

Sustainable Agriculture and Diversified Livelihoods in AP



PROGRESS REPORT

For the period 01.01.2014 to 31.12.2014



Submitted
to

ICCO : Project No. : 71-39-03-039 (2013-15)

ACCION FRATERNA ECOLOGY CENTRE

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1. OUR VISION :

All people in rural areas lead a respectable and decent life with economic security, social equity, gender equity and human dignity, in an atmosphere of democracy, peace, cooperation and community support.

People and Nature live in harmony with each other showing due care for sustainable ecology, environment and bio-diversity.

2. OUR MISSION :

AFs mission is to organize and strengthen the organizations of distressed farmers and rural poor for their economic security, empowerment, self-reliance, food and nutritional security.

AF is committed to work with drought affected farmers in general and rainfed and small and marginal farmers in particular and committed to promote drought resistant Integrated and Sustainable Farming Systems, with low external input and eco-friendly. (as against high cost, high-tech, chemical based).

AF is committed to combat desertification and promote sustainable ecology, healthy environment and bio-diversity, where people and nature live in harmony and support each other.

AF is committed to work with poor and disadvantaged women and youth and promote Diversified Livelihoods including agri-processing, marketing and non-farm skill based employment.

AF is committed to work for gender, social equality, human dignity, and to create a responsible social environment with peace, democracy mutual cooperation and community support.

AF is committed to work with Government, like minded NGOs, CBOs Civil Society Organizations and individuals. In this process it is committed to strengthen and coordinate the role of different organizations, intellectuals, experts and individuals in the interest of social well being.

AF is committed to being a strong, dynamic, dedicated and sustainable organization. It builds itself into an organization, learning from experiences and always working for people's well being. It strives to be positively influencing the society and changing itself to be relevant to the changing needs and contexts.

Our organization is an integral part of people of Anantapur District. We are not alone in this endeavour. There are several organizations, institutions and individuals working towards achieving the above aims and objectives – like Government, NGOs, CSOs, Media, Judiciary, Scientists, Intellectuals etc. Each one is playing its role individually and collectively. AF is committed to play a pro-active role in this endeavour.

3. OUR DHARMA:

AF adopts the Dharma of RDT, as its guiding principles and a code of conduct for itself and its staff.

- Concern for others
- Work beyond duty
- Pursuit of excellence in work
- Reaching as many needy people as possible

4. OUR CORE VALUES

1. Basic human values of compassion, concern, honesty, hard work, sincerity etc.

We are committed to practice and promote the basic human values of love, compassion, concern, honesty, hard work, sincerity etc driven by the vision, Mission and values of AF.

2. Social Equality and gender sensitive

We believe in social equality of all people and are particularly committed to the treatment of women, the disadvantaged and the poor with equality, respect and human dignity. We are committed to being socially equitable and gender-sensitive both within AF and in all our programs and interactions with people.

3. Concern for Sustainable environment

We ensure that all our policies and programmes have due consideration for sustainable environment and ecological balance.

4. Work together with Govt., NGOs, CBOs and CSO.

We are committed to working with Government and like-minded NGOs, CBOs & CSOs in order to produce the best synergies in our combined and co-ordinated efforts.

5. Influencing Govt., policies and programmes

We are committed to influencing Government policies and programmes for maximizing impact in favour of the poor, disadvantaged and sustainable environment.

6. Pursuit of highest quality in work

We are committed to the pursuit of excellence and highest quality in our work.

7. Relevant and learning

We are committed to being a relevant and learning organisation through participatory planning, monitoring and evaluation; and open to change, new ideas and new concepts, which are likely to improve the lives of poor and disadvantaged.

8. Participation and Team work

We are committed to the ethos of Participation and Teamwork and these will be central in our approach to work within AF and with people.

9. Transparent and Accountable

We are committed to be transparent and accountable to all our stakeholders.

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GENERAL INFORMATION

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| Website | : www.af-ecologycentre.org |
| Project Title | : Sustainable Agriculture & Diversified Livelihoods in AP (2012-15) |
| Country of Implementation | : INDIA CENTRE (AF – EC) |
| Project Number | : ICCO : 71-03-03-039 |
| Project Period | : 01.04.2012 to 31.03.2015 |
| Reporting Period | : 01.01.2014 to 31.12.2014 |
| Date of the Report | : 31.01.2015 |
| Author of the Report | : Mohan |

1. CONTEXT OF THE PROJECT:

1.1 Introduction

Sustaining rain fed farming and rural livelihoods in rain shadowed and drought prone areas like Anantapuram district is a herculean task given the low, uncertain and erratic rain fall, for which AF Ecology Centre has been putting in tireless efforts for the past several years. AF continued to learn from dealing with the seemingly endless challenges which were posed by uncertain climatic conditions time and again. Once again the monsoon played havoc with farmers this year. Only about 50% of the cultivable land in the district was sown during the sowing season i.e June & July. 2014 was one more severe drought year recording the lowest rain fall (290mm as against normal rain fall of 552 mm which again is the second lowest in the country) during past 10 years in the district.

However, during this difficult period of very little rain fall and prolonged dry spells, AF continued its efforts of enabling the farmers and farm labourers in coping with the severe drought conditions through promoting drought mitigation technologies and practices involving CBOs. The current year, though posed challenges, opened up windows of opportunities for learning on coping with severe droughts using drought mitigation technologies, systems and practices.

1.2 Strengthening the CBOs and their role in the programme:

AFEC strongly believes that the CBOs (Community based Organisations) have bigger role to play in sustainable development particularly at village level. AF has been striving to strengthen the CBOs by encouraging their participation in project planning, implementation, monitoring and evaluation. AF conducted intensive trainings on their role and responsibilities to the CBOs at all levels i.e SMGs, GSMS, MSMS and ASMS.

1.2.1 Formation of sub groups in the SMGs and promotion of mutual cooperation & savings:

AF felt that SMGs can be strengthened by promoting mutual cooperation in agricultural operations. It is of great help particularly at this juncture of severe distress. Mutual cooperation, on one hand would strengthen the group relations and on the other it would reduce the cost of cultivation through exchange of labour, bullocks, implements etc. Starvation for cash was most severe during this season as the farmers could not avail any Bank loans for policy reasons. Hence AF's efforts to promote mutual cooperation and savings increased quality interactions saved costs in agriculture and reduced the need for cash transactions among the families. Five sub groups of five families each were formed in each SMG to encourage mutual cooperation among the families. These sub groups were formed based on the affinity of the families or living as neighbours or neighbouring land holdings. The sub groups were encouraged to pool together their resources like labour, implements, bullocks etc and to mutually cooperate with each other with informal bartering in their farming activities. In a large number of thus formed sub groups the members began to exchange labour, implements, bullocks and reduced cash transactions in their farming activities. This also facilitated the members to start small saving of money with the SMGs for internal lending among the members. During the reporting year 150 SMGs comprising of 3750 families began monthly savings @ Rs. 50/- to 100/- per member per month. The savings amount was lent to needy members to tide over smaller cash needs

like children's school fees, health needs, purchase of food grains from fair price shop etc. These transactions improved the members' attendance and participation at the SMG meetings which is important aspect of participatory approach. AF would continue these efforts more vigorously in the coming phase of the project.

1.2.2 Participatory Planning, Implementation, Monitoring and Evaluation (PPIME) by CBOs at village level and at mandal level::

GSMS and MSMS were involved in village level planning, implementation, monitoring and evaluation. During the reporting period 4 MSMS (Kundurpi, Settur, Kalyanadurgam and Beluguppa) constituted 12 monitoring committees from among the MSMS members and monitored the qualitative and quantitative aspects of implementation of the programme activities in randomly selected 22 villages. The committees observed that the leaders' role in asset maintenance, record keeping needs to be improved further and there is need for more vigorous efforts in promoting drought mitigation technologies and practices. The feedback of the monitoring committees was of great help in improving the functioning of GSMS. The quality of implementation of the activities improved considerably with active participation of GSMS and MSMS. It is heartening to note that the women participation is increasing in the functioning of CBOs at all levels which was also revealed in the External Evaluation conducted during August 2014. These results encouraged AF to concentrate more on further strengthening the CBOs which is one of the major focus areas in the coming phase.

1.2.3 Participation of ASMS (Apex Sasya Mitra Samakhya) in the planning for 2015-18 phase:

As the current project phase ends by 31st March 2014, AF prepared proposal for 2015-18 phase during September 2014. *Apex Sasya Mitra Samakhya* (ASMS), the apex federation of all the CBOs at project level, which was initiated in the previous year, played important role in planning for the coming project phase 2015-18. A consultative work shop was organised in August 2014 with ASMS in order to (a) draw lessons from the current phase (b) to reflect on the goal, objectives and activities for the next phase 2015-18 and (c) to seek any new ideas and inputs into the planning for 2015-18 phase. It ensured that the proposed project is in alignment with the needs of the communities as their own experiences formed the basis for the planning. All the 50 members including 25 women participated in the consultative work shop.

