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Needs Assessment of Tribal and Aqua Farmers for Disseminating Aqua Cultural Information through ICT in Gujarat

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ABSTRACT

Group discussion was conducted at Navsari Agricultural University, Navsari, Gujarat, for assessing the information needs of tribal and aqua farmers, and officials in brackishwater aquaculture for disseminating the information through Information and Communication Technology (ICT), under four groups, shrimp culture farmers (11 numbers), fish culture farmers (17 numbers), women farmers (12 numbers) and Government officials (10 numbers). Among the total participants one third of the participants (12) were from women tribal farmers. Among the participants 28 members from primary level grouping, 18 members from secondary level grouping and 14 members from graduate and above category. This fairly good education level factor assisted the organization in making to sit for the discussion about the dissemination of aquaculture information through ICT tools. The needs assessment for all four group showed that there was requirement of information on new advances in shrimp culture, fish culture, cage farming of finishes, government schemes for women and tribal community, aquaculture/fisheries databases and extension materials/programmes in brackishwater aquaculture.

Keywords: *Information and Communication Technology, aquaculture, needs assessment*

1. INTRODUCTION

Aquaculture is an important farming enterprise in the coastal agro-ecosystem which provides livelihood security to about one million coastal fish farmers and associated stakeholders. It also contributes significantly for the socio-economic development of tribal communities and their prosperity. Aquaculture production practices are constantly getting improved in tune with the emerging on-farm and off-farm requirements. Concurrently, the scientific research is also advancing fast and new technological advancements are getting introduced continuously. It is essential that the technological improvements developed in research institutes are communicated to the aqua farmers to meet the emerging requirements, sustain the productivity and livelihoods in the changing environments.

More recent communication technological innovations have increased the reach and speed of information, culminating, with digital technology. This digital technology led to the development of Information and Communication Technology (ICT) based tools such as e-Learning modules, expert systems, information delivery through mobile phones, short video films, knowledge centers, databases, web portal etc. for information dissemination through offline and online modes on various issues like agriculture and allied sectors, governance, health, education, employment, developmental schemes and guidelines etc.

The reports indicated that Asia's highest number of ICT projects and also 45 per cent of the world's ICT projects are implemented in India [1, 2]. Various ICT projects/initiatives such as aquachoupal, ikisian, Information Village Research Project of M. S. Swaminathan Research Foundation, e-Arik and others to provide sustainable digital access to rural communities [3, 4]. ICT project such as Community Learning Centres and mobile connectivity are established by Self Employed Women's association under ICT School for empowerment for women project. However, village level ICT initiatives in Gujarat especially for farmers in tribal areas such as Dandi, Surat, Khursad, Mahuvas, Patri and Gandevi etc are almost non-existence. In addition, these areas are exhibits vast resource potential for aquaculture development. The Central Institute of Brackishwater Aquaculture (CIBA), Chennai and Navsari Agricultural University (NAU) has initiated to facilitate the aquaculture development process in these areas. In this existing scenario dissemination of information in aquaculture and allied activities to the tribal and aqua farming community of Gujarat through ICT will helps to faster the information / knowledge empowerment for farming community in aquaculture. But the fact remains that not all the external information provided through such initiatives is of use to the tribal communities. It may be observed that the tribal communities are at home with their indigenous technical knowledge since it serves their needs on a day to day basis. Therefore any additional information and know how that needs to be imparted to such communities should be supplemental than fundamental. Thus a balance of global and local information has to be imparted that helps in improving quality of life of the coastal communities.

Given the above mind set of the communities, the role and scope of aquaculture can be enhanced in tribal/coastal areas through ICT only after assessing the level of skills and knowledge and the information needs of potential users of ICT initiatives. The information needs assessment baseline data will help to understand the system as a whole and help in planning, formulating and implementation of future interventions.

For this purpose, an interactions meet for tribal and aqua farmers on "Information and Communication Technology (ICT) initiatives in brackishwater aquaculture" was jointly organized by CIBA and NAU at

Navsari on 8th May 2013. The objective of interaction meet was to assess the information needs of tribal and aqua farmers in brackishwater aquaculture with special focus on the dissemination of information through ICT.

