



LEIS INDIA



Value Addition



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*Farm women sort and prepare fruit bunches
of litchi*

(Photo: ICAR-NRC on Litchi)

The AgriCultures Network

LEISA India is a member of the global AgriCultures Network. Seven organisations that provide information on small-scale, sustainable agriculture worldwide, and that publish:

Farming Matters (in English)

LEISA revista de agroecología (Latin America)

LEISA India (in English, Kannada, Tamil, Hindi, Telugu, Oriya, Marathi and Punjabi)

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The editors encourage readers to photocopy and circulate magazine articles.

www.leisaindia.org

Dear Readers

Small farmers who dominate Indian agriculture have seldom made profits from agriculture. Improvements in yields and enhanced marketable surpluses hardly transform into better monetary returns owing to absence of value addition, weak value chain system and weak market linkage. But of late, farmer producer organisations are helping small farmers to process their harvests providing better linkages to markets.

In this issue we have included experiences of farmers, farmer producer organisations and institutions that are promoting value addition. You will find that most of the value addition processes are not only simple, but less cost intensive, bringing in enhanced returns to the farm families. We hope these experiences will interest and inspire many farmers to practise value addition, preventing them from distress sales.

We look forward to your feedback, as always. We remain deeply indebted to you all for your commitment to promotion of LEISA.

The Editors

LEISA is about Low-External-Input and Sustainable Agriculture. It is about the technical and social options open to farmers who seek to improve productivity and income in an ecologically sound way. LEISA is about the optimal use of local resources and natural processes and, if necessary, the safe and efficient use of external inputs. It is about the empowerment of male and female farmers and the communities who seek to build their future on the bases of their own knowledge, skills, values, culture and institutions. LEISA is also about participatory methodologies to strengthen the capacity of farmers and other actors, to improve agriculture and adapt it to changing needs and conditions. LEISA seeks to combine indigenous and scientific knowledge and to influence policy formulation to create a conducive environment for its further development. LEISA is a concept, an approach and a political message.

AMEF is a member of AgriCultures Network, which is involved in co-creation and sharing of knowledge on family farming and agro ecology. The network is locally rooted and globally connected. Besides magazines, the network is involved in multi stake holders' engagement and policy advocacy for promotion of small holder family farming and agroecology. The network consists of members from Brazil, Ethiopia, India, Netherlands, Peru and Senegal. The secretariat of the network is located in IED Afrique, Dakar, Senegal.

MISEREOR founded in 1958 is the German Catholic Bishops' Organisation for Development Cooperation. For over 50 years MISEREOR has been committed to fighting poverty in Africa, Asia and Latin America. MISEREOR's support is available to any human being in need – regardless of their religion, ethnicity or gender. MISEREOR believes in supporting initiatives driven and owned by the poor and the disadvantaged. It prefers to work in partnership with its local partners. Together with the beneficiaries, the partners involved help shape local development processes and implement the projects. This is how MISEREOR, together with its partners, responds to constantly changing challenges. (www.misereor.de; www.misereor.org)

AME Foundation promotes sustainable livelihoods through combining indigenous knowledge and innovative technologies for Low-External-Input natural resource management. Towards this objective, AME Foundation works with small and marginal farmers in the Deccan Plateau region by generating farming alternatives, enriching the knowledge base, training, linking development agencies and sharing experience.

AMEF is working closely with interested groups of farmers in clusters of villages, to enable them to generate and adopt alternative farming practices. These locations with enhanced visibility are utilised as learning situations for practitioners and promoters of eco-farming systems, which includes NGOs and NGO networks. www.amefound.org

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Value addition of MFPs is a great way to utilize the hidden potential and value of forest produce which can improve the social and economic conditions of the community. Handholding by grassroot institutions along with governments support will go a long way in creating better livelihood opportunities for the tribal and marginalized community.



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Value Addition

Small and marginal farmers constitute the farming majority. They are categorised as small producers. They are faced with diverse challenges. Invariably, these challenges impact their livelihoods. The typical challenges these farmers face include unpredictable climate as well as market challenges - consequently, they suffer crop failures and reduced farm incomes.

Generally, the strategies suggested to overcome these limitations are processing and value addition. Very often, this is stated simply. We need to recognise that it is not simple as it is believed to be. However, it does work well if efforts are put and certain basic principles are operationalized.

Some of the questions which come to mind include, how the farmers could be guided on technical and other aspects, how they could be guided to face the realities of inadequate working capital, the technical abilities and the scale required. Some of the lessons learnt by several agencies highlight the possible working strategies.

One of the key requirements is keeping the *farmers in the centre* while exploring options and strategies. To begin with, when interactions happen with farmer groups through Participatory Rural Appraisal and Focus Group Discussions, farmers do highlight lack of opportunities for storage, processing and value addition as one of the constraints they face in getting good returns on investments. (Anithakumari, p.32).

The first challenge faced is in identifying **suitable produce** – be it from seasonal crop, minor forest produce, horticulture crops like fruits. For instance, Sesamum was identified as a ‘niche crop’ and sesame oil as a viable product through a programme involving large number of women SHGs. Farmers experimented even in finalising the sesame variety they want to cultivate. The choice for right produce to invest in value addition is invariably backed by intensive study and assessment of various factors. These include production practices, the skill

sets available and gaps to be addressed and importantly, the existing or non-existing marketing practices, for a potential value added product. It could give raise to an emerging market demand like sanitiser which could be made from diversification of existing product range. (Yogranjan et.al., p.16). It could be based on projected demand for nutri rich foods which could be prepared from minor forest produce through processing and value addition. When linked to sustainable livelihoods of tribal communities, in case of minor forest produce, the aim could not just be commercial viability but also fair pricing, improved shelf life and expanded livelihood opportunities. (Archana Bhatt and Vipin Das, p.22).

Simplicity of technologies is a key factor for easy adoption and acceptance. For instance, marketability of coconuts could be improved through identifying correct harvesting time. (Anithakumari, p.32). Similarly, Central Agro-Forestry Research Institute (CAFRI) provided guidance on simple techniques for gum extraction, drying, and cleansing which included making more cuts and not the deeper cuts, and cleaning the bark before making cuts. These resulted in appreciable difference in the production and quality of gum. (Niraj Kumar et.al., p.11). A misconception that limits technology adoption is the notion that processing technologies require huge investment which prevents farmers in taking up processing operations. ICAR supported initiative inspired small farmers to take up litchi processing by convincing that their home (kitchen) could be their processing unit (Alemwati Pongener et.al., p.6).

Training and skill development agencies play a critical and important role – firstly in understanding the current limitations as well as providing solutions to address them. For instance, this could be, the unhygienic collection and storage methods of Mahua flowers and fruits. (Yogranjan et.al., p.16). The training is not just technical aspects alone. It includes guiding communities on importance of other key factors like quality, food safety

regulations and market requirements and agri business. (Niraj Kumar et.al., p.11)

Scale is a very difficult challenge faced by small producers. Invariably, they struggle with required product volumes – be it in terms of allocation of land resources or to deal with markets. Context specific strategies have to be evolved. There is no one perfect model fitting into all contexts. One way forward is through **land consolidation** - a very tough proposition involving diverse stakeholders. Similarly, another is systematic **social organisation** to enable intensive collectivisation. Both need patient and empathetic handling of communities by experienced agencies. For instance, land consolidation was achieved in Kerala through mutual agreement and consensus by consolidating in public places (temple premises, government office etc) as well as individual farmers plots to obtain a contiguous area of cultivation with a minimum of one to 2 acres, thus, making 250 ha of fallow lands productive. (Anithakumari, p.32). Led by vast experience of Srijan in social organisation, Women Producer Groups (WPG), were formed in each village. Respective SHGs continued to patronize WPGs and coordinated with other SHGs to establish village-level collection centers (VLCC) in each village. WPGs, in their respective meetings, agreed on a minimum price and quality of gum to be bought from the members. Members decided to distribute 50% of the total profit immediately among the members who have sold their gums to VLCC and keep 50% with the group to meet its expenditure. (Niraj Kumar et.al., p.11)

In processing and value addition, with their natural abilities to organise themselves, if an opportunity is provided, **women farmers** take lead and emerge as experts. For instance, women farmers in Pathiyoor panchayat in Kerala, emerged as local experts in sesame cultivation, processing as well as effective farmer to farmer knowledge dissemination. (Anithakumari, p.32). Similarly, the women-led Self-Help Groups (SHGs) in Madhya Pradesh were active in identifying women members, later were instrumental in emerging as Producer groups and collection centres while successfully dealing with scale and new markets. (Niraj Kumar et.al., p.11)

Value addition and processing creates new hope for the **youth** who aspire to be entrepreneurs. Like every other place in the country, tilling and toiling in the fields is not an occupation today's youth prefer to take up, and

Sarovar's son was no different. Within three years, the Sarovars have gone from being first time processors to sourcing litchi fruit from nearby growers to match their growth and ambition (Alemwati Pongener et.al., p.11).

Emergence of **Farmer Producer Organizations** has created a new hope for the vast small holder majority. Value addition has been a proven strategy for many FPOs, to reduce post harvest losses as well as better incomes. There are several examples of such efforts from diverse contexts. Some of notable examples are banana in Meghalaya, fish in Tamil Nadu; Mangoes in UP. They offer many benefits to the farmers like increase bargaining power, enable better and easy access to inputs. (Ayyagari Rampal et.al., p.26). Some of the FPOs have created credible **brands** too which require multitude of competencies, preparation to sustain excellence backed by business acumen and strategies. For instance, Pathiyoor Farmers brand markets products like Virgin Coconut oil (VCO), turmeric powder, sesamum oil etc. (Anithakumari, p.32).

