Poverty Elimination Through Rice Research Assistance (PETRRA)

Uptake Pathways Component

Lessons Learned and Options for Further Work on Uptake Pathways for Rice Technology

Working Paper[1]

PETRRA

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[1] Based on a consultancy by Gary Alex, Consultant on Agricultural Extension, and Dr. Abdul Halim, Professor Department of Agricultural Extension Education, Bangladesh Agricultural University, from March 12 to April 5, 2001. The review benefited substantially from the logistical support, orientation and analytical insights provided by PETRRA staff, particularly Ahmad Salahuddin, Project Officer.

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Acronyms

AAS	Agricultural Advisory Services
ABC	Agricultural Business Corporation
ADAB	Association of Development Agencies in Bangladesh
ARD	Adaptive Research Division of BRRI
ASIRP	Agricultural Services Innovation and Reform Project
BARD	Bangladesh Academy for Rural Development/Comilla
BINA	Bangladesh Institute for Nuclear Agriculture
BRAC	Bangladesh Rural Advancement Committee
BRDC	Bangladesh Rural development Corporation
BRRI	Bangladesh Rice Research Institute
CBO	Community-based organization
CVDCS	Comprehensive Village Development Cooperative Societies
DAE	Department of Agricultural Extension
DAEC	District Agricultural Extension Committee
EPICC	Extension Policy Implementation Coordinating Committee
GKF	Gramin Krishi Foundation
GO	Governmental organization
GRS	Genetic Resources and Seed Division of BRRI
M&E	Monitoring and evaluation
MOU	Memorandum of Understanding
NAEP	National Agricultural Extension policy
NGO	Non-governmental organization
OPR	Output-to-Purpose Review
OVI	Objectively verifiable indicators
PETRRA	Poverty Elimination Through Rice Research Assistance
PY	Project Year
RDRS	Rangpur Dinajpur Rural Services
RPF	Resource poor farmer
TD	Training Division of BRRI
UAECC	Upazila Agricultural Extension Coordinating Committee
UP	Uptake pathway

Overview and Summary

The Uptake Pathways (UP) Component review team found the eleven UP subprojects commissioned to-date to be well managed and implemented. The subprojects are effectively strengthening capacity and promoting innovation in participating partner organizations and are promoting innovation by resource poor farmers (RPFs). Subprojects and the Uptake Forum are useful learning laboratories, but learning has been somewhat constrained by lack of a framework for analysis of knowledge and information dissemination pathways.

While all subprojects seem to work with a range of technologies, all but one were initially commissioned for "pilot variety uptake schemes". The original proposals did not present clear descriptions of strategies, approaches and methodologies to be tested, but over time shared learning has resulted in the subprojects converging towards a similar methodology. Individual subprojects vary, but typically the implementing agency works with farmer groups and selected direct participants, who are provided quality seed, training, and credit for other inputs to establish demonstration plots or seed production plots (often the same). Implementing agencies then organize field days and workshops to introduce technologies to neighbouring farmers and to carry out participatory evaluations of new varieties and innovations. The implementing agency then trains participating farmers to produce quality seed and arranges for seed distribution, either through commercial sales or farmer-to-farmer seed exchange. Most subprojects work with a directed credit program and provide "packages" of recommended technologies for rice production, but it is not clear whether either credit or the package of technologies is necessary to promote uptake of new varieties.

A variety of different types of agencies (national, regional, and local NGOs; a private seed company; government agencies) are implementing subprojects, but, as in implementing a similar program, the agencies seem not to be fully exploiting their own comparative advantages. Clearly, some institutions (principally the government technical agencies) are strong technical support services, while others (the NGOs) are better adapted to working directly with RPFs.

Subprojects are quite clear on the technology (varieties) being introduced and generally focus more on this than on the uptake pathways methodology being tested. Subprojects are also relatively clear on plans for institutionalising activities, outputs expected, and extension methods used and have reasonably good systems for assessing client demands and linking to sources of innovation. Procedures for targeting RPFs, working with women, and evaluating success are generally not well developed. Cost efficiency varies and is difficult to measure, but is quite good in at least two cases.

While subprojects are making useful contributions to the capacity of implementing agencies and participating RPFs to enhance rice productivity, they have lacked a framework for analysing lessons learned about uptake pathways (knowledge and information systems) available to RPFs. A framework for future work must recognize that uptake pathways are pluralistic knowledge and information systems and must facilitate comparison of the efficiency and effectiveness of different institutions and approaches in promoting different types of innovation.

The review team did not have sufficient time to document in detail all lessons learned, but recommends that this be done in a "Good Practice Guide" on methodologies for working with varietal introduction for RPFs. Major lessons for practitioners appear to be that uptake pathways for varietal introduction are facilitated by:

- Working with and through farmer groups;
- Working through NGOs with established local contacts and the ability to identify and work with resource poor farmers (RPFs);
- Promoting seed production and farmer-to-farmer seed exchange;
- Using known methods for demonstrations and field days to introduce new varieties to large numbers of farmers;
- Avoiding subsides and market distortions; and
- Developing linkages to competent technical agencies (especially DAE, BRRI, BRDC, etc.).

The major lesson for policy makers appears to be that the National Agricultural Extension Policy (NAEP) is valid and should continue to be implemented to promote decentralized extension services through pluralistic institutions targeting farmer groups. This requires special attention to developing the policies and procedures needed for government technical agencies (BRRI, DAE, etc.) to provide essential support services and to create fora and mechanisms for intermediary service providers (NGOs and the private sector) to develop productive linkages with technical agencies and client groups.

The PETRRA project is positioned to deliver on its Uptake Pathway output, but will have to intensify efforts to distil lessons learned from current subprojects and expand its range of activities relating to uptake pathways. Since it is quite possible that other technologies spread through different uptake pathways than does uptake of new varieties, a new set of subproject interventions would be useful to test alternative uptake pathways. The review team recommends that:

- Current UP subprojects be extended at a reduced level of funding to continue learning in the Uptake Forum, monitor the mainstreaming and sustainability of current activities, and test more cost-efficient mechanisms for varietal introductions;
- A "Good Practice Guide" be developed to document lessons learned and the methodology that has evolved under current UP subprojects and "Technology Notes" to disseminate innovations from technology generation subprojects;
- New sets of UP subprojects be commissioned to test mechanisms for promoting innovation in post harvest technology (services to women by women), production systems management, and supply and use of non-seed inputs;
- Regional rice outreach workshops or programs—targeting NGOs and other local service providers—be piloted as a mechanism for scaling up from current

subprojects, promoting inter-institutional coordination/networking, and wider use of proven methodologies and new technologies; and

- Special studies of existing uptake pathways (i.e., in non-PETRRA villages) and of impacts from current subprojects be carried out to inform the analysis of the experience with UP subprojects.

Background and Introduction

The PETRRA (Poverty Elimination Through Rice Research Assistance) Project started in April 1999 with the purpose of sustainably enhancing productivity of rice-based farming systems of resource-poor farmers (RPFs). The Project is financed by DFID and the Government of Bangladesh and implemented by IRRI through a Project Management Unit in the IRRI Country Office. The Project, which is to run through June 2004, finances research through a competitive funding mechanism designed to respond to needs of RPFs as identified through stakeholder consultations. The Project consists of five components for: (i) identifying, developing, and testing new rice production technologies; (ii) enhancing capacity of the research system to undertake demand-led rice research; (iii) developing recommendations to address key policy constraints to enhanced rice-based livelihoods; (iv) identifying, testing and making recommendations for methods of improving rice technology uptake pathways, and (v) establishing and managing a pilot model for a competitive rice research scheme.

The first PETRRA Output-to Purpose Review (OPR) (October 2000) noted progress in creating a learning and action research environment through establishment of an Uptake Forum and recommended that the Forum undertake a review of different approaches to uptake. The Second OPR (September 2001) concluded that uptake subprojects had not yielded clear lessons and recommendations relative to uptake strategies and methods, but had focused on verifying and disseminating new varieties. The OPR recommended that action be taken to capture lessons learned from uptake subprojects and to focus future work on identifying improved uptake methods and strategies.

This consultancy report responds to the Second OPR's recommendation to review lessons learned and options for enhancing the likelihood of achieving the Uptake Methods Output of Project Component 4. Findings and recommendations are based on review of uptake subprojects, peer reviews, and progress reports; interviews with uptake subproject implementing agencies; review of PETRRA documents; discussions with staff of other extension programs and institutions; experience with extension in other projects and countries; field visits to two uptake subprojects; discussions with rice researchers; and seminars with the Uptake Forum and other DFID-financed extension projects. Field visits were made to Satkira, Kishoregonj, Habiganj, and Moulvibazar districts. A schedule of visits and interviews is included as Annex A.

Experience-to-Date With Technology Uptake Sub-projects

To-date eleven Uptake Pathways (UP) Component subprojects have been commissioned. Ten have run for about two years having been selected from a Call-for-proposals for subprojects to work with rice varietal introduction in production systems of RPFs. Most were originally proposed as larger, higher-cost three year

programs, but since the PETRRA project could not afford the cost of these larger projects and there was as yet no clear framework for identifying good practice approaches to improving uptake, the ten original projects were reconfigured as pilot activities. The eleventh UP subproject evolved from a proposal for adaptive research on soil nutrient management.

Characterization of the UP Subproject Portfolio

The UP subproject portfolio can be categorized by type of implementing agency or program strategy, but implementation methodologies and approaches are similar across many of the subprojects.

UP subproject implementing agencies

The UP subproject portfolio involves a diverse set of implementing agencies that provide opportunities to assess the competitive advantages of each in promoting innovation and productivity increase for RPFs. The implementing agencies include the following:

Type of Implementing Agency:

⇒ National Government Agency	♦ Genetic Resources and Seed (GRS) Division of BRRI
	♦ Adaptive Research Division (ARD) of BRRI
	♦ Training Division (TD) of BRRI
⇒ Regional Development Agency of the National Government	♦ Bangladesh Academy for Rural Development/Comilla (BARD)
⇒ National NGOs	♦ Bangladesh Rural Advancement Committee (BRAC)
	♦ Proshika
	♦ Gramin Krishi Foundation (GKF)
	♦ Agricultural Advisory Services (AAS)
⇒ Regional NGOs	♦ Rangpur Dinajpur Rural Services (RDRS)
⇒ Local NGOs	♦ Shushilan
	♦ Local partner agencies working with AAS
⇒ Private seed companies	♦ Agricultural Business Corporation (ABC)

UP subproject design and strategies

There are in reality two distinct types of UP subprojects and several variations on program strategies. The NGOs, BARD, and the private seed company (ABC) are ***direct service providers*** dealing with RPFs, while the BRRI divisions are ***support service providers*** that through training, adaptive testing, and breeder seed production enhance the quality of services from direct service providers. There is however some blurring of the line between these two types of subprojects, as AAS provides technical support services to community-based organizations (CBOs) and local NGOs and the

commercial seed distributors (ABC, BRAC, and GKF) could assume the role of support service.

UP program strategies are not well defined and are difficult to tease out from program documentation, site visits, and interviews. Distinctions between strategies are also somewhat blurred, but the portfolio might be characterized as follows:

Program Strategy:

⇒ Technical support to direct service providers	BRRI/GRS, BRRI/TD, BRRI/ARS, AAS
⇒ Contract seed production by individual farmers linked to a credit program	ABC
⇒ Seed sales and contract seed production linked to farmer groups + credit programs	BRAC, GKF
⇒ Varietal demonstrations with resource poor farmers (separate from seed production activities with somewhat larger farmers)	RDRS, GKF
⇒ Work with farmers groups + credit programs to promote farmer seed production and sales/distribution	Shushilan, RDRS, AAS, BARD, Proshika

Subprojects have recently revised logframes as they have attempted to clarify their objectives and strategies. Statements of subproject purpose are quite similar with six subprojects having purpose statements that reflect a dual objective of "testing and verification of improved technologies and uptake methods"; three defining their purpose as "identification and testing of uptake methods; and two focusing on "capacity building". Objectively verifiable indicators (OVIs) at the purpose level are quite similar across subprojects, as most include indicators of: (i) 50% of participating farmers adopt new practices, (ii) uptake method developed and practiced by the implementing agency, and (iii) uptake method judged to be effective through participatory evaluation.

The differences in purpose statements do not necessarily reflected clear differences in subproject activities, even though outputs and output indicators vary significantly. Subprojects have to some extent combined objectives of testing uptake methods (Output 4) with testing of technologies (Output 1)—a change that tends to weaken the implementing agencies' focus on improving uptake pathways.

UP subproject implementation methods

The UP subprojects providing direct services to RPFs tend to follow a similar general model for program implementation. There is variation from agency to agency, but the general pattern of implementation involves:

1. selection of site, meeting with farmer group, and identification of direct program participants;

2. training of participants in new technologies and variety characteristics;

3. provision of seed of new varieties along with training and credit for purchase of additional inputs;

4. establishment of demonstration plots by program participants;

5. organization of field days and workshops to introduce varieties and new practices to neighbouring farmers;

6. assistance to program participants to produce quality seed from demonstration plots;

7. participatory evaluation of performance of new varieties and production practices;

8. facilitation of seed distribution through commercial seed operations or farmer-to-farmer distribution networks; and

9. integration of subproject activities into the general program of the implementing agency, often through its support for credit programs or seed sales.

