Volume 2, Issue 1: Farming Practices in Different Water Regimes

April 2011

Inside

ACTION

A Quarterly Newsletter of Action for Food Production (AFPRO)

ED's Note

Enhancing food security and conserving natural resources, the most important of which is water, are major challenges that the whole world will need to address this century. At the core of these challenges is food security and livelihoods of poor and marginalized rural communities, who will be most affected by the impact of climate change and environmental degradation.

A very important solution lies in the promotion of appropriate region-specific farm based livelihood practices and irrigation options based on sustainable natural resources management. These options or models should be promoted based on vulnerability analysis of such groups to identify coping mechanisms, adaptive practices and technological options. Small and marginal landholders should be provided suitable and diverse options in farm-based practices that they can adopt under various water regimes to enable them to have different livelihood sources to depend on.

Existing farming practices of smallholder farmers are driven by the market as well as practices adopted by large landholder farmers. Therefore they also tend to adopt high input farming practices that more often than not lead them into debt traps, especially in case of failure of the crops. As a mitigation approach, the farming practices adopted by smallholder farmers for growing market-oriented crops need to be carefully assessed for improvement through promotion of systematic approaches in agricultural operations and sustainable use of available resources. Such approaches would focus on discouraging general application of high cost inputs that result in damage of the natural resource base.

Banking and credit systems should be supportive of marginal smallholders to provide them timely and low interest credit for farming activities. However, there is need for a risk management template that banks can use as supportive framework to plan extension of credit. Assured productivity returns with proper management of risk parameters will provide necessary ground for financial institutions and bank to give credit to smallholders. Responsibility for taking appropriate action to reduce risks falls upon Central and State Governments, along with CSOs. This approach should be integrated with ongoing government schemes such as MGNREGA.

Special emphasis can be paid to smallholder youth who need to be assured that farm-based livelihoods are a viable option for employment. They can be organized into Youth Cooperatives and provided capacity building, technological support and credit for adopting appropriate livelihoods.

DK Manavalan
Executive Director, AFPRO

Improved Farm Resource Management for Enhanced Livelihoods in Rainfed Areas

- S.G.Salunke, Unit Manager, AFPRO, Ahmednagar

Rainfed agriculture plays a significant role in meeting India's food. Various sources reveal that more than 60% of the net cultivated area in India is rainfed. Further, it contributes more than 40% of the food basket, supporting broadly 40% of our country's population, and 60% of its livestock.

Among those who depend on rainfed agriculture, a big proportion is smallholders, which in turn comprises of a large number of marginal households and landless agricultural labour. This section is severely affected in terms of agricultural productivity on account of failure of the monsoons, lack of water resources management, poor soil health, and unplanned farming patterns. AFPRO provides socio-technical support for enhancing food security amongst this group of smallholders and marginal farmers.

The main strategy used by AFPRO is promotion of integrated management of natural resources for improving farm productivity and sustainable resource use. It brings together skills from core technical disciplines that address the various dimensions of livelihoods in the primary sector – water resources management, sustainable agricultural practices, rearing of livestock and fisheries, and forestry. Growth of rural livelihoods is facilitated by regionally appropriate location-specific measures for integrated development and management of all available natural resource sub-sectors in villages. Through improvement in management of water resources and promotion of appropriate agricultural options, marginal smallholders are able to increase their crop productivity, adopt multiple crops, bring more land under cultivation and cultivate their land in both cropping seasons.

On the other hand, apart from this broad strategy, AFPRO also promotes improved agricultural techniques such as Integrated Farming Systems (IFS) that provide ingenious options for marginal communities to make optimal use of their natural resource base by adopting diverse yet integrated livelihood practices on the same parcel of land. AFPRO is presently implementing a project on the concept of integrated farming systems (IFS) in the flood prone Dhemaji District of Assam. Here the strategy has been to multiply the basket of livelihoods options exercised by villagers in the intervening period between floods by promotion of IFS. Farmers who are participating in the project activities have had good success in their ventures. (An article on this project is presented on page 3.)