COVID pandemic has created several challenges for rural communities and farmer groups and FPOs. While adhering to protocols required they have to survive and succeed. The resilient farming communities are keeping the success of the sector alive by ensuring timely and adequate production. Indeed they are also the true warriors by ensuring timely and nutri rich foods battling all their usual challenges like climate, decreasing productivity, labour shortages, uncertain markets as well as life threatening pandemic.



Litchi processing

A promising value addition

Alemwati Pongener, S K Purbey, Vinod Kumar, Vishal Nath,
S D Pandey and Abhay Kumar

Fruit processing is often associated with high investment, deterring small farmers to take up value addition. ICAR with its simple technology and initial handholding support, has helped litchi farmers in Bihar achieve big dreams.

Talk to any litchi seller/ retailer, and chances are he isn't a litchi farmer. In the litchi heartland, Bihar, almost entire crop is sold to pre-harvest contractors who harvest the fruit and take litchi, profit included, across the length and breadth of the country. The farmers don't have to worry about marketing some might say, but there certainly are strong reasons why almost every litchi grower opts to give his crop to the middleman long before the fruits are harvested.

Unlike many other fruits, litchi harvesting is normally a one-time operation. The whole orchard is harvested in one go. Litchi has a short period of harvest that lasts a maximum of 15-20 days. Then there is the problem of pericarp browning - rapid change of fruit colour from red to brown. Harvested litchi fruit turns brown within 24-48 hours under normal environmental conditions. Litchi being an item of impulse buying, brown litchi fruit find no takers. Locally, the market gets flooded with the fruit resulting, very often, in glut and distress sale, while distant marketing becomes difficult due to highly perishable nature of the fruit and lack of appropriate postharvest logistics in place. Eventually, most litchi growers choose the easier

Chanda Kumari from SJMKPCL prepares litchi squash



option of striking deals with the pre-harvest contractor, although that comes at a high cost – low income.

Value-addition through processing - Intervention at ICAR-NRCL

Processing is one of the means to reduce postharvest losses and add value to fruit crops. Besides being nutritious, processed products are shelf-stable. They can be stocked and marketed over time, thereby, providing the processor with valuable time and advantage to market the products according to demand.

ICAR-National Research Centre on Litchi (NRCL), Muzaffarpur, Bihar has developed and standardized techniques for processing and preservation of litchi beverages. However, in an industry dominated by multi-national companies (MNC), need for initial high investment, and lack of funding and policy support, adoption of technology among stakeholders remained almost negligible.

Between 2014 and 2017, NRCL progressively introduced the positives of the technology during training programmes, Kisan melas, fairs etc. The centre also commenced manufacturing beverages on a pilot scale and marketed them to demonstrate feasibility of the technology as a viable business opportunity. Sensing interest among growers, the centre started an entrepreneurship development programme (EDP) on micro-processing of litchi beverages, whereby registered participants were made aware of the science behind beverage preservation, food safety regulation and licensing, storage and marketing. Once the trainees learnt that beverages could be prepared within the comfort of one's kitchen with minimal investment, the tide began to turn towards the end of 2018.

A few torch-bearers

Ram Sarovar, a 55-year-old farmer, from Kurhani block of Muzaffarpur could hardly earn a decent income from his 10 mango plants to meet family expenses. Convinced

Anoj Kumar Rai with his litchi and mango products in his farm at Pusa, Samastipur



Table: Increase in farm income from Shri. Anoj Kumar Rai litchi orchard through processing

Type of marketing	Fresh marketing	Processing	Gross income
Selling entire yield to middlemen (Traditional)	3000 kg	Nil	₹ 40,000/-
Processing part of yield (2020 experience)	2500 kg	500 kg	₹ 1,12,500/-
Processing entire yield	Nil	3000 kg	₹ 4,75,000/-

that processing could potentially take his family out of his plight, he learned the techniques of fruit processing at NRCL. Initially he started producing mango squash and RTS (ready-to-serve) products. Later, he began processing and marketing litchi pulp too by procuring litchi fruit from neighbouring farmers. Like every other place in the country, tilling and toiling in the fields is not an occupation today's youth prefer to take up, and Sarovar's son was no different. *"I was worried about my educated-unemployed son, who was unwilling to take up agriculture as a profession. But once our litchi processing business started and profits began to come in, he has joined me full time"*, grins Mr. Sarovar about his 24-year-old son, Bharat Bhushan, who has since found his identity as a litchi processor and marketer with pride. In the year 2018, they re-invested their profits in purchasing a pulper of larger capacity. Today, their company, Ram Sarovar Agro Foods, markets litchi pulp to buyers across the country. The Sarovars also manufacture and supply litchi squash and RTS to retailers, restaurants and *dhabas*, and their flavourful-refreshing drinks can be found in retail shops along the highway from Muzaffarpur to Patna, catering to hordes of travellers along this route. Within three years, the Sarovars have gone from being first time processors to sourcing litchi fruit from nearby growers to match their growth and ambition.

If there is one quality that makes litchi stand out among fruits, it's the flavour – tropical and captivating. Its acceptance among consumers can be easily gauged from the popularity it finds in diverse products ranging from beverages, ice-creams and desserts, through home products like incense sticks to cosmetics such as lipsticks. Shri. Anoj Kumar Rai, 50, is another farmer from Samastipur who admits his childhood dream of exploring ways to process litchi for product diversification and earning higher income. *"Litchi*

is available for hardly one month. I want to process litchi so that the delightful flavour and health benefits of litchi can be provided to consumers throughout the year", says Anoj. His family owns 5 acres of land in Malikorh, an interior village in Samastipur, but he has not let poor accessibility to dampen his optimism. In May 2020, when COVID-19 was at its peak, marketing fresh litchi became problematic and risky. He was determined to transform the threat into opportunity. He says, *"While litchi is highly perishable, the restrictions due to the nation-wide lockdown added to our woes. I decided that instead of giving up and counting my loss, I should process the fruit and preserve the pulp"*. With technical supervision of NRCL, Mr. Anoj not only saved his crop but also kickstarted his tryst with fruit processing. His 60 odd litchi trees would hardly earn him ₹ 40,000 through deals with middlemen. During the summer of 2020, he was able to earn a gross income of ₹ 79,200 by processing 500 kg, harvested from 10 trees, into RTS beverage. With success in litchi processing, he replicated the same with "Mallika" mango. Today his products are being marketed locally. Like Mr. Sarovar, he also targets restaurants, retail outlets, and catering houses in Pusa and Samastipur. Mr. Anoj's passion to agri-innovate deserves praise and mention, and is a fine example of success under trying circumstances. His 5-acre plot has different fruit plants – litchi, mango, apple, peach, plum, kinnow, mandarin, lime, grape, jamun, aonla and many more, collected from his visits to different agricultural universities and research institutes all over the country. Mr. Anoj plans to bring maximum share of his varied produce under processing. Seeing his success, nearby farmers have come together to join Mr. Anoj, and formed what they have christened *Pusa Farmers Producer Company*.

Samarpan Jeevika Mahila Kisan Producer Company Limited (SJKPCL), a group located at Jhapaha, Muzaffarpur (Bihar) works among women farmers with the vision of improving social and economic status of farmers through technological and marketing interventions. Fruit and vegetable processing being one of the components of increasing income, the company came forward and attended the EDP at ICAR-NRCL in early March 2020. About 20 tons of litchi pulp was processed during the ensuing litchi season in May-June. With the knowhow gained from the EDP, the company gradually commenced manufacturing litchi squash and



Workers collecting bunched fruits for packaging

RTS. The group further plans to diversify the product range and increase quantum of processing in coming seasons to leverage the litchi value chain and, thereby, improve livelihood of farmers.

While such success stories can be considered as baby-steps or at best morsels in the huge platter of food processing industry, the winds of change are real and encouraging. There is optimism and interest among small and marginal farmers in fruit processing, and rightly so. *Shahi Litchi* of Bihar has been registered as GI (Geographical Indication) that assures quality and distinctiveness attributed to its area of production in Bihar. This has been followed up by the selection of litchi for three districts of Bihar viz. Muzaffarpur, East Champaran and Sitamarhi, in the One District One Product (ODOP) programme under PMFME scheme of

the MOFPI. These factors are expected to give much-needed fillip to increasing processing avenues under litchi.

Influencing factors

Some of the reasons that were instrumental in bringing success to the likes of Ram Sarovar and Anoj Rai are as follows.

Processing in one's own kitchen

A misconception that limits technology adoption is the notion that processing requires huge investment. It is the sole reason which prevents farmers to take up processing on farm. Success in grooming small and marginal farmers to be entrepreneurs and first-time processors lies in convincing that their home (kitchen) could be their

processing unit. To achieve this, training and capacity building on micro-level processing techniques becomes vital, *i.e.*, providing scientifically sound hands-on experience/training on food processing which learners can replicate in their homes. As Akhilesh, another budding processor from Muzaffarpur, says, *“I have an orchard with different fruits, and big dreams too. But before I make haste to do something big, I need to know the basic principles of fruit preservation and be able to come up with a product that sells”*.

Institutional support

From providing technical skills and infrastructural facilities to mentoring small businesses in every step, institutional support goes a long way in nurturing first time processors. Agri-business incubation (ABI) units and Transfer of Technology (ToT) sections in public institutions such as ICAR, KVKs, Agricultural Universities etc., take care of incubating small businesses and start-ups in agriculture, including food processing. At ICAR-NRCL, under the EDP, post-training participants are provided access to laboratory equipment for product development with all possible technical guidance. The centre's postharvest workshop and processing facilities are provided to incubatees on custom-hiring basis. The incubatees are also mentored for marketing their products and other mandatory certification including FSSAI licence. All these go on to show the importance of hand-holding farmers to mitigate risk of failure in processing.

