



REPORT

Awareness & demonstration of fish nutrition promotion programme under APART



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1. Introduction

The state of Assam, situated in the northeast of India, has a considerable percentage of its population under the poverty line and has nearly 86% population residing in rural areas. Despite its vast resources, Assam continues to be one of the bottom five states of the country, which has continued to high level of food insecurity and malnutrition. Malnutrition is a major health problem in Assam, especially in young children and pregnant-lactating women (PLW). Assam has not shown much improvement in its health and nutrition indicators.

As per the last National Family Health Survey (NFHS-5) in Assam, 35 % of children under the age of five years are stunted, or too short for their age, 22% are wasted, or too thin for their height, 9 % are severely wasted and 33% are underweight. The overall continuing high levels of undernutrition are still a major problem in Assam.

Fish has long been an important food item and associated with the social life of the people of Northeast India, especially in Assam. Fish, particularly small fish are more available and affordable than other animal proteins sources in the state of Assam. Fish, especially small fish are rich in micronutrients like vitamin A, vitamin B12, calcium, iron, zinc, essential fatty acids and animal protein. When consumed as part of a meal, fish can increase the absorption of iron and zinc from other foods. To enhance nutritional outcomes from aquatic foods and to assist in accelerating progress on reducing malnutrition in different parts of Assam, under fish nutrition promotion program activities, WorldFish has planned to conduct awareness, pilot and demonstration of fresh fish and fish-based products in different parts of the project area.

Based on the deliverable -7 of WorldFish under the APART project, the WorldFish Assam team has conducted 12 numbers of small fish nutrition promotion awareness, piloting and demonstration activities in different parts of Assam from 8th March 2022 to 30th March 2022. In total 760 participants including mothers, children, caregivers, community members, ICDS staff, ASHA workers, and community resource persons were given awareness. The details are given in below Table 1.

Table 1. Programme schedule.

Sl. No.	Date	Place	District	No. of Participants
1	08/03/2022	Morigaon, Gandhibhawan	Morigaon	53
2	09/03/2022	Kamrup, Bagibari	Kamrup	67
3	10/03/2022	Nalbari, Chengnoi	Nalbari	54
4	12/03/2022	Sonitpur, Bihaguri	Sonitpur	141
5	14/03/2022	Lakhimpur, Ahomoni	Lakhimpur	54
6	15/03/2022	Sivasagar, Chripuria	Sivasagar	52
7	16/03/2022	Jorhat, Rowmari	Jorhat	53
8	17/03/2022	Majuli, Mahorichuk	Majuli,	52
9	22/03/2022	Kamrup, Hajo	Kamrup	49
10	23/03/2022	Darrang, Sialmari	Darrang	69
11	24/03/2022	Morigaon, Charipunia	Morigaon	53
12	30/03/2022	Morigaon, Thekera beel	Morigaon	63
Total no. of Participants				760

2. Overall objectives

- Conducting mass awareness programs on the health benefits of small fish consumption and promoting the inclusion of small fish-based nutrition in the diet of women especially, pregnant and lactating women and infants and young children.
- To demonstrate the different small fresh / dried fish recipes using locally available small fishes and understand their acceptability at the community level.
- To promote hygienical dressing of small fishes and consumption of whole small fish without wasting the head and bones.
- Test acceptability (eg. appearance, taste, smell, color, texture, ease-of-use) of products with women, adolescent girls and children aged under 5 years.

3. Target population

Participants are women including pregnant & lactating mothers, adolescent girls, children of different ages, Anganwadi workers and Sahayika (helper), ASHA, PRI representatives, APART & other fisheries staff, community leaders, etc.





4. Planning and preparation

During the planning of awareness cum recipes demonstration activities, the project team surveyed different local fish markets to understand the availability of varieties of small fishes and the prices of the fish. Also, the team recorded the different fish recipes prepared at nearby hotels and restaurants. The team conducted a focus group discussion with community resource persons (CRP), and local NGOs, to understand the availability of small fishes, their local food preferences and their expectations during awareness, piloting and demonstration activities. The project team also tried to understand, which age category of children are consuming small fish more, the type of recipes prepared in the household, frequency & quantity of consumption also recorded.

