CROP POST HARVEST PROGRAMME

Optimising institutional arrangements for demand driven post-harvest research, delivery, uptake and impact on the livelihoods of the poor through public and private sector partnerships.

R 7502

FINAL TECHNICAL REPORT

1 October 1999 – 31 March 2003

Dr Andy Hall
Natural Resources Institute, University of Greenwich, UK

Natural Resources International Limited

TEMPLATE FOR PROJECT EVALUATION REPORT

Section A Executive Summary

(A very brief summary of how the outputs of the project contributed to the purpose, the key activities and highlights of dissemination outputs.

This research has developed and applied a new conceptual framework to the analysis of partners and innovation processes in the area of post-harvest. This is referred to as the innovation systems framework (ISF). Using this framework the research has examined on-going CPHP projects as well as other relevant instances of post-harvest research. Through this empirical work it has identified a series of features of partnership arrangements that promote innovation in ways relevant to the poor. It has also identified the central importance of institutional learning and change as a way of evolving more effective innovation processes and outcomes. Both the conceptual part of this work, the ISF, and the empirical insights that have been derived from its use, have been influential in the adoption of a radically different research management approach by the CPHP. This is referred to as its coalitions approach. Similarly the collaborating institutions in India have recognised the importance of these concepts and these are starting to influence research policy there also. The work is widely published in international peer review journals. Its relevance is starting to be recognised within the CGIAR system.

Section B Project Background

B.1 Administrative data

Period under report: 1 October 1999 – 31 March 2003	Project Leader/Institution: Dr Andy Hall, Natural Resources Institute, University of Greenwich, UK
NRIL Contract Number: Z	Collaborating institution(s) National Centre for Agricultural Economics and Policy Research, India, International Crop Research institute for the Semi Arid Tropics, University of Strathclyde, UK
DFID Contract Number: R 7502	Target Institution(s) National Centre for Agricultural Economics and Policy Research, India, International Crop Research institute for the Semi Arid Tropics, DFID Crop Post-Harvest Programme
Project Title: Optimising institutional arrangements for demand driven post-harvest research, delivery, uptake and impact on the livelihoods of the poor through public and private sector partnerships.	Start Date: 1 October 1999 End Date: 31 March 2003
Research Programme: Crop Post-Harvest	Budget (i.e. Total Cost):
Production System: N/A	

Section C Evaluating the identification and design stage

(Please describe the importance of the livelihood constraint(s) that the project sought to address and specify how and why this was identified.

If relevant, how and to what extent did the project team understand and work with different groups of farmers?

Did the project work with a specific target institution. Which one? And how did they plan for the future adoption of project outputs at the design stage? Please describe the strategy the project team agreed upon with the target institution(s).

How was the collaborating institution involved in the design of this project and why did they collaborate?)

This project built on a pilot study supported by CPHP that explored the reasons for technology development not leading to technology adoption and impact. The focus of this earlier work was the development of export quality management protocols in India. While clearly good research was being conducted by a range of scientific organisations associated with the intervention, there was a set of factors that where preventing both productive links forming between these organisation and with the farmers' association that was trying to help its members promote mangoes exports. As a result technical recommendations were poorly suited to farmers' production environments. Similarly recommendations appeared inappropriate for the circumstances of the commercial export business.

In a sense the research on export quality management was not unusual among CPHP projects of that period (1997-1998). For example, Altshul's (1998) output purpose review of the CPHP concluded that while projects were achieving their technical outputs, the uptake and application of the outputs was less successful. The work on mango exports, despite the limitations mention above was also typical of another trend that was starting to emerge in CPHP project: namely the participation of diverse organisations in projects, including those from the public and private sectors (enterprise and non-government organisations). In the past CPHP projects had tended to involve collaboration between public sector sciences from the UK and from partner countries. However as projects were encouraged to think about ways of linking into technology uptake pathways, there had been a distinct move towards partnering with the entrepreneurs and NGOs.

The starting point for this project was the recognition partnership of various types could play a valuable role in linking the poor to the R&D and technology promotion process. There was, however, also the recognition that set of circumstances existed which affected these partnerships and had implications for whether outcomes favoured the poor. This set of circumstances included the norms, routines and conventions about who played what role in the R&D process, who set priorities and evaluated outcomes, who would interact with who and in what way and the barriers to participation. We refer to these circumstances as the institutional context of (in this case post-harvest) R&D.

The main partners for the research itself were the National Centre for Agricultural Economics and Policy Research (NCAP), under the Indian Council of Agricultural Research, and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Prior to the project both of these organisations had participated in a series of workshops/ consultations with private organisations to discuss the issue of partnership and the constraints involved. At the time both ICRISAT and ICAR were struggling with the need to build linkages with organisations beyond the scientific community and the desire to improve the effectiveness of their research programmes in a developmental sense. The project was therefore timely in that it sought to explore the conceptual and empirical aspects of partnerships and institutional arrangements when these were priority issues in both national and international agricultural research systems. In a similar way these issues were also clearly important for CPHP and donor supported research programmes of this kind. At the design stage it was assumed that all of these organisation (who were both target and partner "institutions") would adopt the policy and practice recommendations from the project and promote them in the various research management fields in which they were engaged.

The focus of this project was India. This was partially so as it built on previous work in the country, but also because important institutional developments seemed to be taking place, particularly in the post-harvest sector, where the private sector was becoming more important and where potentially useful linkages between the public and private sectors seemed to be emerging. Whilst the

emergence of these new linkages offers the potential for improving the relevance, uptake and impact of CPHP-derived knowledge and technology, it also presented a significant challenge. Critical was the need to identify would be the most appropriate partnerships to facilitate innovation and uptake and what would be the institutional environment that would allow these innovations to be pro-poor and translate into poverty impacts.

The core of this project was therefore to firstly develop a conceptual framework that could assist in the analysis and planning of partnerships and the institutional context of R&D. And secondly, through detailed empirical work, build up a set of practical principles that would help in the planning and implementation of post-harvest R&D. The project had two key features. First, was the pioneering application of the *innovation systems framework* in the context natural resources R&D. The framework is widely used in the industrial sector of developed countries -- usually refereed to as the national systems of innovation framework -- but had not previously been applied to developing country issues in the natural resources sector. The second feature was the use of a two tier project structure with this project using other CPHP projects in India to build up research management lessons for the CPHP and others. This last point is important because it demonstrated the value of process and institutional lessons to the programme at a time when such outcomes were not routinely reported by projects or indeed by the programme.

Section D Evaluating the implementation process

(How was participation achieved among the different stakeholders (the lead institution, the collaborating institution(s), the target institution(s), the CPHP and, where relevant, farming communities) in the research process?

