



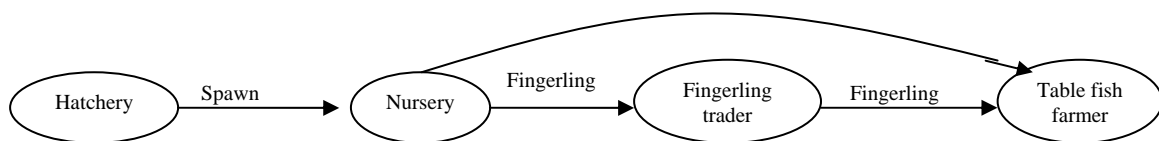
## SCALING UP THE DECENTRALISED SEED PRODUCTION (DSP) APPROACH IN BANGLADESH

### About the Initiative

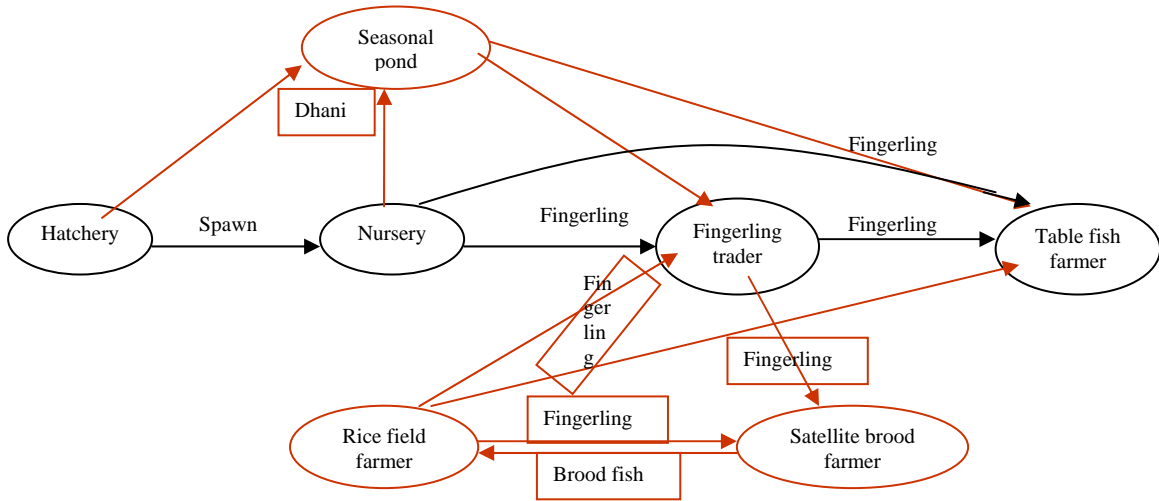
Decentralised Seed Production (DSP) is an approach that was developed in Bangladesh on the back of more than 10 years of participatory research into producing sufficient quantities of high quality fish fingerlings. This approach is essentially about farmers integrating fingerling production with their rice cultivation. Under RIU, a consortium of organisations, led by the NGO RDRS (Rangpur Dinajpur Rural Service), is scaling up this approach in ten districts in the northern region of Bangladesh. Their interventions have led to configurations of different actors emerging around the fish-seed value chain in ways that could result in greater availability of fish-seed in the area as well as improved livelihoods for farmers and other actors.

Different agencies have tried to popularise the DSP approach through different means — creating awareness through training visits, demonstrations at farmers' fields, etc. The RIU project in Bangladesh uses this approach to create different actors in the fish-seed value chain, connects them, builds their capacities and initiates the momentum for a flow of different fish-seed products through different elements of the value chain. The momentum and value chain flows created is expected to attract many more and will help the process of scaling-up the approach.

The existing fish-seed value chain is depicted in the following diagram. The main problem here hatcheries and nurseries are often too physically isolated; transportation of fingerlings takes a long time, resulting in higher mortality rates and increased prices during peak seasons.