4.1 Development of SBCC materials on small fish consumption and benefits

Two leaflets and a calendar on small fish consumption and their benefits in the local Assamese language were distributed among the participants during training as reference material. An AV song on the benefit of small fish consumption was also displayed during the awareness. The team sat along with the participants and discussed thoroughly the messages that were printed in the leaflets and calendar. “Small Fish Nutrition Promotion” program agenda is given below:

4.2 Program agenda

Table 2. “Small Fish Nutrition Promotion” program agenda.

Time	Program
10.15 – 10.30 AM	Registration
10.30- 10.45 AM	Welcome address & training brief
10.45 –12.00 Noon	Awareness program on small fish Nutrition Promotion
12.00 - 12.15 Noon	Tea break
12.15 - 1.15 PM	Preparation of fish and fish-based product
1.15 – 1.30PM	Recipe demonstration and taste trial
1.30 – 1.45PM	Evaluation and feedback
1.45 - 2.00PM	Concluding remarks and vote of thanks

সক মাছ পুষ্টি উপকারীতা :

সক মাছ পুষ্টি উপকারীতা :
 ১. ১০% প্রোটিন
 ২. ১০% লিপিড
 ৩. ১০% কার্বোহাইড্রেট
 ৪. ১০% ফাইবার

সক মাছ অধিক পুষ্টির বাবে উপকারী

সক মাছ আরু ইয়ার উপকারীতা

পুষ্টির আকার্যকারিতা:

পুষ্টির আকার্যকারিতা: (Nutritional Bioavailability) মানে হলো পুষ্টি উপাদানগুলি কতটা সহজে শরীরে শোষণ করা যায়।

পুষ্টিহীনতা :

পুষ্টিহীনতা (Malnutrition) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

পৌমক তত্ত্ব প্রদান :

পৌমক তত্ত্ব প্রদান: (Micro Nutrition) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

সক মাছ বহুত উপকারী

সক মাছ বহুত উপকারী: (Benefits of Fish) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

এপাট

স্বপ্নপুষ্টি, প্রাচীন, ডিটামিনযুক্ত সক মাছ বাওক

স্বপ্নপুষ্টি, প্রাচীন, ডিটামিনযুক্ত সক মাছ বাওক: (Dream Nutrition, Ancient, Vitamin-rich Fish) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

এপাট

মানুষের পবিপুষ্টিত সক মাছের লাভালাভ

মানুষের পবিপুষ্টিত সক মাছের লাভালাভ: (Human Benefit of Fish) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

১০০০ DAYS

১০০০ DAYS: (1000 Days) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

স্বাস্থ্যকর চাচাচা

স্বাস্থ্যকর চাচাচা: (Healthy Chacha) মানে হলো পুষ্টির অভাব বা অতিরিক্ত গ্রহণ।

Figure 1. SBCC Materials developed by the project.



5. Awareness program

5.1 Session 1: Introductory talk about the programme objectives and activity planned

The project team welcomed all the participants of the programme. With an introduction to the APART -WorldFish project working in Assam on various aquaculture and fisheries aspects including nutrition, the facilitators shared the details on the objectives and different sessions of the program. The participants were asked to introduce themselves.

5.2 Session 2: Nutrition and health scenario of Assam state and consequences

The project team provided a brief on the nutrition status of the state based on the report provided by the National family health survey (NFHS-5). Based on the NFHS-5 report, 35% of the children under age 5 are stunted, 22% are wasted, 9 % of children are severely wasted, and 32% are underweight. Both malnutrition and anemia are high among rural women and children.