The key collaborating institutions and target institutions were NCAP and ICRISAT, with NRI collaborating through a scientist, the project leader, seconded to ICRISAT and the CPHP. Participation between the collaborators was achieved by joint planning and implementation of all project activities. Joint publication and attendance and presentation of findings at National and international conferences has also been an important way of building participation. As a policy research project working on research management issues the relationship with the CPHP has been particularly important. Participation in this regard has been achieved by the duel role of the NRI scientist as both project leader as well as CPHP regional co-ordinator for South Asia. The participation of farmers in the project has been indirect because of the nature of research being undertaken. Never-the-less they have been involved in the empirical work of the project in the sense that case studies of partnership process have needed to explore the views of farmers involved in the interventions being studied.

What were the major changes that took place during the implementation period. For each one, explain why they came about and how well do you think the project team managed them?

None to report

What were the strengths and weaknesses of your monitoring system? How did you use and how useful was the information provided by your monitoring system?)

The monitoring system used was the set of indicators provided in the logical framework. In terms of managing the project, while the indicators used provided targets to aim for, they provided not assistance in assessing the progress along the route to these targets. The nature of the project was such that what it was trying to develop concepts and principles that would lead to behavioural changes in research practice. When the project was started it was mistakenly believed that these “outputs” would necessarily lead to these behavioural changes and hence the project assumed that just producing information would be a sufficient way of judging whether we moving in the right direction. It only became apparent towards the end of the project that actually what was also required was a network and relationship with some of the policy actors that would use the information that the project was generating. Of course this relationship did already exist with some of our more important stakeholder (although not all), however we were not equipped with the monitoring systems to explore this aspect of the progress of our work.

Section E Evaluating your activities

(*This section should include a summary analysis of all the research activities (studies, surveys etc.) conducted to achieve the outputs of the project set against their respective OVIs in your project LogFrame.*

Information on any facilities, expertise and special resources used to implement the project should also be included.)

The research activities of the project have evolved during the 3 and a half years of the project. A number of points are notable. It was initially envisaged that all the CPHP projects in India would form case studies for this project. In reality only 2 out of the portfolio of four projects were useful and accessible for case study work. This meant that non-CPHP case studies were relied on to a greater extent than initially thought. A review in 2001 recommended that further case studies should be conducted and that these should focus success stories, i.e. partnership that had worked and which had positive lessons about ways of promoting pro-poor innovation. A lot of the initial case study work had been about why partnerships had not worked or had not emerged and there was a need balance this. The project was also advised by the reviewers to look at some case studies that were not necessarily focused on post-harvest, but which never-the-less had valuable lessons on partnership and innovation process.

The project originally planned to conduct its empirical work only in India. Additional resources from ICRISAT allowed a further case study to be conducted in Southern Africa.

When the project was originally planned it was thought that decision tools would be a major outcome and that activities would focus on developing these. As the project proceeded to became that the idea of decision tools was less useful, and that broad principles about how to promote partnership was a much more valid contribution. The projects approach has therefore been to share and discuss such principles with post-harvest research practitioners and research managers both through documentation and through workshops and consultations.

It is perhaps also worth mentioning that the project underestimated the difficulty of recruiting research professionals to work on the project. The area of innovation studies is a relatively new one and hence researchers in this field are few and far between. This undoubtedly constrained what could be achieved in the time available. In the latter part of the project as our network developed, it was possible to identify consults to help with case study work. The flip side of this is that the project benefited enormously from its collaboration with NCAP and particularly Dr Rasheed Sulaiman, a pioneer in the use of innovation systems ideas in the area of agricultural extension policy.

Specific research activities were as follows (against activities mentioned in the project logical framework.

1.1 Literature review on technology and institutional innovation.

During the course of the project a number of bodies of literature have been reviewed. These fall into 3 broad areas.

- Innovation systems theories and concepts
- Public private sector partnerships in agricultural research
- Impact assessment; evaluation; and Institutional learning and change.

These were not prepared as formal literature review, but instead were used to develop a conceptual framework for the analysis of case studies and as such they are documented in publications arising from the project. Publications in these three broad areas includes the following.

Innovation systems theories and concepts

Hall A.J., , M.V.K. Sivamohan, N. Clark, S. Taylor and G. Bockett. (2001) Why Research Partnerships Really Matter: Innovation Theory, Institutional Arrangements and Implications for the Developing New Technology for the Poor. *World Development* Vol. 29, No 5 pp783-797

Hall, A.J. (ed) (2002) Special edition. Innovation systems: agenda for North-South research collaboration and capacity development. *The International Journal of Technology Management and Sustainable Development*. Vol1 No.3

Public private sector partnerships in agricultural research.
Hall, A.J, N.G. Clark, Rasheed Sulaiman V., MVK Sivamohan and B Yoganand. (2000). New agendas for agricultural research in developing countries: policy analysis and institutional implications. *Knowledge, Policy and Technology* Vol 13 No1 pp 70-91

Hall, A.J., Rasheed Suliaman V., N.G Clark MVK Sivamohan and B Yoganand. (2002) Public–private sector interaction in the Indian agricultural research system: An innovation systems perspective on institutional reform. Chapter in Byerlee, D. and R.G. Echeverria (eds) *Agricultural Research Policy in an Era of Privatization: Experiences from the Developing World.* CABI.

Impact assessment; evaluation; and Institutional learning and change.
Hall, A.J., Clark, N.G., Rasheed Sulaiman V., and Sarah Taylor (2001) Institutional Learning Through Technical Projects: Horticultural Technology R&D Systems in India. *ODI Agricultural Research and Extension Network (AgREN) Paper* No.111 January 2001

Hall, A.J., Rasheed Suliaman V., Clark, N.G. Yoganand B. (2003) From measuring impact to learning institutional lessons: an innovation systems perspective on improving the management of international agricultural research. *Agricultural Systems in press*

1.2 Conceptual framework developed.
See discussion under literature review

2.1 Decision tools selected, tested and validated.
As discussed above, as the project proceeded it became apparent that the concept of decision tool was less useful and that communicating principles through documentation and workshops consultations was more useful. See publications lists and workshop below for details.

3.1 Case studies selected
3.2 Comparative institutional analysis of case studies undertaken
3.3 Institutional and policy environment critically assessed.
The selection, execution, analysis and synthesis of case studies was the core of the project. The case studies were as follows.
CPHP projects.

- Developing quality assurance system for mango export in India. (Experiences of trying to develop export protocols through the collaboration of the export development authority, public research organisations and a framers association)
- The sustainable retailing of post-harvest technology in India. (Experiences of developing and supplying a new packaging technology for tomatoes using partnership based approach).

