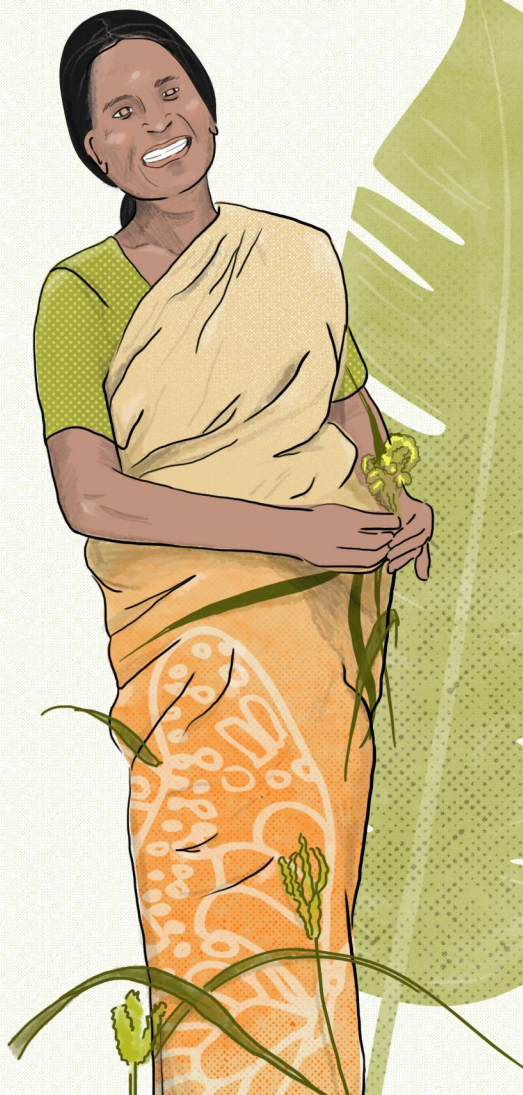


# The enduring narratives of agroecology :

14 case studies from South Asia, Southeast Asia and Africa



PAN ASIA PACIFIC  
International People's  
Agroecology Multiversity (IPAM)



# **The Enduring Narratives of Agroecology: 14 Case Studies from South Asia, Southeast Asia and Africa**



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## The Field Learning Sites

The case studies in this compilation are written by our partners from the following IPAM's Field Learning Sites:

### Bangladesh

Bangladesh Resource Center for Indigenous Knowledge (BARCIK) is a non-government, non-profit development organisation of development practitioners, researchers and social workers that was established in 1997. It works in the fields of environment, biodiversity conservation and development, exploring and incorporating indigenous knowledge and local practices into contemporary development program.

### India

Kudumbam is an organisation working for sustainable rural development which aims to uplift small and marginal farmers and landless agricultural labours and to empower widows, single women and orphan children. Its mission is facilitating vulnerable communities working with nature through building of a multi-stakeholder partnership for agroecology, the preservation and the regeneration of native flora and fauna, to ensure a sustainable livelihood.

Thanal Agroecology Centre focuses on training and research on agroecology and agrobiodiversity and is owned and maintained by Thanal at Panavally in Thirunelly Panchayath of Wayanad District in Kerala. The centre is dedicated to the conservation of indigenous crop diversity of paddy, tubers, spices, cash crops and uncultivated wild leafy vegetables. It started its agrobiodiversity conservation work in 2009 by organising farmers and forming a seed savers network.

### Pakistan

Khoj Society for People's Education through its women's development program since 1994 works with women and children using an approach and methodology that focuses on action-led, needs-based, relevant and gender responsive education. With empowerment of women farmers as the overarching aim, food sovereignty, ecological agriculture, chemical free and safe environment and equitable distribution of food are the major objectives of Khoj's partnership with rural communities.



## Philippines

MASIPAG (Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura / Farmer-Scientist Partnership for Development) is a farmer-led network of people's organisations, NGOs and scientists working towards the sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production and associated knowledge. Its mission is to improve the quality of life of resource-poor farmers. For MASIPAG, Rice is life.

## Senegal

PAN Africa promotes environmental and sustainable agriculture protection based on the safe management and use of local resources. It works towards informing and sensitizing on the dangers of pesticide use in agriculture. It is committed to helping reduce farmers' exposure to hazards in their daily lives, provide affordable alternatives to the spiraling cost and dangerous chemical inputs, and prevent adverse environmental impacts. It also provides trainings on alternative methods on pesticide use and agroecological farming techniques.

## Vietnam

Centre for Sustainable Rural Development (SRD) is an NGO with success in sustainable agriculture and livelihood interventions across the mountainous regions and deltas of northern and central Vietnam. For over three decades, its projects have focused on capacity building within communities and empowering vulnerable groups to sustainably manage their own livelihoods in the long term. It supports poor farmers, women, children, ethnic minorities and people living with disabilities.

Find out more about them at [www.ipam-global.org](http://www.ipam-global.org)

The International People's Agroecology Multiversity (IPAM) is a research-learning-action approach to agroecology that focuses on small-food producers and farming communities. IPAM promotes agroecology as a sustainable approach to agriculture and food production and development, in the framework of food sovereignty, ecological and social justice. It is an innovative approach developed by a network of farmers and women's organisations, NGOs, researchers and academic institutions.





# FOREWORD

Decades of industrial agriculture dominance over global food production and farm resource-base have displaced small farmers' livelihoods, destroyed local food systems and ravaged ecosystems in many parts of the world. The much touted Green and Blue Revolutions peddled by big agribusiness and governments all but revealed the failure of these policies causing worsening global hunger and rural poverty despite overproduction of commercialised food. Chemical-intensive crop monocultures have shackled poor farmers' earnings to perennial debt, intensified land grabbing, destroyed indigenous food cultures and left a disaster of poisoning and chronic illness. Our planet is being destroyed as the race for corporate super profits pushes climate change to further alarming levels.

But across the world, small peasants, indigenous communities and pastoralists are advancing the cause of Agroecology and Food Sovereignty through people-led development. This book, *The Enduring Narratives of Agroecology: 14 Case Studies from South Asia, Southeast Asia and Africa*, gathers fourteen inspiring stories from six countries as evidence to the transformative power of biodiversity-based ecological agriculture on the economic, social and cultural life of farming communities. The case studies demonstrate how diversified agriculture systems helped farmers abandon chemical inputs, increase income from organic methods, improve soil health and biodiversity, develop climate-resilient production, advance farmers' knowledge and practice, and foster women and youth leadership.

From a Philippine school-farm that educates youth on indigenous farming practices to a school garden in Pakistan that teaches children to appreciate organic food; from barren lands that flourished into integrated farming systems in Senegal to farmers-and-public engagement on traditional rice diversity in India; from an empowered woman farmer overcoming a natural calamity in Bangladesh to farmer-to-farmer knowledge exchange and workshops in Vietnam - agroecology offers sustainable solutions to pressing development, climate and social justice challenges.

As agroecology cannot truly flourish without food sovereignty, it is our hope that these successful narratives contribute to the burgeoning of peoples' movements that are crucial to people-oriented development and for food sovereignty.

**Sarojeni Rengam**  
Executive Director PANAP

# BANGLADESH





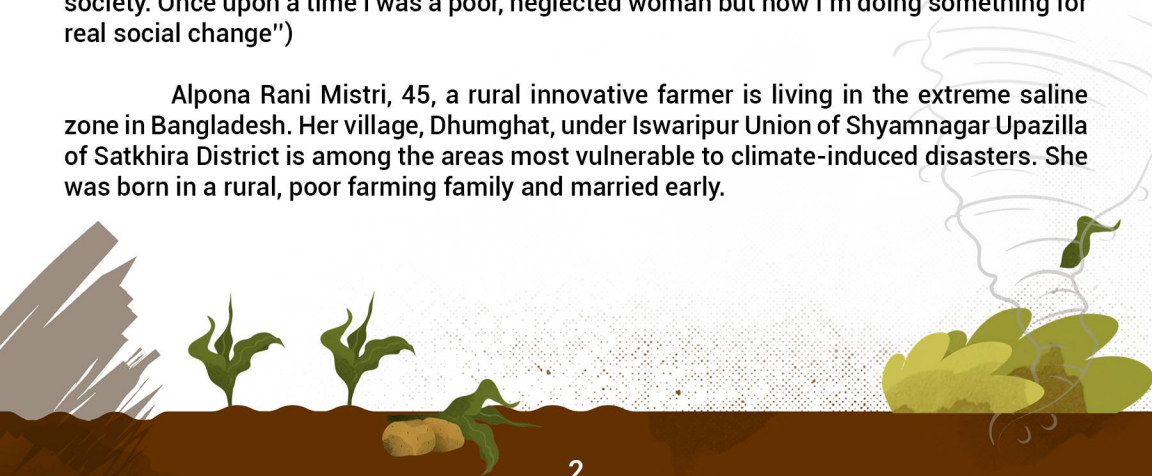


## Alpona Rani Mistri and her sparkling journey

*"gachpala, mati, pani, pakhi, goru sob niyei amader grameen sangsar. Eikhane ekjoner kotha bhable hoina, sobar kotha bhabte hoi. Ei shiksha ami amar gram theke paichi. BARCIK theke ami atmabiswas paichi, amader goriber je nana sampad ache seita niya kibhabe bhalo bhabe kaj kora jai seita bujhte parchi. Ami ekhon bhalo achi, amake dekhe gramer onek nari ekhon eibhabe bachte shikhche. Amar swami dinmajuri chere ekhon amar sathe krishikaj kore. Ami bujhte parchi manushke nijei nijer poribortoner daitto nite hoi, nijer shaktike abiskar korte hoi".*

("plants, soil, water, bird, cow, we are all part of our rural family. It is not possible to live well without anyone of us. I learned this idea of pluralism and inclusion from my surroundings. BARCIK helped me to strengthen my confidence and facilitated to explore the resources in our so-called poor family. Now I'm happy with my family and everyday I'm trying to reach for my dreams. There are many poor women in my village motivated by my story and already started their sustainable integrated farm. My husband also got involved in my farming, leaving his previous day-labour work. Now I feel that all people have their own strength and can change their life if they take responsibility. I learned that I can do something for myself, for my family, for my community, for my village and also for my society. Once upon a time I was a poor, neglected woman but now I'm doing something for real social change")

Alpona Rani Mistri, 45, a rural innovative farmer is living in the extreme saline zone in Bangladesh. Her village, Dhumghat, under Iswaripur Union of Shyamnagar Upazilla of Satkhira District is among the areas most vulnerable to climate-induced disasters. She was born in a rural, poor farming family and married early.





It is very difficult to survive for a four-member family without any permanent income. When Alpona got married, her husband had already lost the land property he inherited. So, she started to cultivate her homestead garden while also working as a day-labourer in a share cropper's rice field. Her husband also worked as a day-labourer that required him to occasionally migrate and leave his family.

In 2009, they lost their house and everything they owned to the devastating cyclone Aila, including their agricultural land. Saline water affected their 33-decimal homestead.

### **Determination and seeds**

Undaunted by difficulties following Aila, Alpona cultivated vegetables anew in her homestead but there was scarcity of local seeds and organic inputs.

In 2012, she participated in a village agro-biodiversity fair facilitated by BARCIK. A farmer organisation assisted by BARCIK later contacted her and gave her some local seeds of different crops and shared organic farming processes. With these, she developed an integrated agricultural plan and started her journey in her 33-decimal homestead land.

### **Innovation and adaptation**

Alpona Rani is proving her skill and confidence day by day. Not only in terms of production, she is also in the process of researching climate-adaptive crop varieties and resilient farming techniques. She has already started an experiment on bean diversity and uncultivated food conservation. She is now growing seasonal vegetables the organic way and raising livestock. She has planted rare trees, medicinal plants and fruit trees in her surroundings. She is producing vermi-compost and botanicals which she also sells to other farmers. To further contribute to addressing health issues in the community, Alpona is also practicing traditional healing and helping poor people gain access to free primary healthcare.