2. APPROACH: ICT INITIATIVE MEET

The framework of an interaction meet on "ICT initiatives in brackishwater aquaculture" is depicted in Fig. 1. The programme was organized in two sessions: presentation by subject experts followed by group discussion. The programme was attended by 40 tribal and aqua farmers from Dandi, Surat, Khursad, Mahuvas, Patri and Gandevi and 10 more participants from NAU, ***Krishi Vigyan Kendra (KVK), Marine Product Export Development Authority (MPEDA)*** and Non-Government Organization (NGO). The topics covered during the presentation session (Table 1) was useful for creating the awareness about the various ICT tools and its role for enhancing the knowledge of farmers in aquaculture and allied activities.

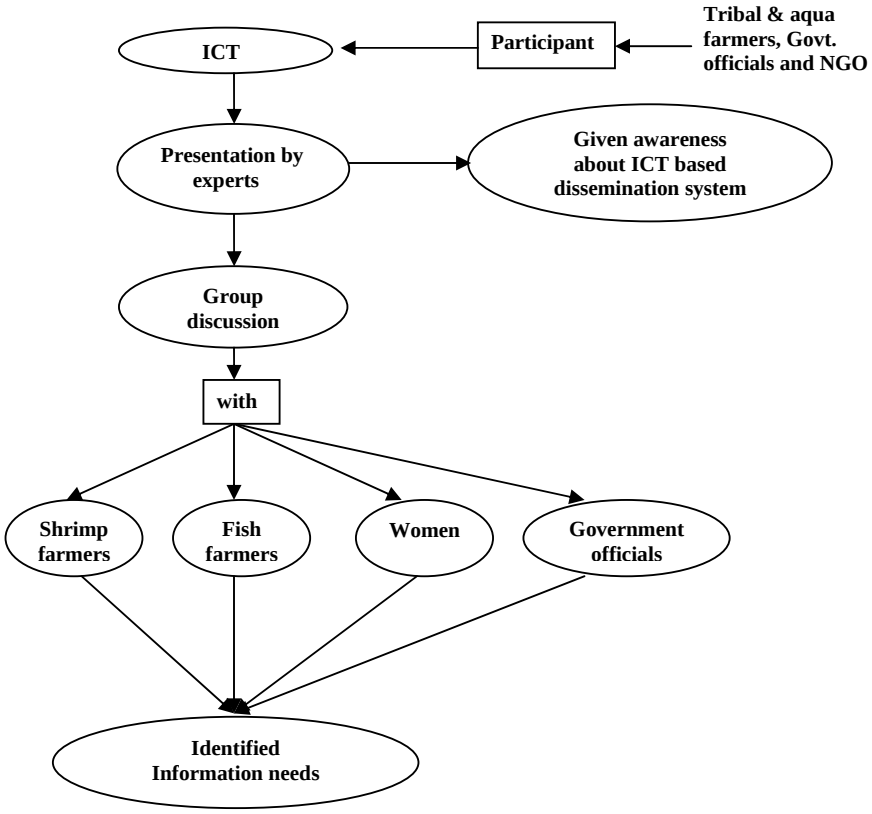

Fig 1: Framework of "ICT initiatives in brackishwater aquaculture" meet

Table 1: Presentation topics covered in the interaction meet

Title	Topics covered
ICT and Fisheries: at a glance	• Usage of ICT tools such as kisan kerala, e-choupal, voice messages through NAU-KVK etc. • Significance of GIS, GPS and RS and their applications towards the agriculture and allied sectors. • Importance of e-governance initiatives/projects implemented in Gujarat.
ICT based dissemination system in aquaculture	• Importance of various ICT based dissemination system such as website, web based FAQs, e-Learning module, interactive kiosk, knowledge center and advisory services. • Operation and functioning of knowledge centers in Tamil Nadu, Andhra Pradesh, Odisha and Arunachal Pradesh. • Importance of knowledge center in tribal areas and its role for enhancing the knowledge of tribal

	farmers in aquaculture and allied sectors. • Implementation of consortium project by ICRISAT- IIT Kanpur in partnership with ICAR and DADF, Ministry of Agriculture, Government of India, named as "Fishpedia- a dedicated knowledge model portal for fishing sector".
Demonstration of e-Learning module on "Banana shrimp"	• Information about the culture of banana shrimp includes, distribution and biology, quality seed production, pond preparation, stocking, feeding strategy, pond management and harvest, economics etc. • Importance of culture of banana shrimp in Gujarat.
Demonstration of Agropedia	ICT based extension services such as voice messages, text messages, voice package of practices etc. through Agropedia.

