

Inside

October 2011

- From the Field** : 3
Discussion : 4
Events : 5



ACTION

A Quarterly Newsletter of Action for Food Production (AFPRO)

ED's Note

Globally, a greater majority of population is dependent on farming sector for their livelihoods. For most of them, subsistence living is the way of life - eking their daily food requirements from nature's larder. Thus, the higher dependency of farming on natural resources emphasizes the need to manage available resources judiciously for sustainable food security and rural livelihoods.

Natural resources on earth are necessary for human survival as well as human needs, but unethical anthropogenic activities lead to degradation of these resources, resulting in losses of ecosystem services. It is also apparent that excessive exploitation of resources is disturbing the climate system at the global scale, which will further affect water resources, sea levels and biodiversity, in particular. Thus, conservation and management of natural resources must get prime importance if we wish to ensure their sustainability.

In recent years, India is facing multi-dimensional challenges to manage its abundant natural resources especially land, water and forests. Sustainability of such resources is directly linked to food security of the rural communities. Most of the agriculture in the country is predominately rain-fed, which further requires prudent use of water for agriculture that would improve cropland and grazing land, increase water storage and infiltration, reduce losses through runoff and lead to greater water availability in the soil and enhance ecosystem water balance.

AFPRO is working towards promoting food security and sustainable livelihoods among rural communities by creating sustainable models based on natural resources in full community participation. Thereby, Government and other development organizations could adopt some of the field tested experiences to augment food production in the country.

The experiences from the field point towards a need for reliable information on the resources available to communities, as well as, awareness on consequences of resource mismanagement. It is therefore important to empower the communities on improved livelihoods through natural resources management and enhance their knowledge on ethical and equitable use of resources. A shift from current resource management practices towards sustainable resource management is therefore essential for creating more bio-mass, improving agriculture production, livestock and fisheries.

Wider promotion of location-specific-low-cost technologies for better management of natural resources, such as Soil and Water Conservation measures, Integrated Farming, Diversion Based Irrigation Systems, Sustainable Agriculture, Tree-based Farming to name a few, would possibly be the best way to defeat the crisis, while providing the requisite amount of support to rural communities, in an endeavour to replenish these resources for sustainability. Also, to reach a state of sustainability many changes would be required to be made especially in terms of resource utilization, like use of substitutes, recycling, and conservation of natural resources.

D K Manavalan

Executive Director, AFPRO

Peoples' Participation in Sustainable Water Resources Management

- Courtesy: AFU-1, Ahmednagar, Maharashtra

Availability of adequate water supply for drinking, domestic use, irrigation and livestock amongst rural communities is a critical requirement in India's progress towards national prosperity. Rural communities depend mainly on ground water sources for meeting their daily water requirements. Ground water, being a finite resource, should be utilized conscientiously. Today, unethical and inequitable exploitation of ground water without appropriate recharge of aquifers has led to its large scale depletion. Being a major source of freshwater supplies, management of ground water for sustainability of water sources needs to be addressed at all levels of governance for ensuring appropriate use of water supply and its availability for future generations. Along with water availability, contamination of ground water due to un-environment friendly industrial development has been an emerging concern across the globe. Thus, management of ground water is not limited only to the quantity of water available, but also to the quality of water for safe use.

Decentralized management of water sources by water users has increasingly gained favor among civil society and policy makers in India, based on which various sectoral reform projects have been initiated. Community participation in water resources management promotes a sense of ownership among water users which increases their awareness & knowledge on water resources management, water-use efficiency and quality of water.

EED, Germany had initiated a two year programme on "Water and Democracy in South Asia". The programme was designed to facilitate capacity building, networking, lobbying, advocacy and sharing of experiences. This South Asia level programme involved partners from India, Pakistan, Bangladesh and Nepal. Various community-based organizations got ample opportunity to contribute to the programme. AFPRO with its field unit at Ahmednagar, Maharashtra played a significant role under the component of 'Participatory People's Monitoring of Water' and carried out quantitative monitoring activities.