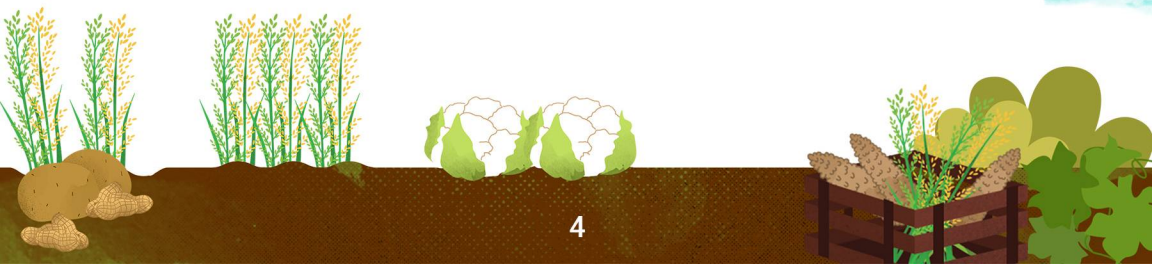
### Recognition, Rejection

Alpona is now a recognised woman farmer. She was first recognised as an inspiring farmer in a public program organised by BARCIK. To date, she has received the National Agricultural Prize from the Honorable Prime Minister, a Crest from the agriculture department, and the National Woman Award aside from many other regional and national recognitions.

Alpona continues to enhance her capacities, participating in various trainings and activities spearheaded by BARCIK. Recognising her practice and valuable contribution, the agriculture department tapped her as a trainer in its organic farming training. She also persevered in organising rural women and formed a women changemakers group in her village. Such efforts at galvanising women inspired local government to accord her space in different decision-making processes.

Alpona now strongly rejects hybrid seeds and chemicals while actively promoting local seeds exchange and organic farming techniques among women. With her help, rural families are challenging market-driven, chemical agriculture through the expansion of their organic farms.

The national media of Bangladesh considers her an icon of sustainable farming. Alongside all the praises, Alpona is just equally happy that her family warmly appreciates her community involvement. Her husband eventually left his day job and returned home to help her in their sustainable family farming





## Abdul Hamid

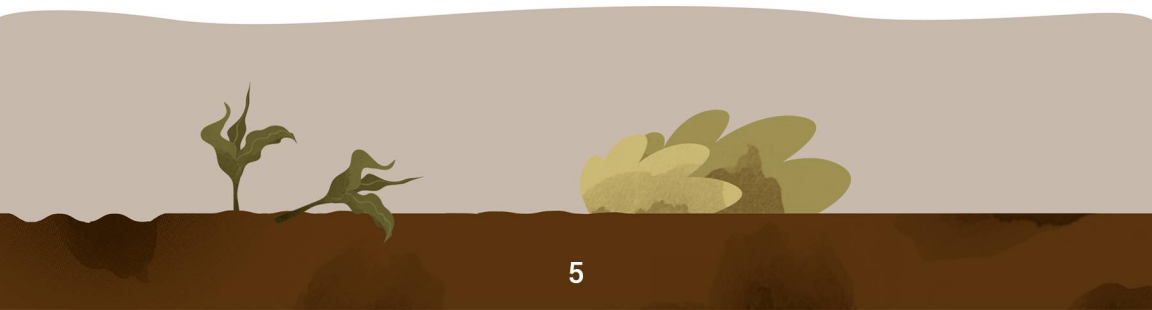
### Leading a community towards agroecology

For the longest time, irrigated High-Yielding Variety (HYV) rice has been Abdul Hamid's primary source of income like many others. But for the last five years, he planted only half the amount that he did in the previous years. The HYV rice is extremely water-consuming to grow. During harvest time, Hamid experienced terrible water crisis and had to buy water with high price but received minimal return at the end.

Hamid, a father of three daughters often worked in the rice field from eight in the morning until two in the afternoon. He lives in the high Barind Tract, a region that has a distinctive physiographic feature comprising a series of uplifted blocks of terraced land covering 8,720 km<sup>2</sup> in northwestern Bangladesh.

In the area, average rainfall is comparatively low with irregular distribution while temperature during the monsoon season is very high. The area is semi-arid and drought-prone, and has low-fertile, red colored, harsh and hard soil.

With the introduction of the green revolution in the mid-1960s, farmers started cultivation of chemically dependent HYV irrigated rice in great extent by increased irrigation facilities using underground water through deep tube wells. In four decades of excessive use of ground water for HYV rice irrigation, ground water level has dropped up to 120-150 feet from the surface.







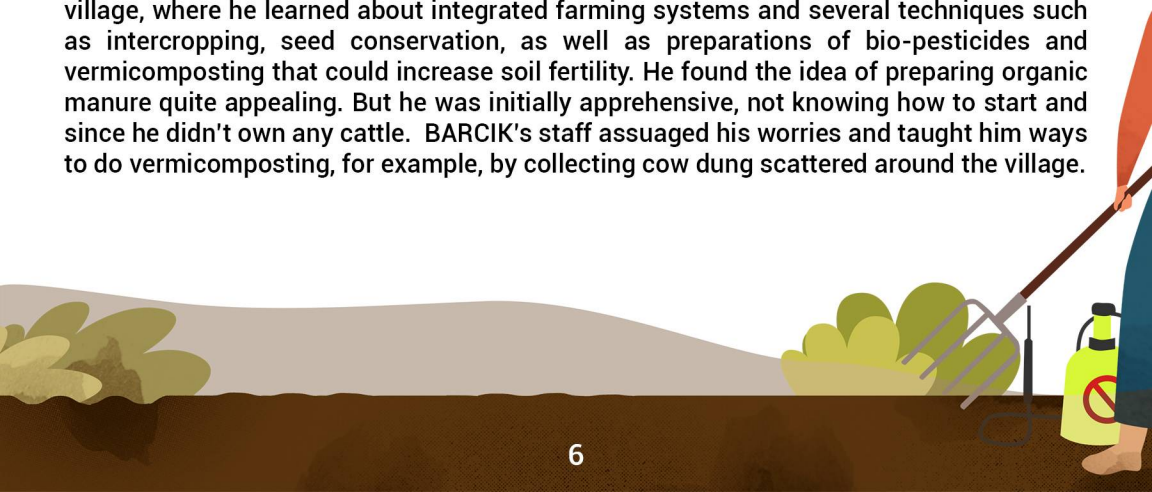
Such practice created manifold problems in farming, biodiversity and livelihood. Many deep tube wells have now collapsed and this situation further deteriorated in that even drinking water become scarce in certain villages of the region. Like many other farmers, Hamid, a marginal farmer from Bohora Village of Kolma Union of Tanure Upazila under Rajshahi District, was grappling with the impact of extreme weather events like drought.

Until five years ago, on his one-hectare land, he grew only rice throughout the year and a little wheat during Rabi (October to March) season. His income was so low that he could hardly make ends meet. He didn't own any livestock and was completely dependent on chemical fertilisers and pesticides for farming, which slowly became unaffordable for him due to rising prices. Practicing mono-cropping and continued use of chemical fertilisers and pesticides adversely affected his land's soil quality, causing low productivity. Living from hand to mouth, he almost planned to leave farming forever.

But it was also five years ago, in 2014, when Hamid started to venture into vermicomposting. And nobody imagined that this small initiative would one day change his life and the drought-affected community. Hard work and good guidance can make all the difference in life, as in his case.

### **Life-changing Vermicomposting**

Further back in 2012, Hamid attended a programme organised by BARCIK in his village, where he learned about integrated farming systems and several techniques such as intercropping, seed conservation, as well as preparations of bio-pesticides and vermicomposting that could increase soil fertility. He found the idea of preparing organic manure quite appealing. But he was initially apprehensive, not knowing how to start and since he didn't own any cattle. BARCIK's staff assuaged his worries and taught him ways to do vermicomposting, for example, by collecting cow dung scattered around the village.



And this is exactly what Hamid did. Every morning he collected cow droppings that fell on the streets or in open spaces and gathered them in the courtyard. With support from BARCIK, he got a vermi bed installed, a base required to put the waste for the preparation of manure.

"Once I started manufacturing vermicompost, I never looked back," Hamid said. He now collects and purchases cow dung for organic manure. With 24 vermi beds, his is now able to produce and sell eight to nine hundred kilograms of vermicompost per month. In five years, he has become an expert in vermicomposting. He has even begun to supply compost worms, about 1,500,000, to at least 350 farmers in 15 villages and also trained them on preparing organic manure.

### **Practicing integrated farming**

Through the knowledge-sharing and exchange learning visits arranged by BARCIK, he acquired different techniques of sustainable integrated farming. Hamid now practices mixed cropping of papaya, bean, brinjal, red amaranth, spices in rabi season (end of monsoon) and ladies' fingers, and cucurbits in kharif (beginning of rainy season). He also has a kitchen garden that ensures supply of vegetables around the year.

"Life has truly changed for us," said Hamid smiling. "Till a few years back, it was hard to arrange meal for thrice a day but these days we are successfully managing our field, cultivating a flourishing kitchen garden and have learned superior techniques of growing food. Also, making vermicompost has proved to be a real boon."

By successfully adopting integrated farming, Hamid's dependence on the market for farm inputs has been reduced. He is very capable in preparing bio-pesticides using plant extracts and local biodegradable ingredients. He doesn't use chemical fertilisers and pesticides anymore and this has helped reduce cost of cultivation and improved his farm's soil health.





Last year he received training on plant nursery establishment and produced papaya seedlings that neighbors buy from him. He also distributed some native varieties of saplings to people who love native species so they can plant in their villages. Moreover, he was often called upon by other local NGO's to conduct hands-on training sessions on vermicomposting for their beneficiaries.

### **Increased economic capacity and social acceptance**

On an average Hamid has been earning BDT 12000 to 13000 (140 to 152 USD) monthly by selling vermin compost and earthworms that made him quite capable to financially provide for his family. He has recently refurbished his house and installed a sanitary latrine and a 100-watt solar energy system on the roof of his house which powers four bulbs, one television and recharges mobile phones.

Hamid, who used to be poor, has set an example for his village and earned respect for his hard work. He is being invited to different programs arranged by the Department of Agricultural Extension, Department of Youth, and Social Welfare and Local Development to share his endeavor. He takes part in several agricultural fairs to promote vermicompost. He even managed to stop five child marriages in his village. "Though I don't have sufficient land and resources, I am still able to influence others. I am happy with my dignified life," said proud Hamid.

### **Fertile and sustainable**

Hamid's initiative has turned barren lands into fertile and greener farms. Villagers come forward to assert the practice of mix-cropping in lieu of HYV rice cultivation that certainly helps to retain ground water level. Hamid was able to change the outlook of farmers on sustainable farming and made it possible for drought-stricken but fertile low land to be cultivable through practicing agroecology.



# INDIA



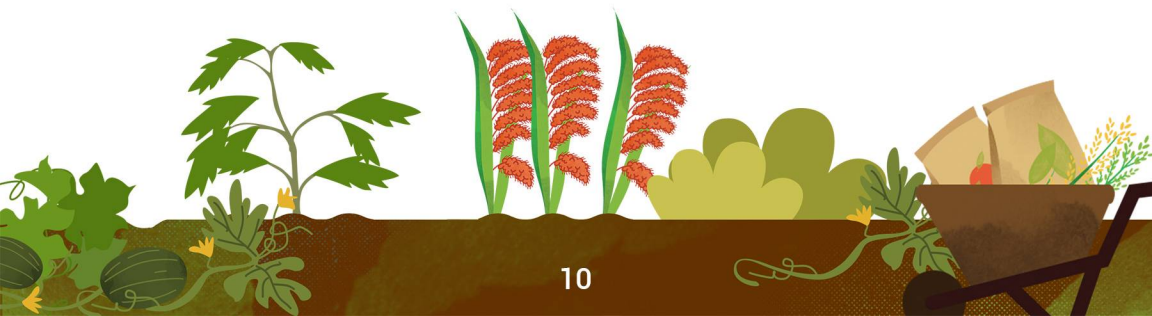


## Arul Mouzhi

**"If we fail one sort of crop, the other one will give an income."**

Mrs. Arul Mouzhi is a woman farmer living in Kongathiranpatti village who owns three acres of dry land and one acre of irrigated land. Arul and her family eat millet twice a week. She gets her millet and vegetable seeds from Kolunji Ecological Farm and Training Center, an IPAM Field Learning Site managed by Kudumbam. Kolunji facilitates her exchanging seeds with other farmers.

Trained by Kudumbam, Arul is one of the farmers who has changed her methods of cultivating to adapt and mitigate the impacts of climate change on her farm. She grows eight varieties of crops in one of her fields employing the method of mixed cropping. She cultivates ragi, cow-pea, green leaves, maize, kongrura, red and black gram. Most of the harvest crops are for family use and the leaves and husk go to cattle.





Climate change has had a huge impact on her farming and, thus, her livelihood. The last five to eight years have seen harmful effects of severe drought where lack of water results to failure of cultivation from time to time. For Arul's one-acre irrigated land, she gets water from the tank that also supports the whole village. Since the tank has been empty for a while, she is unable to cultivate her paddy farm.

