

***Macrobrachium rosenbergii* (Giant Freshwater Prawn): A Useful Palaemonid of Freshwater Aquaculture in India**

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INTRODUCTION

Macrobrachium rosenbergii (de Man, 1879) vern. Giant Freshwater Prawn or Giant River Prawn is one of the largest decapod crustacean of family Palaemonidae. It is also named as ‘Freshwater Scampi’ (India) ‘Golda Chingri’ (Bangladesh), ‘Koong mal nam’ (Thailand), ‘Cherabin’ (Australia) and ‘Udang Galah’ (Indonesia). It is mainly distributed in Indo-pacific countries including India, China, Japan, Thailand, Africa and also in New Zealand & United States of America. Post larvae or adult is cultured in freshwater while its larvae are inhabited in brackish water.

Male prawns are comparatively larger in size (33 cm) than females (29 cm). Its body consists of cephalothorax with eight thoracic and five cephalic segments while its abdomen has six segments with movable terga. At cephalothorax region, antennae (2 pairs), jaws (3 pairs), maxillipids (3 pairs) and walking legs (5 pairs) are present which provide distinct characteristics to prawns of crustaceans. At each abdominal segment, one pair of swimming legs are present which help in swimming of these individuals. First pair of walking legs are very thin and have claws, which are utilized to get food. Second pair of legs are large and powerful while its eyes are compound like other crustaceans. Its rostrum is curved upwardly having 11-14 dorsal teeth and 8-11 ventral teeth. Females can be identified on the basis of wider abdomens and proportionately smaller head than males. Another distinguishing feature is the genital aperture which is present at the base of third pair of walking legs in females and at base of fifth pair of walking legs in males. Giant freshwater prawns mainly found buried half in the bottom sediments of a freshwater body and are nocturnal & sluggish crustaceans. Spawning in prawn occurs at the time of onset of rainy season in tropical areas while at onset of summers in temperate regions. Generally, two to three spawns can occur in a season.

Males with hard shells mate with females containing soft shells. Gravid females goes down into estuaries and eggs develop into free swimming larvae there. The larvae undergo 11 consecutive zoeal stages and after this process, it develops into post-larva. Initially post-larvae remain in the bottom of water body but later migrate into freshwater.

Farming of Giant Freshwater Prawn

In a Freshwater Prawn Farming, freshwater prawns are mainly produced for consumption of human being. According to FAO (2012), total global production of prawns was 220254 tonnes in 2012, out of which contribution of China (57%), Bangladesh (19%), Thailand (11%), Vietnam (4%), India (3%), Taiwan (3%), and Myanmar (2%) was recorded. Out of total prawn farming, two-third prawn belong to *Macrobrachium rosenbergii* species and 98 percent of global trade was from Asia continent only.

Giant River Prawns (GRP) were first used in aquaculture by Takuji Fujimura in 1972 in Hawaii. Hatcheries containing 12 percent brackish water promote metamorphosis of larvae into post-larvae in 32-35 days. Live brine shrimp and egg custard mixture is fed to the developing post larvae. Both monoculture and polyculture methods can be applied in freshwater aquaculture. In polyculture, prawns can be reared conveniently with freshwater fishes because prawns are bottom dwellers and feed on detritus & faecal matters. It is reported that male are aggressive and show cannibalism also. Harvesting of GRPs should be done carefully because they are very delicate. According to FAOs recommendations, the prawns should be iced and washed with chlorinated water immediately after harvesting from water body. Post-processing of the *M. rosenbergii* is also equally important, because it can degrade fast without proper care.

Giant freshwater prawn farming is very profitable because of less input, rearing ability in polyculture and higher sale price of around 15 dollars per kilogram. In Brazil and some Asian countries, GRPs are reared in paddy fields symbiotically as they eat pests,

seeds of rice field weeds and improve the fertility of soil. As a result, pesticide free good quality rice crops are produced.

Macrobrachium rosenbergii is a good source of protein and low cholesterol food for human consumption. It is preferred on other sea foods in China and Thailand, because of its good calorific value. But its production is adversely affected by overcrowding, poor water sanitation, inadequate culture techniques and infection of pathogens. Viruses (*Baculovirus*, *Muscle Virus*, *Nodavirus*), Bacteria (*Vibrio*, *Pseudomonas*, *Aeromonas*) and fungi (*Legendum*, *Fusarium*) cause diseases in GRPs and can severely reduce their production. Probiotics have been reported to control the pathogenic bacteria and viruses in prawn culture and so enhance the gross production.

CONCLUSION

Giant freshwater prawn (*Macrobrachium rosenbergii*) is an important commercial crustacean of freshwater aquaculture in Asian countries including India. Both monoculture and polyculture methods are being practiced for commercial production of prawns. Total global output of freshwater prawns from aquaculture has expanded from 195000 tonnes in 2002 to 220254 tonnes in 2012. Some constraints like unhygienic water of aquaculture, inadequate amount of prawn feed and infection of pathogens have adversely affected the GRPs production. There is need to culture the species at commercial level under specific scientific guidelines. Probiotics and prebiotics mixtures are also recommended to increase productivity of aquaculture as they induce growth and development of prawns by controlling the infection of pathogenic microbes. It is also suggested to promote the gene level research on this valuable species aimed to enhance the quality and quantity of prawns in aquaculture.

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