.
- **identifying and coordinating the distribution of better breeds of fish** including lobbying and fighting for funds for this field of activity in aquaculture and providing the technologies to breed and raise them. Dr Gupta has also coordinated the development of a dissemination strategy of improved fish breeds that aims to ensure the poor benefit and the genetic gains are not lost. Thirteen countries have been involved in the development of this strategy.
- **Being instrumental in developing international fish biodiversity protocols and policies**. Thirteen countries in Asia, Africa and the Pacific have now adopted international protocols for the transfer of fish germplasm.

Repeatedly and successfully in his 31 years in aquaculture, and a total of 40 years in fisheries research, Dr Modadugu V. Gupta found ways to help the poor, including landless farmers and women, become fish farmers. His approach was twofold.

Firstly, he realized the need to assess the experience of the poor on the ground and to deliver solutions that relied on the resources that they had to hand. Whether it was bringing derelict ponds and ditches back into fish production, finding species of fish that would survive in ponds that shrink in the dry season, or finding plants and garden waste to feed fish where villagers could not afford to buy fish feed, he found solutions that worked.

Secondly, Dr Modadugu V. Gupta perceived clearly the need to create networks and linkages between government and non-government agencies, development agencies and the farmers. Appreciating that non-government organizations work at the grass roots, Dr Modadugu V. Gupta pioneered the partnerships with non-government organizations in extending to farmers aquaculture methods that have been successful. He worked to connect farmers and researchers through these non-government organizations so that farmers would have access to the technical knowledge they needed to sustain their efforts.

Since the early 1970s when modern aquaculture was in its early stages in India, Dr Modadugu V. Gupta has dedicated his life to bringing the benefits of sustainable aquaculture to poor rural people in Asia, and following on from this, in Africa and the Pacific. At that time, many governments, development assistance agencies and scientists focused on the high end of aquaculture development such as shrimp farming, benefiting the better-off farmers and fish consumers. Dr Modadugu V. Gupta, in contrast, was driven by the desire to find ways to help poor people become fish farmers, and to help them find the wherewithal to farm productively with whatever resources they could obtain.

Thus, Dr Modadugu V. Gupta developed techniques to produce a record-breaking (for the times) 6 tons per hectare of fish in India using farm wastes such as rice bran, weeds or grass. He experimented with different species of fish and different low-input aquaculture techniques to find which would do well in war-torn Laos and northeastern Thailand in the late 1970's.

He unlocked the potential of many untapped water resources, roadside ditches and seasonal ponds, in the poverty-stricken countryside of Bangladesh in the late 1980s. Through

partnerships with many non-government organizations in Bangladesh he helped hundreds of thousands of poor and landless farmers, the majority of whom are women, to overcome impoverishment.

A dedicated achiever, Dr Modadugu V. Gupta is meticulous, rigorous and quick to build rapport with the diverse aquaculture community. A prolific writer, he documents the results of his research for scientist and non-scientists alike, to spread the results far and wide.

Ever mindful of the vital role played by communication and networks, his career-long practice has been to underpin the value and sustainability of his findings by creating linkages between farmers, government and non-government extension workers, rural banks, development assistance workers and researchers. Now, in his present position as Assistant Director General-International Relations and Partnerships at World Fish Center, Dr Modadugu V. Gupta brings this lifetime of experience to bear on creating networks in aquaculture development on a global scale.

The Importance of Fish

Fish is an essential food for millions in developing countries and a vital source of animal protein, vitamins and micronutrients, particularly for the poor. In many developing countries in Asia, fish provides 50 per cent or more of animal protein in the diet. In the Pacific, nearly 100 per cent of animal protein comes from fish caught from the sea. In Africa, many countries are absolutely dependent on fish and are losing the battle to supply enough fish for their people.

One of the major challenges faced by the world today is to meet the increasing demand for essential foods, including fish. Fishing fleets are harvesting the maximum sustainable yield, or in many cases more than the

maximum sustainable yield, from three quarters of the world's fish stocks. To meet the demand for fish from growing human populations, the world looks to aquaculture.

For poor farmers in developing countries, introduction of affordable aquaculture technologies can make a vast difference. Aquaculture gives these farmers better access to supplies of fish as they can rear fish on their own farms or in their own gardens. More fish means that their families are healthier as they consume more high protein, nutritious food. For the first time in their lives many of these people can earn an income by selling their surplus fish. They can educate their children, buy medicines and be secure in the knowledge that there will always be enough food on the family dinner table.

Impacts in Asia

NEW AQUACULTURE TECHNOLOGIES

Dr Modadugu V. Gupta's tenacity in finding means to improve the nutrition and living conditions of poor people through low-cost and accessible aquaculture technologies has borne fruit. In India, for example, these technologies, now widely adopted, have contributed to the a country's 'blue revolution'.

Two outstanding techniques developed to raise the productivity of aquaculture were recycling farm waste and polyculture. Using affordable and readily available farm waste such as chicken manure, rice bran and weeds, and culturing more than one species of carp with different food habits in the same pond, thus giving better utilization of available natural food produced in a pond, saw productivity beginning to rise in the 1970s and increasing to this day. Dr M. V. Gupta was the first to start to break through the yield barriers and to do it with low-cost inputs. **The national mean productivity per hectare climbed from only 0.5 tons per hectare in the early 1970s to an average of over 2 tons per hectare. Some farms increased**

production spectacularly and produced over 10 tons per hectare.

