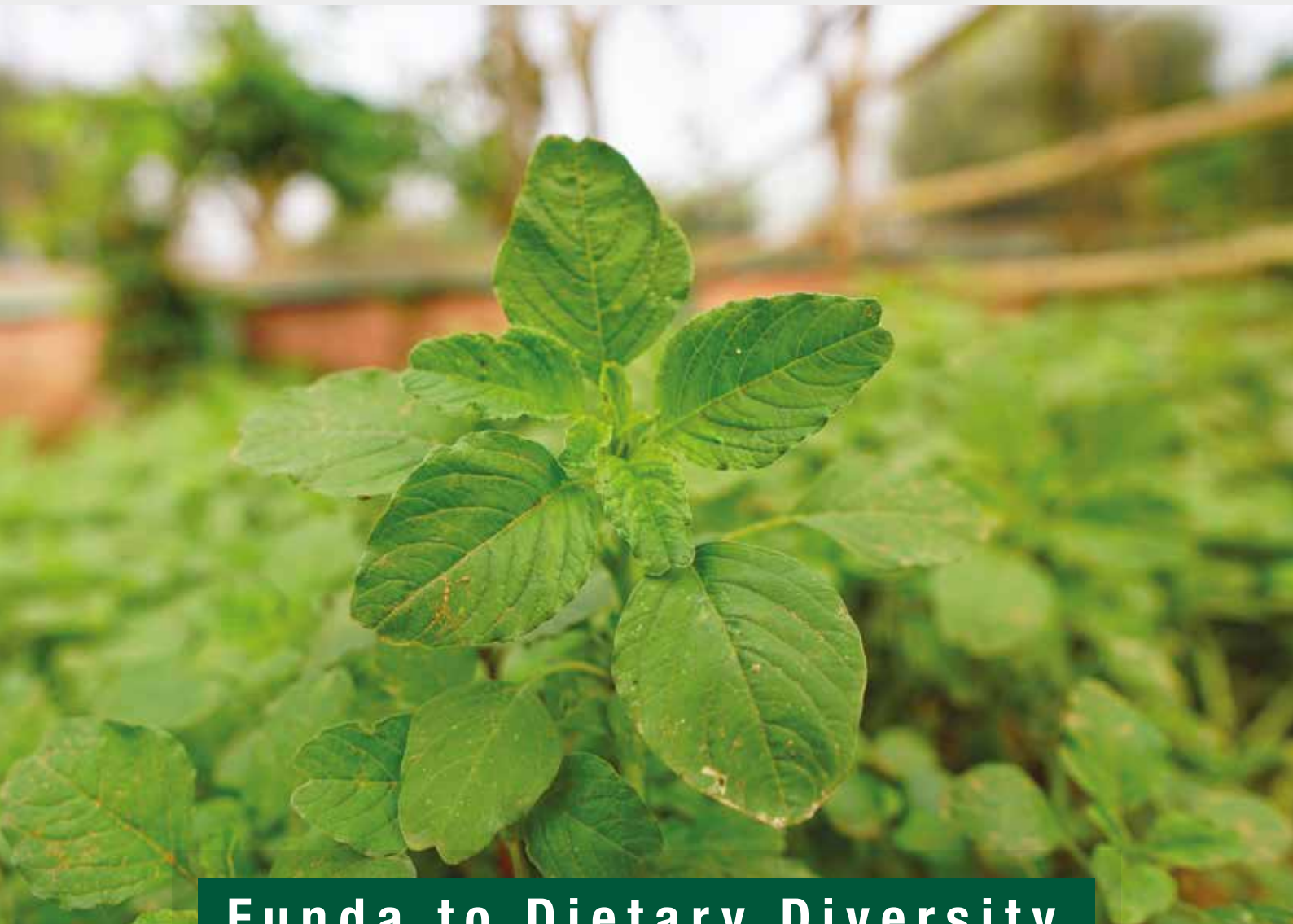


Jaivik Bihar



Funda to Dietary Diversity

Report April 2022

GREENPEACE
ग्रीनपीस



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Introduction

Malnutrition and anaemia are among the biggest challenges Bihar has been facing for a long time. Climatic disruptions, weather extremities and Covid-19 pandemic have further exacerbated the crisis as a large section of the population struggle to access quality and diverse food due to disrupted livelihoods.