AFPRO and three other organizations, Lok Jagruti Kendra, CROPS and Action Fraternal have taken responsibility for the participatory water monitoring component. The project objectives were three-fold: (a) to aid proper understanding

Continued on Page 2

of local water resource availability by developing a simplified water monitoring tool; (b) to capacitate communities with knowledge, data and skills related to groundwater management; and (c) to involve farmers in collection and utilization of groundwater data by demystifying hydrological science.

The primary approach adopted is Demand Side Water Management, which focuses on improving water use efficiency. This includes educating farmers about the consequential impact of lower groundwater levels and adopting changes in their cropping practices. Processes involved in this project were community mobilization and data collection, setting up of observation wells and installation of rain gauges and water level indicators. Farmers were trained on data collection by periodical monitoring of water levels as well as on water quality analysis. Water budgeting exercises were taken up to help farmers to plan for saving water, regulate and manage their own water demand as also to

improve water-use efficiency in agricultural practices.

As a part of the process, experience gained by AFPRO has been systematically documented with the aim to share the knowledge which would help to undertake water monitoring at the community level. During the process of implementation it was experienced that water monitoring technology should be simple and easy to understand so that the community members themselves can undertake water monitoring. At the same time it should be self-reliant and sustainable with minimal external support.

Water resource management is one of the most important components of sustainable development. AFPRO finds that there is a great need for capacity building of all stakeholders in sustainable water resources development and management. Institutional level capacity building and repositioning to face emerging challenges with necessary contextual changes are important aspects for addressing these issues.

Promoting Sustainable Livelihood through Agro-forestry

Courtesy : AFU-VI, Hyderabad, Andhra Pradesh

With 33 communities officially designated as scheduled tribes (STs), Andhra Pradesh accounts for the largest tribal concentration in southern India. Accelerated economic growth and infrastructure development in the urban and peri-urban areas has not trickled down to rural areas where a large percentage of the population resides below the poverty line. Tribal communities residing in the rural areas are more vulnerable due to their isolation, lack of awareness about new developments and traditional barriers. The areas dominated by tribal population are often characterized by declining agricultural productivity, lack of soil and moisture conservation, poor health status, low literacy levels and high migration.

Located at 15°55'N latitude and 77°15'E longitude, Achampet mandal in Mahabubnagar District of Andhra Pradesh is characterized by a large tribal population. A thick forest cover and a large tribal population have resulted in large scale deforestation for cultivation, indiscriminate use of natural resources, depletion of groundwater, poverty and socio-economic imbalance. Such practices question the sustainability of livelihoods of these communities who depend on forests.

Referring to a 'small orchard', "Wadi" is a holistic approach to the management of natural resources. With its core in tree based farming, special emphasis is also laid on suitable soil conservation, water resource development measures and other measures for improving the quality of tribal life such as community health & sanitation, development of women and institutional development.

In Inole Gram Panchayat, 1000 acres of land belonging to poor tribal families have been brought under tree based farming systems. Promoting sustainable livelihoods among the tribal families comprises of a three fold approach - Building capacities of tribal communities on tree based farming, encouraging families to adopt and implement environment friendly approaches and development of linkages with the market for sale of produce. Capacities of tribal communities

were built through trainings on agro-forestry, soil and water conservation, improved agricultural practices, SHG, health, and improved quality of life. Environment friendly approaches comprising of integrated farming with mixed cropping, tree based farming and livestock management were also introduced. The lack of soil and water conservation measures was tackled through the introduction of vegetative bunds, trenches and gully plugs. Water conservation has been promoted through the creation of farm ponds, check dams and water absorption trenches. An improved quality of life was targeted through the creation of kitchen gardens, and organization of health camps among the community.