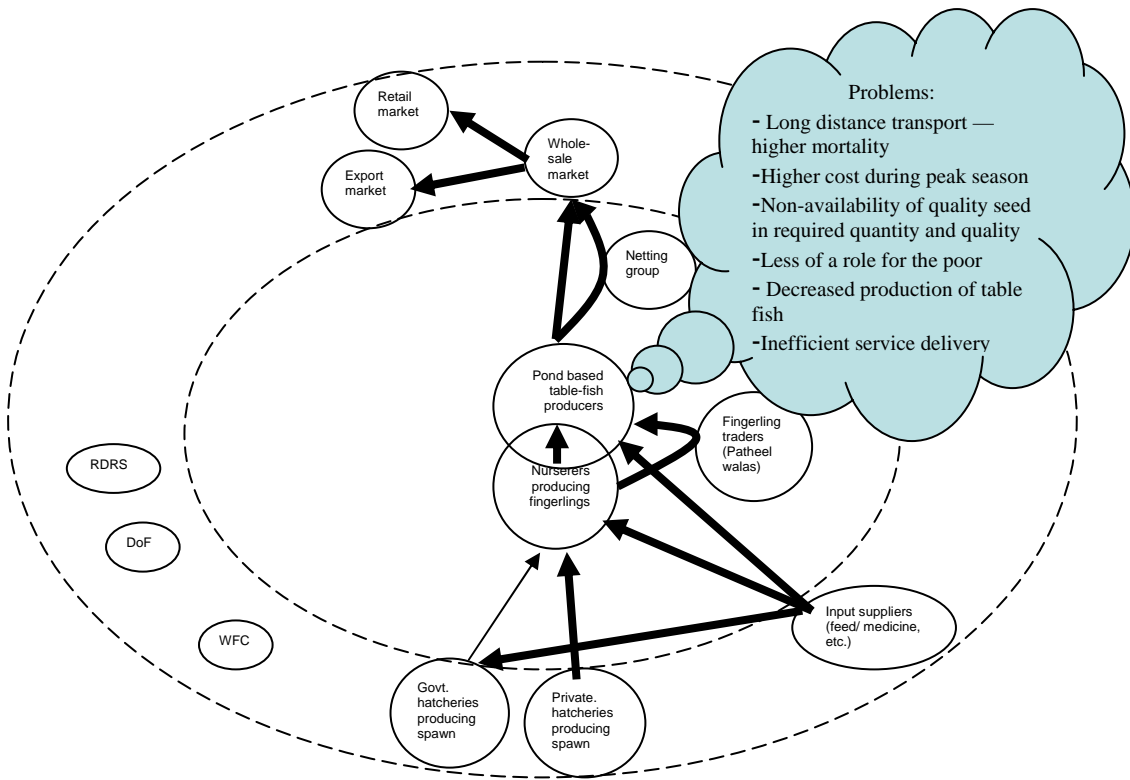


Project interventions are expected to add two more loops of fingerling producers, as shown in the diagram below.

