



PATHARDI, A MODEL VILLAGE- PHASE 5: LIVELIHOOD SUPPORT AND NUTRITIONAL SECURITY



Model village Phase 5: Livelihood support and Nutritional Security

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Executive summary

With the support of GKN Sinter Metals Pvt. Ltd. TERI has been working in Palghar's Pathardi village for over 6 years, with the aim of transforming the village into a model sustainable village. The interventions implemented were focused on enhancing the nutritional status of the target beneficiaries while also increasing water access, energy access and promoting and supporting sustainable livelihoods. The capacity building approach has ensured that the beneficiaries, especially women, are active participants and also magnified the impact of the initiatives.

TERI recognized the need for sustainable livelihoods in the village in order to curb the heavy dependence on rain fed agriculture and migration for work. The 2017-18 phase of the project focused on making the same available to the villagers. The interventions carried out include training on goat rearing and goat farm management, training workshops on bamboo cultivation and bamboo article making, poultry farming and so on. The villagers were provided with bamboo saplings that had a high revenue generation potential along with training on how revenue could be earned from them. Training was also provided on making bamboo articles for sale. TERI also provided seed funding for the purchase of 72 goats, ensuring that every household in the village would own at least one goat. There are currently at least 27 new kids (baby goats), with the number constantly increasing. TERI has even developed a feed for poultry and goats that uses Azolla as a chief ingredient along with several other inexpensive and easily available local ingredients such as egg shells, rice grains, and so on. Azolla, is a fern with a high protein, amino acids, vitamin and mineral content, that can be easily cultivated in Pathardi and would be promoted in the near future.

Carrying forward the efforts to diversify livelihood opportunities available in Pathardi, in 2018-19 TERI focused on introducing livelihood avenues that could also promote good nutrition. Efforts were made to train the women of Pathardi in making nutritious food products for sale, in nutrient fortifying the same and setting up a successful food fortification and processing business. The food products selected included traditional snacks and sweets that could be easily nutrient fortified and items such as healthy cookies and chocolate (Figure No. 1). A major highlight of the project was the women being introduced to and trained to prepare novel food items such as cookies and chocolates, along with the fortification of regular snacks with easily available nutrient rich local ingredients like spinach. The women learnt to prepare chocolates fortified with Spirulina, a highly nutritious super food. After conducting meetings with the SHG and assessing their requirements TERI provided the women with the equipment required to start a food processing business.



Figure No. 1: Fortified food products made by the women

In order to provide the village SHG forward market linkages and opportunities to promote their food business, TERI also got two SHG from the village registered with Umed- Maharashtra State Rural Livelihood Mission (MSRLM), Government of Maharashtra (GoM). This was done to provide the SHG a stable platform for their business and make them eligible to apply for the numerous benefits and subsidies that MSRLM offers. This was instrumental in getting the women the opportunity to participate in Mahalaxmi Saras (MS) Exhibition cum Sale, an annual event held in Mumbai, their first real taste of the food business (Picture No. 1). Their participation in this event also got media coverage; articles appeared in Sakal and Loksatta on January 25th 2019.

The women also put up a stall in the premises of GKN Sinter Metals Head office on the occasion of Women's Day, 2019; the employees of GKN greatly appreciated the food products on sale.

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Picture No. 1: Customers at the stall run by Pathardi women purchasing the spirulina chocolates during the MS sale

Any business involving the making of food products involves the use of water, however little. TERI helped the women obtain waterwheels, a contraption which makes it extremely easy to transport water over long distances that would otherwise need to be carried by the women, a tedious physically exhausting chore. The easy accessibility of water also provides a host of health and social benefits.



The project thus successfully helped the SHG women kick-start their own nutritious food processing business with training and support, both financial and otherwise, having been provided at every step. TERI will continue promoting the nutritious food products prepared by the women and helping the women set up stalls whenever the opportunity arises.

Introduction

Nutrient fortification of food items is one of the most effective ways of beating micro-nutrient deficiencies. Adding an additional nutrient rich and flavorsome ingredient to the recipe also greatly enhances the flavor of the product created and adds to its novelty factor in the market. After research and Focused Group Discussions (FGD) conducted with villagers, the food products to be fortified and processed were narrowed down to easily fortifiable traditional snacks such as *chaklis*, *sev*, and novelty items such as nutritious cookies made using locally available nutritious material, along with nutrient fortified chocolates. The women were trained by expert resource persons in preparing the food items, handling and packaging these as per professional standards.