IFS approaches include the adoption of a combination of agricultural and allied activities on a given unit of land to increase

Continued on Page 2

productivity and profitability, enabling optimum use of the natural resource base and its overall improvement through environmentally friendly approaches. Such an approach would be based on socio-cultural contexts of the area and include raising of crops, forest and fruit trees, livestock such as piggery and poultry, fisheries, sericulture, mushroom, in appropriate location-specific combinations. IFS results in enhanced input use-efficiency leading to decrease in costs of cultivation and making optimum use of the resource base in the farming unit. Bye-products/wastes of one component of the system are used for the benefit of another component. In-situ recycling of organic residues including farm wastes generated at the farm leads to reduced dependency on chemicals. Finally, there is increased water use-efficiency and productivity, and upgradation of soil health and bio-diversity.

Both these approaches look at farming as more than a crop planning exercise integrating all possible resources and their effective utilization. They vary in terms of the area addressed. The integrated natural resources development approach addresses resources at the village or village cluster level, creating scope for sustainable farm-based livelihoods through water resources planning, crop planning, livestock development, fisheries, etc. On the other hand IFS looks at the farm itself as an integrated self-supporting unit, which in case of marginal smallholders is whatever parcel of land they can cultivate.

In terms of the integration being targeted, IFS attempts a high level of organic integration within the farming unit as mentioned above. However, in the integrated natural resource development approach, a broad integration is attempted for overall development of all sub-sectors. In this case, even though organic integration is the ideal wherever feasible, the decision regarding what levels to attain is left to the initiative of participant communities.

AFPRO also has many experiences that fall midway these two approaches. These are innovative projects developed in order to address identified thematic or issue-based requirements of marginal communities or smallholders.

One of these is the project "Ensuring Food Security Through Homestead Cultivation" supported by United Way, Mumbai, which is under implementation in 38 tribal habitations of Maregoan and Zari Zamani block of district Yavatmal. The project is being implemented together with local NGO partners Gramin Samasya Mukti Trust and Dilasa respectively in the two blocks respectively. The project emphasis was on improving nutritional status and livelihoods at the household level by promoting homestead gardens to be managed by womenfolk. (A brief case study is presented on page 7.) Techniques of integrated vegetable crop planning and management, soil & water conservation, and water use-efficiency have been promoted amongst households under different socio-economic categories. As a result of sales obtained from surplus produce in homesteads, there is a significant impact on the cropping pattern in the area which was earlier predominated by cash-crops only.

Kitchen garden raised by household in Project Village of Yavatmal districts

Another example is AFPRO's projects on diversion based irrigation systems. A major project is being implemented in hilly terrain in five states of eastern and north-eastern India. (More details can be found in the Discussion section on page 5). In order to appreciate the impact of such activites let us take a look at a project implemented in villages Dhangarwadi and Mahadapur, Maharastra during the year 2006-2007. AFPRO provided technical guidance for diversion based irrigation in the two villages while local NGO partner Dilasa implemented the activities. The technology focuses on use of surface water flowing through streams by construction of an embankment along with diversion channels so that, the water can be diverted to barren and rainfed lands in the neighbourhood. In Dhangarwadi where no irrigation facility was available, today, a total 206 acres of land belonging to 70 farmers have been brought under irrigation with the help of this technology. Due to improved water availability, villagers were able to diversify into 'tur', the popular local pulse crop, as well as wheat, onions, bajra and black gram. This resulted in a great drop in the rate of migration in the village.

In an ongoing project in Maharashtra, AFPRO Field Unit I, Ahmednagar is participating in a project titled "Convergence of Agricultural Interventions in Maharashtra" (CAIM) as a 'Resource NGO' facilitating implementation. CAIM is a major initiative of the State Government for promoting integrated farming approaches amongst small and marginal farmers in rainfed areas of Vidarbha region. It is financially supported by the International Fund for Agriculture Development (IFAD) and the Tata Trusts. CAIM covers six distressed districts in Vidarbha, and will address 1200 villages with a population of 1.4 million farmers. The main components of CAIM are (a) in-situ soil & water conservation, (b) sustainable agricultural development, (c) pro-poor market linkages targeted in response to market signals and private sector preference by promoting small & medium agro based enterprises and (d) livestock development.