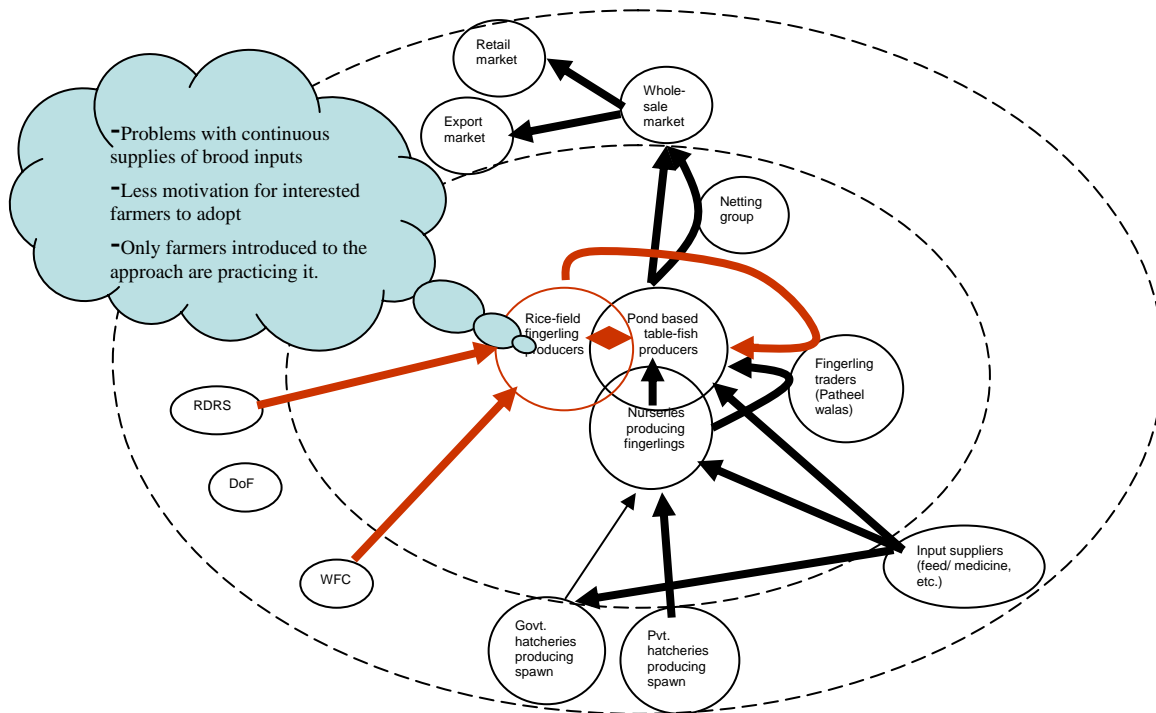


Through this scheme fingerling producers are multiplied. Rice field farmers and seasonal pond owners are added to the system. It appears to be a win-win situation for all actors concerned, with everyone benefiting financially and resulting ultimately in positive impacts on fish seed production and livelihoods of rural communities.

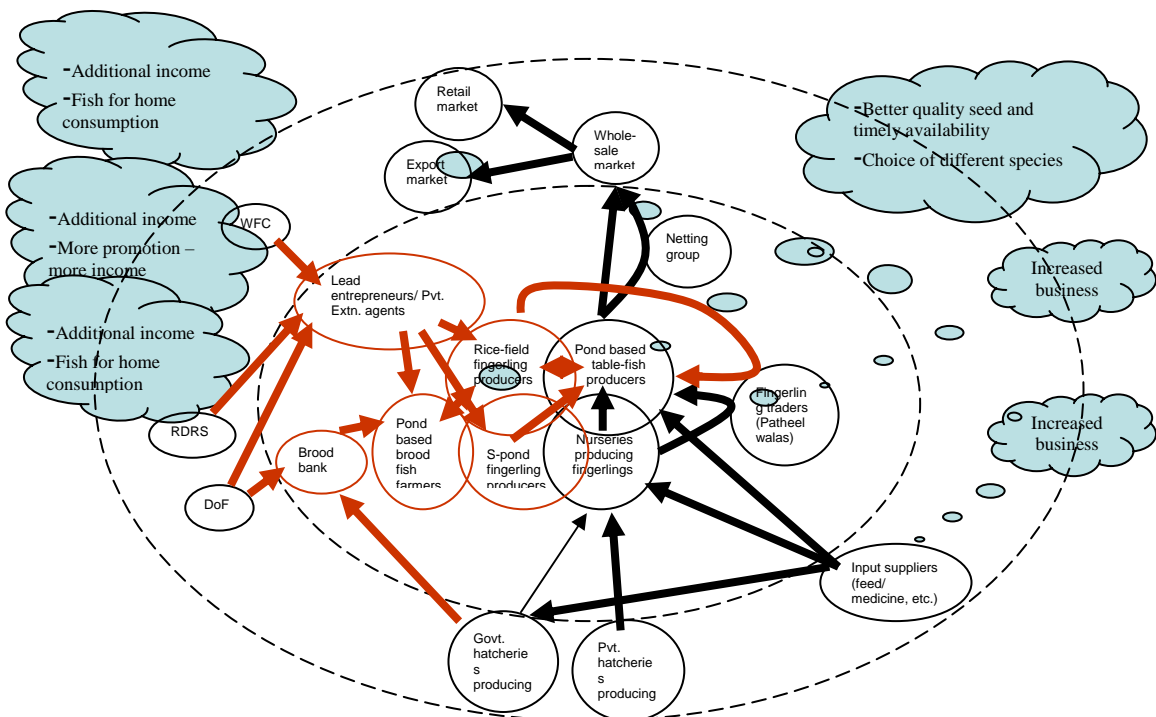
The following diagram depicts different actors in the current stage of the project and their relationships.