They provided an objective feed-back on the current phase. For the next phase, they felt the need to continue the project emphasis on drought mitigation through utilization of tried & tested technologies & practices while integrating further into the project the animal husbandry, alternate livelihoods and cooperatives.

1.3 Necessity & importance of drought mitigation technologies & practices in Sustainable Agriculture brought into light once again

AF Ecology Centre has been consistently working with small & marginal rain-fed farmers and farm labourers in order to stabilize their livelihoods and achieve food security through enabling them to cope up with droughts and effects of climate change. In this endeavor, the past one year period has been very challenging and proved once again the need for sustained efforts on drought mitigation to secure livelihoods of small & marginal rain fed farmers and wage seekers. The rain fall recorded during the monsoon season of

the year 2014 was the lowest in the past 10 years with only 290 mm of rain fall against 552 mm of normal that too distinctly marked with prolonged dry spells. The harsh monsoon conditions left more than 40% of the rain-fed farmers leaving their lands fallow and many migrated in distress to nearby towns and cities to eke out a living. Still worse was the fate of farmers who had sown and invested on sowing and land preparation, as it too failed. The situation once again proved the relevance and importance of AFEC's (Accion Fraterna Ecology Centre) efforts on developing and popularising drought mitigation technologies and practices for timely sowing and for protecting the crops during prolonged dry spells for securing the income from rain-fed farming.

AFEC extensively tried and demonstrated the technologies and techniques on how sowing can be done even under inadequate soil moisture conditions using Aqua Planter and other techniques like dry sowing, pot watering & sowing etc, and on how to protect crops during prolonged dry spells with protective irrigation using mobile micro irrigation units, cement lining of farm ponds for storing rain water etc. The efficiency of these technologies and practices on the field are very encouraging, though some more experimentation and standardization is required. However, scaling up of these technologies would be the important task for AFEC in the coming phase of the project. We have already demonstrated these technologies to the Government of AP and pursuing policy advocacy and lobby for their mainstreaming by Government of AP.

1.4 Demonstrations intensified during crop season to disseminate knowledge on drought mitigation technologies & practices

The crisis thrown up by failed monsoon was also seen as an opportunity to experiment and demonstrate technologies and practices for drought mitigation. AF, in collaboration with farmers and their SMGs, has been conducting on-farm experiments and demonstrations for timely sowing even in the absence of timely rains and protecting rain fed crops to cope with long dry spell drought conditions and to reduce the cost of cultivation.

AF during the year 2014 focused on the drought mitigating technologies and practices like drought resistant intercropping models, timely sowing in the absence of sufficient soil moisture, protective irrigation during prolonged dry spells, promoting multiple tree cropping systems, cement lining of farm ponds for storing water for protective irrigation during dry spells etc.

1.4.1 Timely Sowing of rain fed crops in the absence of rains during sowing season:

AFEC developed intercropping models including millets and pulses which are reasonably drought tolerant. These models reduced cost of cultivation (compared to groundnut which is the mono crop in the area) and also provided food security to the farmers' families. However, the farmers were unable to sow these crop models in time i.e June - July due to insufficient rains. Failure to sow in time is one of the two main causes for crop failures in Anantapuram district. The other cause for crop failure is prolonged dry spells after sowing resulting in drying up of standing crops. To overcome this situation AFEC developed suitable technologies and techniques.

Ananta Planter, Aqua Planter and Mobile Micro Irrigation Units were designed and tested extensively for the past one year. Ananta Planter is 4 times more efficient than traditional planters, hence very helpful in low rain fall conditions in which the soil moisture dries up very quickly in just 2 or 3 days only. The planter was first designed by RARS of Anantapuram for sowing groundnut. Ananta Planter was improved by AF to sow millets and pulses and was successfully tested on the farmers' fields. This is a significant improvement for timely sowing of diversified crop models before the soil moisture dries up. The use of Ananta Planter was extensively demonstrated to the farmers in the project area on how they can quickly complete the sowing operations before the moisture evaporates. During the *kharif* season 2014, about 500 acres were sown covering 200 families and about 4000 farmers participated as observers. They all opined that the instrument completed the sowing operations 4 times faster than the traditional planters and also maintained optimum and uniform spacing between the plants.

Aqua Planter is an extended version of Ananta Planter in which two water tankers are fitted to the implement. It was designed to sow simultaneously the seed and adequate water in order to help in germination and to grow crop for three or four weeks. The Aqua planter was demonstrated on a small scale in the previous year.

There was hardly any rain in June & July this year. It left thousands of hectares of dry land fallow. During such conditions Aqua Planter was extensively demonstrated in the project area to show how to sow under insufficient soil moisture conditions during sowing season i.e June – July. It was proved that sowing with Aqua planter guarantees germination even under insufficient soil moisture condition and the seedlings survived for two to three weeks without rain after sowing. Aqua Planter proved to be very useful in rain-fed farming under low and erratic rain fall conditions. And even when it rains, the soil moisture lasts only for 2-3 days within which the sowing needs to be completed. An Aqua Planter can sow 20 acres of land in a day as against 5 acres by traditional planter. Small and marginal farmers in the district are not equipped with required implements for sowing and the ever haunting drought conditions and fodder crisis had taken away their bullocks. However, the equipment could not be owned by farmers, particularly the rain-fed farmers as they are unaffordable at individual level. So the equipment can be rented by farmers along with the tractors. During the sowing period 50 demonstrations were conducted in 50 villages using Aqua planter which involved over 1500 farmers, various Govt officials etc.

AFEC plans to increase farmers' access to these technologies in two ways. One, by way of encouraging small entrepreneurs, farmers cooperatives and CBOs to own and rent to farmers on commercial basis which could create a win-win situation for the entrepreneur as well as the small and marginal farmers. Two, AFEC demonstrated these technologies and lobbied with the Government Officials and policy makers including the District Collector and Chief Minister of Andhra Pradesh for favourable policy environment for mainstreaming them through farmers' cooperatives or women Self Help Groups in order to increase farmers' access to the proven drought mitigating technologies.

In addition to using Aqua Planter, some more simple techniques also were tried for timely sowing like row water sowing and dry sowing followed by light irrigation.

Row Water Sowing is a technique followed for sowing lesser plant density crops like castor and redgram. One tanker containing 5000 litres of water was needed for sowing castor and redgram on one acre of land. Shallow plough furrows were opened and seeds were dibbled in the furrow. Water from tanker was added in the furrow using pipes and the furrows were closed with a plank. This kind of demonstrations were conducted on 40 acres of land belonging to 40 rain-fed small farmers in the project area. The survival rate of plants on these plots was more than 80 per cent and normal yield can be expected. The results of these experiments proved that there are technologies to sow the seed in time despite failure of rain in sowing season.

1.4.2 Saving crops during prolonged dry spells by providing Protective Irrigation

The next problem after sowing is the prolonged dry spells causing droughts. The efforts to protect crops during prolonged dry spells were continued during the last *kharif* season using Mobile Micro Irrigation Unit (truck with a water tanker and micro irrigation system) developed by AFEC as well as hiring local tractors with water tankers. During the current season the emphasis was more on scaling up the practice by simplifying the design with the local tractor owners and to enable more and more small and marginal farmers access protective irrigation at low cost.

As a part of the effort the local tractors in the villages were fitted with water tankers of 5000 liters capacity and extensively demonstrated protective irrigation on small plots. As the dry spells during the season were prolonged, it came in as a *blessing in disguise* to demonstrate the effectiveness of the practice.

During the *kharif* season, protective irrigation was demonstrated on about 1000 acres belonging to 1000 families. Over 3500 farmers participated as observers. It was taken up on large scale in redgram in November, the results of which will be known by February 2015. The results of providing protective irrigation in *anapa* (Field Beans which were tested by 12 farmers on 20 acres as a new initiative in Dharmavaram area) revealed that the plot which was given protective irrigation during dry spell produced 4.5 Quintals as against 3 Quintals in control plot. The expenditure incurred on protective irrigation was Rs. 1100/- and the income increase was Rs. 3750/- (1.5 Quintals X average price of Rs.2500/-).

AF persuaded Government officials and policy makers to participate in the demonstrations as observers in order to sensitise them on the need for favourable schemes and policies for promoting such drought mitigation technologies and practices on large scale to reach out large number of small & marginal rain fed farmers. The demonstrations were conducted systematically leaving a control part to measure the efficacy of the practice. The results and economic viability of these operations would be known after the harvesting season i.e by February 2015.

The continued droughts resulted in severe water crisis in the villages and availing drinking water for the villages became a herculean task. In such circumstances farmers of some villages found it difficult to provide protective irrigation to the crops. AFEC collected and analysed the rain fall data of monsoon season for the district for past 25 years and found that rain water if captured and stored in a farm pond on rainy days, could be used to irrigate during prolonged dry spells to protect the crop from failure. This was

tested using existing farm ponds dug as part of watershed programmes and MGNREGS. Out of the 12 farm ponds which were lined with cement & clay, 11 ponds were filled with rain water during October 2014 and were used for irrigating about 30 acres of tree crops.

