

# Integrated Watershed Management through Consortium Approach

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## Executive Summary

Watersheds are widely accepted as appropriate geophysical entities for natural resource management in the semi-arid tropics. Management of natural resources on watershed basis is a complex process involving several disciplines and institutions. It has been long debated about how to achieve convergence of various disciplines and institutions at watershed level. It is indeed challenging to bring together various agencies that have their own strengths, limitations, and styles of functioning, and form a consortium to deliver goods to the rural poor.

ICRISAT took up this challenge of converging various agencies at watershed level by putting together a consortium of organizations – national and state agricultural research institutions, government departments, non-governmental organizations, farmers’ organizations, and women’s self-help groups – for effective delivery at watershed level. The basic characteristic of an effective consortium is the common vision of the project goal. The consortium partners must make conscious efforts to develop the vision of the set goal. The partners of the consortium should deliberate and discuss the objectives of the mission, know their roles and responsibilities, and develop a sense of belonging with their fellow partners.

Developing a common vision of the project outcome is very critical particularly when the project is being up-scaled from ten nucleus watersheds to 40 satellite watersheds. It involved taking the institutions into confidence by holding a series of consultations. Once the organizations agreed to work in consortium mode each organization nominated team members to represent their organization on the consortium.

The team building exercise started with the core team in the first round and spiraled up further to include the entire network of consortium partners in the fourth round. The project objectives were reinforced at all the levels and across all the partner-organizations of the consortium. The learnings that occurred at one level were reinforced at the next level and built into the process. The workshops adopted the principles of openness and complementarity to get the best out of the strengths of consortium partners. The proceedings of different levels of team building workshops and the outputs are documented in this report for use of research and development workers for analysis and use in similar contexts. Besides, it also details the learnings that accrued alongside.

# Team Building for Integrated Watershed Management through Consortium Approach

## Introduction

Natural resource management (NRM) in rainfed areas is very complex and arduous. Earlier, NRM in rainfed areas connoted soil and water conservation by putting up bunds and harvesting runoff. However, efficient use of stored moisture or building up soil fertility was not given due emphasis (Singh 1998, Wani et al. 2002a). The program had a target oriented approach and laid emphasis on physical structures. Moreover, these activities were carried out by one or two organizations without much coordination among each other and in a top-down approach. There was hardly any involvement of the stakeholders in planning, implementation, and maintenance. Hence, such efforts did not make headway in impacting the livelihoods of the rural poor in the rainfed areas (Farrington and Lobo 1997, Joshi et al. 2000, Dixit et al. 2001, Wani 2002).

Over the years, many lessons have been learned by researchers and development functionaries on ways to involve the communities to manage the natural resources for sustainable rural livelihoods. One of the major learnings is that unless there is some tangible benefit for the community, people's participation will not come forth (Olson 1971). To enhance community participation it was necessary to show tangible impact of the soil and water conservation practices. Participatory on-farm watershed projects spent considerable time and resources to evolve ways and means to show desirable tangible benefits and ensure people's participation. This involved the expertise of a range of different organizations including research centers, development departments, training institutions, community-based organizations, and civil society organizations. The strengths of different participating organizations can be gainfully utilized by their convergence at watershed level to harness the synergy. The Asian Development Bank (ADB)-funded project developed and evaluated an innovative farmer participatory on-farm watershed management. The consortium of various research, development, and extension organizations involving researchers, civil society members, government departments of the State, and policy makers provided a very good backstopping to non-government organizations (NGOs), and farmers for sustainable outcome from NRM interventions (Wani et al. 2002b).

The United Kingdom's Department for International Development (DFID)-funded project of the Andhra Pradesh Rural Livelihoods Programme (APRLP) is technically supported by a consortium led by ICRISAT. It has adopted this approach on a larger scale for the first time and attempted to put together a consortium of organizations – national and state agricultural research institutions, government development departments, NGOs, women's self-help groups (SHGs) – for effective convergence at watershed level.

The basic characteristic of an effective consortium is the common vision of a shared goal. The consortium partners must make conscious efforts to develop the vision of the set goal. The partners of the consortium should deliberate and discuss the objectives of the mission, know their roles and responsibilities, and develop a sense of belonging with their fellow partners.

## Strategy

The ICRISAT-led consortium is to provide technical backstopping to the DFID-APRLP to scale up the benefits of holistic watershed management approach through convergence for improving the livelihoods of the rural poor. Ten nucleus watersheds and 40 satellite watersheds in Mahbubnagar, Kurnool, and Nalgonda districts are selected to develop the strategy for up scaling. Considering the number of consortium partners involved it was essential to build a team of partners/individuals to work together.

- The first step to build the team involved discussions with heads of organizations and two workshops detailing the project objectives and strategy.
- Once the organizations agreed to work in consortium mode each organization nominated team members to work for the project.

These partners bring with them their strengths (individual as well as organizational), styles of functioning, limitations, and behavioral and attitudinal patterns. It was essential to build rapport among team members and also to initiate the process of team building.

The team building exercise started with the core team in the first round and spiraled up further to include the entire network of consortium partners in the fourth round using the cascade approach. The first round included the core group of scientists at ICRISAT; the second included the entire ICRISAT Watershed Team along with the core group. In the third round, the national agricultural research system (NARS) partners including National Remote Sensing Agency (NRSA) joined. The fourth round consisted of the entire network of government and NGOs including all those who participated in the previous rounds of team building exercise. Thus, the project objectives were reinforced at all the levels and across all the partner organizations of the consortium.

The broad objectives of the team building workshops were:

- Bring about a common vision of the APRLP watershed development program among consortium partners.
- Inculcate a team spirit among the members to achieve the goal of sustainable NRM for improved rural livelihoods.
- Develop an understanding of and appreciation for the efforts and initiatives taken up by various teams.
- Discuss and develop action plans for desired impact.
- Develop a combined strategy to up scale the impact to the neighboring watersheds.

# Team Building Level 1

## Background

A meeting was organized for the core members of ICRISAT watershed team to discuss the modalities of the proposed watershed team-building workshop with the partners of the APRLP Watershed Consortium. The list of core watershed team members and the details of the workshop program are enclosed in Appendixes 1a and 1b. The overall goal of the Team Building Level 1 Workshop was to develop a common understanding of the project and build an effective team for meeting the objectives of the project. The specific objectives were:

- Develop a common vision of the APRLP watershed program.
- Develop the project management structure and terms of references (TORs) for different positions.
- Inculcate team spirit among the members and discuss and develop action plans for the ensuing crop season 2003.

## Summary of the proceedings

SP Wani welcomed the Core Team members and presented a brief report on the background of watershed development projects at ICRISAT. The Tata and APRLP watersheds in Madhya Pradesh, Rajasthan, and Andhra Pradesh are making steady progress since their inception. SP Wani urged the members to keep the good work going with additional vigor as these states are experiencing severe drought. He highlighted the importance of team building and elements involved in the process. The points that emerged during the discussions that followed are summarized below.

## Team building

- Teamwork for NRM was first initiated in BW 7 watershed research in the erstwhile NRM Program at ICRISAT, Patancheru in 1995 and was further strengthened under the ADB-funded watershed project. It is all the more important to harness the synergy at this juncture when many projects are being implemented with various partners both within and outside ICRISAT.
- Team building is very crucial to the success of multidisciplinary research projects.
- Team members need to be proactive and 'risk taking' for a better team output.
- Members need to be committed to the team goal and stretch the capacity of each team member.
- The strengths of the members should be identified and their limitations should be accommodated to harness the synergy.
- Experiences should be exchanged so that the project team can learn from others' mistakes and build on their strengths.

## Organization and management

- Terms of Reference (TOR) for Team Member, Activity Coordinator, and Site Coordinator were discussed and finalized (Appendix 1c). TORs can be modified from time to time based on learnings that accrue during the course of the project.

- Three organization and management structures were presented and discussed at length. Organization structure # 2 was accepted with a few modifications (Appendix 1d).
- Site Coordinator will facilitate execution of all the planned activities as per the agreed work plans together with project implementing agency (PIA)/NARS partners and collaborating agencies.
- Activity Coordinator will be responsible for planning, execution/monitoring, and reporting of his/her area of expertise and responsible to the Project Coordinator.
- It was made clear that the roles and responsibilities are limited to facilitate discharge of various functions by team members and are not administrative.
- Project Reporting Cell will facilitate compilation of reports and proposals and conducting of workshops and meetings.
- Organization and management of team activity needs efficient and organized communication. A good communication network needs to be put in place by compiling email and telephone addresses of all the members.
- To improve the effectiveness of the teamwork, it was suggested that members might try and adopt direct communication wherever appropriate and needed. They should be flexible but follow an organized approach.

## **Strategy for building nucleus watersheds**

The activity coordinators made presentations. Work plan for kharif 2003 was discussed and operational plans were finalized. The summary of the discussions is as follows:

- Characterization of watersheds  
Piara Singh (biophysical) and Bekele Shiferaw (socioeconomics) will coordinate the activity.
  - Geo-positioning of all nucleus watersheds needs to be completed soon.
  - Biophysical and socioeconomic characterization of nucleus and satellite watersheds will be initiated soon.
  - Data on agro-ecological potential should be generated to determine yield gaps.
- Integrated rainwater management  
Prabhakar Pathak is the activity coordinator.
  - Issues of groundwater utilization and mechanism and monitoring of conjunctive use need to be addressed.
  - All nucleus watersheds to be equipped with runoff and soil loss gauging stations.
  - Usage of hydrological data to guide farmers for developing sustainable management of water and soil resources.
  - Simple systems to estimate the level of recharge in wells to be worked out for short- and long-term use.