In cases where DSP was promoted through demonstrations with individual farmers — as part of previous project initiatives — the actors and their relationships have varied, as depicted in the following diagram.



The following diagram presents how new actors and linkages were created through the current initiative.



### **Current Stage**

- A total of 8833 rice farmers belonging more than 250 villages introduced GIFT (Genetically Improved Farmed Tilapia) brood in their rice fields to produce fish-fingerlings during the *amon* season of 2009 in the northern region of Bangladesh. A total of 205 Satellite Brood Rearers developed GIFT brood from fingerlings and supplied these to farmers at the rate of 10 brood fish per farmer. Rice field farmers have expressed their appreciation for DSP's contribution to raised incomes and increased availability of fish for food. Fingerling traders have found that the wider availability of quality fingerlings has reduced drudgery, while table fish growers are appreciative of the greater diversity of fingerlings at lower cost.
- As part of a market development initiative, an association of fish-seed value chain actors was formed and registered at Pirgong, a village in the district of Thakurgaon. Similar initiatives are on at Shorshabari in Rajshahi district and Kudarpar in Kurigram district. These initiatives are aimed at establishing fingerling collection centres and creating better linkages among different actors in the value chain.
- About 600 Lead Entrepreneurs (LE)/ Private Extension Agents (PEA) have been identified from satellite brood farmers (200), rice field farmers (300) and fingerling traders (100) to support scaling-up activities. Project leaders feel this is key to sustaining DSP activities in the post-project phase.

### **Future Activities**

- In the second year of the project DSP will be introduced to about 9,000 more rice farmers in other villages. Farmers who practiced DSP the previous year will continue with their activity, though the project will not conduct any follow-ups due to a lack of human resources. However, it expects a voluntary scaling-up of DSP in these villages.
- Fingerling collection centres will be established in different regions and will serve to strengthen linkages among different fish-seed value chain actors.
- The network of lead entrepreneurs and private extension agents will be further developed to anchor DSP activities.

### **Challenges**

- The current flow in the fish-seed value chain is facilitated through the free supply of GIFT fingerlings to Satellite Brood Farmers, who grow them to a brood fish size. The project buys GIFT brood and gives it to rice field farmers for free. The farmers breed and then sell the fingerlings to fingerling traders. To sustain this chain without the project's support, satellite brood farmers need to buy fingerlings from rice field farmers or fingerling traders, raise them, and then sell brood fish back to rice field farmers. The project may need to ensure these economic transactions.

### **Opportunities**

- A large amount of interest over DSP and GIFT has been generated through the media and several government initiatives.
- A few farmers have signed on to the project on their own accord, breeding GIFT in vast stretches of their rice fields and, thus, contributing to the growing momentum around the approach.

### Potential Areas for Lessons

- Approaches for wider application of DSP
- Factors/ drivers that are contributing to/ challenging putting DSP into wider application
- Types of actors and their roles in value chain innovation
- Ways and possibilities of making the initiative pro-poor

