TATA-ICRISAT-ICAR Project

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

Executive Summary
Project Launching and Planning Workshops
2002

International Crops Research Institute for the Semi-Arid Tropics
Sir Dorabji Tata Trust
Indian Council of Agricultural Research

Wani, S.P., Rego, T.J. and Pathak, P. 2002. Executive Summary of Project Launching and Planning Workshops. Tata-ICRISAT-ICAR Project: Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan. Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. 66 pp.

Acknowledgements

We acknowledge Dr. C.L. Acharya, Director, Indian Institute for Soil Science (IISS), Bhopal, India and Mr. Rajeeva Swarup, Director, Agriculture and Watershed Development & Soil Conservation, Government of Rajasthan, Jaipur, India for their support. We also thank Drs. A.B. Pande, Program Coordinator, and Somnath Roy, Program Coordinator, BAIF, Bhopal, Madhya Pradesh; A.K. Chaurasia, Additional Chief Program Coordinator, BAIF, Bundi, Rajasthan; and Mr. M.M. Sharma, Visitors Services Officer, ICRISAT for their help in organizing the workshops at Bhopal and Jaipur. We are indebted to Dr. K.L. Sahrawat for his help in finalizing this executive summary, Mr. Ajay Vardachari for editing this manuscript, and Mr. K.N.V. Satyanarayana for compiling and page-setting the manuscript.

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Editors

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International Crops Research Institute for the Semi-Arid Tropics
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Executive Summary of
Project Launching and Planning Workshop

26-27 March 2002
ICRISAT Center, Patancheru, Andhra Pradesh

Tata-ICRISAT-ICAR Project

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

Executive Summary of Launching and Planning Workshop

26-27 March 2002
ICRISAT Center, Patancheru, A.P., India

The Tata-ICRISAT project launch workshop was held on 26-27 March 2002 at ICRISAT, Patancheru, Andhra Pradesh, India. Scientists from National Remote Sensing Agency (NRSA), Hyderabad; Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad; Jawaharlal Nehru Krishi Viswa Vidyala (JNKVV), Jabalpur; Maharana Pratap Agricultural and Technology University (MPATU), Udaipur; Bharatiya Agro Industries Foundation (BAIF), Pune; Samaj Pragati Sahayog, Bagli, Madhya Pradesh; Andhra Pradesh Rural Livelihoods Project (APRLP), Hyderabad; International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh; International Water Management Institute (IWMI), c/o ICRISAT, Hyderabad; International Livestock Research Institute (ILRI), c/o ICRISAT, Hyderabad; and Sir Dorabji Tata Trust, Mumbai participated in the planning meeting.

The objectives of the workshop were:

- To appraise the partners about project activities;
- To develop detailed plans for agricultural development at various watershed sites for minimizing land degradation, increasing productivity and generating employment opportunities; and
- To form a consortium for the Tata-ICRISAT Project.

Inaugural Session

Dr. R.R. Navalgund, Director, NRSA chaired the inaugural session with Dr. Piara Singh as the rapporteur. The Director General of ICRISAT Dr. William D. Dar delivered the inaugural address. Dr. R.R. Navalgund said it was a great pleasure to join the ICRISAT-Tata project launch program.

Dr. S.P. Wani, Project Leader, on behalf of ICRISAT management and Tata-ICRISAT project, welcomed all the scientists and also Mr. Mukund Gorakshkar, Project Officer from the Sir Dorabji Tata Trust. He highlighted the involvement of scientific organizations, NGOs and donors to form the consortium to improve the livelihoods of poor rural people living in rainfed areas. He emphasized that the project was built and aimed at developing a model for a consortium approach for increasing productivity in rainfed areas and minimizing land degradation. He hoped that outcomes from the project would serve as an example for future endeavors.

In the formal launching of the Tata-ICRISAT project, Dr. William D. Dar, Director General of ICRISAT, welcomed Dr. R.R. Navalgund, partners from Rajasthan, Madhya Pradesh, CRIDA, APRLP, ILRI and IWMI. Dr. Dar highlighted ICRISAT's mission and indicated that ICRISAT and Tata Trust shared a common goal of improving the livelihoods of millions of rural poor through sustainable use of natural resources. He expressed confidence that what we have

initiated with Tata Trust will result in long-term partnership and thanked the Tata Trust board for supporting ICRISAT. He said success would depend on the partnership venture to serve as an example and once again congratulated the brains behind the project, Dr. S.P.Wani and Mr. Mukund Gorakshkar.

Dr. William D. Dar in his presentation on "Improving Rural Livelihoods: Greening Drought Prone Areas of Asia" spoke about constraints in the Asian SAT, which are poverty, degraded natural resources and malnourishment. With growing population in the present water-deficient world, the points that need to be addressed are: what is the manner in which child malnourishment can be answered? He raised questions on livelihood and nutritional security for millions of poor in the SAT. ICRISAT's vision and mission would provide solutions for a water-deficient world through integrated watershed management with community participation, empowerment of women, and capacity building.

The formal launching of the Tata-ICRISAT project was followed by a presentation from Mr. Mukund Gorakshkar, Project Officer of the Tata Trust on "An overview of the Sir Dorabji Tata Trust activities in India". He gave an overview of the trust activities and introduced noted trustees of the organization. He spoke about the organizations like such as Tata Institute of Social Sciences (TISS), Indian Institute of Science (IISc) and Tata Institute of Fundamental Research (TIFR) promoted by the Tata group. Mr. Mukund said that the challenges ahead as to how are we prefer to call ourselves as an organization to learn and that too to learn at grassroot levels. In his remarks he said that it is a great effort by Dr. S.P. Wani who has initiated the project. The Tata Trust also believed that it would be a model project for several other organizations.

Technical Session I

The first technical session of the workshop was chaired by Mr. Mukund Gorakshkar, Project Officer, Tata Trust with Mr. P. Pathak as Rapporteur. The session began with a presentation by Dr. S.P. Wani on "Integrated Watershed management for minimizing land degradation and sustaining productivity in Asia". He addressed the challenges and opportunities, and constraints to sustainable production in the Asian SAT. He spoke on land degradation in Asia and emphasized that the global problem needs local solutions. He highlighted the newly developed consortium model for integrated management of watersheds under the project supported by the Asian Development Bank (ADB). The progress of the work carried out in India, Thailand and Vietnam was presented.

Dr. R.R. Navalgund in his presentation on "Application of remote sensing for management of natural resources" focused on use of remote sensing as a tool in providing information in a spatial format. He spoke on what space science can do for agriculture and how it can improve the interactions between organizations and solve problems related to agriculture. Speaking on the False Color Composite and True Color Composite technical value in helping map interpretation, he said that with the advancement in technology, remote sensing which was used for macro level study can now be used at micro level due to availability of finer resolutions. Speaking on the use of space technology in agriculture and development, how it helps in monitoring crop violations (eg, sugarcane crop not to be grown in command areas), characterizing watersheds, yield forecasting, assessment of calamities like drought and land reclamation measures. He reviewed

applications of remote sensing in forestry and environment, land resource development and planning. Mr. Mukund thanked Dr. Navalgund and felt that NRSA's involvement in identifying benchmark locations for the project through remote sensing tools would be an ideal partnership.

"Potential for dryland agriculture in Madhya Pradesh and Rajasthan" was presented by Dr. Y.S. Ramakrishna, Project Coordinator, AICRP on Agrometeorology, CRIDA. He discussed rainfed agriculture in India, its extent, and contribution to food production. This was followed by the classification of rainfed agro-ecosystems based on moisture availability indices, major problems in the rainfed areas and management of rainfed areas–sustainability issues. He dealt with available technologies and strategies for achieving higher productivity in the SAT.

A presentation on "Increasing productivity of rainfed SAT areas of Rajasthan" was given by Dr. Gaur from MPATU. He gave an overview of Rajasthan state, its agroclimatic conditions and rainfed farming followed by existing cropping systems and constraints. The presentation highlighted the vast potential for SAT areas in Rajasthan through improved production strategies, rainwater management by recycling runoff and micro-irrigation systems for higher efficiency. The urgent needs, which have to be addressed in the region, are *in-situ* moisture conservation practices, farm mechanization, and watershed approach.