Arul solved the situation by adopting the mixed cropping system. She explains, "I've realised that through mixed cropping, simple crops could be cultivated in dryland around the house, which gives good yield, fodder and supports family nutrition. Those crops have only been here for one season. In mixed cropping, if we fail one crop, the other one will give an income. At least one of them will survive."

As for soil fertility, she says, "I haven't been able to cultivate much, but when the cows are here, I make them go to the field. The cow dung and urine waste go directly to the soil, that's why my field looks good nowadays."

Since the advent of the Green Revolution in Tamil Nadu in the 60s, the practice of cultivating millet had been ignored and forgotten. Kudumbam taught Arul how to cultivate new seeds. She learned that different types of millet seeds don't need as much water as paddy. "I shared this to farmers who cultivate hybrid seeds and couldn't grow without chemical fertilisers. Using traditional methods are more sustainable for humans and the environment. I came to know about millets through Kudumbam. I cultivate finger millet, which my grandson likes to eat as porridge for breakfast," Arul concludes.







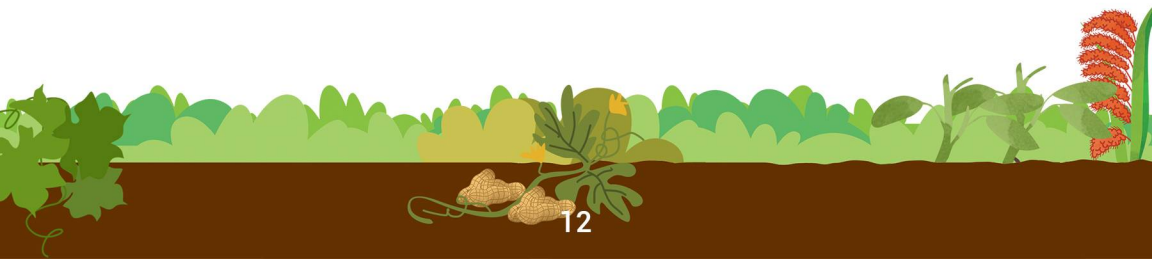
## Chitra

### Prompt solutions from a leading woman farmer

Chitra steps into her field of half an acre as she readies to entertain an interview and winds up a work-related call. She is a busy lady who wears many hats - a mother of two, wife, farmer, trainer, SHG leader, health worker - and dons them truly admirably.

At 43, Chitra is brimming with energy being one of Kudumbam's lead farmer, building the capacities of fellow farmers on sustainable agriculture at the Kolunji Ecological Farm and Training Center. Despite having to drop out of school at age 14 to work on her parents' farm and being married at 17, her circumstances did not impede her from gaining and developing experience in leadership with the help of Kudumbam.

Chitra shares she is cultivating different kind of pulses like red gram, millets such as ragi, and groundnut. She uses the method of intercropping which enables farmers to identify drought tolerant crops that they can cultivate on one field. Despite infertile soil and being dependent on rain-fed land, she still manages to harvest a good yield. This is one of many techniques she learned from the Kolunji centre that is run by Kudumbam.



Chitra possesses commendable participatory communication skills which she exhibits in her diligent work at organising and mobilising women farmers as Participatory Guarantee System (PGS) groups. For these qualities, she was chosen to be a lead farmer and conduct the course "Trainers Training on Organic Farming from Seed to Harvest" to fellow farmers.

She teaches them to identify agricultural problems on their fields and suggests alternative crops which need less water like pulses and millets, which are not only very nutritious but also pest resistant. Likewise, the intercropping method which she actively promotes proves very helpful to farmers.

After harvesting, Chitra and other farmers sell their crops at the farmers market or trade among each other. In this way, they don't have to sell through a middle man buying at low rates.

Farmers also focus on non-cash food growing around the farms. Three of five different and very nutritious greens are not available in the market and are considered uncultivated food. Chitra collects them and cooks them at home. Uncultivated food is good for diabetes and knee pain.

Health and wellbeing are concerns that Chitra actively engages in as well. "I'm happy to be able to help improve agricultural practices in my community by promoting agroecology," she says. Chitra's cell phone, something her husband forbids her to use a few years ago, rings again signalling work. Asked what else she wishes for in the future, Chitra concludes, "I am now equally working with people who have graduated with university degrees. The only thing separating us is the language, so I want to learn English."

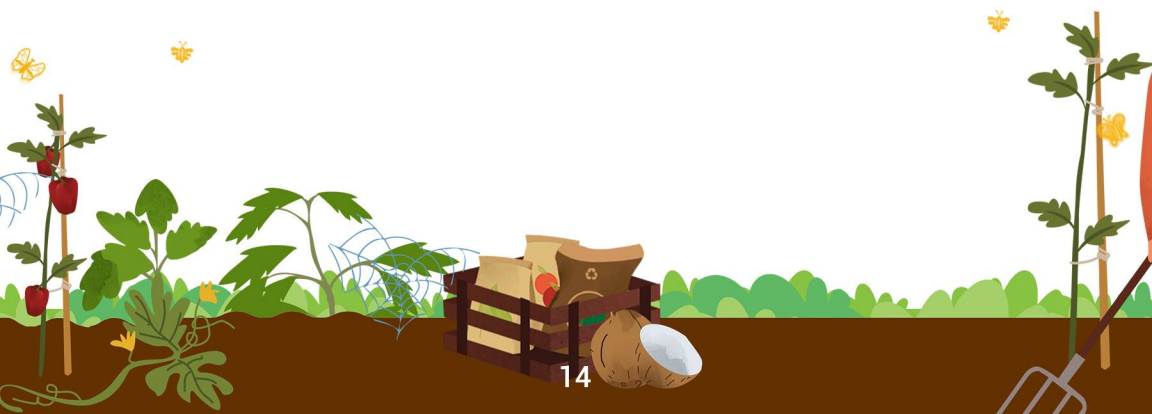




## PAILY, A Farmer's Testimony

"I have been doing farming for the past 10 years mainly planting pepper, coffee, areca nut, and some coconut trees in a little farm I own. And in another land I took on lease, I grow banana and tapioca. I grow my pepper plants in areca nut trees to make efficient use of the little land I own. Currently, I am also doing marigold farming mainly to be used as pest repellent.

Climate change poses the biggest obstacle to farming as seen in the last few years where, on the one hand, it brings more rains than usual creating fungus problems in plants. Conversely, there is less and less summer rains during April and May causing problems to pepper plants. To cope with this, farmers like us resort to organic mulching, where we use plant and tree waste either available in the surrounding or bought from outside to cover the soil surface and keep moisture. (i.e. we use plant/tree wastes available in the field or bought from outside as cover for the plants). I do this just before the rains end.







Continuous heavy rains bring floods like last year and this year (2018, 2019) where non-stop downpour happened for days on end. Top soil gets washed away, bringing with it lime, organic manure and other nutrients. To prevent this, we built top soil fence like stone fence around the farm but it doesn't seem sufficient. With soil nutrient lost, we see problems in Areca trees, pepper start falling off the plants and coffee beans drop to the ground.

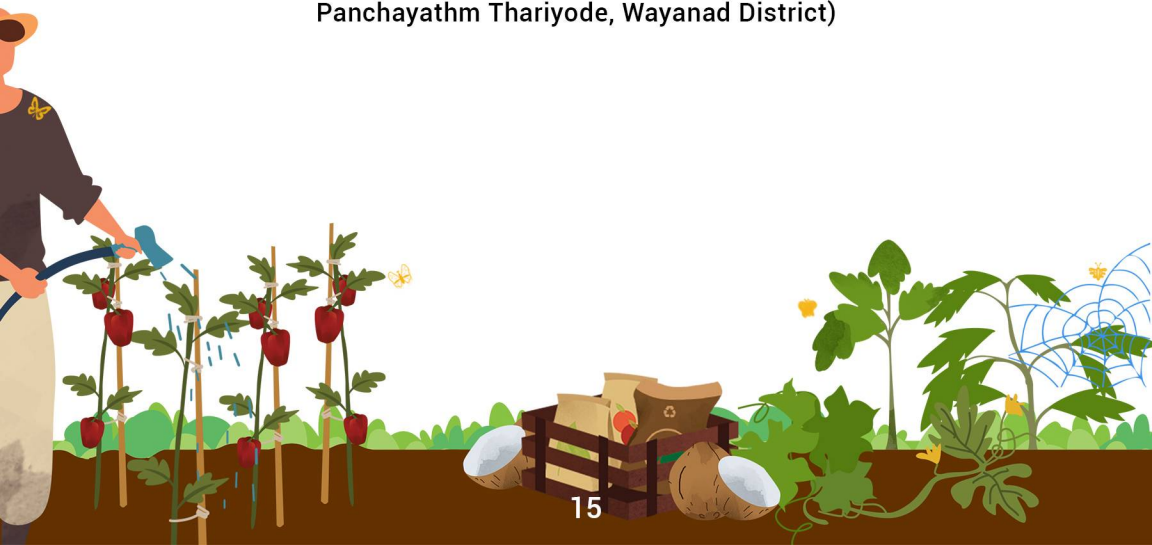


Thanal Trust gives us classes related to organic farming where I learn several things like preparation and use of fish-amino acid, and very useful information about organic pest repellants, among others. I learned that Marigold is a very helpful pest repellant whereas before, we just plant it as a flower. Farmers also used to destroy spider webs as soon as they see it, fearing poisonous bites or avoiding its stickiness. Now, when we see it we try to protect it because we know that it is effective in controlling pests.



The Mobile Organic Clinic initiated by Thanal has visited my farm and conducted soil tests. They also gave me advice on how to improve soil quality of my land."

(Paily is a 50-year old farmer from 10th Mile Kavummannam Panchayathm Thariyode, Wayanad District)





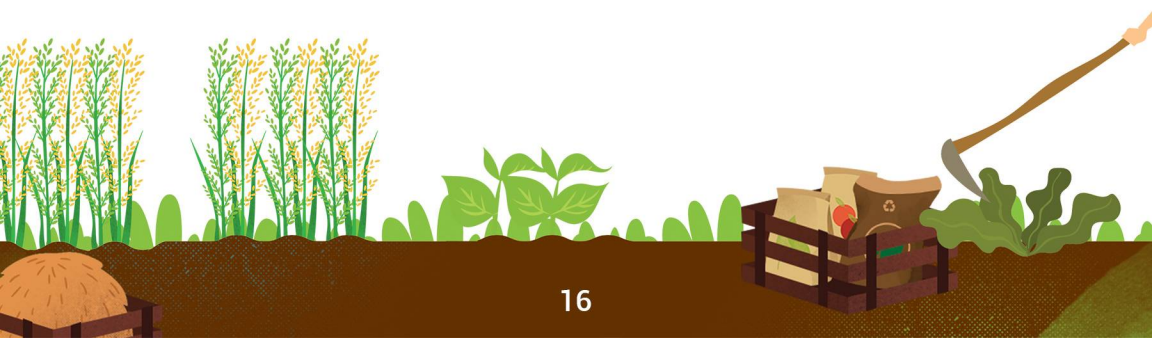


## THANAL Agro-Ecology Centre

Thanal Agro-Ecology Centre (AEC) at Wayanad, Kerala is the centre for training and research on agroecology and agrobiodiversity. Thanal is one of the pioneering organizations in Kerala which undertook various agrobiodiversity conservation programs. It focuses on informing the general public about the role of agricultural biodiversity, the need to conserve and use ecosystems sustainably, and the agroecology practices required to keep it going. Thanal AEC is also among the many Field Learning Sites of the International People's Agroecology Multiversity (IPAM).

Thanal bought the land in Panavally, Wayanad, Kerala in 2009 with the idea of starting biodiversity conservation work with a specific focus on agrobiodiversity. Wayanad, being a predominantly tribal district with a legacy of indigenous cultivation and knowledge, seemed to be the ideal location to start the work on seed conservation. It organized a series of meetings with farmers cultivating one or two indigenous seeds and formed a seed farmers network.

The centre manages a collective total of 6.5 acres of land, out of which 2.2 acres is paddy land. This paddy field is used for two major activities where 60% of land is used for conserving different indigenous rice varieties, the Rice Diversity Block (RDB), and the remaining land is used for normal rice farming like other farmers.