### Timeline of Events that led to the Development of DSP in Bangladesh

Period	Significant Event
	<ul style="list-style-type: none"> <li>• Rice fields used to naturally contain fish and other aquatic life forms</li> <li>• There was local knowledge about fish seed production of common carp in ponds (collecting eggs using water hyacinth and stocking in newly-constructed ditches or in <i>hapas</i> in ditches to produce hatchlings that grow to fry/fingerlings)</li> </ul>
1991	<ul style="list-style-type: none"> <li>• On-farm trial on translocating common carp eggs with aquatic plants from ponds into rice fields to produce fingerlings and use them for table fish production as part of the Northwest Fisheries Extension Project (NFEP). The Department of Fisheries implemented the project during 1987 to 2001 with CARE, DAE and partner NGOs of CARE.</li> </ul>
1994	<ul style="list-style-type: none"> <li>• GIFT was introduced into Bangladesh by BFRI through ADB's DEGITA (Dissemination and Evaluation of Genetically Improved Tilapia in Asia) Project. Its focus was on performance trials to compare previous strains with the GIFT strain (on-station and on-farm trials). Production of GIFT seed in public and private hatcheries was promoted in order to supply farmers (mostly mono-sex seed). This was a centralised seed production system</li> </ul>
1999	<ul style="list-style-type: none"> <li>• GIFT seed in production in rice fields trialled in farmer participatory experiments as part of PhD research (Asian Institute of Technology, Thailand) under NFEP, using ideas from research carried out in Northern Vietnam</li> <li>• Following successful outcomes this was promoted in NW Bangladesh (8 districts) by CARE as part of the Inter-Fish Project (1995-2000)</li> </ul>
2001-2005	<ul style="list-style-type: none"> <li>• Promoted largely in NW areas by CARE under the GOInter-Fish project (2000-2005) with other stakeholders</li> </ul>
2002	<ul style="list-style-type: none"> <li>• Impacts/ scaling up was studied by WorldFish Centre and the University of Stirling, UK as part of post-doctoral research</li> <li>• Follow-up impact studies conducted as part of additional PhD research by the University of Stirling</li> </ul>
2003-2004	<ul style="list-style-type: none"> <li>• WorldFish promoted DSP through their Decentralisation of Sustainable Aquaculture Project (DSAP) (2000-2006) with around 40 NGOs throughout Bangladesh — focus on awareness and training of NGO staff on DSP</li> </ul>

2007-2009	<ul style="list-style-type: none"> <li>WorldFish promoted DSP with common carp, GIFT and carp in rice-fields through their Adivasi Fisheries Project in NW (Rangpur, Dinajpur and Jaypurhat District) and N (Sherpur and Netrokona District) Bangladesh</li> </ul>
2003	<ul style="list-style-type: none"> <li>DSP was promoted in Vietnam through Support for Freshwater Aquaculture (SUFA) project in hilly areas of two Northern provinces</li> </ul>
1980s	<ul style="list-style-type: none"> <li>Research work of AIT about cultivating fingerlings in <i>hapas</i> and spreading the success in Cambodia, Vietnam, Thailand and Laos through AIT's outreach project contributed to development of the Decentralised Seed Production concept</li> </ul>

### **Possible research strands that underpinned DSP development in Bangladesh**

- Research on cultivating fingerlings in *hapas* (captive breeding and growing) and its subsequent adaptation research in different Southeast Asian countries
- GIFT development (number of years of selective breeding from 8 different natural sources of tilapia) and its subsequent introduction into many Asian countries
- Rice field-based fish seed production and development of value chain — participatory research by integrating local knowledge and researchers' findings and development of the system
- Establishing beneficial impacts on livelihoods of rice farmers, fingerling traders, environment, etc. and subsequent promotion through media

### **Salient Features of Scaling-Up DSP in Bangladesh**

- Simple, easy-to-follow technology — can be directly adopted with minor changes to farmers' existing situations
- Suits well to the cropping and lifestyle patterns of Bangladeshi villagers (skills/ resources/ knowledge)
- Addresses the serious problem — demand for quality and timely fingerling availability
- Research demonstrated benefits to different sections of the community
- Farmers are adapting the technology for their specific farm situation and benefiting from this
- Large farmers are adapting the technology in large stretches and contributing for wider spread
- Establishing a network of satellite brood rearers, brood bank, private extension agents, seeding traders is required for faster and wider spread of the technology
- Awareness exists in the community — TV, trainings, etc.

### **Key Observations**

- Different research outputs (captive rearing, GIFT, rice crop agronomy) were integrated with local knowledge (fish in rice fields, seasonal factors, etc.) and market intelligence to develop this approach for wider dissemination

- Factors for wider acceptance of the technology include: market demand, direct economic benefits to different actors, awareness of usefulness, simple technology with minimum adjustments to existing situations
- Farmers are further adapting to their specific situation — different sizes of ditches, feed material, poly-culture of fish, different management in summer (moving them to ponds; also sharing ponds), raising bunds (to grow table fish when flooding), different sps when tilapia is not available, etc.
- Farmers need support to reflect and adapt
- Initial approach — material to satellite brood rearers, rice field farmers, seasonal pond farmers was provided free to initiate the flow. Now the challenge is to make it run on its own through financial transactions among them
- Fingerling traders and nurseries are the key elements providing knowledge. There is a lot of exploitation concerning prices