

ORL-F&PI-01**A Successful Breakthrough on Breeding of Common Carp *Cyprinus carpio* in Highlands of Nepal: A Hitherto Unexplored Bid**

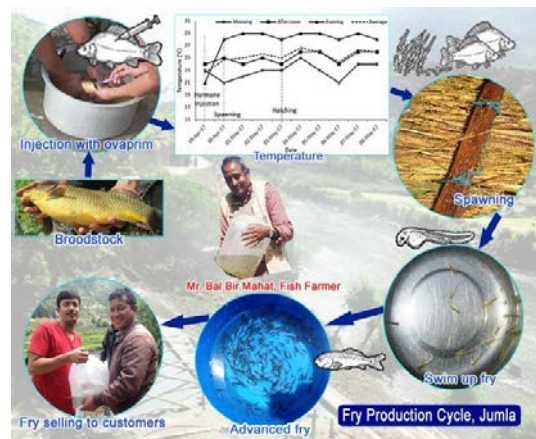
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Aquaculture in Nepal has seen significant growth, with annual fish production reaching 73,693 metric tons and a productivity rate of 4.97 MT/ha in FY 2020/2021. However, high-altitude regions remain underutilized, with over 94% of fish ponds located in the warmer Terai region. While Indian major carps struggle in cooler climates, species like Chinese carps (such as grass carp and silver carp) and common carp (*Cyprinus carpio*) are known for their wide temperature tolerance, ranging from 0°C to 35°C, making them suitable for colder regions. Common carp thrive between 3°C and 35°C, with optimal growth in temperatures of 20°C to 25°C. This adaptability to diverse thermal conditions allows them to be farmed in colder regions where water temperatures drop in winter.

In an effort to promote aquaculture in Jumla, common carp fingerlings were procured from the Fisheries Development Center in Shamsergunj, Banke, and transported to the region via Yeti Airlines. The trial aimed to test fish farming in two different locations of Jumla: Tatopani and Garjyangkot. The setup included two distinct environments—a cemented tank in Tatopani and earthen ponds in Garjyangkot—each managed by different local farmers. Unfortunately, the trial in Garjyangkot faced a setback due to negligence on the part of the owner, leading to its failure. In contrast, the trial at Balbir Mahat's cemented tank in Tatopani was successful and is still continuing to thrive.

In Tatopani, at 2500 m altitude, Mr. Bal Bir Mahat stocked 50 fries on June 21, 2014, in his small 6 m² cemented tank with a stocking density of 6 fish/m², achieving a 76% survival rate and an average growth of 0.54 grams per day, reaching approximately 0.5 kg (by April 2017) over a period of 1046 days (35 months). On April 29, 2017, he initiated hormone-induced spawning using Ovaprim (@ 0.5 mL/kg of body weight of the female and 0.25 mL/kg of body weight for male). Kakaban rafts made of rice straw were suspended in the pond for spawning. After the broodfish, consisting of 4 males and 9 females, were released into the breeding pond, a gentle flow of water was supplied. Due to limited pond availability, the male and female broodfish were kept together in the same pond during the breeding period, rather than being isolated. Spawning in Kakaban occurred within 22 hours (i.e., on 30 April 2017) with hatchlings appearing 50 hours (i.e., on 2 May 2017) after ovulation. Fries were fed boiled eggs and then crushed pellet feed, growing to 1-2 grams in 52 days. During the breeding period, dissolved oxygen (DO) and pH measurements indicated stable water quality, with DO consistently around 10 mg/L, pH at 7.5 and water temperature in a range of 21-29°C at different day time. Temperature was monitored closely, and the pond was covered at night to prevent drops. This marked the first successful high-altitude carp breeding in Jumla. Mr. Mahat sold 2,500 fries and fingerlings, earning NPR 12,500 and demonstrating the commercial viability of carp farming in colder regions, providing new livelihood opportunities for food-insecure communities.



Initiating fish farming in Jumla faced significant challenges, including funding shortages and a lack of specialized knowledge. Despite skepticism about the project's viability, perseverance and support from pioneers led to success. MDI expresses gratitude to key contributors, particularly Mr. Khop Narayan Shrestha for his initiative and guidance, and acknowledges the assistance of various team members and partners from AFU and WFP, whose support was crucial for the project's development.