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"Embarking on an Ascendant Journey: Aquaculture Surges to New Heights, Synergizing with Agriculture in Vibrant West Bengal"

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Among the Indian states, West Bengal has a rich agricultural heritage and plays a crucial role in the country's food production. Agriculture is the primary occupation of the people in West Bengal, and the state has one of the highest proportions of land under cultivation among all Indian states. Despite a declining share in the gross state domestic product, the agricultural sector remains a vital contributor to West Bengal's economic growth. However, the sector faces challenges such as soil degradation, water scarcity, and pest attacks, exacerbated by increasing population pressure and climate change. To tackle these issues, aquaculture has emerged as a viable solution, complementing traditional agriculture by providing a new source of food, income, and employment opportunities. Aquaculture is the fastest-growing food sector in India, with an overwhelming production of 162.48 lakh tonnes in 2021-22, valued at around Rs. 76,000 crores with annual average per capita consumption of 5-8 kg (DoF, Govt. of India). India's fisheries sector is a vital contributor to the country's economy, providing foreign exchange earnings and employment opportunities. It supports the livelihoods of over 99 million fishermen in India. India stood third in total fish production and second in aquaculture production. The sector plays a crucial role in India's socio-economic development, as evidenced by the record-breaking fish production of 16.2 million tonnes. In West Bengal, the state excels in freshwater aquaculture, producing 16.52 lakh tonnes in 2021-22, nearly valued at Rs. 4,942 crores. West Bengal is the leading fish seed producer of the country. It is called the ‘rice fish society’. Aquaculture offers several advantages, including high feed-to-protein conversion efficiency. Fish, in particular, efficiently convert feed into body weight compared to land animals like cattle, pigs, or chickens. Moreover, aquaculture can utilize marginal or degraded lands such as ponds, swamps, or abandoned fields, which are unsuitable for crop cultivation. In West Bengal, aquaculture predominantly takes place in ponds, ranging from small household ponds to large community ponds or commercial fisheries. Although the state has a potential area of 1.18 lakh hectares for freshwater aquaculture, only

40,000 hectares are currently utilized, indicating significant room for expansion. Recently, Bengal topped the list of states in India with most ponds and reservoirs according to the first ever water-body census, 2023.

Apart from its efficiency and scalability, aquaculture provides multiple benefits to farmers and communities, including income generation, employment opportunities, and nutritional security. Fish and other aquatic products are rich sources of protein, vitamins, minerals, and omega-3 fatty acids essential for human health. In West Bengal, the major species of freshwater fish cultivated are rohu, catla, mrigal, common carp, and silver carp, which account for over 80% of the total production. WB contributes 21-23% of inland fish production in India. Depending on market demand and environmental suitability, farmers can also cultivate shrimp, crab, or ornamental fish. West Bengal has witnessed numerous success stories in aquaculture. The Sundarbans, a mangrove forest in the state, is a prime example of an area with great aquaculture potential. By employing modern aquaculture techniques, the Sundarbans has become a major producer of fish and shrimp, generating revenue of over Rs. 2,000 crores in 2018-2019 from a production of over 71,000 metric tons. Other regions in West Bengal, such as Purba Medinipur, Nadia, and Hooghly, have also experienced success in aquaculture. For instance, farmers in Purba Medinipur have increased their income by 50% through fish farming, while in Nadia, a project combining fish and vegetable cultivation has provided sustainable livelihoods for farmers. Despite the successes, expanding aquaculture in West Bengal faces certain challenges. Collaboration between the government and the private sector is necessary to overcome these obstacles. The government can support the construction of ponds and tanks, provide financial assistance for equipment and inputs, and improve rural infrastructure like roads, electricity, and water supply in aquaculture areas. Government also undertakes major projects like development of inland and marine fishing villages, dwelling houses for tribal fishermen, set up of harbors and fish landing centres, Govt fish farm for quality fish seed production, pilot projects for hilly areas etc. It is crucial to conduct frequent training programs for farmers to enhance their knowledge of modern aquaculture techniques and marketing strategies, improving the efficiency, productivity, and profitability of their operations. The government of West Bengal has undertaken various ventures to promote fish farming in view of higher production, cage culture is the new promising one. ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI) signed an MoU with the state Directorate of Fisheries to promote cage culture in Kangsabati reservoir, Bankura. The ceremony was attended by prominent figures in the fisheries sector, emphasizing collaboration for fisheries development. ICAR-CIFRI highlighted its initiatives for sustainable fisheries practices and livelihood enhancement. The project involves using 32 ICAR-CIFRI GI Cages for table fish production, aiming to disseminate cage culture techniques and strengthen fisheries capacity. The ICAR-CIFRI GI Cage is a registered trademark, reflecting their commitment to innovation. This collaboration holds promise for sustainable fish production and socio-economic benefits in India.

Overall, the status of cage culture in India is promising, with increasing adoption and recognition of its potential in meeting the growing demand for fish, promoting sustainable aquaculture, and enhancing rural livelihoods. Continued research, technological advancements, and government support are expected to further boost the development of cage culture in the country.