Dream big, start small

It is one thing to dream, quite another to translate that into reality. The food industry is dominated by several big MNCs, and it is no mean task to stay competitive and successful. Before deciding to invest big, it is important for any micro-processor to develop a product and test for market and consumer acceptance. Only after the processor is convinced that the product would sell should he make the decision of investing more. Without a product that sells, big investment would put businesses into jeopardy and risk of heavy losses. As Anoj puts it, *“My plan is to start small and process as per local market demands. I will make effort to popularize my products and expand my marketing niche. I plan to expand and invest commensurating with my business growth.”*

Conclusion

Viable business and promising opportunities lie in litchi processing. Processing can be an important tool to nullify the threat and risk associated with marketing of fresh litchi. Entrepreneurship and business growth through fruit processing also lifts other related industries such as packaging, food ingredients, water purification, logistics and warehousing, E-commerce etc. A few micro-processors in litchi have emerged in and around Muzaffarpur in recent years. With Shahi litchi already GI registered and the present institutional support in the form of PMFME scheme, the future in processing appears bright. Besides, the same preservation techniques can be employed to process other fruit and vegetables that are seasonally available throughout the year.



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Secondary Agriculture

Empowering tribals of Central India

Niraj Kumar, Mohd. Zahid and Prasanna Khemaria

Secondary agriculture which deals mainly with the functionality of agriculture, contributes significantly to increased income and competitiveness of the farmers. With focus on value addition, SRIJAN supported Sahariya tribes in Madhya Pradesh with appropriate advisory service, practical training and linkage with the market, helping them to get better returns.

Gum from Palash tree is a multi utility product

Secondary agriculture offers a viable option of doubling the farmers' income and also making agriculture competitive. Functional expansion of hitherto traditional agriculture can be a potential way to increase the income of the farmers, particularly those who are small, landless, and dependent on natural resources like forests for their sustenance. Besides others, utilizing the spare time of the farmer family is one of the potent approaches of secondary agriculture. Alternative enterprise linked to rural off-farm activities has been one of the approaches of secondary agriculture that adequately help utilize existing human resources, technologies, and competencies to create gainful employment and adequate income for the participants.

Self-Reliant Initiatives through Joint Action (SRIJAN), an internationally acclaimed





WPG members training in progress

NGO working across many states of central India, has successfully facilitated a better livelihood option through value addition that not only provided Sahariya tribals additional income but also helped in protecting forests in Shivpuri district of Madhya Pradesh. The Government of India classifies Sahariya tribes, mainly found in the districts of Morena, Sheopur, Bhind, Gwalior, Datia, Shivpuri, Vidisha, and Guna of Madhya Pradesh and adjoining Baran district of Rajasthan, as a Particularly Vulnerable Tribal Group (PVTG). Sahariyas are traditionally expert woodsmen and forest products gatherers. Their main occupations are hunting, and collecting and selling gum, catechu, tendu leaf, honey, mahua flower, and other medicinal herbs from forests. A considerable number of Sahariyas are settled cultivators and grow wheat, pearl millet, maize, black gram, and pigeon pea.

Flame of Forest, *Palash* in Hindi (*Butea monosperma*), is one of the most common but versatile trees in the forests of the Shivpuri region. According to an estimate, on an average, there are 17 *Palash* trees per hectare of forest area. Villagers used each part of the tree (like flowers, leaves, seeds, bark, and gum) for income generation. Gum from *Palash* (*kamarkas* in Hindi) is a multi-utility product with considerable medicinal and market value. *Palash* gum has anthelmintic, anti-convulsive, anti-

diabetic, anti-diarrheal, anti-estrogenic and anti-fertility, anti-microbial, anti-stress, chemo-preventive, thyroid inhibitory, and wound healing properties. The collection of this gum from trees require special skills, and members of the Sahariya tribe are considered experts in those skills.

As agriculture in the area is predominantly rainfed, villagers do not have any significant on-farm engagement after harvesting their Kharif crops. They use their time in the collection of gum and flowers from *Palash* trees. Although the entire family is involved, it is the women who take the primary responsibility of *Palash* gum and flower collection. The productive season for the gum collection is from December to February. The entire process of gum collection is manual and labor-intensive. It requires considerable time and skills to identify suitable trees, cut the tree's bark, and finally collect the oozing gums. Unfortunately, farmers do not get enough return from their forest-based activities and migrate to nearby cities for employment.

It was the winter of 2019, not even six months since SRIJAN started working with the farmers in the area, it decided to undertake a detailed study of its value chain of *Palash* gum and its possible role in increasing the income of farmers. The study found a sizable production

and market potential (up to 40 crores) of *Palash* gum in Shivpuri district. Besides the local market (dominated by middlemen), cities like Indore, Neemuch, Delhi, Jodhpur and Vadodara were the other potential markets of *Palash* gum. The study concluded that the local middlemen exploited tribal farmers by underweighting and underpricing the gum extracted by the tribals. It was possible to provide 20% to 30% additional income to the tribals by linking them to established market channels. The study also found that changes in extraction practices can increase the gum yield.

The Process

SRIJAN joined hands with the women-led Self-Help Groups (SHGs), promoted by the Madhya Pradesh State Rural Livelihoods Mission, which were active in two villages in the *Karera* block of Shivpuri. With the help of SHGs, it was easier to identify women members who were already involved in gum extraction. A different group of women-gum-extractors, known as the women producer group (WPG), was formed in each village. A team of scientists from the Central Agro-Forestry Research Institute (CAFRI) provided on-site, hands-on training to the members of WPGs on the scientific processes of gum extraction, drying, and cleansing. Simple experts' suggestions like making more cuts and not the deeper cuts, and cleaning the bark before making cuts made an appreciable difference in the production and quality of gum. These women members were also trained in book-keeping, record maintenance, weight measurement, and price calculations. Their responsible and sustainable practice of gum harvesting helped the community to increase the quantity (by 30%) and quality of gum.

Respective SHGs continued to patronize WPGs and coordinated with other SHGs to establish village-level collection centers (VLCC) in each village. The WPG decided that members will ensure first-level cleaning and drying at their respective homes after collecting the produce from the forest area. After basic cleaning and drying, members sold their produce at the VLCC of their respective villages. During the first year, villagers sold 732 kg of gum.

After the mechanism of gum procurement at the VLCCs was established, members with leadership skills took the lead in selling their aggregated produce. They

The story of Dayabati

Dayabati Adiwasi, her husband, and two children lived in Simra, a village in the Shivpuri district. Owning only 0.5 acres of land, they could grow very little, rely on forests, and work as farm laborers to meet their ends. Dayabati and her husband collected gum from the nearest forest and sold it to the local buyers at Rs.70-80 per kg. The nearest forest is about 2 km away from the village; however, she had to venture deep into the woods to get gum. On any typical day, Dayabati would get up early in the morning, cook food and leave for the forest to collect gum, only to return in the evening. On average, she used to collect 3-4 kg of gum in a day.

After she came to know about SRIJAN's initiatives, she decided to join the Women Producer Group (WPG) and became an active member of her WPG. Because of her interest and leadership characteristics, she was elected as Center-in-charge. She was trained in book-keeping, record maintenance, operation of E-weighing machine, and payments.

In one season (Dec-Feb), she sold 171 kg of Palash Gum in VLCC at the rate of Rs.105 per kg. and could earn Rs.18,847 in 3 months. Because she sold her product to VLCC, she could make Rs.4,275 more than what she would have earned by selling to the local buyers. A happy and confident Dayabati said, *"Earlier, I was unsure what I was doing and did what others did. But now, after joining PWG, I know how to get more gum from the same tree, get a higher price for my product, and extract more gum without damaging Palash trees and our forest."*

decided to bypass local middlemen (aggregators) at the village, block, and district levels. Because of training in business negotiations and continuous encouragement from SRIJAN, women members felt more confident and started looking for new markets. With the support from SRIJAN team, the women leaders could reach the gum markets of cities like Indore, Neemuch, Delhi, Jodhpur, and Vadodara, which ensured a 20% higher price for their produce. Because of increased production, higher price, and better organization, villagers could sell 4500 kg of gum during the second year of WPG functioning.

WPGs, in their respective meetings, agreed on a minimum price and quality of gum to be bought from the members. Members decided to distribute 50% of the total profit immediately among the members who have sold their gums to VLCC and keep 50% with the group to meet its expenditure. Members had the freedom to sell their products even in the open market or to the local middlemen if they did not want to sell it to WPG

Appropriate advisory service, practical training, and linkage with the market were the crucial components of SRIJAN's interventions

or the product did not meet the WPG's minimum quality standard.

The Outcome

It was just two years since tribal women of the Shivpuri district decided to form WPGs; the results have been phenomenal. The WPG movement, which started from two villages, expanded to the other five villages, with membership growing from 70 to 300. The average gum collection increased from 10 kg to 20 kg per member per season. As many new women joined the bandwagon of gum-collectors whose initial contributions were low, the average seemed modest. However, for the founder members of the WPGs, the average contributions increased up to 40 kg per member. This was primarily because of the adoption of scientific methods of gum harvesting, resulting in more gum per tree. Direct linkage

Table: Performance of WPGs

Activities	2019-20	2020-21
Number of villages	2	7
Number of members	70	300
Area under operation	45 hectares	280 hectares
The average amount of gum sold per member in a season	10 kg	15-20 kg
The average price received per kg of gum	Rs. 70 - 80	Rs. 100 - 120
The average amount of money received per member in a season	Rs. 980	Average Rs 4000 - 4500

with markets bypassing village level intermediaries and improved quality of gum resulted in better price realization (from Rs. 70-80 to Rs. 100-120 per kg), increasing their average seasonal income from less than Rs.1000 to Rs. 4000 – 4500 per member.