- Collaboration with National Geophysical Research Institute (NGRI) and International Water Management Institute (IWMI) is needed on groundwater recharge.
- Water sharing and demand need to be worked out in Kothapally and Lalatora watersheds in India.
- Integrated nutrient management  
TJ Rego and SP Wani will coordinate the activity.
  - Soil sampling in all the satellite watersheds should be taken up on priority and analysis of results will be communicated to farmers soon.
  - A methodology for representative soil sampling of watersheds should be developed.
  - Micronutrient studies should be continued to understand residual effects.
  - Quantification of biological nitrogen fixation (BNF) in different legume-based cropping systems should be undertaken.
- Crop intensification and diversification  
A Ramakrishna will coordinate the activity.
  - Crop productivity vis-à-vis water-use efficiency and crop diversification should be studied.
  - Diversification across the watersheds or within the watershed need to be compared.
  - How and which watershed interventions increase cropping systems productivity and trade off need to be examined.
  - Crop intensification and diversification should have clear goals and aim to increase incomes and stability.
- Integrated pest and disease management  
GV Ranga Rao is the activity coordinator.
  - Strategic monitoring and experiments will be conducted in nucleus watersheds.
  - Scaling up in satellite watersheds through technology dissemination and capacity building will be undertaken.
  - One watershed each in the 3 districts will be made a model integrated pest management (IPM) watershed and learning spot.
  - Forewarning of pest incidence and control measures should be provided.
  - Neem seed collection campaign will be undertaken to promote use of biopesticides in IPM.
- Monitoring and impact assessment  
B Shiferaw and SP Wani will coordinate the activity.
  - Socioeconomic and biophysical data will be collected in all the nucleus watersheds.
  - Available secondary data from various watersheds will be used.

- Detailed baseline and final data sets will be generated.
- Procedures for monitoring of biophysical data will be finalized.
- Income generation activities and livelihood strategies  
SP Wani and A Ramakrishna will coordinate this activity.
  - Livelihood options through NRM will be developed.
  - Options for quick income generation will be explored.
  - Village-based seed bank systems will be initiated.
  - Diversification with medicinal and aromatic plants and linking producers with commercial organizations for marketing will be initiated.
  - Crop-livestock interactions, breed development, and nutrition will be studied.
  - Processing and value addition for income generation for non-farm groups will be facilitated.
- Capacity building  
SP Wani, TJ Rego, and A Ramakrishna will coordinate the activity.
  - ICRISAT will provide technical backstopping and nucleus watersheds will be used as sites of learning.
  - Training of trainers to build trainers' capacity will be organized.
  - There will be convergence with other organizations for capacity building.
  - Training schedules for various activities will be developed well in advance for logistics, roles, and responsibilities.
- Strategic research  
SP Wani, TJ Rego, and Piara Singh will coordinate the activity.
  - Simulation models to predict yields, cropping systems, and agroecological potential will be used.
  - Coping strategies for drought management will be studied.
  - The impact of climate change on climate variability will be assessed.
  - Water budgeting at watershed level will be undertaken.
  - Geographic information system (GIS)-based model for development and management of watersheds will be developed.
  - Strategic research in carbon (C) sequestration, community participation to increase C sequestration, and C simulation studies will be conducted.
  - Emphasis will be laid on measures to overcome biological constraints.
  - Nutrient budgeting will be done to identify and reduce the gap between potential and actual BNF.
  - Visiting scientists or research scholars will be hired, if needed.



## Team Building Level 2

### Background

Following the first level of the team building workshop for the core members (GT3 scientists) it was decided to extend the team building approach to include all ICRISAT Watershed Team members (scientists from other GTs). This workshop was planned to discuss the research activities in detail and prepare to discuss with NARS partners.

The Team Building Level 2 Workshop was held with the following objectives:

- Gain a common vision of the watershed development programs being operated at ICRISAT and also the ICRISAT watershed team organization.
- Develop an understanding of and appreciation for the efforts and initiatives of different activity teams.
- Inculcate a team spirit among the members to achieve the goal of sustainable NRM for improved rural livelihoods.
- Discuss the proposed strategies for the ensuing crop season.

### Summary of the proceedings

At the outset SP Wani welcomed the ICRISAT Watershed Team members and presented a brief report on the background of watershed development projects at ICRISAT and an update on the progress of the Tata and APRLP watershed projects (Appendixes 2a and 2b). He also presented the importance of team building and elements involved in the process. The points that emerged during the discussions that followed are summarized below:

- Teamwork in NRM research at ICRISAT was initiated in 1995 and consolidated further under the ADB-funded project. ICRISAT has considerable experience in this field. It is important to harness this when many such projects are being implemented simultaneously.
- The Tata and APRLP watersheds in the states of Madhya Pradesh, Rajasthan, and Andhra Pradesh are making steady progress since their inception. It was agreed to continue the good work vigorously as these states are experiencing severe drought.
- Team building is very crucial to the success of multidisciplinary research projects. Team members need to be proactive in order to get a better output.
- It was agreed to share different technology exchange experiences and prepare a compilation of such experiences which will serve as lessons for the project.
- It was also agreed to compliment the strengths of the PIAs and accommodate their limitations to harness the synergy.
- The Team Organization Structure was presented and explained in detail. The roles and responsibilities of team members and Activity Coordinator and Site Coordinator were circulated (Appendix 1c)

The leaders of different activity groups briefly presented the progress of work and work plans for the ensuing season. The discussion during this session is summarized below:

- Soil test results will be used to get the best outcome by drawing up best integrated nutrient management (INM) and cropping strategies in the next season.
- A decision support system is being developed based on the nutrient balance studies so that sustainability can be achieved in terms of crop yields over the years. Lessons learned from watershed activities at Lalatora in which wheat was benefited in the soybean-based cropping system will be used to address such issues.
- The message of the Director General, ICRISAT to seriously deliberate on the issues of drought and strategies to cope with it was communicated to the group by CLL Gowda. The group agreed to develop effective action plans to address the issues and discuss these proactively with the Government of Andhra Pradesh.
- The draft proposal for the National Challenge Programme to be led by ICRISAT is getting ready and is being sent to external referees. The proposal will be finalized after holding stakeholders meet during March 2003. As part of the program a Virtual University for Drought Management will be launched on 5 June 2003 coinciding with the World Environment Day. Besides India, Sri Lanka and Nepal will be partners in this effort.

Followed by a presentation on “Team organization and management” by SP Wani, presentations by Activity Groups continued. The discussions are summarized below:

- Organization and management of team activity needs a smooth flow of information among the members of different groups. Hence, a good communication network may be set up by compiling email IDs and telephone numbers of all the members. Further, it was suggested that this activity might form a part of the ongoing effort to create an intranet-based communication network.
- To improve the effectiveness of the teamwork it was suggested that members might try and adopt direct communication wherever appropriate and needed. Information should not be protected and should be disseminated freely for the benefit of all members.
- It was suggested to rename the Project Monitoring Cell to Project Reporting Cell to facilitate report compiling, workshop/meeting-scheduling, etc., to meet donor requirements.
- It was felt necessary to generate data on the cost effectiveness of soil and water conservation structures so that they can be used in modeling for decision support.
- Seed requirement of various crops that are being planned for the ensuing kharif may be passed on to Belum VS Reddy. This will help to initiate steps to procure required quantity of seeds.
- Members expressed concern over the number of activities planned by the socioeconomic studies group. B Shiferaw clarified that these were not the ones prioritized but the overall summary of activities over the project period.
- Biopesticide production at village level could be explored as an income generating micro-enterprise. Further, it was decided to train 4–5 village youth and farmers in each of the watershed villages as ‘pest monitoring scouts’. This will aid pest monitoring during cropping season.

- The team agreed for a proposal of developing an intranet-based communication network to facilitate better coordination among team members besides aiding monitoring by the Project Coordinator.
- The members were urged to participate in the capacity building activities that are undertaken as part of the project. The services of the research scholars, research associates, apprentices, and visiting scientists should be availed for mutual benefits.
- There is a need to delineate the capacity building needs of various stakeholders involved in the project. It will help draw up need-based training programs.
- An evaluation of the team building exercise was carried out by handing out questionnaires to all the participants at the end of the workshop. The details of the evaluation are in Appendixes 2c and 2d.

## Team Building Level 3

### Background

After the two levels of team building workshop with the core team and the entire ICRISAT watershed team, the third level of team building workshop was conducted with other partners of the APRLP watershed consortium. The overall goal of this workshop was to develop a common understanding of the project goal and build effective activity teams for carrying out the planned program.

The Team Building Level 3 Workshop had the following specific objectives:

- Bring about a common vision of the APRLP watershed development program among consortium partners.
- Develop an understanding of and appreciation for the efforts and initiatives of different teams.
- Inculcate a team spirit among the members to achieve the goal of sustainable NRM for improved rural livelihoods.
- Discuss the proposed strategies for the ensuing crop season.