The main focus areas of the activities planned under the project were as follows:

- a) Orientation and capacity building of the women
- b) Introduction and training in preparing novel items such as cookies and chocolates
- c) Introduction to fortification using easily available resources such as spinach

Objective	Methodology followed
To establish an additional livelihood option that is sustainable and makes use of the resources available to the villagers locally.	Orientation, training and capacity building of villagers, especially the women
To set up a state of the art food processing and packaging unit in the village	FGD (focused group discussions) conducted and equipment for food processing and preparation handed over to 2 SHG groups made responsible for the same, members would use the same on a sharing basis
To build the capabilities of the target beneficiary groups in food fortification, processing, packaging, setting up a business and so on.	Workshops conducted to orient the villagers with respect to starting a food processing business, business budgeting including costing, hygienic handling and packaging of food products for sale, customer interaction and so on.
To train the villagers in making nutrient fortified snack and sweet items.	Multiple training workshops conducted on preparation of food products, nutrient fortification, packaging and hygienic handling of food for sale, and so on
To plan and implement excursion trips, visits to business units to inspire and encourage the beneficiary groups	SHG representatives from the village visited Mumbai and participated in the 10 day long Exhibition cum sale that provided them with plenty of exposure and an enriching experience with respect to budgeting, customer interaction, marketing ideas and so on. Successful

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	entrepreneurs invited to the village, motivated and encouraged the women using their own examples.
To introduce and increase consumption of nutritious food items such as mushrooms, spinach and papaya and promote their cultivation to increase the diversity in the diets of the villagers	The villagers were oriented about the benefits of consuming nutrient rich foods and about how they could be easily cultivated and used to nutrient fortify everyday snacks and sweets
To set up market linkages for the processed food products to ensure the profitability of the food processing business of the target group	TERI linked the SHG with MSRLM to provide them with a platform for promotion and sale of their food products. This also paved the way for them to participate in exhibition cum sales organized by MSRLM and other avenues
To improve the socio-economic status of the villagers and thus better their health and overall well being	Introduction and training for a new livelihood avenue along with help required to kick start the same, thus generating an additional income opportunity that would contribute to a better standard of living in the long run
To decrease and eventually rid the village of the incidence of SAM and MAM among the children and adolescents	Nutrient fortified food products, with self-consumption could decrease nutrient deficiencies among target beneficiaries, contribute to the good health of family members, especially children

Project activities

A. Orientation and mobilization of the villagers

Orientation sessions were held whereby villagers were introduced to food processing, fortification and the various opportunities that could pursue to successfully run a food processing business. They were explained the significance and ease of fortification and the opportunity of earning an additional livelihood through the same. After discussing a plethora of options with respect to food items that could be nutrient fortified, a few items were shortlisted, that the women in the village were in agreement with. TERI also conducted training on budgeting for a food business and the financial aspect of conducting a successful business, handling competition in the market and so on.



Picture No. 2: Representatives from the four SHG groups at work

As a capacity building exercise women belonging to 4 Self Help Groups (SHG) prepared Diwali snacks and sweets as an initial pilot activity in the month of October and set up a stall in to sell the same. This was done to provide the women with an exposure to the process of preparing and packaging food items hygienically for sale with the objective of making them comfortable with the procedure. Traditional Diwali items were selected as the women were already familiar with them and could make them easily.

Accordingly, around 40 women from 4 SHG participated in this activity, preparing and packaged close to 25 kg of traditional items such as *laddus*, *karanji*, *anarse*, *shankarpali* using eco-friendly material. The stall was put up at Seawoods, Navi Mumbai during a Dussehra get together, and managed by the SHG representatives themselves. The women were encouraged by the positive response and feedback that was received from customers.

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B. Training workshops

TERI organized a series of workshops on not just preparing sweet and snack items and fortifying them but also on quality control, hygienic packaging procedures, costing of items, and so on. The women were explained the steps to be followed while operating a food business by expert resource persons and given tips to successfully run the business.

1. Introduction to cookie and chocolate making

TERI organized an introductory workshop on the basics of baking and chocolate making. The resource person for the workshop, Mr. Rahul Nagvekar, is the owner of a highly successful cake and cookie business, based in Navi Mumbai. The workshop was attended by over 25 women.



Picture No. 3: Mr. Rahul Nagvekar explaining the basics of cookie making

Mr. Nagvekar explained the steps involved in baking and making cookies, following it up with a demonstrative session on making ragi *naankatai*, a traditional cookie. Ragi is gluten free and an excellent source of iron and proteins, making it an ideal ingredient to make nutritious cookies. The hands on training workshop had volunteers trying their hand at making these cookies. The trainer stressed on the importance of hygienic practices, including the use of hair nets and other protective gear.

This was followed by a chocolate making demonstration session. The women were thus introduced to these novel items that they had never prepared before and realized how making them was easy, cost effective and could fetch a good revenue if pursued as a business.

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Picture No. 4: The women (wearing hairnets) making cookies

2. Nutrient fortification of snacks using locally available super foods

TERI organized a second workshop on preparing nutrient fortified cookies and snacks with the help of an expert Ms. Smita Dighe, an entrepreneur who runs a successful culinary business in Thane. Ms. Dighe conducts training classes for beginners, especially housewives, in making cakes, biscuits, bread, sweets, and so on, as per professional standards, for sale.