1.4.3 Demonstration of 10 types of diversified annual crop models: AFEC continued promoting and propagating through demonstrations of the 10 intercrop models with millets and pulses on farmers' fields with active participation of the farmers and their *Sasya Mitra Groups* (SMGs). During the *kharif* season 2014, 10,000 demo plots were planned with 10,000 farmers with one acre per farmer. Severe drought conditions during sowing season i.e in July led to lesser sowing by about 50%. However AF put in lot of efforts on the demo plots to show case the effectiveness of drought mitigation technologies and practices wherever sowing was possible. Failure of timely rains also created the need for short term contingency crops with horsegram and Jowar. AF encouraged the farmers to go for horse gram and jowar in August and September, mainly for producing fodder if not grains. In Dharmavaram area, *anapa* (field beans) were tested on 10 acres belonging to 7 farmers and the results were very encouraging with an average yield of 3 Quintals per acre and a net income of Rs. 5000/- per acre. By the time of reporting (December 2014) *green gram + sorghum* and *foxtail millet + red gram* models (*green gram* gave the farmers reasonable yield and better market prices. The yields of Red gram will be known by February 2014).

1.4.4 Demonstration of irrigated crops for eco-friendly and low cost farming practices During the rabi season 2013-14, the demonstration of irrigated crops was done extensively by encouraging border crops, trap crops, pheromone traps, bio fertilizers, jeevamritham etc which are low cost and eco-friendly farming practices. The results in tomato crop under irrigation were extremely good with high quality produce with increased shelf life when compared to control plot.

During the present rabi season i.e 2014-15, the number of demo plots were restricted to 5 per village due to (a) area under cultivation was drastically reduced due to ground water depletion and (b) to test the efficacy of solid bio fertilizers like Micorrhiza, Phosphorous Solubilising Bacteria (PSB) etc. At the time of reporting 1000 plots were sown with groundnut and tomato for demonstration.

1.4.5 Perennial Rain-fed Tree Crop Models: Rain-fed tree crops are highly recommended in securing stable income for the rain-fed farmers in drought prone districts like Anantapuram. However, the greatest challenge is to water the plants for the first 3 to 4 years for initial establishment and cope with a long gestation period of about 5 years before they see any income from trees. AFEC designed four tree crop models and tested on farmers fields under rain-fed conditions. Among the four models MFTC (Multiple Fruit tree Crop) model became popular with the farmers. This model includes Mango, Sapota, Custard Apple and Indian Goose Berry along with border plants for fodder and green manure. These trees are selected based on their drought tolerance and the seasonality of fruits to provide income to the farmers throughout the year whereas in mono crop like mango could be susceptible to complete crop failure and or high market uncertainties.

Rain fed farmers were sensitised on the importance of other tree crop models i.e BIFSRA (Bio-Intensive Farming Systems in Rain-fed Areas), IFS (Integrated farming Systems) and

Multiple Tree Crops in Waste Lands. These are very relevant and important in the project area both economically and ecologically, as the models include bio mass plants and fodder plants in addition to fruit plants. Severe fodder crisis made farmers selling off their animals and consequently deteriorating land fertility with lack of farm yard manure in the soil also made the lands less productive. The tree crop models promoted by AFEC are aimed at overcoming these issues of fodder crisis and increasing soil fertility in the long run.

In-house experimentation for testing innovations: AFEC also tried to test the technologies and to experiment for innovative practices on a 6 acre farm taken under lease. This effort enables AF to get first-hand experience of farmers and to innovate with courage. All the technologies and practices promoted with the farmers were first tried on this farm under the supervision of Head, Sustainable Agriculture of AFEC.

There is a belief that sowing bigger groundnut seeds gives in better yield. AF tried using smaller groundnut seeds for sowing in one acre and bigger seed on one acre on this farm. The results showed that the size of seed makes no difference in productivity. It helps the farmers, particularly the irrigated, who spend more money on purchasing highly graded bigger seeds. A farmer can save Rs. 500/- to 700/- on seed cost by going for smaller seeds.

The efficiency of liquid bio-fertilisers and *jeevamrutham* was tested on this farm. This was done on demonstration and control plot mode. The initial results revealed that *jeevamrutham* and liquid bio-fertilisers were not that effective under rain fed conditions as believed to be, though more & more field trials are needed before concluding. These kinds of experiments help us to evolve better practices.

1.5 Severe Drought led to distressed migration:

The monsoon season this year received the lowest rain fall in the past 10 years which increased the stress on farmers and farm labourers' livelihoods. Unable to make ends meet, many families left the villages in search of some employment in the cities like Bangalore. This year, thousands of families in the project area migrated temporarily to Bangalore. Men are mostly working as security guards, gate watchman and *hamalis* (truck loaders) and women as home maids. They lived in cities under miserable living conditions. They all hope to return to home by next June (2015) in time for next sowing season. Their children and aged people were left behind in the villages.

AFEC has been consistently representing to the District Administration and the Government at the State level about the need to provide continuous employment under MGNREGS, but fell short due to partition of AP state and unsettled new Governments.

AFEC's efforts on imparting job oriented skills to rural youth and women proved significant and relevant under severe crisis in agriculture and farmers' distress.

1.6 External Evaluation for the 2012-15 phase, appreciated AF's efforts on drought mitigation

As per the terms agreed upon by the BftW, ICCO and AFEC, an external evaluation was conducted during August & September 2014. A team of experts consisting (1) Mr. Khilesh Chaturvedi, an Organisational Development expert, (2) Ms. ShylajaRao, Sustainable

Agriculture Specialist and (3) Mr. Kamath, Chartered Accountant conducted the External Evaluation during August and September 2014.

The evaluation focused on Organisation Management, relevance of the programme, quality of implementation, effectiveness & impact of the programme, gender & social equity, quality of functioning of CBOs, Financial Management systems followed at the organisation as well as at CBO level. The evaluation was conducted using participatory methods and assessing the villages and CBOs based on stratified random sampling.

The findings of the external evaluation highlighted the sincere efforts of AFEC and the impact in improving the lives of the highly distressed rural communities in an arid and chronically drought hit project area. The evaluation team appreciated the participatory approach of AF and the transparency followed at every level, particularly in the value based Organisation Management and Financial management. The evaluation appreciated the innovations in methods and technologies for drought mitigation and the active role played by the women in the CBOs. The important observation of the evaluation is the compelling need for continuous and constant search/experimentation/trial and error to develop technologies, practices and systems to address the gigantic problems of frequent droughts and farmers' distress. It also stressed on the need for further strengthening of CBOs for increasing the pace and scope of the drought mitigation technologies and practices. These important findings brought into light the learning character of the organization and participatory approach in Planning, Implementation, Monitoring & Evaluation (PPIME). The evaluation also observed that there is need to increase women at the middle and top level management, though overall the number of women in the organization increased significantly over 3 years.

The findings of the external evaluation and the feed-back of the CBOs were considered as basis for planning 2015-18 project phase. The full report of External Evaluation was mailed to ICCO during September 2014.

1.7 Rain-fed Farmers Cooperatives (RFCs), a pilot initiative towards livelihood security of rain-fed farmers:

The Pilot Project was initiated during the last year by promoting 8 Rain-fed Farmers Cooperatives covering 200 rain fed farmer families. The objective of this pilot activity is to ensure rain-fed farming sustainable and remunerative for small & marginal farmers. The cooperative model, if successful in creating livelihood security, will be replicated in more villages in a phased manner.

The cooperative strategy includes synergizing on (a) reducing cost of cultivation by encouraging mutual cooperation among the members (b) enhancing farm productivity by promoting drought mitigation technologies & practices (c) by promoting eco-friendly Sustainable Agriculture practices (d) diversifying livelihood portfolio of the rain-fed farmers by integrating off-farm and non-farm livelihood activities on collective basis for generating additional income to the farmers.

Members of 7 out of 8 RFCs started monthly savings and internal lending during last year. 175 members of 7 cooperatives so far saved about Rs. 180,000/-. In 7 cooperatives 3 to 4 member functional committees were set up from the leaders of the cooperatives to identify feasible supplementary livelihood opportunities. The committees, with support from area teams of AF, conducted a detailed market study on ram lamb rearing, leasing-in of

tamarind trees for selling deseeded tamarind. It was ensured that the members have adequate experience/knowledge of the activities being chosen. Two Cooperatives took up leasing-in of tamarind trees on collective basis during December, the profitability of the activity would be known during March 2015.

1.8 Low Carbon Farming:

AFEC is continuing LCF pilot work in a cluster of 24 villages in Rapthadu and Dharmavaram mandals with 1500 farmers in about 1500 acres (607 ha). LCF protocols were followed with required rigor and quality. AF ensured that all the protocols of LCF were followed rigorously in order to stand the test of third party verification. The focus during the past 6 months was on preparing ground for third party verification and validation for accessing the carbon markets which would take

1.9 Sahajeevan Trust, a new initiative of AF:

AF Ecology centre has been renting out training facilities like training halls, canteen, guest rooms etc and earning some income every year. In June 2014 AF Ecology Centre decided to drop such income fetching activities from its fold. Consequently a separate trust was founded called “Sahajeevan Trust” (SJT) as a social enterprise for managing such incidental income generating activities. It was founded by Dr. Y.V. Malla Reddy and 4 other like-minded eminent persons with social work background and was registered under Indian Registration Act 1909. Dr. Y.V. Malla Reddy serves as the Managing Trustee of SJT. RDT, which is the legal owner of AF campus including all training facilities, entrusted the responsibility of managing the training facilities (training halls, guest rooms, dining hall etc) to SJT.