Assessment of Subproject Design and Implementation

The review team assessed the design and implementation experience of current subprojects and rated these on a range of criteria as reflected in Annex C. This assessment was necessarily quite subjective, as the level and detail of documentation on subprojects varied. Further complicating the assessment was the fact that subproject strategies and approaches differ—perhaps more than might be expected from stated objectives and strategies—and the various criteria are not equally relevant to all subprojects. These limitations notwithstanding, average of ratings across the portfolio probably reflect a fairly accurate assessment of the strengths and weaknesses of the subprojects[2].

On average the subprojects rated the highest in terms of ***clarity as to the innovations being promoted*** with clients, reflecting the tendency to focus on technology rather than uptake methods.

Subproject ratings on average were moderately acceptable to good in terms of ***clarity on strategy for institutionalising subproject activities, clarity of outputs expected*** (generally varietal adoption and higher yields)***, documentation and reporting, clarity of extension methods used, linkages to research or other sources of innovation,*** and ***systems for assessing client demands***. In general, while subproject documents or program briefings provided evidence of attention to these issues, this often appeared to have evolved over the course of subproject implementation and was not always evident in the original subproject design.

Likelihood of program sustainability and ***networking with other service providers*** were on average rated moderately acceptable across all subprojects. In both areas,

[2] Since the assessments are quite subjective, individual subprojects are not identified by implementing agency.

understanding of issues involved is evolving and improvements are likely, though not well reflected in subproject documentation. The various implementing agencies have their own agendas and objectives for working with rice technology dissemination (i.e., support for lending programs, seed sales, etc.) and this is likely to improve chances for sustainability, even though for various reasons (i.e., proprietary business plans, etc.) details might not be reflected in subproject documentation.

Subprojects were rated poor on ***procedures for targeting RPFs***, ***arrangements for gender-equity in service provision, clarity of M&E plans***, and ***attention to environmental issues***. In the case of environmental issues, this is understandable as varietal introductions alone are not likely to involve major environmental issues. Implementing agencies probably did fairly well in selecting and working with RPFs, but procedures for participant selection were generally not well defined.

Cost efficiency estimates are not entirely reliable, as definitions and reporting on numbers of clients participating in different program activities was quite variable and the type and intensity of service provision varies between subprojects. Costs averaged Taka 26,247 per direct client and Taka 1,616 per client over-all. Costs should be expected to be relatively low for simple introduction of new varieties, but the small size of the programs and lack of economies of scale increase costs per client served. While the average cost across the subprojects is not unreasonable, two subprojects demonstrated very respectable levels of cost efficiency with costs per client of Taka 251 and Taka 322. What is now needed is a measure of impact to set against these figures and allow calculation of cost effectiveness measures.

Framework for Uptake Work Under PETRRA

The Second PETRRA OPR expressed concern with the structure of the Uptake Pathways Component work and its ability to deliver lessons and recommendations to improve the uptake of innovation by RPFs. The UP Component review team concurs with the OPR finding that UP Component activities, as currently structured, are likely to achieve the intended output “only to a very limited extent”.

The UP Component addresses a number of complex problems and issues. From the beginning it had relatively modest resources for the task at hand, even though it operates in parallel with some much larger projects (i.e., ASIRP) with similar objectives. With slightly more than two years remaining to the PETRRA project—and with the modest funding remaining—there are limitations on the scope and scale of uptake method and pathway testing that PETRRA can undertake. Balancing this is the rich experience of the UP subprojects to-date and the good working relationships established in the Uptake Forum. These provide a good base for future work. The UP Component review team therefore concludes that, with carefully targeted pilot activities and careful attention to analysis of lessons learned, the UP Component can still substantially achieve its objective of identifying improved pathways and methods for effective uptake of innovation in rice production systems of RPFs.

PETRRA Uptake Pathways Component Strategy

Several aspects of the PETRRA strategy and UP Component design have contributed to the component getting “off-track”.

"Uptake pathways"

The term "uptake pathways" is new to most participants involved in UP Component subprojects and in partner organizations. This seems to have caused no serious confusion, but neither has it been helpful in clarifying the component's objective and strategy[3]. The original Project Memorandum proposed a study of Uptake Pathways as a basis for planning further action research pilot activities directed towards improving the flow of knowledge and innovation to RPFs. In this context, "uptake pathways" might be a useful concept for the study of spread of knowledge and innovation to farmers or for design of development interventions, but it is probably less useful in implementing field activities.

The terms "uptake pathway" and "uptake method" are now established within the PETRRA project, but implementing agencies still may not have a consistent understanding of the terms. PETRRA should itself define these terms to clarify them for all implementing agencies. To avoid confusion, it might be well to define future work on the basis of improving mechanisms for dissemination of knowledge and innovation (or improved extension services[4]) for rice production systems of RPFs, rather than "identifying uptake pathways".

Uptake pathways component objective

Subproject descriptions, subproject reports, and Uptake Forum documentation do not give a clear or consistent picture of the UP Component objective. Initial reading of these documents gives the impression that the objective is:

1. transfer of technology to RPFs;
2. testing and verification of new technologies;
3. building capacity of extension service providers;
4. establishing or improving uptake pathways for RPF rice technologies;
5. understanding how rice production knowledge spreads and can best be spread;
6. establishing a forum for sharing learning experiences; or
7. developing recommendations for future improvements to dissemination of rice production knowledge and technology for RPFs.

While subprojects are and must be doing all of the above, the PETRRA UP Component is quite clear that the output is to be the last of these—*recommendations for improving the uptake of new rice technologies by RPFs.* Action research is to test various options for delivery of new technologies and extension services to RPFs. This is a sound approach and likely more productive than simply analysing existing uptake

[3] "Uptake pathways" are generally understood by implementing agencies as "technology transfer"—a term the initial project design might have been trying to avoid.

[4] With "extension" understood as the complex of institutions providing farmers with knowledge and information and relaying their needs to sources of technology generation and innovation.

pathways, but—in retrospect—an analytical study of existing knowledge and innovation dissemination channels might have helped to structure a more efficient action research program.

At the subproject level, there is an almost total focus of activities and reporting on testing and uptake of "technologies" (mainly new varieties) rather than on testing of "extension systems". This is easily understood in view of scientists' interest in new technologies and the interests of service providers in producing field level impacts for clients. This does not however facilitate the identification and testing of methods for improving uptake of innovation. Merging the objectives of testing uptake methods and technologies in subproject purpose statements dilutes focus on uptake pathways.

Output and indicators

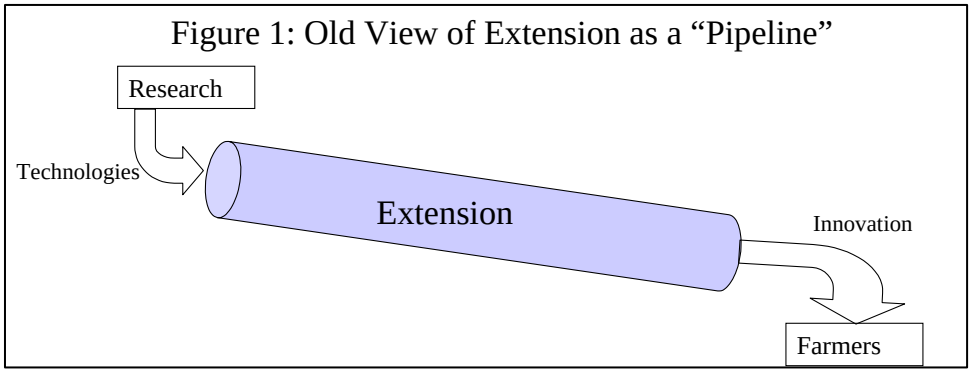
The PETRRA logframe description of the UP Component has evolved over the life of the project, especially in terms of indicators (OVIs) (see Annex D). This is significant, as projects tend to work towards established indicators. Changes appear to have been made mainly because of problems with measurement of established indicators. Current indicators are measurable, but suffer from a few limitations noted below:

Indicator:	**Comment:**
1. Number and proportion (>50%) of participating resource poor rice farmers--RPRFs (M/F) who know about, test, and approve of newly introduced varieties by end of PY3 (for 9 subprojects commissioned in 2000).	• Direct subproject participants are almost by definition testing new varieties; indirect participants are not well defined or quantified • Approval of a new variety by farmers reflects the characteristics of the variety more than the effectiveness of the innovation dissemination system
2. Validated and documented recommendation presented to a National Uptake Seminar by end of PY4 and assessed by majority of seminar participants as being relevant and practical.	• A good indicator, but more recommendations are probably needed to achieve the output than can be documented by the end of PY4
3. Proportion of PETRRA technology development sub-projects (output 1) aware of and applying uptake pathway recommendations by PY 4.	• Not all output 1 subprojects will necessarily lead to technologies suited to uptake during the life of project

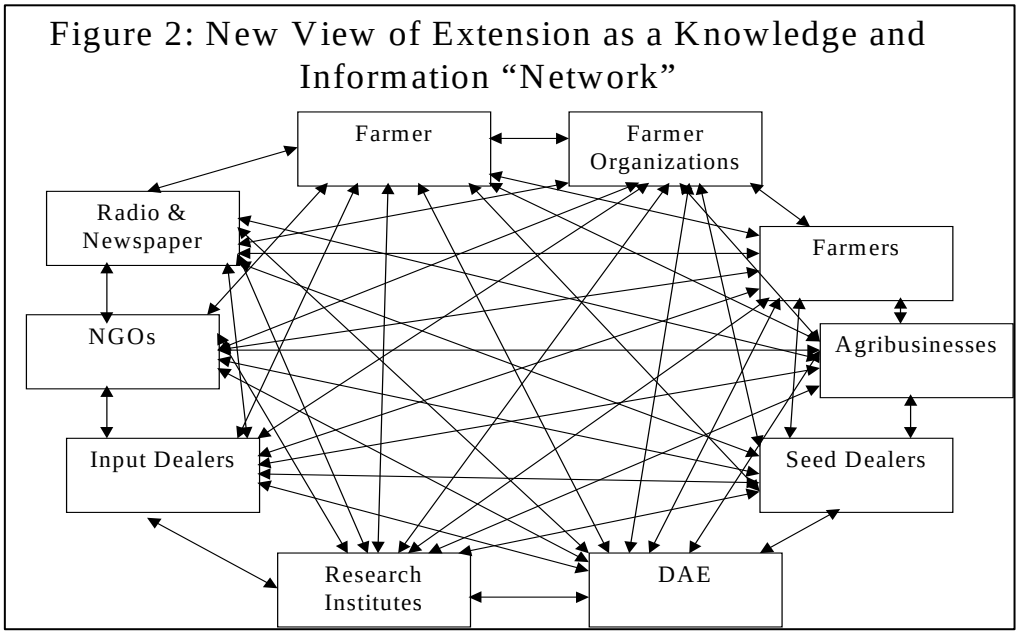
The logframe has lagged in revision of the statement of activities to deliver the UP Component output. A proposed restatement is included in the section of this report on "PETRRA Future Directions—Where to now?".

Varied Pathways

The understanding of knowledge and technology dissemination processes has evolved from the old concept of a "pipeline" of technology transfer from research to extension, as per Figure 1.



The farmers' knowledge and innovation system is now seen as a complex network of institutions and actors providing different types of information and knowledge services to farmers. The network typically includes other farmers and different types of farmers, farmer organizations, private input suppliers, agribusinesses, DAE, NGOs, research institutes, radio, newspapers, and others, as in Figure 2.



Improving the pathways for flow of knowledge and technologies to RPFs might therefore require improvements in the operation and linkage of several of these actors in the local knowledge system. Since different types of knowledge and information might well flow through different institutions, analysing an innovation system might require a matrix as presented in Table 1.

Almost certainly the most important source of information is from "other farmers", though those farmers would ultimately depend on external sources for much (but not all!!) knowledge and information for improving productivity of rice production systems. The matrix of sources of information becomes more complex when we realize that different types of farmers (large, small, resource-poor, women, etc.) likely rely on different sources of information and that these might vary by agro-ecological zone and production system.

This theoretical complexity in innovation dissemination pathways may provide fertile ground for academic work, but on a practical basis PETRRA must limit its action

research to the most important elements of the innovation system for RPFs. This might well focus on innovation systems for the major types of innovation[5] noted in Table 1: a) new varieties, b) management systems, c) input use, and d) post-harvest handling.

Table 1: Farmers' Alternative Sources of Information and Innovation

Farmer's Source of Knowledge or Innovation	Type of Innovation*			
	New Varieties	Management Systems	Input Use	Post Harvest Handling
Other farmers				
Spouse & other family members				XX
DAE				
Research & educational institutions				
Seed Dealer	XX			
NGO	XX			
Farmer Organization		XX		
Agribusinesses				
Credit Programs				
Radio & TV				
Input supplier (fertilizer, chemicals, equipment, etc.)			XX	
Visits to markets, towns, etc.				