Farming Options for Living With the Floods

- Dhrubajit Sarma, Unit Manager, AFPRO Task Force, Guwahati

AFPRO is implementing a project titled "Live Better with the Floods" under the National Agriculture Innovation Project (NAIP) in flood-affected areas of District Dhemaji, Assam.

Dhemaji is among the most flood affected districts of Assam. During times of flood the district remains cut off from the rest of the country both by rail and road. At this point of time the district faces shortage of food items and other essential commodities in a severe manner. Kharif crop, the main crop for the rural households, is usually affected by floods which directly affects their income and food security.

Perceiving that the critical issue for smallholder farmers in Dhemaji was dealing with impact of the floods on their farming practices and livelihoods, AFPRO promoted the idea of "living with the floods" as a coping mechanism. Therefore, the overall goal is to enhance the capacity of farming communities to understand the natural cycle of floods, and promote Integrated Farming Systems (IFS) as a livelihoods practice to adopt a combination of farm-based options for diversifying and expanding their livelihood basket.

Analysis of the flooding season together with the community has helped in generating awareness regarding phases of the flood. These phases are categorized as "Pre Flood Situation", "Disaster Preparedness" and "Post-Flood Operations". The Sustainable Livelihoods Approach Framework has been used to identify anticipatory measures required for coping with the problems of production in flood prone areas and options for improving the livelihood base.

As an alternative model, the concept of Integrated Farming Systems (IFS) has been introduced among farming communities addressed under the project. As compared to existing monoculture approaches that look at farming from the view of a seasonal crop alone, IFS is a farm-based sustainable livelihood system that integrates crop production with rearing of livestock and practice of fisheries in appropriate combinations.

IFS as promoted by AFPRO, is aimed at helping poor farmers with small and marginal landholdings to generate increased livelihoods by optimal use of natural resources available to them. Based on participatory approaches, knowledge of the agro-climatic conditions, traditional practices and socio-cultural acceptability, four different models of IFS have been recommended viz. Rice-fish-vegetable, Livestock-fish-vegetable, Dairy-VermiCompost-Fish-Vegetable and Sericulture-Livestock-Horticulture have been adopted after participatory planning at the community level.

IFS is in fact an innovation of existing farming practices for developing traditional approaches with additional household skill sets and suitable technology for improved and sustainable utilization of available natural resources. In IFS, no natural waste goes unutilized, the byproduct of one system becoming the input for other.

By adopting IFS, these smallholder farmers will be able to diversify farm production, fully utilize their natural resources, use organic manure from farm wastes for improving produce, leading to eventual increase of income.

Further, a cropping calendar has been adopted that enables farming communities to organize their livelihood practices in relation with the flood season. Capacity of these households has been developed to deal better with floods by finding adaptive ways and strategies for diversifying farm activities towards maintaining and enhancing their livelihood base.

Rejuvenating Livelihoods through IFS

Golok Mandal, 25 years, of village Dharmapur, Sisibor Gaon Block, Assam was unable to cultivate his 4 *bighas* of land due to heavy deposition of sand after the floods of 2007 that devastated Dhemaji. Since 2009, he has started practicing Integrated Farming System with the support he received from "Live Better with the Floods" Project.

He adopted the Livestock-Fish-Horticulture model with support from the project. He dug a pond for rearing fish and constructed a poultry shed for rearing the croiler breed of hens. As part of the IFS concept, the shed was constructed on the pond at one side, so that poultry droppings would fall directly in the water and serve as feed for the fish. Finally, the bank of the pond has been utilized by him for vegetable cultivation.