Dr. R. K. Gupta, Dean, JNKVV, Jabalpur, Madhya Pradesh spoke on "Technologies for increasing production of drylands in Madhya Pradesh". He gave an account of the rainfed situation in Madhya Pradesh and said that the state was made for rainfed agriculture. He mentioned that the state was widely diversified in various aspects with respect to perception and adoption of technology. The situation in the state was that at the end of the rainy season 55 to 65 cm of rainwater was left unused. Then he spoke on the state of art of soil and water conservation structures focusing on mechanical structures for water harvesting. He also dealt on the extent of salt affected soils in one of the targeted benchmark locations for the project.

Technical Session II

Dr. S.P. Wani presented the "Road map for combating land degradation and increasing productivity in Madhya Pradesh (MP) and Eastern Rajasthan". Initially the constraints of SAT were projected as MP and eastern Rajasthan, which come under the SAT. The main goal of the project is to develop a process to empower farmers and other stakeholders to harness maximum benefits from watershed investments through minimizing land degradation, increasing productivity, improving water availability and generating employment opportunities. The specific objectives of the project are:

- to develop and apply a holistic participatory watershed-based model,
- to establish information and communication technologies enabled farmer- centered learning and monitoring system, and
- to understand the linkages between ecosystem degradation, socioeconomic factors and productivity of rainfed areas in India to design mechanisms to strengthen linkages.

The strategy for the project was aptly described by the an acronym PETICCS which stands for:

- **P**articipatory
- **E**volutionary
- **T**eam-oriented
- **I**ntegrated
- **C**onvergence
- **C**onsortium
- **S**cience driven.

Convergence in the watershed and consortium approach was highlighted as the crucial element in the approach adopted in the project. The strategy emphasizes low-cost water harvesting structures, technical backstopping, developing community-based seed supply systems, increasing productivity through the use of new science tools and empowering the community by information and communication technology (ICT) enabled learning systems. For execution and implementation of the project, the benchmark districts identified are Guna and Devas in Madhya Pradesh and Bundi in Rajasthan, spread out in two different agro-ecoregions (AEZ) 5 and 10. The important issues that need to be addressed are how to increase productivity and employment opportunities, ways to combat desertification, improve rural livelihoods, achieve equity and reduce malnutrition. The plan of work needed to achieve these objectives is described in three modules with activities covered in each module.

Following the presentation by the team leader, there were deliberations among the consortium partners and the participating institutions and NGOs about the activities as per the work plan.

Dr. Hegde, the President of Bhartiya Agro-industries Foundation (BAIF), highlighted the project as a prestigious and ambitious project and was thankful to the project leader for making BAIF a partner in this project. He gave a brief background of BAIF mentioning that it has a holistic program approach where agro-forestry, livestocks, silvipastoral and horticulture development programs were linked. Issues like networking of farm ponds with help of local leaders, empowerment of women, and community development programs were also taken up. Dr. Rangu Rao, from Samaj Pragathi Sahayog, Devas, Madhya Pradesh gave an overview of his organization. and the existing local problems in the region and strategies for implementation in Devas tribal belt, covering a number of villages.

Technical Session III

In technical session III the consortium partners assembled in three groups and came out with their draft plans for each benchmark location. Each group dealt with one site and prepared an action plan with the following details.

The approach for the site locations Bundi, Guna and Dewas: The proposed project locations were Guna and Dewas in Madhya Pradesh, and Bundi in the northeast region of Rajasthan state. The geographical and agro-climatic features were described and the demographic information was provided for all the three sites. The land use pattern, major crops, productivity constraints of crop and livestock were projected. The team proposed activities for providing plausible solutions

to the existing productivity constraints in the selected target sites. Community participation at village level, training based on the proposed activities and how to implement them were also delineated. The pathways for linkage between various consortium partners and improved employment opportunities were also presented.

Presentation of individual group workplans

Bundi

The proposed project benchmark site, is located in Nainwa Taluka, Bundi district in the north eastern region of Rajasthan state. The topography is undulating with a slope of 10 to 15%. The soil type ranges from sandy clay to silt clay type with a soil depth of 30 to 130 cm. The pH of the soils range from 8.07 to 8.25. This is a rainfed region with temperatures as low as 8 ºC and the maximum rising upto 48 ºC. The rainfall received in this region ranges between 450 mm to 600 mm.

The demographic information provided about the region was that the total population was about 133800 with the scheduled castes forming to 18% and scheduled tribes 21% of the population. The overall literacy in the location was 27% with 41% among males and 10% among females. The livestock population from records revealed a higher population of cows (60,000), followed by buffalo (39,000), sheep (22,000) and goats (78,000).

Land use pattern and major crops: The land use pattern in the location proposed had a total area of 1,15,000 ha with 20% under forest cover, 58% under cultivated area, 14% under non-cultivable wasteland and 8% under pasture and fallow land. The major crops grown up in the rainy season are maize, sesame, groundnut, black gram and green gram. The crops taken up in the post rainy season are wheat, mustard, gram and lentil.

Constraints to agricultural production in the region: The different constraints causing lower crop productivity are:

- Low soil moisture and low soil fertility
- Degraded soil due to wind and water erosion because of sloppy terrain and grazing by cattle
- Low-yielding varieties of crops
- High pest incidence
- Low input and lack of sufficient credit.

Lower livestock productivity is due to:

- Poor breed of livestock
- Poor nutrition
- Poor health and management of the livestock
- Lack of awareness
- Problems of credit

The following are the proposed activities for providing solutions in arable and non-arable lands.

Arable land

Increased soil water: Soil moisture retention through soil conservation (arable land and water conservation measures) were proposed.

In-situ soil conservation
- Ridges and furrows
- Field bunding with vegetative protection
- Cultivation (contour)
- Vegetative barriers

Ex-situ soil conservation
- Gully plugging

In-situ water conservation
- Farm ponds
- Well recharging

Ex-situ water conservation
- Check dams
- Percolation tanks
- Village ponds

Increased crop productivity
- Introduction of improved variety seeds.
- Improved management practices through integrated nutrient, pest and weed management practices.

Improved soil fertility
- Vermicomposting
- bio-fertilizer technology

Introduction of alternate cropping systems
- Intercropping
- Agro-horticulture
- Fodder promotion
- Increasing cropping intensity

Non-arable land

Afforestation (Private land): Soil and water conservation through vegetative cover with silvipastoral and legume introduction.

Livestock improvement

- Breeding for improved cows, buffaloes, sheep and goats.
- Feed resources by fodder promotion, growing dual-purpose trees, improving the quality of crop residue and providing nutrient supplements.
- Livestock immunization programs.

Community participation

At village level the organization with village panchayat and gram sabha were emphasized. Involvement of women self-help groups (SHG) and user groups will similarly assist transmission of technology.

Training

Based on the proposed activities training to be provided to the community-based organizations (CBOs), farmers and field staff.

Implementation process

- CBO will be involved in management, maintenance and post project responsibilities.
- BAIF would facilitate the implementation process.

Linkage

For the execution of the work plan, the consortium partners proposed were:

- CRS, Kota
- KVK
- MPATU
- Market
- Credit
- Line department

Employment opportunities

Improved employment opportunities through:

- Dairy products
- Carpet weaving
- Flour mill
- Vegetable cultivation
- Horticulture

Dewas

- The other project proposed site is Dewas which covers 100 villages; the operational area being proposed is 50 villages (for benchmark site 2 villages will be selected by the

consortium team). The approach in the operational area is a single village with group of farmers and individual farmer. The constraints identified are:

- Most neglected and backward area
- Deforestation
- Poor soil fertility
- Undue ground water exploitation
- Resource poor farmers
- Low and uneconomical yields
- Pest problems (especially in cotton)
- Poor livestock
- Inferior fodder and feed

The constraints for growing cotton, maize, sorghum, soybean and pigeonpea are:

- Lack of input resources
- Lack of capital
- Non-realization of potential productivity
- The crops grown are mostly for self consumption
- The farmers have small land holdings (< 2 ha)

The action plan drawn for the location is as follows:

Selection of the benchmark site(s)

- The site should be representative of the eco-region.
- Identification of probable sites by holding discussions with colleagues and farmers.
- Finalize the benchmark watershed together with ICRISAT consortium team.