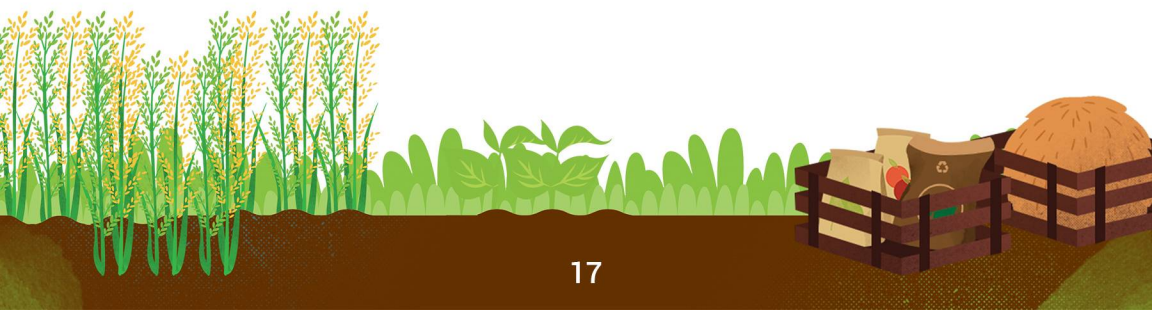
## Rice Diversity Block

Thanal AEC started a Rice Diversity Block at the centre in 2010 which began with 4 indigenous paddy varieties. Now, it conserves more than 300 traditional varieties, from which, 180 are from Kerala. This is the largest collection of paddy varieties in the state.

Every year, Thanal organises a 'Rice Field Week' and this provided farmers, students, politicians, officials, academicians and the general public an opportunity to see and learn about rice diversity and its value to the community. Participants are also invited to choose and bring home varieties of their preference.

Varieties suitable to different geographical conditions such as upland varieties, flood-tolerant, saline-tolerant, deep water, as well as other varieties having special qualities like scented varieties and medicinal, are all being conserved as part of the program. Now there are 13 big and small RDBs in Kerala managed by farmers, mostly from north Kerala, who are inspired by the efforts of Thanal AEC. The Rice Diversity Block at the centre which remains the largest in Kerala continues to motivate more people not only farmers but also ministers and other public officials, and the public.

Maintaining and managing RDBs demands a lot of time and technical work and ensuring purity and quality of the varieties is very important. In an RDB, four square meters are specifically allotted to each variety. Though rice is mainly a self-pollinating crop, there exists a less than two percent chance for cross-pollination. To avoid this, an isolation distance of 50 centimeters between plots and a system of flowering asynchrony (i.e. arranging plots in a particular style to avoid chances for cross-pollination in adjoining plots) are employed. Only pure seeds are saved for next year's cultivation. A system of roguing, or removing odd varieties in a plot, is employed in all the stages of cultivation from nursery, tilling, booting and flowering.







## Seed Bank

Thanal has a collection of paddy seeds kept after harvest and replenished every year. In 2015, it launched a seed festival in Panavally for the purpose of exhibiting seeds and facilitating seeds exchange. The exhibit introduced the diversity of seeds not only to farmers but also the general public in attendance for them to appreciate. Food festivals and discussion sessions on various topics related to seed conservation and agroecology were also part of the event. Many farmers collected samples of certain varieties to see its performance in their own fields. Now, seed festivals have become a regular feature in AEC's neighboring panchayaths in Wayanad.

In 2004, the centre coordinated a national campaign on traditional rice seed conservation called Save Our Rice campaign. Seed exchanges were integral to the advocacy where farmers from different states shared varieties amongst them while the centre also tried varieties from other states. The campaign has become a mass movement in India that even after the project ended, partner groups continue the advocacy especially in sustaining efforts to revive the paddy culture of the country.

## Agrobiodiversity

Apart from indigenous rice, Thanal AEC also cultivates diverse kinds of crops. The centre is maintaining 35 species of trees and works on a detailed inventory of trees. The inventory consists generally of timber, medicinal, shade trees and the local trees of Wayanad. All these trees are also useful in farming such as for making farm implements and tools, enriching topsoil with micronutrients and metals, providing material for mulching or as support poles, among others.





Thanal has a collection of tubers, spices and bananas and vegetables mostly collected from Wayanad. In the changing climatic situation, it is important to focus on local tubers and bananas which do not need much water and can withstand stress. The centre grows and conserves different varieties of tuber crops which are also rich in carbohydrates and fiber, and are the main source of calories in the Kerala menu. Efforts at conserving varieties which are suited to the Wester Ghats/malnad region are being undertaken in the centre even as more exploration is needed to collect varieties before they get lost.

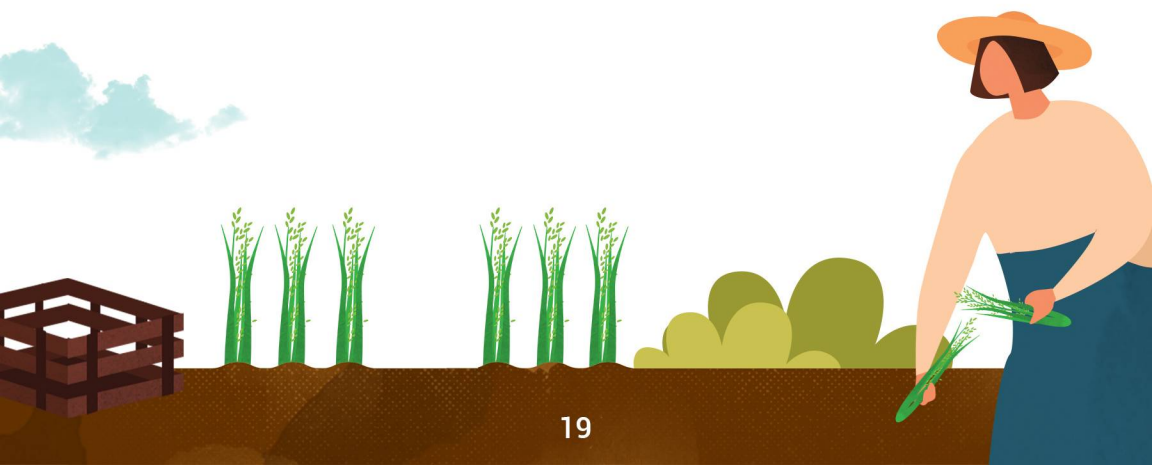
Different kinds of birds, butterflies, dragonflies, damselflies and spiders abound in the centre and are all well-documented. During the rice field week, visitors witness this diversity which help them further understand the importance of agroecology.

Thus, Thanal AEC performs a very important function of being a research and learning centre promoting conservation and appreciation of indigenous crops, facilitating seeds exchange, and advancing agrobiodiversity and agroecology among farmers and the general public as well. Nurturing and propagating agroecological farming methods enhances food security and food sovereignty while providing better adaptation to climate change and reducing harmful environmental impacts.

### **Rising above climate change challenges**

2018. About 90% of rainfall in Kerala occur during monsoon months, coming mainly from the southwest and northwest monsoons. In 2018, Kerala had abnormally high rainfall from the start of June until the third week of August. This resulted to severe flooding in 13 out of the 14 districts in the State. Heavy rains and floods badly affected the lives and properties across Kerala.

Located at the banks of the river Kalindi, the Thanal Agroecology Centre was badly hit due to severe flooding of the river. The centre's infrastructure sustained heavy damage and a large portion of its crop land was destroyed. The neighboring communities in Panavally also suffered loss of crops and land even as the farming community as a whole reeled grievously from the calamity.



Thanal raised resources to rebuild the centre and worked with farmers in the region for post-disaster rehabilitation, taking nearly a month to normalise the situation. Over 60 varieties of paddy lost to the floods had to be relocated and restored. The centre also helped local farmers build climate resilience in farming methods.

The entire agricultural activities at Panavally had to be rebuilt almost from scratch, starting from de-silting the land to make it ready for the next season of planting. Nurseries, bunds and upland farms for coffee, vegetables, palms, pepper and fruit trees that suffered heavy damage had to be restored, as well as submerged seed drying area and spaces where farmers assemble and convene.

Heavy floods also washed away top soil including manure, negatively impacting land fertility. The centre undertook the big task of rejuvenating and increasing soil health by reapplying lots of inputs like cow dung, biofertilisers, green leaves and dried leaves. Now, the soil has greatly improved. In the centre's areca plantation, most of the areca developed yellowish leaves, a sign of Mahali disease, after the flood. After performing root feeding, almost all the areca plants had been saved.

A new well-designed rain proof structure was built to raise seedlings in a protected condition. To rehabilitate and strengthen the river bank, bamboo was planted along the banks. A Machan or watch tower which was built on paddy land to watch and guard rice diversity block from wild animals.

The farmland's entire irrigation system, electric fencing of the RDB, including the solar pump and motor that were destroyed when the pump house sank, all underwent repair.

Mindful of more extreme climate events, Thanal was able to rebuild the centre and by December, classes and consultations with farmers in the locality have resumed.

2019. However, in the following year, heavy rains once again caused a havoc of four straight days of downpour in Kerala which is part of the ecosensitive zone in Wayanad district. Around 200 relief camps were set up to offer refuge to several thousands of people while more than 100 people lost their lives in landslides and floods across the state.

The agroecology centre at Panavally managed to survive without too much damage. The nursery and shelter got flooded, but thankfully did not lose any saplings. Rains started immediately after seeds were sowed, but it was a good thing that the centre built the rain-proof structure and seeds were moved to the top-most shelf in the nursery before the rains. Mahali disease again struck areca trees but quick root feeding immediately solved the problem.

Climate change has affected the agroecology centre. Most of the months, there is not enough rains. The rain expected during June, now comes in July while rainfall of 'Thulavarsham' (rains during November) also decreased. On top of this, heavy flooding accompanies even erratic rainfall. Soil becomes hard due to the air gap formed after flooding. Without removing those, there is no use of planting vegetables or anything.

Thanal persists in pursuing agroecological solutions to climate change challenges confronting the centre and the farming communities it serves. It continues the work on conserving seeds and preserving agrobiodiversity, which are keys to a safe, secure and climate-resilient future for the farmers of Kerala.

### **Community Intervention**

Training of farmers. As part of a project supported by the UN Food and Agriculture Organisation (FAO) Thanal gave training to agriculture officers, master farmers and local farmers identified by the agriculture department. Capacity building involved sessions on nature of the soil and soil health, seed treatment, preparation of organic manure and pest repellants and importance of sustainable farming and agroecology practices. Organic inputs and banana saplings were also distributed to farmers who participated in the training.

As part of the International People's Agroecology Multiversity (IPAM), trained farmers will start conducting regular courses for local farmer trainees. A classroom and soil lab will also be set up to become part of the centre.

### **Mobile Organic Agri-Clinic.**

With the purpose of reaching out and helping farmers affected by the 2018 floods, Thanal AEC launched the Mobile Organic Agri-Clinic in Wayanad. The project visited and interacted with farmers, helped identify problems on crops and soil health and proposed solutions to the problems. The mobile clinic was able to reach out to 3,500 farmers and demand for follow-up consultation and training increased. Currently, the clinic continues to visit famers, conducting soil testing (nitrogen, phosphorus, potassium), carbon testing, teaching preparation of organic inputs and other information on organic farming and climate resilience.