5.3 Session 3: Understanding about a balanced diet for healthy life and the availability of nutritious food from local sources

Dr. Baishnaba Charan Ratha, senior nutrition expert presented a session on the importance of balanced diets for a healthy life. He explained that though the population can access 3 meals per day, the nutritional requirement of the body is not met. With a basic introduction to nutrition and the importance of dietary diversity for people of all ages, he discussed the three food groups—body-building foods, protective foods, and energy-rich foods with simple examples —and categorized local foods into each group. He then defined the first 1000 days of child life, which many of the women understood to be the first 1000 days after the child's birth, forgetting about the important role of the woman in child development during pregnancy.

Following the clarification, the team discussed how to ensure good nutrition and dietary diversity for women and young children in this critical time, based on the food groups. The discussions highlighted the severity of low dietary diversity for young children, as women remarked that children are fed only staple plant foods (usual rice), prepared rice with dal, a small number of vegetables and are infrequently fed fish and other nonveg products, in the form of curry or fry. Then, the discussion was held on a different source of micronutrients including iron, zinc, calcium and vitamin A, B12,

Omega -3 fatty acids, iodine and protein focusing on the role of micronutrients during the first 1000 days of child life.

5.4 Session 4: Benefit of fish, particularly small fish for better health

In this session, discussions were held with different age groups of women regarding the nutritional benefits of small fish. In the first 1,000 days of a child's life, which encompasses pregnancy and the first two years after birth, the child's physical and mental growth is rapid. Small fishes like moa (mola), puthi (*Puntius spp*), boliora (*Aspidopariæsp*) dorikona (*Esomusdanricus*), prawn, and kholihona (*Colisa fasciatus*) are abundantly available in all the water bodies of Assam. More than 90% of people in Assam consume fish. Among all the small fish available, people relish eating mola. Though many people consume small fish, their nutritional value is not known to them. The small fishes when consumed whole, provide maximum benefits since it is rich in micronutrients like vitamin A, zinc, iron, etc. Details discussion held on nutritional benefit of small fish is as below:

Table 3. Benefits of consuming fish, especially small fish.

Small fish nutrients	Children	Adolescent girls, Pregnant and lactating women
Omega-3 fatty acids	<ul style="list-style-type: none"> • Brain growth • Healthy eye • Less asthma 	<ul style="list-style-type: none"> • Healthy pregnancy • Health eye • Healthy hormones • Healthy heart • Less diabetes • Healthy weight
B12	<ul style="list-style-type: none"> • Healthy red blood cells • Healthy nervous system 	<ul style="list-style-type: none"> • Healthy pregnancy • Healthy red blood cells • Healthy nervous system • Prevent birth defects
Iron	<ul style="list-style-type: none"> • Brain growth • Healthy immune system • Prevents iron-deficiency anaemia 	<ul style="list-style-type: none"> • Healthy immune system • Healthy pregnancy • Prevents iron-deficiency anaemia
Zinc	<ul style="list-style-type: none"> • Healthy growth • Healthy immune system • Faster recovery from diarrhea • Prevent stunting 	<ul style="list-style-type: none"> • Healthy growth • Healthy immune system • Faster recovery from diarrhea

Calcium	<ul style="list-style-type: none"> • Healthy bones/teeth • Healthy nervous system 	<ul style="list-style-type: none"> • Healthy pregnancy • Healthy bones/teeth • Healthy nervous system • Healthy heart
Iodine	<ul style="list-style-type: none"> • Brain growth • Thyroid health 	<ul style="list-style-type: none"> • Healthy pregnancy • Thyroid health
Protein	<ul style="list-style-type: none"> • Physical growth • Healthy hormones • Healthy organs • Healthy nervous system Prevents wasting 	<ul style="list-style-type: none"> • Physical growth • Healthy hormones • Healthy organs • Healthy nervous system

Some reasonable facts on consumption were also shared with participants on the benefit of more small fish consumption, and cost-effectiveness as compared to big fish. They are:

- After the preparation of big fish curry, it is difficult to distribute the fish curry equally to all members of the family.
- In many families, the mother or woman of the family has less chance to get the right quantity of fish curry for own consumption, whereas, in the case of small fish recipes, every family member has an opportunity to get an equal quantity of small fish for own consumption.
- Small fish consumption whole including head and bone has an opportunity to get all required micronutrients like iron, calcium, Zinc, Vitamin- A & B12, Omega-3 fatty acid & iodine in marine fish but has some constrained to consume big fish as whole including head and bones and distribution of all part of big fish with equal quantity is not possible among all family members.
- The availability of small fish with less price to purchase at village level and a smaller quantity of small fish can also be managed to prepare curry for all family members and easily distribute to consume by the whole family.
- Small fish can also be kept for more days in dried form for the availability for regular family consumption.

6. Cooking demonstration

The cooking demonstration provides a platform to have discussions with the community and understand their cooking practices, cultural food habits etc. Often families are not aware of locally available, seasonal healthy foods which are rich sources of energy and nutrients. Therefore, cooking demonstrations serve as a platform and behaviour change tool to generate awareness about healthy nutritious foods and the importance of their consumption.

Here, the demonstrations are intended to demonstrate to recipients on fish-based recipes, methods of preparing recipes featuring mixing of vegetables, locally available small fish and handmade fish powder.

6.1 Purpose of cooking demonstration

- To build awareness of the participants on the importance of improved dietary diversity and micronutrient intakes involving small fish-based products
- To demonstrate the methods of incorporating locally available small fish and homemade small fish powder in their regular cuisines.
- To transfer knowledge and skill to participants about how to prepare a small fish-based recipe that is diversified and of appropriate consistency amount, and frequency for infants, children and women.
- To influence mothers, caregivers and other community members to practice optimal infant and young child feeding practices and adopt a balanced diversified diet including small fish.

6.2 Identification of location for the demonstration program

These decisions were taken considering the distance that participants have to travel (particularly women with children) and the facilities of the area. In selecting the place, the following points were considered:

- An area that is center (not too far) that participants, particularly women, adolescent girls, children could easily come and participate
- Cleanliness of the area and availability of clean water
- Venue/room able to accommodate participants and power supply facility
- A place that has no or minimal disturbance

6.3 Follow safe and hygienic practice during cooking, demonstration & taste trial of recipes

Before joining the cooking process, the team informed participants about the importance of general sanitary practices like hand washing, cleaning of all the utensils & equipment used during the product of preparation. Small fishes (both fresh and dried) were washed thoroughly before cooking. In many places, women and adolescent girls involved in cooking activities, used cooking hand gloves, aprons and head caps during preparation.

6.4 Collection of cooking equipment

Cooking equipment like LPG gas with stove, utensils, mixer grinder, paper plates and cups for the hands-on demonstration was arranged by the community and to some extent by the project. The project decided to pilot & demonstrate a few simple recipes, then overburden a parent with too much information. Thus, the kitchen, the utensils and the method of preparing and cooking are similar to those used within the homestead.

6.5 Small fish recipes and preparation techniques

Participants were asked about the different types of small fish recipes cooked regularly in the households. Mixed vegetables with fresh/dried small fish curry were found to be the most common recipe prepared at the community level.

Based on the feedback from the participants, the project planned to pilot & demonstrate the following 4 types of recipes during the program. The procedure/method followed for the demonstration was similar to the practices which are followed in the households so that it will be easy to prepare by the mothers/caregivers. The details method of preparation of the fish recipes is attached in Annexure 1.

1. Mixed vegetables with fresh/dried small fish curry
2. Mixed vegetable with fresh/dried small fish powder curry
3. Small fish powder soup
4. Dried small fish with pea and tomato curry

After a brief discussion on the above recipe's preparation steps, a detailed discussion was held on how to prepare small fish powder with locally available small fish and its inclusion in a regular diet for all, particularly children under 5 years. Fish powder preparation and consumption were very new to understand for the first time by all. A sample of a marine small fish powder packet with 'FSSAI certification was showed to all participants. They were allowed to touch and feel the texture of the fish powder.