A model of Integrated Livestock-Fish-Horticulture farming

In 2010 he was able to sell his croiler hens for Rs. 5,000/-. From this amount, he started a broiler farm and already sold 450 kgs of broiler in 3 batches. His net profit from this unit is Rs. 10,500/-and now he is thinking for expansion of the broiler farm. Rejuvenated by his success, he cultivated 2 bighas of land with paddy in both the summer and winter seasons, harvesting about 24 quintals. He has also formed a farmers' group consisting of 5 members and cultivated vegetables and *rabi* crop in 5 bighas of fallow land. In February 2011, he earned around Rs. 7,000/- from sale of fish, and Rs. 8,000/- from sale of vegetables.

As a result, he is now earning about Rs. 30,000 from his farming activities. This shows the impact that IFS can have even in a small portion land and provide a source of additional income and impetus to small and marginal farmers.

System of Rice Intensification (SRI): More rice in less water

- M. S. Tiwari, Sr. Civil Engineer, AFRPO Task Force, Raipur

AFPRO is promoting System of Rice Intensification (SRI) among marginal smallholders in Jharkhand, Orissa, Chhattisgarh and North-Eastern states in the country through capacity building interventions and field demonstrations. More than 1000 farmers have been trained on SRI in a project implemented by AFPRO Task Force Raipur (ATF) and LWR in 7 villages in Chhattisgarh. In another project with World Vision India, ATF Raipur has provided handholding support followed by training to 100 farmers in Durg district. Many such farmers have adopted SRI and the impact has been very good with increased yields. It has been observed from their experience that SRI has potential to increase yield, save water and improve soil health.

SRI is a proven method of rice intensification for enhanced yield with reduced water requirement. It aims to tap the full growth potential of the rice plant, minimize the application of water and maximize the yield.

SRI enables farmers to reduce the required total depth of flooded water from almost 100-120 cm (in the regular approach) to only 40-50 cm total depth. At the same time, although using the same amount of resources, it results in a yield improvement to the tune of nearly 1.5 to 3 times the original yield. In the traditional model of paddy cultivation, one kilogram of rice needs around 200 liters of water. Overall, paddy cultivation uses up almost 50% of the total water consumed for irrigation.

The technique involves -

(i) early transplantation of seedlings for exploiting the full growth potential of rice plant

(ii) transplantation in singles (rather than in groups as in the traditional or modern approaches)

(iii) wider spacing,

(iv) careful management of weed growth,

(v) application of minimum water during the vegetative growth period and

(vi) use of organic manure.

COMPARISON BETWEEN SRI AND CONVENTIONAL METHOD OF RICE CULTIVATION

Input	SRI method	Conventional
Seed Rate (kg/ha)	8-9	35-40
No. of days during seeding	Only 7-12 Days during Seedling	23 – 28 days during seeding
Area for seedling	10-15 M^2	25-30 M^2
Water requirement	less Water (Sufficiency)	Water flooded (All season)
Planting	Seed bed (more Effective)	3-5 planting in one hole
Use of chemical fertilizer	No Chemical Fertilizer.	Use Chemical
Yield (ton/ha)	9-12	Only 5-6

From AFPRO's experiences, farmers from project villages have experienced an increase in yield of 1.5 to 2 times by adopting SRI as compared to the traditional methods of paddy cultivation. Even with low input costs, the yield has increased up by nearly 50%. SRI advantages as compared to the conventional methods of rice cultivation are felt in terms of lesser seeds, lesser cost (in terms of fertilizers and pesticides), lesser labour, on the one side, and greater harvest and enhanced income. The results are attracting other farmers to take up this new farming technique which is being advertised amongst the community with the caption - 'more yield with less water'.

While option to use the hitherto unexploited ground water resources of Eastern India to enhance India's agricultural productivity is being explored, proven techniques like SRI may in fact provide a more environment friendly and yet yield enhancing solution. However, environmental impact assessment at regional scale is required to assess the sustainability of the SRI

After 10 days of transplant

After 35 days of transplant

Farmer of village Gunderdehi, Durg practcing SRI and getting more rice in less water

Impending Water Shortage and Irrigation Options in Hilly Terrains

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

Water is the most critical component of life support systems. The world is facing an impending water shortage that will complicate national and global efforts to alleviate and prevent food shortages. For India, a largely monsoon dependent agrarian economy, water is of prime importance. It is estimated that by 2020, food grains requirement in India, will be almost 30-50% more than the demand during 2000 (INCCA Report 2, 2010). Studies on impacts on climate change (Gosain *et al.*, 2004, Gosain *et al.*, 2006) on water availability in India, indicate that the quantity of surface runoff would vary (mostly reduce) across river basins and sub-basins by 2050s. It has also been projected by the IPCC and several other studies that there is a probability of 10-40% loss in crop production, in India, by 2080-2100 due to climate change. Indian agriculture and hence national food security is therefore endangered.