Group discussion was conducted for assessing the information needs of tribal and aqua farmers, and officials in brackishwater aquaculture for disseminating the information through ICT, under four groups, shrimp culture farmers (11 numbers), fish culture farmers (17), women farmers (12) and Government officials (10). Each group recorded their group members responses in the charts. At the end of the group discussion, the information needs assessed by each group was presented in the meeting.

3. RESULTS AND DISCUSSIONS

3.1 Profile of the Participants

The profile of the participants is presented in Table 2. Among the total participants one third of the participants (12) were from women tribal farmers. The average age of these participants was 32 in female and 33 in male. Among the participants oldest group by age was MPEDA which has an average age of 50 years. The youngest groups were from NAU, NGO and women tribal farmers with average age below 35 years. The experience of participants in aquaculture varied from 0 to 30 years and the average experience of the participants was 2 in female and 8 in male. The highest and lowest average experience was from MPEDA with 28 years and women tribal farmers with 2 years respectively.

Table 2: Participant's profile

Participants	Details	Sex	
		F	M
Tribal and aqua farmers	No .of respondents	12	28
	Average age (years)	32	34
	Average experience in aquaculture (years)	2	10
NGO	No .of respondents	_	2
	Average age (years)	_	35
	Average experience in aquaculture (years)	_	10
KVK	No .of respondents	_	2
	Average age (years)	_	42
	Average experience in aquaculture (years)	_	17
MPEDA	No .of respondents	_	1
	Average age (years)	_	50
	Average experience in aquaculture (years)	_	28
NAU	No .of respondents	_	5
	Average age (years)	_	32
	Average experience in aquaculture (years)	_	8
Total no .of respondents		12	38
Average age (years)		32	33
Average experience in aquaculture (years)		2	8

The income levels of the participants are represented with three income level such as low (<5000), middle (5001-10000) and higher (>10000). The income levels of the participants are presented in Table 3. The male (16) and female (8) tribal/aqua farmers were the low income group. The middle income group had representation from tribal/aqua farmers and NGO. The higher income group members were about 14 in number from all the government officials such as NAU, KVK and MPEDA and part of the tribal/aqua farmers. Among the participants 28 members from primary level grouping, 18 members from secondary level grouping and 14 members from graduate and above category. This fairly good

education level factor assisted the organization in making to sit for the discussion about the dissemination of aquaculture information through ICT tools.

Table 3: Income level

Income / Participants	<5000		5001-10000		>10000		Total
	M	F	M	F	M	F	
Tribal/aqua formers	16	8	6	4	6	0	40
NAU	0	0	0	0	5	0	5
KVK	0	0	0	0	2	0	2
MPEDA	0	0	0	0	1	0	1
NGO	0	0	2	0	0	0	2
Total	16	8	8	4	14	0	50

3.2 Information needs of Tribal and Aqua Farmers

The information needs of tribal and aqua farmers in brackishwater aquaculture were depicted in Table 4. Information is needed to improve the culture practices of banana shrimp, vannamei, seabass, milkfish, mud crab fattening and ornamental fish. They showed interest in polyculture of shrimp with fish and also milkfish with carp. Government group needed the package of practices in diversified species for the development of aquaculture which are suitable in Gujarat climatic condition especially during the winter season. Shrimp and government official group respondents required that videos of success stories and case studies of farmers related with aquaculture. The fish group needed the ICT module in fisheries especially to improve the culture practices of seabass and milkfish. ICT modules are increasingly attracting the attention of farmers including women, extension functionaries and educationists as a way of much-needed speedy transfer of technology in agriculture and allied activities [5, 6].