## Results

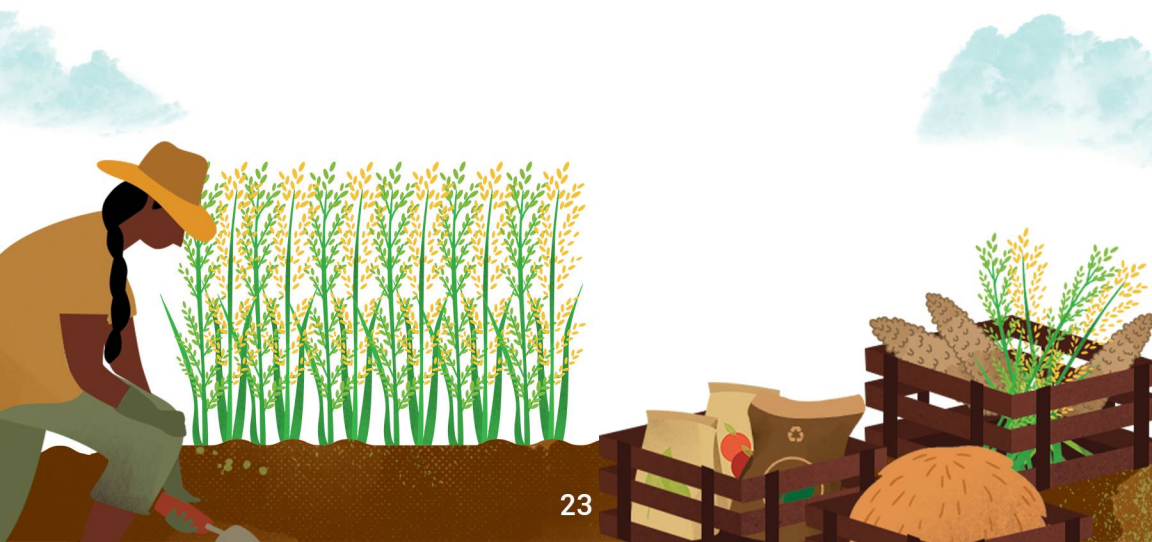
For its interventions, the centre identified the following outcome and learnings:

- Identified traditional seeds that were more flood-resistant, in that most of previously planted rice plants could be saved even if water remained logged in the field for several days.
- Indigenous varieties indeed give more yield compared to hybrid varieties.
- Generated a market for its indigenous rice varieties which have superior quality and taste and possessing flood- and pest-resistant properties. This persuaded other farmers to convert into sustainable farming.
- Trained 3,800 farmers and provided the same with material inputs to help them restore their farms badly hit by floods (FAO project).
- Reached out and assisted famers at the local level through the mobile agri-clinic in addressing the impacts of flood to farm activities, and developed skills on climate-resilient sustainable agriculture.
- Women and children developed awareness and appreciation of the diversity and nutrition of uncultivated edible leaves through documentation initiated by the centre and conducting of workshops. Previous to this, people treat some edible leaves as weeds.
- Partner farmers now fully understand the need for biodiversity conservation and, for instance, are happy and proud to show dragonflies and spider webs in their fields.
- Women are active and powerful changemakers as exemplified by the consistent work of seven women members of the centre's 9-person team. They were tireless and did a commendable job leading the centre's intervention efforts during the floods, as well as performing regular farming activities and day-to-day work at the centre. All seven live in nearby homes and some of them are the family's sole income-earner.

## Areas for improvement

Thanal AEC looks forward to effecting the necessary intervention and strategies to further strengthen their work:

- Having a proper display space in the centre where seeds and other materials can be neatly and appropriately shown and presented.
- More resources are needed including human resource to enhance the centre's capacity for agroecology education and biodiversity conservation, as it attracts more and more farmers, students and officials to its programs and activities.
- Reaching out to more people, especially the youth, to transfer theoretical and practical knowledge on agroecology, hence, contributing to achievement of sustainable development goals.
- Intensifying promotion and development of sustainable food and agriculture systems in the framework of food sovereignty, climate and social justice.
- Developing a demonstration field for dissemination and popularisation of the diversity of edible leaves.
- Enhancing scientific capacities to further advance work on climate-resilient agriculture. For instance, in studying, developing and monitoring climate-adaptive qualities of some traditional varieties from rain-fed and coastal regions that exhibit an advantage of performing well even during drought and flood situations.





## PAKISTAN







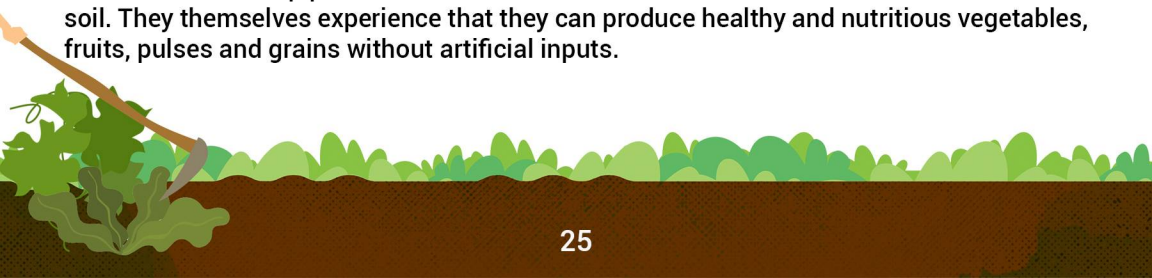
## KHOJ SCHOOL GARDEN of the Khoj Society for People's Education Lahore, Pakistan

Teaching the science of organic food production is an integral part of Khoj school curriculum. Children learn the scientific concepts behind growing plants by practically doing everything. A garden has been set up in the school to provide a platform. The school garden aims at blending the school curriculum, going beyond plant biology and integrating the activities of the school garden, which reinforces and enhances children's conceptual as well as practical understanding of the science of growing food.

### Connecting safe environment with healthy food

In the Khoj School Garden, children are involved in the different stages of starting, running and maintaining the gardens. Here, they learn how to manage soil health, ensure biodiversity, conserve natural resources, increase productivity of plants and protect plants.

Children learn about the composition of soil, life in the soil and the critical role this life plays in food production. Once they understand that the soil is alive, they develop a sensitivity about the requirements of the microbes in it. They realise that chemical fertilisers and pesticides cause a very serious threat to life in the soil, the birds and their habitats, human health and the safety of the environment. They make a variety of natural fertilisers which help provide food for the microbes and create a nutritional balance in the soil. They themselves experience that they can produce healthy and nutritious vegetables, fruits, pulses and grains without artificial inputs.



The importance of keeping plants healthy and productive while benefitting the environment and people are ingrained in their knowledge and skills. School children learn to prepare the soil, sow seeds, understand seed structure and seed germination, and water plants while knowing not to underwater or overwater. Grasping how plants uptake nutrients, they learn about maintaining plant nutrition, facing pest attack and figuring out what causes pest infestation. In knowing the appropriate time to harvest, they are able to think and strategise how to nurture plant health and productivity. They practice companion planting, intercropping and plant rotation to minimise the danger of pest attack.

Students also come to know about the economic and nutritional benefits of having a diversity of plants. In the school garden, there are more than thirty kinds of vegetable plants, an assortment of flower plants, four trees of guava, four of lime and five of neem.

Students are also taught how to save seeds. The work of saving seeds completes the cycle of sowing seeds and then harvesting them. Children start appreciating the bounties and interconnected processes in nature.

### **Confidence in no-cost, safe remedy**

Hands-on participation in all processes of growing food, flowers and fruits gives the children confidence on the success of chemical and poison-free gardening and agriculture. This self-assurance has resulted in many successful low-cost or no-cost interventions applied to their parents' fields.

Tehmina, a student at Khoj, and her parents had grown cow peas on half an acre field and the crop had been attacked by cutworms. As she had experimented the use of wood ash at Khoj School garden, she and her mother used wood ash and got rid of the pest problem. They were happy as it was a no-cost solution and they were able to grow poison-free, healthful beans. There are many such examples of transfer of knowledge and practice from school garden to the fields.

After successfully growing summer and winter crops, senior students guide the junior classes.







## A Garden That Keeps On Giving And Teaching

Nasira Habib's Organic Home Garden has three main objectives: (1) to grow healthy and safe food for personal consumption; (2) to do action research on various gardening concepts and practices to validate them; and (3) to plan teaching activities for Khoj School students based on learning in the garden and use the insights to design training workshops for home gardeners.

Instead of focusing on stand-alone techniques of soil fertility and pest management, she tries to understand the science and art of growing plants in a holistic manner. Many experiments were carried out to better understand the soil, its components and the life in it. Only after learning the critical role microbes play in the growth and productivity of plants was she able to define viable strategies for soil fertility management.

Nasira believes in the presence of a natural cycle of nutrition in the garden itself. Fallen leaves and flowers, pruned tree leaves and branches, mowed lawn grass, kitchen organic waste and poultry excreta are excellent sources of compost and fertiliser. Not a single leaf is thrown out. She makes leaf mould, leaf compost, kitchen waste compost and cow dung-liquid fertiliser. She finds leaf and straw mulch extremely useful.

Legume plants are rotated in different parts of the garden to fix nitrogen. Researching extensively on the nutrition requirements of different plants has greatly helped Nasira to decide on intercropping and plant rotation.





The healthier the soil is, the more resistant the plants are to pest attack as she has found out. In fact, in the nutrient-balanced soil, pests are discouraged to eat or suck the plants. Thus, instead of focusing on preparing and applying pesticides, it is far more important to pay attention to soil health.

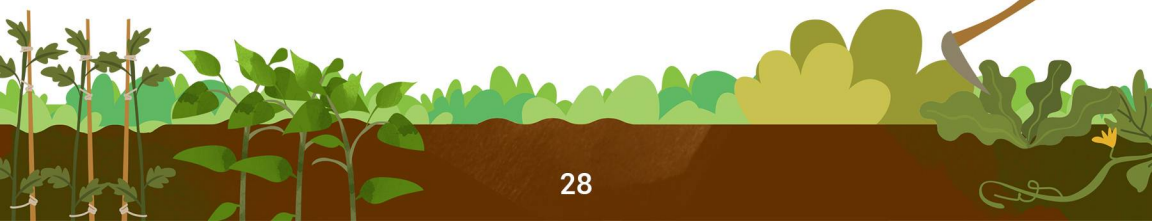
But before reaching nutrient balance in the soil, various pest management strategies need to be in place. To prepare the botanical pesticides, Nasira uses no market inputs. She has a neem tree in the garden and she grows garlic, onions, chillis, coriander, mint, basil and aloe vera which are all used to prepare natural, botanical pesticides. Neem and mustard seeds are used to expel oil and its residue is used to repel the plant pests. She feeds mustard seed cake to the soil while neem seed cake is used both for plant protection and soil fertility. Crop rotation and companion planting are her favorite techniques to ensure plant health against invasion of insects and diseases. Biodiversity is the most useful practice in ensuring food safety and security.

Nasira had the opportunity to visit organic gardens and farms in other countries like Sri Lanka, Vietnam, Cambodia, Bangladesh, Malaysia and India and has benefitted from their knowledge and experience. She was able to compare and analyse various realities, and decide what was possible in her situation and how to localise scientific concepts. The action research has helped her validate many indigenous practices in Pakistan and other countries.

The above strategies have resulted in healthier and more productive plants. The garden produces much more vegetables, herbs and fruits that can be consumed at home. Also, the fruits from the best performing plants are selected to save seeds in order to ensure sustainability and self-reliance. The seeds saved are apparently much more that can be sown in the garden. Nasira happily shares surplus food as well as seeds to friends or sells them to other home gardeners.

Nasira's garden has also become a center for training of home gardeners. She has designed a comprehensive curriculum on vegetable garden based on her rich learning and experience, in addition to authoring a handbook on home gardening. In her training workshops, she places greater emphasis on building and maintaining soil health while at the same time basing every workshop on the trainees' personal experiences.

Nasira is an educator who believes that learning should be relevant to the social, cultural, economic, environmental and political realities of the learners. In a country where around seventy percent of the population live in rural areas, she strongly believes that agroecology must be integrated in education to teach the science of growing food that is safe, healthful and sustainable.



# PHILIPPINES



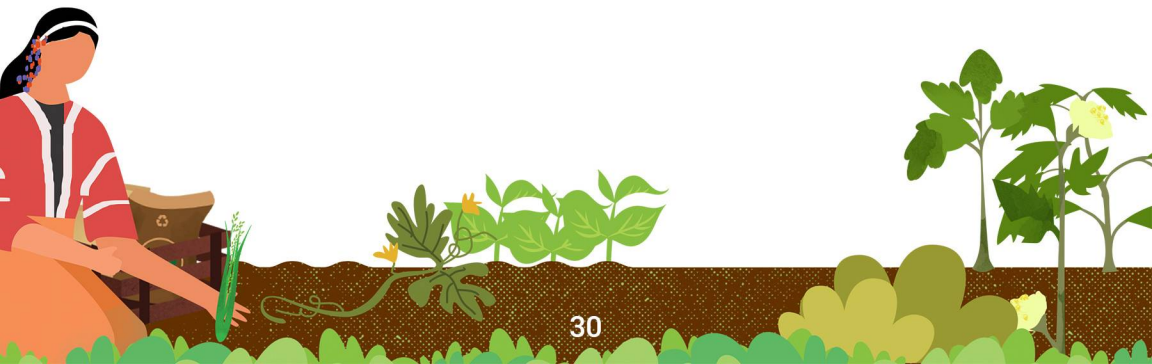


## CTCSM: Integration of Agroecology in Lumad Education

Lumads are the non-Muslim Indigenous People (IP) of Mindanao, the second largest and southernmost island in the Philippines. According to PASAKA, an alliance of Lumad organizations in Southern Mindanao Region, 90% of Lumads do not have access to formal education.