SRIJAN's focus on increasing the efficiency of the value chain of *Palash* gum had a multidirectional impact. The most important outcome was reduced migration. As the agriculture off-season became productive and remunerative more and more farmers started staying in the village. As the primary responsibility of gum collection continued with the women members, SRIJAN organized training for their male counterparts in growing seasonal vegetables. The training focused on the principles of

Gum collection at village collection centre



climate-smart agriculture and the use of bio-inputs (like *Bijaamrit*, *Jivaamrit*, and *ghanajiva amrit*). Because of climate-smart agriculture and locally available water, and family labors, they could harvest good returns from vegetable cultivation. “It is always good to do the labor on our field. Now, we eat food grown in our field. The availability of various vegetables has increased, and it has become cheaper for us,” said Sharda Bai of *Radha Rani Mahila Utapadak Samuh*, *Rajgarh* whose family had sold 35 kg of gum last year.

SRIJAN’s presence and impact of scientific intervention by the scientists to increase the production and quality of *Palash* gum had also affected agricultural practices in the villages. The farmers had started talking about the quality of seeds, different crops, and improved fertigation methods and wanted to learn about improved farming practices. “No doubt, the change is palpable, and we are experiencing some improvement in their agriculture practices, even if they are among the smaller and poorer farmers of the country,” said Mr. Sandip of SRIJAN, who was the project manager there.

Exposure to various markets and participation in price negotiation and business discussions had empowered local women leaders. They had started discussing profit, sustainability, and equity in the business. Although the number of such empowered women leaders was still significantly less, their active and meaningful participation in WPGs and SHGs meetings had affected their social and economic status. “Our WPG is new, and we are new to the business, but we are planning to have an FPO (Farmer Producer Company) to scale up our business,” told Dayabati Adiwasi, who is in charge of a VLCC in Village *Simmra*. Encouraged by this success, SRIJAN had plans to replicate the model in the rest of the blocks of Shivpuri and other districts of Bundelkhand region, though with government support.

Conclusion

It is clear that if the income of the more impoverished and smaller farmers has to be sustained then the market must expand both territorially and functionally. Secondary agriculture deals mainly with the functionality of agriculture and contributes significantly to increasing the income and competitiveness of the farmers. With the focus on value addition, it did help villagers to increase their income. Appropriate advisory service,

practical training, and linkage with the market were the crucial components of SRIJAN’s interventions. Change in the outlook of the villagers and realization of the fact that despite smaller landholdings, they can get better returns by changing their practices were the significant outputs of the intervention. The successful experiment of facilitating secondary agriculture through value addition among impoverished communities establishes that it helps increase productivity and price realization and changes farmers’ perspectives towards agriculture. Additionally, it contributes towards women’s empowerment and improves the village-level economy. Let’s promote secondary agriculture, and let agriculture extend beyond farmland and farming season.

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Mahua trees along the roadside

Adding value to Mahua in pandemic times

Yogranjan, Lalit Mohal Bal, Dinesh Kumar and Ayushi Soni

Judicious and commercial use of Mahua flowers and fruits can be a profitable enterprise for the villagers by value addition. Besides several products, the villagers learnt that Mahua flowers could be a source of producing sanitiser, making them self reliant in the times of pandemic.

The people of Tikamgarh district, in the state of Madhya Pradesh, India, have a simple existence close to forest, but the encroachment of paved roads and the mounting ambition of urbanization have led to some unwelcome changes. Although, livelihood sustenance based on forestry products has been a part of the traditional lifestyle here, however, a large amount of this practice is being lost owing to changes in village life resulting in adapting to new ways of living. Also, with a long and recurrent history of drought, local people are forced to migrate to the metropolitan cities in search for constant work which is hard to find in rural settings.

Reviving the forest heritage

The entire area under the district traditionally enjoys a good coverage of forest and that too with trees of economic importance such as Mahua (*Madhuca longifolia*), Palas (*Butea monosperma*) Teak (*Tectona grandis*) and Tendu (*Diospyros melanoxylon*). Mahua is an important source of income for the rural population. It is traditionally a source of alcohol. On the other hand, Tendu leaves are used to make beedis.

“Despite abundance, the traditional method of collection of Mahua flowers and fruits is unhygienic, drying is not proper and storage is unscientific”, observed by Dr. L.M.Bal, an agricultural scientist. He opined that unscientific storage led to heavy microbial load, making them suitable only for liquor distillation and cattle feed. It was also observed that owing to lack of knowledge on processing, there was distress selling of the Mahua flowers. To address these issues, the Agriculture College in Tikamgarh with the financial support of Biodiversity Board, Government of Madhya Pradesh, took up a project and standardized suitable drying (microwave and solar drying) and preservation methods to get the desired quality of dehydrated Mahua flowers.

The several drying characteristics, effective moisture diffusivity and colour kinetics of Mahua flowers during drying by different methods (solar and microwave drying) were extensively explored in the well equipped biochemistry laboratory of the college. Physico-chemical properties of dried Mahua flowers were evaluated primarily to know moisture content, colour measurement, rehydration ratio, and protein and total

Mahua based alcohol



sugar content. All these studies have revealed that Mahua flowers can be easily refined as natural sweeteners to make local delicacies such as pudding, kheer, puri and barfi. The transformation of dried Mahua flowers into diverse range of food products such as Dried flower, candied flower, Mahua bar, Ready-to-Serve beverages (RTS), Squash, Jam, Laddu, Cake and Toffee have been demonstrated to the villagers. The double distillation process in the laboratory also resulted in extraction of alcohol. Extracts from Basil leaves, Lemon Grass and Aleovera were used to remove the smell emanating from Mahua.

Covid 19-an opportunity unleashed

The Corona pandemic and the inevitability of Lock Down forced the region's expatriates to return home. Lacking any source of income, the condition of these people who have returned to the village has become miserable. Additionally, the very small land holdings, the severe apathy of youth towards agriculture, and lack of resources including water aggravated the problems.

During the village tour, the team of scientists and students of the College of Agriculture, Tikamgarh, observed that despite nationwide spread of pandemic, the villagers had great indifference towards the use of sanitizer. Besides, there was also a lot of frustration among the returned migrants as there was no source of income available. In these difficult times, the College of Agriculture, Tikamgarh tried to offer a better option to earn the livelihood of these migrants through value addition of locally and abundantly available Mahua. The college team took initiatives for exploiting the plurality of Mahua trees in the area not only by using it as a source of income for the local people but also made them aware to use alcohol based sanitizer to avoid COVID infection.

A total of 300 quintals of Mahua was procured from the villagers and approximately 60 litres Mahua sanitizers have been prepared and distributed among villagers so far. The sanitizer has been distributed to rural youth in a 100 ml bottle. Initially, the popularization and commercialization of Mahua based food products and sanitizers were being undertaken through hands on training to the youth of adopted villages. The laboratory is also extending the shelf life of the dried Mahua and thus alleviating the decay issue of Mahua and making it available throughout the year.

Impact

People in the village have now understood the importance of sanitizer and have become aware that it is a protective option made of things around them. Many villagers are seeing possibilities of utilizing not only mahua flowers but also taking interest in planting Giloy, Tulsi and Lemongrass plants in house pots and beds. Ajay Yadav of Karmarai village, also a volunteer of the project says that the village people have strong likings for Barfi and candies made of Mahua. The youth who have returned back from the metropolitan cities are now not only interested in collecting Mahua flowers and fruits but also learning to make other value-added products of Mahua through guidance from the college. *I have no plan of going to big cities again for job even if the pandemic situation improves*, says, Dayaram Ahirwar. These value added products have not only provided additional income, but also enabled farmers to return to their villages and be self reliant in the times of pandemic.



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It's not all bad news in Covid. India's farm exports soared to 6-year record high

According to the Agricultural and Processed Foods Exports Development Authority, the national agricultural commodity export grew by nearly 25 per cent over \$15.9 billion in 2019-20. This surge amid the Covid-19 pandemic is driven by record-high rice exports — 13.9 million tonnes (MT) in non-basmati and 4.6 MT in the basmati category, and a six-year high in wheat exports — 2.08 MT. India's combined wheat and rice exports touched a record high of almost 20 MT in the 2020-21 fiscal.



Lower price, bumper production

According to experts, two primary factors are behind this surge. Firstly, India's foodgrains are available at a lower rate against other exporting nations. Secondly, the bumper production in the country has also provided the necessary push.

With the UN Food and Agricultural Organisation's global food price index at its highest since May 2014, the price of wheat and rice in major exporting countries remains higher than in India.

Indian wheat is priced at \$280/tonne against Australia's \$300/tonne, Europe, US and Canada's \$310-320/tonne, and Russia or Ukraine's \$290/tonne.

Similarly, the price of Indian rice is hovering around \$360-390/tonne against Thailand's \$495/tonne, Vietnam's \$470/tonne, and Pakistan's \$440/tonne.

The MSP factor

Most of the exported foodgrains are supplied from major producing states such as Uttar Pradesh, Bihar, West Bengal, Gujarat and Rajasthan, say experts.

While these states are major producers of wheat and rice, the procurement by government at minimum support price (MSP) remains minimal, forcing farmers to sell their produce at market prices making it viable for exports.

Estimates for this fiscal

According to the advance foodgrain estimates by the agriculture ministry, the total production of rice in 2021-22 is estimated at a record 121.46 MT against 118 MT last year. This is also higher by 9 MT than the average production of 112.44 MT in the last five years. Until 24 May, 77.2 MT of rice had already been procured by government agencies. Similarly, the production of wheat in the country is estimated at a record 108 MT against 107 MT last year, which is higher by 8.32 MT than the average wheat production of 100.42 MT. However, the procurement of wheat remained at 39.06 MT as on 24 May.

Source: <https://theprint.in/economy/its-not-all-bad-news-in-covid-indias-farm-exports-soared-to-6-year-record-high-heres-how-2/667187/>

Less than four percent Indian farmers adopted sustainable agricultural practices, says study

Less than 4 per cent of Indian farmers have adopted sustainable agricultural practices and systems, according to a study by the Council on Energy, Environment and Water (CEEW). The study, supported by the Food and Land Use Coalition (FOLU), found that scaling up sustainable agriculture would be critical to improve farm incomes and bolster India's nutrition security in a climate-constrained future. States such as Andhra Pradesh and Sikkim have already taken a lead in sustainable agriculture.