Since the Government of Bihar adopted its 3rd Agriculture Roadmap, the expansion of land under organic farming has steadily grown from a few hundred hectares in 2016-17 to 21000 hectares in 2020-21. Prior to this, the first Bihar Living Soils Ecoag Model village Kedia has had a markable role in legitimising ecological agricultural practices among the farmers and government officials alike.

The success mantra of the BLS model, popularly known as Kedia Model was the collaborative efforts of the farmers of Kedia Village, the concerned government departments and Greenpeace India. All the three components of the tripod had distinct role to play; Kedia farmers were the actual implementers and partial investors, the government role was to sponsor the infrastructure building through its schemes and programmes and providing extension services whereas Greenpeace India did the mobilisation and facilitation of brainstorming and knowledge co creation session as well as bridging between the farmers and the government officials.

In the success of the BLS model in Kedia, Bihar Rural Livelihoods Promotion Society or Jeevika had distinct contributions which brought Greenpeace India and Jeevika closer and inspired the two institutions to work together for the expansion of organic and natural farming practices in more villages of Jamui District.

With this background, Greenpeace India and Jeevika (Bihar Rural Livelihood Promotion Society), Jamui launched a pilot project, #IGrowWithNature with over 187 small and marginal women farmers (all associated with Jeevika Self Help Groups) as the key project partners in various villages of the district. The project is a part of our larger campaign on mainstreaming ecological farming practices to make farming adaptive and resilient to climate crisis.

The women farmers established their Organic Kitchen Gardens (OKGs) with certain technical and logistical support from Greenpeace India and Jeevika. With active support from Jeevika, Greenpeace India facilitated a series of knowledge co-creation sessions on ecological agricultural practices including the using biomass residues for the preparation of eco-fertilisers and pest management concoctions.

In their Organic Kitchen Gardens (OKGs), Jeevika Didis have been growing 15-20 varieties of vegetables since 2020 on small pieces of land close to their residences. This pilot project was aimed at encouraging women farmers to grow different varieties of vegetables to ensure the nutritional security of their families.

Roles of Jeevika and Greenpeace

This pilot project is a collaborative initiative between the two institutions hence there are some overlapping in the roles and responsibilities. At the same time there have been some areas which were distinctively different. Jeevika did the identification of the communities for piloting OKGs. They also provided all the community mobilisation, implementation and monitoring related support.

Greenpeace as a knowledge partner and a facilitator of knowledge co creation processes assisted Jeevika by organising training sessions for Jeevika Didis on making eco fertilisers and pest management solutions. We also closely worked with Jeevika Didis to create acceptance and awareness on the health and agronomic importance of growing many varieties of vegetables and fruits together on a small piece of land.

Intentions behind the survey and this report

This report, "**Jaivik Bihar: Funda to Dietary Diversity**," intends to examine if OKGs or other forms of organic nutrition gardens can be sustainable and reliable sources for food and nutritional security of small and marginal farmers. The report is an effort to collect, collate and curate the insights, experiences and learnings from the perspectives of small and marginal women farmers and especially those who have been actively participating in the pilot project. This report also tries to look into the practices applied in these kitchen gardens and scopes for further improvements.

The report assesses the development achieved by farmers in organic farming in the district of Jamui, Bihar. It incorporates the testimonies of changes experienced by the farmers and how the concept of OKGs are impacting their lives. The report also documents the challenges and way forward that could encourage more farmers to join the organic movement.

Methodology

After one year of completion of the OKG pilot project, Jeevika Jamui through their Village Resource Persons (VRPs) and SEWs conducted a survey with 115 small and marginal women farmers from 5 villages, namely Mohanpur (Lakshmipur Block), Pasraha (Barhat Block), Sagdaha, Titahiyon and Tari Dabil (Khaira Block) with the intention of gathering insights from the practitioners on their experiences with OKGs and their aspirations to scale up the ecological agricultural practices.

The report is based on the data collected during the survey conducted in the months of October and November 2021. Since this assessment report is based on just one year of experience of the women farmers, all the insights should be considered indicative.

Personal testimonials of the project partner women farmers also corroborate the survey data. During the face to face interviews, the respondents were interviewed by an independent researcher.

Jaivik Kitchen Gardens: Through & beyond the excel sheets

"I have been engaged in the practice of Jaivik Kitchen Gardens for the last three years. My poshan(nutrition) garden is spread over a 750 sq ft area, in the backyard of my house. I receive seasonal harvests from the garden throughout the year. It helps my family save money as we don't have to buy vegetables from the market. Through the garden, I have ensured that my family has rang-birang ki sabji (a variety of vegetables) on their plates. I find the practice of organic farming healthy and I feel close to nature."