A farmer planting trees around his agricultural land

Integrated Farming System (IFS) – An Approach to Sustainable Management of Resources

- Chandan Kalita, Consultant, AFPRO Task Force, Guwahati

In the present situation, conventional farms have been requiring more and more external inputs like water, energy and agro-chemicals to produce the quantities of food, fodder and fiber. This mode of farming causes serious environmental degradation. The small and marginal farmers (who have 1 acre or less of land inclusive of paddy fields, ponds, and homesteads) have been the worst affected in this process. That is why many farmers have given up farming and migrated in search of other odd jobs. So, it is very important to evolve a more sustainable farming system known as **Integrated Farming System** which is a sustainable resource management strategy to achieve economic development and sustained production to meet the diverse requirements of a farm household while preserving the resource base and being able to feed our growing population in the future without deteriorating our environment.

Integrated Farming System is the integration or combination of different enterprises such as Agro-Forestry, Horticulture, Livestock (Dairy, Goatery, Piggery, Poultry, and Duckery etc.), Bee Keeping, Mushroom cultivation, Aquaculture, Biogas, Biodigester (Compost), Sericulture and bi-product utilization, with crops aimed at increasing the income and standard of living of small and marginal farmers. IFS can be practiced as micro businesses by farm youth for earning a regular income. By promoting different enterprises IFS



Farmer demonstrating a recently grown Topioca Plant in Jatiachapori Village of Dhemaji District, Assam

reduces the risk of failure, as often one component or one crop based business leads to market instability. The other advantages of IFS include effective recycling of residues within the farm thereby reducing the cost of production per unit area.

AFPRO is promoting IFS under component 3 of the ICAR's World Bank supported “National Agricultural Innovation Project (NAIP)” in 38 villages of Dhemaji District of Assam. Dhemaji lies near the confluence of three big rivers Dihing, Dibang and Lohit, and the eastern-most corner of the district faces annual flooding due to the huge force generated in the confluence at peak run-off. Water accumulates at depths of 1 to 5 meters and recedes only after a period of 4-5 months, thus having a severe impact on the lives of the inhabitants. For the rest of the year, a big challenge faced by them is the large sand and silt deposit left behind by the flood, which leaves the land unsuitable for cultivation.

Through proper seasonal planning of IFS and appropriate choice of IFS combinations, communities are strengthened with greater food security and livelihood sustainability. The IFS modules promoted by AFPRO during the project in the district are:

- Rice-Fish-Horticulture (RFH)
- Livestock-Fish-Vegetables (LFV)
- Dairy-Fish-Horticulture (DFH)
- Sericulture-Pig-Horticulture (SPH)

Situations such as these are very difficult to influence through mitigation-centred approaches, and would require a broad-based long term plan with intense coordination between government departments, civil society and technical institutions. As a more immediate intervention to support affected inhabitants of the flood prone district, there is need to address the actual strategy adopted by the community to adapt to floods for survival. Communities have to be capacitated so as to prepare them to accept floods and shift focus to optimal livelihood options, promoting the concept of living better in consonance with their flood-prone reality. Innovative agricultural and allied land-based livelihoods provide scope for identifying alternative approaches.



An Integrated Farming System (Pig-Fish-Horticulture) developed by the community in one of the project villages of Dhemaji District, Assam

Impacts of Climate Change on Natural Resources in India

- Dr. Anish Chatterjee, Principal Research Coordinator - Climate Change & Livelihoods, AFPRO, New Delhi

The Inter-Governmental Panel on Climate Change (IPCC) has stated "Global warming and climate change is unequivocal" and the debate today is on the magnitude of climate change. Changes in rainfall pattern, shift in setting in / withdrawal of summers - winters and temperature shifts in the agro-eco systems will affect cropping patterns. The IPCC indicated that an overall increase of 2° C in temperature and 7% increase in rainfall would lead to an almost 8% loss in farm level net revenue. As climatic patterns change, so also do the spatial distribution of agroecological zones, habitats, distribution patterns of plant diseases and pests, and ocean circulation patterns with significant impact on agriculture and food production and hence Food Security. Abnormal changes in the climate and resulting increase in frequency and intensity of drought and flood events have long-term implications for the viability of these ecosystems. The IPCC estimated that GDP in the developing countries would decline by 1.4% to 3.0% due to climatic change. The effects of global warming are likely to be more severe in India. For every 2 ° C rise in temperature, the reduction in GDP, in India, is expected to be about 5% .