All the four group respondents' envinced keen interest in information about state/central government schemes or plans related with shrimp culture, fish culture, aqua farmers, tribal community and farm women etc. In addition they recognize the potentiality of requirement of schedule of training and other programme/meetings to be held by state fisheries, aqua departments, agriculture and allied universities, co-operative societies and farmers associations for enriching their knowledge in the field of aquaculture. Government group respondents have shown keen interest for the development of web portal for fisheries sector which contains species wise frequently asked questions addressed by farmers, location specific aquaculture information, area wise farmers database, land survey database, fisheries/aquaculture related extension materials in vernacular language etc. will be useful for aquaculture planning and development. Shrimp farmers group voiced their concerned about the increasing cost of feed/seed and requested the Government for framing of guidelines for stabilizing the market price.

Tribal women were explained about the alternative livelihood activities of coastal women self-help groups already functioning in Tamil Nadu and Andhra Pradesh. They opined that the Government should arrange an exposure visit to other states to know about the involvement of women in aquaculture activities like mud crab fattening, value added products from shrimp/fish etc. Also, information on ornamental fish farming and preparation of aquarium tanks as alternative livelihood activities was expressed.

4. CONCLUSIONS

The needs assessment for all four group showed that there was requirement of information on new advances in shrimp culture, fish culture, cage farming of finfishes, government schemes for women and tribal community, aquaculture/fisheries databases and extension materials/programmes in brackishwater aquaculture. Based on need assessment, ICT initiatives can provide a powerful thrust to improve the aqua cultural activities among the users in the tribal/coastal areas. Furthermore, ICT initiatives can use need assessment not only to make significant improvements to the aqua cultural operations of the stakeholders, but also enhance the impact on the role of institutions and organizations in the development of aquaculture in coastal areas. Although face to face meetings, workshops, group discussions and demonstrations remain the mainstay of extension, new technology and electronic media can enhance opportunities to aquaculture extension educators for innovative and effective ways of information distribution to various stakeholders.

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Table 4: Matrix of information needs assessed by the four groups

Information needs	Groups			
	Shrimp culture	**Fish culture**	**Women**	**Government officials**
Package of practices/products	Vannamei, banana shrimp	Seabass (cage culture), milkfish	Cage farming in seabass and milkfish, ornamental fish, value added products from shrimp/fish	Diversifies species suitable for Gujarat
Availability of quality seed	Tiger shrimp, vannamei, banana shrimp	Seabass, milkfish		
Stocking density/ha	Banana shrimp	Seabass, milkfish	Mud crab and ornamental fish	
Feed management	Banana shrimp	Seabass, milkfish	Mud crab and ornamental fish	
Diseases and its management	Management of WSSV and LSV	Diseases in seabass	Ornamental fish	
Soil and water quality	Physico-chemical parameters	Culture of species in high saline condition		
Probiotics	Name of probiotics and its application procedure			Names of government recommended probiotics
Marketable size	Banana shrimp	Seabass, milkfish	Mud crab and ornamental fish	
Marketing and economics	Stabilizing of market price	Seabass and milkfish	Value added products from shrimp/fish, mud crab, and ornamental fish	Available of International and domestic market price for shrimp and fish
ICT modules	videos in success stories and case studies of farmers	e-Learning module in fisheries (Seabass, milkfish)	Women friendly technologies	Web portal for fisheries, videos of success stories and case studies of farmers
Polyculture	Shrimp with fish	Milkfish with crap		
Government schemes	Land approval procedure for shrimp farming	Licence procedure for fish farming	Information of tribal / coastal women	Available of government schemes/plan related with tribal and aqua farmers in the web portal.
Training schedule	Shrimp culture	Fish culture	Tribal/coastal Women	State department officials
Databases				Area wise database in aquaculture, Farmers data base, water body area database, land survey database
Extension materials				In vernacular language
Others	Awareness about climate change	Technical guidelines for designing pond	Exposure visit to other states and aquarium preparation	Species/area wise FAQs, Awareness about climate change related with aquaculture