Phoolmani Devi

A marginal farmer of Pasraha village

Jaivik Kitchen Gardens aka **Organic Kitchen Gardens** is a concept of vegetable gardening. Under this pilot project, the size of the plots used for establishing OKGs ranged from 400sq mtr to 800 sq mtr. The garden is generally made near houses so that farmers can have easy access to maintain the plot and utilise the produce. The produce from these gardens is intended to be used by the practitioner's families or small group communities. The garden, therefore, provides a wide variety of seasonal vegetables to the dependents. The jaivik vegetables, as opposed to the chemically grown vegetables available in the markets, are healthier and nutrition-rich. They are also better in taste and have a longer shelf life. This not only reduces the economic burden of buying vegetables but also ensures decent prices at the local market.



The testimony of Phoolmani Devi is supported by the survey data from five villages of Jamui as collected by Jeevika, a Bihar Government agency. 100 % of the women farmers surveyed responded that Kitchen garden has ensured increased access to a variety of vegetables. They say the kitchen gardens promote dietary diversity thereby ensuring their nutritional security.

The survey clearly indicates a psychological shift among farmers who are now better understanding the drawbacks of chemical-based farming and its impact on our health:

- ▶ 100 % of the respondents said chemical-based farming is a menace and not economically viable.
- ▶ All the respondents found the gardens to be positively impactful as they provide nutritious and safe food.
- ▶ All 117 female farmers said they would expand the land size of the gardens in future.
- ▶ 100% of farmers from Titaihia, Tari Dabil and Sagdhaga said they did not spend any money buying seeds.
- ▶ Farmers from all five villages observed a significant reduction in the input costs as they stopped purchasing chemical fertilisers and pesticides. 100% of the farmers in the survey said they don't spend money buying fertiliser and pesticides from the market.
- ▶ Practitioners categorically stated that the taste of the vegetables from OKGs are significantly better than chemically grown vegetables.
- ▶ In OKGs, the average varieties of vegetables grown in the three seasons are: 21 in Rabi, 19 in Zaid and 20 in Kharif.
- ▶ Respondents stated the vegetables from the OKGs stayed fresh longer.
- ▶ During the pandemic, kitchen gardens helped OKG families and communities consume diverse, nutritious and safe food, at a time when their livelihoods were severely impacted.
- ▶ Farmers say nutritious produce from OKGs supported them in boosting immunity. That they believe might have helped them through the pandemic.

A significant change can be seen in a few villages where farmers have adopted organic farming practices for food grains in some of the relatively bigger fields. These changes are re-introducing sustainable, climate-friendly and self-reliant agricultural practices to villages.

A Brewing intersectional climate movement

The story of *Jaivik Kitchen Gardens* in Bihar is noteworthy for multiple reasons. It is not simply a transformation that took place in the realm of agriculture but the specific context of the region where this practice gained popularity demands the story be analysed from various perspectives; only then can one understand how the farmers and that too women farmers in the region are taking small, yet pertinent, steps in the fight against climate change and the widespread food and nutritional insecurity.

The Jaivik Kitchen Gardens have triggered an intersectional climate movement where multiple identities and conditions coincide, making it a success against several odds. It is a movement with intersections of gender, caste, landholding, climate and demography.

Several women farmers who have grown their Jaivik Kitchen Gardens in Jamui belong to some of the most marginalised communities in India. In all 118 women farmers were engaged by Jeevika and Greenpeace India on different aspects of organic farming. The co-learning sessions equipped them with the necessary knowledge, including skillshare on composting and seed conservation.

Majority of the women farmers belongs to different Dalit communities and a significant proportion of them are from tribal communities.

These marginal women farmers are financially deprived and are in need of the economic relief that organic farming can provide. While input costs are reduced as they do not need to purchase chemical fertilisers and pesticides from the market, the wider variety of green vegetables also ensures their nutritional security.

Moreover, Jamui is largely a rainfed district as over 66% of its cultivated area is rainfed. It receives less than 1100mm rainfall annually. It experiences scorching summers and harsh winters. Heat waves and long dry spells, as farmers tell us, have been detrimental to crops. Along with this, the region has faced multiple political and social conflicts over the years. Apart from fighting climate change and making citizens more resilient by means of nutritious food, the organic movement also has a larger spillover effect in bringing positive societal transformation in the region.