Climate Change Impact and India

Changes in climate will affect India's entire environment, especially the nation's water resources, sea levels and biodiversity, impacting a wide range of sectors, particularly natural resources. The Nation's economy is closely tied with natural resources with over 65% of workers engaged in agriculture and allied sectors, and many others earning their living in coastal areas through tourism or fishing. There are many climate related problems that people in India are already facing, such as diminishing water resources and frequent natural disasters, which are likely to be further aggravated by the impending changes in the climate. The poorest in the country, most of who live in rural areas, are almost totally reliant on natural resources for their food, shelter and livelihoods, increasing their vulnerability to the impact of climate change.

A recent report prepared by the **Indian Network for Climate Change Assessment (INCCA)**, a network-based programme that brings together over 120 institutions and over 220 scientists from across the country to undertake scientific assessments of different aspects of climate change, provides an assessment of impact of climate change in 2030s (it is for the first time that an assessment has been made for the 2030s, all previous assessments were for the 2070s and beyond), on 4 (four) key sectors of the Indian economy, namely 1) Agriculture, 2) Water, 3) Natural Ecosystems & Biodiversity and 4) Health in 4 (four) climate sensitive regions of India, namely 1) the Himalayan region, 2) the Western Ghats, 3) the Coastal Area and 4) the North-East Region. **The Salient Findings of the 4X4 Assessment:**

1. Climate Change Projections:

- Climate change scenarios for 2030s indicate an overall warming for all the regions in focus. The net increase in annual

temperatures in 2030s with respect to 1970s ranges between 1.7°C – 2.2°C, with extreme temperatures increasing by 1-4°C, with maximum increase in coastal regions. The extreme maximum and minimum temperatures are also projected to increase in 2030s with respect to 1970s.

- All the regions are projected to experience an increase in precipitation in 2030s with respect to 1970s and the increase is maximum in the Himalayan region and minimum increase in the North Eastern region. The extreme precipitation events are likely to increase by 5-10 days in all the regions.

2. Sea Level Rise and Extreme Events:

- Sea level along the Indian coast has been rising at the rate of 1.3mm/year and is likely to rise in consonance with the global sea level rise in the future.
- Further projections indicate that the frequency of cyclones is likely to decrease in 2030s, with increase in cyclonic intensity.

3. Agriculture

- Irrigated rice in all the regions are likely to gain in yields marginally due to warming as compared to the rain-fed crop as the irrigated rice tends to benefit from CO₂ fertilization effect. Maize and sorghum are projected to have reduced yields in all the regions. The Coconut productivity is projected to rise in the western coast and reduce in the eastern coast. Observations indicate a reduction in apple production in the Himalayan region, which is likely to continue in the future.
- In the case of marine fisheries some species will gain in yields, as the warming favours their productivity such as Sardines. Some species like Indian Mackerel are likely to move upwards to the northern latitudes thus maintaining their yields. Species like Threadfin-breams, may shift their spawning seasons adjusting to the season which optimally favours spawning temperatures.
- With overall warming, the thermal humidity index (THI), is projected to increase in all the regions, especially in the months of May and June, leading to stress among livestock and hence reduction in its milk productivity.

4. Water

- Water yield (which is a function of precipitation, total surface run off, evapo-transpiration and soil properties) is projected to increase in the Himalayan region in 2030s by 5-20%, however, water yields are likely to be variable across the North Eastern region, Western Ghats, and Coastal region. In some places in these regions, it is projected to increase and in some places it is projected to decrease.
- Moderate to extreme drought severity is projected in 2030s for the Himalayan region, as compared to the other regions. All the regions are likely to experience flooding which are exceeding existing magnitudes by 10% to 30%.

