Bhoo Chetana rejuvenating land and livelihoods in Karnataka

Bhoo Chetana, meaning land rejuvenation, is reviving soils, harvests and incomes.

Background

"This initiative to revive our agriculture involves farmers, farm facilitators, extension workers, universities, research institutes and government. Karnataka has the second largest dryland area in India. Agricultural growth in our state was negative four years ago largely due to depleted soils and water deficiency. Since 61 percent of our population depend on agriculture, we needed to act fast and change things round." S.V. Ranganath, Chief Secretary of Karnataka State Government.

"We needed low cost, ecological, science-based and scalable solutions to insulate farmers from climate change and protect rural livelihoods from frequent droughts and low yields. Scientific based evidence can successfully be applied at a wider scale when researchers partner with the state ." K. Raju, Economic Advisor to Karnataka State Government.

Given ICRISAT specializes in dryland agriculture, the Institute was asked to develop a holistic programme to efficiently manage natural resources and increase food production at the same time.

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ICRISAT Science with a human face
International Crops Research Institute for the Semi-Arid Tropics

The Impact

Since Bhoo Chetana started in 2008, agricultural production has risen by almost 6 percent. In 2011, 3 million farm families experienced yield gains of 35 – 66% and, despite poor rains, the project resulted in economic growth of $130 million through increased food production.

'Through tailor made inputs and holistic farming advice, Bhoo Chetana has achieved a much needed increase in agricultural productivity and better farm management,' K.V. Sarvesh Director and Nodal Officer.

'A big change has been the supply and use of micronutrients like zinc, boron and sulphur, essential for plant growth. Subsidized and affordable micronutrients have been made available to farmers via 747 farm centres across the state and this has boosted soil fertility and harvests.' Bharatlal Meena, Principal Secretary for Agriculture.

'The holistic education programme has had a major impact. As well as using micronutrients, farmers have been diversifying into other crops and livestock which has increased their resilience to drought. They also use organic compost, agroforestry, dams, gullies and micro irrigation to conserve rainwater and prevent soil runoff.' Kaushik Mukherji, Additional Chief Secretary and Development Commissioner.

Key Drivers

Farm facilitators, (farmers who serve as community representatives), are the vital link between the farmer and the researcher. There is 1 facilitator per 500 hectares of land, recruited by the local government and trained by ICRISAT, agricultural universities and government staff on Bhoo Chetana practices. They are key in helping farmers improve farming practices.

They conduct farmer field schools with 25 farmers at a time, covering techniques such as soil testing, micronutrient application, intercropping, azolla preparations, vermicompost and seed treatments.

Agriculture officer in Hassan district encourages farm facilitator to talk about her success in training neighbouring farmers on Bhoo Chetana

The Government of Karnataka's commitment to Bhoo Chetana has been key to the programme's success. From the policy makers at state government level down to the district and village level agriculture officers, everyone believes in Bhoo Chetana and wants it to work. From wall paintings on bus stops to poster campaigns and farmer field days, they are encouraging farmers to improve their farming. They work closely with scientists and farm facilitators to interact with farmers, understand the challenges and provide tailor-made solutions to increase yields in a sustainable and ecological way.

"Hassan district had the highest agricultural production in Karnataka last year despite half the usual level of rainfall. By adding micronutrients, farmers have boosted the soil's capacity to resist drought. Water harvesting and groundwater recharging techniques have helped manage the water scarcity. We have also encouraged farmers to develop livestock and dairy which gives them an additional source of income as well as manure for improving soil water retention and fertility," K. Shivaraju, Joint Director of Agriculture, Hassan.

ICRISAT has been working closely with the government, farmers, farm facilitators, universities and the private sector to ensure that Bhoo Chetana's success is long lasting and wide-reaching.

« Our main question was why is there such a big gap between the research station and the farmer's field. We wanted to fill the yield and communication gap by studying the problem in a holistic way. We looked at the challenges on individual farms to find adapted solutions. Depleted soil nutrients was a major factor as well as the need for soil and water conservation. The government's investment and farm facilitators' engagement has been key to farmers adopting Bhoo Chetana. It is now being driven by farmers themselves. What better way is there to see change on the ground?, » Suhas Wani, Principal Scientist Watersheds, ICRISAT.

So what does Bhoo Chetana mean to farmers?

Mahadevappa and Gauravamma own 2 hectares, 4 cows and 2 sheep. They learned how to test their soil from a farm facilitator. When they got the results from their local farm centre, they followed the guidance to add missing micronutrients zinc, boron and sulphur as their depletion was impairing plant growth. They were able to buy these at subsidised rates at their government supplies office.

They diversified their crops (they claim they are now almost self-sufficient) and rotate them with leguminous high protein and nitrogen-fixing crops like pigeonea to prevent soil exhaustion. They started rearing more livestock. « We learnt that growing duckweed (azolla fern) in ponds was good for the soil as well as animal feed. We mix a handful with millet and pigeonpea. Since eating this, our cows have been producing higher fat milk. The nitrogen-fixing algae hosted in the fern makes this a good natural fertilizer as well. »

They also make vermicompost (resulting from earthworms feeding on organic matter) and use this along with manure fertilizer on their fields. They use the ridge and furrow planting system to conserve soil moisture and drip irrigate using their borewell. Despite the drought in the last two years, the farming couple boast of healthy harvests and dairy produce.

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ICRISAT is one of the 15 centres making up the global agricultural partnership, CGIAR. ICRISAT's mission is to help reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics, home to the world's poorest people.

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