Other

- Contrasting research arrangement in the public, private and co-operative sectors using the illustration of the sugar sector in India.
- Kerela Horticultural Development Programme, an example of a learning based approach to developing research partnerships and linking farmers to markets.
- Public private sector partnership in India seed industry.
- Partnership based approaches to commercialisation of sorghum and millet in Southern Africa.
- New institutional arrangements for developing pro-poor biotechnology capability in Andhra Pradesh.
- Agro-processing and local markets through peoples technology initiatives.
- Mango processing by tribal communities in Gujarat.
- The pomegranate innovation system in Maharashtra.
- Building local capacities for traditional agro-processing: the case indigo in Andhra Pradesh
- Food system innovations and the role of civil society organisations: the case of Spirulina technology.

3.5 Series of consultative stakeholder meetings undertaken.
Four annual meetings were held as follows.

New Policy Agendas for Agricultural Research: Implications for Institutional Arrangements. 28 March, 2000.
35 participants from the agricultural research and rural development sectors. The workshop discussed the evolving rural development agenda and the need to think about partnerships between post-harvest research and rural development sectors. (Keynote paper published as journal article)

Sharing Perspectives on Public-Private Sector Interaction. April 10 2001.
35 participants from the private sector seed industry and sciences from ICRISAT and the national agricultural research programme. The workshop involved a consultation on what each sector had to offer and on what each required from the other. (Workshop proceeding published)

Post-harvest innovations in innovation. May 6 2002
35 participants agricultural research and research management community. A series of presentation of post-harvest innovation in alternative institutional contexts. Discussion and synthesis of key lessons on partnership and innovation. (Workshop proceedings in press).

Post-harvest innovation: Partnership, learning and institutional change. 14th and 15th April 2003.
20 participants, mainly agricultural engineers from the All India Co-ordinated Project on Post-Harvest. The workshop was an opportunity to share lessons and perspectives from the work of CPHP with those of its Indian national equivalent. Papers were presented, but emphais was place on discussions and working groups exploring ways of taking forward an innovation systems perspective on post-harvest research. (Presentations and working group findings shared with all participants)

3.4 Best practice strategy developed and promoted at final workshop.
Principles for promoting partnership have been synthesised and published in a number of journal articles and policy briefs. The final workshop discussed above was one way in which these have been promoted to with key stakeholder. Equally important has been informal networking and presenting findings at a number of national and international conferences. This is discussed further under outputs.

Section F Evaluating Project effectiveness
(This section of the report uses the rating criteria for the purpose and your outputs previously used in your annual reports.)

- **The Purpose**

(Based on the values of your purpose level OVIs, to what extent was the purpose achieved? In other words, to what degree:

- *Have target institutions adopted or are likely to take up the research outputs and how have they done this or plan to do this? And/or*

- *Have the results of the research been validated as potentially effective at farmer level and how was this done?*

The project purpose stated in the logical framework of the project is as follows.)

"Strategies developed which improve food security of poor households through increased availability and improved quality of cereals and pulse foods and better access to markets."

It should be noted that this was a generic purpose provided by the programme to which all projects should contribute. The customised indicator of this purpose provides a clearer picture of the nature of the project and its progress towards the identified development opportunity / constraint of the project.

"By 2005 best practice approaches to institutional arrangements and partnerships reflected in programming and policies of CPHP, CPHP stakeholders and target institutions, national and international policy bodies in the context of post-harvest technology research."

This was a policy project that sought in the medium term (by 2005) to contribute to behavioural changes in the of research practice. An other way of making the same point would be say that the project sought to bring about institutional change.

In terms of generating the information necessary to underpin this institutional change the project has certainly been successful. A significant number of publications have been produced, approximately 30, almost half of these are peer review articles, the rest being policy briefs network papers, book chapters, international conference papers, and workshop proceeding. We point out this achievement as it was an import component of our strategy of making innovation systems analysis of post-harvest R&D a credible and visible approach. In addition to publishing this material we have mailed hard copies to an Indian and international audience. But what has been the impact of all of this, have we changed research management strategies? One of our targets was the DFID RNRRS programmes. While acknowledging the efforts of others we feel that our research on innovation systems played an important role in paving the way for the adoption of this as an core principle of the coalitions approach of CPHP. 20 CPHP projects have been design according to the principles that have emerged from this project. We also had success with the Livestock Production Programme and were to use the innovation systems approach to explore the design of the programme's "dissemination" strategy in India – unfortunately the funding of a large East Coast fever initiative thwarted this plan.

In the Indian agricultural science community, and notably among agricultural economists, the innovation systems term has entered the lexicon of policy debate. For example, a recent conference of the prestigious Indian Academy for Agricultural Science convened to discuss agricultural research policy, not only concluded with the need for institutional change, but it also recognised that the innovation systems approach is a suitable way to proceed. The project's work was on partnerships and post-harvest innovation systems was presented in the context post-harvest and participation in this conference had a significance impact on this debate and its outcome.

The project also impacts in the CGIAR system. An external review of economics and policy research at ICRISAT concluded that the work on innovation systems was one of only 3 significant methodological developments to have been achieved by ICRISAT in the last 5 years. The projects work on innovation systems has created interest at a series of CGIAR international conferences. It has been influential in introducing an institutional learning and change perspective into impact assessment, with the project team developing a successful proposal to support such approaches across the CGIAR. Its also important for us to acknowledge that the emergence of the innovation systems debate in the agricultural research sector has had a number of sources, but we are clearly one of those sources. For example the International Service for International Agricultural Research has recently adopted the innovation systems theme as one of only two focus areas of it work. Our work may not yet be impacting on the conduct of post-harvest innovation directly in a general sense (nor would it be expected to have done by this stage), but it has certainly impacted on the debate surrounding agricultural innovation policy.

- **The Outputs**

What were the research outputs achieved by the project as defined by the value of their respective OVIs?

<table>
<tr><th>Outputs</th><th>OVI</th><th>Achievements by value of OVI</th><th>Quality and relevance.</th></tr>
<tr><td>1. Analytical principles for understanding the institutional dimensions of the innovation process in the post-harvest sector developed and validated.</td><td rowspan="2">1 & 2. By the end of the project a series of policy briefs and journal articles prepared to disseminate and promote analytical principles and decision tools for understanding and assessing the effectiveness of partnership arrangements.</td><td rowspan="2">1 special edition journal
11 journal articles
1 book chapter
2 network papers
10 workshop proceedings and conference papers
2 policy briefs

Outputs mailed to an India and international mailing list</td><td rowspan="2">In general the quality and relevance of these outputs has been very good. Much of the work has been published in well respected international journals. All the written outputs including the workshop proceedings have been peer reviewed.

The topic of institutional change and the use of the innovation systems framework in post-harvest research practice and agricultural research in general is extremely relevant at a time the impact of such efforts are coming under close scrutiny. This was evident from the interest this project has attracted.