Then all the participants actively participated in the preparation of small fish powder followed by its use for making fish soup.

The facilitators explained the process of the cooking demonstration clearly and the responsibility of participants for all three recipes and informed and convince participants not to overcook vegetables by telling them about the loss of vitamins during overcooking.

6.7 Community participation

After the collection of locally available small fish, women from the community came forward for dressing and wash the fish hygienically with the guidance of project staff. Dishes were cooked with the involvement of community people. The team advised participants to add some amount of lemon juice or coriander leaves in curry (not in hotter) which are a source of Vit C and are helpful in the absorption of iron in the body.

After the preparation, mothers/caregivers, adolescent girls, children (more than 5 years) and other participants were allowed to taste the recipes. Upon satisfaction by mothers and caregivers, the soups were fed to the children under five years.



After completion of programme, some women were very helpful in cleaning the used utensils, paper plates, and cups and cleaning the demonstration venue immediately.

6.8 Monitoring the impact of cooking demonstrations

The project has monitored and evaluated the cooking process, taste the fish recipes, feedback and overall acceptance of prepared items and documentation. Monitoring the impact of cooking demonstrations is important for the following purposes:

- To understand whether cooking demonstrations are influencing feeding practices, particularly among women, adolescent girls and children below of five years of age
- Identify any challenges in exercising the feeding practices promoted during cooking demonstrations
- Document good practices and challenges to use as lessons to revisit future cooking demonstrations
- Collect feedback about taste, color, odor/smell, appearance and overall acceptance of all recipes, particularly small fish soup and mixed vegetables with fresh/dried small fish curry and fresh/dried small fish powder curry.



7. Observations

Participants were allowed to share their experiences after the demonstration program. Many of the children and women enjoyed the curries and soup. They expressed appreciation for their new knowledge on the preparation of small fish powder and the use of fish powder in soup and mixed vegetable curry. After open interaction with women, adolescent girls, Anganwadi workers, Anganwadi sahayika, ASHA, field project staff and other community members, the feedback of the program were recorded for further improvement of the programme implementation. Summary of the observations are listed below:

- Mixed vegetable small fish curry was very much the preferred recipe of all community members in Assam, but there was a hesitation among them to feed it to the children due to the presence of spines and bones.
- The mother or caregiver of some children below 2 years was worried to feed their children with fish soup and fish powder curry since the locally prepared fresh mola paste was not fine in texture. This can be overcome by preparing the fish paste using a mixer grinder.



- Elder women showed more interest in fresh mola fish paste since it was a very new concept for them compared to the mola fish curry. After tasting both dried fish powder and freshly prepared small fish paste, participants preferred the later more over the first one.
- The fishy odor of the powder/paste which is reported to make pregnant women nauseous can be 'hidden' in dishes using an appropriate amount of spice and vegetables.
- Some of the participants shared their apprehension to prepare a small amount of fish soup for one child as it is not possible all time. So, it is suggested to include fish powder in the regular curry of the family.
- In places where small fish availability is scarce, it is suggested to use dried small fish products for the preparation of soup and curry.
- Some participants also mentioned the unavailability of the hygienically dried small fish in their places and didn't have much awareness of the preparation of hygienically dry fish.
- In some districts where fresh mola is available in plenty, they also wanted to understand more about the process of preparing hygienically dried fish.
- Some mother and caregivers expressed their willingness to understand the right quantity and frequency of small fish consumption for children to acquire more health benefits.
- The participant also mentioned they have never heard about the concept of the first 1000 days of a child's life and its importance for the mother and the child.
- Adolescent girls preferred both fresh and dried mola powder Soup compared to the addition of fish powder/paste in curry.
- The majority of mother and adolescent girls opined that they learned the skills needed to make the fish-based recipe at home.
- Some reported that they did have hands-on practice to prepare fish powder and powder mixed curry during the demonstration.
- They also believe that the ingredients used in the demonstration were affordable and available where they normally shop.