* Note: Shaded column has been the stated emphasis of UP subprojects to-date.
"XX"s indicate PETRRA's hypothesis of key aspects of RPF uptake pathways.

Work to-date has focused largely—though not exclusively—on dissemination of new varieties and many of the lessons learned relative to this can now be documented. This is likely the easiest type of innovation to disseminate and was the basis for the initial call-for-proposals that led to 10 of the 11 current subprojects. Future work will need to focus on uptake pathways for other types of innovation.

Factors Affecting Uptake Pathways

A wide range of factors affects the efficiency and functioning of rural knowledge and innovation systems. Institutional issues are the most appropriate targets for UP Component activities, but uptake of innovation is heavily influenced by the type of innovation and new technology available and the policy environment (both of which are subjects of other PETRRA components) and by socio-cultural and other environmental factors.

Institutional issues

Institutional specialization: Rural knowledge systems are complex networks and rarely does an innovation pass directly from its source to the RPF adopting the

[5] While this is a simple typology of innovations, it must be recognized that there are no clear boundaries between the types of innovation and many cut across the categories.

innovation[6]. Instead specialization requires different institutions to focus on their own comparative advantage in the knowledge system and develop the necessary linkages (partnerships) with other institutions to deliver knowledge and information services efficiently and effectively.

This division of labour is such that farmer organizations are often needed as grassroots institutions to link RPF members and develop economies of scale in demanding and accessing knowledge and information services. Local service providers interface with farmer groups to deliver extension services needed by farmers, while support institutions enhance the quality of the services available from the service providers. The key support services are: training, subject matter specialist technical support, mass media materials, and monitoring and evaluation. The latter two can often be provided by the direct service provider, but training and technical support generally require a link to specialized institutions.

Market mechanisms: Sustainability requires that programs keep costs low, use resources efficiently, and be responsive and accountable to clients. This dictates that market mechanisms be used to the extent possible, with financial transactions underpinning relationships and exchange of goods and services between service providers and clients. In many countries, reforms are leading to full privatisation of extension services or—at least—a partial co-financing of services by clients. In Bangladesh and with the target RPF group, cost recovery is at best a long-term goal, but programs should still avoid unsustainable subsidies that distort market prices and use of inputs and services and—probably—make programs inherently unsustainable. PETRRA policies discourage such subsidies in UP Component subprojects, but some unsustainable activities persist, such as:

- Pricing of breeder seed at only a modest premium over certified seed;
- Requiring farmer seed producers to sell their seed to others at a set price below the market rate for improved seed;
- Providing loans to farmers at below the market rate; and
- Providing inputs free or at reduced cost to RPF collaborators.

Public financing is needed to improve availability of knowledge and information services to RPFs and some direct subsidies might be warranted to share farmers' risk in initial on-farm trials of new technologies. Such subsidies and public funding must however be targeted to public goods (i.e., poverty reduction, environmental conservation, etc.) and rely on market mechanisms wherever possible.

Technologies

The availability of appropriate new technologies conditions the spread of innovation. A knowledge system (or uptake pathway) might function very efficiently, but if new technologies do not meet client needs there will be no "uptake" or innovation. For this reason, the knowledge system must function so that technology suppliers (research

[6] This does of course happen with innovations developed by farmers themselves and on a very limited basis when research institutions manage on-farm trials with farmers.

institutes, private sector, etc.) understand and respond to farmers needs and interests for new technologies.

On at least one occasion, the Uptake Forum expressed concern that appropriate technologies for RPFs are not available (Christie report of March 2001). Reporting by the UP subprojects and the limited field visits by the review team would indicate that this is not a problem and that innovations (varieties) are available that can significantly increase productivity of RPF rice production systems[7]. With new varieties, the innovation is relatively quickly and easily introduced and the stock of innovation then depleted, since it appears to take 4-10 years before replacement varieties become available through BRRI[8].

Knowledge and innovation systems should be adept at sourcing knowledge from various institutions. Globalisation and market liberalization should offer an expanded range of choices benefiting all. In the case of rice varieties, the UP subprojects work mainly with varieties from BRRI, BINA, and a limited number of private firms. Farmers' knowledge and innovation systems however draw on a wide range of options in accessing traditional varieties and new varieties from India. This taps the heavy investment in rice research in India and provides varieties that are obviously meeting farmers' needs. Unfortunately, this uptake pathway operates on a totally informal (and probably occasionally illegal) basis, constraining farmers' ability to obtain good seed and full knowledge of the varieties. This illustrates an area where public policy impacts on the functioning of the rural knowledge and innovation system.

Policy impacts on RPF innovation

Many public policies condition the environment for innovation in rice production systems. Pricing policies, market access, public investment in rural infrastructure and education, subsidies, taxes, and other policies affect the spread of innovation and investment by rice farmers. These also affect the strength of institutions delivering knowledge and information services to farmers and the relationships among these institutions. The PETRRA "Policy Component" subprojects are investigating key policy impacts on productivity. Experience of the UP Component should provide input to this policy agenda and might provide evidence of policy impacts on technology spread and rural productivity.

With the little time remaining to PETRRA, the uptake policy agenda must be modest. Seed policy is the obvious issue arising in the current subproject work on varietal introduction. Other issues might include: fertilizer pricing and marketing policies, credit policies, land tenure arrangements, public investment in research and extension, regulation of private service providers, and regulations affecting farmer organizations.

Socio-cultural system and other factors

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[7] It is however surprising that the spread of new varieties seemingly well suited to RPF conditions (i.e., BR-28 and BR-32 both released in 1994 and still new to many RPFs) has been so slow.

[8] Recognizing that once an innovation is introduced, "adoption" does not happen immediately. Depending on the technology, the knowledge stock of the farm family, and market forces, farmers typically test innovations 3-5 years before accepting them as standard production practice.

Many other factors influence the spread of innovation. Cultural beliefs, attitudes, religion, group dynamics, education levels, and other social factors condition the farmer's propensity to innovate. Economic constraints, risk, and competing demands on time and resources play key roles. Weather, locality, and natural resource endowments (e.g., agro-ecological conditions) affect innovation. All of these contributing factors make it difficult to make strict comparison of experience across villages and subprojects.

Lessons—Learned and Those Yet Unanswered

The PETRRA project has developed a wealth of experience in work on promoting varietal innovation by RPFs. This work got off to a quick start and provides a good base for structuring a framework for future learning. The initial subprojects do not fit into a neat framework for learning and, as a result, synthesizing experience and lessons learned is difficult. Nonetheless, subproject progress reports, peer review reports, and interviews with implementing agencies yield the following major lessons learned to date:

- **NGOs**, especially local NGOs and community based organizations (CBOs), have important local linkages, social capital, and credibility that enable them to work closely with farmers and help them to target RPFs;

- **Farmer organizations**, especially pre-existing organizations, are effective in mobilizing members, promoting shared learning, and establishing credibility for new innovations in rice production systems;

- **Seed networks** are important both to ensure quality seed (preferably certified seed) for introduction to a community and also at the level of farmer-to-farmer seed exchange to promote further diffusion of adaptable varieties;

- **Demonstrations and field days** are key methods for promoting uptake of new varieties; and

- **Technical support** from DAE (locally) and BRRI (regionally and nationally) has been essential to ensure sound technical interventions. This is particularly important as many intermediaries, especially NGOs, are weak technically and have had limited involvement in agricultural programs in recent years.

A few key issues are not yet answered. ***Credit programs*** are an aspect of almost all subprojects, but it is not clear whether these are essential to the varietal introduction work or not. Most subprojects have promoted ***technology packages*** that include fertilizer, management, and pest control recommendations and again it is not clear whether these are necessary to promote varietal uptake[9]. ***Mechanisms for targeting services to RPFs*** are not well defined in the subprojects, even though subprojects appear to have been reasonably successful in working with RPFs. There is also question as to whether RPFs (with their low tolerance for risk) should be the initial target for introduction of new varieties.

[9] Varietal introduction might of course be a good lead into introduction of other productivity-enhancing innovations.

Recommendations for Improving Uptake of Rice Technologies by RPFs

This section summarizes the UP Component review team's recommendations for improving uptake pathways whereby RPFs obtain knowledge and information that leads to innovation and increased productivity in rice production systems. As suggested by the Second OPR, recommendations are separated into those for field practitioners and those for national policymakers. Recommendations on future directions within the PETRRA project are outlined in a following section of the paper.

Recommendations for Practitioners—Improving Current Subprojects

The following recommendations apply broadly to the current UP subprojects, but are also relevant to other extension work with RPFs.

Refining the "model" for variety introduction work

Current UP subprojects have been gravitating towards a common model for work with RPFs on rice varietal selection and introduction activities. While recognizing that there can be no "one-size-fits-all" model for such work, there would be value in further synthesis of experience with current uptake subprojects to document common elements of the approaches being used. This would help improve the clarity in the current models used by different implementing agencies and facilitate replication of the approaches and methodologies by other agencies.

Consider other extension methods

Mini-kit Programs: Mini-kits have been used as a cost-effective means of rapidly introducing new varieties across a relatively broad area (i.e., in Nepal and India). In the simplest form, the "kits" consist of 2-5 kg. of a new variety given or sent out to participating farmers to test. Ideally, farmers report on their evaluation of the variety, either through follow-up meetings with extension staff or by returning a simple post card evaluation through the mail. This is essentially a simplified form of farmer participatory varietal selection. Participating farmers then save their own seed of "good" varieties and spread the variety from farmer to farmer.

As UP subprojects have moved towards a standard approach, there has been less experimentation with alternative extension methods than would have been expected. Introduction of new varieties is often a relatively easy innovation and might be done at a relatively low-cost. Adding credit programs, training, and more extensive technology "packages" might sometimes be desirable, but might not always be necessary. Two possible alternative options for low-cost dissemination of new varieties are: a) minikit programs or b) commercial advertising and sale of seed. To some extent these are inherent in on-going subprojects, but focusing more on these activities with less ancillary support might be useful to test cost-effective approaches.

Question the need for credit facilities

Almost all subprojects utilize credit programs to support varietal introduction work—even in cases where adoption of recommended technologies apparently

requires less farmer investment than in the past. Project reports do not provide details on credit program arrangements and terms, but these may be key—not necessarily to uptake of the technologies by farmers—but to the sustainability of the service delivery mechanism itself. This is quite acceptable and an important finding. It would however be useful to learn whether credit is important to RPF adoption of new varieties and to this end, some experimentation with varietal introduction work through technical assistance and trials in the absence of credit would be useful[10].

Avoid subsidies

UP subprojects have rightly attempted to avoid subsidies, although these still creep into the programs in many ways. Past practice, especially by NGOs, has been to provide free inputs, pay for farmer participation in training events, or provide other types of incentives. These distort incentives and reasons for program participation and most agencies are eliminating such subsidies. When subsidies are given, the farmer seems to view the program as being for the benefit of the service provider and not an opportunity for his/her own knowledge and information acquisition. When the program ends, the practice of the innovation ends. There are situations in which subsidies or free inputs for a risky trial are appropriate, but these should be carefully targeted. Subprojects should—to the extent possible—avoid all forms of subsidies that distort motives for program participation (free inputs, low cost seed or other inputs, lower than market rate fees for credit programs, training allowances, etc.).

Emphasize planning and strategy development for BRRI divisions

The priority for government technical agencies—principally the BRRI Adaptive Research, Training, and Genetic Resources and Seeds divisions—is that of establishing the policies, operating plans, and mechanisms needed to provide technical direction and support to service providers that serve as intermediaries in promoting innovation in the small farm sector. Mechanisms are in place for technical support to DAE, but further work is needed to develop and strengthen linkage mechanisms for support to the private sector and NGOs. The MOUs and working relationships formed under UP subprojects to-date are a good start, but scaling up will be difficult. Organizing outreach activities on a decentralized regional level might be key.

Strengthen procedures for participatory needs assessment

Surprisingly, none of the current subprojects has documented a good participatory needs assessment methodology to underpin subproject activities. To some extent the thorough PETRRA project stakeholder assessment helped to inform subprojects of client needs. Still, it would be important to involve clients at each subproject location in a needs assessment to guide subproject activities in the area. This might have been done, but not documented, for some subprojects. In other cases, implementing agencies have worked with the same clients over a long period and may know or think they know what the clients' needs are in relation to rice varieties. Participatory needs

[10] Free distribution of inputs does not constitute a sustainable alternative to a program based on credit facilities.

assessment of some type should be a standard part of the program methodology for most service providers both at the beginning of a new program and throughout the period of working with clients on innovation in production systems.

Rethink women's participation and roles

Most, if not all, subprojects recognize an important role for women in rice production systems, but only two appear to involve women in a meaningful way. Some cite women working in the field in the subproject area as a significant impact, but there is little evidence that subprojects have contributed to this or that this is an improvement in the status of women. (It more likely reflects economic necessity and cultural norms.) There is a need to identify methodologies for providing more relevant services for women to assist them in their role in rice production systems and to add to the family stock of knowledge on rice. Some services might not be relevant for women and some methodologies for service delivery might not be effective. Clearly, extension services for women are not effective as an add-on to a mainstream program directed at men. Additional work on delivery of services to women is needed, but would best be done under new subprojects. For current subprojects, unless services to women are already a key element of the subproject design, new initiatives should probably not be started until the Uptake Forum reviews this issue in more depth.