One example is in West Bengal, prior to the introduction of these new technologies, fish was scarce and market prices put fish beyond the reach of the poor. **Following the 'blue revolution' for the poor, fish became abundant, prices dropped, and the rural poor could afford to buy fish.**

In another region of Asia, the lower Mekong basin countries, and at around the same time, the late 1970s, fish farmers were struggling to raise species which did not grow quickly enough. Dr Modadugu V. Gupta turned to other species and found that certain species of native Indian major carps could flourish in the Mekong basin environment. He introduced this species to the Mekong basin countries along with the technologies to breed and raise them. There followed a proliferation of hatcheries producing fingerlings of Indian major carps species. **Now, in the north of Vietnam, Indian major carps have come from nil supply to comprise about 30 to 40 per cent of total freshwater aquaculture production. The result has been an increase in fish production and more fish for consumers in the region.**

Again in the late 1980s Dr Modadugu V. Gupta worked closely with the Bangladesh Fisheries Research Institute to find ways to increase fish production through pioneering low-cost aquaculture technologies. The agro-ecological environment conditions differed in different parts of the country and they worked to integrate aquaculture in farming systems under these different conditions. The results were technically remarkable. One study showed that **fish production increased nearly eightfold, from 304 kg/ha to an impressive 2,574 kg/ha in 3-6 months. Moreover, with the new technologies, farmers tripled fish yields in the difficult season between monsoon floods, achieving yields of more than 1,000 kg/ha.**

Furthermore, many unused small water bodies in Bangladesh were turned to productive use. **Nearly half of the untapped resource of more than a million ponds, including seasonally-flooded ditches, and hundreds of thousands of small seasonal ponds and roadside canals were turned into a new source of food and income. The fish raised reduced protein malnutrition among the rural poor, especially those living in flood-prone areas.** Dr M.V. Gupta was the first to recognize the resource and to find ways to tap the fish-growing potential of these water bodies.

In 2001 the WorldFish Center estimated that **1.04 million farmers/families practiced these low-input aquaculture technologies.**

Now, nearly 60 non-government organizations are working with these farmers to maintain and improve their aquaculture practices.

INVOLVING NON GOVERNMENT ORGANIZATIONS AND CAPACITY BUILDING

Dr Modadugu V. Gupta was the first to see the benefits of involving the powerful and capable non-government organizations in aquaculture outreach in Bangladesh. He knew that government organizations did not necessarily have the means to reach the poorer people. On the other hand, non-government organizations have proven ways of reaching poorer farmers and are trusted by the communities. The non-government organizations have been particularly effective in reaching women and, **today, about 60 per cent of people involved in rural aquaculture in Bangladesh are women. Previously it was almost nil.**

While working with non-government organizations, Dr Modadugu V. Gupta also worked tirelessly to encourage and develop a

critical mass of scientists, extension workers, and farmers, and to train them in aquaculture. He realized that the momentum in aquaculture could only be maintained and moved forward by developing the expertise of Bangladeshis.

The payoff for these strategies was that **over Bangladesh as a whole, aquaculture production increased by 300 per cent during the 1990s.**

NEW BREEDS, DISSEMINATION AND BIODIVERSITY PROTOCOLS

Dr Modadugu V. Gupta's efforts in alleviating the conditions of the poor farmers continued in his role as Research Coordinator for the International Network on Genetics in Aquaculture (INGA). INGA is a global forum which aims to increase fish production through genetics research and conserving aquatic biodiversity. Thirteen developing countries in Asia, Africa and the Pacific and 12 advanced scientific institutions, regional and international organizations, are members of the network.

Much of the success of INGA can be attributed to the close collaboration between the members and the confidence and trust they accord Dr Modadugu V. Gupta who has fruitfully led the network for the last 7 years.

All 13 member countries are developing new breeds of fish for farming and most have already, achieved this. The long-term impacts of the Network will be that more fish will be produced and more fish will be available to poor people in developing countries.

Brood stock and other carp species of the better growing tilapia have been transferred to a number of developing countries in Asia and are being cultured by farmers. Dr Gupta has facilitated this through making judgments on the biosafety of the transfer, facilitating the communications

between the two countries and making sure biodiversity protocols are being followed. Thus, improved fish developed in one country have been made available to fish farmers throughout Asia and this has been done in an environmentally sustainable way.

Ever vigilant, Dr Modadugu V. Gupta has been instrumental in having the Network adopt a biodiversity protection code and biosafety protocols for transferring fish between countries.

In the *Philippines*, one improved strain, the GIFT fish (Genetically Improved Farmed Tilapia), has been distributed by the Gift Foundation, capturing one quarter of the over 100,000 tons annual market for tilapia after only five years. Dr Gupta has assisted with this through his experience and advice in his role as a Board member of the Gift Foundation and the representative of WorldFish which has its own stocks of Tilapia held by the Foundation.

CAPACITY BUILDING

Through strong partnerships with advanced scientific institutions, for example the Institute of Aquaculture Research in Norway, and the great importance that Dr Modadugu V. Gupta places on improving the capacity of developing countries in aquaculture genetics, sustained learning processes and activities are incorporated in the activities of INGA. Dr Gupta formally surveys and visits all 13 INGA member countries and assess their training needs, develops courses to fit the countries needs, sources funding for the courses and coordinates them. He ensures there is asynergy in aquaculture genetics research and training between these countries.

About 300 scientists in developing countries have benefited from the 10 international and national training programs organized under the International Network on Genetics in Aquaculture.

Apart from INGA, Dr Gupta also presently leads the Group of Fisheries and Aquatic Research (GoFAR), a fisheries arm of the Asia-Pacific Association of Agricultural Research Institutions (APMRI) in which 19 countries from Asia Pacific region are participating. Now in its 5th year, GoFAR has equipped the fisheries managers/planners in the region with appropriate approaches on research priority setting/planning to enable them to address developmental needs and make best use of their limited resources.

Dr Modadugu V. Gupta has been a prime architect of the 'blue revolution' in Asia. His work has helped millions of the poor and landless, giving them means to feed their families and earn an income through fish farming. And he has done this by always working in true partnerships.