8. Way forward

- The experience from the 12-recipe demonstration programme can be shared with the other participants through awareness programmes.
- The communities must be encouraged through continuous awareness to use fish and dried fish products in their regular cuisines.
- More no of Avs and SBCC materials can be prepared by the project based on the experience gained from the awareness.
- Women from the communities must be trained on preparation on hygienic dried fish paste/ powder preparation using locally available fish. Also, they should be given knowledge on the storage of the products for longer use.
- Follow-up action may be planned in all places, where programme is completed.
- Under the APART project, standard nutritional messages from all food groups may be planned in convergence ways with other CGIAR agencies like, IRRI, ILRI, CIP etc. So that, more diversified nutritional messages including fish nutrition may be disseminated in the community level.
- More training may be planned for Community Resource Persons (CRP), those who are working in remote places.
- Social media, and electronic and print media may be helpful for more awareness at the community level.
- Increase hands-on practice during food preparation demonstrations for women and adolescent girls as possible to build confidence and skill as well as increase motivation toward diet-related behaviour change.



Annexure 1. Small fish recipes prepared in demonstration programs

1. Small fish powder/paste

Method of preparation:

- Clean the small fish well and wash properly, then put the required turmeric and salt immediately
- Roast fresh/dried small fish for 15 to 20 minutes over low heat.
- Cool the roasted fish for 5 to 10 minutes
- Grind with a locally available mixy or grinder, prepare fish powder and keep it in a clean container with a lid.



2. Preparation of small fresh/dried fish soup

Ingredients:

- Fresh/dried fish powder-250g
- Cooking oil-80ml
- Small-sized onion sliced
- Ginger paste-1 tablespoon
- Garlic paste-1 tablespoon
- Turmeric powder-1 tablespoon
- Cumin powder-1/2 tablespoon
- Coriander powder-1/2 tablespoon
- Fish masala powder-1/2 tablespoon
- Garam masala-1/2 tablespoon
- Jeera powder-1/2 tablespoon
- Dhania powder-1/2 tablespoon
- Chilli powder-1/2 tablespoon
- Fresh chilli-3-4 as required
- Small tomato chopped
- One small sized cabbage
- Salt as required
- Black pepper 1/2 tablespoon
- Corn flour 2 tablespoon
- One bunch of coriander leaves (for better flavour)



Method of preparation:

- Heat oil in a pan adds small-sized onion sliced, fresh chilly sliced, ginger, garlic paste and sauté for a few min.
- Add chopped tomatoes, cabbage, and cook until the oil separates from the mix
- Add turmeric powder, cumin powder, coriander powder, fish masala powder, jeera powder, dhania powder and chili powder, salt and saute for 2 min
- Add fish powder and cook for a few min.
- Add some hot water
- Add Cornflour
- Add black pepper
- Add garam masala and coriander leaves
- Cook for 30 min and just before turning off the heat, add a few coriander leaves (for better flavor)



3. Preparation of mixed vegetables with small fish curry

A popular traditional Assamese meal is "xakor logot horu mass," which consists of mixed vegetables with small fish.

Ingredients:

- Fresh fried small fishes-250g
- Cooking oil- 100ml
- Onion sliced- 3 medium-sized
- Ginger paste-1 tablespoon
- Garlic paste-1 tablespoon
- Turmeric powder-1/2 tablespoon
- Garlic paste- 1 tablespoon
- Ginger paste-1 tablespoon
- Turmeric powder-1/2 turmeric powder
- Fish masala powder- 1/2 tablespoon
- Garam masala-1/2 tablespoon
- Jeera powder-1/2 tablespoon
- Dhania powder-1/2 tablespoon
- Red chili powder-1/2
- Potato chopped-150g
- One Cabbage-500g
- Tomato-100g
- Brinjal-150g
- One small size bottle gourd
- Salt as required
- leafy vegetables
- One bunch of coriander leaves (for better flavour)