The lack of Education among Lumads place them in most vulnerable situations. Their resource- rich ancestral lands were plundered from logging, mining and big-agribusiness plantations. In 2015, Resisting Expansion Agricultural Plantations (REAP) in Mindanao noted that at least 500,000 hectares of land in Mindanao is occupied by plantations of palm-oil, rubber, banana, among other export crops.

The dominant agricultural system along with lack of access to education resulted to severe poverty among Filipino families, especially Lumads.





## Challenges

In the Philippines, the average age of Filipino farmers is 57 years old. Experts predict that for the next 15 years, there might be a shortage of Filipino farmers.

Farming, despite being a noble profession remains to be the most marginalised in the Philippines. Even Filipino farmers themselves discourage their children from being farmers. This resulted to the ageing farmer population of the Philippines.

Marginalisation of Filipino farmers can be traced to the green-revolution where farmers became dependent on costly chemical inputs. Placing them vulnerable to loan-sharks, loosing even their farmlands. Mainstream agricultural policies as reflected on the export-oriented and import-dependent agricultural economy of the Philippines further exacerbate the marginalisation of Filipino farmers - the ones who produce food end up being hungry.

## CTCSM Response

In order to change this unsustainable type of agriculture and encourage youth to participate in farming, Non-Government Organisations (NGOs), farmers, and indigenous people established the Community Technical College of Southeastern Mindanao (CTCSM) in 2013, a school that promotes organic agriculture as it preserves indigenous knowledge and practices.

CTCSMI believes that education as a powerful tool must be relevant, transformative and sustainable. This type of education is reflected in the curriculum of CTCSM with its three interconnected pillars of learning: Agroecology, Health and Academics. Organic agriculture plays an important role in providing food for the school, keeping the students healthy and maintaining a student's focus and higher retention in his/her academics.



Integration of theory and practice through actual farming activities is vital to facilitate learning among the students. It creates space for students to practice what they learn and to learn from their practice.

The CTCSMI school-farm is a good model for Coconut-based Diversified Integrated Farm, in which they maximise the materials from coconut in their gardens. For example, in the rolling portions, they carefully establish contour lines and arrange the coconut husk to maximise space for vegetables. By-products of crops, usually treated as waste, such as mung bean pods were also utilised as soil-conditioner to increase soil fertility, improving crop yield.

Integration of livestock such as cow, carabao, goat, hog and poultry were noted. The waste of livestock and poultry when processed serves as fertiliser for the soil.

## Results

Lumads and children of peasants from Mindanao were able to access free-education in CTCSM. While studying, the students are able to practice agroecology as part of their daily routines. Part of their food consumption are being produced from their own school farms. Since 2013, two batches were able to graduate from the Certificate Program on Organic Agriculture (NC-II in Organic Agriculture Production) and are now serving as People's Agriculturists.

The People's Agriculturists program is a form of return-service for their free education by teaching and managing the school farms of other Lumad schools across Mindanao.

Aside from providing formal education, CTCSM also hosts short-courses on agroecology. However, after President Rodrigo Duterte declared Martial Law in October 23, 2017 in Mindanao, hundreds of Lumad schools were vilified and forced to close. Despite these challenges, CTCSM continued to teach and operate.

The thrust of CTCSM to practice agroecology can be reflected in the significant contribution of their school farm's production in their day to day food needs. At least 50% of their food consumption is sourced out from their farm.

Also, the school serves as training center for organic agriculture production for other people's organisations, NGO partners both local and international partners.



# Collective Farming Improving Farmers' Lives in San Isidro Carmen Davao del Norte

San Isidro is a Barangay in Carmen Davao Del Norte in Mindanao. The province of Davao Del Norte is dubbed as the “Banana Republic” of the Philippines. Originally a rice-growing community, large tracts of rice lands have now been encroached by banana plantations for export by big agri-businesses after the Philippines ratified the Agricultural and Fisheries Modernization Act (AFMA). The costly production of rice due to lack of government support further discouraged farmers to continue rice production and instead forced them to enter into onerous contracts of agribusiness ventures like that of banana plantation.

The San Isidro Carmen Organic Farmers (SICOF) is an organisation that was re-established in 2014 from the former NAMASICAR and is composed of 15 members. It is a local people's organisation (PO) that is at the forefront of challenging the negative impacts of chemicals-based agricultural plantations.

## Challenges

The perennial problem of higher cost of inputs and low buying-price of palay continues to be the main challenge in the community. Several farmers from one major-rice producing village in the municipality have shifted to other crops such as Cavendish banana which command a better market price at 40–50 Php per kilo as of January 2020. The sorry state of conventional rice farming has accelerated the encroachment of Banana plantations as individual farmers prefer to become contract growers for agri-business firm Lapanday Foods, Inc. and DOLE-Itochu. This is particularly alarming since the area in the village just beside the four-hectare leaning site has been converted into a banana farm. And members of a local people's organisation, SICOF, are searching for ways to efficiently contain the chemical drift by utilising buffer crops and filter ponds. Additionally, there are at least seven other banana farms in the area, two of which utilise aerial spraying as a means to deliver chemicals to their plants.

Although members of SICOF are well aware of the impacts of chemicals being former employees of banana plantations themselves, a lot has to be done to educate their neighbours and fellow farmers of the ill-effects of chemical use. Further compounding the problem is a big irrigators association in the community, San Isidro Farmer's Irrigators Association (SIFIA), which has a pre-arranged market agreement with several agro-chemical suppliers. Their intervention makes it easier for farmers in the area to access chemicals as they are enticed with lower interest rates on loans for crop production.



## Response

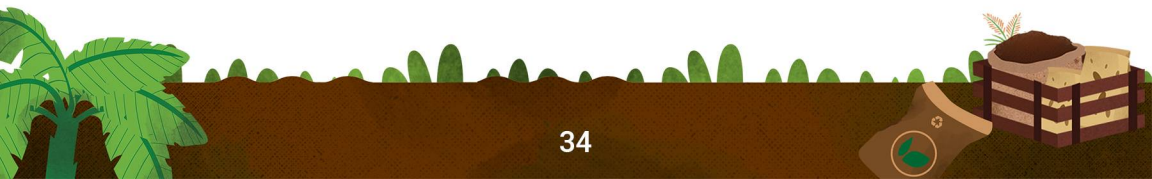
MASIPAG re-entered the community in 2016 and partnered with SICO. Capacities were built to re-strengthen the local PO and encourage them to produce organic rice. A Trial Farm was established in SICO in order to select locally adapted varieties. At least three trials were conducted to achieve success.

The first trial was damaged by pests while the second trial was damaged by flood. These did not prevent them from continuing and were then able to successfully select varieties after the third trial. The trial farms proved to be of utmost significance since these showed to the farmers that IRRI's HYVs are designed to be planted with chemicals which further push them into debt.

On the other hand, they were introduced to several traditional rice varieties, Masipag and farmer-bred lines, which as far as the PO members are concerned, are far more superior in terms of palatability, local adaptability and harvest recovery. At present, the PO is planting an assortment of at least 70 varieties of lowland rice with different morphological and physical characteristics.

It is worthy to note that after the success of the third trial, Pedro Sanchez, the chairperson of the PO, as well as several other members quit their jobs in a nearby banana plantation to do diversified farming full time. This was seen as a major tipping as several members began sharing the same enthusiasm. Several women members who previously did not care what their husbands were doing in the rice paddies began sporting rubber boots and participated in whatever it is that needs to be done – be it collecting data for the trial farm's evaluation sheet or manual weeding.

By mid-2017, Masipag conducted a series of trainings in Soil Fertility Management and Alternative Pest Management (APM-SFM) as well as Diversified and Integrated Farming System (DIFS) to give the farmers technical assistance in crafting their farm transition and conversion plans from inorganic to organic farming. The first harvests were tough as there was a 30-40% dip in the volume of rice harvests as a consequence of their abrupt conversion to organic farming, but they simply brushed it aside saying that the savings they had from no longer buying chemical fertilisers will compensate for their loss. Additionally, their rice produce is now healthier since it is no longer produced with toxic chemicals.



By 2018, the PO saw the need to provide an area for their ever expanding rice varietal diversity. They agreed to cultivate a collective farm of 4 hectares owned by a generous landlady. Since the area will be too big for a trail farm, a majority will be allotted for mass producing rice. MASIPAG-Mindanao facilitated in the planning and the monitoring of the plan. A "work-point" system was established in order to ensure fair sharing based on their actual participation and performance in the farm.

Improvement of farmers capacities were also done through farmer-led rice breeding. In SICOF alone, at least 4 farmer-bred rice were produced and being maintained

## Results

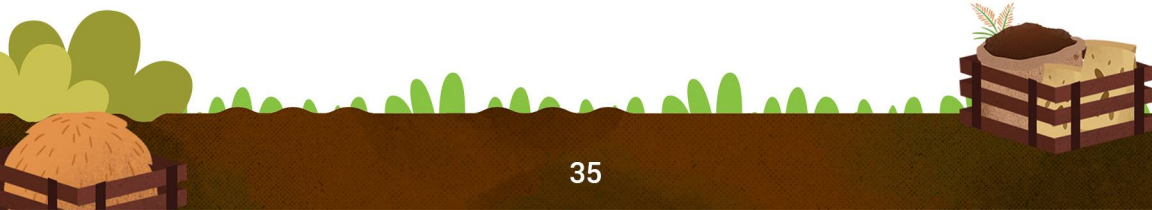
### a.Economic gains

Clearly the collective farm in SICOF provides an additional income to the farmers aside from their respective individual farms. This is one of the highlights of the intervention. Since they are selling naturally grown rice[ The PO can only label their produce as Naturally Grown since they cannot certify it as organic primarily due to the proximity of large plantations and for legal reasons as indicated in Sec. 17 of the Organic Agriculture Act. ], they can sell it at above premium prices. A breakdown of their expenses and income is seen below.

### COST AND RETURN ANALYSIS

Total Gross Income (Rice)	=	Php 241, 177
Total Cost (Production and Post-harvest)	=	Php 114, 177
Total Net Income	=	Php 126, 823
SHARING		
Land-Owner	=	Php 25, 364.6
SICOF Share	=	Php 101, 458.4
Additional Income for SICOF (from By- products)	=	Php 10, 665.0
Total Income of SICOF	=	Php 112, 123.00

A total of 501 work-points were noted. From the total income of Php 112,123, divided by the 501 work points, each work point is equivalent to Php 223.80.



## WORK POINT SYSTEM (June- Novemeber 2019)

MEMBER	JUNE	JULY	AUG	SEPT	OCT	NOV	TOTAL
ALOY / GINA	31	50	40	20	10	37	188
ONDOY	18	7	16	10	5	14	70
BONIE	2	4					6
BINGKAY/DINGLE	10	19			5		34
ALLAN/CHONA	4	2	2				8
EM-EM							
DAYOT / BOY	9	43	47	13	10	18	145
WINA / CANOY			11	13	8	18	50
JOSEL							
LORNA							
							501

MEMBER	POINTS	VALUE (php)	LESS	INCOME (PHP)
ALOY / GINA	188	41,924	3,525	38,399.00
ONDOY	70	15,610	4,000	11,610.00
BONIE	6	1,338		1,338.00
BINGKAY/DINGLE	34	7,582	525	7,057.00
ALLAN/CHONA	8	1,784		1,784.00
EM-EM				
DAYOT / BOY	145	32,335	3,300	29,035.00
WINA / CANOY	50	11,150		11,150.00
JOSEL				
LORNA				

RICE			
Variety	Volume	Price	Value
M 163	78 Sacks	2,300 Php	179,000.00
RBJ – 4	20 Sacks	2,300 Php	46,000.00
SWR	8 Sacks (fresh)	950 Php	7,600.00
BY-PRODUCTS			
Darak	250 kgs	15 Php	3,750.00
Darak (Coarse)	220 kgs	10 Php	2,200.00
Binlod	160 kgs	25 Php	4,000.00

The sharing of individuals based on their work points is shown on the tables above.



Aside from technical support, MASIPAG Mindanao also facilitated the marketing of the naturally grown rice produce of SICOF. Despite efforts of the farmers to implement organic agriculture, the challenge remains that their product cannot be certified as organic since the banana plantations around practice aerial spraying of pesticides and fertilisers.