Picture No. 5: The trainer, Mrs. Dighe during the demonstration session

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The workshop included a session on standardizing the food products and once again focused on hygiene, presentation, financials and other aspects of setting up a food business and making the products market ready. The expert also stressed on maintaining hygiene and presentation as per professional standards, with a focus on temperature control, color and quality of the items being prepared. She demonstrated the easiest ways to nutrient fortify these food items using the puree of nutrient rich spinach, with hands on training. She also explained how beetroots, carrots and other such items could be used to fortify the simplest food items and thereby greatly increasing their flavor and novelty factor.

Green leafy vegetables like spinach which are extremely nutrient rich with high levels of vitamin A, iron, and so on. However, a lot of people, especially small children and fussy eaters dislike the same and consume it in far lesser quantities than ideal. Incorporating the same into the diet in a tasty form would make them more appealing especially to all, including children. Several women from the SHG volunteered and prepared the snacks under the supervision of the trainer with excellent results.



Picture No. 6: Fortification using spinach during the demonstration session

The trainer also taught the women different ways to easily prepare cookies and how they could nutrient fortify those using different ingredients. The making of Ragi cookies was demonstrated during the workshop, following which the participants tried their hand at the same. The trainer ended the workshop by giving the villagers tips to keep in mind once they start their entrepreneurial venture selling food products. She motivated the women to make use of the opportunities being made available to them. Standardized recipe booklets were also provided to all the participants of the workshop.

3. Fortification of Chocolate using Spirulina

Representatives of the SHG were trained to prepare and package Spirulina fortified chocolates. Chocolates are consumed by a variety of age groups, especially children. The fortification of cookies and chocolates with an ingredient like Spirulina will ensure their consumption by everyone, including children, in both urban and rural areas, thereby achieving our objective of reducing micro-nutrient deficiencies.

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Spirulina is a form of cyanobacteria or blue-green algae that, being a powerhouse of nutrients, is considered a super food and even used as a dietary supplement. It is an excellent source of vegan protein. It is also a powerful anti-oxidant and has excellent anti-inflammatory properties and even contains small amount of magnesium, potassium and manganese among other important minerals. Studies have also shown that Spirulina is beneficial in controlling bad cholesterol and may even help control blood sugar.



Picture No. 7: Spirulina flavored chocolates

The novel Spirulina chocolates prepared by SHG representatives from Pathardi could be used for self-consumption, especially by the children in Pathardi and also for sale. The recipe used for the preparation of the same uses 3 grams of powdered Spirulina in 100 grams of the chocolate.

C. Development of food processing inventory

After discussions with SHG representatives and taking into account their needs and requirements, it was found that the women would be more comfortable with preparing food items for sale in the comfort of their own home and not at a space outside.

Hence, it was decided that individual SHGs would be provided with equipment, kitchen gadgets and so on, which would then be used by the women on a sharing basis. The management of the inventory would thus be the collective responsibility of the respective SHG representatives.

Accordingly, after conducting several meetings with the members of the 2 SHG, assessing and analyzing their requirements with the women, TERI provided the 2 groups with a set of resources they required to start preparing snack and sweet items, including oven-toaster-grill, electronic measuring scales, *chakli* makers, cookie cutters, and other paraphernalia required. TERI also explored the possibility of providing solar powered gadgets such as refrigerators and dehydrators. TERI has kept aside a small fund for the same and would be utilizing it for the best possible option after deliberation with the villagers and add per their requirements within the next 6 months.

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D. FSSAI registration and registration of SHG with MSRLM

Food Safety and Standards Authority of India (FSSAI) registration is a mandatory compliance used to ensure the safety of food products and it is essentially a certificate issued by the food authority in India. The registration is thus a crucial requirement to start any business in India involving food products. TERI assisted 2 SHG groups in the village, *Laxmidevi Mahila Bachat Gat* and *Jai Santoshi Mata Mahila Bachat Gat* in obtaining their FSSAI registrations.

TERI also helped these SHG groups to register with Umed- MSRLM, GoM. Linking the SHGs with Umed- MSRLM makes them eligible for several of the subsidies, training programmes and loan benefits that the GoM provides under the MSRLM programme. It also makes them eligible to participate in Exhibition cum sale events that MSRLM organizes in Maharashtra to sell their homemade goods or products.

Thus, TERI established forward market linkages for the SHG by linking them with a body that would provide them with a long term platform to showcase and sell their products and also provide training and capacity building opportunities.