Method of preparation:

- Wash, cut all vegetables and keep them aside.
- Heat oil in a pan adds small sized onion sliced, ginger-garlic paste and sauté for a few minutes.
- Add mixed vegetables tomato, brinjal, bottle gourd, cabbage and cook until the oil separates from the mix.
- Add turmeric powder, coriander powder, fish masala powder, cumin powder and chili powder, jeera powder, dhania powder, salt and saute for 2 min
- Add small fish and cook for some time.
- Add garam masala and coriander leaves
- Add hot water and cook for 45 min just before turning off the heat, add a few coriander leaves (for better flavour).

After 45 min of cooking “mixed vegetable with small fish or xakor logot horu mass” ready to serve.



4. Preparation of mixed vegetables with small fish powder curry

In the pilot programme area, the small fish powder was mixed with vegetable curry and served to all the participants. Ingredients are given below-

Ingredients:

- Fresh small fish powder- 250g
- Mustard Oil- 100ml
- one medium-size onion chopped
- Garlic paste- 1 tablespoon
- Ginger paste-1 tablespoon
- Turmeric powder-1/2 turmeric powder
- Fish masala powder- 1/2 tablespoon
- Garam masala-1/2 tablespoon
- Jeera powder-1/2 tablespoon
- Dhania powder-1/2 tablespoon
- Red chilli powder-1/2
- Potato chopped-150g
- One Cabbage-500g
- Brinjal-150g
- One small size bottle gourd
- Salt as required
- leafy vegetables
- One bunch of coriander leaves (for better flavour)



Method of preparation:

- Wash, cut all vegetables and keep aside.
- Heat oil in a pan adds small sized onion sliced, ginger and garlic paste and sauté for few min
- Add mixed vegetables tomato, brinjal, bottle gourd, cabbage and cook until the oil separates from the mix
- Add turmeric powder, coriander powder, fish masala powder, cumin powder and chilli powder, jeera powder, dhania powder, salt as required and saute for 2 min
- Add fresh small fish powder and cook for some time.
- Add garam masala, coriander leaves
- Add hot water and cook for 45 min just before turning off the heat, add a few coriander leaves (for better flavour).

5. Preparation of dry fish with pea and tomato

Ingredients:

- Dry small fishes-150g
- Cooking oil- 60ml
- Onion sliced- 1 medium-sized
- Ginger paste-1/2 tablespoon
- Garlic paste-1/2 tablespoon
- Turmeric powder-1/2 tablespoon
- Garlic paste- 1 tablespoon
- Ginger paste-1 tablespoon
- Turmeric powder-1/2 turmeric powder
- Fish masala powder- 1/2 tablespoon
- Garam masala-1/2 tablespoon
- Jeera powder-1/2 tablespoon
- Dhania powder-1/2 tablespoon
- Red chilli powder-1/2
- Salt as required
- Pea – 500g
- Tomato- 150g

Method of preparation:

- Wash all peas and tomatoes and keep them aside.
- Heat oil in a pan adds small-sized onion sliced, ginger and garlic paste and sauté for a few minutes.
- Add tomato and brinjal and cook until the oil separates from the mix
- Add turmeric powder, coriander powder, fish masala powder, cumin powder and chilli powder, jeera powder, dhania powder, salt as required and saute for 2 min
- Add fresh small fish powder and cook for some time.
- Add garam masala, coriander leaves
- Add hot water and cook for 45 min just before turning off the heat, add a few coriander leaves (for better flavour).