The written outputs of the project while extremely valuable could have given more emphasis to briefing notes and outreach material accessible to practitioners and non-disciplinary audiences. Greater emphasis in the project design would have assisted dissemination.</td></tr>
<tr><td>2. Decision tools for assessing the effectiveness of partnership arrangements developed and validated.</td></tr>
<tr><td>3. Strategy to achieve optimal institutional arrangements for the effective uptake of research outputs through public and private sector partnerships developed and promoted.</td><td>3.1 By the end of the project a series of policy briefs and journal articles prepared to promote best practice.

3.2 Briefing material on best practice prepared for CPHP management team, CPHP stakeholders and national and international policy bodies

3.3 By 2003 the findings of the project presented at least one international conference or workshop</td><td>3.1
1 special edition journal
11 journal articles
1 book chapter
2 network papers
10 workshop proceedings and conference papers
3 policy briefs
(publications appendix for details)

3.2
CPHP South Asia Regional Strategy 2002-2003
2 policy briefs
4 stakeholder consultation workshops
1 project proposal developed for CGIAR on institutional change.

3.3
Findings presented in 3 international conferences.
(Conference papers in publications annex)</td></tr>
</table>

(Were all the anticipated outputs achieved and if not what were the reasons?)

Yes

Your assessment of outputs should:

- *be presented as tables or graphs rather than lengthy writing, be provided in as quantitative a form as far as is possible; and*
- *include a qualitative assessment as to their quality and relevance as perceived by their intended users (if this last aspect is not covered in your assessment of the purpose).*

(For projects aimed at developing a device, material or process, and considering the status of the assumptions that link the outputs to the purpose, please specify and justify:

a. *What further market studies need to be done?*
b. *How the outputs have been made available to intended users?*
c. *What further stages will be needed to develop, test and establish manufacture of a product by the target institution?*
d. *How and by whom, will the further stages be carried out and paid for?*
e. *Have they developed plans to undertake this work? If yes, what are they? If why not?)*

	Signature	Date
Collaborating institution	……..	……..
Project leader	……..	……..

ANNEXES

I Project Logical Framework

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTIONS
GOAL: Poor people benefit from new knowledge applied to food commodity systems in semi-arid and forest agriculture interface area.			
PURPOSE: Strategies developed which improve food security of poor households through increased availability and improved quality of cereals and pulse foods and better access to markets.	By 2005 best practice approaches to institutional arrangements and partnerships reflected in programming and policies of CPHP, CPHP stakeholders and target institutions, national and international policy bodies in the context of post-harvest technology research..	Annual reports of CPHP, CPHP stakeholders and target institutions, national and international policy bodies. Output to purpose reviews of CPHP.	A suitable political and economic environment exists for the adoption and implementation of best practice approaches.
OUTPUTS: 1. Analytical principles for understanding the institutional dimensions of the innovation process in the post-harvest sector developed and validated. 2. Decision tools for assessing the effectiveness of partnership arrangements developed and validated. 3. Strategy to achieve optimal institutional arrangements for the effective uptake of research outputs through public and private sector partnerships developed and promoted.	1 & 2. By the end of the project a series of policy briefs and journal articles prepared to disseminate and promote analytical principles and decision tools for understanding and assessing the effectiveness of partnership arrangements. 3. By the end of the project a series of policy briefs and journal articles prepared to promote best practice. 3. Briefing material on best practice prepared for CPHP management team, CPHP stakeholders and national and international policy bodies 3.By 2003 the findings of the project presented at at least one international conference or workshop 3. By 2003, 5 concept notes submitted to CPHP explicitly reflecting the institutional arrangements principles developed by the project.	Annual and quarterly reports to DFID, journal publications, policy briefs, presentations at conferences, Internet site.	CPHP management team, CPHP stakeholder and national and international policy bodies willing to adopted best practice strategies developed. Resources for sustained advocacy of best practice measured developed can be found. Additional funded made available for the development of training packages.

ACTIVITIES	Budget spend ooo's pounds	Reports of collaborating organisations, quarterly and annual reports to DFID and workshop proceedings	Sufficient case studies with a range of institutional frameworks can be found to supplement the case studies of India CPHP projects.
1.1 Literature review on technology and institutional innovation undertaken 1.2 Conceptual framework developed; analytical principles tested and validated. 2.1 Decision tools selected, tested and validated 3.1 Case studies selected 3.2 Comparative institutional analysis of case studies undertaken 3.3 Institutional and policy environment critically assessed. 3.5 Series of consultative stakeholder meetings undertaken. 3.4 Best practice strategy developed and promoted at final workshop and via policy briefs, training material and Internet site.	Y1 Y2 Y3 Y4 Tot Staff 18 39 39 25 120 OH 14 30 30 19 100 T&S 3 13 15 5 6 Mis 5 13 13 16 48 VAT 7 16 17 11 51 Tot 49 110 115 75 349		

II Analysis of expenditure over implementation period (modified format needed)

The project has spent all of the allocated budget, with an even spend across the four quarters in each of the financial years covered.

III Results of end of project workshop (guidance needed)

Post-harvest innovation: Partnership, learning and institutional change.

14th 15 April 2003, Himachal Pradesh

Background

Over the last three years the Crop Post-Harvest Programme of the Department for International Development (DFID), UK has support a policy research project exploring partnerships in the area of post-harvest innovation. In our research we have explored innovation in the broad sense of the activities and processes associated with the generation, distribution, adaptation and use of new technical, institutional and managerial knowledge. We make this distinction to emphasis that our work is not about innovation in the narrow sense of the invention of new technology in R&D laboratories -- although R&D is clearly important. Rather our research is about how R&D needs to be viewed as part of a bigger process that brings about changes in post-harvest systems.

Among the many findings of this research has been the growing realisation that innovation happens when arrangement are in place that support learning and institutional change among groups of partners and stakeholders. By this we mean arrangements whereby those involved in research and rural development reflect with their partners on their successes and failures and adapt approaches and procedures in order to achieve success.

This process is referred to in a number of ways – "learning by doing", "failing forward", "participatory learning and action". We use the term institutional change as shorthand for this concept and by this we simply mean changing the norms and routines of the way post-harvest innovation is approached. This might mean reconsidering who is involved in research or implementation activities; who decides priorities and approaches; and how successes are judged and by who. In the last three years we have observed that this combination of cycles of learning and institutional change is a powerful way of bringing about post-harvest innovation that supports the livelihoods of poor people.

While we have realised the importance of institutional learning and change, we know far less about how to encourage and promote this process in organisations and clusters of partners. In the next two years we will be exploring these learning and change processes and attempting to draw out principles that post-harvest researcher and practitioners can use to strengthen innovation.