AFPRO's Interventions:

Participatory rural investigations have suggested, that availability of water for agriculture in hilly terrains, is restricted due to unavailability of water in farmers' plots, primarily due to the terrain of the areas. AFPRO has been working on a low cost irrigation systems in hilly areas of Chhattisgarh, Maharashtra, Jharkhand, Orissa and Assam. In particular, AFPRO's experiences **under the project Diversion Based Irrigation Systems (DBIS)**, supported by Sir Dorabji Tata Trust (SDTT), have reinforced this learning. Here, water from streams/nullahs is diverted to nearby agricultural fields to assist, in meeting the water demands for agriculture, which is known as diversion based irrigation system. The flow of small streams/nullahs in hilly areas, is checked with cement plugs and the stored water is diverted to the fields with surface contour canals or by laying subsurface pipelines. The system does not require any electricity or diesel to run pumps for lifting/transporting the water. The hilly terrain allows the water to flow under gravitational force to the nearby villages. Thus this system provides the resource of water (which has every possibility of becoming more scarce due to climate change) for agriculture (also threatened by climate change) and in an eco-friendly manner.

Impact of Diversion Based Irrigation System:

Economic: The water in the agricultural fields has brought around wide smiles all around among the villagers. The major impact is that the villagers are now able to cultivate in both the seasons as against just one season earlier. Moreover the assured irrigation during both the cropping seasons has addressed the issue of climatic variability (timeliness, distribution and reliability of monsoon rainfall). The people could go in for timely sowing whereas people in the neighbouring villages have to still depend on sufficient monsoon rainfall, before they plough their fields and begin sowing. This has more than doubled the area under cultivation in these villages and hence production, which has made them self reliant, economically. Nandu Mahato, from Kowad of Jharkhand, was able to purchase one acre of land for agriculture due to enhanced returns. Chandrasingh Terang, of Uzandonka village, Karbi Anglong district of Assam, could provide his relative in need, with a substantial loan.

DBIS set-up at village Umrnong in Meghalaya

Social: One of the greatest social benefits of providing adequate water for agricultural activities is that, it has completely stopped **distress migration** from the villages. The gravity irrigation system has brought back the migrants to their villages. They are happy returning to their traditional livelihood of agriculture and have stopped migration for the last 5 years. The women could now utilize their saved energy (from non travelling for collection of water) in other productive activities. Children are being sent to schools, instead of forcing them for earning.

Environmental: The village Khondra, in Masturi block of Chattisgarh, is an "Organic" certified village, by Uttaranchal State Organic Certification Agency, vide certification decision No. CD/08/10/54, Dated 04/10/2008. Besides, assuring water for crops, the system also contributes to mitigating climate change. The water is brought to the farmers' fields through water channels (surface or subsurface). The flow of water into the channels is driven by the gravitational force, as a result, this system does not utilise any pumps (diesel or electric) for lifting water and hence does not contribute to carbon emissions.

Conclusion

The diversion based irrigation system is a very **low cost** technology, **easily adaptable** by the small and marginal farmers. It has provided **substantial returns** to the farmers, by **assuring irrigation water throughout the year**, enabling them to cultivate in both the seasons. It has stopped **distress migration** from the villages and also contributed to **children education**. It has **ensured women welfare** by bringing water at their doorsteps. Above all, this low cost irrigation system, shows the direction to a **low-carbon development trajectory** by contributing to both adaptation and mitigation of climate change.