Speaking about sustainable agriculture, NITI-Aayog Vice-Chairman Rajiv Kumar said: "Embracing sustainable agriculture could not only lead to better incomes for farmers but also have multiple environmental benefits."

There is a need to rethink current agricultural practices, he said, and added, "Our focus is on promoting sustainable agriculture, especially natural farming, in India. This would benefit small and marginal farmers." It is also suitable in drier regions of the country as it requires lesser water, he said in a statement.

According to the CEEW study, organic farming has garnered the most policy attention among the eight sustainable agricultural practices receiving budgetary support under various central government programmes. However, it currently covers only 2.8 million hectares (ha) - or two per cent of India's net sown area of 140 million ha.

Natural farming is the fastest growing sustainable agricultural practice in India and has been adopted by around 800,000 farmers. Integrated Pest Management (IPM) has achieved a coverage area of 5 million ha after decades of sustained promotion.

Agroforestry and rainwater harvesting, which have received significant attention in national programmes, cover 25 million ha and 20-27 million ha, respectively.

The CEEW-FOLU study recommended investing in capacity building and facilitating information exchange among farmers because most sustainable agricultural practices are knowledge and skill-intensive. Also, re-



aligning government support to reward agricultural outcomes like annual farm productivity and resource-use efficiency would incentivise adoption of sustainable agriculture. Further, focus on rainfed areas would be particularly important to enhance farmers' incomes and resilience in a changing climate. Finally, it would be crucial that national and state-level agriculture information systems such as the agriculture census capture and integrate data on prevalence of sustainable agriculture practices. This would help raise awareness and scale up sustainable agriculture in the country.

The study is based on an in-depth review of 16 sustainable agriculture practices and systems such as organic farming, natural farming, integrated farming systems and conservation agriculture. It also included a primary survey with 180 civil society organisations promoting sustainable agriculture, as well as 40 plus consultations with stakeholders such as the government and agriculture institutions.

Source: <https://economictimes.indiatimes.com/news/economy/agriculture/less-than-four-percent-indian-farmers-adopted-sustainable-agricultural-practices-says-study/articleshow/82165017.cms>

Investing less than 1% of world GDP in nature can tackle climate change

A total investment of \$8.1 trillion in nature is required over the next three decades to successfully tackle the climate, biodiversity, and land degradation crises, according to the State of Finance for Nature report. This amounts to \$536 billion a year by 2050. The report finds that annual investments in nature-based solutions will have to triple by 2030 and increase four-fold by 2050 from the current investments of \$133 billion (using 2020 as base year).

The report released on Thursday was produced by the World Economic Forum, UN Environment Programme (UNEP), and the Economics of Land Degradation (ELD) Initiative hosted by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), in collaboration with Vivid Economics.

It urges governments, financial institutions and businesses to overcome this investment gap by placing nature at the heart of economic decision-making in the future.

It stresses the need to rapidly accelerate capital flows to nature-based solutions by making nature central to public and private sector decision-making related to societal challenges, including tackling the climate and biodiversity crises. The report favours unlocking the potential of nature-based solutions to close the finance gap by 2050. However, nature currently only accounts for 2.5 per cent of projected economic stimulus spending. Private capital will also have to be scaled up dramatically to close the investment gap.

Developing and scaling up revenue flows from ecosystem services and using blended finance models as a means to crowd in private capital are among the suite of solutions needed to make this happen, which also requires risk-sharing from private sector entities.

“The State of Finance for Nature report underlines the urgency and the criticality of increasing investment in nature,” said Justin Adams, Head of the Tropical Forest Alliance at the World Economic Forum.

Forest-based solutions alone, including the management, conservation and restoration of forests, will require \$203

billion in total annual expenditure globally, according to the report. That is equivalent to just over \$25 per year for every citizen in 2021. The report calls for coupling investments in restoration action with financing conservation measures.

The scaling up of private capital for nature-based solutions is one of the central challenges of the next few years with a specific focus on investing in nature to support sustainable economic growth.

Source: <https://www.nationalheraldindia.com/national/investing-less-than-1-of-world-gdp-in-nature-can-tackle-climate-change>

Value addition of MFPs

Potential tool to empower tribal community

Archana Bhatt and Vipindas

Value addition of MFPs is a great way to utilize the hidden potential and value of forest produce which can improve the social and economic conditions of the community. Handholding by grassroot institutions along with governments support will go a long way in creating better livelihood opportunities for the tribal and marginalized community.

Community engaged in the segregation of wild gooseberry



Wayanad is the major tribal (*Adivasi*) dominated district and is home to 12 tribal communities with considerable diversity in terms of livelihood traditions, dialect, cultural practices and socio-economic affiliations. Based on the peculiarity of tribal economy *Adivasis* are classified into several groups in which forest-dependent community occupies predominant role. Studies revealed that over time, forest-dependent communities have been facing unique survival challenges viz extreme weather vagaries, restriction to access forest produce, lower market price and health risks associated with forest produce extraction and collection. All these factors curtailed the income of forest-dependent communities to a great extent.

Collection of Minor Forest Products (MFPs) is physically challenging and gives meager returns if unprocessed. Though they invest their heart and hand during collection, these services are undermined due to undervalued market price, measurement misappropriation, commission of middlemen, the low shelf life of certain produce, massive surplus during seasons, lack of storage facility and lack of bridging money to meet the immediate needs for the marketing and packaging of produce. Moreover, the perishable nature of the produce compels *Adivasis* to sell their produce at a cheaper price which result in the tribals remaining in poverty despite their product being highly valued in the market.

The Initiative

Cheeyambam 73 settlement is located in Poothadi Grama Panchayath, Wayanad District of Kerala. The settlement was a government owned plantation which was later distributed to 302 landless tribal families dominated by Paniyan, Katunayakan and Mullukruma community. Being a forest-dependent community, Katunayakan families heavily rely on MFPs collection in the locality. Due to the strategic position of tribal settlements and close contact with nature, other two communities also heavily depend on MFPs collection for livelihoods though they are not a forest-dependent community by tradition. Out of the total 302 families, 53 families are heavily dependent on MFPs for household consumption and generating livelihood. During the months of MFPs collection, their monthly income contribution from MFPs was found to be more than 90%. The primary data itself highlighted a huge potential and need for value addition of MFPs to generate higher income.

Community Agrobiodiversity Centre, M S Swaminathan Research Foundation at Wayanad, Kerala took up an initiative on value addition of MFP. The aim was not only to reduce the losses due to lack of proper market linkage, plug middlemen appropriation to assure fair price for their produce but also to attempt an increase in the shelf life of MFPs through value addition and convert MFPs as an livelihood opportunity rather than mere collection. The initiative was implemented with the joint support of NABARD and the Department of Science and Technology, Government of India.

A series of field studies and trainings were organized by the centre since 2018 to identify the gaps and issues regarding collection and value addition of MFPs. Trainings were organized in different phases; firstly knowledge based training on MFPs, secondly hands on skill based training on value addition (learning by doing) and finally on production and marketing.

An SHG named '*Vanamallika*' was formed with the participation of 6 women and 4 men from the tribal community. The trainings were given on various topics related to value addition namely retaining maximum nutrients in product, reducing the use of preservatives and adulterants, food processing and value addition of seasonally available, perishable forest produce. The components of training focused on both household's nutritional security as well as income generation. However, the thrust was majorly given to the processing and value addition of MFPs.

To cater to the need for food processing and value addition, a unit was initiated with limited budget provision. Since, value addition is a supplementary income generation activity for the SHG group members, it was not possible to ensure it as a regular income source but the efforts are being taken through value added products for making it as a consistent employment activity. The unit is presently doing value addition in a collective manner for papaya, ginger, jackfruit and coffee during off season to sustain the unit and keep it running. Value-added products developed and marketed by the group is given in Table 1.

Besides training, support was also provided for marketing, by the resource persons. Since, they network with people who are already engaged in large scale value addition and the members of Farmer Producers' Organisation (FPO) in the vicinity, this network is helping the tribal



Nutri-rich food fest

Table 1 Value addition of MFPs by Vanamallika SHG

S. No.	MFPs	Value added products
1.	Wild Gooseberry (Amla)	Pickle, Honey with Amla, Amla Candy, Dried amla, Amla powder, Amla seed for medicinal purpose.
2.	Honey	Processed honey (Heating, filtering and double boiling methods).
3.	Jackfruit	Payasam, Jack varatti, Jack biriyani, Jack fritters, jack Samosa, Jack seed powder.
4.	Ginger	Dried ginger, Ginger powder, Ginger coffee
5.	Yam	Yam mixture
6.	Curry leaves	Curry leaves powder, Curry leaves tamarind mix powder
7.	Moringa	Moringa leaves powder

community in marketing their raw materials or products as well. At present, the SHG is following two main marketing strategies i.e. one through direct sale of the products and second by utilizing the various ecoshops/organic product outlets spread across the state. Being an intervention at its budding stage, the team expects it to be more successful in the coming years.

Impact

As the initiative is fairly new, it is difficult to ascertain the impact of products at the family level. However, based on the study done till now, wild arrowroot powder has comparatively more demand. This is because unadulterated good quality arrowroot powder is rarely available in the market. But, the lacuna here is related to the processing part. Even though the product has enough demand, the production is very low owing to time consuming traditional processing methods. Wild arrowroot is available in abundance in the forest but due to a lower price for the raw produce, the community is reluctant to collect it. But now with the machinery available, it became easier to process and sell it in the market at a higher price which also reduced the drudgery of the community. Last year, 20 kg processed arrowroot was sold at a price of Rs 1500/kg. Overall, in the last year MFP based value added products sale turn over came out to be around one lakh rupees.