Continue inter-subproject peer reviews

The inter-project peer reviews appeared to be appreciated and effective as a learning tool. These should be continued, as and when appropriate.

Don't confuse seed production with grain production

Subprojects need to be clear on their technical recommendations. Admittedly, as new and inexperienced service providers become active in rice production, there will be gaps in their technical knowledge that will need to be addressed through training and technical support. In current subprojects, one minor point noted was the tendency for some implementing agencies to confuse recommendations for seed production and grain production (i.e., numbers of seedlings per hill). The more stringent requirements for producing quality seed are not always necessary or appropriate for grain production.

Increase attention to environmental issues

In general subprojects give little attention to environmental issues. This is not the focus of the varietal introduction subprojects, but subprojects need to be proactive in promoting environmental awareness and need to employ mitigative measure for any potential negative environmental impacts of agro-chemical use or irrigation. Arsenic issues are especially important in some of the areas.

Strengthen subproject logframes

The revised logframes for subprojects are quite improved and implementing agencies are to be commended for their work on these. For new subprojects and for extension of current subprojects some modifications might be desirable. First, for subprojects of this size, it should be possible to simplify logframes and include fewer activities and indicators and avoid complex purpose statements. Secondly, if logframes are to be

used for monitoring and evaluation, more specific quantitative (or qualitative) targets are needed for most indicators. Thirdly, information on output level indicators should generally come from implementing agency progress reports, while that for purpose level indicators might best come from special studies (i.e., beneficiary assessments, impacts studies, peer reviews, etc.) carried out by PETRRA or jointly by PETRRA and the implementing agency.

Recommendations for Policy Makers

The Second OPR recommended that review of the UP Component produce a set of recommendations for policy makers to improve the efficiency and effectiveness of public extension services for delivering services to RPFs. This review provides a relatively modest set of recommendations at this level for two reasons. First, the NAEP (National Agricultural Extension Policy) is generally quite sound and its implementation—while somewhat delayed—is underway. Second, the UP component subprojects to-date have provided limited evidence of need for policy shifts and rather reinforce the policy direction inherent in the NAEP. The over-arching policy recommendation would be to expedite implementation of the NAEP.

National Agricultural Extension Policy: The National Agricultural Extension Policy (NAEP) was introduced in 1996 in response to changing needs and pressures to improve the efficiency and effectiveness of service provision to farmers. The NAEP is based on 11 principles:

- Extension support for all categories of farmers
- Decentralization
- Working with groups of all types
- Training of extension personnel
- Integrated extension support for farmers
- Efficient service delivery
- Demand-led extension
- Strengthening research-extension linkages
- Use of appropriate extension methodologies
- Coordinated extension activities
- Integration of environmental issues in extension services.

Recognizing the role of private extension service providers

This policy is already established within the NAEP and is evident throughout rural Bangladesh. The UP subprojects have demonstrated that private sector seed producers and NGOs can be effective in reaching RPFs with knowledge and information needed to increase productivity of rice production systems and can establish sustainable programs based on seed production and sales and directed credit programs. Although government policy of support for private service provision has been established for some time, implementation always lags policy formulation. With PETRRA support BRRI has made good progress in re-orienting its programs and procedures to support private service providers.

Encourage independent farmer organizations

This policy is also enshrined in the NAEP commitment to work with farmer groups and the private sector. “Independence” of farmer groups is important for program sustainability, as groups that are not totally dependent on a government or NGO program for support are more likely to represent true needs of members and are likely to endure beyond the end of project support. Development of internal capacity and independence typically requires a medium to long-term growth process with an establishment phase that often depends on facilitation by an intermediary able to foster independence and avoid creating dependency. NGOs and the private sector have proven much more effective in this facilitation process than have governments.

The UP Component review team found no significant policy constraints to group formation and federation activities underway in many of the UP subprojects. Still, policy makers should be alert to opportunities to encourage development of autonomous and sustainable farmer organizations that can be instrumental in organizing demand for services for RPFs.

Orient government services to support work of intermediaries

In clarifying institutional roles in the knowledge and information system serving RPFs, it is important to distinguish support service roles from direct service provision. BRRI (and BARI, BINA, agricultural universities, and other research institutions) are not equipped to deliver knowledge and information services directly to RPFs, but rather provide technical support to direct service providers.

Procedures are in place for BRRI to provide technical training and support to DAE and breeder seed to BARD, but such services need to be made more widely available to other intermediaries potentially able to provide services to farmers. A good start has been made by the BRRI/TD, BRRI/ARD, and BRRI/GRS in reforming policies and procedures to provide support to private firms and NGOs that are able to work with RPFs, but these reforms now need to be pushed forward and consolidated.

The DAE has a dual role—both providing services directly to farmers and providing technical support to other intermediaries. Many NGOs are highly motivated and have good linkages with communities enabling them to identify and work with RPFs, but most are quite weak in their technical capacity relevant to increasing productivity of rice systems. Collaboration with DAE extension staff is quite important to these groups and helps the DAE deliver on its mandated function.

Strengthened government support is essential to more effective and efficient use of NGO and private sector resources. Support services (training, breeder seed production, adaptive testing, mass media) require support for a core capacity, but should then be responsive and accountable to client demands. This requires a somewhat different structure for financing services and developing relationships with clients. PETRRA support, which has been oriented to developing a core capacity, should continue with increased emphasis on developing the policies needed to make services responsive to client demands.

Strengthening fora for collaboration and partnerships

An important element of an institutional structure for efficient and effective knowledge and information services is the mechanism for promoting partnerships between institutions with different comparative advantages. Linkage mechanisms provide for increased interaction and sharing of knowledge of different technologies, needs, and programs. The EPICC (Extension Policy Implementation Coordinating Committee) Committees, especially the District Agricultural Extension Committees (DEPCs) and Upazila Agricultural Extension Coordinating Committees (UAECCs) are potentially important in this regard. These should be strengthened and PETRRA participation expanded where possible. There appears also to be a need for other regional fora for disseminating knowledge and information on innovation in rice production systems to service providers. The PETRRA focal area strategy represents an opportunity to strengthen decentralized mechanisms for promoting partnerships.

Seed policy study

Seed policy studies have almost certainly been done in Bangladesh in the past, but issues with seed pricing, production, and distribution continue to arise in the UP Component subprojects as the private sector emerges as a more significant player in the seed industry. Public sector seed production and distribution is rarely efficient and generally disrupts markets such that it crowds out potential private sector seed dealers. At the same time the small profit margins for cereal seed make this relatively unattractive to private sector investment and a continuing or transition role for public sector seed supply might be necessary. The seed policy study under the PETRRA Policy Component should focus on ways of minimizing parastatal distortion of seed markets while private firms are expanding in the cereal seed business.

PETRRA Future Directions—Where to now?

The PETRRA project objectives require a fairly heavy agenda of further work on improving uptake pathways for innovation by RPFs. This will involve consolidating current work, testing the scaling up of activities, testing uptake of other types of innovation and uptake pathways with expanded roles for other types of institutions.

Promoting Uptake of Innovations from PETRRA Subprojects

A first priority for the UP Component will be that of documenting and disseminating recommendations from PETRRA subprojects—both relating to improving uptake pathways for innovation by RPFs and relating to the technology recommendations from technology generation subprojects. This promotion strategy fits well with the PETRRA communications strategy and can possibly use dissemination channels defined in that strategy (i.e., perhaps using the PETRRA Newsletter publisher to prepare UP dissemination materials). Draft terms of reference for documenting methodology and technology recommendations are included in Annex E.

Refining and disseminating a "model" for variety introduction work

The first major output of the UP Component would be a set of recommendations for practitioners working with RPFs on rice varietal introductions. This would consist of a synthesis of experience from current uptake subprojects in a "good practice guide" for service providers working with RPFs. An annotated outline for such a good practice guide is included as an Attachment to Annex E. PETRRA would need to contract an extension specialist and a development communications specialist to work with subproject implementing agencies in producing a *Good Practice Manual for Working with Resource-Poor Farmers on Rice Varietal Selection.* A training guide might be developed to complement the good practice manual and together these would provide the basis for scaling up work (principally by NGOs) with rice varietal dissemination to RPFs.

Disseminate research results

Several PETRRA technology generation subprojects (Output 1) are reaching the point where they have recommendations to be passed on to farmers. While much is still to be learned about knowledge and information systems serving RPFs, a clear first step is to ensure that technology recommendations—both for "hard" technologies embodied in input use and "soft" technologies of management systems—are made

available to intermediary institutions that have been shown effective in working with RPFs. Good "packaging" of technical recommendations for dissemination to NGOs, farmer groups, the DAE, and training institutions can facilitate technology uptake. The following PETRRA subprojects are likely to produce technology recommendations for dissemination before the end of the project:

Subproject:	Expected Innovation
Seed Health Improvement	♦ Seed cleaning ♦ Seed drying ♦ Seed storage
Sustainable Nutrient Management	♦ Use of leaf colour charts
Varietal Development for Coastal Wetlands	♦ Introduction of saline tolerant varieties
Rice-cum-Duck Production	♦ Management system for rice and duck production
Utilization of USG technology	♦ Use of USG in tidal areas
Rice Biodiverity	♦ Introduction of local varieties to new areas

PETRRA can facilitate farmer access to technologies by preparing concise Technology Notes with technical recommendations and guidelines for introducing these technologies to RPFs. Other technologies might also be ready for release before the end of the project. The review team recommends that PETRRA commission preparation of *Rice Technology Notes* based on results from technology generation subprojects and make these available to NGOs, DAE, and other extension service providers.

Continue with the Uptake Forum and Current Subprojects

The Uptake Forum should continue as a means of coordinating activities and sharing learning on the promotion of rice knowledge and innovation for RPFs. Current subprojects should be extended for 18 months at a reduced level of funding to enable implementing agencies to expand and mainstream their PETRRA activities. Continuing these subprojects will provide the opportunity to: (i) continue the shared learning through the Uptake Forum and subproject activities; (ii) monitor implementing agency experience with integrating activities into their core programs; and (iii) test lower-cost alternatives for promoting varietal introductions.

Scaling Up through Decentralized Regional Programs

Fora for inter-institutional collaboration and sharing of experience and skills are important to improving rice knowledge and innovation systems for RPFs. At the national level the Uptake Forum has been quite effective, but this still has limited reach and participation. At the district and upazilla level, the DAECs (District Agricultural Extension Committees) and the UAECCs (Upazilla Agricultural Extension Coordinating Committees) have considerable potential, but do not include all potential private sector intermediary service providers and are too numerous and dispersed to be a good mechanism for BRRI outreach with rice innovations. Regional Agricultural Technical Committees covering 18 agro-ecological zones are useful for research planning and consultations, but are not open to all service providers and cover too broad a range of technical issues.

Establishing a system of regional workshops on rice technology[11] would provide a mechanism for making the latest rice production system innovations available to service providers and would serve as a forum for interaction and development of partnerships between different institutions. Such regional workshops—open to all—could be held once a year, providing an opportunity for researchers to present research results relevant to the region and for NGOs and private input dealers to present their experience and innovations in rice production systems. The review team is not in a position to suggest a specific configuration for such regional workshops, but aligning these to be coterminous with BRRI regions, DAE regions, agro-ecological zones, and PETRRA focal regions would facilitate coordination.

PETRRA should test regional workshops or fora as a mechanism for BRRI outreach. This would be in harmony with the PETRRA focal area strategy and could be done through UP subprojects targeting training and technical capacity building for NGOs and other service providers. A substantial portion of funding available to such regional fora could best be allocated to local NGOs (or other local service providers) to "contract in" support services from BRRI or other technical agencies to complement and build on partnerships and technical capacity built through the workshops. ADAB would likely play an important role in facilitating such collaboration at the regional level.

New Thrusts in Uptake Pathway Action Research

Developing a more complete understanding of uptake pathways for innovation in rice production systems of RPFs will require PETRRA to commission a further series of subprojects focused on transfer of technologies other than new varieties. Different types of innovation in rice production systems may or may not rely on different uptake pathways and new subprojects would ideally target innovations in: post-harvest handling technologies, management systems, and input use. Commissioning 4-6 subprojects in each of these technical areas would allow implementing agencies to experiment with alternative arrangements for transfer of technologies to farmers. Activities in different areas might introduce innovations with-and-without credit facilities or with-and-without the introduction of new varieties. A draft call-for-concept notes for commissioning such subprojects is included as Annex F.

There is limited time remaining for PETRRA to test extension methods. Two to three years would be more desirable to allow adequate time for participatory needs assessment, developing relationships with clients, testing innovations, and fine-tuning technical recommendations and extension methods. As this is not possible, subproject designs will have to account for the short time available and maximize learning in that time.

