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Fostering Aquaculture Expansion in Nepal: How CAARP is Enhancing Access to Quality Seed for Tilapia, Pangasius, and Sahar

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Fish farming in Nepal is characterized by a low-input, low-output polyculture of Chinese and Indian carps, resulting in modest yields (<6 tons per ha) and returns. Scaling of these species is restricted by low yield, low stocking densities, and small intramuscular bones. Tilapia and Pangasius are gaining popularity as alternatives, with 4-5 times higher productivity, 2-3 annual harvests, and no intramuscular bones, which makes them easier to fillet. Monosex seed technology for tilapia has enhanced its versatility, growth, uniformity, and market potential, earning it the nickname "aquatic chicken" in over 150 countries. Sahar (*Tor putitora*), a popular game fish, is declining in the wild, making seed production and pond farming essential to alleviate fishing pressure and ensure its availability. Improving access to and availability of high-quality seeds for tilapia, Pangasius, and Sahar is crucial for successfully scaling these species in Nepal.

Realizing the need, a group of aquaculture professionals established Center for Aquaculture Agriculture Research and Production (CAARP) Pvt. Ltd. in Kathar, Chitwan. CAARP is one of Nepal's unique farms, featuring a state-of-the-art tilapia monosex hatchery. The facility includes 32 ponds for breeding, nursing, and grow-out, used for both production and research. While CAARP's capacity exceeds 5 million monosex tilapia fry, current production ranges from 0.5 to 1 million annually, depending on demand. All equipment, accessories, and technology, including those for achieving 100% sex reversal, were imported from Thailand, where industrial tilapia farming is well established.

Additionally, CAARP is the only private-sector producer of Sahar fingerlings in Nepal, producing around 20,000 annually. These fingerlings are used for restocking in natural waters and for stocking ponds with tilapia and other fish. The facility at CAARP also includes a training hall, an island restaurant, and a dormitory. It features dining and lodging facilities, enabling tourists and professionals to stay on the farm and observe CAARP's activities.

In response to the rapid expansion of Pangasius farming in Nepal's Terai region, which heavily relies on imported seed from neighboring countries, CAARP has begun breeding Pangasius and has produced a limited number of fingerlings so far. Further efforts will be made to increase seed production in the coming years.

In Nepal, greater private sector involvement is vital for boosting the supply of quality fry and fingerlings for Tilapia, Sahar, and Pangasius, thereby contributing to the advancement of sustainable aquaculture growth. CAARP will continue to serve as a center of excellence in research, production, and training for these species. Concurrently, government policies should focus on promoting these species, providing technical assistance, implementing the Code of Conduct (CoC) and guidelines for quality seed production and supply, and offering subsidies for aquaculture equipment and electricity charges for water use.

Figure: Tilapia egg collection (top) and egg incubation (bottom) at CAARP Farm