### Summary of the proceedings

SP Wani welcomed the consortium partners. HP Singh, Director, Central Research Institute for Dryland Agriculture (CRIDA) chaired the workshop (Appendixes 3a and 3b). William D Dar, Director General, ICRISAT in his inaugural address, stressed on the importance of convergence in natural resource management research. He called upon the partners to give their best and strive for the betterment of livelihoods of rural poor in the semi-arid tropics (SAT). He stated that the watershed development project is the flagship project of the institute, and emphasized on on-farm research on watershed basis. He expected that the team would make important breakthroughs in working with other partners and communities. The models that come out of the initiative must be scaleable to other countries in South Asia and sub-Saharan Africa with similar conditions. HP Singh appreciated the team building initiatives and hoped that this will usher in a new mode of working in partnership in issues concerning multi-stakeholders. SP Wani presented briefly the evolution of team-led research at ICRISAT and the importance of teamwork.

SP Wani updated the participants on the progress achieved in the Tata and APRLP watershed projects and called upon the partners to use the available data for scientific publications by giving due credit to the concerned institutes and scientists. The participants discussed the modalities of collaboration in different activities of watershed research and development. The following teams were constituted for taking up different activities.

**Activity: Baseline survey and characterization**

**Coordinator: Piara Singh**

Sub-activity	Team members responsible
GIS mapping	YS Ramakrishna, GGSN Rao (CRIDA); Raji Reddy (ANGRAU); RS Dwivedi (NRSA); and ICRISAT scientists
Assessment of natural resources and production systems	V Veerabhadra Rao (Kurnool); T Ramprakash (Mahbubnagar); P Prasadini (ANGRAU); and ICRISAT scientists
Simulation studies	GGSN Rao, AVR Kesava Rao (CRIDA); Venkataramana, Sambasiva Reddy (ANGRAU); and ICRISAT scientists
Field verification	Suhasini (Mahbubnagar); Madhava Swamy (ANGRAU-Kurnool); and ICRISAT scientists

**Activity: Integrated land and water management**

**Coordinator: P Pathak**

Sub-activity	Team members responsible
Identification/development of land and water management options for different benchmark sites	Mohan Rao/Sarojini Devi (ANGRAU); and ICRISAT scientists
Identification of technically and economically superior runoff harvesting and groundwater recharge systems	Sarojini Devi (ANGRAU); K D Sharma (CRIDA); and ICRISAT scientists
Identification of systems for water-use efficiency in relation to cropping systems	Goverdhan (ANGRAU); and ICRISAT scientists
Impact assessment of watershed technologies	KD Sharma (CRIDA); and ICRISAT scientists

**Activity: Integrated nutrient management**

**Coordinators: TJ Rego and SP Wani**

Sub-activity	Team members responsible
Soil sampling in all satellite watersheds	T Ramprakash, M Singa Rao, Arun Sathe (ANGRAU); SS Balloli (CRIDA); and ICRISAT scientists
Processing and analysis of samples	T Ramprakash, M Singa Rao, Arun Sathe (ANGRAU); SS Balloli (CRIDA); and ICRISAT scientists
Crop response to nutrient application	T Ramprakash, M Singa Rao, Arun Sathe (ANGRAU); SS Balloli (CRIDA); and ICRISAT scientists
Dissemination of soil test results of 2002	T Ramprakash, M Singa Rao, Arun Sathe (ANGRAU); SS Balloli (CRIDA); and ICRISAT scientists

**Activity: Crop diversification and intensification**

**Coordinator: A Ramakrishna**

Sub-activity	Team members responsible
Exploring opportunities for intercropping, sequential cropping, and relay cropping	Vishnuvardhan Reddy, others from Home Science and Dairy Science (ANGRAU); GR Korwar (CRIDA); and ICRISAT scientists
Identification of appropriate crop rotations	Vishnuvardhan Reddy, others from Home Science and Dairy Science (ANGRAU); GR Korwar (CRIDA); and ICRISAT scientists
Increasing cropping intensity and introduction of new crops and cultivars	Vishnuvardhan Reddy, others from Home Science and Dairy Science (ANGRAU); GR Korwar (CRIDA); and ICRISAT scientists
Introduction of improved production and best-bet options	Vishnuvardhan Reddy, others from Home Science and Dairy Science (ANGRAU); GR Korwar (CRIDA); and ICRISAT scientists

**Activity: Income generation activities and impact of watershed management interventions**

**Team members: B Shiferaw, B Ramkumar, SP Wani, and A Ramakrishna**

## Other important points

- The Agricultural Research Station (ARS), Palem should intimate the list of crops and their varieties available with them for supply during kharif 2003 to Belum VS Reddy (*Action: M Venkat Reddy*)
- All the teams visiting villages should pass on information on pest/disease incidence to GV Ranga Rao.
- All the partners should participate, facilitate, and share their facilities and expertise for capacity building activities.
- The entire public awareness material and educational material should be distributed among all the partners.
- Details of nucleus watersheds and satellite watersheds should be shared with all partners.

Dyno Keatinge, Deputy Director General, ICRISAT presented “Concluding Remarks”. He stressed the importance of teamwork with several vivid examples in different fields. He recognized that it was indeed a difficult task and appreciated the initiative of the ICRISAT-led APRLP Watershed Consortium for having taken up the task. He contrasted Africa’s experience in NRM on watershed basis with that of India’s experience and attributed India’s success to the trust and sharing mechanism the communities have developed with researchers and development agencies. Finally, he emphasized that each team member should take the responsibility and that the decision-making authority must lie within the group.

The meeting was closed with a vote of thanks to the chair and all the consortium partners.

## Team Building Level 4

### Background

The APRLP-ICRISAT Program was initiated in April 2002 with an overall objective of increasing the impact of the DFID-APRLP program in rural India to alleviate poverty through increased agricultural productivity and improved livelihood opportunities. The specific objectives of the Team Building Level 4 Workshop were:

- Bring about a common vision of the APRLP watershed development program among consortium partners including the PIAs/NGOs and Department of Agriculture.
- Develop an understanding of and appreciation for the efforts and initiatives of different teams.
- Inculcate a team spirit among the members to achieve the goal of sustainable NRM for improved rural livelihoods.
- Discuss the proposed strategies for the ensuing crop season.

The APRLP-ICRISAT Program has adopted the strategy of convergence in watersheds for improving the livelihoods of poor people residing in the target districts. The watersheds are used as entry points for convergence and the watershed management will be through an innovative farmer participatory approach (Wani et al. 2002c). Following a number of meetings with consortium partners for initiating the project work in 2002 rainy season, a series of team building workshops were planned to build the consortium to review the progress and to plan the work for 2003. This workshop was the fourth in the series of watershed team building and organizing workshop. The main purpose of holding this workshop in the Office of the Commissioner of Agriculture was to expand the consortium by involving the Department of Agriculture, Government of Andhra Pradesh as a key partner for sustainable increase of agricultural production and improving the livelihoods of farmers.

### Summary of the discussions

Before the meeting commenced on a formal note, SP Tucker initiated informal discussion on the new developments and challenges in APRLP in the wake of drought. Under the APRLP low-cost drips will be used for increasing productivity in the watersheds. Under new guidelines Rs 900,000 for each watershed is earmarked for increasing agricultural productivity. He also described the Chinese farming system model. The formal meeting started with a welcome by SP Wani (in place of Ms T K Sreedevi). On behalf of the APRLP-ICRISAT Consortium he welcomed S Bhattacharya, Commissioner of Agriculture and briefed about the consortium and the APRLP-ICRISAT Program. He also welcomed SP Tucker, HP Singh, and the staff of the Department of Agriculture and consortium partners and presented the objectives of the workshop followed by Essentials of Team Building and What it Involves to Build a Good Team (Appendixes 4a, 4b, and 4c). A brief progress of the work done during 2002 and plans for 2003 were presented.



### **Achievements in 2002**

- Improved crops and varieties.
- Response to micronutrient amendments.
- Use of improved machinery for farming.
- Planting *Gliricidia* on farm bunds.
- Vermicomposting.
- Propagated integrated disease management (IDM) and IPM practices.
- Improved land management options such as contour planting, broad-bed and furrow (BBF), etc.
- Detailed household surveys for identifying socioeconomic constraints and potential options for livelihood.
- Value-addition and micro-enterprises.
- VSAT-based information center at Adarsha Society, Addakal.
- Capacity building for partners in nucleus and satellite watersheds.
- Follow up on the workshop: Coping strategies for drought.
  - Develop computer-based training modules.
  - The Telugu version on drought coping strategy is being upgraded.
  - Video film will be made by the BR Ambedkar Open University (BRAOU) and will be telecast on TV.
  - National Challenge Programme on drought management.
  - Virtual University for drought management.
  - Policy briefs for drought management.

### **Initiatives in 2003**

- Up-scaling from nucleus watersheds to satellite watersheds.
- Develop soil sampling methods for watershed sampling.
- Establish one IPM village in each of the three districts.
- Evaluate options for crop and system diversification including agri-horticultural, silvipastoral, and agroforestry systems.
- Develop Decision Support System for nutrient needs for targeted yield.
- Evaluate molecular methods for assessing soil quality.
- GIS maps for all the nucleus watersheds with natural resource endowments and biophysical and socioeconomic constraints.
- Undertake yield gap analysis for groundnut, sorghum, and pigeonpea.