Since the PO started to do organic agriculture, they have become known in their locality. Several key persons in the municipality including key officials of the Barangay, Municipal Agricultural Office, Roman Catholic Church as well as several other professionals go to them to purchase rice at their farm gates. This gives them a more intimate relationship with their consumers. Also, they are constantly being invited to become resource persons within their locality on topics related to organic agriculture. By early 2019, Gina Juanitez, the secretary of the PO sits as a member of the Municipal Agriculture and Fisheries Council of Carmen in recognition of the accomplishments of the PO within a short period of time.

## PACKAGING SUPPORT| Promotional Flyer of their Rice Product



**HOW TO COOK!**

- 1 Rinse rice thoroughly under running water and then remove any dirt or debris you may find.
- 2 Soak rice in water for at least 20 minutes.
- 3 Use one and a half (1.5) cups of water for every one (1) cup of rice.  
If softer rice is desired just increase the amount of water, for firmer rice decrease the water.
- 4 Cook for about forty-five (45) minutes.

**ENJOY!**

**FARM FRESH!**

**PRODUCED BY FARMER'S LOVING HANDS**

The rice being sold to you are produced by the San Isidro Carmen Organic Farmers (SICOF)

These rice varieties are developed by MASIPAG's breeding program. Farmer-led rice breeding has been one of the core programs of MASIPAG. Through rice breeding, farmers are able to exercise their control over the genetic resources they use in their farms.

**WHY EAT NATURALLY GROWN PIGMENTED RICE?**

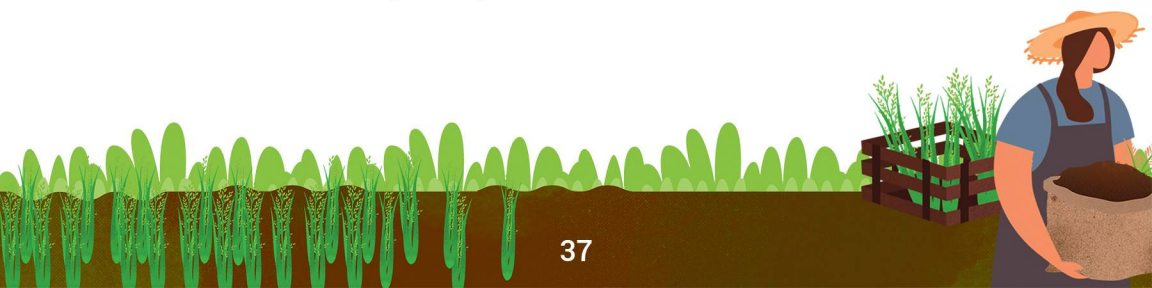
- It is the staple for health buffs everywhere! Because of its high fiber content you easily get full by consuming small portions. No more extra rice!
- It is also high in naturally occurring oils which helps normalize cholesterol levels.
- Because of its low glycemic index (LGI), Naturally Grown pigmented rice, when consumed, has a low sugar release which makes it good for persons with diabetes. Studies show that daily consumption of brown rice reduces the risk of developing diabetes by 60%.

**HEALTHY & SAFE!**

Consuming Naturally grown products reduces the potential health risks usually associated with chemical residues on the food we eat.

Contact Numbers  
Variety / Color:  
Net Weight

The PO can only label their produce as Naturally Grown since they cannot certify it as organic primarily due to the proximity of large plantations and for legal reasons as indicated in Sec. 17 of the Organic Agriculture Act.





## SENEGAL



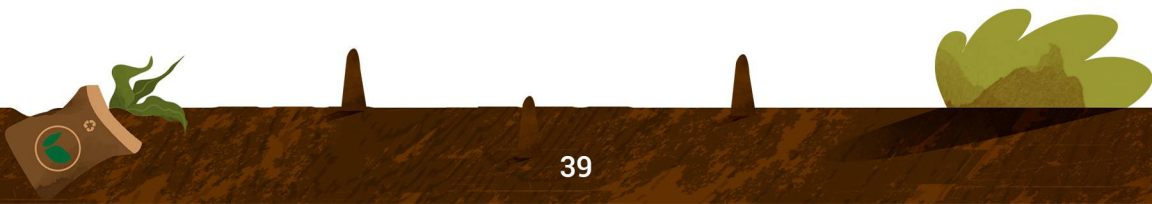


## The Agroecological Farm of KAYDARA Returning to Agriculture as a Pillar of Development

Samba Dia, a village located in the rural community of Fimela, in the Fatick region of Senegal, is starting to get out of the rut. Kaydara, the agroecological school farm of the association 'Jardins d'Afrique', teaches people how a return to the land is possible in an area still facing serious issues despite the country's declared economic upturn.

The Kaydara farm is the initiative of Mr. Gora Ndiaye, who, self-taught, has 25 years of experience in agroecological practice and has held various functions of facilitator and coach in Project Management with focus on NGOs.

It was in 2003 when he created the farm with the planting of its first tree. Three years hence, in 2006, and adding up to a decade of action research and working with local communities, the farm has transformed into a base for sustainable agricultural production and a training center for various agroecological practices.





In the farm-school, natural organic matter like compost are used instead of pesticides. Organic fertilisers supply crops with consistent nourishment. The project also includes a livestock component with the objective of diversifying the activities and income of farmers. Learners from the trainings return to their communities and apply the agroecological techniques they acquire. Their efforts also create jobs for young people and help protect and improve soil health. At present, the farm is considered a model in Senegal and the whole of Africa.

The farm trains farmer students to better prepare people to return to the land. After three years of training, ten student farmers have received their certificates and are expected to strengthen the process of returning to agriculture.

Mr. Ndiaye was able to transform abandoned and considered barren land into integrated and prosperous agricultural production areas using agroecological techniques of regeneration and soil maintenance. Indeed, the use of agroecological techniques such as compost, mulching, green manures, crop rotation, recycled manures, the planting of fertile trees (e.g. tithonia, leucaena, vetiver, coconut) that fix sand and hold water and fallow, are practices that have been instrumental in managing and restoring soil fertility.

Efforts have been put not only on training to improve production (planning, quantity and quality) but also on marketing: knowing how to present products, developing customers, making deliveries, etc. The products are now sold to restaurants in Saly, Mbour, Ndagane and other places. Residents of Ndagane and Mbodiène even do their marketing on the farm.



# PIERRE RABHI AGROECOLOGICAL FARM of Satinebougou

Located in Sanankoro, about thirty kilometers south of Bamako, the Pierre Rabhi Agroecological Farm of Satinebougou (FAPIRAS) was founded by Oumar Diabaté in 2005 as a tribute to the famous French agroecologist. FAPIRAS was designed as an agroecological unit that consists of complementary and integrated production systems: livestock, poultry and fish; cereal crops; market gardening; fruit trees; and fodder production.

The farm thus finds livestock and poultry, cereals and vegetables as well as fruit trees raised together in harmony. The animals feed on cereals and vegetable residues, such as the outer leaves of the cauliflower. In addition to meat, milk and eggs for humans, they produce droppings that will be mixed with plant debris (straw) to make compost. The compost will feed the soil which, in turn, will feed the plants. These can then be consumed by animals and humans. The cycle is thus completed.

During the rainy season, from June to October, the soil is mainly occupied by arable crops like maize, millet, rice and peanuts which represent an area of 1.5 hectares. Yields depend on rainfall and can reach up to 6 tonnes per hectare for maize. The production is intended for self-consumption either by animals or by humans.

All the work is done by hand thanks to the *dabas*, a set of tools consisting of a wooden handle of about thirty centimeters and a metal working piece. Only the maize grain is mechanically produced, for the price of 10% of the harvest. Once the maize is harvested, market gardening becomes more widespread, eventually occupying half a hectare.

The cultivated crop species are numerous: onions, salads, apples, eggplant, beans, tomatoes, okra, cassava, peppers, cucumbers, spinach, strawberries, turnips, carrots, watermelons, sweet potatoes, potatoes and shallots. Similarly, aromatic plants also have a place of choice, so we find chives, basil, dill, absinthe, mint and lemongrass. These vegetables are intended for family consumption as well as basket sales.





**VIETNAM**





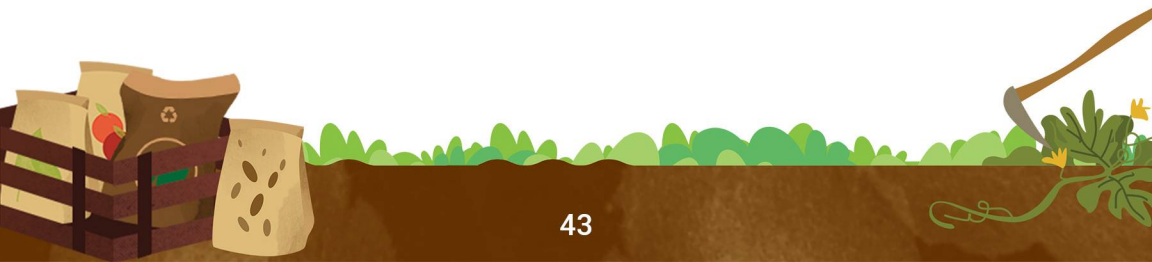


## The story of Nguong village

Nguong village is a very poor agricultural community that was the site of Participatory Action Research (PAR) conducted by the Centre for Sustainable for Sustainable Rural Development (SRD) in 2017. Living in low-roofed houses standing on stilts and propped against the mountain, villagers here find it unusual for local public officials visiting and discussing with them about their agricultural problems and how they can solve these using local resources.

Research information showed there are very few areas for growing wet rice and that productivity was low. Farmers use very simple production methods even as they lack training on scientific and technical know-how. Most do not practice seed breeding as they buy seeds at the beginning of cropping season, lending it to risks of procuring seeds that are low quality and susceptible to unfavourable weather conditions. All these factors contribute to food shortage in the community that lasts from three to four months in between crop period.

This information has helped SRD to come up with ideas in their work on biodiversity conservation and development and in crafting proactive response to climate change. One such intervention is on preservation of indigenous rice varieties which have high genetic capacity to withstand drought. These varieties especially include one that has been grown for many generations and is also a favorite of Thai people, but has since declined in quality due to unsuitable seed selection method.



## Transplanting and a balanced ecosystem

In 2018, starting from the period of the spring crop up to the seasonal crop, the first training class on rehabilitating indigenous sticky rice varieties was conducted by the first Farmer Field School (FFS) on Climate-smart Rice (CSR) production that was established in the community. Thirty poor households and women were the priority participants of the training.

Mr. Lo Van Tung, head of the village, remarked, "After the training, many people immediately applied what they learned in the FFS class. First, households started composting manure to gradually replace the use of chemical fertiliser. Guided by officials of Son La Plant Protection and Plantation Sub-department, farmers transplanted a unit of rice using sparse transplanting and seedling transplantation equally on separate fields for organic or chemical fertilisers. In the process, they reduced the use of pesticides by applying their knowledge on analysing the ecosystem and protecting natural pest controls found in the surroundings."

This technical knowledge made participating households very excited and interested on seedlings transplanting, sparse transplanting, and transplanting a unit of rice. It was very helpful in that in the old method, people used many varieties to transplant thickly resulting to very low yields

In one class, a staff who led the collection of data drew the local ecosystem for participants to see. Farmers were excited and eager to learn about a balanced ecosystem where an area or a habitat is sustainable, with living things interconnected and depending on each other for continued existence. They understood, for example, that pests have natural enemies and that plowing carefully can contribute to reducing harmful insects. Most participants declared they did not use much pesticide during spring of 2018.

In growing a trial field to rehabilitate indigenous sticky rice varieties, farmers learned it was very important to choose the homogenous ear of corn containing original characteristics of the variety. Their failure to select this was the reason they did not get high and very mixed yields in the next cropping season. Many households started to rehabilitate their favorite rice variety in their fields using one to two square meters, in combination with composting. They did not use pesticides and gradually replaced chemical fertilisers. They also applied sparse transplanting as well as transplanting of young seedling, and their yield immediately increased to 20-30% higher than the previous harvest.

## To move forward, leave chemicals behind

By their own practice and experience, Nguong villagers can now confidently explain their understanding of agroecological farming. That it is a system of sustainable farming which gets rid of the harmful use of chemicals such as herbicides, pesticides and chemical fertilisers that destroy the natural ecosystem. It is a practice that can protect and perpetuate indigenous crops and where pests and plant diseases can be controlled by identifying its natural enemies thriving in the local ecosystem.