Survey

- Undertake surveys to generate baseline data on socioeconomic and biophysical aspects.
- Prepare an appropriate questionnaire.
- Provide training for a common understanding and harmonized approach.
- Organize collection and analysis of samples.
- Educate farmers based on analysis results and plan research to address constraints.
- Develop time scale information to monitor progress.
- Develop indicators to monitor impact.

Increase productivity of existing cropping systems

- Best bet options
- Enhance productivity
- Reduce cost of production
- Crop diversification (dual purpose sorghum, horticulture, legumes etc.)

Crop livestock systems

- Dairy development program (stock improvement)
- Fodder quality improvement

Innovative approaches

- Crop diversification
- Horticulture, silvi-pastoral and agro forestry systems

Integrated pest management

- Development of local products (neem, mahuwa seeds)
- Bioagents
- Nuclear polyhedrosis virus (NPV)

Increased employment opportunities

- Vermicompost
- Horticulture
- Milk and dairy products
- Seed production

Project administration

In addition this group deliberated on project management structure. It was suggested that we should have:

- Project Advisory Committee
- Steering Committees for Madhya Pradesh and Rajasthan programs

The role of communication was also discussed in depth. It was proposed that consortium partners should exchange information regularly.

Guna

The proposed project benchmark site Guna is located in Madhya Pradesh state. The area proposed is about 1000 ha in the selected watershed. The topography is an undulating terrain with moderate slopes. The prevalent soil types are medium black and red soils with a soil depth of about 150 cm. This is a predominantly rainfed area covering 80 per cent and the rainy season extends from July to September. The average rainfall received is 1070 mm. Minimum temperature of 6 ºC is recorded in the month of January and maximum temperature goes up to 44 ºC in June.

The crops grown in rainy season are soybean, maize and jowar. Wheat and gram are the post rainy season crops in the region. A cropping intensity of 120 per cent is prevalent in the region. Average land holding is 0.4 hectares and the landless population is 18 per cent.

Problems faced include:

- Land degradation
- Low productivity

- Loss of rainwater
- Unemployment

Proposed solutions for the problems:

- Assess the extent of land degradation and fallow lands through remote sensing, GIS and concerned state department and research organizations.
- Reducing land degradation
  - Reducing rainy season fallow
  - More cover crops in rainy season
  - Cropping across slopes
  - Short duration rainy season crops
  - Land and water management systems
  - Field drainage systems
  - Minimum tillage for post-rainy season.
  - Creating awareness regarding degradation
- Rehabilitating degraded land
  - Soil and water conservation measures at field and community scale
  - Integrated Pest and Nutrient Management System
  - Organic manure/vermiculture/NADEP
  - Inorganic fertilizers
  - Bio-fertilizers
  - Crop residues
  - Balance fertilization
  - Generation of biomass (legumes)
- Suggested alternate land use systems
  - Agro-forestry
  - Agro-horticulture
  - Silvi-pastoral systems
- Enhance efficient use of rainwater
  - Water harvesting
  - Ground water recharging
  - *In-situ* moisture conservation
  - Mulches (soil and organic)
  - Surface configurations
  - Minimum tillage
- Increasing productivity
  - Improved crop management
  - Matching cropping systems with water availability (sequential and inter cropping)
  - Weed management
  - Improved crop varieties resistant to abiotic and biotic stresses
  - Integrated pest management
  - Suitable implements for timely operations (sowing to harvesting)
  - Integrated water and nutrient management (SWNM)
  - Efficient use of harvested water (surface and ground)
  - Crop diversification
  - Alternate land use system
  - Multiplication and distribution of quality seed

- Increased employment generation
  - Improved productivity of livestock
  - Breed improvement
  - Livestock health and management
  - Improved nutrition
  - Livestock diversification (goats/poultry)
  - Maintenance of common grazing land
  - Supply of fodder and fodder banks
  - Promotion of stall feeding and biogas
  - Forward and backward linkages
  - Vegetable production and marketing
  - Micro enterprises through SHGs
  - Nursery raising and grafting
  - Vermiculture
  - Value addition to agriculture produce
  - Medicinal aromatic plants cultivation
  - Fish rearing
- Empowerment of community and institutions
  - Technical skills and managerial training to staff and community in all watershed management activities.
  - Addressing issues like gender equity social justice and equitable distribution of benefits harnessed.
  - Facilitate training in health, hygiene, sanitation and primary education through ICT center.
- Implementation strategy
  - All activities through people's organization (PO)
  - BAIF as facilitator
  - Technological support through consortium approach
  - Baseline survey
  - RRA, PRA needs identification prioritization
- Participatory monitoring and evaluation
  - Appropriate formats, quantitative and qualitative
  - Mid-course corrections
  - Formation of POs and their strengthening
  - Nurturing the Indian culture and value systems
  - SMART indicators and milestones to be set
  - Impact assessment
  - Exit mechanism/policy
  - Documentation of the process, methodology and results both in terms of success and failures
  - Dissemination of technology and scaling up

The presentations for different project implementation sites by the teams were followed by deliberations on local problems, action plan and implementation of the defined activities.

Plenary Session

Dr. Dar chaired the plenary session and in his opening remarks commented that the technical session in the past two days must have been very productive. He acknowledged the important support coming from the Tata Trust and many premier national and international institutions. He requested Mr. M. Gorakshkar, Program Officer, Tata Trust to provide his feedback and insights of the workshop

Mr. Mukund expressed that his experience was very rewarding and found that the project had generated great enthusiasm among the consortium partners. The workshop participants interacted freely and discussed both positive and negative aspects with the same openness. He felt that it was a healthy sign as the constraints could be addressed effectively. Mr. Mukund thanked the DG and ICRISAT for the wholehearted support both in terms of human resources and financial assistance for holding the project launching and planning workshop.

He emphasized that there should be no compromise on transparency but considerable flexibility is allowed. The workshop proved to be a great learning experience for the trust as every association is a great education and learning experience to make the funding more appropriate and to make the trust goals more effective. He found that the consortium approach provides many advantages like: (i) freedom of choice, (ii) freedom to participate, (iii) freedom to be informed, (iv) cross learning across the institutions and participants (v) creation of self help groups (vi) introduction of process that benefits the whole group (vii) agreed protocols and (viii) addition of partners based on need.

Mr. Mukund stressed that the Trust expects:

- Clear mile stones and time-frames
- Comprehensive list of activities
- Schedule of visits by scientists
- Constitution of Advisory Committee (one at Central and two at Field Level)
- Appropriate documentation at each point of time

In the end he felt that this project is going to be a great learning experience for each one of the consortium partners.

Dr. Dar added that the guidelines and protocols are important and need strict adherence if we need to succeed in the game; and transparency and cohesiveness are important to move together.

Dr. S.P. Wani had provided a gist of the group discussions and emphasized that the approach will be PETTICS together with productiveness and team spirit.

Dr. Dar in his closing remarks stated that he is more than assured about the quality and commitments of the membership based on interactions during the workshop. There are several important institutions involved, both national and international. He wished to see what kind of livestock and water management interventions are needed at this point of time and would be included in the work plans. He felt that the basic guidelines suggested by Mr. Mukund and the road map presented by the project leader, Dr. S.P. Wani will lead to success of the project.

Dr. Dar mentioned that currently only 50% of the participants have gathered for launching the project and the remaining 50% are waiting outside i.e. in the rural areas/ in the field. With more participation of the community we can have participatory process documentation, monitoring and evaluation. He said that it is important to get community involvement in monitoring group actions and individual contribution to document our successes and failures. He felt there was more room for involving the community at every stage and better participation of communities will help success of the project. He said we move ahead with the enthusiasm that there is every room for equal role for the community as they are the ones who will practice, participate and learn.

Dr. Dar commented that he was very impressed with the participation by the consortium partners and the kind of enthusiasm shown by Mr. Mukund and felt confident that the project has all the necessary components for a success story in the making. He wished more and more partners to join this success story. The chairman in his concluding remarks appreciated the consortium for the quality and said there would be no falling back. He also mentioned that the project would look not just at the crop commodity but also at the ecosystem in a watershed approach.