- Initiate bio-economic modeling for identifying the drivers for adoption of new technologies.
- Prepare public awareness materials based on the earlier results for the benefit of development workers and farmers.

SP Tucker, Project Coordinator, APRLP set the scene for the workshop and appreciated the work done by the team. He highlighted the need for capitalizing on the gains achieved in 2002 and work out the strategy for 2003 to extend the benefits from 10 to 50 and to 2500 watersheds. The challenge is to ensure that the lessons learned from the APRLP-ICRISAT Program are extended to all APRLP watersheds. S Bhattacharya, Commissioner of Agriculture updated the gathering on the thrust areas of the department. The following are the salient points:

- District-wise soil maps are prepared in partnership with the National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Nagpur.
- The department has embarked on a micro soil-sampling plan with over 50000 soil samples being collected and analyzed for land-use planning. More emphasis is being laid on micronutrients.
- Trained officers are being deployed to check spurious pesticides.
- CDs and video films on new technologies are distributed to farmers' training schools.
- All the district agricultural offices are being networked and this communication network can be used by the project.
- The Joint Directors of Agriculture can be involved in the project in respective APRLP districts.
- Frequently asked questions in agriculture are being compiled with appropriate answers by expert panel.
- Fly ash is being popularized as a soil amendment.
- Green manure seeds are being distributed.
- Gypsum is being distributed for soil reclamation.
- About 2500 multipurpose extension officers are being recruited.
- Facilities at Farmers' Training Centers (FTCs) and CDs and video films can be used for conducting training under the APRLP.

S Bhattacharya appreciated the initiative of the APRLP-ICRISAT Program to converge in the watersheds and enthusiastically extended wholehearted support to the consortium. He nominated Narayana Chaudhary as the Nodal Officer for the project. He indicated that all his staff would share the necessary information with the APRLP-ICRISAT Program. The Agricultural Officers in the districts would be instructed to provide all the help to these programs as the aim of the Department of Agriculture also is to increase agricultural productivity and increase farmers' incomes. These are also the objectives of the APRLP.

HP Singh, Director, CRIDA commented that APRLP is not just another technology transfer program. It intends to bring out new innovations and institutions to transform rural livelihoods towards betterment. He was very appreciative of ICRISAT's efforts to bring the consortium partners together to address the complex issues in the watersheds. The consortium could be strengthened with the

support extended by S Bhattacharya to the APRLP watersheds. The session was concluded with vote of thanks by SP Wani to S Bhattacharya for extending wholehearted support and he promised to share all the information from the project with the Department of Agriculture. He also thanked SP Tucker for providing this opportunity to bring together the research institutions, development departments, civil society organizations, and farmers to develop an excellent model to enhance the benefits for the farmers from the APRLP project. Such a model will be useful for the country as well as other countries in the region. He also thanked HP Singh for contributing significantly and providing all the support to ensure that the consortium functions smoothly and also for extending all support from the premier dryland research institute in India. Finally, all the PIAs, staff of Acharya NG Ranga Agricultural University (ANGRAU) and ICRISAT were thanked. Contributions of A Padmaraju (Director of Research, ANGRAU) to consortium building process were specially appreciated.

## Work plan 2003

The work plan for kharif 2003 was discussed by the partners besides finalizing detailed operational plans with participation of PIAs and NGOs. The summary of the decisions arrived in the session are as follows:

### Baseline survey and income generation activities

- ICRISAT to share with the consortium partners the outcome of the analysis of the data collected so far. (*Action: SP Wani*)
- Society for Development of Drought Prone Area (SDDPA) and other PIAs to share the details of baseline survey conducted in the entire nucleus watersheds with the consortium. (*Action: All PIAs*)
- One Watershed Development Team (WDT) member will be trained along with data enumerators for conducting baseline survey so that the member can accompany the enumerators. (*Action: B Shiferaw, ICRISAT*)
- District Coordinators to ensure that the baseline survey questionnaires are sent to all the PIAs. (*Action: SP Wani, A Ramakrishna, and TJ Rego, ICRISAT*)
- APRLP to share the data that has already been collected from APRLP watersheds. (*Action: Venkat Rao, APRLP*)
- All the PIAs agreed to cooperate and provide logistical support for the baseline survey.

### Crop diversification and intensification

- All the PIAs to decide in consultation with the farmers the extent of area, crop, and seed required for kharif 2003 and communicate the same to respective district coordinators by **March first week** (District Coordinators: Mahbubnagar – SP Wani; Nalgonda – TJ Rego; and Kurnool – A Ramakrishna). Further the PIAs are to cooperate in seed distribution on cost basis.
- PIAs to be supplied with the list of available crops and varieties by **February second week** so that seeds will be supplied to the respective villages by third week of May. (*Action: District Coordinators*)

- PIAs to distribute the seeds, collect money, and deposit it with district coordinators.
- ARS, Mudhol to be contacted for arboreum cotton seeds. (*Action: M Venkat Reddy, ANGRAU/SS Balloli, CRIDA*)

## Integrated nutrient management

- Soil samples to be analyzed for response-based micronutrient application. Fertilizer requirement to be assessed based on analysis, recommendations, and farmers' needs. The activity to start from **third week of February**. PIAs to provide necessary logistical support. TJ Rego to inform the detailed schedule of the activity well in advance.
- Planting of *Gliricidia* for green manure should be encouraged under income generating activities. All the PIAs should mobilize planting of at least 10,000 plants on field boundaries. A nursery could be started in each watershed as an income generating activity. All PIAs agreed to raise 50,000 seedlings whereas Stephen Livera, SDDPA took the challenge to raise 100,000 *Gliricidia* seedlings for planting. Pongamia may also be tried as a green manure crop on wastelands under income generating activities.
- Vermicomposting should be encouraged in each watershed by availing the support of the state agricultural department and this activity could be strengthened as an income generating activity in each watershed.

## Integrated pest and disease management

- PIAs to help identify at least two farmers in each village for training in integrated pest and disease management (IPDM) so that training course can be conducted before kharif 2003 for monitoring insects and diseases. The selected farmers act as para-IPDM workers in villages. It was decided to select at least one nucleus watershed in each district to make it a complete IPDM watershed. Based on the criteria for social mobilization, participation, and suitability, the villages need to be identified and suggested to the District Coordinators by **first week of March 2003**. (*Action: All PIAs*)

## Land and water management

- All the nucleus and satellite watersheds should ensure introduction of new implements and arrange for training farmers to operate the machines. This will go a long way in increasing the efficiency of agricultural operations in rainfed areas. (*Action: District Coordinators*)
- Sub-soiler should be tried in red *chilka* soils and can be evaluated in selected farms in Mahbubnagar district. It must be ensured that those fields where this will distinctly bring out the benefits should be selected. 'Need driven' should be the guiding principle for all on-farm trials. Singa Rao took the responsibility to organize machines for undertaking trials. (*Action: Singa Rao, ANGRAU and District Coordinators*)
- Planting of stylo on field bunds should be encouraged in all the watersheds. (*Action: All PIAs and District Coordinators*)
- Location and farmers' needs to be identified for laying out BBF and other land management options by **February end** by all PIAs. (*Action: P Pathak, ICRISAT*)

- Identification of open wells and bore wells and arrange for geo-referencing of the same to monitor groundwater situation in the watershed villages. Selected villagers need to be trained for monitoring groundwater levels in watersheds. Groundwater department of the Government of Andhra Pradesh may also be contacted and requested to set up devices in APRLP watersheds to monitor groundwater levels. (*Action: P Pathak/PIAs*)
- Installation of automatic runoff and weather stations in nucleus watersheds to be taken up before **15 May 2003**. (*Action: District Coordinators and P Pathak*)

## Strategies for up-scaling the nucleus watershed to satellite watersheds

The 10 APRLP nucleus watersheds need to be scaled-up to 40 satellite watersheds making the total number to 50 by kharif 2003. To achieve this suggestions were invited from all the PIAs. The summary of the discussion is given below:

- The capacity building needs of farmers with respect to soil, water, crop, and nutrient management should be identified by the PIAs and communicated to respective District Coordinators by **15 March 2003**.
- Farmers from the selected satellite watersheds should be invited to participate in field days. Demonstrations should be conducted in nucleus watersheds.
- A two-day workshop should be conducted at all the nucleus watersheds in which the farmers from the satellite watersheds will be invited as participants. During this event farmers of nucleus watershed will act as resource persons. Seed requirements may be collected from the farmers of satellite watersheds during this event.
- PIAs of nucleus watersheds should initiate meetings and call the farmers from satellite watersheds.
- Field exposure visits should be conducted for the farmers of satellite watersheds.
- Video films depicting successful watershed projects should be shown in satellite watersheds.

## Other points discussed

- PIAs to inform **within the next 15 days** about the telephone connectivity and power situation in their watershed villages for initiating work on computer connectivity.
- ICRISAT to run a documentation workshop for all the 9 PIAs **within the next 15 days**.
- To request the Commissioner of Agriculture to write to the officers of APRLP districts for extending cooperation to the project work. (*Action: SP Wani*)

The meeting came to a close at 1630.

