

## **BHOOCHETANA**

### **Technology Adoption & Enhancement of Productivity in Dry Land Agriculture in Karnataka**

*“We need a second green revolution that is more broad-based, more inclusive and more sustainable.... this must explicitly embrace dryland farming.” - Hon. Prime Minister Manmohan Singh, 11 July 2011*

#### **Background & Objectives**

In India, 60% of total cultivated area is rain-fed, which means that crop production in these areas is dependent on rainfall, having no facility for protective or life-saving irrigation. Rain-fed areas meet 40% of India's food demands and support 60% of total livestock population; coarse cereals, rice, oilseeds, pulses and cotton are predominant crops. Agricultural productivity in rain-fed areas has remained low and unstable due to vulnerability of the area to vagaries of the weather, degraded soils and continuing poverty of farmers, who are mostly small and marginal.

Even if India were to achieve its full irrigation potential, approximately half of the cultivable area of 142 million hectares will still remain largely dependent on rainfall. It is also estimated that by 2025, of an expected population of 1.5 billion, 500 million will live in rain-fed areas. In India, therefore, ensuring sustainability of rain-fed agriculture is critical, more so in the scenario of climate change and the vulnerability of populations living in these areas. Watershed development & water management, improved farming practices and income diversification are essential to address the issues of these ecologically fragile and economically weak areas. There is an urgent need to identify the opportunities for stimulating agricultural growth and reducing poverty and environmental degradation in rain-fed areas to ensure food and livelihood security of the country in the coming decades.

Karnataka has the second largest area under rain-fed agriculture after Rajasthan in the country. Nearly 55% of total food grain production and 74% of oilseeds production come from rain-fed agriculture in Karnataka. Therefore rain-fed agriculture plays an important role in total food grain production in the state. It is evident from the higher yields observed in crop demonstrations as compared to current crop yields that rain-fed agriculture has substantial untapped potential, and crop yields can be increased in the dry land areas by adoption of various dry-land production technologies.

Government of Karnataka initiated a novel project under Rashtriya Krishi Vikas Yojana (RKVY) called '*Bhoochetana*' to improve the livelihoods of dry-land farmers in the State by increasing the agricultural productivity of rain-fed agriculture. The prime focus of *Bhoochetana* is revival of soil fertility status and the project was initiated in May 2009 covering the period up to 2013-14.

The basic purpose of the project is to increase average productivity of major rain-fed crops by 20% in all 30 districts in a phased manner over 4 years by undertaking stratified soil sampling, analysis of soil samples & preparation of GIS-based soil fertility maps in all the districts and capacity building of dry land farmers. The major crops covered are maize, groundnut, *ragi*, soyabean, red gram, black gram, green gram, bengal gram, sunflower, jowar, rain-fed paddy, cotton & *bajra*.

Implementation of the project is by a Consortium comprising of Karnataka State Department of Agriculture, Watershed Development Department, University of Agricultural Sciences, Bangalore/Dharwad /Raichur, and ICRISAT.

## **Intervention**

The primary strategy of *Bhoochetana* is soil testing based nutrient management with a major thrust on micronutrients. Inputs are made available at 50% subsidy at village/cluster village level

through timely positioning and farmers are sensitized by wide publicity through wall writings, posters, village meetings & mass media.

Strategies adopted included:

- ✓ Identification & adoption of best management practices for selected crops.
- ✓ Soil test based nutrient management with major thrust on micronutrients.
- ✓ Registration of all farmers.
- ✓ Timely positioning and distribution of inputs (seeds, seed treatment chemicals, Gypsum, micronutrients & bio-fertilizers) at subsidized rates at village/cluster village.
- ✓ Farmer facilitators and lead farmers' service for extension activities at village level.
- ✓ Active Role by District Nodal Officers.
- ✓ State, District, Taluk & Village Level Trainings.
- ✓ Wide Publicity & Awareness creation through wall writings, posters, village meetings & mass media.

Department of Agriculture is the nodal department for implementing the project. Technical support/consultancy services and training are being provided by ICRISAT, Hyderabad.

State Agricultural Universities assist in identifying suitable high-yielding cultivars of the identified crops as well as appropriate management practices including pest control measures at district levels and provide knowledge and guidance to farmers at state, district and taluka level. Watershed Department is responsible for identifying and converging various watershed development activities in the target districts. SAUs also assist ICRISAT in organising training programmes for the Farmer Facilitators. Crop cutting experiments are conducted and yields of controlled and untreated plots are recorded jointly by Department of Agriculture, ICRISAT, WDD and SAU.

Technological information access to farmers at their door steps through farmer facilitators and agricultural extension personnel coupled with availability of critical inputs at cluster villages (2-3 villages per each cluster) and method demonstrations, result demonstrations throughout villages has motivated large member of farmers to adopt appropriate dry-land production technologies.

The mission has become immensely popular as farmers have widely accepted the improved practices with successful yield results.

## **Outcome**

In the first phase, project was implemented in six districts of Kolar, Chikkaballapur, Tumkur, Chitradurga, Haveri and Dharwad in 2009-10 covering an area of 2.25 lakh hectares in four crops, viz, groundnut, *ragi*, maize & soyabean. It benefitted 2 lakh farmers from 1440 villages, who registered significant productivity increase across crops. Productivity of groundnut enhanced in the range of 32 to 41%, maize up to 44% and soybean up to 39% in different districts with improved management options including balanced nutrition compared to fields under farmers' management.

During the year 2010-11, project was implemented in 16 districts (including 6 first phase districts) of Chitradurga, Chikkaballapur, Dharwad, Haveri, Kolar, Tumkur, Bidar, Bijapur, Chamarajnar, Gadag, Gulbarga, Yadgir, Bangalore (Rural), Hassan, Davanagere and Raichur, with an area coverage of 12.00 lakh hectares. In this phase 8.70 lakh farmers from 5030 villages were brought under the *Bhoochetana* umbrella and about 23-57% increase in yields was observed in treated plots compared to non-treated plots.

During the year 2011-12, the project is being implemented in 30 districts covering an area of 31.1 lakh hectares benefiting 25.54 lakh farmers from 14,000 villages; about 23- 50% increase in yields has been recorded.

Improvement in delivery time of services and convergence of all the existing schemes has been one of the visible and positive impacts of

*Bhoochetana*. Scientific approach, technical support through effective extension and timely supply of package of inputs have enabled dry-land farmers to enhance crop productivity significantly.

Farmers have appreciated the benefits (higher yield) of balanced application of nutrients and adoption of improved cultivation practices. The farmers' acceptance was widely noticed during the second phase of project implementation. Improvement in measurable indicators has been observed in terms of increase in productivity and corresponding cost benefit ratios.

*Bhoochetana* has also underlined the importance of effectively organizing and utilizing communities for increasing productivity of dry-land agriculture.