1.10 Policy Advocacy and Public Opinion Building:

AF Ecology Centre, in collaboration with other NGOs, CSOs, progressive writers, cultural groups and farmers’ organizations, has been working on public opinion building and policy advocacy on important issues in Anantapuram district like water crisis, rain-fed agriculture, gender policies, MGNREGS, crop insurance, Community Managed Seed Systems and input subsidy for farmers including long term issues of drought and desertification in the district.

- **Lobbying for short term measures:** During the past 6 months of reporting period AFEC has been consistently representing to the District Administration to enhance the outreach of MGNREGS in view of severe drought in order to prevent distress migration. Further AF has been advocating and lobbying for taking up contingency cropping at least to ease the problem of fodder if not grain yield. Consequently the Government did supply the seed of Jowar and Horse gram for contingency crop. However, unfortunately even the late rains also failed and the crops were not sown in most of the villages.
- **Lobbying for long term measures:**
 - (a) **10 Point Programme to combat drought & desertification in Anantapuram District:** AF Ecology Centre developed a “Ten point program” aiming at combating drought & desertification and strongly lobbied for its implementation. The 10 point programme included creating “Ananta Water Grid” for mitigating agricultural crisis on sustainable basis, through protective irrigation and climate resilient sustainable agriculture which

would provide assured income, food & nutritional security, particularly to rain fed farmers. Further it improves the endowment of environmental resources and reverses the desertification process by adding tree cover, bio-diversity, rain water harvesting and enhanced ground water.

The 10 point programme was presented to various stakeholders including over 1200 farmers, representatives of CBOs, CSOs, NGOs, Government officials etc on the occasion of “World Day to Combat Drought & Desertification” conducted on 17th June 2014 at Anantapuram.

b) Sensitised the Chief Minister of Andhra Pradesh & former President of India on the need for state intervention in promoting and scaling up of drought mitigation technologies & practices

During Chief Minister of Andhra Pradesh, Mr. Nara Chandrababu Naidu & former President of India, Dr. APJ Abdul Kalam’s visit to Anantapuram district on 7th October 2014, AF exhibited the tried, tested & proven drought mitigation technologies & practices like Ananta & Aqua Planters for timely sowing, Mobile micro irrigation units for protecting annual & tree crops during dry spells, cement lining of farm ponds for storing rain water etc. Dr. Y. V. Malla Reddy explained about the ever haunting droughts & severe agriculture crisis in the district and the need for the Government’s intervention to promote and to scale up the proven drought mitigation technologies. The Chief minister and former President were very attentive during the presentation and assured of their scaling up in appropriate ways. The efforts of AF in sensitizing the Chief Minister resulted in very positive indication that the Government made a decision to support digging up of farm ponds under MGNREGS.

1.11 The challenges ahead

- 1) Scaling up of drought mitigation technologies & practices so as to reach large number of small & marginal rain fed farmers in the district
- 2) Further strengthening the SMGs and their federations in order to increase their participation in planning, implementation, monitoring and evaluation of project activities, particularly at village level
- 2) Stabilising Rain fed Farmers’ Cooperative to expand livelihood portfolio of small & marginal rain fed farmers by integrating farm, off-farm & non farm activities.
- 3) Belling the cat in accessing carbon revenues through Low Carbon Farming
- 4) Drawing the attention of the Government in promoting drought mitigation technologies and the issue of increasingly threatening ground water crisis

2. PROGRESS MONITORING PROTOCOL

2.1 PROJECT OBJECTIVE:

To increase and stabilise the income levels of the target families and improve their access to basic needs like employment and food and nutritional security by promoting; (a) sustainable agriculture, (b) natural resource management, (c) alternate livelihoods for rural women and youth d) Public opinion building and lobbying with the Government for pro- LEISA policies.

2.2 Specific Objectives and their indicators:

| OBJECTIVES | INDICATORS |
|---|---|
| 1) To reduce the cost of cultivation and mitigate drought (by diversified cropping) in 11200 ha of land belonging to 5600 farmer families through SA practices by 2015. | 1.1 35% of 16000 farmer families practicing atleast 3 of 5 main sustainable agriculture practices. 1.2 856 SMGs of 21400 farmers and farm workers and their federations work in a collective manner in order to adopt sustainable agriculture. |
| 2) 1500 famers introduce Low Carbon Farming in their 1500 acres of land (607 ha of land) in order to gain access to the Indian CO2 market by 2015. | 2.1 The method of low Carbon Farming is introduced in 1500 acres of land (607 ha of land) and is validated and certified for the Indian Co2 market. 2.2 The certificates are offered at the Indian carbon market. |
| 3) The livelihood of approx. 3200 women and youth from the target families is diversified through alternate off farm/ nonfarm livelihoods by 2015. | 3.1 Approx. 3200 women and youth are trained to contribute additional livelihood to the family with skill based employment. |

2.3 Progress at outcome level:

| Objectives | Indicator (or) Desired End Result by March 2015 | Achieved during 1 st January 2014 –31 st December 2014 | Remarks / Reasons for Variance |
|---|---|--|--|
| 1) To reduce the cost of cultivation and mitigate drought (by | 1.1) 35% of 16000 farmer families practicing at least 3 | Of the 16000 small and marginal farmer families enrolled into AF's SA program: 8206 farmer families practiced any 3 of 5 | <ul style="list-style-type: none"> Only half of the project area received rains during sowing period i.e June and July. Only 66% of |

| | | | |
|---|--|--|--|
| diversified cropping) in 11200 ha of land belonging to 5600 farmer families through SA practices by 2015. | of 5 main sustainable agricultural practices. | <p>SA practices (Use of bio-fertilisers, intercropping, trap & border cropping, use of bio-pesticides and using of pheromone traps) by December 2014 covering 5500 ha. They saved on an average cost of Rs. 7000/- per ha by avoiding high cost chemical fertilizers and pesticides</p> <p>During the reporting period January 2014 – December 2014</p> <ul style="list-style-type: none"> • 5790 rain fed farmers sowed diversified crops on 4554 ha of land • 4342 rain fed farmers and 3864 irrigated families (8206 of 16000) had applied bio-pesticides to their crops covering 1545 ha. • 3800 farmers used border crops, trap crops and mechanical pest traps covering 1520 ha | the 11500 rain fed farmers could sow their crops, those too could not be protected during the prolonged dry spells and crops of 1890 farmers dried up by September 2014. |
| | 1.2) 856 SMGs of 21,400 farmers and farm workers | <ul style="list-style-type: none"> • Out of 856 SMGs formed 802 (94%) groups are effectively functioning. | <ul style="list-style-type: none"> • Discontinuing Karyakartha system and new staff at grass root level settling down after |

| | | | |
|--|--|--|--|
| | and their federations work in a collective manner in order to adopt sustainable agriculture. | <ul style="list-style-type: none"> Mutual Cooperation in farming activities and savings were started in 150 SMGs covering 3750 members | turbulence needed 54 SMGs to be reorganized and strengthened which is under progress during the reporting period |
| 2) 1500 famers introduce Low Carbon Farming in their 1500 acres of land (607 ha) in order to gain access to the Indian CO2 market by 2015. | 2.1) The method of low Carbon Farming is introduced in 1500 acres of land (607 ha of land) and is validated and certified for the Indian Co2 market. | <ul style="list-style-type: none"> LCF protocols are being practiced by 1260 farmers (950 during kharif and 310 during rabi) in 1300 acres (520 ha). Out of the 1260 | Uncertain market conditions in Indian Carbon market is getting the things delayed. Severe drought conditions resulted in reduced sowing and 1260 farmers continued LCF. However, AF continued to encourage farmers in following the LCF protocols and in taking necessary measures for third party verification like data collection, consolidation, record keeping, laboratory maintenance etc. |
| | 2.2) The certificates are offered at the Indian carbon market. | <ul style="list-style-type: none"> Preparing ground for third party verification was started during the reporting period | |
| 3) The livelihood of approx. 3200 women and youth from the target families is diversified through alternate off farm/ nonfarm livelihoods by 2015. | 3.1) Approx. 3200 women and youth are trained to contribute additional livelihood to the family with skill based employment. | <ul style="list-style-type: none"> 745 girls were enrolled for garment making trainings. 350 girls completed the course by December 2014 and 100 of them started earning a minimum monthly income of Rs 2000/-. Another 415 | |

| | | | |
|--|--|--|--|
| | | <p>girls will complete the training by April 2015.</p> <ul style="list-style-type: none"> • 180 boys were enrolled during the reporting period for training on driving skills 144 of them completed the course by the reporting period end. 73 of the trained youth started earning a minimum monthly income of Rs. 6000/-. Another 36 boys will complete the course by March 2015. • One job fair was conducted involving 150 youth and 50 potential employers. 90 of the attended youth were selected for employment by the employers during the reporting period. • 44 youth were sent to skill development centers like | |
|--|--|--|--|

| | | | |
|--|--|---|--|
| | | TTDC, RUDSETI etc and trained on trades like Embroidery, Electrician etc. 31 of them were employed/self- employed during the reporting year. | |
|--|--|---|--|