# Learnings from Team Building Workshops: Developing a Productive Team

## Team building

Team building is an effort in which a team studies its own process of working together and acts to create a climate that encourages and values the contributions of team members. Their energies are directed toward problem solving, task effectiveness, and maximizing the use of all members' resources to achieve the team's purpose. Sound team building recognizes that it is not possible to fully separate one's performance from that of others.

Team building works best when the following conditions are met.

1. There is a high level of interdependence among team members. The team is working on important tasks in which each team member has a commitment and teamwork is critical for achieving the desired results.
2. The team leader has good people skills, is committed to developing a team approach, and allocates time to team building activities. Team management is seen as a shared function, and team members are given the opportunity to exercise leadership when their experiences and skills are appropriate to the needs of the team.
3. Each team member is capable and willing to contribute information, skills, and experiences that provide an appropriate mix for achieving the team's purpose.
4. The team develops an environment in which people feel relaxed and are able to be direct and open in their communications.
5. Team members develop a mutual trust for each other and believe that other team members have skills and capabilities to contribute to the team.
6. Both the team and individual members are prepared to take risks and are allowed to develop their abilities and skills.
7. The team is clear about its important goals and establishes performance targets that are achievable.
8. Team member roles are defined, and effective ways to solve problems and communicate are developed and supported by all team members.
9. Team members know how to examine the team and individual errors and weaknesses without making personal attacks. This will enable the group to learn from individual experiences.
10. Team efforts are devoted to the achievement of results, and team performance is frequently evaluated to see where improvements can be made.
11. The team has the capacity to create new ideas through group interaction and the influence of outside people. Good ideas are followed up, and people are rewarded for taking innovative risks.

Each member of the team knows that he or she can influence the team agenda. There is a feeling of trust and equal influence among team members that facilitates open and honest communication. This allows each member to provide their technical knowledge and skills in helping to solve the problem,

complete the project, and develop new programs. During this process, team building can be facilitated as members evaluate their working relationship as a team and then develop and articulate guidelines that will lead to increased productivity and team member cooperation.

As part of this process, team members need to learn how to be willing to manage conflict, evaluate performance of the group, and provide feedback and support that will encourage each member to meet their commitment to the team and the organization. Team performance can best be evaluated if the team develops a model of excellence against which its performance can be measured.

The team leader should be the liaison between the team and upper management. The team leader needs to know and work with upper management to obtain its full commitment in support of the team's program. However, when this happens, team members must realize that they have a major responsibility to make maximum use of the resources and support provided. The team leader can encourage team member growth, and should be willing to take some risk by having members whose resources are relevant to the immediate task and provide leadership. The team leader should be fair, supportive, and recognized by team members as one who can make final judgments, work with upper management, and give direction to the team as needed.

As team members build commitment, trust, and support for one another, it will allow them to develop and accomplish desired results. This commitment, trust, and self-determination by each team member is critical in achieving a sustained high level of performance. Team members will learn to appreciate one another and will help keep one another on track. The team will have developed its working methods so that they become an informal set of guidelines.

## **A focused team**

When the team resources are focused and members are all working to accomplish the same purpose, teamwork can be very rewarding and productive. This is best accomplished when team members use a proactive approach rather than a reactive approach.

The proactive approach manifests such characteristics as given below:

1. The team members take a very positive approach in jointly determining the way they will work together as a team and their goals. When individuals and the entire team choose to operate this way and are willing to set petty differences aside, unbelievable results become possible.

When individuals adopt this attitude and commit to use their resources, knowledge, and skills to contribute to the goals of the team, alignment with the team's overall purpose comes about. This will not happen unless the team leader as well as team members choose to do so.

2. Having a well-defined purpose or vision of what the team will accomplish is a very powerful force for the team leader and members. Goals are aligned with the team purpose, and team members are empowered to accomplish the goals. This process leads to a high level of team productivity.
3. Team members have a positive attitude toward change and are willing to accept and allow change to occur as needed to accomplish desired results.



4. Team members understand that patience is required, and that for some goals, a long-term commitment is needed to accomplish the desired results.
5. Interests of both the team leader and team members are focused on desired results rather than on short-term problem-solving activities.

If people learn to focus simultaneously on both the current situation and the desired results, problems that arise will be solved as part of the total process of achieving the desired results.

6. The members have a strong feeling of control within the team. They are able to establish priorities and then commit time and resources for accomplishing these tasks.
7. Team members verbally and publicly support each other. Each member recognizes that negative comments about other members will break the team harmony.

Team leaders and members that make a conscious, sustained effort to make these seven characteristics a part of their mind set will find that both creativity and accomplishment of desired results will be much higher than it would be otherwise.

## **Team leader**

There are several ways in which the team leader can contribute to creating a positive climate within the team. One of the most powerful forces is to put forward, in cooperation with team members, an exciting vision/purpose of what the team is to achieve. Once the vision is developed, it needs to be kept in front of the team members as a reminder of what they wish to accomplish.

The team leader, where possible, should help select or influence the composition of team members. Selection should be based on willingness of people to work in a team and the resources, both skills and technical components, they are able to bring to the team.

The team leader can provide the leadership for helping the team develop, understand, and accept a set of principles that will contribute to their success. This set of principles should include norms for operating within the group, criteria for evaluating success, standards for determining quality of performance, and an identified reward system to recognize the team's successes.



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## Team Building Level 1

ICRISAT Watershed Team Building and Organizing Workshop

18 January 2003

ICRISAT Center, Patancheru, India

### Workshop Program

0915-0930	Welcome and objectives of the workshop	
0930-1015	Team building: what it involves	
1015-1030	Discussion	
1030-1100	Tea	
1100-1230	Team organization and management	
1230-1330	Lunch	
1330-1630	Strategy for building the nucleus watersheds	
	Characterization of watersheds	Piara Singh
	Integrated rainwater management	P Pathak
	Integrated nutrient management	TJ Rego and SP Wani
	Integration of income generation activities and livelihood strategies	B Shiferaw and SP Wani
	Crop diversification	A Ramakrishna
1530-1545	Tea	
	Integrated pest and disease management	GV Ranga Rao
	Monitoring and impact assessment	P Pathak, B Shiferaw, and SP Wani
	Institutional and policy needs for watershed management	B Shiferaw and SP Wani
1630-1730	Strategy for scaling-up from nucleus to satellite watersheds	
	Human resource development	SP Wani, A Ramakrishna, and TJ Rego
1730-1830	Strategic research in on-farm watersheds	
	Environmental studies	SP Wani and TJ Rego
	Simulation modeling	Piara Singh and B Shiferaw

## **Team Building Level 1**

**ICRISAT Watershed Team Building and Organizing Workshop**

*18 January 2003*

*ICRISAT Center, Patancheru, India*

### **Participants**

**ICRISAT**

SP Wani

TJ Rego

P Pathak

A Ramakrishna

Piara Singh

B Shiferaw

GV Ranga Rao

## **Team Building Level 1**

**ICRISAT Watershed Team Building and Organizing Workshop**

*18 January 2003*

*ICRISAT Center, Patancheru, India*

### **Terms of Reference**

#### **Team Member**

##### **Role**

A team is a group of scientists working in an inter-disciplinary setting towards a defined output and having a shared work plan. A team member is a scientist (and associate) who is a member of a group of scientists working to achieve a clearly defined output. The primary responsibility of a team member is to contribute to the timely attainment of clearly defined output(s) of a given activity or project as an indispensable actor in the team.

##### **Functions**

- Plan and develop sub-activities based on his/her expertise and together with other team members.
- Execute the activities as a key player in the team and in collaboration with all relevant project or activity partners.
- Contribute to development of concept notes, training materials, report writing, and review of progress in a given project or activity.
- Assist the team in his/her areas of expertise as and when required.
- Assist in liaising with government and non-government agencies, NARS and other partners and stakeholders.
- Perform other tasks useful to the team assigned by the Activity Coordinator, Project Leader/ Theme Leader, or Regional Theme Coordinator from time to time.
- Actively undertake training activities in the area of his/her specialization and also explain the team's work to visitors as needed.

#### **Site Coordinator**

##### **Role**

- The role of Site Coordinator is to assist the Project Leader in effective delivery of planned activities at the site through facilitating the activities of Activity Coordinators.

## Functions

- As a representative of Project Leader, liaise with government, NARS and project implementing agencies/NGOs for smooth planning and execution of project activities at the sites and exploring funding opportunities.
- Assist Project Leader to prepare the work plans, ensure proper execution of the planned activities, and in reporting the progress.
- Impart training in the area of his/her specialization and also explain the research work to visitors.
- Liaise with various Activity Coordinators and ICRISAT staff, PIAs, and NGOs located at the site for smooth operations and timely completion of planned activities.
- Facilitate organizing field days, training courses, and workshops at the site.
- Facilitate visits of project implementing staff/farmers/other officials to ICRISAT and ICRISAT staff to site and assist in organizing logistical support for ICRISAT staff's visits.
- Perform other tasks.