The purpose of this meeting was to share some of the findings from the past three years work and discuss the meaning of these in the light of the next phase of work on institutional learning and change that is just starting. The approach was to present some of the case study work that has been conducted and provide a syntheses of the critical finings of this work. This was then used to open up a wider discussion on ways of understanding institutional learning and change process more comprehensively in the area of post-harvest innovation.

The workshop programme can be found at the end of this report along with a list of the workshop participants.

Based on the discussion arising from the presentations at the workshop five questions were arrived at for detailed deliberation by the participants. Breakout groups worked on all five questions and provided suggestion which are detailed below. The workshop concluded with a commitment to explore ways in which the All India Co-ordinated Post-harvest Project could work with NCAP and others in post-harvest interventions where partnership and reflective learning processes where given emphasis.

Question 1. The other story.

How can organisations better understand the broader innovation process in which they are involved, learning from the hits and the misses? How can social scientist help.

Group 1.

- Continuously reflect on processes as well as end results
- Failures should also be treated as learning.
- Feed back from users must also be encouraged and included in the research process.
- Create forums in the organisation for reporting on process
- Social science is not only for social scientists.
- Social scientists should contribute constructively.
- Social scientists should be an integral part of the team.

Group 2.

- Mechanisms for self-reflection and reporting.
- Research group should be multidisciplinary, some disciplines might need to be brought in from outside
- Other actors should be associated with the process throughout.
- In order to do this, organisational management should have a stake in this.
- Agenda for social scientist – integral role, social science disciplines are also multi disciplinary.
- Social scientist should address- communications, lessons learnt, assessment of these, impacts of previous work, HRD aspects, look at work both inside and outside the organisation.

Group 3.

- Get rid of the culture of blame, and replace with one of cooperation and understanding.
- Senior management should play a strong direct role in integrating social science research into other research.
- Choice and design should involve social scientists, including building flexibility and learning.
- Capacity building by encouraging workshops facilitated by social scientists
- Social scientist should have primary role in linking with external actors.

Question 2: Going soft around the edges.

How do we as scientists cope with the need to work in partnerships in more participatory ways, recognising the skills and innovations of others? How do we expand our professional mandate while remaining good scientists, or technology transfer experts?

Group 1

- Lead partners should be responsible for brining in partnership and should make it interesting for the partners
- Developing an attitude for listening to others
- Being open
- Scientist should drop their label
- Scientist should be encouraged to participate in multi partner and Inter- disciplinary workshop
- Joint ownership of results
- Re-evaluate the incentive system for scientists
- Create learning materials for future use from our experiences

Group 2

- Get rid of hierarchy. There are a number of hierarchies. All must be got rid of through team based work. Team management of research groups should be trained with a view to achieving this method of non-hierarchies research
- Partnership with all actors should be key organizing principle of the research design and its implementation
- In order to do this, research design and its execution should include exposure visits and opportunities to learn from others

- Develop performance indicators of research projects of these items, evaluation should be on-going and not post project

Group 3

- Partnership should be joint ventures with all actors having an explicit role
- Share of resources.
- Acknowledge our weaknesses and use this as a mechanism to bring in other skills that we don't have (from the start of the project)
- Scientist should be exposed to special mechanisms like attending specially designed workshops like these
- Conduct refresher course in research methodology
- Scientists should be evaluated professionally in ways that allows them to be soft around the edges
- Accountability of scientist should be encouraged and with both internal and external auditing
- Part of the job of scientists and others that work in research should be to get involved in extension activities

Question 3: Lumpy and continuous change

We are all changing in the way we work in post-harvest innovation. How can we increase the rate of the change. How do we learn to learn faster. How do we cope with the need to respond quickly to the dynamic economic systems associated with post-harvest.

Group 1

- Spend more time on defining research questions
- Do not reinvent the wheel – reviews etc
- Let field testing and technology development go simultaneously
- Select short term projects, deal with simpler problem. Have small wins
- Viability should continuously be discussed and tested

Group 2

- Change should be substantive rather than small
- Change not just in post-harvest but also at the research system level
- Market assessment and technology forecasting should be built into research design
- Look at on-going experiments outside the system
- Technology up-gradation be made integral part of research and innovation with scope for up-gradation of mechanism
- An effective and continuous feedback between the field and the technology be built in. Identify partners to do this
- External evaluation be carried out not just by peers but by multiple stakeholders, capacities study should be done on completed and on-going research
- Advocacy should be included in the culture and style of research organization.

Group 3

- Judicial balance about the pace of change. So that it is not too fast to manage
- Incremental change rather than discontinuous change.
- More frequent in-house monitoring with reflective or introspective meetings.
- Recruitment policy should be responsive to the changing needs and with capacity building for already recruited staff.
- Entrepreneurial skills should be an integral of university courses
- Action learning within universities
- Mechanism to integrate other stakeholders including NGO's and private sector
- Joint projects between R&D institutions and private sector in the development and promotion of technology
- Establishment of technology incubators with possibility of spin off with R&D getting a fair share.

Question 4: Tip of the post-harvest iceberg

An enormous amount of exciting work is going on in the area of post-harvest innovation in both research and development sectors. How do we better learn from this and share experiences?

Group 1

- Establish a documentation center at the national level
- Create a network of post-harvest individuals and organizations.
- Encourage newsletters website, allow organizational advertisements on web. Create interactive web sites.

Group 2

- Facilitate more sharing, interaction etc
- Too much segmentation of disciplines, provide access to larger community through publications of the processes and their outcome. A journal or website for multidisciplinary narratives required and should be open to non-scientists also.
- Senior management should support and fund the platforms to allow this sharing of broader experiences

Group 3

- Organise public debates on associated issues related to post-harvest e.g. biotech GM foods etc
- Documentation and digitization of research and development stories (particularly successes) for widespread use and easier access through newsletters, popular articles and web sites
- Sensitization of issues arising out of innovations within the organisation
- Devising suitable mechanism for learning from Indigenous Traditional Knowledge (ITK)
- Involvement of clients at the time of final decision on project funding
- Extensive use of patent search at the time of project formulation.

Question 5: Making a difference in post-harvest

We all know the challenges of promoting post-harvest innovation, we also know what needs to be done about them. But how do we make a difference in the wider post-harvest sector?

Group 1

- Do all the above
- Need to spend time in the mundis (local markets) and markets – weekly transect walks – do aggressive market research
- Involve government agencies, marketing agencies, rural development departments and others
- Improve the habit of writing among scientists (hold writing workshops?)
- Encourage local consumption. Focus on local markets.

Group 2

- What would we do new when we get home? We should be formulating and seeking funding for multi stakeholder partnership based projects
- Do we know? Prepare a strategy document setting out how to do things
- For institutional work, to make an impact we need to do more outreach work, linking up with line departments and banks
- Quicker way of making rapid impact, link up with grouping of partners that are already established and on going and in our own niche in these existing partnerships.

