

Success story of an organic farmer

from Khargone District of Madhya Pradesh

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In the declaration of COP28 UAE on Sustainable Agriculture, Resilient Food Systems and Climate Action, the focus was on the conservation, protection and restoration of land and natural ecosystems. Sustainable and healthy agriculture can play a major role in solving the problem of global hunger and effective management of natural resources. In this article, the success story of an organic farmer, Mr. Rameshwar Bariya, who is from a very small village – Awalya, in Khargone district of Madhya Pradesh in Central India has been described. Farmers like Rameshwar Bariya can be the game changer to promote the adoption of sustainable farming practices. The article details the journey of the farmer from conventional to sustainable farming and his experiences of adopting different organic farming practices. The article also highlights the impact of Narmada Landscape Restoration Project, a unique project funded by United States Agency of International Development (USAID) and NTPC Ltd., and jointly implemented by Global Green Growth Institute (GGGI) and Indian Institute of Forest Management (IIFM) towards the movement for sustainable agriculture and ecosystem of the region.

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In Awalya village of Maheshwar block in Khargone district of Madhya Pradesh, there is a farmer Shri Rameshwar bariya with a heritage rooted in agriculture. Shri Bariya cultivates 1.0 acre of his farming land, harvesting a diverse array of crops such as cotton, wheat, and maize as main crops with pulse crops like red gram as secondary crop, and an assortment of vibrant floricultural crops such as marigold as border crops. Departing from conventional farming practices, Shri Bariya joined the organic movement initiated by Narmada Landscape Restoration Project and started practicing organic methods in 2022, abandoning chemical fertilizers and pesticides.

The village – Awalya is situated near the Vindhya mountains endowed with the scenic beauty of nature at its best. There are around 200 households in the village, divided into different faliyas.

Rameshwar Bariya's house and land are in the pahadi faliya of the village, geographically located at 22°19'40.78"N and 75°41'8.04"E. Sandy loam and clay loam are the major soil types found in the village. The major source of irrigation is the well and surface water drawn from streams. The water in the stream

is fed by the overflow from the 'Narmada Water Supply-line' which supplies water from the Narmada River to Indore city round the year.

He also integrated farming and animal husbandry practices, nurturing four cows, two buffaloes and four goats whose dung and urine convert into Sanjiwak, a



Rameshwar Bariya picking organic cotton from his field



Rameshwar Bariya inspecting his organic cotton field

potent organic fertilizer. Rameshwar Bariya's farm is a harmonious blend of agriculture, agro-forestry, and dairy, ensuring a sustainable interdependence among the three. The symbiosis not only enhances crop yield but also generates substantial income.

Through his continuous learning and interactions with the project team and fellow farmers, Shri Bariya constantly refines his craft. His proficiency in organic farming has gained him recognition as a progressive farmer, drawing numerous visitors including some from overseas seeking his expertise of innovative agricultural techniques. He loses no opportunity in patiently sharing his knowledge and expertise with anyone concerned with organic farming, project stakeholders and agricultural authorities, enriching the farming community with his expertise. He has set a great example of transformation from conventional to organic farming, despite not being very literate and much aware of organic farming.

The Narmada Landscape Restoration team has been instrumental in strengthening Shri Bariya's efforts by providing technical support, fostering the integration of water-saving technologies such as drip irrigation, crop diversification and introduction of improved organic crop varieties. His farm is now a learning center, attracting farmers eager to learn and adopt organic farming practices.

The Narmada Landscape Restoration Project (NLRP) is funded by United States Agency for International Development (USAID) and NTPC Ltd. and is being jointly implemented by Global Green Growth Institute (GGGI) along with Indian Institute of Forest Management (IIFM).

Technologies adopted

Shri Bariya has adopted integrated farming practices over the conventional methods. When he joined the NLRP Organic Initiative, he got the soil health analysis done for his farmland for the very first time, the cost of which was covered from the project. He adopted crop diversification, sowing of improved and organic varieties of wheat, cotton, maize and pigeon pea, integrated nutrient and pest management practices, drip irrigation technique, mulching by palash leaves and becoming the part of farmer's group such as farmer interest group (FIG) and motivated his wife to join woman's self-help group (SHG) of his village.

Improved crop varieties

All these years he has been sowing traditionally saved seeds of wheat and pigeon pea, and the yields have been average. He sowed Bansi variety of wheat and desi variety of pigeon pea. With support from the project team, he was connected with the organic cotton firm in the area and received non-GMO cotton seeds for his land. He also started crop rotations in the fields from rabi 2022.

Integrated nutrient and pest management practices

Nutrient supply is one of the costliest inputs in any cropping system. Shri Bariya received a training program on how to effectively manage soil health and nutrient management. He started practicing mulching, crop rotation and crop diversification. Shri Bariya also adopted organic practices

such as seed treatment materials like *Rhizobium* in pigeon pea and gram, and azotobacter & phosphate solubilizing bacteria (PSB) to manage the low nitrogen content of his soils in wheat and maize. To add organic carbon, he applied 15 tonnes FYM and liquid organic fertilizers prepared in his farm to his one-acre land.