## Activity Coordinator

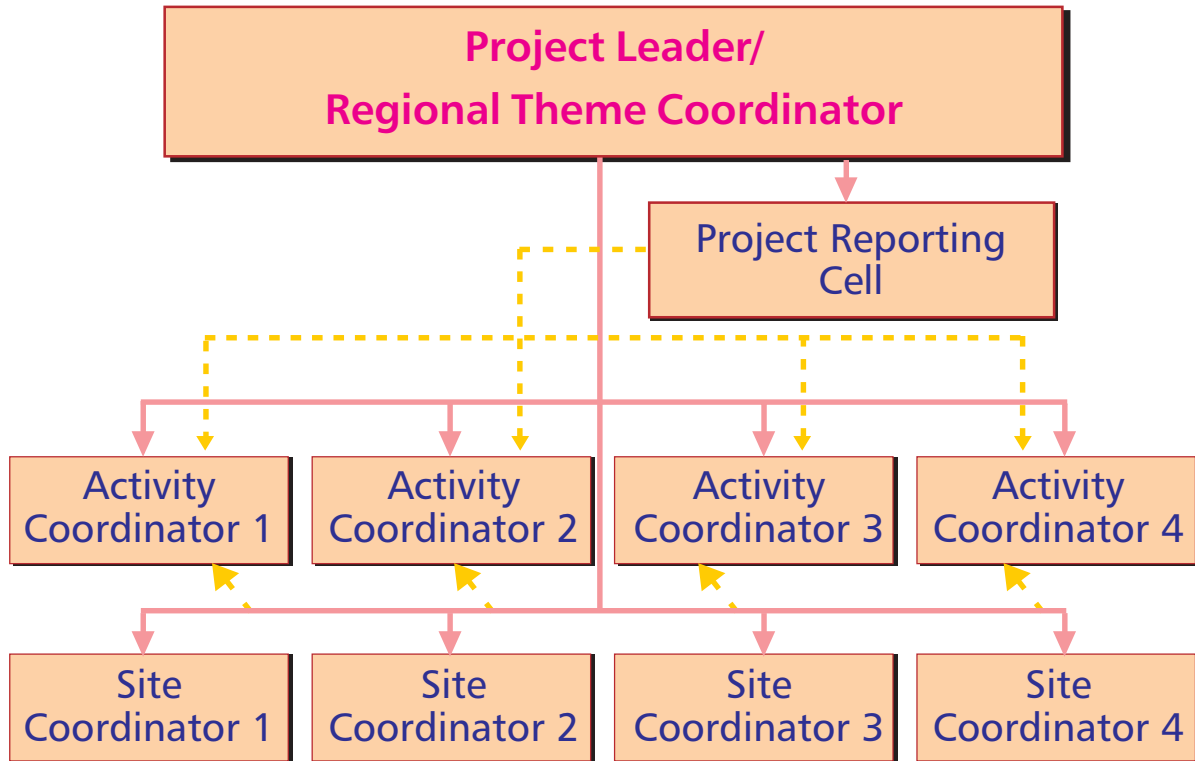
### Role

- The primary responsibility of Activity Coordinator is to assist the Project Leader by coordinating for planning, reporting, and assessing the progress of the research activities in the area of his/her expertise.

### Functions

- Facilitate planning, reviewing, and progress monitoring of the activities in the specified research area as per the project plans.
- Coordinate compilation, synthesis, and preparations of activity reports in the desired formats.
- Explore funding opportunities in the area of his/her specialization, prepare proposals, and assist the Project Leader for proposal preparation and fund raising.
- Serve as a focal point for communication with activity team members, Site Coordinator, and Project Leader for efficient delivery of activity outputs.
- Assist the Project Leader to organize specified training courses, workshops, field days, and in preparation of necessary literature, public awareness materials, manuals and proceedings; and explain the work to visitors.
- Perform other tasks assigned by the Project Leader/Regional Theme Coordinator/Theme Leader from time to time.

## Team Organization



## **Team Building Level 2**

### **ICRISAT Watershed Team Building and Organizing Workshop**

*28 January 2003*

*ICRISAT Center, Patancheru, India*

## **Workshop Program**

- |           |  |
|-----------|--|
| 1100-1115 | Welcome and objectives of the workshop   |
| 1115-1130 | Update on Tata and APRLP watersheds  |
| 1130-1230 | Team building: what it involves<br>Discussion  |
| 1230-1330 | Lunch  |
| 1330-1400 | Team organization and management   |
| 1400-1615 | Strategy for building the nucleus and satellite watersheds<br><i>(Tea break: 1530-1550)</i> <ul style="list-style-type: none"><li>• Baseline surveys and characterization</li><li>• Land and water management</li><li>• Integrated nutrient management</li><li>• Crop diversification and intensification</li><li>• Integrated pest management</li><li>• Information and communication technology</li><li>• Farmer participatory selection of varieties</li><li>• Income generating activities and livelihood strategies</li><li>• Capacity building</li><li>• Institutional and policy needs for watershed management</li></ul> |

## **Team Building Level 2**

**ICRISAT Watershed Team Building and Organizing Workshop**

*28 January 2003*

*ICRISAT Center, Patancheru, India*

### **Participants**

#### **ICRISAT**

SP Wani

KL Sahrawat

Belum VS Reddy

CLL Gowda

V Balaji

A Ramakrishna

B Shiferaw

GV Ranga Rao

P Pathak

Piara Singh

TJ Rego

GD Nageswara Rao

K Padmaja

LS Jangawad

L Mohan Reddy

G Pardhasaradhi

S Raghavendra Rao

MS Kumar

K Srinivas

Ch Srinivasa Rao

V Rameshwar Rao

Irshad Ahmad

B Ramkumar

Ch Ravinder Reddy

Sreenath Dixit



## **Team Building Level 2**

### **ICRISAT Watershed Team Building and Organizing Workshop**

*28 January 2003*

*ICRISAT Center, Patancheru, India*

## **Evaluation Sheet**

You will appreciate that the workshop was a sincere effort towards building an effective **ICRISAT Watershed Team** to address the challenges of working as a team. We all are aware that we have a long way to go. Together we are sure of achieving the desired goal. But we need to take a close look at our efforts at every step to improve further. This Evaluation Sheet helps us do that. Please spare a few minutes to give your frank opinion.

1. Do you think the Team Building workshop was useful? **Yes / No**

If **Yes**, to what extent?

**Fully**

**Partially**

**Failed to achieve**

2. Whether goals and objectives of the project are clear now? **Yes / No**

If **Yes**, to what extent?

**Fully**

**Partially**

**Not clear**

3. What should be the frequency of such meetings? Please Specify.

4. Is the present way of conducting Team Building appropriate in your view? **Yes / No**

If **No**, will you please suggest ways of improving the process?

5. Do you think we need an external expert to help us build an effective team? **Yes/No**

Evaluate Your Team Development							
<b>Rating Team Development</b>							
How do you feel about your team's progress? (Circle rating)							
1. Team's purpose							
	I'm uncertain	1	2	3	4	5	I'm clear
2. Team membership							
	I'm out	1	2	3	4	5	I'm in
3. Communications							
	Very guarded	1	2	3	4	5	Very open
4. Team goals							
	Set from above	1	2	3	4	5	Emerged through team interaction
5. Use of team member's skills							
	Poor use	1	2	3	4	5	Good use
6. Support							
	Little help for individuals	1	2	3	4	5	High level of support for individuals
7. Conflict							
	Difficult issues are avoided	1	2	3	4	5	Problems are discussed openly and directly
8. Influence on decisions							
	By few members	1	2	3	4	5	By all members
9. Risk taking							
	Not encouraged	1	2	3	4	5	Encouraged and supported
10. Working on relationships with others							
	Little effort	1	2	3	4	5	High level of effort
11. Distribution of leadership							
	Limited	1	2	3	4	5	Shared
12. Useful feedback							
	Very little	1	2	3	4	5	Considerable

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Team Building Level 2

### ICRISAT Watershed Team Building and Organizing Workshop

28 January 2003

ICRISAT Center, Patancheru, India

## Evaluation Report

- All the members (100%) felt that the ICRISAT Watershed Team Building Workshop was **useful**. Over 70% of the participants (16 members) responded that the workshop was **fully** useful while the rest (6 members) said it was partially useful.
- All the members (100%) felt that the **goals and objectives** of the ICRISAT Watershed projects were **clear**. Over 80% of them responded that the goals and objectives of the projects were **fully** clear.
- Majority of the members felt it was necessary for all the members to meet at least once in **3-6** months and discuss the progress and bottlenecks.

Almost everyone agreed that the way team building is being approached was right and opined (77%) that there was **no need** to hire external experts to conduct team building exercise.

The overall scores for **Team Development** on the extent of

- understanding of **team's purpose** - 91%
- feeling about the **team membership** - 85%
- **openness of communications** - 76%
- team interaction in **goal setting** - 70%
- using team **member's skills** - 79%
- **team support for individuals** - 70%
- conflicts are resolved **openly and directly** - 81%
- their influence in **decision making** - 76%
- encouragement for **risk taking** - 82%
- team members' effort for improving **working relations** with others - 86%
- **shared leadership** - 86%
- the **feedback** is useful - 75%

It is important to note and improve on the areas with less than 80% score. They are **openness of communication, team goal setting, team support for individuals, decision making, and useful feedback**.