Group 3

- Influence public policy through greater interaction with government.
- Greater role for banks
- Helping the government formulating national post-harvest policy
- Promotional polices through tax holidays, fiscal policy etc
- Removal of infrastructure constraints.
- Increasing awareness about codes and standards (WTO) etc

- Encourage greater links with markets particularly international markets and technology
- Strengthen backward and forward linkages.

Workshop programme

Post-harvest Innovations – Partnerships, Learning and Institutional Change
15-16 April, 2003

15 April, Tuesday

Session 1. 9.00 – 12.30

Chairperson. *Norman Clark, University of Strathclyde, UK*

9.00 – 9.30 Welcome, participants introduction, workshop outline overview.
Andy Hall, Crop Post-Harvest Programme South Asia regional Office, Hyderabad

9.30 – 10.30 Systems for crop and marketing innovations in arid areas: the case of pomegranates in Maharashtra.
Rajeswari Raina, NISTADS, New Delhi.

10.30 – 11.00 Tea

11.00 – 11.30 Rural agro-processing centres for income and employment generation – some success stories of Karnataka.
B.Ranganna, UAS, Bangalore

11.30 – 12.00 Title to be announced
V.V. Satanaryana, ANGRAU, Bapatla

12-12.30 Open discussion, *facilitated by Rasheed Sulaiman V., NCAP*

12.30 – 1.30 Lunch

Session 2.
Chairperson *S.M. Ilyas, CIPHET, Ludhiana*.

1.30 – 2.30 Technology transfer in fruit and vegetable processing to farmers.
R.Raghunandan, CTD, New Delhi.

2.30 -- 3.00 Tea

3.00 -- 3.30 Agro- processing centres.
Ashwini Kumar, CIPHET, Ludhiana.

3.30 – 4.00 IDE's approach to development.
Shivani, M. IDEI, New Delhi

4.00 – 5.00 Open discussion, facilitator, *Rajeswari Raina, NISTADS*.

16 April Wednesday

Session 3
Chairperson *Guru Naik, Livelihood Solutions, New Delhi*

9.00 – 10.00 Food system innovations and civil society organisations: the case of Spirulina algal technology. *Shambu Prasad, CPHP, Chennai.*

10.00 – 10.30 Tea

10.30 – 11.00 Post-harvest management in Agro-Processing Complexes. *Vinod Sehgal, CIPHET, Ludhiana.*

11.00 – 12.00 Open discussion, facilitated by *S.M. Ilyas*

12-00 – 1.00 Lunch

Session 4
Chairperson *Archana Godbole, CPHP, Hyderabad*

Facilitators *Andy Hall, Rasheed Sulaiman V. Rajeswari Raina, Guru Naik*

1.00 – 1.30 Synthesis, overview of emerging issues, suggestion of key discussion points **Andy Hall, Rasheed Sulaiman V. Rajeswari Raina, and Guru Naik**

1.30 – 3.00 Discussion
Workshop Administrator *Pradnya K., CPHP, Hyderabad*
Workshop Rapporteur *Yoganand, B., CPHP, Hyderabad*

Workshop participants

Dr. Norman Clark	Director	Graduate School of Environmental Studies. Wolfson Centre. Glasgow. G4 0NW Scotland. UK
Dr. C. Shambu Prasad	Consultant-CPHP	14, Vijaynagar(North) Velachery Chennai-600042
Dr. Ashwani Kumar	Proj Coordi.(APA)	CIPHET, PAU, Ludhiana. 141004
Dr. S.M.Ilyas	Director	CIPHET, PAU, Ludhiana. 141004
Dr. D. Raghunandan	Director	Centre for Technology & Development D-158, Lower Ground Floor, Saket New Delhi- 110017
Dr. B. Ranganna	Professor & Research Engineer	PH Tech Centre. University of Agricultural Sciences. GKVK Bangalore-560065
Dr. V. Rasheed Sulaiman	Dscientist	National Centre for Agricultural Economics & Policy Research. PUSA- New Delhi- 110012
Dr. Guru Naik	Director	Livelihood Solutions, F-208/D II and Floor. MB Rd. Lado sarai. New Delhi-
Dr. V.V. Satyanarayana	Scientist	PH Technology Centre ANGARU, Bapatla. 522101
Dr. V.K. Sehgal	Sr. Research Engineer	Dept. Of Processing & Agrl Structures College of Agrl. Engg. PAU, Ludhiana. 141004
Ajay Kumar	Scientist	VPKAS (ICAR), Almora.

		Uttaranchal. 263601
Dr. V.K. Dixit	Prog Coordinator	IDE-India, C-5/43, SDA, New Delhi- 110016
Shivani Manaktala	Sr. Executive-Programs	IDE-India, C-5/43, SDA, New Delhi- 110016
Dr. Rajeswari Raina	Scientist	NISTADS, Kishan marg. PUSA New Delhi- 110012
Dr. Andy Hall	CPHP S.Asia Coordinator	ICRISAT, Patancheru. 502324
Dr. Archana Godbole	Spl. Advisor	ICRISAT, Patancheru. 502324
B. Yoganand	Scientific Officer	ICRISAT, Patancheru. 502324

IV Target Institution's workplan for adopting project outputs

The outputs of this project concern principles and strategies for dealing with the institutional dimensions of the post-harvest research process. Two of the target institutions NCAP and ICRISAT have successfully developed post-harvest project proposals that have been informed by the principles and strategies emerging from this project. Summaries of these projects are as follows.

ICRISAT proposal summary (from RD1)
Exploring Marketing Opportunities Through a Research, Industry, and Users Coalition: Sorghum Poultry Feed
Duration Feb 2003 – Dec 2004

The findings of the previous DFID projects, R7506 and R6687, involving Andhra Pradesh Poultry Industry and ICRISAT forms the base for this project. With liberalized institutional environment, linkages between research and industry and joint experimentation with farmer/market linkages would be worked out. The main purpose of this project is the creation of marketing opportunities by developing sustainable economic inter-linkages in sorghum poultry-feed chain through innovative coalition systems. Understanding the coalition as a process and establishing market linkages would form the major outputs of the project. Issues would be addressed at two levels: Level 1. Research on a series of identified tasks. Level 2. Establishment of user interface with the clients. Released sorghum varieties will be multiplied on farmers' fields. Feed manufacturers and small poultry producers would be involved in validating feed trial results. The findings would be jointly scaled up and a range of useful tasks will be explored with the help of a users coalition.

NCAP proposal summary (from RD1)

This project proposes a combined research, training and networking approach to capacity development in post-harvest innovation systems in South Asia. It is now becoming increasingly clear that the development and emergence of more effective and socially inclusive innovation systems could become a key driver of poverty-relevant development. For the post-harvest sector this has enormous relevance as by its very nature post-harvest is a broad cross cutting organising principle that covers a gamut of processes, relationships and opportunities. This project seeks to use an interactive policy research approach to strengthen institutional learning and change with a view enhancing the capacity of post-harvest innovation to respond effectively to the needs of the poor.