Permaculture: An Introduction

- *S.Kashyap, Agriculture Specialist, AFPRO, New Delhi*

Majority of the world's food needs are currently being met by the industrialized conventional agriculture. The high use of petroleum-based energy, synthetic fertilizers and synthetic pesticides for food production in the conventional practices are leading to ecological degradation and adverse affect are being observed in soil, water, air, biodiversity, and human health. To address the issues associated with conventional agriculture, an Australlian ecologist 'Bill Mollison' conceived a technology termed as 'Permaculture' or 'Permanent Agriculture' as a solution for maintaining agriculture productive ecosystem.

Concept of Permaculture

Permaculture is a process of designing ecological human habitats and food production systems. It is a land use and community building movement which strives for the harmonious integration of human dwellings, microclimate, annual and perennial plants, animals, soils and water into stable, productive communities. In such system, 'wastes' become resources, productivity and yields increase, and environments are restored.

Permaculture principles can be applied to any environment, at any scale from dense urban settlements to individual homes, from farms to entire regions. The major component of Permaculture entails farming systems and techniques commonly associated with agro- forestry, swales (marshy low tract of land), contour plantings, soil and water management practices, hedgerows and windbreaks, integrated farming systems such as pond-dike aquaculture, aquaponics, intercropping and polyculture. Furthermore, issues related to water collection, management and reuse systems, different water management approaches such as rain catchment, constructed wetlands and aquaponics (the integration of hydroponics with recirculating aquaculture) play an important role in designing Permaculture models.

The success and failure of farming is closely associated with the prevailing weather conditions as weather plays a key role in operation of agricultural production right from field preparation to marketing. Permaculture models make is possible to optimize the farm production by adjusting the cropping patterns and agronomic practices to suit the climate of an area.

Region based Permaculture Approach

On the basis of potential evapotranspiration, India can be classified to four different climatic zone i.e. Arid, Semi Arid, Sub Humid and Humid zone. This classification represents a climatic index of plant development and a heat index of the agro- climate, soil moisture supply, plant cover and soil management.

In Arid region, the distribution of rainfall is extremely uncertain even in the rainy season. Drought resistant types of crops like jowar, bajra etc. are grown during the monsoon season. Production of crop is extremely precarious. Climatically, the area is more suitable for rearing of livestock than for cultivation of crops. It is presumed that by adaptation of better standards of livestock feeding and improving cattle management practices, greater return can be achieved. This will require introduction of Permaculture model with improved methods of grass land management and readjustment of cultivation of crops supplementary to livestock production which will result in a more stable form of land use than hitherto.

Semi arid zone, the dry farming region of the country, roughly covers an area of 77 million acres. In this region, the cultivated crops mainly depend upon the erratic monsoon rains which occur within the specified periods. The important crops grown in this region are millets, ragi, cotton, groundnut, castor and linseed. Introduction of drought resistant strains of crops, efficient use of soil moisture (e.g. use of mulch for conserving soil moisture) and application of organic fertilizers are important Permaculture component for increasing crop production in this zone.

Humid and sub-humid zone, the climatic complex consists of temperate sub-tropical conditions. The region is very productive and important for the production of wheat, rice, sugarcane, jowar, arhar, maize and mustard, as rains occur often. In this region, by adopting proper management of land, water and cropping the yields can be appreciably stepped up. Introduction of short duration varieties of crop, application of organic manures to increase moisture holding capacity of the soil and judicial application of fertilizers with proper management of land are essential component of Permaculture to be adopted in these regions.

There is a wider scope for promoting Permaculture models across the country. The support from government and non-government organizations in upgrading knowledge of farmers and developing need-based region specific Permaculture models will prove key to adoption of sustainable agricultural practices by better utilizing human efforts and natural resources.