Post-Harvest technologies

Post-harvest technologies (including seed cleaning and storage) are typically the domain of women. Current subprojects have attempted to involve women and introduce improved technology for farmer-saved seed, but results have been variable. This has been true in other extension programs in Bangladesh when services for women are an add-on to a general extension program (Mick Howe ASIRP Report of

[11] If such a workshop forum currently exists, the review team was not made aware of it.

February 2002). PETRRA should request proposals for extension services on post-harvest handling of rice and rice seed with services provided to women by women.

Management systems innovations

Many of the new productivity-enhancing innovations in agriculture are likely to be based on knowledge-intensive improvements to production system management rather than on use of new or more production inputs. These management systems include such innovations as integrated pest management, integrated nutrient management, minimum tillage, the "Madagascar rice production system", and water management systems. These management innovations generally require the farmer to have a much better understanding of the principles behind the management system and to manage production on the basis of field and farm conditions rather than blanket recommendations. PETRRA should request proposals for transfer of management system innovations that have been tested in Bangladesh rice production systems.

Input supply and use

The for-profit private sector has surprisingly little representation in the current set of UP Component subprojects, although several are based on commercial seed production and sales. Fertilizer and equipment dealers at both retail and wholesale levels are usually key players in the rice production knowledge and innovation system. A set of subprojects could explore mechanisms for enhancing collaboration between these for-profit input suppliers and other institutions delivering services to RPFs. Such subprojects should be careful to compromise neither the private sector entity's profit objective, nor the mandate to use public funds to address public goods issues, such as poverty alleviation and environmental sustainability.

Special Studies

Two special studies on RPF knowledge and innovation systems would contribute substantially to PETRRA understanding of these systems. A draft term of reference for these studies is included as Annex G.

Beneficiary assessment of UP subproject impacts

An independent study of impacts across subprojects would help to assess results and client views on subproject activities. A survey of a random sample of farmers—direct participants, indirect participants, and non-participating farmers—could identify changes in knowledge and practice in rice production, estimate impacts of innovation on productivity and family well-being, and determine farmers' attitudes towards the programs[12]. Beneficiary assessment procedures that use a pragmatic sampling procedure might be appropriate for such a study and a university Ph.D. student might be able to undertake this study with proper support and direction.

Uptake pathways study

A study of current knowledge and information systems (uptake pathways) would be useful to understand the farmer's current sources of innovation and issues surrounding

[12] The study would not need to report results by individual subproject, but this information could be made available to the implementing agencies concerned.

innovation by RPFs[13]. This can not now be completed in time to influence the action research agenda, but would still help in understanding and interpreting the experience and findings coming out of the UP Component subprojects.

PETRRA Management Implications

The UP Component issues are complex and—unfortunately—implementing the recommendations of this report will add substantially to both the complexity and workload for this component of the project. To-date PETRRA has managed the UP subprojects and the Uptake Forum quite well, but expanding the number and diversity of subprojects and adding new activities needed to deliver this output will stretch management capacity. Assignment of one professional staff member full time to coordinate the UP Component would facilitate implementation and help maximize learning from the component. Simplifying reporting from subprojects might also facilitate PETRRA monitoring and implementing agency management. A draft format for simplified quarterly and final subproject reports is attached as Annex H.

The activities proposed for the balance of the project will stretch available budget provisions. Priority should go to documenting good practice lessons to-date, testing regional scaling up of outreach and networking, and experimenting with uptake of new types of innovations.

Modification of UP Component Logframe Description of Activities

The logframe description of UP Component activities needs to be updated. If the recommendations of this report are adopted, the statement of activities could be as follows:

1. implement a series of subprojects to identify, test, and evaluate methodologies for promoting dissemination and uptake of innovation in rice varieties, post-harvest handling, management systems, and non-seed input supply and use.

2. test an Uptake Forum (national) and Rice Technology Outreach Workshops (regional) to promote networking and dissemination of extension methodologies and new technologies.

3. prepare a Good Practice Guide for rice extension methodologies and Technology Notes on new technical recommendations to disseminate PETRRA findings to service providers working with RPFs.

[13] PETRRA is already collaborating on a study of farmers' knowledge and information systems and with appropriate direction this is likely to provide the insights needed on existing uptake pathways.

Annex A: Schedule of Uptake Pathways Component Review

Date	Time	Events
12.03.02 Tue		Preparation & Travel
13.03.02 Wed		Travel
14.03.02 Thu		Meeting with PETRRA (SA/NM/AS) Review reports & documentation
15.03.02 Fri		Review reports & documentation
16.03.02 Sat		Meeting with PETRRA NM Review reports & documentation
17.03.02 Sun		Team inception meeting with PETRRA (NM/AS)
18.03.02 Mon	10:30 hrs 15:00 hrs	Meet Proshika (Zahid Hossain) Meet AAS (Harun-Ar-Rashid)
19.03.02 Tue	10:00 hrs 12:00 hrs 15:00 hrs	Meet ASIRP (Keith Fisher/Pamela George/Richard Pickering) Meet CARE (Lloyd Gudgeon) Meet ABC (Mr Fashiur Rahman)
20.03.02 Wed	9:00 hrs 10:00 hrs 10:30 hrs 11:30 hrs 14:30 hrs	Meeting Head BRRI/GRS (DG BRRI (S. B. Siddique) Head BRRI/TD (Khairul Alam Billah) Head BRRI/ARD (Abdul Rashid/Abdul Razak) Director Research BRRI (Nurul Islam Bhuiyan) Meeting BRAC (Md. Abubakar/Azizul Haque)
21.03.02 Thu	9:00 hrs	Meeting DAE/Director Field Services (
22.03.02 Fri	 17:00 hrs	Review of project documentation Evening flight to Jessore; Stay overnight at Jessore
23.03.02 Sat	7:30 – 17:00 hrs	Field visit to Shushilan (Mustafa Nuruzzaman) Overnight at Jessore
24.03.02 Sun	12:00 hrs	Leave Jessore for Dhaka by morning flight
25.03.02 Mon	6:30-17:00 hrs	Field visit to Kishoreganj (AAS activities) Travel to Srimangal; Stay overnight at HEED Guest House
26.03.02 Tue	8:00-16:00 hrs	Field visit to Moulvibazar (AAS) and Habiganj (AAS/AURD, AAS/PSUS, AAS/BASA); Travel to Dhaka
27.03.02 Wed	9:00 hrs 10:30 hrs 13:30 hrs 15:00 hrs	BRRI/ARD (Musherraf Hussein) BARD (Tapash Ranjan Bose) RDRS (Syed Shamsuzzaman) GKF (Azizul Islam)
28.03.02 Thu	9:30 –12:30 hrs	Meeting with Uptake Forum Team discussion
29.03.02 Fri		Writing
30.03.02 Sat	10:00	Meeting PETRRA (NM) Writing
31.03.02 Sun	 14:00	Writing Team discussion
1.04.02 Mon	11:00	Meeting PETRRA (NM/AS) Meeting USAID (J. Emmert)
2.04.02 Tue	10:00-12:00 hrs 14:00 hrs	Meeting PETRRA (NM/AS) Meeting with DFID Projects
3.04.02 Wed	8:00 hrs	Meeting DFID (Tim Robertson) Meeting PETRRA (NM/AS)
4.04.02 Thu	8:30 hrs	Departure BA Flight 144
4.05.02-4.10.02		Report writing

Schedule for: Mr. Gary Alex and Prof Abdul Halim

PETRRA: Dr Noel Magor (NM), Project Manager; Ahmad Salahuddin (AS), Project Officer; Mr Salim Ahmed (SA), Office Manager; Ms Shaila Arifa Nabi, Technical Officer

Annex B: Description of Individual Uptake Pathways Subprojects

Following is a summary description of the various UP subprojects in terms of their purpose, strategy, and methodology; relationship to the implementing agency's general program; and any unique aspects of the subproject.

Adaptive Research—Adaptive Research Division (ARD) of BRRI

The technology uptake sub-project of the BRRI Adaptive Research Division (ARD) commenced in the Boro season of December 1999. The purpose is to identify and recommend improved methods for uptake of improved rice varieties and cultivation techniques for resource poor farmers. The main strategy relies on adaptive testing of rice varieties in different regions with resource poor farmers.

The methodology followed uses field demonstrations and training, rice schools, field days at demonstration sites and farmer-to-farmer seed exchange programs. Inputs are provided free of cost. DAE personnel at upazila and block levels along with partner NGOs are involved in demonstrations, field day programs, and participatory workshops. Since ARD has a general mandate for regional testing of technologies both at regional stations and in farmers' fields, this subproject fits well with this mandate and is mutually beneficial to the on-going programs and projects of BRRI.

Unique Points: The organizational capacity building within ARD was a strong point of this subproject, allowing partnerships with NGOs for rice productivity programs. Under the subproject BRRI for the first time specifically targeted resource poor farmers and developed a network with other partners.

Training—Training Division (TD) of BRRI

The purpose of the Training Division (TD) subproject is to enhance the capacity of different partners to increase productivity of rice production systems. A training-of-trainers (TOT) strategy is followed in training field workers of NGO partners. Methods used for training included lectures, participatory learning and discussions.

The TD provides seed-to-seed training for personnel of DAE working at the district and field levels. Expanding this training to NGOs under this subproject is in harmony with the on-going TOT training programs of BRRI and is mutually beneficial to those programs.

Unique Points: This is the first time that demand-led rice production training has been organized by BRRI for field workers of different NGOs. A training needs assessment was done using participatory rural appraisal (PRA) methodologies and a participatory evaluation report prepared. Development of a pro-poor training curriculum is another innovative aspect of this program.

Breeder Seed—Genetic Resources and Seed (GRS) Division of BRRI

The purpose of the GRS subproject is to ensure continuous breeder seed supply to seed networks and to improved knowledge of seed production by all categories of seed producers and resource poor farmers. Seed producing agencies are provided

breeder seed from BRRI and expected to use this to produce their own foundation seed.

GRS provides training for seed producing agencies, makes field visits to seed production areas, and develops linkages with NGOs and private sector firms. An MOU was signed between BRRI and BRAC to undertake collaborative activities. Planning meetings, review workshops and monitoring are used in implementing this program, which is in harmony with the general program activities of GRS.

Unique Points: GRS has established a sustainable seed network with diverse partner agencies. This helps in planning breeder seed production needs and in harnessing the resources of NGOs and the private sector to produce foundation seed and get certified seed to farmers. Good linkages with seed producing partners provide mutual benefits for all partners.

Pilot Scheme—Bangladesh Rural Advancement Committee (BRAC)

The purpose of the BRAC subproject is to identify and test improved practices and uptake methods for rice production. The subproject follows the BRAC model for seed production and distribution, but this was not spelled out in detail in subproject reports.

BRAC bases its activities on its own seed business and supply of rice seed of modern varieties that are in high demand. Methods used include demonstrations, field days, training and supply of printed materials. BRAC maintains its own general program of supplying credit to the resource poor farmers for agricultural inputs.

Unique Points: The subproject emphasizes capacity building in rice production technology to strengthen BRAC's ability to produce foundation seed in their own fields. Relationships have been established with DAE, BRRI, BADC and other partner agencies facilitating BRAC work on promoting rice technologies.

Pilot Scheme—Gramin Krishi Foundation (GKF)

The GKF subproject purpose is to identify and test improved rice seed and rice production technology and methods of uptake. The strategy involves identification and verification of improved rice varieties and technology in fields of resource poor farmers. Both male and female groups are used in testing and verification of the varieties, production technology and uptake methods.

The methods include demonstrations, field days, workshops, and participatory assessments in collaboration with other partners, especially DAE and local NGOs. GKF—formed in 1989 as a sister organization of the Gramin Bank—works mostly through groups. The general method of working with groups of resource poor farmers is well adapted to the process of identifying and testing rice varieties, production technologies, and uptake methods. GKF's marketing model is used effectively in marketing rice produced by participating farmers.

Unique Points: Attention to product marketing is a unique aspect of the GKF subproject, which approaches seed supply from a business orientation. Women play an active role in evaluating quality of rice varieties.

Pilot Scheme—Agricultural Advisory Services (AAS)

The purpose of the AAS subproject is to develop, test, and recommend an uptake method of farmer-to-farmer seed exchange for RPFs. The AAS strategy involves use of community-based organization (CBOs) and existing groups to promote farmer-to-farmer exchange of quality seed, new rice varieties, and new management practices.

The methodologies used emphasize demonstrations and group discussions involving demonstration and non-demonstration farmers, field workers, partner organizations, wives of demonstration farmers and DAE block supervisors. Participatory workshops, training, and field visits are also organized. Fifty-five NGOs and CBOs are working in collaboration with AAS throughout Bangladesh. No direct credit programs are run by AAS, but micro-credit programs of partner NGOs facilitate farmer innovation.

AAS was formed in 1989 by a multinational group of professionals to provide technical support services to partner NGOs in the field of agricultural production system management. It provides training and services on a contract basis in different agro-ecological zones and works with resource poor farmer groups representing men, women and youth. The present PETRRA program fits well with the general program of AAS.