Participating farmers in the project prepared their own reports to share in the commencement of experimental fields for other villages and communes, as well as to leaders of all levels who joined the sharing workshops. Farmers, including many young people and women actively articulated and debated on learned practices and issues confronting agricultural production. Farmers from other villages, hamlets and communes were very inspired and interested on the results of Nguong farmers' agroecological methods. Everybody wants to apply it in their fields right on the spring of 2020, eager to experience the same yield as that of the farms in Nguong.

During the annual "16 days of global action on agroecology" led by PANAP and its partners, hundreds of farmers from different villages participated in a program spearheaded by SRD and farmers from Nguong village on October 15, 2019. Local leaders were deeply impressed by the event, with a statement from district leaders affirming that, "the project not only addressed the concerns of farmers regarding their production but also helped the district agricultural agencies fulfill their duty to the farmers."

Leaders and officials believe that agroecological production methods employed and advocated by SRD in cooperation with the Department of Plant Protection is the most potent way to move forward for sustainable agricultural production. In the conferences of Thuan Chau district and various other districts, leaders consistently ask the Agricultural Extension Agency to include agroecology in its strategic plan.





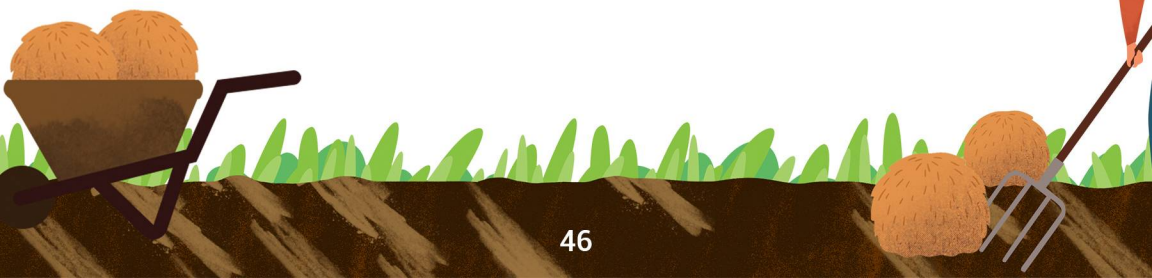


## Ms. HONG and her Traditional Rice Varieties

Every morning, Ms. Lo Thi Hong works on her rice field where she has undertaken to rehabilitate a traditional family rice, taking care of the crop assiduously as when she first set out to cultivate it. The rice is blooming so it is necessary to carefully remove the ones with characteristics that are not of its parents and to obtain seeds that identify with the Tan Lanh variety.

Since spring of 2018, she has participated in the project "Agrobiodiversity conservation and development for poor communities in response to Climate Change in Son La province" carried out by the Center for Sustainable Rural Development (SRD) in cooperation with the Plant Protection Sub-Department (PPSD).

Like many other farmers, Ms. Hong has not had the chance to take part in capacity-building programs in the past. So, she was very eager not only to learn but also to share her knowledge to other women farmers belonging to the Women's Union of Bo village, Muoi Noi commune of the Thuan Chau district.

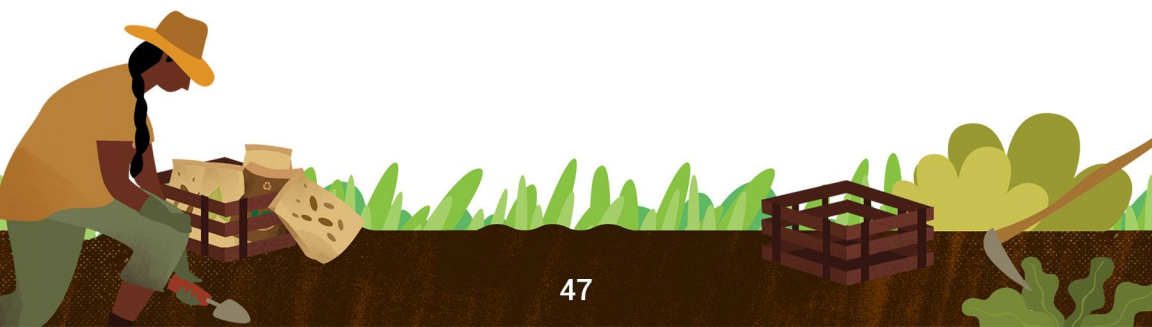


## Chemical versus organic inputs

Ms. Hong shares that that her Thai minority ancestry is characterised by having traditional sticky rice on their tables. But over time, farmers selected to cultivate big, thriving rice plants which are not always the best, and eventually greatly reduced productivity for the native rice variety. She also said that farmers apply chemical-based NPK fertiliser after plowing, as well as nitrogen to promote tillering, pushing the plant until pests appear, which then resulted to dependency on pesticides. This practice caused rice yields to decline to between 100 and 120kg per sao (approximately 360 square meters), leaving no seed to reserve for propagation.

Conventional farming methods require farmers to use and spend much resources like buying lots of seeds from external seed providers and companies which also prescribe increased used of chemical inputs. Not only did these non-indigenous, high yield varieties sidelined traditionally cultivated varieties, farmers were also faced with continued risk of low productivity or crop failures. This was due to soil deterioration owing to prolonged use of chemicals like herbicides, and the unadaptability of crops to local conditions especially in the face of climate change events like droughts and irregular rain. In addition, dense transplanting, up to 7kg of rice seeds for 500 square meters, and transplanting old seedlings also contribute to decreasing yields. The result of these practices threatened food security and health of the community besides impairing local biodiversity.

Since participating in the project, Ms. Hong and other farmers in the village have learned how to utilise trees and other organic by-products for producing compost as biofertiliser. This prompted a gradual reduction of chemical fertiliser use as more and more farmers become capable of producing their own organic inputs. They learned how to target the application of nitrogen, phosphorus and potassium fertilisers to match the growth of plants. By spraying pesticides only when pests appear and the weather is suitable, application has decreased by up to 50%, from four applications per crop to two.



## Improved practices, breeding selection

Along with many other families, Ms. Hong enjoyed higher yields than before, up to 60kg per sao. Most families are able to save on resources including labour, besides reducing cost of maintenance. This was due to improved practices like increased spacing between trees, transplanting younger seedlings and shifting to compost and other organic inputs as opposed to relying on chemicals. Before, people rampantly use pesticides regardless of the prevalence of pests, making the rice fields smell of chemicals and consequently making farmers easily tired while working on the fields.

Ms. Hong narrated her experience, saying, "Since the beginning of cropping, in July 2018, I participated in a training course on the techniques to rehabilitate the local rice varieties Tan Lanh and Tan Nhe. Unlike before when the practice was just to choose the big, good looking rice plants, we learned two ways of rehabilitation in the training. One is negative selection, where we remove plants that are different from the rest of the group or which have less purity. The other is by positive selection where we select rice plants with specific desirable characteristics as the rehabilitated varieties including physical appearance like husk, leaf stem, color, etc."

Of these two methods, she said her family chose negative selection, removing plants that are different and keeping homogenous ones. She also shared that the method has a slight disadvantage of losing some grains. "But compared to how we selected which to breed in the past, I found that these two methods are easier to do. Now on our second year in the field with the FFS class, the rice crops look very similar as emphasis has been mainly put on purity. Unlike last year, where too many mixed varieties were used," Ms. Hong said.

Family members and other villagers who were not able to attend the course benefitted from Ms. Hong's diligent efforts to echo her knowledge and training experience that she gained. "I also share the methods to households who have fields near mine so they know how to restore rice seeds for the next crop. I told them the specific characteristics of Tan sticky rice variety, such as how it looks, the grain color, and how to select the most homogeneous rice varieties for breeding," she adds.

Ms. Hong gladly relays how people come together in breeding selection, saying, "people said they could choose more pure and unbroken ones against degenerated crops, using the method. As long as everyone participates and remains patient, everything is possible."





## Agrobiodiversity

Although farmers do not necessarily have an in-depth understanding about the concepts of agrobiodiversity and genetic diversity, they understand that changing farming practices can increase yield. Steps that could be taken include less dense transplanting, reducing use or doing away with chemical fertilisers and pesticides, alleviate environmental pollution, and protecting the balance of rice field ecosystem where, for example, natural enemies of pests exist to control their spread.

Similarly, classes on Climate Smart Rice conducted in parallel with the rice rehabilitation classes aim to capacitate farmers with rice cultivation methods that can adapt and mitigate the impacts of climate change. Farmers learn many techniques at climate-adaptive rice growing, thus, helping increase rice productivity. In addition, implementing alternate wet/dry irrigation method plus reducing use of chemical inputs contribute a great deal to decreasing greenhouse gas.

This basic knowledge along with the application of teaching methods for adults made Ms. Hong and other farmers very enthusiastic about participating and applying these practices in their rice fields.

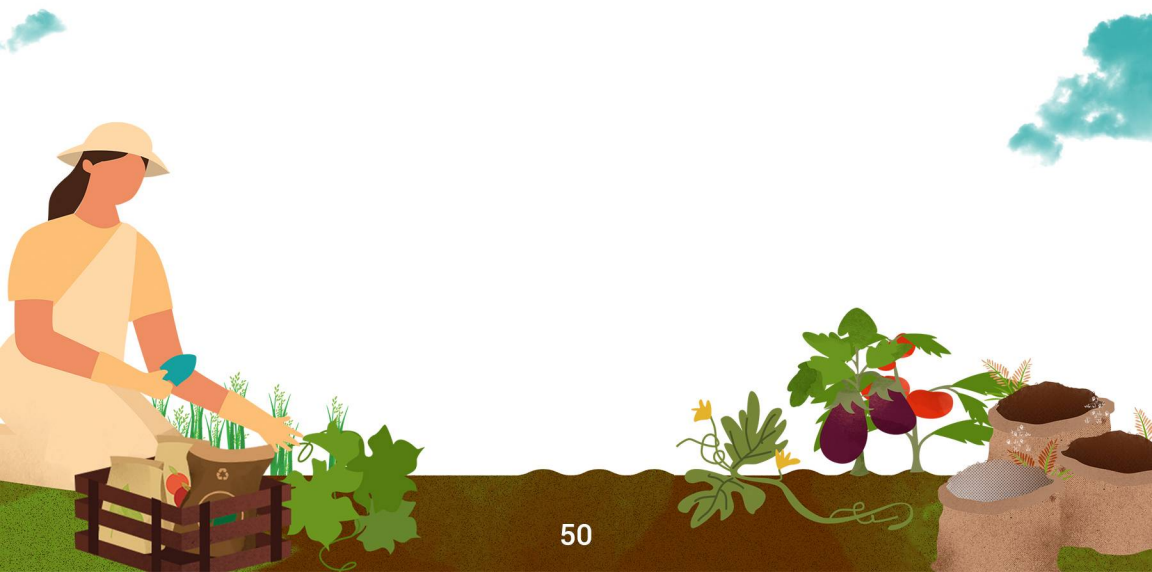


## Youth and Women, Economy and Culture

Ms. Hong and other farmers share a feeling of comfort and gladness that their knowledge on agroecological methods will help them to further improve their lives. With their eagerness to apply their training on their family fields and share the learnings with others, Ms. Hong proudly reports, "Thai youth are on the journey to rehabilitate and preserve the local sticky rice varieties with the help of ecological agriculture."

The project has been truly helpful for ethnic minority farmers in remote areas to gradually improve their production methods and their lives as well. Ms. Hong is an example of Thai women who have become more confident and able to make decisions for their families and the community. She enthusiastically imparts her learnings with others during village meetings or even when people simply have an opportunity to meet.

For ethnic minorities who are much more disadvantaged than farmers in the delta, channels for information are less accessible and chances to participate in training courses are fewer. Hence, the technical knowledge that the project provides to them is indeed invaluable and crucial for advancing not only capacities but the economic rights of ethnic minorities. Farmers are resolved to sustain rice rehabilitation efforts and CSR production in their fields to better benefit economically while also consolidating their cultural heritage and identity. By treading the path of agrobiodiversity, they are confident that they are caring for their fields the right way as they look forward to a more bountiful and stable future.



## Acknowledgement

This book would not have been possible without the enthusiastic contribution of our partner organisations and their steadfast commitment to advance the cause of agroecology and food sovereignty. We are particularly grateful to Pavel Partha and Sukanta Sen of BARCIK; Suresh Kanna and Oswald Quintal of KUDUMABAM; Jayakumar Chelaton and Manju of THANAL; Nasira Habib of KHOJ; Leo XL Fuentes and Gary Ben Villocino of MASIPAG; Maimouna Dienne of PAN Africa; and Vu Cong Lan of SRD for gathering and composing the featured narratives. This publication is also made possible through the support of MISEREOR.

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