These same principles have informed the CPHP South Asia regional strategy the logical framework of which is attached below.

SUPER GOAL	INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATION	RISKS AND ASSUMPTIONS
Poverty eliminated in poorer countries through sustainable development			
GOAL			
Livelihoods of poor people improved through sustainably enhanced production and productivity of RNR systems.			
PURPOSE			
National and regional crop-post harvest innovation systems respond more effectively to the needs of the poor.	By 2005, an evolving range of different institutional arrangements improve access to post-harvest knowledge and/or stimulate post-harvest innovation to benefit the poor has emerged and been recognised in South Asia. .	Project evaluation reports. Regional Coordinator's Reports. CPHP Annual Reports. CPHP Review 2005. Partners' reports.	National and regional crop-post harvest innovation systems have the capacity to develop and promote innovations to poor people during and after programme completion. Livelihood analysis provides accurate identification of researchable opportunities that lead to poverty reduction.
OUTPUTS			
1. Strategies are developed, which improve food and livelihood security of poor households through increased availability and improved quality of food crops and better access to markets. 2. Strategies to improve security of poor households are effectively promoted.	1.1. By end 2002/2003, nationally located coalitions are established (including management structures, priority areas, monitoring procedures and workplans) in at least three out of four focus research and promotion theme areas 1.2. By end 2003/2004, coalitions have implemented research and or promotion workplans. 1.3. Through 2002/2003 – 2004/2005 institutional assumptions, priorities, and coalition composition is reviewed and research and or promotion workplans are informed by this. 1.4 By end of 2005, for each coalition at least one technical and/ or institutional innovation that sustainabley improves food security and/or the livelihood of poor people are developed, adapted and or promoted.	Annual Research programme reports. External refereeing. External Output-to-Purpose reviews. Partners' reports.	Enabling environment exists or can be created that allows coalition partners to develop, adapt and or promote innovations relevant to the poor. Coalitions and or coalition partners develop skills and institutional/organizational characteristics that lead to the development, adaptation and or promotion of innovations during and after programme implementation

	2 By end of 2005, research has identified and promoted ways in which post-harvest interventions can be developed and applied by national/ regional post-harvest innovation systems that interface with the poor .		
ACTIVITIES			
2002/2003. South Asia programme organizes coalition building workshops and partnership skill development workshops conducted in the following identified research and technology promotion theme areas: 1. Decentralized food safetynets 2. Food safety 3. Horticulture and rural diversification 4. Post-harvest innovation systems policy. 2002/2003 Activities identified by the coalitions commissioned by the South Asia programme. 2003/2004 – 2004/2005 Programme supports and facilitates on-going coalition development and promotion of cross coalition learning. 2002/2003 – 2004/2005 Programme identifies and synthesise key institutional lessons and promotes them.	Budget in addition to projects already commissioned and on-going 2002/2003 0.1 million 2003/2004 0.5 million 2004/2005 0.5 million		

V Feedback on the process from collaborating institution(s) and farmers (where appropriate) (Criteria needed).

Feedback on the process from Collaborating institutions Dr Rasheed Sulaiman, NCAP.

Participation in this collaborative research project on “Optimising Institutional Arrangements” have been an extremely rewarding experience for NCAP and me personally due to the following reasons.

a. The study could generate insights on the reasons behind the limited progress the national agricultural research system could make in developing partnerships with the private sector (Building partnerships became a part of the ICAR research policy since mid-1996, but the progress has been very modest)
b. The project adopted a new framework-innovations system approach to examine the wider range of actors involved in agricultural technology generation, diffusion and use and to identify factors that facilitate or restrict knowledge flows across them. This has been really useful.
c. Case studies from this project revealed the importance of using the innovation systems framework to analyse agricultural research systems and the benefits this provides in comparison to the dominant economic evaluation methods
d. We realised the need to develop capacity among actors within the innovation system to embrace a systems approach to promote change within agricultural research and extension systems.
e. There has been a wide appreciation of the methods employed and results generated from the study among scientists within NCAP, research managers within the national agricultural research system led by ICAR and also among international research organisations and donors.
f. Participation in this project provided me a detailed understanding regarding better ways to explore innovations and familiarisation with the innovation systems approach in research helped us in using this approach for the fist time in analysing and designing better agricultural extension systems. This has been an unexpected positive outcome.
g. Apart from these, our ability (Andy Hall and myself) to work together as a team complementing each others competence has been professionally rewarding and we continue to collaborate in the new phase of this project and also in other professional activities.

VI List of publications

Peer review journal articles.

Special editions

HALL, A.J. (ed) (2002) Special edition. Innovation systems: agenda for North-South research collaboration and capacity development. *The International Journal of Technology Management and Sustainable Development*. Vol1 No.3

Accepted subject to revision

HALL,A.J., RASHEED SULIAMAN V., SIVAMOHAN M.V.K, YOGANAND B. AND CLARK, N.G. (2002) Reform of Agricultural R&D in its Wider Institutional Context: An Exploration of the Innovation Systems Framework. *Agricultural Systems*

Accepted and in press

HALL, A.J., RASHEED SULAIMAN V., B.YOGANAND, CLARK, N.G (2003) Post-harvest innovation systems in South Asia: research as capacity development and its prospects for pro-poor impact. *Outlook on Agriculture in press*

CLARK, N, G., HALL, A.J., RASHEED SULAIMAN V., GURU NIAK (2003) Research as capacity building: the case of an NGO facilitated post-harvest innovation system for the Himalayan Hills. *World Development*

HALL, A.J., RASHEED SULIAMAN V., CLARK, N.G. YOGANAND B. (2003) From measuring impact to learning institutional lessons: an innovation systems perspective on improving the management of international agricultural research. *Agricultural Systems*.

Published

HALL, A.J. (2002) Innovation systems and capacity development: agenda for North-South research collaboration?. *The International Journal of Technology Management and Sustainable Development.* Vol. 1 No 3 146-152.

HALL, A.J., RASHEED SULAIMAN V., (2002) Application of the Innovation Systems Framework in North-South Research. *The International Journal of Technology Management and Sustainable Development..* Vol. 1 No 3 182-195.