2.3 Progress at output level (Milestones):

2.3.1 Campaigns on (a) Sustainable Agriculture, (b) Gender and (c) Adaptation to Climate Change:

- During the reporting period January 2014 to December 2014, 8 area level campaigns were conducted on Sustainable Agriculture, Gender including
- 390 village level campaigns on sustainable agriculture and gender were conducted covering 19550 families of which 9878 (about 51%) were women and 5285 (27%) were from SC/ST.
- 8 Mandal level SA campaigns (crop wise campaigns) were conducted. 1250 GSMS members attended the campaigns (75% of the planned 1600) of which 536 (45%) were women farmers and 334 (28%) farmers were from SC/ST communities.
- One area level campaign on productivity enhancement in fruit tree crops was conducted at Kalyanadurgam covering 450 fruit tree crop farmers from Kundurpi and Kalyanadurgam areas among which 214 (48%) were women and 126 (28%) were from SC/ST Communities.
- One project level campaign on combating drought & desertification was conducted involving over 1200 small & marginal farmers, Government officials, NGOs, CBOs, CSOs etc during “World day to combat Drought & Desertification. (Please see annexure for detailed report)
- Cumulative Achievement (Until December 2014) of Village level campaigns: Since inception of the project phase (2012-15), 1284 Sustainable Agriculture Campaigns were conducted (151% of the planned 850) covering about 22,000 farmer families.

The mass campaigns play important role in reaching out to large number of stake holders. AF has also been creating awareness on climate change and its consequences on the agriculture and livelihoods; and the ways for mitigation and adaptation to climate change & droughts.

These campaigns were organized at different levels like village level, mandal level, area level and project level. At Mandal and Project level, the farmers, the agriculture scientists, the human rights activists, NGOs, government agencies, media and elected representatives were brought together in these campaigns. The farmer groups (GSMS and SMGs) at village level and federations (MSMS at mandal and area level) played an active

role in organizing these campaigns. In these campaigns awareness was created on; (a) suitable crop models and SA practices including crop diversification with intercrops of millets, pulses & vegetables and multiple tree crops, (b) technologies and practices required for timely sowing of crops in absence of sufficient soil moisture/before the soil moisture dries up and protecting the standing crops during prolonged dry spells through protective irrigation, (c) Adaptation measures to cope with droughts and effects of climate change like changing rainfall patterns etc. The successful practicing farmers of SA were invited to share their experiences with other farmers. Good cropping practices, preparation of low cost indigenous bio-fertilizers, bio-pesticides were demonstrated to the farmers in these campaigns. Special efforts were made to increase the role of women in making decisions on farming activities right from choosing a crop variety to the level of marketing the produce.

2.3.2 Trainings on (a) Sustainable Agriculture, (b) Gender and (c) Group dynamics & leadership development

- **During the year 2014, 840 FFS sessions** were conducted as against the planned 2568 sessions in which 7769 farmers participated cumulatively. Among them 3806 (49%) were women and 1892 (24%) were from SC/ST.

During the reporting period January 2014 to December 2014,

- 36 cluster level trainings (86% of the 42 trainings planned for the year) were organized. 1605 GSMS leaders participated in these trainings out of which 814 (about 51%) were women. Of the total participants 468 members (29%) were from SC/ST communities.

Cumulative Achievement since inception of this project phase (2012-15),

- 128 cluster level, mandal and area level trainings were organized (95% of the planned 135) covering over 1650 GSMS leaders.
- 5,650 FFS sessions were conducted (82% of the planned 6851) covering over 12,000 farmer families.
- a) **Sustainable Agriculture:** Trainings on Sustainable Agriculture were imparted mainly through **Farmer Field Schools (FFS)** and crop based Farmer Conferences at cluster, mandal and area level. FFSs were conducted from seed selection to harvesting of the crop, so that the farmers were able to observe, analyze and learn the life cycle of crop ecology throughout the crop season. The topics dealt in FFSs during the period included importance of diversified cropping, intercropping, trap cropping, pest and disease management, preparation and application of bio-fertilizers and bio-pesticides, understanding farmer friendly & enemy insects and their life cycles, prevention and protection from various pests diseases using local botanicals and adherence of the farmer members to PGS protocols.

During the FFS sessions, importance was given to demonstrate and sensitise the farmers on the drought mitigation technologies and practices like Ananta Planter, Aqua Planter, Row Water Sowing Protective Irrigation, Cement lining of farm ponds for harvesting and storing rain water for protective irrigation etc. The STOs facilitated the sessions with support of GSMS leaders and Subject matter Specialists of AF. The

inputs like FFS curriculum, reading material and FFS kits were provided by the Subject Matter Specialists in Sustainable Agriculture.

Formation of sub groups in SMGs improved the quality of FFS as the affinity of members increased through mutual cooperation and savings. These sub group members helped each other in exchange of labour, bullocks, implements etc and also collectively prepared the bio-fertilizers and bio-pesticides time to time.

Severe drought conditions during sowing season and prolonged dry spells afterwards left about 50% of the lands unsown in the project area and about 30% of the sown crops dried up during prolonged dry spells. This situation resulted in farmers' distress and the number of FFS sessions could not be achieved as per the plan.

- b) & c) **Trainings on gender, leadership development of women:** The gender and leadership trainings for GSMS members were organized at cluster level, wherein the women were oriented and trained on gender issues like gender division of labor, sharing of work load by men, prevention of domestic violence, girl child education, economic freedom to women, household food security, nutritional security, participation for women in decision making at family level as well as in farming activities like cropping choices, SA practices, marketing etc, alternate/supplementary livelihood activities, women and child health, personal hygiene etc. Experiential learning on group dynamics such as participation, conflict resolution, mutual cooperation, monthly savings and qualities and role of leadership also were imparted through these trainings.

2.3.3 CBO Meetings (SMG, GSMS, MSMS, ASMS)

During the reporting period January 2014 to December 2014,

- 5950 SMG meetings (98% of the revised plan of 6084) were conducted in 214 villages.
- 1982 GSMS meetings (154% of the planned 1284) were conducted in 214 villages.
- 48 MSMS meetings (100% of the planned 48) were conducted for 8 MSMS in 8 mandals.
- Four ASMS meetings (including a special meeting for planning for the next phase) were organized in April, July, September and December 2014

Cumulative Achievement: Since inception of this project phase (2012-15),

- 15144 SMG meetings (118% of the planned 12840) were conducted in 214 villages.
- 8632 GSMS meetings (112% of the planned 7704) were conducted in 214 villages.
- 233 MSMS meetings (% of the planned 288) were conducted for 8 MSMS in 8 mandals.

SMG & GSMS at village level: There are 4 SMGs and 1 GSMS functioning in each of 214 project villages. Each SMG meets once in a month and every GSMS meets twice a month. During the crop season they meet more times in a month due to intensity of activities. The STOs facilitate the meetings and functioning of SMGs, UGs, GSMS and WDCs.

During the current period SMG meetings were conducted separately for each SMG to focus on the specific needs of each group which would be consolidated at GSMS level. Earlier 4 SMGs in the village used to conduct a combined meeting. These joint meetings

proved to be ineffective particularly in addressing the needs of labour groups. Hence, it was decided to organize separate meetings at each SMG level.

Special need based meetings were conducted for GSMS during the sowing season to discuss about drought mitigation technologies & practices and to chose cropping models for demonstrations. With these intense efforts the number of village level CBO meetings went beyond planned at the beginning of the phase.

MSMS (Mandal Sasya Mitra Samakhya): There are 8 MSMSs organized and are effectively functioning in 8 mandals in the project area. The MSMS meetings were facilitated at Mandal level by Area Team Leaders (ATLs) and Agriculture Extension Officers (AEOs). The MSMS members played an important role particularly in organizing mandal and district level awareness campaigns such as Drought and Desertification Day and campaigns on Sustainable Agriculture, International Women's Days etc. MSMS members also were formed as monitoring committees and participated in participatory monitoring process conducted during July 2014. The teams of MSMS members visited randomly selected villages, and monitored the progress in implementation of the activities against village level yearly action plans. The feed back of the MSMS monitoring teams was very helpful for the GSMS in improving the implementation of the planned activities. There was visible improvement in the villages where the MSMS monitoring was done in terms of participation of GSMS members in management & utilization of GSMS owned equipment like sprayers, sprinklers etc.