"My garden grows an average of ten varieties of vegetables in all three seasons - Rabi, Kharif and Zaid. I have observed that the usage of organic manure has enhanced the water retention capacity of the soil. Soil remains moist for a longer period of time and cultivation requires a lesser amount of water."

Sunaina Devi
From Sagdaha

"Organic manure is prepared from animal waste, leaves of plants and other bio wastes. It also helps me in using the waste in a more efficient way."

Phoolmani Devi
A marginal farmer of Pasraha village



The University of California in research titled, "Urban food gardens: the potential for climate change mitigation and adaptation" in 2014 concluded, "Food gardens have the potential for mitigating climate change by reducing the greenhouse gas emissions per unit of produce consumed and potentially reducing other sources of greenhouse gas emissions, as well as helping households and communities adapt to changing climate, economy and society." These food garden models also suggested that reductions in the greenhouse were primarily due to the replacement of chemical fertilisers and machinery, avoiding emissions from inputs of treated irrigation water, by composting household organic food and using the product as the nutrient input for the garden, among many others. The research also suggested that the governments include support for the food gardens as part of climate mitigation and adaptation strategies, and for households and communities that want to contribute to addressing climate change.

In Jamui, most of the families engaged with organic kitchen gardening belong to poor and underprivileged castes which comprise landless farmers. The poor are worst impacted by climate change, as we all know. Second, most of the seeds used in these gardens are conserved by the communities. In some villages, these seeds are native and adapt according to the soil and local climatic conditions. Third, the farming practice itself lays importance on using cattle dung and emphasizes poultry. Fourth, most of the crops grown in the gardens are vegetables, fruits and species that are rich sources of multi nutrients. Fifth, the kitchen gardens focus to make the households self-dependent, so that they grow the essentials for self-consumption. It addresses food sovereignty as well as the local economy.

-Rohin Kumar for MoJo Story in "How women from Bihar tackled COVID 19 by building food systems"



Climate Change is having a devastating effect on agriculture. The ecological imbalance resulting from it impacts agriculture to a greater extent. The loss of soil fertility is a direct consequence of chemical-based farming. Undue rainfall, frequent drought and hailstorms are occurring frequently, making agriculture vulnerable to climate change. According to the **Intergovernmental Panel for Climate Change 2022: Impacts, Adaptation and Vulnerability, the Working Group II on climate change**, in order to avert the fatal impact of climate change, there is a need to change the farming practices by making it less chemical-induced, preserving forests and changing diet. This will bring around 25% reduction in the GreenHouse Gas (GHG) emissions. The report also mentions that 22% of global greenhouse gas emissions are contributed by agriculture, forestry, and other land use. Highlighting the destructive results of chemical-based farming, the report mentions that growth in land productivity will happen at a declining rate.

¹ http://www.nicra-icar.in/nicrarevised/images/statewiseplans/Bihar/BR7_Jamui_28.12.2013.pdf



Fresh veggies from OKGs. © Shiv / Greenpeace

What more can be done

Through *Jaivik Kitchen Gardens*, there has been a noticeable increase in the number of farmers testing and shifting towards organic farming. However, there are certain challenges and concerns that if solved, can facilitate a wider acceptance of natural farming. On the basis of data and testimonials as collected by Jeevika and Greenpeace India, there happen to be three important areas of focus:

a.

VERMICOMPOST PIT: Organic farming requires bio waste which can be efficiently converted into rich manures through decomposition. These highly nutritious organic manures are used by farmers in their fields to enhance the productivity of their land. Farmers unequivocally said that the construction of vermicompost pits will be a motivating factor to practise organic farming. This will allow the farmers to have access to regular and time-bound manure, meeting the requirements of nutrition for plants.

"I have vermicompost pits. Through it, I am able to utilise the biomass residues produced in fields in making organic manure. I find it economical also because I have cattle and with no cost I am able to prepare manure for Jaivik Kitchen Gardens."

Pratima Devi
From Tari Dabil

b.

MARKET ACCESS: The farming of organic poshan garden requires hard labour, time and patience as compared to inorganic farming. Despite the quality produce, farmers are yet to get regular market access or consumer supported models where they can sell their organic produce at a reasonable price. As the local market and mandis are loaded with chemically produced vegetables, organic farmers are subject to unfair competition to sell their produce in due time before it perishes and hence, are left with no choice to sell their produce at a price at par with chemically grown vegetables.