Sanjiwak: Sanjiwak is a liquid manure prepared by mixing 30 liters of cow urine, 300 kg cow dung, 5 kg jaggery and 1-2 kg besan in 1000 liters of water. It was prepared in a cemented pit with financial support from NLRP. After mixing the five components, the pit was kept covered for the next 7 days with shaking of the mixture with a wooden stalk twice in a day. Sanjiwak so prepared can be used within the next 10-15 days. This liquid manure boost microbes for rapid soil organic matter decomposition, supplies nutrients and helps maintain favourable soil structures for greater soil water holding capacity.

He started sowing border and trap crops to reduce the occurrence of pests. To monitor the pest population, he installed pheromone traps in his cotton fields and also installed 20-25 yellow sticky traps. With support from his wife and other members of his family, he prepared and used different organic inputs such as Panch-Patti dawai, Char-Chatni dawai, Neem leaf extracts and fermented milk.

Panch-Patti Kadha: Panch-Patti kadha, the most effective organic pest deterrent was prepared by boiling the leaves of neem (*Azadirachta indica*), dhatura (*Datura stramonium*),

besram (*Ipomea carnea*), custard apple (*Annona squamosa*), and akanv (*Calotropis gigantea*), each half kg, with 5 liters of cow urine and 12-15 liters of water for half an hour. The mixture can be used as 500 mL per 15 liters of water to spray in crops as insect pests' repellent.



NLRP stakeholder's visit on the organic farm of Shri Bariya

Table 1. Cost - Benefit analysis for the year 2022-23

Season	Crop + Intercrop	Area (acre)	Total cost of cultivation (INR)	Gross income (Yield + Straw) (INR)	Net income (INR)	Agronomic Benefit-Cost (B:C) Ratio ¹
Kharif 2022	Cotton	1.5	65900	74800	10900	1.13
Rabi 2022-23	Wheat	1.5	33990	83250	49260	2.45
Kharif 2023	Cotton (Main) + Marigold & Pigeon pea (Border)	1.5	35800	79500	43700	2.22

¹The agronomic benefit-cost ratio is calculated with the gross benefit divided by the total cost of cultivation.

Precision farming

Shri Bariya understood the importance of irrigation and switched from traditional furrow to drip irrigation techniques and experienced great response in yield of crops. He received technical and financial support from NLRP. Using drip irrigation, he saved almost 60-80% of water and also experienced a reduction in pests and diseases in the crops resulting in better yield.

Diversified livelihood opportunities

Shri Bariya believes that his success in organic farming will lead to widespread awareness among other farmers of the area and they will also start practicing organic farming practices in their farmland. Farmers of the area were afraid that if they adopt organic farming practices, they may face reduction in the yield. Shri Bariya has enough numbers of animals in his cattle shed and he was selling surplus milk to other farmers. The NLRP team identified a scope for selling the cow urine and Shri Bariya agreed to collect and sell it to other farmers

to help them to prepare organic inputs.

Cow urine collection tank: For collection of cow urine, Shri Bariya constructed a concrete floor with drainage channels to flow to urine collection tanks in cattle sheds. He could collect 10-15 liters of cow urine daily for selling it to other farmers and generate some additional income for supporting other farmers for preparation of their organic inputs.

Bamboo plantation: Rameshwar Bariya observed that the stream flowing beside his field is eroding and removing the fertile topsoil. He decided to plant bamboo samplings alongside the stream to reduce soil erosion and generate additional income. His approach is now motivating other farmers for its adoption.

Capacity building

Rameshwar Bariya joined the NLRP initiative in July 2022 and was first involved in the Farmer Interest Groups' (FIG's) meetings in his village, where he expressed his deep

enthusiasm to learn more about sustainable agriculture practices.

Shri Bariya looked for enhanced capacity building of self and others through FIG meetings with village resource persons, NLRP team, agriculture experts, exposure visits, and training programs.

Results

Rameshwar Bariya major problem in farming was the rapidly increasing cost of cultivation. Before 2022, he was hardly getting thirty to fifty thousand rupees as annual income from his one-acre farmland and the livelihood of his family was largely dependent on tendu-patta and labour works. His earnings from other sources were spent on buying inputs for agriculture.

A major achievement was a significant reduction in the cost of cultivation through less use of costly inputs such as fertilizers and pesticides.

Shri Bariya not only reduced his cost of cultivation but also succeeded in increasing income through crop diversification and adjustments in sowing and harvesting thus reducing the risk of drought and coinciding with good market price of his produces.

By adopting advanced techniques such as drip irrigation, he could save time and water. He learnt about sustainable farming and other livelihood activities like dairy and poultry. Use of less water from the stream ensures its downside flow and increases the groundwater recharge.

Feedback from the farmer

Mr. Rameshwar Bariya proudly says that by adopting sustainable agricultural practices, he could generate more income from his farmland duly protecting the environment and ecosystem. He hope that every farmer should adopt integrated organic farming and should be enthusiastic to learn and adopt new technologies in agriculture.

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Shri Bariya participated in the organic input preparation training organized in his village