In the end Dr. Dar stressed that the group through the project is helping the poor communities living in a fragile environment, empower them and improve their livelihoods through active participation for development of their lives, community and country. The chairman once again congratulated the efforts put in by Dr. S.P. Wani and wished the project all success.

Dr. C.L.L. Gowda proposed a vote of thanks. He thanked Tata Trust, participants, institutions and ICRISAT support services. He opined that the excellent participation and sharing of experiences would certainly lead the project towards success.

Decisions

- It was decided that each participating institution based on their strengths, would take up responsibilities.
- The project plans would include off-season work for employment generation.
- An improved version of the survey questionnaire was suggested. It was also decided that training would be provided to the enumerators before data collection.
- Potential benchmark sites to be decided by NGO partners by 25 April 2002 and communicated to the Project Leader.
- Team of consortium partners to visit potential benchmark sites and finalize the benchmark sites by 15 May 2002.
- During rainy season work needs to be initiated in all the benchmark sites.

TATA–ICRISAT-ICAR Project Launching and Planning Workshop

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

26–27 March 2002
C F Bentley Conference Center (212 Bldg.)
ICRISAT Center, Patancheru

Program

26 March 2002

0830-0900	Registration [near Conference Center Foyer]	

Inaugural Session

Chair : R R Navalgund
Rapporteur : Piara Singh

0900–0910	Welcome	S P Wani
0910–0940	Improving rural livelihoods: Greening drought prone areas of Asia; and Formal launching of the Tata–ICRISAT project	W D Dar
0940–1000	An overview of the Sir Dorabji Tata Trust activities in India	M Gorakshkar
1000–1010	Group photograph	
1010–1030	*Tea/Coffee Break*	

Technical Session I

Chair : M Gorakshkar
Rapporteur : P Pathak

1030–1050	Integrated watershed management for minimizing land degradation and sustaining productivity in Asia	S P Wani
1050–1110	Application of remote sensing for management of natural resources	R R Navalgund
1110–1130	Potential for dryland agriculture in MP and Rajasthan	H P Singh
1130–1150	Potential for micro-enterprises based on use of natural resources	K Balasubramanian
1150–1210	Potential for increasing productivity of rainfed SAT areas of Rajasthan	Pratap Singh
1210–1230	Technologies for increasing production of drylands in MP	R K Gupta
1230-1300	Discussion	
1300–1400	*Lunch break*	

Technical Session II

1400–1430	Road map for project implementation	S P Wani
1430–1530	Concurrent Activities Planning Sessions	
	Group I : Guna site	
	Group II : Devas site	
	Group III : Bundi site	
1530–1550	*Tea/Coffee break*	
1550-1700	Concurrent activities planning sessions *(Continue)*	
1700-1750	Project monitoring group meeting	
1830	*Workshop dinner*	

27 March 2002

Technical Session III

Chair : N G Hegde

0830–0930	Individual groups present their draft plans
0930–1000	Discussion
1000-1020	*Tea/Coffee break*
1020–1300	Individual groups continue the workplan development
1300-1400	*Lunch break*
1400-1500	Groups prepare for final presentation

Plenary Session

Chair : W D Dar
Rapporteur : A Ramakrishna

1500-1515	Workplan presentation by Group I	
1515-1530	Workplan presentation by Group II	
1530–1545	*Tea/Coffee break*	
1545–1600	Workplan presentation by Group III	
1600–1615	Looking forward	M Gorakshkar
1615–1630	Chair's concluding remarks	W D Dar
1630–1640	Vote of thanks	C L L Gowda

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Executive Summary of
Project Launching and Planning Workshop

20 June 2002
Indian Institute of Soil Science (IISS)
Bhopal, Madhya Pradesh

Tata-ICRISAT-ICAR Project

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

Executive Summary of Launching and Planning Workshop

20 June 2002
Indian Institute of Soil Science (IISS)
Bhopal, Madhya Pradesh, India

The Tata-ICRISAT-ICAR project on Combating land degradation and increasing productivity in Madhya Pradesh, a partnership between ICRISAT, ICAR and the House of Tata, was launched by Honorable Chief Minister of Madhya Pradesh, Sri Digvijay Singh. The function was organized by ICRISAT and IISS and was held on 20 June 2002 at the Indian Institute of Soil Science (IISS), Bhopal. The Honorable Chief Minister of Madhya Pradesh Shri Digvijay Singh; the Honorable Agriculture Minister, Shri Mahendra Singh; Dr. M.S. Swaminathan; Directors General of ICRISAT, Dr. William D. Dar; and Indian Council for Agricultural Research (ICAR) and Secretary, Department of Agricultural Research and Education (DARE), Government of India, Dr. Panjab Singh; Sir Dorabji Trust representative, Mr. Mukund Gorakshkar; non-governmental organizations' (NGOs) representatives; ICAR and state agricultural universities' (SAUs) staff; state government departments' staff; Chairman, Federation of Indian Chambers of Commerce (FICCI) Agriculture Committee, Mr. V.S. Aggarwal, farmers and others attended the function. Dr. Acharya highlighted the role played by ICAR in general and IISS in particular for the development of agriculture in Madhya Pradesh.

Inaugural Session

Dr. C.L. Acharya, Director, IISS welcomed the Honorable Chief Minister, Agricultural Minister of Madhya Pradesh; Director General, ICRISAT; Director General, ICAR; Chairman, M.S. Swaminathan Research Foundation; Sir Dorabji Tata Trust representative; Vice-Chancellor, JNKVV; Directors of ICAR institutions, invitees, press and media staff and other scientists participating in the function. Speaking on the occasion, Dr. M. S. Swaminathan lauded Tata's initiative in supporting research, as evidenced by three major projects on soil, land and water conservation in the country. The three projects are: Natural Resource Management on three major soil types (black, red and alluvial soils), Consultative Group on Land and Water Care and the present project under the leadership of ICRISAT. The present project signifies the power of partnership between an international institute, ICAR, state agricultural universities, NGOs and farmers. Dr. Swaminathan highlighted the direct link between natural resource management and the livelihoods of millions of poor. In Madhya Pradesh the per capita food availability is higher than the all-India average. Madhya Pradesh also produces 29% of the oil seeds and pulses of India, the per capita consumption in rural areas of MP is much higher. The best safety net against poverty, he said, was increasing agricultural productivity. He emphasized that natural resource management should not be viewed in isolation but livelihood should be a part of natural resource management. According to him, safety net is achieved through increased agricultural production involving both on-farm and non-farm activities. Value addition will not only generate more

income but also will provide more rural employment. He stressed that the self-help groups (SHGs) in rural India should not be mere credit suppliers, they should help to create more employment as well as they should be linked to markets. Dr. Swaminathan stressed that our research should be integrated research and should be for precision farming in drylands. Precision farming should result in higher factor productivity mainly from improved efficiency of land and water use. He also suggested the establishment of a National Center of Training and Demonstration in Precision Dryland Farming in the Narmada Valley of Madhya Pradesh.

Dr. William D. Dar, Director General, ICRISAT in his speech stressed the link between poverty and political and social instability and highlighted ICRISAT's on-going efforts for improving the livelihoods of millions of poor in Asia and Africa. Citing the example of Adarsha watershed in Kothapally, Andhra Pradesh, he noted that the only way to increase productivity of rainfed areas is better management of rainwater and other natural resources. Dr. Dar described the objectives of the TATA-ICRISAT-ICAR project and also briefed about the progress achieved to date in this initiative. According to him, this was an excellent example of partnership involving Tatas, ICRISAT, ICAR, the state government, NGOs and farmers. Dr. Dar thanked the Sir Dorabji Tata Trust for their financial support.

Dr. Panjab Singh, Director General, ICAR highlighted the need for diversifying rainfed systems to increase productivity and reduce production costs; and the need to take a holistic approach to natural resource management. He called for a thorough evaluation of policies in the utilization of ground water considering all possible consequences. He also called for a policy shift toward rainfed agriculture, necessitated on social grounds as a large majority of the rural community has subsistence-level existence below the poverty line. For this, convergence and holistic approach should be the strategy for uplifting the economically weaker section of farmers in Madhya Pradesh. Dr. Singh also emphasized the option of growing biomass for energy production on the marginal and wastelands to minimize dependence on fossil fuels. He appreciated the efforts of ICRISAT, Tatas and the ICAR institutions for the formation of such a consortium with various NGOs and farmers.