For further details refer the following links

http://permacultureinindia.blogspot.com/

http://www.npg.org.np/home/thematic_areas.php

http://permaculture.zoomshare.com/0.html

http://www.southerncrosspermaculture.com.au/what-permaculture/

http://www.youtube.com/redirect?q=http%3A%2F%2Fpermaculture.tv%2Findia-permaculture-pioneer-narsanna-koppula-of-aranya%2F&session_token=DMIE_MW9feh2BkscGAUOnqsnrG98MTMwMTQ2MzM4Mg%3D%3D

Simple Technology for Effective Irrigation in Homestead Cultivation

- Venketesh Shete, Sr. Agriculture Engineer, AFPRO Ahmednagar

Tribal communities in Maregan and Zari-Zamni blocks of Yavatmal district in Maharashtra are enthused about a new farming technique. Women from these blocks are growing vegetables at their homes with the help of their husbands and children.

About 1500 households from 38 habitations in the district have adopted kitchen gardens as a means for improving their nutritional intake. They are participating in AFPRO's project on "Ensuring Food Security Through Homestead Cultivation" supported by United Way, Mumbai. The project seeks to demonstrate options for homestead vegetable cultivation amongst these marginal communities. By cultivating their homesteads, women are able to fully ulitize their homestead land resources and grow vegetables for intake. In many cases, they are able to sell excess produce in the market and earn reasonable income.

The More family in village Mendhani, Maregaon block has gone a step further. Ocupants of a traditional kaccha house, the four member farming household is largely dependant on the father who is the sole earner making his livelihoods from farm-based activities. Their vegetable purchases were minimal and limited to a local weekly market. Yet they opted to use appropriate techniques to irrigate their plot as well and installed a Krishak Bandhu (KB) drip irrigation system on their 12 ft x 10 ft kitchen garden. AFPRO recommended the System as a low-cost solution (costing Rs. 350/-) for efficient water use as the region suffers from water scarcity.

Now, the Mores grow their own vegetables including Tomato, Val, Vetch, Spinach, Fenugreek, Lady's Finger, Sweet Potato, Brinjal and Coriander. This winter they were able to produce vegetables that lasted them 3 months. They put the market worth of their crop at Rs. 3,400/-.

The KB drip can be operated under low operating pressure heads (1.0 to 2.0 m). The discharge rate from the micro tube drippers is about ideal for vegetable plants. Dripper clogging is minimal even with little or no filtration when using water from dug wells. Along with vegetables, the Mores have also planted saplings of five fruit trees. A fencing with wire mesh provides protection from animals while a shade on top deflects the heat and reduces evaporation losses.

Drip pipes with sac laid in kitchen garden developed by the More family

Excerpts from Budget 2011

In the Central Budget 2011, Government has given special attention to Agriculture, Food, Infrastructure, Education and Health sectors and come up with measures to boost agriculture production and provide better benefits to the farmers. This year Government announced a numbers of measures, including increased farm credit at subsidised rates, removal of production and distribution bottlenecks in food items. To boost the growth of farm sector Government has raised the target of credit flow to farmers in the current financial year.

Highlights of the announcements on Agriculture & Food Production

- Promotion of organic farming methods, combining modern technology with traditional farming practices through the National Mission for Sustainable Agriculture.
- Approval being given to set up 15 more Mega Food Parks during the financial year.
- Focus on removal of production and distribution bottlenecks for items like fruits and vegetables, milk, meat, poultry and fish.
- Special initiatives to improve post-harvest management of agricultural produce.
- Focus on augmentation of storage capacity and cold chain through private entrepreneurs and warehousing corporations.
- Capital investment in creation of modern storage capacity will be eligible for viability gap funding of the Finance Ministry.
- Duty exemptions - Full exemption from excise duty to air-conditioning equipment and refrigeration panels for cold chain infrastructure including conveyor belts in the full exemption from excise duty to equipment used in cold storages, markets and warehouses
- Efforts to persuade the state governments to review and enforce a reformed Agriculture Produce Marketing Act
- Allocation for implementation of vegetable cluster initiative to provide quality vegetable at competitive prices
- Allocation to bring land under oil palm plantations.
- Subsidies bill for fuel, food and fertilisers
- Bring urea under the Nutrient Based Subsidy (NBS) net
- Move toward the direct transfer of cash subsidy to people living below the poverty line in a phased manner for better delivery of kerosene, liquefied petroleum gas (LPG) and fertilisers.
- Proposes to include capital investment in fertiliser production as an infrastructure sub-sector.