"We have heard that farmers from Kedia and Tari Dabil are now connected to a XXX, Farmer Producer organization from Kolkata. We expect soon we too would get such market access and can earn a fair profit on the produce. It will also attract more farmers to adopt organic farming."

Gudiya Devi
From Pasraha

C.

SEED CONSERVATION: The knowledge around the conservation of seeds remains the third most important need and demand of the farmers. Though farmers have begun focusing on locally grown seeds and also conserving certain seed varieties, there are a few seeds that they still have to buy from markets. This adds to the expenses of the marginal farmers. Farmers say, while the seeds of various vegetables like Palak, Cucumber and Gourds can be conserved and used in the next season, there are certain varieties of vegetables that cannot be conserved.



Rani Devi
From Mohanpur

"Seeds of vegetables like cabbage, cauliflowers, beetroots etc cannot be conserved. For its conservation, we need proper training and knowledge. I understand conservation of seeds from organically produced vegetables is essential as it is also adapted to the local climatic conditions."

"A village-wise establishment of a seed bank can also help in collective seed conservation."

d.

IMPROVED FARM PRACTICES: In the present OKGs, crops of one season are sown after removing the previous ones and rebuilding the farms. This creates a gap of one to two months and the OKG owners have to depend on the market for vegetables during this period. Due to the existing farming practices and farm design, the objectives of OKGs are partially achieved. This necessitates the upgradation of OKG designs and farm practices. There are a number of other kitchen garden models which provide vegetables, leafy greens and other foods round the year. The permaculture-based Mandala Gardens are one specific model which is also helpful in reducing labour and water consumption and making OKGs more sustainable and cost-effective.

e.

INCORPORATING WILD AND UNCULTIVATED CROPS (INCLUDING FORGOTTEN FOODS): It is widely observed that the wild or naturally growing food plants are more resilient and can survive in adverse weather conditions too. Experts say with high confidence that these food plants are rich in nutrients and can ensure dietary balance with little effort and almost no cost. They not only add to dietary diversity but also help in enhancing the biodiversity in and around farms as they feed and provide shelter to many pest management and pollinating agents including bees, spiders and many other insects along with small birds, amphibians, reptiles and microorganisms. Adding these fabulous plants to the OKGs will be a win-win solution for farmers, soil, biodiversity and the natural environment.



Conclusions and Recommendations

The early indications of the model OKGs are positive and encouraging. As per the data collected through the survey and individual testimonials confirm that the project partner women farmers are satisfied with the pilot project and are interested in expanding the area under organic vegetable cultivation. Organic Kitchen Gardens, under the pilot project #IGrowWithNature, have been instrumental in ensuring access to diverse, nutritious food to families which were unable to access them before. This initiative has helped the implementing families to reduce the cultivation cost as well as food costs. These kitchen gardens have also helped families in earning additional incomes.

On the basis of the findings from the survey data and individual testimonies here is a set of recommendations for institutions which are assisting families to adopt OKGs:

- ▶ The success of the pilot is an incentive to scale up the OKGs with the combined effort of government agencies, civil society groups and philanthropies. The OKGs are a sustainable and low cost solution to ensure nutritional security among the most vulnerable segments of the population.
- ▶ Knowledge co-creation process on ecological farming practices should be implemented with the practising families and women farmers for at least 2 years along with required institutional support.
- ▶ Scaling up agro-biodiversity including herbs, shrubs and trees would make kitchen gardens more resilient and ensure uninterrupted food supplies round the year.
- ▶ Low cost drip irrigation systems should be provided to the families
- ▶ Village/cluster based live seed farms of native varieties should be developed
- ▶ Uncultivated/natural/wild food plants should be promoted and added to the kitchen gardens to enhance the crop and food diversity



Greenpeace is an independent campaigning organization, which uses non-violent, creative confrontation to expose global environmental problems, and to force the solutions which are essential to a green and peaceful future. Greenpeace's goal is to ensure the ability of the earth to nurture life in all its diversity. Therefore Greenpeace seeks to protect biodiversity in all its forms, prevent pollution and abuse of the earth's ocean, land, air and fresh water, end all nuclear threats and promote peace, global disarmament and non-violence. Greenpeace India exists because of activists, supporters, donors and volunteers who believe in taking collective action for the environment. Our planet needs us more than ever— individuals, communities and groups who have the power to shift the paradigm.