Mr. Mukund Gorakshkar, representing Sir Dorabji Trust, stated that support for the project in Madhya Pradesh was important because the western region of the state is a very fragile and degradation-prone region and the success of the watershed work in the state should lead to improved livelihoods of the poor people of this fragile region of Madhya Pradesh. Mr. Gorakshkar also explained various research and development initiatives supported by Tatas for productivity increase, employment generation, education and skill development in the unorganized sector in the country. He lauded various initiatives undertaken by MP under the leadership of dynamic Honorable Chief Minister , Sri Digvijay Singh, particularly in the area of watershed management and poverty alleviation programs.

Mr. Mahendra Singh, Agriculture Minister, Government of Madhya Pradesh thanked the collaborative effort by Tatas, ICRISAT and ICAR for combating land degradation in MP and Rajasthan. Because of high population growth and lack of proper management, land degradation has taken place to varying degrees in the state. The Chambal area of MP has problems of salinity and consequently productivity is very low. The minister stressed the need to develop soil and water conservation practices for increasing the productivity of drylands in the state.

Honorable Chief Minister, Shri Digvijay Singh lauded the partnership effort by ICRISAT, ICAR and the house of Tata for addressing the issues of land degradation and crop productivity, and also highlighted the need to improve the quality of life of poor farmers in rainfed areas. The Chief Minister stated that MP is the largest producer of pulses but the productivity is very low and no breakthroughs have been achieved in increasing pulses productivity. Soybean is a very important crop in MP but its yield has stagnated. He sought researchers' opinion on the use of genetically modified soybean for breaking the yield barrier. The watershed program in MP has resulted in reduction in area under kharif fallow and increase in area under rabi also. He described the efforts of the state government for checking soil erosion and promoting soil conservation practices and noted that the problem was not of water scarcity but of its proper management. The chief minister promised all government help to ensure that this project becomes a model project not only for Madhya Pradesh but also for the whole country. He opined that Narmada valley might be an ideal area for a center for precision farming in drylands. The Chief Mininster felt that extension is the weakest link in agricultural development and there is need to change from statistics oriented government centric to farmer centric extension programs. He emphasized that a permanent partnership with ICRISAT, JNKVV (state agricultural universities) and ICAR will be for the benefit of Madhya Pradesh state in particular and the country as a whole. Following his speech, the Chief Minister officially launched the project.

Dr. S.P. Wani, Project Leader reemphasized the importance of partnership and participatory approach for increasing incomes of resource-poor farmers in the rainfed areas by increasing productivity and minimizing land degradation. He thanked all the dignitaries for their guidance and support for the project activities in MP. He also thanked one and all for making a success of the function for launching of the project.

Technical Session I

Dr. M.S. Swaminathan chaired this technical session. Dr. T.J. Rego was the Rapporteur. Dr. S.P. Wani (ICRISAT), Dr. N.G, Hegde (BAIF) and Dr. Mihir Shah (SPS) made presentations during the session. Dr. Wani spoke about the role of integrated watershed management for improved livelihoods through convergence. It was emphasized that livelihood improvement can only be achieved through sustainable use of natural resources in India. Appropriate unit for managing natural resources could be the watershed as water could be managed through watersheds. He emphasized the need for ensuring tangible economic benefits to the individuals through watershed programs. Generally watershed programs concentrated on soil and water conservation but integrated watershed management programs must go beyond by targeting efficient and sustainable use of conserved resources for increasing agricultural productivity. The need for converging various development programs in watersheds by using watershed programs as entry point activities was highlighted for improving livelihoods through convergence. A consortium approach for technical backstopping of the watershed programs was emphasized. Results of a case study of Adarsha watershed at Kothapally in Ranga Reddy district of Andhra Pradesh were described. The success of Adarsha watershed has enthused farmers from four nearby watersheds a well as the policymakers in AP who are scaling-up the consortium model for improving livelihoods of the poor in drought prone areas of AP through integrated participatory watershed management. Dr. Hegde discussed the strategy and activities undertaken by BAIF at the Lalatora

watershed in the Vidisha district of Madhya Pradesh for improved livelihoods through convergence under the Asian Development Bank (ADB)–ICRISAT project. He highlighted the results in terms of increased productivity of soybean-based systems, improved groundwater, reduced cost of cultivation by adopting minimum tillage for postrainy season crop and also village-based seed banks for chickpea through self-help groups. Dr. Hegde highlighted the benefits of technical backstopping in the normal watershed programs. The successful adoption of boron and sulphur application by the farmers has increased incomes by Rs. 8000 ha^{-1} for soybean-wheat system. Not only the farmers from Lalatora watershed but also the farmers from other watersheds in Vidisha, Rajghad and Guna are keenly adopting the modules such as village-based seed banks, boron and sulphur applications, vermicomposting, etc. Dr. Mihir Shah discussed the activities of Samaj Pragati Sahayog (SPS) in Devas district of MP. He highlighted that SPS has the responsibility to train NGOs and PIAs under CAPARI program. Further he discussed various activities carried out for improved livelihoods in the Kanad watershed in the Dewas district of Madhya Pradesh. A range of activities from watershed development, livestock improvement, to pisciculture , housing and sanitation have been carried out in 40 villages in the tribal areas.

Dr. Swaminathan noted that land and water conservation should be of very high importance. Community management of natural resources should be based on the principle of 3 Es viz., Ecology, Economics and Equity as it provides a win-win situation for all. It was suggested that a manual on Equitable and sustainable use of natural resources should be brought out. Also training resource material must be made available to local NGOs in local languages. Effort should be made to properly reward the efforts by the tribal community for maintaining the rich agro-biodiversity. A precision farming training and demonstration center for rainfed farming may be established in the Narmada region of MP.

Technical Session II

A panel discussion on convergence of various activities in the watersheds was organized. The panel consisted of:

Dr. R.K. Gupta	Chairman
Dr. M. Velayutham	Member
Dr. H.P. Singh	Member
Dr. Mihir Shah	Member
Dr. D.L.N. Rao	Member
Mr. V.S. Agarwal	Member
Mr. Sharma	Member

The group discusssiohn was initiated by the Chairman Dr. R.K. Gupta by soliciting the comments and opinions from farmers about their needs and expectations from the project, who participated in the discussion along with other participants. Farmers' views were particularly sought on (a) possible options and interventions and (b) farmer-centred project activities.

Farmers expressed their gratitude for selecting their villages for the integrated watershed work for the Tata project. They have realized the benefits from the checkdams constructed earlier in

terms of increased water availability in their wells for crops. They also appreciated the support of ICRISAT-BAIF team for improved farm machinery and seeds of improved varieties during this season. They mentioned that the project staff is providing them all the necessary support since May starting with soil analysis and training to operate the tropicultor.

Mr. Aggarwal narrated his rich experience in improving the lot of farmers by supplying the inputs in time at a reasonable price as well as buying their outputs for a fair price.

Mr. Sharma (district Executive) emphasized the usefulness of utilizing the spare time of farmers outside the cropping season (6-7 months) in the areas of (a) livestock improvement, (b) water saving and (c) vermiculture.

Dr. S.P. Wani suggested the role of forward and backward linkages in agricultural production and sought the help of Mr. Aggarwal through FICCI to strengthen these linkages for improving the livelihoods of poor farmers.

Dr. O.P. Joshi emphasized the need to strengthen marketing and seed production for soybean as well as its use as nutritional sources to farming families.

Dr. D.L.N. Rao briefed about the usefulness of integrated nutrient management, which includes FYM, compost, BNF and also supplemental chemical fertilizer. He stressed that improving the N use efficiency up to 70-80% itself is a way of precision farming. Biodiversity conservation of not only plants but also conservation of traditional knowledge and holistic approach both in technical and in sociological interventions were also brought up by him.

Dr. R.A. Sharma stressed the role of women's participation as well as the participation of landless people in agricultural development.

Dr. M. Velayutham liked to include document budget on the quantitative aspects such as extra grain produced per unit of water or per unit of nutrient rather than only recording increased yields. He also suggested to include sustainability indicators and need to collect details of each farm and put it in GIS which could be useful for precision farming in rainfed areas.