E. Distribution of water wheels

Preparing food products requires water, even if in small quantities. As Pathardi is located in a water scarce region, women are still forced to walk over long distances to fetch water for their household requirements after the monsoons. TERI distributed and oriented the villagers in the use of 'waterwheels', an invention by Wello and marketed by Nilkamal that uses rolling water technology to make carrying water convenient and efficient. It can also be used as a mini storage drum when the handles are detached. The capacity of the water wheel is 45 litres which is approximately the amount of water that gets fetched in 2 or more trips when using traditional pots.

The waterwheel has greatly reduced the drudgery of fetching water over distances and also led to distribution of work with men and children also taking an interest in using it and fetching water.

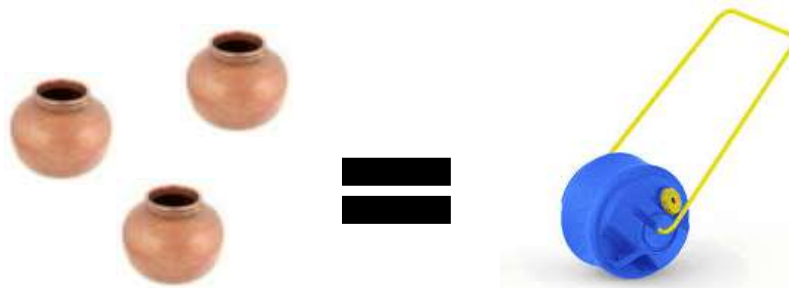


Figure 1: The capacity of the water wheel is around 45 litres, approximately equivalent to the water carried in 3 standard pots.

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Picture No. 8: Two youth in Pathardi using the waterwheels

F. Participation by beneficiaries in a mega Exhibition cum sale

The exhibition-cum-sale events organized by Umed-MSRLM, GoM, aim to provide SHG women who are entrepreneurial and own small businesses, a platform to sell their products thereby providing these women with market linkages and an additional livelihood source.

The *Mahalaxmi Saras* is a 10 day long exhibition cum sale, organized in Mumbai, for the past several years. It has a huge footfall every year with thousands of customers patronizing the stalls at the event. This year it was held from 23rd January till 4th February 2019 in BKC, Mumbai and 2 SHG from Pathardi participated in the exhibition and sold food items prepared by them, which included spinach fortified snacks and Spirulina chocolates.



Picture No. 9: A village representative gifting H'ble Minister Ms. Pankaja Munde a hamper with the goodies prepared by the SHG women after the inauguration of the exhibition on January 23rd, 2019

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The Spirulina chocolates were a one of a kind item at the exhibition thereby attracting a lot of attention from customers and the media alike. There was media coverage at the exhibition and a couple of media articles in the regional language spoke about the journey of the women from Pathardi and their novelty product, the Spirulina chocolates.

The women earned a sizeable revenue over a period of 10 days and were motivated and encouraged to pursue this

entrepreneurial venture further. The exposure provided by the exhibition and the profits from the sale were a huge confidence boost for the ladies.



Picture No. 10: Pathardi women manning their stall during the exhibition

Way Forward

TERI is constantly working on improving the market linkages available to the women entrepreneurs of Pathardi and guiding them to take beneficial business decisions. TERI is also working on providing the women with reliable platforms to showcase and promote their food products. The women also sold a few of their products on the occasion of Women's day in the premises of GKN Sinter Metals Pvt. Ltd. in Pune, which were very well received by GKN employees. The food items were much appreciated with the employees stating that they would like to purchase them in the future as well. TERI would be continuing to support the SHG women to make use of similar opportunities to promote and sell their food products and also participate in exhibition cum sales in the future. There would also be periodic trainings as and when required to keep them up to date with the food processing and fortification business and continuously update their skills in the same.

TERI is constantly working towards introducing novel nutrient rich foods into the daily diets along with promotion of traditional nutritious foods. With this objective, TERI would be organizing training programmes for the cultivation of Spirulina (for food fortification as well as self-consumption) and Azolla (for the nutritional security of poultry and livestock). TERI has already introduced the villagers to Spirulina (Fortification of Chocolate using Spirulina).

Azolla is a fern with high protein, amino acids, vitamin and mineral content and has a high commercial and nutritional value. TERI has developed a highly nutrient goat and chicken feed that utilizes inexpensive products like rice grains, egg shells (calcium rich), peanut de-oiled cake, wheat grains, moringa leaves, along with Azolla, using a very easy recipe. TERI experts would be training the villagers in cultivating Azolla, both for sale and for preparation of the feed for their own poultry and livestock to improve their health and nutritional status, thereby indirectly strengthening the income that could be generated from them.

In the next phase of the Pathardi project, TERI would be partially restoring the village pond to increase its water retention capacity thereby increasing the water availability and accessibility in the village. Increased water availability would help villagers practice additional livelihood options such as aquaculture and indirectly improve the nutritional status of the villagers. Additionally this water will be beneficial in the cultivation of Spirulina and Azolla, thereby forming a successful resource utilization linkage.