Unique Points: Youth groups, women's groups, and other existing CBOs are used effectively as partners. The partnership network operates on a fairly wide scale, providing a basis for low cost program expansion. Support services help local NGOs implement seed production programs, while partner organization-managed revolving funds provide needed financing. Farmer-to-farmer seed exchange has been effective. AAS capacity and interest in promoting high value cash crops could potentially provide opportunities for diversifying the rice farming systems of participating farmers.

Pilot Scheme—Proshika

The Proshika subproject purpose is to identify and verify improved methods for effective uptake of sustainable rice production technology to ensure livelihoods of resource poor farmers and maintain a sound environment. The strategy involves distribution of certified seeds, replication of seed production demonstrations, and provision of all required inputs.

Methodologies used include training, demonstrations, supervision, participatory discussions with contact farmers, field visits, field days, workshops, motivational and awareness campaigns and participatory evaluation. Proshika's main areas of work focus on poverty reduction, women, ecology, micro-credit and group formation. The present activities under PETRRA fit well with on-going programs and the Proshika micro-credit program of is integrated in the PETRRA program.

Unique Points: The Proshika subproject takes a livelihoods approach, offering clients a range of services. The subproject stresses environmentally sound development, women's involvement and employment, and development of linkages with leading GOs (as BRRI and DAE) and NGOs. The program helps poor farmers in Proshika groups to produce quality rice seed.

Pilot Scheme—Rangpur Dinajpur Rural Services (RDRS)

The RDRS subproject purpose is to test and verify improved seed production technology with environmentally friendly storage and improved methods for technology uptake by members of the RDRS farmers' federation. The RDRS strategy involves testing and verification of new varieties on farmers' fields and seed storage in organic cocoons (airtight seed storage facilities). Varietal demonstrations on fields of RPFs and seed production by small farmers are the two most important elements of the RDRS subproject.

Methodologies used include demonstrations, training, field days, participatory evaluation, and university students' involvement as researchers in the field. RDRS works through groups and federations and has a micro-credit business. The RDRS resource poor farmer groups and federations are well suited to participating in the PETRRA program.

Unique Points: RDRS helps farmers produce seeds and is working with farmer federations to market seed. Members of RDRS primary and secondary groups participate in the program. Information flows through RDRS as a formal pathway with MOUs providing linkages to technological institutions and through informal pathways of farmer-to-farmer exchange of information. University students are involved in research on the pilot program.

Pilot Scheme—Agricultural Business Corporation (ABC)

The purpose of the ABC subproject is to identify and test improved HYV rice seed production and rice cultivation practices for resource poor farmers by establishing a demand-driven seed marketing system and methods of technology uptake. The strategy to achieve this purpose involves identification and testing of rice varieties and cultivation practices by the resource poor farmers.

The methodologies adopted are motivational meetings at the farmers' level, training, demonstrations, field days and workshops, formation of seed cooperative societies, and directed credit provision. ABC was formed in 1997 as a private seed business selling mostly maize hybrid seeds. The PETRRA program fits well with the ABC general seed program.

Unique Points: The main element unique to the ABC program is its foundation on a sustainable, commercial seed business.

Pilot Scheme—Shushilan

The purpose of the Shushilan subproject is to identify and verify improved HYV rice technology for resource poor farmers and improved uptake methods for new technology. The strategy adopted involves verification and testing of HYV rice varieties on the fields of resource poor farmers.

Methods used include demonstrations, training, farmer cooperatives, discussion groups with experienced farmers, and promotion through cultural programs, such as folk songs and other traditional amusements. PETRRA activities complement and enhance the organizational capabilities of Shushilan and strengthen its general program.

Unique Points: Women are targeted in Shushilan training programs and subprojects focus on increasing their knowledge, attitude and skills in rice production technology, especially as relate to post harvest activities. This improves the decision-making ability of women and men in rice cultivation. Although women are not directly involved in field cultivation of rice, their increased knowledge helps the family and complements men's knowledge.

Pilot Scheme—Bangladesh Academy for Rural Development/Comilla (BARD)

The purpose of the BARD subproject is to identify and verify improved modern rice varieties and cultivation practices for resource poor farmers and improved methods of technology uptake through village institutions. The strategy involves testing and verification of HYV rice cultivation by resource poor farmers. Methodologies used include demonstrations, training, distribution of printed materials (i.e., leaflets), and organized field days. BARD uses its standard Comilla approach in implementing the PETRRA program, which fits well with the general program of BARD.

Unique Points: Selection of resource poor farmers was done through cooperative society members in the two-tiered cooperative system of local village cooperatives linked in a federation. Selected farmers produce seeds to be stored in organic cocoons owned by the Comprehensive Village Development Cooperative Societies (CVDCS) and distribute these to other farmers on a commercial basis. The subproject has developed training materials and manuals and promoted use of urea super granules (USG). Cooperative societies, rather than BARD, provide credit, while BARD develops links with local GOs and NGOs to support its programs, as for example, the Soil Research and Development Institute, which does soil tests to support adaptive research on soil nutrient management.

Annex C: Assessment of Uptake Pathways Sub-projects*

Criterion	Subproject**											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**Aver.**
Demand-driven: Adequacy of systems to assess and respond to client demand	3	4	2.5	2.5	2	2.5	2	2.5	3.5	3.5	1	2.6
Poverty-focused: Adequacy of procedures for targeting RPFs	1.5	3.5	5	2	3	5	3.5	5	5	3	3	3.6
Gender-equity: Adequacy of arrangements for gender equity in service delivery	1.5	5	5	1.5	4	5	3.5	4	5	4	3	3.8
Institution-building: Clarity of strategy for institutionalizing extension strategy	3	3.5	1.5	2.5	1.5	2	2	1.5	2.5	3	2	2.3
Sustainability: Likelihood of sustainability	2.5	3	3	3	2	3	2.5	2.5	4	3	2	2.8
Methodology: Clarity and adequacy of extension approach and methodology	3	3.5	2	2.5	2.5	1.5	3	2.5	2.5	3.5	2	2.6
Innovation: Clarity of innovation (technology) options presented to clients	2.5	2.5	1.5	2	1.5	1.5	2.5	2.5	1	2	2	2.0
Innovation: Linkage to research program or other source of innovation	3	3	1.5	4	2.5	1.5	2	3	1.5	2.5	2.5	2.5
Networking: Linkages to other service providers	4	4	2.5	2	1.5	2.5	3	4	3	1.5	2.5	2.8
Results-orientation: Clarity of output targets	2.5	3	2	2.5	2	2.5	2	2.5	3.5	2	2	2.4
Environmental impact: Attention to environmental issues	2.5	4.5	4	2.5	2.5	5	4	4.5	5	4	3	3.8
Learning: Clarity and adequacy of M&E plan	4	4.5	4	3	3.5	4	4	4	4	3.5	2.5	3.7
Learning: Adequacy of documentation and reporting	3	3	3.5	2.5	1.5	1.5	3	2.5	2	2	2	2.4
Cost-efficiency: Cost/ Direct client (Tk/client)***	16,186	16,616	16,703	9,868	4,148	136,179	1,931	32,316	9,570	1,867	44,437	26,347
Cost-efficiency: Cost/ Client (based on rough estimates of total clients) (Tk/client)**	809	1,113	835	2,683	830	1,362	322	2,884	1,930	251	4,761	1,616

* Rated on the basis of: Excellent - 1; Good – 2; Moderately acceptable – 3; Poor – 4; and Very poor/Not applicable – 5.
** Subprojects not individually identified.
*** Cost efficiency estimates not valid for comparisons.

Annex D: Evolution of Output 4—Uptake Pathways Component

Logframe Version	Statement of Output 4	OVIs	Activities
Project Memo. (2/2/99)	In collaboration with extension services, the constraints to effective uptake of rice technologies identified, improved approaches pilot tested, and recommendations for improvements in uptake pathways made.	1. High quality study identifying constraints to effective uptake and including design for pilot study completed by end of PY1. 2. Participatory pilot study with DAE implemented and recommendations made by MTR at end of PY3. 3. Improved uptake pathways identified and being used by EOP. 4. All research sub-projects assist with development of appropriate extension materials during project.	1. Factors constraining effective uptake of improved rice technologies identified. 2. Uptake pathways (DAE, NGOs, private sector) supported in pilot implementation of new approaches. 3. Pilot studies jointly evaluated with uptake organizations and recommendations developed for system improvement. 4. Studies finalized and briefings organized with policy makers.
Inception Report (June 2000)	(No change.)	Adoption of best practice in uptake pathways reduces time gap in extending new technologies to resource-poor households from "X" years to "Y" years being utilized by EOP.	1. Factors constraining effective uptake of improved rice technologies identified in conjunction with DAE, NGOs, and the private sector. 2. At least five pilot schemes in technology uptake research established by joint research and extension partnerships and recommendations developed and implemented.
OPR #1 (9/29/00)	Improved methods for effective uptake of technologies for rice systems identified, pilot tested, and recommendations for improvements in uptake pathways made.	1. Uptake pathways that reduce the time gap, increase the number of people who hear of and adopt new technologies developed and validated in focal areas. 2. New methods of information transfer promoted to organizations that are active in the promotion and transfer of knowledge and technologies by end of PY4.	No change.
OPR #2 (11/5/01)	(No change.)	1. Number and proportion (>50%) of participating resource poor rice farmers--RPRFs (M/F) who know about, test, and approve of newly introduced varieties by end of PY3 (for 9 subprojects commissioned in 2000). 2. Validated and documented recommendation presented to a National Uptake Seminar by end of PY4 and assessed by majority of seminar participants as being relevant and practical. 3. Proportion of PETRRA technology development sub-projects (output 1) aware of and applying uptake pathway recommendations by PY 4.	No change.

Annex E: Draft Terms of Reference for Preparation of Good Practice Guidelines and Technology Notes

Phase I: Preparation of Good Practice Guidelines for Promoting Uptake of New Rice Varieties By RPFs (target timing: April 2002 through July 2002)

Objective: To produce a short set of guidelines for NGOs and other service providers working with RPFs to increase productivity by introducing new rice varieties. New varieties often offer potential for significant increases in productivity, but the rate of spread of new varieties to RPFs has been slow.

Approach: Extension communications specialists would draw from the varied experience, approaches, and methodologies used by the PETRRA uptake pathways subprojects and document; (a) the generalized approach that has evolved in most of these subprojects and (b) examples of good practice identified by the subprojects.

Product: An 8 -16 page Good Practice Guideline with an accompanying trainers manual for presenting a 2-3 day workshop on extension methods and program approaches to improve rice productivity through varietal introductions. The documentation would be targeted to NGOs and others initiating work with rice production and—while stressing that there is no single valid approach—would provide an over-all model approach and specific examples of effective practice.

Resource Requirements: Approximately 15 days of an Extension Education Specialist and five days of a Development Communications Specialist would be needed to work with staff of UP subprojects to develop the materials. Staff of each subproject would need to dedicate about two days time to assisting with preparation and reviewing drafts of guidelines. Approximately 2,000 copies of the Good Practice Guidelines and 100 copies of the training manual would need to be printed and distributed through an NGO apex organization and the Uptake Forum.

Suggested Outline for Good Practice Guidelines: The Guidelines would emphasize practical issues to be considered in working with RPFs on improving rice productivity and would refer users to additional references and sources of information wherever possible. A preliminary draft outline (to be revised after further consultations with UP subproject implementing agencies and other potential extension service providers) is included as an attachment to this Annex.

Phase II: Preparation of Technology Notes for Promoting Uptake of New Rice Technologies By RPFs (target timing: July 2002 thru June 2004)

Objective: To produce a set of short guidelines and recommendations for NGOs and other service providers working with RPFs to introduce new rice technologies developed under PETRRA technology generation subprojects.

Approach: Extension communications specialists would draw from the various PETRRA technology generation subprojects to identify technical recommendations ready to be introduced to farmers. The specialists in collaboration with the subproject staff would document the technical recommendations and guidelines for introducing these to PRFs.

Product: A 2-4 page Technology Note for each of approximately 10 technical innovations identified under the PETRRA subprojects. The Technology Notes would be targeted to NGOs and others working with rice production systems and would complement the Good Practice Guidelines on methodologies.

Resource Requirements: For each Technology Note, approximately three days of an Extension Education Specialist and two days of a Development Communications Specialist would be needed to work with UP subprojects staff to develop materials. Staff of each subproject would need to dedicate approximately three days to drafting recommendations. Approximately 5,000 copies of the Technology Notes would need to be printed and distributed through an NGO apex organization and the Uptake Forum.

Phase III: Updating of Good Practice Guidelines for working with RPFs to Increase Rice Production System Productivity (target timing: March 2004 through July 2004)

Objective: To revise or expand on the guidelines for NGOs and other service providers working with RPFs to introduce innovations to increase productivity of rice production systems. Additional subproject experience will provide additional materials to supplement the original Guidelines or allow preparation of revised Guidelines.

Approach: Extension communications specialists would draw from experience with the new set of the PETRRA uptake pathways subprojects working on innovations other than varietal introduction. The specialists would document successful approaches and good practices identified in these subprojects.