ASMS (Apex Sasya Mitra Samakhya): The Apex Sasya Mitra Samakhya (ASMS) which was constituted with 5 members from each of 8 MSMSs, 5 from WDCs of 16 Watershed villages and 5 progressive farmers with a passion for SA started to play an important role in PPIME (Participatory Planning, Implementation, Monitoring and Evaluation) of Project. Generally ASMS meetings are held once in a quarter to review the progress and plan for the next quarter. During the reporting period 4 ASMS meetings were conducted as against planned 3 meetings. There was a special meeting conducted in September for involving them in planning for the next phase of the project. During the meeting held in April, ASMS proposed to increase the number of rain fed demo plots in order to sensitise more number of farmers about the benefits of drought resistant inter cropping models of millets and pulses. Hence the number increased to 10000 demo plots as against previous year's 6400. Unfortunately the plan did not work out due to severe drought conditions during sowing period. During the meeting held in July 2014, ASMS discussed about the drought conditions, distressed migration and proposed contingency crops like jowar, horsegram, greengram, blackgram, field beans etc which are of short duration crops and provide animal fodder if not grains. At the time of reporting i.e 31st December 2014, green gram, field beans and horse gram were profitable and also provided fodder.

A special ASMS meeting was held in September 2014 and was used as a participatory forum for the planning process of next project phase i.e 2015-18. ASMS provided inputs in the planning process and provided feedback on the implementation of various programme activities of the current phase and on the outcome and impact of program activities; which were also used as inputs for the next phase planning. Further it also discussed about need for advocacy and lobbying for favourable policies for scaling up the proven drought mitigation technologies and practices.

3. ACTIVITIES: Demonstration on SA Cropping Systems, Drought Mitigation Technologies and practices in annual crops:

During the reporting period the efforts were continued to promote the diversified intercropping models developed by AF. But it was a very harsh sowing season with half of the project area did not receive any rains during June & July (Right time for land preparation & sowing). However AF put in efforts to continue the demonstrations in villages wherever it rained in the project area.

During the reporting period, annual demonstrations of 10 models of rain fed cropping systems were planned on a big scale with 10,000 farmers on 10,000 acres under rain fed conditions. In rain-fed demo plots women were encouraged to actively participate in deciding the crop models suitable for them as they tend to prefer food crops compared to men who tend to prefer cash crops. Special meetings were conducted with SMGs for selecting the eligible and willing farmers to take up demo crop models. The cropping systems were designed not only based on agro climatic conditions but also keeping in view the objective of food and nutritional security at household and at project level. The models of intercrops were a mix of pulses, millets and vegetables like red gram, pearl millet, sorghum, foxtail millet, field beans, cow pea, castor, cluster beans, ladies finger, bitter gourd, ridge gourd etc. The important eco-friendly SA practices included were use of botanicals, pheromone traps, border crops, trap crops etc for pest management. A handbook on cultivation of the 10 models of cropping systems and SA practices was printed and circulated widely among the target group farmers.

AF supplied High Yielding Varieties (HYV) of seed (pulses, millets and vegetables) needed for these crop demonstrations the rain fed farmers who came forward to take up demo plots. The major costs such as ploughing, sowing, bio-fertilizers and bio-pesticides, weeding, harvesting etc were borne by the farmers themselves. Social equity was considered as very important aspect in selecting the demo farmers so as to involve socially vulnerable groups in taking up Sustainable Agriculture practices under rain fed conditions.

With severe drought conditions during the sowing period only 5790 farmers could be facilitated to sow the seed in time. Each demo plot was sown in 1 acre. Among the 5790 farmers who opted for demo plot, 2084 (36%) families belong to SC/ST, 198 families were of woman headed, and 2547 (44%) families belong to BC communities.

3.1 Timely Sowing of rain fed crops in the absence of rains during sowing season:

In the villages where sowing on time was not possible for want of rain, AF, in collaboration with farmers and their SMGs conducted experiments and demonstrations on the farm for sowing on time using technologies and practices like Aqua Planter, Manual Water Sowing etc.

Ananta Planter was designed by RARS (Regional Agriculture Research Station) designed and was tested extensively by AF for the past one year. Ananta Planter is 4 times more efficient than traditional planters. It is a tractor drawn implement and can be used during night times also. Hence it is very helpful on the lands of Anantapuram district where the soil moisture gets evaporated within 2-3 days and the sowing operations need to be completed that time, which is not possible with traditional planters. Ananta Planter is handy in such circumstances with 4 times increased efficiency and the facility to use it round the

clock. It was originally designed for sowing groundnut but was improved by AF to sow millets and pulses. This proved to be a significant improvement for timely sowing of crop models promoted by AF before the soil moisture dries up.

During the crop season we organized demonstration of the use of Ananta planter in the project area covering about 420 acres of land covering 200 families and 4000 farmers participated as observers. They expressed their happiness over such technological intervention as it saves time and cost. Many of the small & marginal farmers do not own the implements for sowing. And generally the demand for hired implements will be very high and availing them on time for small farmers becomes a herculean task during the sowing season.

Aqua Planter was also designed by RARS to sow simultaneously the seed and adequate water (when the soil moisture is inadequate or absent) in order to help in germination and to grow crop for three to four weeks. The Aqua planter was demonstrated on a small scale in the previous year.

During the sowing season this year, 50 demonstrations were conducted in 50 villages using Aqua planter which involved over 1500 farmers, various Government officials and Agriculture Researchers.

Manual watering techniques for sowing:

Some simple techniques, which can be easily practiced by small farmers were also tried for timely sowing like manual water sowing and dry sowing followed by light irrigation.

Row Water Sowing is a technique followed for establishing lesser plant density crops like castor and redgram. One tanker containing 5000 litres of water was needed for sowing castor and redgram on one acre of land. Shallow plough furrows were made and seeds were dibbled in the furrow. Water from tanker was added in the furrow using pipes and the furrows were closed with a plank. This kind of demonstrations were done on 40 acres of land belonging to 40 marginal rain-fed farmers in the project area. It rained on 20 plots after 20 days from sowing. Another 10 plots received rain after 30 days from sowing. The germination and survival rate of plants on these plots was more than 80 per cent and normal yield is expected provided timely rains subsequently. On the remaining 10 plots there was no rain and crops were dried up. However, red gram could survive for about 45 days after sowing without water. On 5 demo plots where the rains failed, protective irrigation was given after 30 days from sowing and the crops are growing well. The results of these experiments proved that there are technologies and practices to sow in time despite drought conditions during sowing season. Some of the practices have greater potential for small and marginal holders as they can be done manually by family labour.

Pot Watering is one more technique of manually providing moisture for seed germination. This was tested on 15 acres covering 15 marginal farmers on a pilot basis. This technique was used for castor + redgram crop model in which plant density is lesser. The farmer families dibbled the seed in the land and added about 500 ml of water per dibble exactly where the seed was dibbled. Germination in this method was also encouraging.

3.2 Protective Irrigation during prolonged dry spells:

In the villages where the sowing operations were completed in time, prolonged dry spells of 30 to 50 days followed the sowing. AF conducted demonstrations on protecting the crops during such dry conditions by providing protective irrigation using mobile micro irrigation methods, cement lining of farm ponds etc.

AF simplified the protective irrigation technology by using locally available tractors at village level. The tractors were fitted with water tankers of 5000 liters capacity and extensively demonstrated protective irrigation on small plots. In crops with lesser plant density like castor and red gram furrow watering technique was used for protective irrigation. A furrow was made adjoining the row of plants using a plough. Water was released from the tanker along the furrow in order to provide moisture to the root zone of the plants. The experiments were conducted by providing irrigation to rows of plants while leaving one row for control without providing irrigation in order to test the efficiency of the practice in terms of increase in the yields. Rows of plants provided with protective irrigation survived whereas the survival on un-irrigated came down to about 35% that too with stunted growth. Providing protective irrigation was carried out in two modes viz (a) flood irrigation through the furrows which took 1 hour per acre to make furrows using bullocks and 40 minutes to irrigate the plants, (b) using drip irrigation system which took 2 hours for 2 persons per acre to set up the drip system and 20 minutes to irrigate the plants. Both the methods were found to be practically feasible but the choice depends upon the human & material resources available with the farmers at individual level. The actual yield increase due to protective irrigation will be measured at the time of harvest in January/February 2015.

Cement lining of Farm Ponds for storing rain water for protective irrigation: AF collected and analysed the rain fall data of the district for the past 100 years. It revealed that prolonged dry spells during crop season were very common despite normal amount of rain fall in the years. Hence water harvesting in the farm ponds and storing without seepage during rainy days can help the farmers in providing irrigation during dry spells. Under Watershed programs and MGNREGS thousands of farm ponds were dug in Anantapuram district. The original intention behind digging of farm ponds was to recharge the ground water table by letting the water to percolate in. But AF, after analyzing the rain fall data, realized that retaining the water in farm pond without allowing to percolate can be used for protective irrigation during prolonged dry spells. Hence cement lining of such farm ponds in order to prevent percolation was tried and tested during the past 6 months.

During the reporting period 16 farm ponds were lined using a low cost method with 1:6 ratio of cement and clay. 10 ponds out of the 16 were completely filled during rains in September and were used for protective irrigation on 25 acres and the crops were protected. It had not rained up to September 2014 in villages where the other 6 farm ponds were cement lined.

