

## In Harmony with Nature

### Having shifted to organic farming, a tribal farmer from West Bengal produces meat of his farm inputs

BANKURA DISTRICT, WEST BENGAL

**F**ertilizer, feed for cattle and most of the other inputs required for agriculture come from Khepu Hembram's own farm. A tribal farmer from Bankura district of West Bengal, overcame the dilemma of shifting to chemical-based mono-crop in 2012, when he attended a training at a non-profit. Khepu chose to live in harmony with nature, by adopting organic methods of farming, and not losing out on the diverse food crops that people of his tribe enjoy.

Till 2012, for an income, Khepu depended on four cows, two bullocks, two calves, three ducks, three hens, 21 sheep. He also had about 1 acre of cropland, which was cultivated twice a year, with chemical inputs.

In 2012, he began attending sessions on organic farming conducted by Development Research Communication and Services Centre – a West Bengal based non-profit. He learnt about single-stick paddy cultivation with organic manure. Satisfied with the result, in 2013, he extended organic paddy cultivation to the entire one acre land during the monsoon season. His per acre yield rose while the seed used dropped considerably.

In the standard practice, Khepu used to get 5 quintals of paddy from 1/3<sup>rd</sup> acre with 6 kg of seed. The single stick method produced 4 quintals in same stretch of land, with only 350 grams of seeds, in the very first year. The yield increased in the consecutive years.

Khepu was keen to learn the science of mixed cropping i.e. mixing crops from different plant families which help each other in growing well. He learnt to manage it so well that in the winter of 2013, he produced 1758 kgs of 19 different types of vegetables in 1/3<sup>rd</sup> of an acre. For this, he spent Rs. 210 on seeds. Most of the inputs, including fertilizers were generated from his own farm. He spent about Rs. 6000 on labour and earned Rs. 24000 in that

season. From the crop he stored a part as seeds to exchange within the farmers' group.

Livestock is Khepu's strong point. For livestock, he does not purchase any feed from outside, it comes from straw, mustard cake, pulses, agro-waste, and left over from the farm. He collects cow urine and uses it in the field for various purposes. His cow shed has been structurally improvised to collect waste with minimal efforts, thus keeping the animals healthy. He sells milk, chicken, meat and egg regularly while sheep and cow are sold occasionally. From these, in 2013, he earned about Rs.47,500. The value of his existing livestock is around 1,66,700 INR.

Khepu also has a biogas plant, which recycles cow dung to produce slurry and fuel. But in his opinion, Vermicompost is the most economic component of his farm, which produces quality fertilizer (6 quintals every quarter). It also provides healthy feed for chicken and ducks.

According to his calculations, he has 317 numbers of internal labour days in his production system. After including this imputed cost, his net profit is 78456 INR annually.

*"I have harvested good amount of vegetables for my food and feed for my animals and birds. I also came to know about livestock care and their usefulness for improving agriculture."*

- Khepu says

*(This case study is sourced from Development Research Communication and Services Centre – a West Bengal based non-profit).*

## Soil Management Techniques help Jharkhand Farmer achieve Good Income

On his 2.5 acre of land Nandlal Singh a resident of Sonaraithadi in Jharkhand practiced chemical intensive monoculture of paddy or maize in rainy season and grew wheat and potato on separate stretches during winter season. Most of his upland remained fallow which led to frugal profits. For almost a decade, he could not even recover the input costs.

In 2011, his situation worsened. After being forced to mortgage an acre of land to marry off his daughter, Nandalal migrated to Chennai and began working in a factory to earn a living.

In 2012, during a break from work, he attended a Sustainable Integrated Farming System (SIFS) orientation in the village conducted by Pravah, a local non-profit. Soon after, Nandlal adopted the practice of integrated farming system in his farm. He was supported with trainings, logistical help in extension of his farm pond, 10 ducks, partial help for building a biogas plant, compost pit and a zero-energy cool chamber. The zero-energy cool chamber is a double walled chamber created for providing cooling effect for keeping vegetables fresh for long.

Starting 2012, Nandlal began to experiment with different combinations of crops, which included mixed cropping between pigeon pea and maize, cultivation of finger millet, cow pea and roselle. In the third year, he produced 20 quintals of paddy, 1.5 quintals of maize, 1.5 quintals of pigeon pea, 1 quintal of cow pea, 40 kgs of Roselle, 1.5 quintal of finger millet and 70 kgs of pearl millet. He really embraced the idea of diversification. The land which remained permanently fallow is now converted into cropping land, where he practices intercropping of maize, pigeon pea, roselle and finger millet in rainy season. His homestead now produces a variety of vegetables throughout the year like bottle gourd, ridge gourd, cucumber, maize, brinjal, chilli and leafy vegetables.

In the same plot he started with System of Root Intensification with wheat in 2012 and went on to produce 6.5 quintals of wheat from 0.6 acres of land, 55 kgs of chick pea and 50 kgs of mustard through intercropping in 0.2 acre of land. In the winter season, with the help of lift irrigation and farm pond (supported from SIFS), he cultivated wheat and mustard in 0.20 acres of land through mixed cropping and chickpea and oilseed in 0.15 acres of land through intercropping. In the third year, he also increased his area of cultivation of wheat to an additional 0.30 acres using System of Crop Intensification.

### Realizing the importance of livestock

Nandlal renovated his cowshed in a way that allows him to collect 4-5 liters of cow urine per day for preparing fertilizer and bio pesticide. His cows are now safe from disease, live in a cleaner environment and get regular vaccination. He even started using the droppings of his pet pigeons in his farm. He was initially supported with 10 ducks, which gave him 350 eggs in the first year, the yield increased to 550 by the third year. To supply good quality fodder, he also started growing fodder grass in 0.10 acre decimal of land and Azolla in a small patch.

Adopting these different practices has converted his pond into integrated production unit with duckery unit over the pond, fodder trees and vegetable on the bund for his own consumption. Apart from providing 1.5 Q fish in the 3<sup>rd</sup> year, the pond also provides life-saving irrigation for 6 acres of land.

*“I want to develop an agro horticultural model on about 6 acres of waste land of our village with my other colleagues of Sahyaog Kishan Club and want to do voluntary service to scale up IFS concept, by providing capacity*

*building training to other farmers in my area.”*

*- Nandalal Singh*

To be self-sufficient in fertilizer, Nandalal started with one vermicompost unit and produced 6 quintal compost in the first year. The yield increased each passing year. He also sold 20 quintals of vermicompost and 2000 earthworms for an

additional income. He added Biogas in the third year using subsidy from the government, which helped in reducing fuel cost for the entire family. His cost of production has reduced to about 27% to Rs. 14500 in the 3<sup>rd</sup> year, while cash income increased by 77% to Rs. 82725. This proves that just by adopting certain practices, the yield of soil can be increased many fold.

*(This case study is sourced from Pravah, a Jharkhand based non-profit).*