The value addition effort helped tribal women's financial inclusion as the group formation and joint effort helped to improve their social and economic solidarity in the community. The efforts of the initiative including the

purchase of MFPs from the community, support in facilitating the sale of the raw and value-added products and developing entrepreneurial skills among the members highly improved the self-esteem of the group members among the community. This made them realize their own strength and potential in generating better livelihood opportunities for themselves and also for the entire community. After attaining skill and knowledge through various training and capacity-building activities by the centre, their experience with technology made them as a skilled labour and empowered them.

With the outbreak of covid, which made huge labour displacement in tribal pockets, in such adversities, SHG *Vanamallika* group members were able to gain fair income (Rupees 600/per person) on a daily basis through the production and marketing of value-added products. The SHG group's demonstration of "Nutri-rich" value-added products in different forums as a food fest helped to generate high-level consumer awareness as well. Also, for the consumers, *Vanamallika* groups' value-added products were assured as safe to eat products since they were homemade, natural, organic and close to home.

Challenges and future endeavors

The recurrent restrictions due to Covid created an unprecedented crisis on the value addition process. The Covid outbreak affected the access to raw material demand of value-added products. Most of the raw materials for developing value-added products by the SHG are largely seasonal MFPs namely wild arrowroot, wild gooseberry, wild honey, wild mango, jackfruit seed, etc. that are available only in seasons. Raw material which are highly perishable in nature, need to be stored for the entire year which requires technology and expensive facilities. Moreover, value addition is profitable only when the raw material is available in the vicinity and easily accessible since that only determines the sustainability of the unit.

Demonstration of "Nutri-rich" value-added products in different forums helped to generate high levels of consumer awareness.

Many factors like inadequate storage facilities, low grade packing (inadequate packing reduces shelf life as well as attraction from consumers), lack of marketing strategies like advertisement were identified as limitations to sustain in the market. Further, a recurrent covid situation also destroyed the supply chain of products which is an issue that is difficult to comprehend at this point.

Another challenge at the group level was the reduction in the availability of certain MFPs due to unsustainable harvest by the tribal community. Since the Adivasi community is traditionally a marginalized community and the group members don't have credible skills in community and capacity mobilization it becomes difficult to carry out all activities in a professional manner. These issues even affect all the processes from production to distribution level. It is important to note that external handholding is necessary initially for empowering group members in various aspects of product development and distribution. Handholding by grassroot institutions along with governments support will go a long way in creating better livelihood opportunities for the tribal and marginalized community.

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Value addition for better returns

Ayyagari Ramlal, Dhandapani Raju, Madhulika Singh, Ajay Kumar and Ambika Rajendran

Farmer Producer Organizations have a vast potential in helping the small and marginal farmers to address their challenges successfully. Building capacities of these organisations in value addition will result in better quality of produce, improve their bargaining power, provide additional employment opportunity and better returns.

The largest group of cultivators in India are primarily marginal and small farmers. Farmers primary challenges are crop failure, monsoon vagaries, lack of access to knowledge and guidance, indebtedness, lack of working capital, making them very vulnerable. Being not organised, they are constantly confronted with inadequate access to inputs and abilities to scale up to leverage markets.

Small farmers groups like Farmer Producer Organisations (FPOs) and cooperatives are legal bodies formed by primary producers such as farmers, fishermen, milk producers, weavers, and others. They could be a producer company or a cooperative society which enables sharing of profits/benefits among the members. The primary mission of such POs is to ensure better incomes for the producers enabled by an organization which is their own. They are expected to enhance their incomes, reduce costs of input purchases including transaction costs, create opportunities for employment, involve them in value-addition including processing, distribution and marketing, enhance bargaining power and provide access to formal credit. These FPOs regularly face various issues and challenges in terms of gaining the trust of the members. The members on the other hand do not have clarity about their structure

and the choice of FPO to become a member. Currently, the notable mainstream institution offering support is, National Bank for Agricultural and Rural Development (NABARD), which has been supporting the POs by providing financial assistance besides technical and managerial support. Shree Balajee Farmers Producer Company Limited, is depicted as an example in Box 1.

Some success stories

Value addition has been a proven strategy for many FPOs, to reduce post harvest losses as well as better incomes. There are several examples of such efforts from diverse contexts. These contexts either offer the scale or the niche in terms of homogenous production or unique local product which offers them advantage of organising themselves. More importantly, the member's capacities have to be improved through capacity building on skills required for processing, value addition.

Some of notable examples from diverse contexts are described below.

Value addition in banana in Meghalaya

The Bolkinggre Women's Commodity Interest group of Meghalaya is associated with banana farming and cultivation. Banana is enriched with many vitamins and

Box 1: Shree Balajee FPC

Shree Balajee Farmers Producer Company Limited is a Farmer Producer Organisation which was started in the year 2019 in the village Murera, Gaya, Bihar. This FPO was initially started as an ATMA group and formerly known as "Shree Balajee Krishi Udayami Samuh". It was started with the involvement of only a small number of farmers, about 30 farmers. Later, this FPO set up a custom hiring centre with an initial capital of Rs. 3,20,000. Following this, they started purchasing various agriculture implements by investing Rs. 10 lakhs and made it operational. During the first year, they got a benefit of Rs. 4 lakhs. The FPO's major hurdle was in expanding the membership. KVK and ATMA groups along with people from the ATMA group helped them. Currently, they are involved in new initiatives which include lemongrass cultivation, G-9 bananas and red lady papaya and fisheries. They also started trying out basmati rice varieties (1121 and 1509) for selling them for better prices to markets in Bengal and Punjab.

minerals and also a horticultural crop that is widely grown in the Garo hills of Meghalaya. They are the producers of a local variety of banana called Bitaguri (or Nendran). The size of the fruit and its quality to make chips is the main attraction of this unique banana variety. Now, with the help of the District Commerce and Industry centre, they learnt the technique of making banana chips along with others including pickle making. As a result, their weekly and monthly earnings have increased.

Value addition in fish and its products – The ATMA group (Sri Renugadevi ATMA group) envisioned enhancing their status of farming and income through a group approach along with value addition. In order to increase their ability both in value addition and post harvest technology, the group organised a training programme with the assistance from the Tamil Nadu Dr Jayalalitha Fisheries University on Fish Processing Technologies to increase the scope of fish processing and production of value-added products (dry products, baked items and fish storable products) along with how to increase marketing strategies. The group is yet to take up value addition.

Value addition of mango - The Krishi Vigyan Kendra, Unnao and the district Agriculture Department of Uttar Pradesh helped Smt Taravati by providing technical guidance and support to sustain her agricultural farming in a better way. She later became part of the project on "Empowerment of rural women through value addition of mango fruit". Thereafter, she started value addition in mango of her farm and prepared pickles and powder and increased her earnings.

Conclusion

Farmer Producer Organizations have a vast potential in helping the small and marginal farmers to address their challenges successfully. They offer many benefits to the farmers like increased bargaining power, enable better and easy access to inputs. However, capacities of these organisations has to be built through various training programmes. They will help them in getting better quality produce, reduce their post-harvest losses, generate more employment opportunities and help them to get better incomes through value addition. Currently, they are being supported by NABARD and SFAC (Small Farmers Agribusiness Consortium), KVKs, ATMA as well as several NGOs.

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Moving towards agroecologically sustainable farming

Sandeep Narayan Jamjade is a farmer residing in Jalochoi Village, Baramati, Pune. He is 37 years old with a family of 11. He started his farming venture when he was 24. It took him years of trial and error to adopt various practical solutions leading to ecologically sustainable agricultural practices.

Though Sandeep's ancestral family has been practicing farming for more than 40 years, he started doing full time farming after he lost his contractual job as a labour in the year 2007. He struggled for many years to make his ends meet with low yield of crops and poor quality of soil. Due to unavailability of proper guidance, his farming practices were mainly restricted to mono cropping of maize cultivation which yielded him approx. INR 1000/- per ton for 50 tons per season. Also, to add to it, the nutritionally challenged soil wasn't helping much, while, majority of the income coming from his maize produce was getting invested in purchasing fertilisers, insecticides and pesticides for his farm, further depleting the existing nutrients from his land.

He had no idea as to how to improve the soil quality of his farms till he attended one of the free seminars, conducted by SankalpTaru Foundation after getting registered as one of its farmer beneficiaries in the year 2018. He was introduced to the organisation through his cousin who has been a farmer beneficiary since 2016.

Stabilizing his livelihood by incorporating farming practices of agroecological approach was not an overnight transformation for him, it took 3 years of self-education, guidance and awareness from his fellow farmers and SankalpTaru's on-ground coordinator Gopal. Saplings of fruit bearing trees of guava and mango were planted during 2018, which he confesses came as a blessing for him and his family. Currently, he has more than 500 fruit trees on his farm which alone are giving him an annual return of Rs. 2 lakhs. Since the Foundation provided high



Income from fruits helped Sandeep Narayan to improve his standard of living

quality grafted saplings, the yield started coming in 2 years. To ensure a 100% survival rate, the affected ones due to unfavourable climatic or soil conditions, were replaced.

In the course of a decade of practicing diverse farming practices, he is able to raise his annual income from Rs 35000 annually to Rs 3.9 lakhs by following agroforestry from the past 3 years. With the help of additional income coming along from his newly established mini fruit orchard, he gradually started to raise the standards of his livelihood and learn ways to optimally manage the resources at hand with his 2.5 acre land.

Gaining confidence from his improved economic conditions, he started planting vegetables like brinjal and chilly and then added fruit trees of Custard Apple, Coconut, Grapes, Sapota, Pomegranate, Papaya to scale up his profits. In order to replenish the lost levels of nitrogen, depleted by the cultivation of other crops, he planted peanuts as a cover crop that fertilized the soil by fixing nitrogen from the air, with the help of bacteria living in their root systems.