Dr. R.K. Gupta , chairman, summarized the discussion with following main points:

- Experience and knowledge gained from more than 400 watersheds in MP should be used for developing options/interventions and they should be resource relevant and region specific.
- Emphasis on resource conservation (soil and water) and utilization of rainwater more efficiently.
- Contingency crop, water and integrated nutrient management.
- Non-farm activities for increased livelihoods such as animal husbandry, honeybee keeping, etc for year round gainful employment.
- Energy plantation in waste lands with emphasis on legume trees for firewood.
- Intercropping and mixed cropping
- Use of land as per land capability class.
- Precision farming in rainfed areas.

Dr. S.P. Wani thanked all the participants and chairs of technical sessions. He mentioned that with the launching of this project today a beginning is made to realize the goal which is set by the consortium partners to improve livelihoods and minimize land degradation in the target districts. We as a team have to put our efforts whole heartedly through the convergence tunnel and we will succeed as a team to make the target districts as models for rainfed agriculture as envisaged by Prof. Swaminathan and Honorable Chief Minister Mr. Digvijay Singh.

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Program

20 June 2002

0930–1000	Registration	near Auditorium
	Inaugural Session	
1000–1010	Welcome	C L Acharya
1010–1030	Status paper on land degradation and food security issues in India	M S Swaminathan
1030–1045	Strategies to achieve food security and minimize land degradation—Tata-ICRISAT-ICAR initiative in India	William D Dar
1045–1100	Rainfed agriculture in India: Potential for improving livelihoods for small farmers	Panjab Singh
1100–1110	Sir Dorabji Tata Trust's initiatives to improve livelihoods of people in India	Mukund Gorakshkar
1110–1130	Inaugural speech and launching of the Tata-ICRISAT-ICAR project	Digvijay Singh Hon'ble Chief Minister, MP
1130–1135	Presentation of mementos	
1135–1140	Vote of thanks	S P Wani
1140–1210	*Group photograph and tea break*	
	Planning Session for Convergence	
	Chair : R Gopal Krishnan ***Rapporteur : T J Rego***	
1210–1225	Improved livelihoods through convergence in watersheds	S P Wani
1225–1245	Increased incomes through sustainable management of watersheds in Guna district, MP	A B Pande
1245–1305	Increased incomes through sustainable management of watersheds in Dewas district, MP	Mihir Shah
1305–1330	Chair's remarks: Convergence of various development programs in watersheds	R Gopal Krishnan
1330–1430	*Lunch*	

Panel Discussion: Strategies and Possible Options to Improve Livelihoods in Watersheds

Chair ***: M S Swaminathan***
Rapporteur ***: V Balaji***
Panel ***: Panjab Singh, William D Dar, V S Aggarwal, A Tiwari, Sudhir Nath, A V Singh, Gyanendra Singh, Rakesh Sahani O P Rawat***

1430–1600	Panel discussion	
1600–1615	Chair's remarks	M S Swaminathan
1615–1630	Closing of the workshop and vote of thanks	S P Wani

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Executive Summary of
Project Launching and Planning Workshop

26 July 2002
Hari Charan Mathur – Rajasthan Institute of Public Administration (RIPA)
Jaipur, Rajasthan

Tata-ICRISAT-ICAR Project

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

Executive Summary of Launching and Planning Workshop

26 July 2002
Hari Charan Mathur – Rajasthan Institute of Public Administration (RIPA)
Jaipur, Rajasthan, India

The Tata-ICRISAT-ICAR project on "Combating land degradation and increasing productivity in eastern Rajsthan was launched in a function held at Hari Charan Mathur–Rajasthan Institute of Public Administration (HCM-RIPA) on 26 July 2002 at Jaipur. The objectives of the launching workshop were:

- To appraise the policymakers and executives, NGOs and other consortium partners about the project (goal, strategy, target area and activities);
- To form the consortium for Bundi benchmark site in Rajsthan; and
- To seek support of policymakers and executives for converging various development schemes at benchmark site.

The launching workshop was organized by ICRISAT, ICAR and Director, Agriculture, Government of Rajasthan. The participants included Prof. M.S. Swaminathan, Chairman, M.S. Swaminathan Research Foundation, Sri Ashok Gehlot, Honorable Chief Minister of Rajasthan; Sri Govind Singh Gurjar, Honorable Minister of Agriculture; Dr. Panjab Singh, Secretary, Department of Agriculture Research and Education (DARE) and Director General, Indian Council of Agricultural Research; Mr. Inderjeet Khanna, Chief Secretary, Government of Rajasthan, Mr. Mukund Gorakshkar, Sir Dorabji Tata Trust; Dr. A.S. Faroda, Vice-Chancellor, Maharana Pratap University of Agriculture; Dr. N.G. Hegde, President, BAIF, Pune; Dr. H.P. Singh, Director Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad; Dr. Pratap Narain, Director, Central Arid-Zone Research Institute (CAZRI), Jodhpur; executives of Government of Rajasthan; NGOs; development agencies; Directors of ICAR institutes; and members of press and media. Honorable Chief Minister of Rajasthan Sri Ashok Gehlot launched the project at Jaipur.

Inaugural Session

The Hon'ble Chief Minister of Rajasthan Sri Ashok Gehlot launched the TATA-ICRISAT-ICAR initiative on "Combating land degradation and increasing productivity in Madhya Pradesh and eastern Rajasthan" in Jaipur. Mr. Mukund Gorakshkar, Project Officer, Sir Dorabji Tata Trust welcomed Honorable Chief Minister of Rajasthan Sri Ashok Gehlot, Sri Govind Singh Gurjar, Minister of Agriculture, Dr. M.S. Swaminathan, Dr. Panjab Singh, D.G., ICAR, Sri Inderjeet Khanna, Chief Secretary, Government of Rajasthan, NGO representatives, Directors of ICAR institutions, and state agricultural university staff and others who attended the function. In his welcome speech, he highlighted that Rajasthan is prone to severe land degradation and Hon'ble

Chief Minister has taken dynamic decisions for integrated rural development, which attracted the Tatas to select Rajasthan as one of the benchmark site for this initiative. He mentioned that despite shortage of fodder and quality feed, Rajasthan has large animal population and produces 11% of the country's milk and 40% of its wool. He complemented the Hon'ble Chief Minister's initiatives to tackle desertification and land degradation, successful implementation of drought mitigation program through "Nadi Nirman", "Dusara Dashak", "Vidya Bhavan Institute for development of Panchayat Raj leaders" and "Rajiv Gandhi Patashala" are some of the excellent initiatives by the state government. He mentioned that Rajasthan government is making excellent effort to make drought management program into a general development program.

Dr. S.P. Wani, Project Coordiantor, ICRISAT welcomed the dignitaries and participants on behalf of Dr. William D. Dar, ICRISAT Director General. Dr. Wani gave a brief background of ICRISAT, its goal, objectives, mandate, vision and strategy. He emphasized the importance of water for agriculture and other uses and urged to make it a public movement to conserve water. He lauded and complimented the Hon'ble Chief Minister's various initiatives/measures for conserving water. As an example, he cited the efforts to increase awareness about importance and shortage of water through catchy slogans depicted everywhere by the state authorities. He described the details of TATA-ICRISAT-ICAR initiative and highlighted the unique components of the initiative. The consortium approach adopted for technical backstopping of the farmer centric development project is the unique feature of the TATA-ICRISAT-ICAR project. He stressed the need to use a consortium approach to resolve the complex issues. The goal of this project is to develop and improve the productivity on sustainable basis with improved management of natural resources in Madhya Pradesh and Rajasthan, where land degradation/erosion is a serious problem. In the next 5 years the project will contribute significantly in minimizing the land degradation and desertification problems in eastern Rajasthan and Madhya Pradesh. In the end he stated that through consortium approach and by adopting fully participatory approach for convergence this project team will achieve the project goals with the encouragement and support of Hon'ble Chief Minister, active support of state government and other consortium partners.