## **Team Building Level 3**

### **ICRISAT Watershed Team Building and Organizing Workshop**

*31 January 2003*

*ICRISAT Center, Patancheru, India*

## **Workshop Program**

### **Chair: HP Singh**

0900-0910	Welcome and objectives of the workshop	SP Wani
0910-0930	Inaugural address	WD Dar
0930-0950	Update on Tata and APRLP watersheds	SP Wani
0950-1015	Tea	
1015-1100	Team building: what it involves	SP Wani
1100-1630	Strategy for building the nucleus and satellite watersheds ( <i>Lunch: 1230-1330 and Tea: 1530-1545</i> )	
	• Baseline surveys and characterization	Piara Singh
	• Land and water management	P Pathak
	• Integrated nutrient management	TJ Rego
	• Crop diversification and intensification	A Ramakrishna
	• Integrated pest management	GV Ranga Rao
	• Information and communication technology	V Balaji
	• Farmer participatory selection of varieties	Belum VS Reddy
	• Income generating activities and livelihood strategies, institutional and policy needs for watershed management	B Shiferaw
	• Capacity building	SP Wani
1630-1640	Concluding remarks	Dyno Keatinge

## **Team Building Level 3**

**ICRISAT Watershed Team Building and Organizing Workshop**

*31 January 2003*

*ICRISAT Center, Patancheru, India*

### **Participants**

#### **ICRISAT**

William D Dar

SP Wani

KL Sahrawat

Belum VS Reddy

A Ramakrishna

V Balaji

B Shiferaw

GV Ranga Rao

P Pathak

Piara Singh

TJ Rego

KV Padmaja

B Ramkumar

KPC Rao

P Parthasarathy Rao

Ch Ravinder Reddy

Sreenath Dixit

#### **CRIDA**

HP Singh

GR Korwar

GGSN Rao

SS Balloli

#### **ANGRAU**

A Padmaraju

M Singa Rao

M Venkat Reddy

T Ramprakash

#### **NRSA**

RS Dwivedi

## Team Building Level 4

### ICRISAT Watershed Team Building and Organizing Workshop

*1 February 2003*

*Office of the Commissioner of Agriculture, Fateh Maidan, Hyderabad, India*

### Workshop Program

1015-1025	Welcome	T K Sreedevi
1025-1045	Objectives of the workshop	SP Wani
1045-1105	Scene setting for the workshop	SP Tucker
1105-1130	Update on APRLP nucleus watersheds	SP Wani
1130-1140	Tea	
1140-1200	Convergence with Department of Agriculture	S Bhattacharya
1200-1630	Strategy for building the nucleus and satellite watersheds <i>(Lunch: 1230-1330 and Tea: 1530-1545)</i>	
	• Baseline surveys and characterization	Piara Singh
	• Land and water management	P Pathak
	• Integrated nutrient management	TJ Rego
	• Crop diversification and intensification	A Ramakrishna
	• Integrated pest management	GV Ranga Rao
	• Information and communication technology	V Balaji
	• Farmer participatory selection of varieties	Belum VS Reddy
	• Income generating activities and livelihood strategies, institutional and policy needs for watershed management	B Shiferaw
	• Capacity building	SP Wani
1630-1640	Concluding remarks	SP Wani

## **Team Building Level 4**

### **ICRISAT Watershed Team Building and Organizing Workshop**

*1 February 2003*

*Office of the Commissioner of Agriculture, Fateh Maidan, Hyderabad, India*

## **Participants**

### **ICRISAT**

SP Wani

KL Sahrawat

A Ramakrishna

B Shiferaw

GV Ranga Rao

P Pathak

Piara Singh

TJ Rego

B Ramkumar

P Parthasarathy Rao

Ch Ravinder Reddy

Sreenath Dixit

### **APRLP**

SP Tucker

N Srinivas

Venkat Rao

### **Directorate of Agriculture**

S Bhattacharya

Narayan Choudari

Vikram

### **CRIDA**

HP Singh

GR Korwar

GGSN Rao

SS Balloli

### **ANGRAU**

M Singa Rao

M Venkat Reddy

T Ramprakash

### **SDDPA**

Stephen Livera

### **Disha**

B Pragnananda

### **PEACE**

K Narsanna

K Nimmaiah

### **DPAP**

P Santosh Kumar

### **BAIF**

B Shivarudrappa

### **PIAs**

B Dharmendra Singh

P Roman

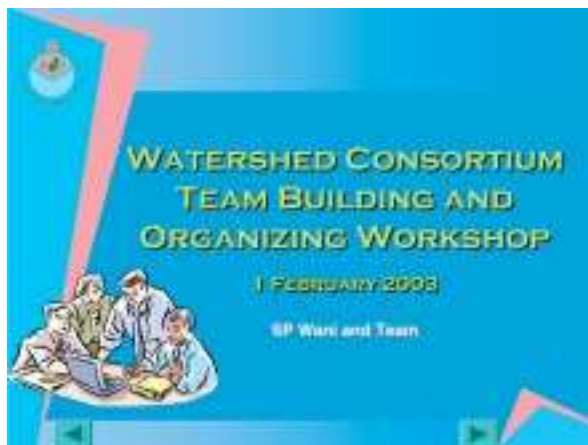
## Team Building Level 4

### ICRISAT Watershed Team Building and Organizing Workshop

1 February 2003

Office of the Commissioner of Agriculture, Fateh Maidan, Hyderabad, India

## Presentations





### Foundation Elements of Good Team (Contd.)

- **Strong and Shared Leadership:** Leadership should help the members understand and appreciate the motivation and interests, concerns, and social and cultural norms of the individual members and the organization



### Foundation Elements of Good Team (Contd.)

- **Interaction and involvement of all members:** Roles and responsibilities of team members and team leader should be clear. When all team members are full contributors, the team is more likely to have fun together and to enjoy their work with one another.
- **Maintenance of individual self-esteem:** Favoritism must be avoided, and challenge to the team is to enhance, not lower, the self-esteem of each member



### Foundation Elements of Good Team (Contd.)

- **Open communication:** Channels of communication must be open to everyone, especially to the leader. Use all communication channels to pass on information, make suggestions, and bring-up new ideas
- **Attention to process and content**
- **Mutual trust**
- **Constructive conflict resolution**



### This Consortium

- Is technically and socially the right combination
- Believes in on-ground results with farmers
- Does scientific monitoring and impact assessment
- Will deliver tangible benefits to the farmers and APRLP
- Will provide invaluable learnings for other projects and will produce international public goals (PGs) for NRMP



### Practical Tips for Effectiveness

**Be**

- Sincere
- Energetic
- Patient
- Committed to the goal
- Addictive
- Good listener
- Solution provider and not a part of problem



# Improving Livelihoods through Convergence in Watersheds: An Overview



**Strategic Modules**

Module I: Nucleus watersheds as "Islands of Learning"  
 Module II: Empowerment of rural community and other stakeholders  
 Module III: ICT-enabled learning systems for knowledge exchange

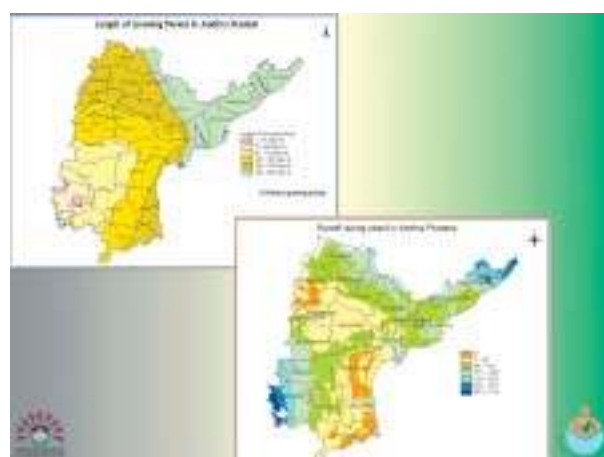
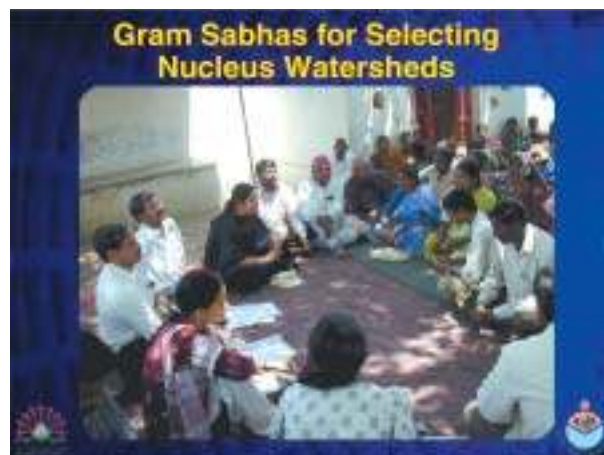


- Module I: Nucleus watersheds as "Islands of Learning"** (Contd.)
- Activity 1: Selection of benchmark watersheds and collection of baseline data
  - Activity 2: Quantify agroecological and natural resource-bases
  - Activity 3: Integration of soil and water management for increasing crop productivity
  - Activity 4: Integration of nutrient management strategies and on-farm generation of N-rich organic matter for sustaining systems' productivity and for improving soil quality
  - Activity 5: Integration of pest and disease management for increasing the systems' productivity
  - Activity 6: Farmer-participatory selection of crop varieties
  - Activity 7: Matching livestock feed technologies with rural livelihoods
  - Activity 8: Monitoring changes