Eventually, he included dairy cows on his farm. He started cultivating pasture plants such as alfalfa also known as *Lucerne*, a protein rich leguminous plant to feed his cattle. This helped him run his dairy farm with low-cost input to raise his feedstock, further promoting his income. He learned the concept of cultivating pasture plants from his cousin in 2012 where he understood the importance of home-grown, high-quality pasture in reducing the cost of rearing cattle. Starting from a cow and 2 goats in 2019, he now has a total cattle stock of 2 cows, 3 goats, 5 sheep and 2 buffaloes. The death rate of the cattle have also decreased due to availability of nutritionally high feedstock.

Furthermore, concerned about the quality of the soil, he has avoided the use of chemical pesticides since the beginning, instead, he uses organic pesticides made up of concoctions of medicinal plants such as 'Dashparni Ark'. It is a broad-spectrum pesticide and can be used on a wide variety of indigenous crops, fruits and vegetables bearing plants. Due to the pungent aroma of this ark, the worms and insects are diverted away from the plants. He has also started preparing his biological fertilizer and plant based pesticides by using plant extracts of Neem, Drumstick, Papaya, Karanja, Custard apple leaves, Aloe Vera, Garlic mixed with Butter milk and Jaggery.

Another interesting example of 'Greennovative' technique that he incorporated to save his produce is via the technology of 'Push and Pull'. This is done using flowers like Marigold or Chrysanthemums to pull the

weeds and pests away from the main crops and Elephant grass is used to pull these pests towards them.

He also used manure from his cattle and an organically made liquid solution known as 'Jeevamrut slurry' which is considered to be an excellent source of natural carbon biomass, phosphorous, potassium, nitrogen and a lot of other micronutrients required for organic farming and gardening.

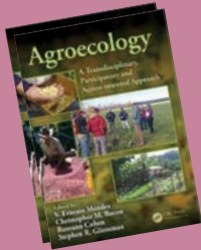
He is an example to so many local farmers in his region, the benefits of agroecology that has been strengthening the sustainability of all parts of the food system, from the seed and soil, to the table including ecological knowledge and economic viability.

Many of his relatives and friends have spread the word of his practices in the entire village as the result of which other farmers of his locality come to his farm to learn about his sustainable farming practices which are helping him to raise his annual income, strengthen the food security of his family while serving to rejuvenate his land and the surrounding environment. He holds monthly informal workshops on his farm to share his knowledge regarding the social, economic and ecological benefits of agroecological farming.

*This story was shared by Sankalptaru Foundation.
www.sankalptaru.org*

*Marigold crop is used to attract the pests away from
the main crop*





Agroecology

A Transdisciplinary, Participatory and Action-oriented Approach

V. Ernesto Méndez, Christopher M. Bacon, Roseann Cohen, Stephen R. Gliessman (Eds), 2020, CRC Press, 284 p., ISBN 9780367436018

Agroecology: A Transdisciplinary, Participatory and Action-oriented Approach is the first book to focus on agroecology as a transdisciplinary, participatory, and action-oriented process. Using a combined theoretical and practical approach, this collection of work from pioneers in the subject along with the latest generation of acknowledged leaders engages social actors on different geo-political scales to transform the global agrifood system.

The book is divided into two sections, with the first providing conceptual bases and the second presenting case studies. It describes concepts and applications of transdisciplinary research and participatory action research (PAR). Six case studies show how practitioners have grappled with applying this integration in agroecological work within different geographic and socio-ecological contexts.



Traditional Ecological Knowledge and Global Pandemics Biodiversity and Planetary Health Beyond Covid-19

Ngozi Finette Unuigbo, 2021 by Routledge, 94 p., ISBN 9780367692940

This book demonstrates the importance and potential role of Traditional Ecological Knowledge in foreseeing and curbing future global pandemics.

The reduction of species diversity has increased the risk of global pandemics and it is therefore not only imperative to articulate and disseminate knowledge on the linkages between human activities and the transmission of viruses to humans, but also to create policy pathways for operationalizing that knowledge to help solve future problems. Although this book has been prompted by the COVID-19 pandemic, it lays a policy foundation for the effective management or possible prevention of similar pandemics in the future. This book argues for the deployment of traditional ecological knowledge for land use management in the preservation of biodiversity as a means for effectively managing the transmission of viruses from animals to humans and ensuring planetary health.

This book will be of great interest to students and scholars of traditional ecological knowledge, indigenous studies, animal ecology, environmental ethics and environmental studies more broadly.



Innovations In Agriculture For A Self-Reliant India (In Two Parts)

P.K. Ghosh, Prabhat Kumar, Debashis Chakraborty, Debashis Mandal, P.N. Sivalingam, 2021, NIPA, 810 p., ISBN: 9789390591534

The book brings out an encyclopaedic picture of the potential areas of transformative Indian agriculture through innovations in science, technology, institutional and policy affairs directed in building a self-reliant India (Atmanirbhar Bharat). The book has addressed the challenges to make India free from hunger, poverty and undernutrition, and suggested interventions with focus on all-inclusiveness and sustainability, peace and prosperity, and resilience to climate and other volatilities. Most of these propositions are analogous to the Sustainable Development Goals – Agenda 2030, which India has committed to achieve.

The book specially covers critical needs for development on different fragile ecosystems such as coastal, desert, hill, ravine and other marginal ecosystems. For each of the above areas, necessary policy options, actions, and path ahead to transform Indian agriculture for achieving Atmanirbhar Bharat have been elucidated.

The book will act as a very useful guidance for the policy makers, and development communities, and a reference document to the academicians as well.



Technologies for Value Addition in Food Products and Processes

Sankar Chandra Deka, Dibyakanta Seth, Nishant Rachayya Swami Hulle, 2019, *Apple Academic Press*, 404 p., ISBN 9781771887984

The new volume looks at some important emerging food processing technologies in light of the demand for functional food products and high-value and nutritionally rich products. *Technologies for Value Addition in Food Products and Processes* covers a selection of important recent developments in food processing that work to enrich or maintain nutritional value of food products, including such applications as non-thermal plasma, refractance window drying, extrusion, enzyme immobilization, and dry fractionation.

Dry fractionation, in particular, has emerged as a sustainable alternative to wet processes in last three decades for producing protein concentrates from legumes. Several chapters on fish processing cover both traditional knowledge and advances in fish processing technologies. A chapter on bioethanol production discusses the past and present status of the industry, focusing on economic feasibility and environmental viability. A chapter also discusses traditional fermentation process and nutritional aspects of ethnic foods followed by the Rabha-Hasong, Mishing and Karbi communities of Assam, India.

Processing of Fruits and Vegetables From Farm to Fork

Khursheed Alam Khan, Megh R. Goyal, Abhimannu A Kalne (Eds.), 2021, *Apple Academic Press*, 366 p., ISBN 9781774634035

This volume looks at new and established processing technologies for fruits and vegetables, taking into consideration the physical and biochemical properties of fruits and vegetables and their products, the challenges of the processing industry, the effect of processing on nutritional content, economic utilization of bio-wastes and byproducts, and much more.

Divided into several sections, the volume covers:

- processing and antioxidant/enzyme profiles of fruits and vegetables
- novel processing technologies in fruits and vegetables
- the challenges and solutions in waste reduction, negative effects of processing, and effects of processing on vitamins of fruits and vegetables



Enterprising Agriculture: Market Awareness, Farm Innovation & Value Addition

Sharmistha Banerjee, Mohua Banerjee, Suneel Kunamaneni, Alfred Chinta, 2020, *NIPA*, 282 p., ISBN9789389130454, Price: Rs.3995.00

The agricultural value chain ranging from inputs to marketing has a lot of gaps, which in turn can be utilized as opportunities for entrepreneurial interventions. This book comprises articles and research papers that deal extensively in three key focus areas, which is its unique proposition. A novel collection, it brings together writings on (i) Entrepreneurial Innovations that Impact Agriculture, (ii) Government Policies and Interventions in Entrepreneurship and (iii) Farmers' Development and Welfare through Agriculture.

The articles in this book aim to bring to the reader a heterogenous collection about entrepreneurial opportunities in agriculture. The book is a humble attempt to encourage readers to think of agriculture as a domain where innovation touches lives and creates enormous impact in multiple dimensions of society.



Value addition

Making small farms smarter

Anithakumari P

Value addition can be achieved through simple practices. Cooperation, coordination, convergence, inclusiveness of communities and handholding by a premier research institute resulted in successful social innovation in Pathiyoor Panchayat region in Kerala.

Sesamum revived after many years of discontinuation



Family farms produce 80 percent of world's food from 70.80 percent of farm land. By 2050 food grain production needs to grow 330 MT per year. The small family farms are ecological and play a big role in promoting food security and nutritional support.

In the state of Kerala, the average land holding size is only 0.2ha. Mostly, they are coconut based homesteads. The biggest challenge faced by small farmers is making them profitable. Thus, the focus of Farmer FIRST Programme (FFP) in Pathiyoor panchayath promoted since 2016 by Indian Council of Agricultural Research - Central Plantation Crops Research Institute, Kayamkulam was on integrating technologies for improving farm livelihoods and incomes. This was to be done through participatory interventions in crop, horticulture, livestock, natural resource management, value addition and IFS among 1000 farm families.

A brief timeline of the interventions included Rapid rural analysis followed by Participatory Rural Analysis (PRA), formal pre project survey among 750 sample respondents, Focus Group Discussion (FGD) in all the 19 wards involving ward representatives and stakeholders, for prioritizing problems, delineating solutions and farmer's aspiration and program objectives were completed in 2016. Strategies were designed to address the following challenges: Small size of farm/coconut plots; the rapidly changing social and economic challenges of farming including non viable scale of production. Also, the other factors and challenges recognized included: poor extension outreach to small farmers, especially women, farmer's limited resources and incomes. One of the useful strategies identified was, value addition. However, it was essential to define, refine, design, develop and humanize the 'value addition extension strategies' suitable for small and marginal farmers of the panchayath.

