**Baseline study for Fisheries Development in Telangana state**

**ANN – 5.10**

**Annexure – 6.8**

Brood stock management and breeding practices followed in seed production centers

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| * **Operations** | **Fish seed production and rearing practices - As is, gaps and suggestions** |
| **Govt. hatchery** |  |
| * Species bred | Indian Major carps-catla, rohu; mrigal (small scale) and common carp; Grass carp (only in one or two hatcheries).  **Gaps:** Breeding of other fish species like, Tilapaia, murrel, and Amur carp is not happening |
| * Brood stock | Mainly out sourced from nearby tanks (80-90%), reared for 2 months prior to breeding; Brood stock are fed with normal feed and are used for captive breeding  **Gaps:** No information on brood stock source, age /year class and brood stock raising aspects like stocking, sex wise segregation and husbandry practices including feeding practices; feeding with special brood stock feed and feed management; health, etc; transportation method, associated mortality, acclimatization process adopted.  **Suggestions:** Record keeping to be made mandatory document for progress monitoring and performance audit (both technical and managerial). |
| * Breeding practice | Mass spawning using 35-40 kg female /batch; Breeders size : around 4-5 kg/ fish  Induced breeding using ovatide. Breeding in breeding pools/separate tanks; fertilized eggs are transferred to hatchery. Spawning response: around 50-60%.  **Gaps:** Age of breeder not recorded; no records on performance like breeding response, fecundity , percentage of fertilization, hatching rate and survival from egg to spawn  **Suggestions:** spawning response and fecundity depends on the age and weight of fish. Large sized fish may give more no of eggs but fecundity may be less and result in low survival from egg to spawn and slow growth.  Use 2-4 year old fish for better fecundity, and fertilization (95% and above), equalization sex ratio will help in avoiding inbreeding; Simple fin cauterization/removal may be practiced to know the age of breeders. |
| * Replenishment of brood stock | **Gap:** No regular replenishment of farm reared brood stock  **Suggestions:** Support replenishment of aged breeders with replacement of selected breeders from hatchery with best BMP by 20% every year or once in two years to maintain genetic vigor. |
| Hatching methods and rearing of hatchlings | Hatching in Jars/ or cement Chinese hatchery. Hatching percentage: 60-70%.  Egg to spawn realization is approximately: 50-55% in govt. hatchery and over 70% in private.  **Gaps:** Water flow and quality is not monitored; dead eggs are not removed; post hatching care for 3-4 days is not satisfactory.  **Suggestions:** Maintenance of good circulation of eggs and good oxygenation for high hatching success (90-95%). This would enhance output of spawn from eggs to spawn to >50%. |
| * Record keeping | **Gaps:** No proper record keeping is seen except quantity of spawn produced  **Suggestions:** Record keeping to be made as mandatory document |
| * Knowledge | Mainly operate on empirical experience.  **Gaps:** Limited hands on training on technical and commercial aspects of quality fish production  **Suggestions** : Organize/ sponsor/ depute hatchery managers for trainings on brood stock management and hatchery practices |
| Suggestions | Establishment of brood bank for specific cultivable varieties of fishes and also for selected indigenous species. This will ensure better genetic material with assured breed quality traits, growth vigour, health and disease resistance and other quality aspects.  Also provide seed material for taking up stock enhancement in reservoirs and rivers, conserve local biodiversity for better ecosystem service |

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| **Private hatchery** |  |
| * Species bred | Catla, rohu, mrigal and common carp; production of other specific species is based more on demand  **Gaps:** Breeding of new varieties and local indigenous fish species of high consumer demand.  **Suggestions:** Change mindset of hatchery managers both under Govt. and private system on advantages of having more choice of species to attract more farmers. |
| * Brood stock | Mainly own brood stock (70-80%) and balance is out sourced. Farm raised brood stock are fed with special farm made brood stock feed but exact composition not available.  **Gaps:** Moderate adoption of scientific brood stock management  **Suggestions:** Capacity building on the improved practices by encouraging/ sponsoring private hatchery owners/ managers for special training programs |
| * Breeding practice | Operations on commercial scale with 70 female fish weighing between 2-5 kg and similar weight of males are used; induced breeding using GONOPRO @1ml/kg body weight in two dosage. Injecting only 15-20% of breeders. Breeding response of 90%; Fecundity is around 1.2 lakh/kg body weight. Some time mixed breeding is also done.  **Gaps:** scientific management of brood stock in producing good quantity quality seed is partly practiced with several loose ends; mixed breeding will result in hybrids and are generally slow growers  **Suggestions:** Capacity building on the improved practices |
| * Brood replacement | No systematic replacement as per guidelines |
| * Hatching methods and rearing of hatchlings | Cement hatcheries; Survival: 60-70% from egg to spawn  **Suggestions:** Training on professional management is required for achieving more success |
| * Record keeping | Information shared but records not shown |
| * Knowledge | More based on field experience |
| * Participation | Owner’s participation and team work; better decision making process, accountability of work force mainly outsourced from outside state and commitments to assigned job was far excellent. |