5. Forests

- Change is projected for 8%, 18%, 56%, and 30% of the vegetation grids and increase in Net Primary Productivity by 23%, 20%, 57%, and 31% is projected in Western Ghats, North Eastern region, Himalayan region, and the Coastal region, respectively.

Training on Climate Risk Screening organised by AFPRO

Climate Change is one of the key current concerns, which might jeopardise decades of developmental achievements in India. The occurrence of extreme weather patterns such as droughts, floods, extreme hot summers and cold winters, all within the boundaries of a single climatic region are nothing other than a terrible warning of global warming and climate change that are projected to have severe negative impacts on food production, food security and natural resources. India, whose economy is rooted in climatic sensitive sectors like agriculture, fisheries and forestry, is threatened by severe constraints to its economic development because of climate change, thus jeopardizing the livelihoods of millions.



Participants and Resource Persons at the AFPRO Head Office

While a lot of effort is being made world over to build a strategic knowledge base on climate change, the desired success will only be achieved with the adoption of suitable and diverse coping mechanisms related to water management and farming practices at the local level. AFPRO, with its 44 years of experience in rural India, is focused on contributing to enhancing the adaptive capacity of rural communities to climate change. In light of this, AFPRO has extended its mandate to engage government and development professionals on adaptive planning to reduce climatic risks and enhance the livelihood capacities of rural India. As a first of such initiatives AFPRO conducted a **"Short Course on Climate Risk Screening"** that was held on **September 20th – 21st, 2011** at the **AFPRO Head Office, in New Delhi**.

A total of 21 government and development professionals, directly engaged in the field of food security, food production, agriculture, natural resources management and livelihoods, participated in the two day course. Eminent dignitaries from Swiss Agency for Development and Cooperation (SDC), United Nations Development Programme (UNDP), India Agricultural Research Institute (IARI) and Department of International Development (DFID) graced different sessions, sharing their experience with regards to climate risk screening and climate change adaptation. The coursework included comprehensive and rigorous group exercises that have equipped the participants with the required knowledge and skills to undertake climate risk screening for their respective projects and programmes.

Another "Short Course on Climate Risk Screening" is being planned for in the near future. Similar initiatives are being undertaken by AFPRO at various state government levels, as well.

Training on Women Empowerment attended by AFPRO

A training programme on "Women's Empowerment" was organized by National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi between 8th and 12th August, 2011. The aim of the five-day training was to sensitize Voluntary Organisations and Government Officials on issue related to women empowerment. 35 participants, working at senior and middle level in voluntary organizations and Govt. Departments, attended the programme across the country. Ms. Archana Pandey from AFPRO also attended the training course.

The main objectives of the training programme were to inform the participants regarding the policies and programmes of women empowerment, imparting project formulation skills, incorporating gender issues and share the experiences of voluntary organizations and Government departments on women empowerment. The participants got acquainted with Policies for Women's Empowerment; Basic Concepts on Gender; Economic, Political and Social Empowerment of Women; Government Schemes & Programmes for Empowerment of Women; and Project formulation and management of project, support services, developing leadership, assertive & communication skills and income generating proposals for economically poor women.

We invite your comments and suggestion.

Please write to: The Executive Director, AFPRO

25-1/A, Institutional Area, D-Block, Pankha Road, Janakpuri, New Delhi - 110058

Email: ed@afpro.org/pd@afpro.org

Action For Food production (AFPRO) is a non-governmental, socio-technical development organization that has been working to reduce rural poverty in India since 1966. We provide technical guidance and back-up support to grass-root level NGOs in implementing environmentally sound food production, livelihood generation and related projects. Our core competencies are in land and water management, agriculture, livestock and fisheries, renewable energy and forestry. AFPRO reaches out to poor communities through 6 field units and 3 task forces, strategically located in 9 different states in India.