3.3 Annual Field Demonstrations of kharif irrigated crops:

During the reporting period thousands of bore wells dried up leaving even the irrigated farmers unable to sow crops. For the kharif season 2014, 5050 demo plots were planned under irrigation to demonstrate on reducing the cost of cultivation by following SA practices like avoiding chemical fertilisers & pesticides, including border crops, trap crops,

pheromone traps for pest management etc, promoting judicious use of ground water using technologies and equipment like sprinklers, drip irrigation etc.

Out of the planned 5050 plots, only 3064 plots were sown during the reporting period. AF ensured that all the farmers on demo plots were following the suggested SA practices which were monitored through FFS and PGS. The results of the demonstrations will be revealed in January 2015.

3.3 Perennial Rain-fed Tree Crop Models:

During the reporting period April 2014 to September 2014

- 44 plots of 1 ha each were planted under MFTC (Multiple Fruit Tree Crops) with 2540 fruit plants and 3453 bio-mass plants covering 44 rain fed farmer families
- 3 IFS (Integrated Farming Systems) plots of 1 ha each were planted with 2900 fruit plants and 1400 bio-mass plants
- 2 plots of 1 ha each were planted on Waste Land with 1800 multiple fruit, fodder and bio-mass plants.
- 6 plots of 1 ha each BIFSRA (Bio- Intensive Farming Systems in Rain fed Areas) were planted with covering 6 rain fed farmer families.

Propagating and promoting the 4 tree crop models developed by AF was continued despite poor rains during the reporting period. Rain-fed farmers were sensitized and oriented during SMG meetings and village level awareness campaigns on the importance of tree crops in drought prone areas like Anantapuram district. Area level trainings were organized for those farmers who had shown interest in going for tree crops.

3.4 Back yard activities: AF has been promoting back yard activities like Integrated Kitchen Gardens, Kitchen gardens, Back yard horticulture to improve health & nutritional security of small rain fed farmers and wage labourers.

3.4.1 Integrated Kitchen Garden Units (IKG): IKG unit is a system of back yard kitchen gardening which includes a drum for storing water and micro drip irrigation system to provide water to the vegetable plants. The objective of the IKG is to improve health & nutritional security to the families of small farmers and wage labourers through back yard production and consumption of vegetables on daily basis at a very low cost. During the previous year AF provided 300 IKG units to 200 GSMS which were distributed to the landless and other poor families who have enough back yard space, water and interest to look after the kitchen gardening activities. The families who took the units increased their vegetable consumption and also shared the vegetables with relatives, neighbours and other SMG members.

During the reporting period in many of the villages water availability, even for drinking purpose became very difficult with thousands of bore wells drying up including those of Government which supplied drinking water to the villages. Hence only 150 of the IKG units were functioning during the reporting period. GSMS took back the non- functioning units from the beneficiaries with a view to give them to other villages where water crisis is not so severe or use them once the water is available.

3.4.2 Kitchen Gardens: All the households do not have adequate space in their back yards. Hence IKG is not possible for families with very small back yard space. Hence AF has been promoting small kitchen gardens in a small space available which could be sufficient to the household level.

During the reporting period AF provided seeds of multiple vegetables like chilli, tomato, cluster beans, bitter gourd, bottle gourd etc to 1400 landless and other poor families out of which 408 (29%) were from SC/ST communities.

3.4.3 Back yard Horticulture: Fruits are a must in nutritional diet. But the price of fruits like citrus, mango, sapota, custard apple etc are increasing very rapidly. Having two or three fruit plant in the back yard helps in providing the families seasonal fruits on regular basis.

During the reporting period AF promoted back yard horticulture with two to three fruit plants covering 2425 landless families out of which 1100 (45%) belong to SC/ST communities

3.5 Piloting Rain fed Farmers' Cooperatives for securing the livelihoods:

The Pilot Project of promoting 8 Rain-fed Farmers Cooperatives in order to explore how small & marginal rain-fed farmers can achieve livelihood security in the drought prone Anantapuram district took momentum during the reporting period.

The leaders of 8 RFCs were trained on the concept of farmers' cooperatives, diversified livelihoods, bylaws and essential elements in functioning and managing cooperatives. A total of 41 (21 leaders and 20 members) from 6 villages were trained on the concept and practice of farmers' cooperatives by a consultant. With this training leaders and members realized the significance of mutual trust and Cooperation in effective functioning of cooperatives.

Members of 7 RFCs out of 8, started savings and internal lending during last year. At the end of the reporting period an amount of Rs. 120,000 was saved by the members which was used for internal lending among the members. The members of RFC at Palabavi village agreed to start savings very soon. The RFCs expressed their keen interest in taking up collective off-farm and non-farm livelihood activities to diversify their livelihood portfolio. In this regard, an annual plan was discussed and developed separately with each RFC based on the needs, resources and opportunities available with each group. Plans also included long term goals of earning additional income from alternate livelihoods like rearing of small ruminants, rain fed tree crops etc. The RFCs also discussed about the immediate needs for the crop season and set the activities like sharing/hiring implements, labour exchange and collective marketing as priority for the current crop season. Efforts were put in involving the members of RFCs in planning and executing small tasks by delegating the responsibilities among themselves.

Three to Four member functional committees were set up from the Boards of Directors of the cooperatives to explore supplementary livelihood opportunities within their resources, knowledge and skill sets. The committees, with support from area teams of AF, conducted a detailed market study on sheep rearing, leasing-in of tamarind trees for selling deseeded

tamarind. It was ensured that the members have adequate experience/knowledge of the activities chosen.

Four of the cooperatives [Yerraborepalli, Devadulakonda, Konampalli and Kurlapalli] opted for collective rearing of ram lambs and one [Seegalapalli] to pursue leasing-in of Tamarind trees as the most suitable activity to take up on collective business mode as they already skilled workers in tamarind value addition like de-shelling, de-seeding and pressing. The profitability of the collective additional livelihood activities would be known by April 2015.

3.6 Alternate Livelihoods:

Severe drought conditions during the reporting period led to farmers' distress and many of the active family members temporarily migrated to Bangalore in search of employment. All of them were involved in unskilled activities like truck loading, construction labour, home maids etc. This situation once again proved that the AF's claim for skill based trainings to rural youth and consistent policy advocacy on the need for industrial development in the district as the agriculture sector under drought prone conditions can not provide sufficient employment to the lakhs of needy families.

3.6.1 Driving skills for rural youth: Two state of the art Driving Schools set up by AF at Anantapuram and Kalyanadurgam trained youth on LMV (Light Motor Vehicles) and HMV (Heavy Motor vehicles). Professional drivers are in great demand in cities which provides a decent and dignified living outside the villages. During the reporting period 180 boys were enrolled during the year and 144 of them were trained out of which 85 (59%) were from SC/ST families of the project area. By the end of the reporting period 73 youngsters got employment as drivers. They were able to earn a monthly income of above Rs. 6000/- .

3.6.2 Training for women in garment making: In order to train women on garment making, training centres were set up in the villages on temporary basis. During the reporting period 745 girls enrolled for the training. Among the 745 girls, 360 (48%) belong to SC/ST communities. By the end of December 2014, 350 girls completed the course while the remaining were still undergoing training. They were also trained on personality development, gender issues and personal hygiene. 100 trained girls (About 29%) of the trained girls started to earn an income of about Rs. 2000 per month by working at home. These girls also improved their self confidence levels with newly acquired skills and improved social awareness. A lot needs to be done in making the garment making activity a sustainable source of income for the rural women. AF started to build linkages with garment manufacturers in the nearby towns and cities. This can be beneficial for the trained women as well as the manufacturers. The manufacturers can reduce their cost of production by decentralising the production at low cost in rural areas.

3.6.3 Collaborating with Vocational Training Institutions & Job Fairs: AF collaborated with agencies like TTDC and RUDSETI to train youth on skill based livelihood activities. During the reporting period 44 youth were trained on embroidery, electrician etc in these institutions and 31 of them started earning an income ranging from Rs. 3000/- to Rs. 6000/-. AF also conducted one job-fair at district level to link the unemployed youth with potential employers from cities and towns. 150 educated/semi educated youth and potential

employers were involved in this job fair. 90 of the attended 150 youth were selected by the employers with a monthly salary ranging from Rs. 6000/- to Rs. 8,000/- based on the skills and qualification of the selected youth.

3.7 ADAPTION TO CLIMATE CHANGE:

Low Carbon Farming practices by Farmers:

During the reporting period, LCF was continued by 1500 farmers. The coverage of the acres came down due to drying up of bore wells. Regular meetings were conducted in all the LCF villages so that all the LCF farmers attained good understanding about the program. Women farmers actively participated in these meetings. Farmers are following the LCF norms and protocols on their selected 1 acre plot. Detailed demographic data was collected in these villages. GPS survey work was continued during the reporting period.

LCF Research: The research is going on with measuring the emission reductions in Paddy and groundnut crops with different package of practices in the laboratory set up on AFEC campus. The research needs to be continued for another 2 to 3 seasons to see the trends in emission reductions. EDF is providing financial support, scientific input and monitoring this highly scientific research project.