Annexure 2. Photographs of activities

1. Awareness and demonstration program at Morigaon on 08.03.2022





2. Awareness and demonstration program at Bagibari, Kamrup District on 09.03.2022



3. Awareness and demonstration program at Nalbari District on 10.03.2022



4. Awareness and demonstration program at Sonitpur on 12.03.2022



5. Awareness and demonstration program at Lakshmipur on 14.03.2022



6. Awareness and demonstration program at Sivasagar on 15.03.2022



7. Awareness and demonstration program at Jorhat on 16.03.2022



8. Awareness and demonstration program at Majuli on 17.03.2022



9. Awareness and demonstration program at Hajo, Kamrup District on 22.03.2022



10. Awareness and demonstration program at Darang on 23.03.2022



11. Awareness and demonstration program at Mikirbheta, Morigaon on 24.03.2022



12. Awareness and demonstration program at Morigaon, Thekera beel on 30.03.2022



Press Coverage on Fish Nutrition promotion programme organised in various districts of Assam by State's Fishery Department under APART Assam by Assam Tribune.

#presscoverage #fish #nutrition #programme #fishery #APARTAssam

Fish nutrition promotion programme organised

STAFF REPORTER

GUWAHATI, April 17: State's Fishery department recently organised a series of small fish nutrition promotion, awareness and demonstration programmes in different parts of Assam.

The programmes were organised in Morigaon, Kamrup, Nalbari, Sonitpur, Lakhimpur, Sivasagar, Jorhat, Majuli and Darrang under World Bank aided Assam Agri-Business and Rural Transformation Project (APART) through WorldFish, a research-based organisation.

A total of 751 participants attended these programmes, including pregnant women, lactating mothers, adolescent girls, children of different ages, Anganwadi workers and Sahayikas (helpers),



ASHA, GP representatives, APART and other fisheries staff, community leaders, etc.

NK Debnath, Director of Fisheries, said WorldFish extended technical support to create awareness among community people about locally available small fishes and their nutritional values that

can hugely benefit the health of women, adolescent girls and children. He added that "fish is one of the cheapest sources of animal protein, which is available in the community level water body in the State".

Acting as a resource person, Dr Baishnaba C Ratha,

Senior Nutrition Specialist, WorldFish, said the small fish also improves nutrition for pregnant and lactating mothers and young children during the critical first 1,000 days of child development. "A woman must take appropriate nutrition throughout pregnancy to maintain her pregnancy and ensure that her child develops properly, which can be compensated by small fish," he explained.

The hygienic handling of small fish was also discussed by Dr DJ Sharma, Nodal Officer, APART (Fisheries) during the programmes. He explained ways to improve household nutrition, particularly for women and children, by adding micronutrient-rich small fish. "The large fish can be sold for income, while small fish are harvested reg-

ularly for household consumption or, when in excess, for sale within the community or near the market," he added.

Fishery Coordinator (ARI-AS) Dr Sanjay Sarma informed that fish powder prepared with locally available mola fish, and recipes like fish powder soup and mixed vegetable small fish powder curry can be very tasty and nutritional.

Different social behaviours change communication materials prepared in the local language on the benefits of small fish nutrition were distributed among all the participants for their better understanding.

Nabamika Sonowal and Nita Beippi, fisheries consultants under WorldFish, attended these programmes as resource persons and extended technical know-how to the participants.

Annexure 3. Lists of participants

About WorldFish

WorldFish is a nonprofit research and innovation institution that creates, advances and translates scientific research on aquatic food systems into scalable solutions with transformational impact on human well-being and the environment. Our research data, evidence and insights shape better practices, policies and investment decisions for sustainable development in low- and middle-income countries.

We have a global presence across 20 countries in Asia, Africa and the Pacific with 460 staff of 30 nationalities deployed where the greatest sustainable development challenges can be addressed through holistic aquatic food systems solutions.

Our research and innovation work spans climate change, food security and nutrition, sustainable fisheries and aquaculture, the blue economy and ocean governance, One Health, genetics and AgriTech, and it integrates evidence and perspectives on gender, youth and social inclusion. Our approach empowers people for change over the long term: research excellence and engagement with national and international partners are at the heart of our efforts to set new agendas, build capacities and support better decision-making on the critical issues of our times.

WorldFish is part of One CGIAR, the world's largest agricultural innovation network.

For more information, please visit www.worldfishcenter.org