Professor M.S. Swaminathan, World Food Award Laureate mentioned that, the launching of this watershed management project has special significance in the context of current severe drought in the country. He highlighted that with increasing population and decreasing level of natural resources per capita, increasing water scarcity, and large gap between precipitation and evapotranspiration in the arid and semi-arid tropics makes rainfed agriculture prone to severe land degradation. He also stated the positive developments in the state (such as high growth rate in crop production (2.1%) and increased per capita availability of food (458 g day^{-1}). He expressed that this ICRISAT initiative is laudable since the partnership is the driving force of this project. He highlighted the prevailing drought situation in the country and emphasized the need to operationalize the "drought code" to manage the prevailing drought in different parts of the country.

It was highlighted that in most parts of our country and particularly in Rajasthan livestock and livelihoods are intimately related and farm animals must find a place in the drought management strategy. The suggested strategy included:

- Strengthening of the public distribution system and need to implement the safety net programmes in an integrated manner.
- Establishment of community food and water banks by the Government which can be operated by self-help groups.
- Decentralised storage of food grains in the villages (food banks) in the grain silos need to be undertaken.
- Establishment of fodder banks using agricultural residues such as bagasse and straw, fortified with urea and molasses will help save animals from death due to starvation.
- Restructuring of the Land Use Boards which can proactively advise farm families on land and water use and cropping pattern under different rainfall and moisture availability regimes using computer simulation models.
- Adequate seed reserves to enable adoption of alternative cropping strategies based on the rainfall need to be ensured.
- Low-cost greenhouses, fertigation techniques for efficient use of precious water and nutrient for producing high-value crops such as vegetables, medicinal plants, flowers, fruits which can be marketed appropriately.
- Research and information is a key to tackle drought and Virtual University to manage climate variability could be established in Rajasthan.
- Many safety net programs are needed to ensure food and water security in India.

He also highlighted the need for undertaking drought proofing activities in the country and ensure that future droughts do not cause the same level of concern and damage. He suggested that every calamity provides an opportunity for initiating action which will help in reducing the adverse impacts of such calamities in future.

Hon'ble Agriculture Minister of Rajsthan Sri Govind Singh Gurjar mentioned that several watershed programs are going on in the state for quite some time, now it is time to further strengthen these projects through the involvement of various organizations and by overcoming the past deficiencies. He expressed his confidence that this project will be helpful to people of Rajasthan and will be highly successful. He stressed the need to take-up the model watershed work of TATA-ICRISAT-ICAR project in more regions of Rajasthan. He felt that most of the government programs concentrate on targets and in the process they miss the important component of 'people's participation' in the project. People's participation is a key for the success of any watershed project.

Hon'ble Chief Minister Sri Ashok Gehlot complemented all the scientific communities and collaborators involved in bringing up TATA-ICRISAT-ICAR project, which addresses the important issues of rainfed agriculture in Madhya Pradesh and Rajasthan. He mentioned that drought comes as a "family member" in Rajasthan and the people of Rajasthan are victims of drought very frequently. They know the importance of water but what they need is proper guidance in conservation and use of water. Increased impact can be achieved through increased level of education amongst the farmers. He also called for the hard decisions such as population control to ensure the sustained benefits to the society. He highlighted Rajiv Gandhi Watershed Mission, Gandhi Gram Yojana, Mid-day meal scheme, which are targeting rural development in Rajasthan. He mentioned that the state government has spent huge sums of money on watersheds but the expected benefits are not realized. Without active participation of people no technology

can be successfully implemented and sustained. We need to have a close relationship between the researcher, government, and farmers to ensure the benefits. He called for all political parties, NGOs, government organizations and others involved to speak and do that only which is of public interest. He cited the example of Ralegaon Sidhi and emphasized the need to educate and empower the farmers to take their own decisions in all the development activities. He urged farmers/watershed committee to device a system to raise their own resources to maintain the developmental activities and structures built in their watersheds. He extended full support to Prof. Swaminathan's suggestion of establishing a virtual university to manage climate variability in one of the universities in Rajasthan. Sri Gehlot said that his government will ensure all the necessary support for this project and the Bundi district model developed through this project will be replicated throughout the state.

Dr. Panjab Singh, Secretary, Department of Agriculture Research and Education (DARE), and Director General, Indian Council of Agricultural Research (ICAR) stated that "this partnership project between national agricultural research systems (NARS)-ICAR-NGOs-farmers, and ICRISAT-supported by Tatas will bring large impact in rainfed areas of Rajasthan and Madhya Pradesh in terms of sustaining production, alleviating poverty, improving the quality of life/livelihood, generating employment and controlling the land degradation". Stressing the importance of integrated watershed management for the conservation and efficient use of water he said that "next war would be for water". There is need to have convergence and synergy to achieve the sustainable impact of watershed programs. Dr. Singh described the conditions of recent drought/delayed monsoon in the country and stressed the urgency to work harder to manage the drought. He stressed the need for not only food security/production but also need to improve the nutritional quality of food. There is also urgent need to prioritize programs, policy and action plan both at state and central level to effectively tackle the problems of land degradation, natural resource depletion, malnutrition, and infant mortality. He mentioned that the TATA-ICRISAT-ICAR project will provide technical backstopping at the benchmark watersheds, training, farmer capacity building and dissemination of these information to other watersheds. Dr. M.S. Swaminathan's vision and mission of bringing organizations together to implement the programs will create 1st rate human resource to combat desertification and poverty alleviation. In the end he appreciated and thanked Hon'ble Chief Minister and Prof. Swaminathan to provide time, the kind of vision, mission, thought and encouragement for such initiatives, which will have good impact.

Dr. N.G. Hegde, President of BAIF Research Foundation gave the background of BAIF's program and highlighted various development initiatives undertaken by BAIF in Rajasthan viz cattle development program, cross breeding program, pasture land development program, horticulture development program and watershed programs. He mentioned that these programs had made good impact and improved livelihood and health of farmers. Mr. Inderjeet Khanna, Chief Secretary, Government of Rajasthan stated that rainfed agriculture is very important for this state and watershed programs are found more rewarding than other development programs in the state. He emphasized the need of people's participation, importance of livestock and silvipastoral systems. He assured the project partners that his government will provide all necessary support to this initiative. Several other important dignitaries/participants such as Dr. A.S. Faroda, Vice-Chancellor, Maharana Pratap University of Agriculture and Technology, Udaipur, Dr. H.P. Singh, Director CRIDA, Dr. Pratap Narain, Director CAZRI, Dr. Pratap Singh,

Director of Research, MPUAT, Mr. Rajeeva Swarup, Director of Agriculture, Government of Rajasthan, Secretaries of Rajasthan Government, representatives from NGOs, Members of development agencies such as United Nations Development Program (UNDP), India; semi-government institutions; and ICRISAT scientists also participated in the workshop.

Dr. S.P. Wani thanked one and all for making a success of the function for launching of the project.

Technical Session I

Following inaugural session a technical session was conducted and Dr. M.S. Swaminathan chaired the technical session and Mr. Prabhakar Pathak served as rapporteur. Dr. S.P. Wani (ICRISAT) and Dr. A.K. Chourasia (BAIF) made the presentations during the session.

Dr. S.P. Wani presented a strategy for combating land degradation and increasing productivity of rainfed areas of eastern Rajasthan and Madhya Pradesh. He elaborated the details of Tata-ICRISAT-ICAR project and highlighted the encouraging results from the Adarsha watershed at Kothapally, Ranga Reddy district Andhra Pradesh. He mentioned that crop productivity in good rainfall year can be maximized by 2 to 3 folds and even in bad rainfall year it can provide a cushion or sustain the productivity by adopting integrated watershed management approach. Such benefits are not only observed in a particular watershed, but similar results are obtained from the other benchmark watersheds in Madhya Pradesh and Andhra Pradesh. He stressed the critical role of research organizations in providing technical backstopping to watershed project implementing agencies. Most of development agencies lack the required expertise in various areas for implementing watershed projects, hence the technical backstopping is essential. Need to use eco-friendly resource management technologies was emphasized. He mentioned that ICRISAT's emphasis is on basically empowering the farmers providing them the information to solve their problems on their own. To address the major problems of integrated watershed projects he suggested three modules:

- Nucleus watershed establishment at benchmark sites
- Human resource development/capacity building
- Establishing ICT-based farmers learning centers

Systems productivity can be successfully increased on sustainable basis and livelihoods of poor residing in the watersheds could also be improved by adopting the consortium approach for converging various developmental activities in the watersheds.