Events

"Agriculture is the noblest of all alchemy; for it turns earth, and even manure, into gold." - *Paul Chatfield*

Walk for Water on Rajpath, New Delhi

As a call for social awakening to the water crisis prevalent in New Delhi, nearly 1500 people gathered at the India Gate lawns on Saturday, 19th March, 2011. Comprised to a great extent from school children and community representatives from different parts of the city, as well as NGOs, the group walked up and down New Delhi's historic Rajpath, calling for increased self-awareness and policy focus on saving water. The event was organized by NGOs FORCE and Water Aid, and was supported by many other agencies & NGOs including AFPRO, Bhagidari, UN Information Centre for India & Bhutan, UNICEF, WWF, Plan, MRYDO, WSP, and Tapas. From AFPRO, Mr. S. C Jain and Mr. Sunil Augustine participated in the Walk.

Mr. Salman Khurshid, Hon'ble Minister for Water Resources and Minority Affairs (center) participated in the event.. Other dignitaries on the dias are (from left to right): Ms. Sanjan Cheema, Delhi Jal Board (DJB), Mr. Ramesh Negi, CEO, DJB, Dr. Lourdes Baptista, Chief Executive, Water Aid India, Dr. Anjana Pant, WWF, Mr. S. C. Jain, AFPRO, Dr. Isha Prasad Bhagwat, Water Aid India, Ms. Jyoti Sharma, FORCE.

Mr. Salman Khurshid, Hon'ble Minister for Water Resources addressed the group which gathered at the India Gate lawns and led them in adopting the Blue Delhi declaration. The declaration is a pledge to work jointly on five specific areas for water conservation and make Delhi a Water Secure City in the next five years. These identified work areas are restoring and protecting water bodies, revitalizing the Yamuna, recharging and conserving ground water, reducing water wastage, and encouraging citizens to take responsibility for local water management and usage. Mr. Khurshid complimented the group and highlighted that in India, ordinary citizens have traditionally played the role of promoting national consciousness on critical issues. He suggested adoption of specific targets towards which task groups could align their efforts.

Ms. Kiran Mehra-Kerpelman, the new UNIC Director, shared the message of UN Secretary-General Ban Ki-Moon that governments and society recognize the urban water crisis, and improve governance, strengthen polices and effectively manage urban water issues. Mr. Ramesh Negi, CEO, Delhi Jal Board, called upon members of the society to make water savings in their daily use. Dr. Lourdes Baptista, Chief Executive of Water Aid India spoke that the challenge that lay ahead was one of planning finite water resources to meet the needs of an increasing population and sustainable water use at all levels of society. Ms. Jyoti Sharma, President, FORCE said, "This walk was to give all of us an idea of the problem a woman in a remote village goes through, everyday, to get her daily basic requirement of water."

International Conference on Digital Library Management

International Conference on Digital Library Management (IDLM) was held between 11th and 13th January 2011 at Science City, Kolkata with the theme "Knowledge creation, Presentation, Access and Management". The Three-Day conference was jointly organized by TERI (The Energy & Resources Institute) and RRRLF (Raja Rammohan Roy Library Foundation) and it was the first in Eastern India to provide exposure on Digital libraries to traditional librarians. Professionals from Digital library communities across the globe contributed in the Conference.

Ms. Archana Pandey from AFPRO explaining concept of Digital Library to the visitors

AFPRO participated in the Conference and shared the concept and need of Digital Library through a Poster Presentation titled '*Moving Towards Digital World*'. The presentation was developed and shared by Ms. Archana Pandey and Ms. Anjana Tirkey during the Conference. The poster presentation briefly depicted the concept, issues and advantage of Digital library. Technical sessions in the conference highlighted the need to upgrade and move towards a digital world with the advancement of technologies.

We invite your comments and suggestion.
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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.

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Contributions: AFU-1, ATF-R & ATF-G
Published by Action For Food Production, 25-1/A, Institutional Area, D-Block, Pankha Road, Janakpuri, New Delhi-110058 for Private Circulation Only.