3.8 Policy advocacy & Public Opinion Building on Sustainable Agriculture and Drought Mitigation Technologies & Practices:

During the past 6 months AF conducted demonstrations of technologies for timely sowing of crops in the absence of sufficient rains and protecting the crops by providing protective irrigation during prolonged dry spells involving stake holders like farmers, CBOs, CSOs, public representatives like MLAs and MPs, State & District level Government Officials from Revenue, Agriculture, Horticulture, Ground Water, Irrigation departments etc for sensitising the stakeholders and for building strong public opinion on the relevance, importance and the need for promoting them on large scale.

During the reporting period demonstrations of Aqua Planter on timely sowing of crops and Protective Irrigation using mobile micro irrigation unit were conducted involving the District Collector and heads of various government departments.

A large campaign was conducted on 17th June 2014, the “World Day to Combat Drought & Desertification” involving more than 1200 farmers, representatives of CBOs, CSOs, NGOs, Government Officials including the District Collector, Scientists etc.

The 10 point programme designed by AF was presented to the participants and the participants unanimously resolved to send a representation demanding implementation of the “10 Point Programme” and “Ananta Water Grid”, (a concept proposed by AF on filling the traditional water bodies in the district with river waters from outside the district) to the Chief minister through the District Collector.

4. WHAT WENT WELL AND WHAT DIDN'T:

Went well:

- Even during severe drought conditions, some light could be seen at the end of the tunnel on the efficacy of drought mitigation technologies and practices, particularly cement lining of farm ponds. 16 farm ponds were lined with cement and clay during the year and 10 of them got filled up with rain water (during September & October) and used for protective irrigation of about 25 acres during prolonged dry spells of over 50 days, despite the fact that the monsoon season recorded the lowest rain fall in the past 10 years. From this experience farmers could realize that the farm ponds could be used to store rain water which helps in protecting the crops during dry spells. Adding value to this result, contingency crops of short duration like horse gram, jowar, green gram, field beans which were sown during August & September proved to be very much successful with reasonable yields while also providing fodder to livestock during the difficult year marked by severe fodder shortage due to drought. And short duration contingency crops reduce the risk of crop failures and also provide valuable fodder. The Chief Minister of Andhra Pradesh also was sensitised in this regard and a favourable policy to intensify farm pond digging under MGNREGS became a policy. This is the most important positive development seen during the year.

Didn't go well:

- It was planned to increase the number of rain fed demo plots significantly during the *kharif* season so as to reach large number of small and marginal farmers and to enable them to go through hands on experience of the benefits of drought tolerant cropping models which also provide food & nutritional security to the farmer families.

Failure of monsoon season resulted in almost 50 % of the farmers leaving their lands fallow for lack of rains during sowing season. Still worse was the fate of the farmers who had sown with some scanty rains during June & July with their germinated crops completely dried up as prolonged dry spells of over 50 days followed the sowing, leaving the hapless farmers lost on their investment on seed and sowing operations.

However, these situations were seen as an opportunity to spread understanding of the farmers and other stakeholders on the need for adopting drought mitigation technologies & practices during drought conditions.

5. LESSONS LEARNT:

- There is a need for improving MIS for better flow of information in project management.
- Strengthen PPIME processes for continuous learning and improved organizational efficiency and achieving project objectives.
- AF understood the Karyakartas are not allowing the CBO to take responsibility. Discontinuing Karyakartha system though initially caused some disturbance, ultimately proved right with increased participation of CBO members in Project activities.

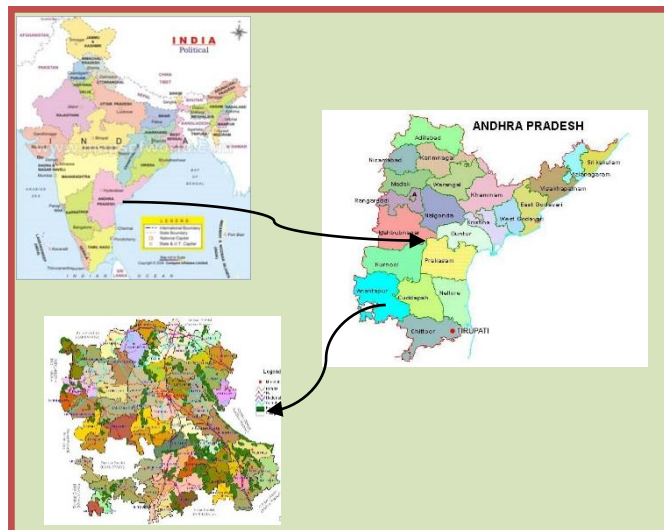
- The gender aspect needs reinforcement both at the organization and at the program level. The gender policy was reviewed and improved. A competent consultant to guide the organization on gender issues was appointed during this year.
- Staff turnover at grass root level was alarming at one stage. Educational qualification required for STOs was lowered from graduation to 12th class level which proved a good decision as the graduates look for better opportunities in towns and cities and many of them do not like to live and work in villages.

Our Brief History

AF Ecology Centre was founded by Father Vincent Ferrer in 1982. Since then we have been involved in Rural Development. The programmes included watershed development, agriculture, drought management, non-farm livelihoods, gender and policy advocacy. We have made a substantial contribution since 1986 in Anantapur district with our Participatory Watershed Development Programme supported by EED (Germany) & ICCO (Netherlands). It was perhaps the largest participatory watershed programme by an NGO in India spread over about 300 villages, covering about 1.35 lakh ha of farm land and 60,000 farmers. We're known for our participatory approach and very high quality in watershed development on a sizable scale. The major interventions under the watershed programme included Soil and Moisture Conservation, Rain Water Harvesting, Horticulture, Rainfed Agronomical Practices, Farm Forestry, Bio-gas and Peoples Institutional Development.

Since 2007, we Shifted our programme to promoting Sustainable Agriculture. It was due to the Government initiating watershed activities in all villages in the District under MGNREGS. So we decided not to duplicate what Government is extensively implementing. However, we continue to implement participatory watershed development projects with the support from NABARD and IWMP (Integrated Watershed Management Project) & MGNREGS under Ministry of Rural Development, Government of India. We have been also contributing substantially to the effective implementation of MGNREGS by way awareness raising and empowering the labour to assert and access their right to employment and utilize the same effectively to improve productivity of their lands by undertaking soil and moisture conservation, farm ponds, rainfed horticulture, plantation etc.

We have made a significant contribution in influencing a favourable and enabling policy conditions for a people centred watershed development, rural livelihoods, gender, poverty alleviation, and rural employment (MGNREGS) in the State of Andhra Pradesh. We have been actively involved in various policy making bodies like Andhra Pradesh Water Conservation Mission, Andhra Pradesh State Commission on Farmers Welfare, APRLP, APREGS and Advisory Committee on Watershed Development Programme of Andhra Pradesh. Further AF has been actively involved in various consultations by the Ministry of Rural Development at National level.



About Anantapur District and relevance of Sustainable Agriculture, Watershed Development & Alternative Livelihoods

Located in south-western corner of Andhra Pradesh, Anantapur District is the centre of rain shadow area in South India. It receives the least rainfall in the state of Andhra Pradesh, and the second lowest in India, after Jaisalmer in Rajasthan, averaging at 552 mm annually. It is one of the poorest districts in the country.

Anantapur farmers are largely dependent on chronically drought-prone, rain-fed agriculture; and mostly a single crop of groundnut in a year is sown in about 9 lakh ha under such harsh and agro climatic conditions. Of its geographical area of 19,00,000 ha, (largest in AP) totally 11,00,000 ha is the cultivated land; a vast 10,00,000 ha are rain-fed while only about 1,00,000 ha are irrigated, that too mostly under undependable tube wells and surface water bodies. This is the only drought-prone district with a tiny 10% of cultivated area under irrigation and a large 90% under rainfed farming.

With virtually no other non-farm livelihoods, Anantapur backwardness and poverty are well indicated in its severe rural indebtedness, high turn up of labour under MGNREGS, farmers' migration, seasonal migration and highest number of farmer's suicides in the country. The District has predominantly i.e., 6.3 lakh rainfed small and marginal farmers (93%) of the 7 lakh total farmers, mostly belonging to Dalits, Tribals and other Backward communities. About 20 per cent of the population comprises dalits and tribals, and 60 per cent comprises of backward communities. Malnutrition, illiteracy, illhealth, deprivation, caste and gender discrimination are predominant. Added to these social divisions, crime and discord between various factions and groups are common in the district.

Green Revolution model of agriculture, which is high-tech, high cost and chemical intensive is highly hazardous for Anantapur due to small holdings and frequent droughts. High pressure on groundwater resources and over exploitation is leading to undependable and unsustainable even to the meager irrigation of about 10%.

The above harsh agro-climatic and socio-economic conditions warrant an urgent and high priority for Sustainable Agriculture, Watershed Development and Diversified Rural Livelihoods.

AF sees it as challenging opportunity to make a difference. We believe that success in Anantapur district is a recipe for any other region.



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