Dr. A.K. Chourasia, BAIF-Rajasthan Rural Institute of Development Management (RRIDMA) briefed the development activities of RRIDMA at Thana and Gokulpura villages in Bundi district which are benchmark villages for the project. He felt that the technical backstopping by consortium partners of TATA-ICRISAT-ICAR project will greatly benefit the watershed projects in Bundi district as emphasis on sustainable production of agricultural systems is very much needed. He also briefed some of the proposed project activities and the activities already initiated in the watersheds to improve the livelihood of farmers in Bundi district.

Dr. M.S. Swaminathan noted that natural resource conservation should be of very high importance. He emphasized the need for capacity building of the farmers. He cautioned scientists and development agencies not to experiment with poor farmers. New ideas should be first tried and tested at small scale. He mentioned that the NGOs, research organizations, government department and other agencies all have important role in improving the livelihood of rainfed farmers.

Technical Session II

The technical session on "Strategies for convergence in watersheds" was chaired by Dr. Panjab Singh, DG, ICAR. In this session representatives from the ICAR, state government, state universities, NGOs, ICRISAT and local Institutions participated. The chairman solicited comments and opinions from the participants about the strategies for convergence in benchmark watersheds. Dr. Singh stressed the need to involve farmers and panchyat Raj institutions from the very beginning of the project both in planning and execution. He suggested that for the watershed in Bundi the scientists from Kota Research Center should also be involved. It was suggested that all consortium partners should visit benchmark watershed frequently and provide technical support to undertake the project activities.

Dr. M. Velayutham suggested that the planning should be done both at watershed and field scale. He emphasized the need for field scale planning based on soils, slope and other parameters.

Several participants suggested that the PRA exercise should be done by team of multidisciplinary scientists. Emphasis should be placed on to build on the existing knowledge.

Dr. Panjab Singh suggested to hold a meeting of all the partners in Bundi and at project site to discuss the activities which should be taken at the benchmark watersheds. Dr. Wani appreciated the idea and suggested that he would request to the concerned institution in-charge to nominate the concerned scientists for participation in the on-site planning meeting. agreed for this. He said that he will inform all the partners about the meeting. Based on the ground realities and interactions with the farmers detailed workplans and interventions could be worked out. In due course a meeting of the consortium partners will be organized and communications will be sent by Dr. Wani to all the concerned organizations. Nominations of scientists form different institutions were suggested and approved by the Chair.

Dr. Wani thanked all the participants and the Chair, Dr. Panjab Singh for facilitating and enabling the process for detailed planning and the involvement of the consortium partners.

TATA–ICRISAT-ICAR Project Launching and Planning Workshop

Combating Land Degradation and Increasing Productivity in Madhya Pradesh and Eastern Rajasthan

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Hari Charan Mathur – Rajasthan Institute of Public Administration (HCM-RIPA)
Jaipur, Rajasthan, India

Program

26 July 2002

1030–1100	Registration	near Nehru Auditorium
	Inaugural Session	
1100–1110	Welcome and Sir Dorabji Tata Trust's initiatives to improve livelihoods of people in India	Mukund Gorakshkar
1110–1120	TATA-ICRISAT-ICAR initiative to minimize land degradation and improved livelihoods	S P Wani
1120–1125	BAIF's initiatives in Rajasthan for integrated rural development	N G Hegde
1125–1130	Enhancing rainfed agriculture productivity through watersheds in Rajasthan	Inderjeet Khanna
1130–1145	Key Note address: Rainfed agriculture in India—Challenges in the new Millennium	Panjab Singh
1145–1200	Food security and land degradation issues in India	M S Swaminathan
1200–1205	Speech by Agricultural Minister	Govind Singh Gurjar
1205–1225	Inaugural speech and launching of TATA-ICRISAT-ICAR Project	Ashok Gehlot Hon'ble Chief Minister Rajasthan
1225–1230	Presentation of mementos and vote of thanks	
1230–1250	*High tea*	
	Technical Session	
	Chair : M S Swaminathan ***Rapporteur : P Pathak***	
1250–1310	Improved livelihoods through convergence in watersheds	S P Wani
1310–1330	Strategies to increase productivity and improve livelihoods in Bundi district, Rajasthan	D N Shindey et al
1330–1345	Chair's remarks	
1345–1445	*Lunch*	

1445–1630 **Panel Discussion: Strategies for Convergence in Watersheds**

Chair : Panjab Singh
Rapporteur : D N Shindey and P Pathak

Panel Members: O P Meena, R N Meena, Dharam Singh Meena, U S Thanvi, Rajeeva Swarup, Ashutosh Gupt, Pratap Singh, A S Faroda , H P Singh, M Velayutham, Pratap Narain and L Venkataratnam

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Photographs

Project Launching and Planning Workshop

26–27 March 2002
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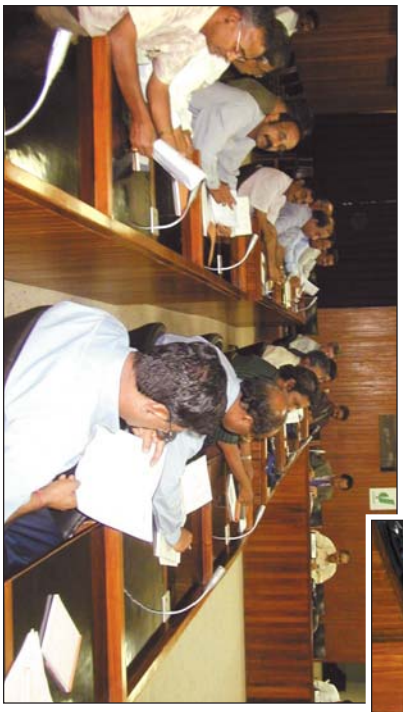
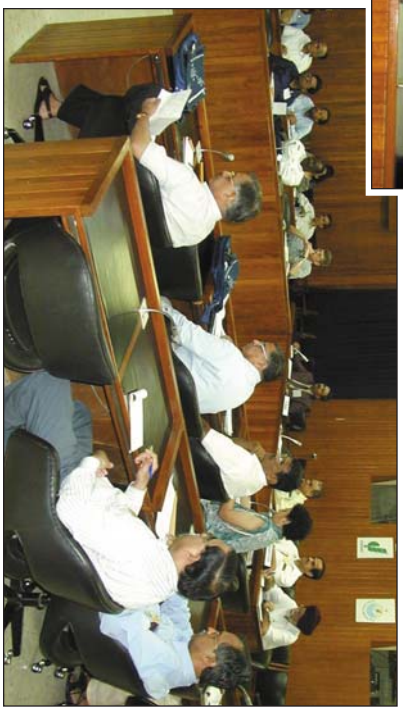



Improving Rural Livelihoods
during Drought Prone Areas of Asia



Project Launching and Planning Workshop

20 June 2002
Indian Institute of Soil Science (IISS),
Bhopal, Madhya Pradesh, India

Project Launching Workshop

Project Launching and Planning Workshop

20 June 2002
Hari Charan Mathur– Rajasthan Institute of Public Administration
Jaipur, Rajasthan, India

About ICRISAT

The semi-arid tropics (SAT) encompasses parts of 48 developing countries including most of India, parts of southeast Asia, a swathe across sub-Saharan Africa, much of southern and eastern Africa, and parts of Latin America. Many of these countries are among the poorest in the world. Approximately one-sixth of the world's population lives in the SAT, which is typified by unpredictable weather, limited and erratic rainfall, and nutrient-poor soils.

ICRISAT's mandate crops are sorghum, pearl millet, chickpea, pigeonpea and groundnut – five crops vital to life for the ever-increasing populations of the SAT. ICRISAT's mission is to conduct research that can lead to enhanced sustainable production of these crops and to improved management of the limited natural resources of the SAT. ICRISAT communicates information on technologies as they are developed through workshops, networks, training, library services and publishing.

ICRISAT was established in 1972. It is supported by the Consultative Group on International Agricultural Research (CGIAR), an informal association of approximately 50 public and private sector donors. It is co-sponsored by the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank. ICRISAT is one of 16 nonprofit CGIAR-supported Future Harvest Centres.

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808-2002