The post harvest as well as processing arrangements enabled women farmers as economic contributors to society and families.

Mrs. Radhakumari, Chairperson, Community Development Society (CDS), ward-1 is a proud participant and evolved as a leader in group farming. "We all are very much motivated and highly confident as farmers through Farmer FIRST Programme (FFP) interventions. The success of sesamum cultivation in the last 5 years continuously lead us to revive paddy cultivation also before sesamum after first year onwards. We as a group were rated as one of the best farmers achieving highest productivity of 500 kg/ ha among the 68 women groups of 19 wards of the FFP panchayath. We also attained expertise in organic farming of tubers, pulses, spices, vegetables, millet and fodder crops. We earn an average of Rs. 10,000 – 12,000 per women in the crop season, as additional return besides MGNREGS wages. The fresh products contributed to the diet of our own family, besides the marketable surplus. This ensured support from family members including our children who happily became part of farming activities, especially in the Covid period. The real addition in our lives is recognition as farmers, earners and practitioners irrespective of our age'.

In the situational study and analysis the farming communities, the people's representatives (ward members and panchayath local bodies), the coconut farmer producers' societies, SHGs of women farmers, MGNREGS laborers, livestock and poultry farmers and rural youth were involved. The analysis reiterated that the multidimensional aspect of small farmers production systems was not being adequately addressed. Possible interventions were designed which included productivity improvements through better varieties and preferred cropping systems, adoption of better agricultural practices, revival of farm ponds, better processing and marketing efforts. The following were identified as critical bottlenecks - lack of value addition, planned marketing efforts, high costs of labour and input, fragmented marginal holdings, shrinking of homesteads to home plots.

Initially, the household level farm planning was facilitated to enable farmers to draw/map draw/map their homestead plots indicating the present scenario, crops, integrated farming components, water bodies, land, soil type, investments being made and profit/loss being currently realized. The following aspects were documented: the crop yields with special reference to coconut, the levels of recycling resources, the access to advisory services, the support schemes being availed

from local bodies, the constraints for as well as visioning for value addition.

Convergence and consolidation

The number of households to be reached out per hectare was 4 to 10, hence technology dissemination and adoption demanded strong and purposeful linkages and convergence of social institutions. The local self government extended support, involvement and local leadership in mobilizing society in all the 19 wards by the ward members. There was convergence with MGNREGS towards food security interventions. Dr. Madhuri, Veterinary surgeon of veterinary clinic under the panchayath offered field level project expertise in designing interventions in poultry and livestock. The cooperation with local self government steered the action research towards planned and focused interventions, avoided duplication, and offered traingulation of social and technological experimentation and innovations for faster awareness and result based large scale adoption among the small and marginal farmers. High visibility of women farmers as MGNREGS labourers as well as farmers could be established through women leadership as ward members, CDS /ADS of kudumbasree and as joint liability group (JLG) leaders.

In conclusion, consolidation of labour, time, land and knowledge was a *value addition* innovation in FFP, especially for women farmers with meager access to land for cultivation. With average holding size of women farmers being only 10-15 cents (0.04-0.06 ha), organizing them for cluster/group cultivation was necessary. This helped in achieving marketable surpluses, better bargaining power and higher visibility for women farmers. This was achieved through mutually agreed and consensual land consolidation in public places (temple premises, government office etc) as well as individual farmers plots to obtain a contiguous area of cultivation with a minimum of one to 2 acres. Thus, it was a value addition to 250 ha fallow lands being made to be productive.

Choice of Seasmum as niche crop and value addition

The programme begun by facilitating participatory introduction and experimentation with water saving, nutrient rich climate resilient crops like finger millet, pulses, maize, sunflower and ground nut in the

Mr. C. K. Unnithan, President, Coconut Producers Society, Ward 16 of Pathiyoor panchayath opined that 'expert based choice of appropriate tools and machinery is as important as advisory services in today's agriculture for small and marginal farmers communities to tide over labour shortage and low productivity. Increasing productivity smartly requires value added services through mechanization, ICT and knowledge based innovations'

panchayath. Involving 248 women SHGs 16 varieties of the crops were put under participatory experimentation and evaluation in 19 wards. Following this, the evaluation was done as a social process involving the participating farmers, general public and researchers of Indian Council of Agricultural Research - Central Plantation Crops Research Institute and linked agencies/institutions. Sunflower was evaluated as not suitable and discontinued.

Sesamum and finger millet emerged as the most accepted crops in terms of low resource need, nutritional produce, high demand, very low incidence of pests and diseases. Also, the 250 ha area wide cultivation helped in adding soil nutrients and crop residues to enable carbon sequestration.

Sesamum is a traditional crop of this 'Onattukara soil tract' which is predominantly sandy loam. It is traditionally cultivated in paddy fields as second crop after paddy. The pre - project survey showed that sesamum (which will be declared as GI crop shortly) and paddy were the most discontinued crops in the panchayath. Thus, revival and rejuvenation of sesamum was the most successful value addition intervention as part of 'value addition extension strategy' (VAES). The participatory evaluation of high yielding varieties released by KAU for the specific tract (Kayamkulam-1, Thilak, Thilathara, Thilarani and Thilothama) was the first year intervention in 2016. Initially beginning with 2.04 acres in 2016, the coverage was improved to 188 acres in the consecutive years by women groups. Kayamkulam-1 & Thilak were preferred based on evaluation by 68 groups in 19 locations. The evaluation brought out that Kayamkulam -1 had oil content up to 46 - 48 percent and Thilak with 38 percent and other varieties had lower oil content. Both these varieties also exhibited tolerance and low incidence of phyllody disease which causes crop loss. Thus, women groups built their own capacities to choose crop varieties

which are suitable to their needs and local situation.

Five to 8 MT of indigenous sesame per annum is being produced as a 'niche product'. It is in demand fetching Rs.250-300/kg. The sesame is sold fresh after cleaning and packing in the panchayath as well as neighbouring panchayaths. Locally branded sesame oil '*pathiyoor karshaka ellenna*' meaning 'pathiyoor farmers' sesame oil' is being sold at Rs.900-1000 per litre.

The oil pressing facility set up under the programme for a young entrepreneur, paved way for procuring sesame in an institutional arrangement. Women farmers have emerged as local experts in sesame cultivation. The post harvest as well as processing arrangements enabled women farmers as economic contributors to society and families. A solid value addition indeed! besides enabling purposeful and effective farmer to farmer knowledge dissemination.

The women farmers were guided to maintain 'Farming diary' to record data, growth stages, period pests/diseases, yield, problems faced. The whatsapp groups enabled wider sharing of experiences, suggesting solutions to problems by scientists and fellow farmers, showcasing their achievements through pictures, videos, messages and podcasts. The pulsating dynamics of the entire value addition process was empathetically brought out by themselves. Using simple ICT tools enabled them to manage their time better, increasing spread of technologies, minimizing crop losses besides empowering them, mutually.

Coconut and other produce – Value addition

Rural life is simple in terms of daily life, behaviour, attire, social relationships, ecological friendliness etc. Simplicity is easily understood in terms of simple innovations resulting from generational experiential learning of communities.

One of the notable achievement is the formation and active ground work of Farmer Producer Company



Maize harvest

among farmers, since 2019. Procurement of fresh farm products from farmers generated much enthusiasm which included copra, turmeric and tubers. Some of the challenges faced and the way they were addressed by the FFP NABARD Odanad Farmer Producer Company Ltd's is highlighted below.

Value addition was initiated after increasing the production of coconut, sesamum, and turmeric to marketable surplus level. Value addition can be as simple as harvesting at right time. In case of coconut, for effective marketing, harvesting should be done in the seventh month of the nut. The company could not ensure uniformity and quality drying of copra to be procured. The Farmer First programme intervened through introduction of Copra Moisture Meter at a cost of Rs. 3500-4000 per piece. The procurement process was finalised by ensuring 6 percent moisture level for the quality copra. They could ensure the moisture content by taking a sample of copra cups, inserting the knob and recording the reading.

Later, coconut oil units, two Virgin Coconut Oil (VCO) and coconut based food product units and one turmeric boiler, dryer and powdering unit were established in the FFP. The scale of coconut is around 25000 nuts at present. In turmeric, processing of turmeric powder involved 3 tons of fresh turmeric. The sesamum marketing and sesamum oil marketing has been done to the tune of Rs. 15-20 lakhs per year.



Women groups built their own capacities to choose crop varieties which are suitable to their needs and local situation

In 2020, FPO focused on Pathiyoor Farmers brand. The products being marketed under the brand name are: Virgin Coconut oil (VCO), turmeric to turmeric powder, sesamum to sesamum oil, cowdung to shade dried cow dung and vermicompost from farm organic residues, Ghee and butter from desi cows. A rural ‘agrimart’ was opened for procuring and selling of these products, planting materials, cowdung, other bio inputs, vermicompost etc., under the FPO. The FPO could initiate small support during Covid pandemic in procuring farm produce on call and door delivery on demand.

The major lessons learnt have been that value addition is achievable through simple practices, through cooperation, coordination and convergence and inclusiveness of communities and how a premier research institute can promote social innovation. The major challenges confronted in this period are: acute shortage of skilled coconut climbers, mobility

restrictions during covid situations, climate change induced untimely heavy rains; socio economic changes leading to rapid conversion of paddy lands to housing areas resulting in drainage problems and fragmentation. However, farming interventions remained as the silver lining during covid period with active farming, active and continued interactions through mobiles and income generation.

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