CLARK, N,. YOGANAND, B AND HALL A.J. (2002) New Science, Capacity Development and Institutional Change: the Case of the Andhra Pradesh-Netherlands Biotechnology Programme (APNLBP). *The International Journal of Technology Management and Sustainable Development*. Vol 1 No 3 pp 195- 212

RASHEED SULAIMAN V AND HALL, A.J. (2002) An Innovation Systems Perspective on the Restructuring of Agricultural Extension: Evidence from India. *Outlook on Agriculture* Vol 30 No. 4 pp 235- 243

HALL, A.J., CLARK, N.G., RASHEED SULAIMAN V., AND SARAH TAYLOR (2002) Institutional Learning Through Technical Projects: Horticultural Technology R&D Systems in India. *The International Journal of Technology Management and Sustainable Development*. Vol. 1 No. 1 25-39.

HALL A.J., , M.V.K. SIVAMOHAN, N. CLARK, S. TAYLOR AND G. BOCKETT. (2001) Why Research Partnerships Really Matter: Innovation Theory, Institutional Arrangements and Implications for the Developing New Technology for the Poor. *World Development* Vol. 29, No 5 pp783-797

HALL, A.J, N.G. CLARK, RASHEED SULAIMAN V., MVK SIVAMOHAN AND B YOGANAND. (2000). New agendas for agricultural research in developing countries: policy analysis and institutional implications. *Knowledge, Policy and Technology* Vol 13 No1 pp 70-91

Book chapters

HALL, A.J., Rasheed Suliaman V., N.G Clark MVK Sivamohan and B Yoganand. (2002) Public–private sector interaction in the Indian agricultural research system: An innovation systems perspective on institutional reform. Chapter in Byerlee, D. and R.G. Echeverria (eds) *Agricultural Research Policy in an Era of Privatization: Experiences from the Developing World.* CABI.

Network papers, working paper/ discussion paper series.

HALL, A.J. (2002) New patterns of partnership in agricultural research in Africa: Recent experiences from SADC/ICRISAT Sorghum and Millet Improvement programme, Phase IV. *ICRISAT Working Paper Series*. *Under review*.

HALL, A.J., CLARK, N.G., RASHEED SULAIMAN V., AND TAYLOR, S. (2001) Institutional Learning Through Technical Projects: Horticultural Technology R&D Systems in India. *ODI Agricultural Research and Extension Network (AgREN) Paper* No.111 January 2001

Edited workshop proceedings and conference papers

HALL, A.J., RASHEED SULAIMAN V., (2003). Post-harvest innovation systems in South Asia: research as capacity development and its prospects for pro-poor impact. Proceedings of JIRCAS International Symposium 2002 "Value-Addition to Agricultural Products", pp 53-61

HALL, A.J., YOGANAND B. RASHEED SULAIMAN V., AND CLARK, N.G. (eds) (2002). Innovations in Innovation *Proceedings of workshop, May 10 2002. ICRISAT Patancheru India.* Patancheru, 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi Arid tropics, Patancheru, India and National Centre for Agricultural Economics and Policy Research. In press.

HALL, A.J. (2002) The Development and Use of the Innovation Systems Framework in India: Northern Perspective. In North South Cooperation: International Conference 3 December 2001: Amsterdam.. Royal Netherlands Academy of Arts and Science pp 217 ISBN 90-6984-348

HALL, A.J., RASHEED SULAIMAN V., YOGANAND, B . AND CLARK, N.G. (2002) Partnerships in the Indian agricultural innovation system: lessons and ways forward. Paper for workshop *Agricultural Policy: Redesigning R&D to Achieve the Objectives.* Sponsored by National Academy of Agricultural Sciences (NAAS) Co-sponsored and Organised by Centre for Advancement of Sustainable Agriculture (CASA), National Institute of Science, Technology & Development Studies (NISTADS), National Centre for Agricultural Economics & Policy Research (NCAP). 10-11/12, April 2002

RASHEED SULAIMAN V. AND HALL, A.J., (2002) Beyond Technology Dissemination-How to Re-invent Agricultural Extension? Paper for workshop *Agricultural Policy: Redesigning R&D to Achieve the Objectives.* Sponsored by National Academy of Agricultural Sciences (NAAS) Co-sponsored and Organised by Centre for Advancement of Sustainable Agriculture (CASA), National Institute of Science, Technology & Development Studies (NISTADS), National Centre for Agricultural Economics & Policy Research (NCAP). 10-11/12, April 2002

HALL, A.J., RASHEED SULAIMAN V., CLARK, N.G. YOGANAND B. (2002) From measuring impact to learning institutional lessons: an innovation systems perspective on improving the management of international agricultural research. International conference *Why Has Impact Assessment Research Not Made More of a Different ? 4-7 February San Jose, Costa Rica.* Organised by The Standing Panel on Impact Assessment (SPIA) of the Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research (CGIAR) and the International Wheat Improvement Centre (CIMMYT)

HALL, A.J. (2001) The Development and Use of the Innovation Systems Framework in India: Northern Perspective. Invited paper for Conference "North South Research Co-operation", Royal Netherlands Academy of Arts and Science, 3 December 2001. Royal Netherlands Academy of Arts and Sciences (2002) *North-South Research Cooperation. International Conference, December 3, 2001*: Amsterdam: KNAW

HALL, A.J., YOGANAND B. RASHEED SULAIMAN V., AND CLARK, N.G. (eds) (2001). Sharing Perspectives on Public-Private Sector Interaction. *Proceedings of workshop, April 10. ICRISAT Patancheru India.* Patancheru, 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi Arid tropics, Patancheru, India and National Centre for Agricultural Economics and Policy Research. 44 pp ISBN 92-90066-437-1

HALL, A.J., RASHEED SULIAMAN V., AND N.G CLARK MVK SIVAMOHAN AND B YOGANAND. (2000) Public and private sector partnerships in Indian agricultural research: emerging challenges to creating an agricultural innovation system. Paper presented at XXIV International Conference of Agricultural Economists. *Tomorrow's agriculture: incentives, institutions, infrastructure and innovations*. August 13-18 Berlin, Germany.

HALL, A.J, N.G. CLARK, RASHEED SULAIMAN V., MVK SIVAMOHAN AND B YOGANAND. (2000). New Policy Agendas for Agricultural Research in Developing Countries: Implications for Institutional Arrangements. Paper presented at the workshop *New Policy Agendas for Agricultural Research: Implications for Institutional Arrangements* held on 28 March, 2000 at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India. pp 22.

Policy briefs

RASHEED SULAIMAN V AND A.J. HALL (2002) Beyond dissemination: Can Indian Agricultural Extension Reinvent Itself. *NCAP Policy Brief* No 16, National Centre for Agricultural Economics and Policy Research, New Delhi, India. 4 pp

HALL, A.J, N.G. CLARK, RASHEED SULAIMAN V., MVK SIVAMOHAN AND B YOGANAND. (2000). Coping with new policy agendas for agricultural research: the case for institutional innovation. *NCAP Policy Brief* No 13, National Centre for Agricultural Economics and Policy Research Indian, New Delhi, India. 4pp

VII A catalogue of data sets and their location.

Not applicable.