Product: A revision or supplement to the original Good Practice Guidelines with an accompanying trainers manual for presenting a 2-3 day workshop. The revisions would cover methodologies for introduction of management systems innovations, post harvest handling innovations, and working with input suppliers to better serve RPFs.

Resource Requirements: Approximately 15 days of an Extension Education Specialist and five days of a Development Communications Specialist would be needed to work with staff of the UP subprojects to develop the materials. Staff of each subproject would need to dedicate approximately two days to drafting sections of the guidelines and reviewing drafts. Approximately 5,000 copies of the Good Practice Guidelines and 200 copies of the training manual would need to be printed and distributed through an NGO apex organization and the Uptake Forum.

Attachment D-1: Preliminary Outline for Good Practice Guidelines for Promoting Uptake of New Rice Varieties By RPFs

I. Introduction (or Foreword)

- Purpose of the Good Practice Guidelines
- Origin—description of the PETRRA project, UP subprojects, and the Uptake Forum (list subprojects)
- Emphasize that these Guidelines focus on **program approach and methodology**, not on varieties or technology
- Note that "Technology Notes" may be produced separately to describe technical innovations

II. Program Preparation and Planning

- Why rice production is important
- Various approaches in increasing productivity of rice systems
- Working with RPFs
- Need for technical support and staff training for work with rice technology
- Options for training staff on rice production technologies—BRRI/TD, DAE, others

Good Practice Box: BRRI/TD Approach to training needs assessment

Good Practice Box: AAS training for partner NGOs/CBOs

III. Site Selection

- Considerations in selecting new sites in which to work on rice productivity or in expanding into rice technology at a site in which the service provider is already working
- Contact DAE or the DAEC for guidance in site selection
- Considerations as to types of rice, production seasons, production systems, agro-ecological zones

IV. Participatory Needs Assessment with Farmers

- What farmers to meet with
- How to meet with and solicit opinions of women farmers
- Identifying farmers problems and needs in rice varieties
- Strengths and weaknesses of working with existing organizations

Good Practice Box: participatory needs assessment and program planning [Note: The UP subprojects have been quite weak in their PNA procedures, but it is important to provide an example of how this can best be done—perhaps a simplified version of the PETRRA Stakeholder analysis.]

V. Identification of Technology (Varietal) Options

- Key characteristics that condition rice varietal adoption—days to maturity, plant type, insect and disease resistance, taste, threshing or cooking characters, special cultivation requirements, market value, keeping quality, volume of boiled rice per unit of unboiled, yield potential
- Sources of varietal resources, including local varieties
- Production systems, seasons
- Use of quality (certified) seed. Characteristics of good seed. **Use quality seed!!!**

- Sources of good seed.

Good Practice Box: Drawing on Other Resources for Technical Support

- BRAC—Network for training
- ARD—Collaboration with NGOs, DAE, etc.
- RDRS—Collaboration with the university
- Proshika—MOUs with BRRI, BARI, DAE, etc.

Good Practice Box: GRS—Breeder seed production and MOUs with NGOs and private seed companies

Good Practice Box: Seed Producers/Sellers

BADC/ BRAC/ ABC/ GKF/ Other UP subprojects

VI. Selecting Key RPF Collaborators and Clients

- Farmer interest, motivation, innovation, and leadership ability
- Selecting RPFs—issues of ability to assume and manage risk
- Working with groups: established groups vs. forming new groups; group objectives
- Land availability and suitability
- Location suited to field days and visits
- Ability to save harvest for seed

Good Practice Box: Proshika—selection of RPFs

Good Practice Box: BRAC—Group selection of demonstration farmers

VII. Program Approach and Model

- Participatory varietal selection—can be very easy and low cost
- Training on other improved cultural practices—more complicated, more costly, and may eclipse attention to varietal impact
- Options for program models include:
  - ⇒ Linking to a directed credit program
  - ⇒ Developing farmer as a seed entrepreneur
  - ⇒ Working through local organizations
  - ⇒ Linking to a seed company/supplier

Good Practice Box: AAS—working with local groups

VIII. Extension and Training Methods

- Bring in DAE and others
- Alternative extension methodologies
- Preparation of extension materials

Good Practice Box: BARD—Village based training

Good Practice Box: Shushilan—working with women farmers

Good Practice Box: preparation of training and extension materials

⇒ AAS—extension materials

⇒ ARD—materials

⇒ RDRS—pictorial extension materials

IX. Establishing Demonstrations

- Essential in introducing varieties
- Consider using good local varieties and ensure fair comparisons on introduced and local varieties
- Options of demonstrations with farmers' practices vs. package of improved practices (pros and cons)
- Avoid providing free inputs!! (though free seed may be necessary and appropriate)
- Attention to environmental issues

X. Field Days and Workshops

- Bring in DAE and others
- Observe new varieties, compare, evaluate, taste and cooking characteristics, discuss strengths and weaknesses and maybe introduce other improved practices

Good Practice Box: ABC—Field days and informal meetings

XI. Sustainability—seed production

- Remember: new varieties may or may not be better than what the farmer already has
- Avoid blanket recommendations and making recommendations too soon. Farmers should test for 2-4 years
- Train women in seed selection and storage
- Promote farmer-to-farmer seed exchange and seed marketing systems
- Encourage farmers to value and price seed for a profit

Good Practice Box: Seed exchange

⇒ Shushilan—farmer-to-farmer seed exchange

⇒ GKF—seed exchange

XII. Evaluation

- Record farmers' participatory evaluation of new varieties
- Report experience and findings back to DAE, BRRI, and others
- Publicize successes locally and in news media
- Report negative results also—if varieties are not better than what farmers already have, this is also valuable information.
- Plan next season's work. Consider options for diversification.
- Estimate cost of program per farmer client
- Estimate impact on farmer income. Remember: yield isn't necessarily important, but income is and so is minimizing risk. (Opportunity to plant another crop may make short season varieties with low yields better than longer season varieties.)

Annex F: Call for Concept Notes for Pilot Testing of Methodologies for Dissemination of Rice Technology to Resource Poor Farmers

The 'Poverty Elimination through Rice Research Assistance' (PETRRA) Project approved by the Government of Bangladesh in 1999 and funded by DFID is being managed by the International Rice Research Institute (IRRI) in close partnership with the Bangladesh Rice Research Institute (BRRI). The project period is for five years and will be completed in August 2004.

PETRRA's purpose is the sustainable enhancement of the productivity of rice-based farming systems for resource-poor farmers. This supports the goal of substantially increased rice production and incomes by 2008 and the super-goal of a 50 percent reduction in rural and urban poverty by 2015. The project finances research through partnerships between IRRI, BRRI, Universities, NGOs and other national and international research institutes to develop improved rice production technologies appropriate to Bangladesh. One aspect of the research work is the identification, testing, and demonstration of improved methodologies for enhancing the uptake of new technologies by resource poor farmers.

Proposals in the form of a Concept Note are invited for action research sub-projects to identify, develop, and verify extension activities and methodologies that enhance innovation and uptake of new technologies of three types (post harvest handling technologies, management systems innovations, and non-seed input supply and utilization) as described in the attachment to this Call-for-Concept Notes. The completion date for subprojects financed in response to this Call-for-Concept Notes will be no later than July 31, 2004. Budgets must be modest. It is anticipated that PETRRA will support up to six small sub-projects in each of the three areas of technology diffusion.

Other Information

Successful applicants are expected to have professional capability, a good reputation, and a recognized track record in the area of interest. Partners will be expected to have a strong commitment to the overall goal of PETRRA. (A partner is any participating organization that submits a Concept Note). Partners will be expected to demonstrate a **participatory approach** in their work and wherever appropriate interface with **resource poor households**. This implies a need for prior consultation and participatory development of subproject concepts, strategies, and activities with resource-poor farm households. Partners will be expected, where appropriate, to include **women** in their extension activities and be sensitive to the **environmental** consequences of technological innovation.

Partners are expected to have adequate basic resources to carry out the work. PETRRA funds are not intended to bring in an expertise that does not exist within an institution or organisation but may be used to bring in complementary expertise for strengthening existing capacity in a specific and essential area. PETRRA project funds will not be provided for building organisational infrastructure for linkage to resource-poor farm households but will rather complement existing organisational linkages to these households.

Since its inception PETRRA has financed 11 subprojects for promoting the development of methodologies for improved dissemination of new rice varieties to resource poor farmers. These activities are expected to continue. The implementing agencies for these subprojects have participated in an Uptake Forum that meets every 2-3 months to share experience and lessons learned in rice technology dissemination. The Uptake Forum meetings are expected to continue and all partners implementing technology dissemination action research subprojects will be expected to participate.

Proposals will be expected to foster strong linkages with centres of excellence through direct partnership or through planning and workshop forums. Field testing and demonstration of approaches and methodologies for promoting innovation and improved uptake of new technologies will be expected to be undertaken in one of the nine PETRRA Focal Areas in regions of: 1) Rangpur; 2) Rajshahi ; 3) Khulna; 4) Barisal; 5) Faridpur; 6) Noakhali; 7) Comilla; 8) Sylhet or 9) Kushtia.

Proposal Selection

Criteria for assessment of Concept Notes will take into account the above requirements and will include consideration of the degree to which the submitting organization:

- has adequate resources, capabilities, and institutional linkages for the work and can demonstrate potential to integrate lessons learned into ongoing programs and demonstrate some sustainability for activities (20 points)

- defines a clear strategy and sound and innovative extension approach for promoting innovation in target technologies by participating resource poor farmers (20 points)

- identifies new technologies or innovations (of a type identified in the Call-for-Concept Notes) that have potential to improve the productivity and profitability of rice-based production systems of resource poor farmers in the target area (20 points)

- demonstrates an understanding of participatory approaches and the needs and constraints of resource poor rice farmers (20 points)

- proposes an appropriate time scale, cost-effective approach and realistic implementation plan for delivery of the action research subproject (20 points)

Interested partners may be provided with PETRRA documents that are useful for concept development in line with the PETRRA philosophy. Some of such reports available with PETRRA are: i) project description; ii) gender strategy; iii) stakeholder analysis reports of 13 districts in 10 volumes; and iv) assessment of the Uptake Pathways Component activities.

Proposers whose Concept Notes are selected will be asked to submit Subproject Proposals as described in the guidelines for preparation of Concept Notes.

Proposal Submission

The deadline for the receipt of this call for Concept Notes is **Sunday _____, 2002**. An electronic copy of the form with accompanying guidelines can be obtained from the Technical Officer, PETRRA (cnpetrra@bol-online.com). Proposals should be submitted in hardcopy in plain papers (not in spiral binding) and also on diskette.

Postal address

Project Manager,
Attention: Call for Concept Notes

PETRRA,
GPO Box 64, Ramna, Dhaka 1000;

For hand delivery

Technical Officer PETRRA

IRRI Bangladesh Office,
Hse 39, Rd 23, Block J, Banani,
Dhaka 1212; or

Administrative Assistant
PETRRA Project,
Bangladesh Rice Research Institute,
Joydebpur, Gazipur 1701

Please indicate your interest by email (cnpetrra@bol-online.com) or contact the IRRI office tel 8817639-40 or tel 8827210 (Ms Shaila Nabi, Technical Officer) for clarification or further information.

Yours sincerely,

Noel P Magor
Project Manager, PETRRA

CALL FOR CONCEPT NOTES

Development of Methodologies to Promote Innovation by Resource Poor Farm Households

***Issue 1*:** **Promoting Uptake of Innovations in Post-harvest Handling of Rice and Rice Seed in Resource Poor Farm Households**

Background: Research and extension services have traditionally focused on increasing rice yields and have to some extent neglected technologies for post harvest handling of rice. Considerable rice is lost due to poor storage and handling after harvest. Furthermore poor post harvest handling technologies are labour intensive and inefficient and can lead to deterioration in quality of grain and price of rice sold. Another important aspect of post harvest handling is seed selection, handling and storage, which offers opportunity for income generation and establishes the basis for the next year's crop.

Defining the issue: Post-harvest technologies (including seed cleaning and storage) are typically the domain of women. Current subprojects have attempted to involve women and introduce improved technology for farmer-saved seed, but results have been variable. This is generally the case in Bangladesh when extension services for women are an "add-on" to a general extension program. PETRRA therefore wishes to experiment with extension services on post-harvest handling of rice and rice seed with services provided to women by women.

Objective: to develop and demonstrate effective approaches and methodologies for promoting innovation and uptake of post harvest handling technologies for rice and rice seed that improve the productivity and profitability of rice production systems of resource poor rice farmers with services provided to women by women.

Guidelines:

- Extension activities must be carried out with marginal, resource-poor, and tomorrow's poor farm families (BIDS definitions).
- Interventions must be clearly developed and implemented in consultation with these farm families.
- The subproject design proposed must include a clear statement of the extension approach and methodology to be employed (with credit given for innovative experimental approaches) and the technologies or innovations proposed to improve system productivity.
- Interventions should be cost-effective and potentially sustainable.
- All interventions should be environmentally friendly and gender sensitive in nature.
- Development of links to local resources (e.g., DAE, seed dealers, service delivery agents, etc.) for sustainability must be part of the plan.
- Training for technical staff may be included in the proposal.