### Nucleus Watersheds in APRLP

Nucleus Watershed	District	PLU	HO
Malleboinpally	Mahabubnagar	Shankarappa	BAIF
Mordhanly	Mahabubnagar	Shekar Urois	ICRISAT
Belurpally	Mahabubnagar	T. Narayanaiah	BAIF, Telangana
Bhadrachalam	Warangal	Thangarajulu	ICRISAT
Telavarampally	Warangal	Jaggi	ICRISAT
Maddurpally	Warangal	Krishna Kumar	ICRISAT
Madhwalpally	Karimnagar	G. Thirupathi Reddy	ICRISAT
Madhwalpally	Karimnagar	Vishwanathiah	ICRISAT
Maddurpally	Karimnagar	Hi PRG	ICRISAT



- ### Important Issues to be Addressed
- How to**
- > increase productivity
  - > increase employment opportunities
  - > combat desertification
  - > improve rural livelihoods
  - > achieve equity and address gender issues
  - > reduce malnutrition

- ### Malleboinpally Watershed
- #### Location and Extent
- > Jadcherla mandal, Mahabubnagar district
  - > Area - 500 ha
  - > 1 Nucleus & 6 Satellite micro-watersheds
  - > Consortium in watershed research
    - DPAP Mahabubnagar, Govt. Departments, ANGRAU, NRSA, CRIDA, APRLP, ICRISAT and BAIF

### Malleboinpally Watershed Geographical Distribution

- Divided into 3 habitats
  - Malleboinpally
  - Pochamagadda tанда
  - Mangalikunta thanda and Kotha thanda
- 200 households with a population of 2840
- Arable land - 400 ha
- Topography - gentle slopes
- Moderate levels of soil erosion

### Malleboinpally Watershed Farmers' Classification

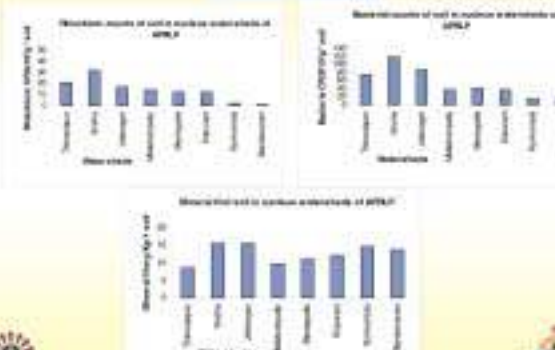
- Small farmers (<1 ha) - 382
- Medium farmers (1-2 ha) - 85
- Large farmers (> 2 ha) - 52
- Land less farmers - 20

### Malleboinpally Watershed Cropping System

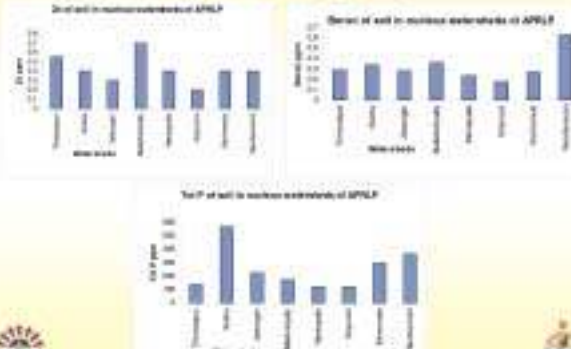


- Major crops and their yields
  - Cotton 315 kg ha<sup>-1</sup>
  - Maize 225 kg ha<sup>-1</sup>
  - Castor 135 kg ha<sup>-1</sup>
  - Sorghum 135 kg ha<sup>-1</sup>
  - Pigeonpea 90 kg ha<sup>-1</sup>

### Detailed Characterization of Nucleus Watersheds



### Detailed Characterization of Nucleus Watersheds (Contd.)



### Microclimate Monitoring and New Equipment

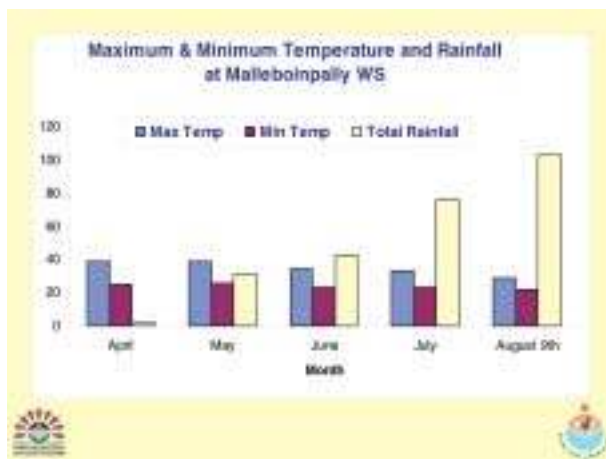


- Automatic weather stations installed
- Provided Tropicutor to all nucleus watersheds



- On farm evaluation trials in progress
- Trained farmers in operating tropicutor





### Micronutrient Success Story in APRLP Watersheds, 2002

Crop	Average grain yield (kg ha <sup>-1</sup> ) Control	Average grain yield (kg ha <sup>-1</sup> ) MN treatment*	% Increase over control grain
Maize	2000	4360	73
Greengram	770	1110	51
Castor	470	700	50
Groundnut pod	1420	1820	30

\* Micronutrients applied: Boron: 1 kg ha<sup>-1</sup>, Sulphur: 100 kg ha<sup>-1</sup> and Zinc: 20 kg ha<sup>-1</sup>

### Increased greengram yield due to amendment with micronutrients, Nernikal, Nalgonda, rainy season 2002

Farmer	Control	Grain yield (kg ha <sup>-1</sup> )	
		All micronutrients (Zn+B+S)	% Increase
N. Bhadrasah	790	1018	27
V. Venkata Reddy	1080	1375	17
S. Lakshminath	1080	1588	45
N. Venkata Reddy	760	1096	44
N. Krishna Reddy	660	1038	30
V. Reddy Reddy	590	1138	91
V. Reddy Reddy	630	1118	34
Sahayya	640	1078	120
N. Vajjavarapu Ram	470	698	73
Mean	770	1118	44

\* In control farmer grow local variety as against improved variety.

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### Community-based Seed Banks

#### Sorghum cultivars supplied to APRLP in 2002

Variety/Hybrid	Quantity (t)	District (s)	Season
PVR 801	2.08	Warangal/Nalgonda	-
S 35	2.09	"	"
IPSV 18	1.88	"	"
ICSV 748	0.79	"	"
CSH 18	1.08	"	"
IPSV 1	2.09	"	"
GD 6919	9.35	"	Short season
ICSV 8080	8.45	"	"
WTJ 2	0.18	"	"
SPV 1038	2.09	Kurnool	Short
SPV 1187	2.09	"	"
WTJ 2	0.28	"	"
Total	21.32		

### Community-based Seed Banks

Pigeonpea varieties supplied to APRLP in 2002

Line number	Quantity (q)	District(s)
ICPL 85916	8.0	Mahabubnagar, Nalgonda, and Kurnool
ICPL 87119	1.0	-
ICPL 86038	1.0	-
ICPL 80863	1.0	-

### Community-based Seed Banks

Groundnut varieties supplied to APRLP in 2002

Line number	Quantity (q)	District(s)
ICGS 76	15.0	Mahabubnagar, Nalgonda, and Kurnool
ICGV 86590	10.0	-
ICGS 11	5.0	-

### Community-based Seed Banks

Chickpea varieties supplied to APRLP in 2002

Line number	Quantity (q)	District(s)
ICCV 18	1.0	Mahabubnagar, Nalgonda, Kurnool
ICCC 37	18.0	-
ICCV 2	2.0	-
Annigeri	3.5	-

### Strategy for Scaling-up from Nucleus to Satellite Watersheds



- > Workplans are discussed with consortium partners
- > Strategy and workplan discussed with PIAs




- > Exposure visits for the farmers from nucleus watersheds (450 farmers visited ICRISAT watersheds)

### Strategy for Scaling-up from Nucleus to Satellite Watersheds

- > Close interactions with Directors and DCBC members
- > Training of PIAs from nucleus and satellite watersheds

- > Village level meetings were held with men and women farmers

### Strategy for Scaling-up from Nucleus to Satellite Watersheds

- > Farmers were trained for identifying major insects and monitoring of pheromone traps




- > Vermicomposting training initiated for women (woman trainer from Kothapally is involved)
- > Field days at nucleus watersheds were conducted at Kurnool



### Strategy for Village-based Seed Banks in the APRLP watersheds

- Breeders seeds of greengram, sorghum, pigeonpea, groundnut, pearl millet, castor are provided to the farmers
- Seeds harvested from these fields need to be collected and used as foundation seeds

**Issues**

- Procurement
- Seed treatment
- Storage
- Sale during next season



### ICT—A Move Forward for Community Empowerment

- VSAT stations established at 3 sites—Hon'ble Chief Minister inaugurated Community Center
- Distance learning program was launched by Hon'ble President of India






- Distance learning program in partnership with Commonwealth of Learning (COL), Canada and BR Ambedkar Open University (BRAOU), India



### Empowering Adarsha Society, Addakal Members

- Women members trained in handling computers and simple operations



**THANK YOU.**