- Proposals should include linkages to research institutions or other sources of innovation and knowledge on rice production, as appropriate.
- Implementing agencies will be expected to participate in Uptake Forum meetings held approximately every three months in Dhaka.
- Complementary dissemination through mass media (i.e., "Krishi Kotha", Farm Broadcasting, posters, etc.) should be considered.
- Documentation from the Seed Health Improvement subproject of PETRRA may be useful to applicants.

Locations: The subproject activities are expected to be implemented in at least three villages in one of the PETRRA focal areas.

Number of subprojects to be approved: up to six

Budget: Up to 18,000 GBP over 18 months

Duration: Up to July 31, 2004

***Issue 2*:** **Promoting Uptake of Innovations in Management Systems for Rice Production System Productivity Enhancement in Resource Poor Farmers**

Background: Future increases in agricultural productivity are likely to come from more efficient use of inputs, rather than use of new inputs as was the case during the "green revolution" period. Technology recommendations will be tailored to specific groups of farmers and more narrowly defined production environments with recommendation domains defined by continuous variables (i.e., pest counts, soil test results, etc.) rather than by discrete variables (i.e., pest presence, soil type, etc.). Innovation will require more knowledge and information input with extension services transferring information in an educational rather than directive approach, building on formal schooling as a basis for information services provided. Extension will have to tailor information delivery to specific farmer situations rather than pushing pre-determined technology packages and will have to provide situation-specific (i.e., field-specific, season-specific, etc.) recommendations rather than technology messages marketed across large recommendation domains. This scenario is likely to be true in Bangladesh's rice production systems.

Defining the issue: Many of the new productivity-enhancing innovations in agriculture are likely to be based on knowledge-intensive improvements to production system management rather than on use of new or more production inputs. These management systems include such innovations as ***integrated pest management, integrated nutrient management, the "Madagascar rice production system", and water management systems***. These require that the farmer have a much better understanding of the principles behind the management system and manage production on the basis of field and farm conditions rather than blanket recommendations. Proposals should be for transfer of management system innovations that have already been tested in Bangladesh.

Objective: to develop and demonstrate effective approaches and methodologies for promoting innovation and uptake of improved management systems that improve the productivity and profitability of rice production systems of resource poor rice farmers.

Guidelines:

- Extension activities must be carried out with marginal, resource-poor, and tomorrow's poor farm families (BIDS definitions).
- Interventions must be clearly developed and implemented in consultation with these farm families.
- The subproject design proposed must include a clear statement of the extension approach and methodology to be employed (with credit given for innovative experimental approaches) and the technologies or innovations proposed to improve system productivity.
- Interventions should be cost-effective and potentially sustainable.
- All interventions should be environmentally friendly and gender sensitive in nature.
- Development of links to local resources (eg DAE, seed dealers, service delivery agents, etc.) for sustainability must be part of the plan.
- Training for technical staff may be included in the proposal.
- Proposals should include linkages to research institutions or other sources of innovation and knowledge on rice production, as appropriate.
- Complementary dissemination through mass media (i.e., "Krishi Kotha", Farm Broadcasting, posters, etc.) should be considered.
- Implementing agencies will be expected to participate in Uptake Forum meetings held approximately every three months in Dhaka.
- Documentation from PETRRA Sustainable Nutrient Management, Integrated Pest Management, Integrated Crop and Nutrient Management, Rice-Duck, or Integrated Crop Management subproject may be useful to applicants.

Locations: The subproject activities are expected to be implemented in at least three villages in one of the PETRRA focal areas.

Number of subprojects to be approved: up to six

Budget: Up to 18,000 GBP over 18 months

Duration: Up to July 31, 2004

***Issue 3*:** **Promoting Uptake of Innovations from Private Input Distributors to Resource Poor Farmers Rice Production Systems**

Background: Many rice system productivity innovations rely on the use of additional inputs (fertilizers, pesticides, weeders, pumps, and other equipment). Fertilizer and equipment dealers at both retail and wholesale levels are key players in the rice

production knowledge and innovation systems. Private for-profit firms are the most efficient suppliers of inputs and have a personal profit motive for promoting their products. While short term interests might provide an incentive for maximizing current sales, longer term interests of reputable input suppliers dictate the education of farmers in the use of the inputs to maximize productivity and profit, thus ensuring repeat sales and sustainable business. Collaboration between input suppliers and other extension services and farmer groups can improve the supply of knowledge and information services to farmers, especially as regard use of the purchased inputs. To-date, although several UP subprojects are based on commercial seed production and sales, the for-profit private sector is surprisingly lacking in the current set of UP Component subprojects.

Defining the issue: RPFs, because of their low individual purchasing power, are not the primary client base for most input suppliers. However, as a group RPFs constitute an important market for inputs, but need both better access to inputs and the knowledge and information on how to use such inputs most effectively. UP subprojects would explore mechanisms for enhancing collaboration between for-profit input suppliers and other institutions delivering services to RPFs. Subprojects must compromise neither the private sector entity's profit objective, nor the public sector's mandate to use public funds to address public goods issues of poverty alleviation and environmental sustainability.

Objective: to develop and demonstrate effective approaches and methodologies for collaborative relations between input suppliers and other organizations to promote innovation and uptake of technologies that rely on use of purchased inputs to improve the productivity and profitability of rice production systems of resource poor rice farmers.

Guidelines:

- Extension activities must be carried out with marginal, resource-poor, and tomorrow's poor farm families (BIDS definitions).
- Interventions must be clearly developed and implemented in consultation with these farm families.
- The subproject design proposed must include a clear statement of the extension approach and methodology to be employed (with credit given for innovative experimental approaches) and the technologies or innovations proposed to improve system productivity.
- Interventions should be cost-effective and potentially sustainable.
- All interventions should be environmentally friendly and gender sensitive in nature.
- Development of links to local resources (e.g., DAE, seed dealers, service delivery agents, etc.) for sustainability must be part of the plan.
- Training for technical staff may be included in the proposal.
- Complementary dissemination through mass media (i.e., "Krishi Kotha", Farm Broadcasting, posters, etc.) should be considered.

- Proposals should include linkages to research institutions or other sources of innovation and knowledge on rice production, as appropriate.
- Implementing agencies will be expected to participate in Uptake Forum meetings held approximately every three months in Dhaka.

Locations: The subproject activities are expected to be implemented in at least three villages in one of the PETRRA focal areas.

Number of subprojects to be approved: up to six

Budget: Up to 10,000 GBP over 18 months

Duration: Up to July 31, 2004

Annex G: Draft Terms of Reference for Special Studies

I. Beneficiary Assessment of Current UP Subprojects

Objective: To complete an independent assessment of farm level impact and attitudes towards uptake pathways subprojects.

Context: There has been considerable effort expended on reviews and reporting on experience and implementation of the initial set of uptake pathways action research subprojects, but evidence of results and outcomes from the subproject activities is largely anecdotal or linked to reporting on the activities and outputs. A more comprehensive and systematic assessment of the subproject outcomes is needed to confirm the effectiveness and efficiency of the methodologies being used.

There are some significant constraints to a study of UP subproject impacts. Subprojects have operated for only one or two years with methodologies that are still evolving. Target populations of direct participants are small and target populations of indirect beneficiaries are ill defined. Methodologies are similar, but vary from subproject-to-subproject. Technology options vary from subproject to subproject with proposed innovations more suited to some areas than others. Target areas are geographically dispersed

The assessment of outcomes must therefore be a relatively pragmatic and informal appraisal rather than a formal statistically valid survey. The Beneficiary Assessment methodology—though developed for national level surveys—is thought appropriate. A World Bank Good Practice Note describing this methodology was left with the PETRRA project.

Proposed Methodology: An independent socio-economist not associated with IRRI or the subproject implementing agencies with support of two to four field interviewers could undertake the study. The study team would need to meet with UP subproject implementing agencies (except for BRRI/TD and BRRI/GRS which do not have farmer level extension activities) to discuss subproject activities and objectives and obtain: a) locations and lists of names of direct participants and b) a list of one to three key technologies (i.e., varieties) the subproject has attempted to introduce.

The survey team would then visit each subproject location to interview farmers. This would require visits to 3-6 villages per implementing agency, except for the larger BRRI/ARD subproject for which the sample might be doubled to 6-12 villages. In each village the interviewers would select a random sample of approximately five direct participants and five neighbours who were not direct participants. (Note: The socio-economist and PETRRA might agree to a different sample number.) The interview schedule should be short to keep the study and analysis manageable.

Key Questions for Participants:

1. Did you participate in the UP subproject? Yes No
2. Does the participant's description of the program conform to that of the implementing agency? (i.e., is the participant fully aware of the program model and activities?) Yes Partially No

3. Do you know and understand the technology introduced by the subproject?
   Yes Partially No
4. Do you use the technology introduced by the subproject? Yes Partially No
5. How much rice land do you have? _____ And on how much do you use the technology introduced by the subproject? _____
6. Does the technology introduced by the project provide any benefit?

   Yes Partially No
7. Will you continue to use the technology introduced by the subproject?
   Yes Partially No
8. What was the level of benefit from adoption and use of the technology? (Attempt to quantify in Taka) _____
9. How many months of Rice Provisioning Ability does your family have?_____
10. Any other comments?

Key Questions for Non-Participants (Neighbours):

1. Did you participate in the UP subproject? Yes No
2. Do you know and understand the technology introduced by the subproject?
   Yes Partially No
3. Do you use the technology introduced by the subproject? Yes Partially No
4. How much rice land do you have? _____ And on how much do you use the technology introduced by the subproject? _____
5. Does the technology introduced by the project provide any benefit?

   Yes Partially No
6. Will you continue to use the technology introduced by the subproject?
   Yes Partially No
7. What was the level of benefit from adoption and use of the technology? (Attempt to quantify in Taka) _____
8. How many months of Rice Provisioning Ability does your family have?_____
9. Any other comments?

II. Uptake Pathways Study

Objective: To understand resource poor farmer's current (pre-PETRRA intervention) sources of knowledge and information for innovation in rice production systems.

Context: Farmers' many sources of knowledge and information drive innovation in their production systems. Typically farmers are constantly innovating based on their own ideas and information they obtain from other family members, other farmers (large, small, entrepreneurs, etc.), DAE, radio and TV, NGOs, farmer organizations, rice buyers, seed dealers, other input dealers, and others. Understanding the existing

or traditional knowledge sources for innovation (uptake pathways) will help PETRRA to interpret experiences and maximize learning from UP subprojects.

Proposed Methodology: A social scientist with an agricultural background would be required to carry out the study, which would be based on focal group discussions or other rapid rural appraisal methodologies to develop cases studies of farmers' knowledge and information sources in a sample of 20 villages (Note: Number to be confirmed by the socio-economist and PETRRA.). Sufficient time and interaction would be required to develop a clear picture of alternative sources of knowledge and information that induce innovation in rice production systems. The study would require a defined methodology to select informants from PETRRA's target group of resource poor farmers with 3-8 months of family Rice Provisioning Ability. A control group of larger farmers might also be interviewed for comparison.

Key Questions:

1. What innovations have been made in your family's rice production system over the past ten years? (Note: The socio-economist will have to confirm the length of period to be investigated. A longer period—up to a generation—might also be of interest, though recall may be a problem and conditions and institutions may have changed enough to make information on earlier uptake pathways of less value.) (Note: The interviewer will need to define innovation.)

2. From where did the information or impetus come to introduce this innovation?

3. Where do you currently get rice production-related information?

    a. On varieties?

    b. On soils and fertilizers?

    c. On pest and disease control?

    d. On markets?

    e. On irrigation and drainage?

    f. On other management practices?

4. What information do you need on rice production?

5. How can your information services be improved?

The consultant will synthesize information from farmers from the different villages in a report that inter alia assesses:

- The level of importance and farmers' confidence in different sources of innovation for rice production systems and

- Implications for PETRRA of resource poor farmers' information needs and preferences for sources of information.

Annex H: Draft Format for Quarterly/Final Reports

Organization: _____ **Reporting Period**: _____

Subproject Number: _____

Subproject Objective:

Outcome Indicators*:

Indicator	Target	Prior Report	Current Report	Comments
1. _____	____	_____	_____	_____
2. _____	____	_____	_____	_____
3. _____	____	_____	_____	_____

*Data not expected until later in subproject implementation.

Output Indicators:

Indicator	Target	Prior Report	Current Report	Comments
1. No. of direct participants*	____	_____	_____	_____
2. _____	____	_____	_____	_____
3. _____	____	_____	_____	_____
4. _____	____	_____	_____	_____
5. _____	____	_____	_____	_____
6. _____	____	_____	_____	_____

*Attach names and addresses/locations for new participants.

Activities/methodology:	Status	Comments
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

Innovations Introduced:

1. _____
2. _____
3. _____

Problems/Constraints:

General Status and Progress:

Note: Additional pages can be attached to provide additional information, if necessary.