PD-ABL-316

FORESTRY PLANNING & DEVELOPMENT PROJECT
Government of Pakistan-USAID

95281

END OF TOUR REPORT

CONTRACT NO. 391-0481-C-00-5021-00

Prepared by

Charles R. Hatch
Senior Policy and Management Advisor
and
Chief of Party

Tour Duration

June 1989 to July 1994

June 26, 1994

Winrock International

Technical Assistance Team

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EXECUTIVE SUMMARY

In 1989 I was selected as Senior Policy and Management Advisor and Chief of Party to lead a newly configured Technical Assistance Team. I was located in Islamabad with the Inspector General of Forests as my Pakistan counterpart.

This report is confined to activities which I directly influenced during the second phase of the Forestry Planning and Development Project. It is divided into three parts: Major Accomplishments; Impediments to Greater Success and Possible Solutions; and Lessons Learned. Within each part are key topics which span a spectrum of policy, planning, training, research and Technical Assistance Team and Grant Unit administration activities for which I had responsibility.

MAJOR ACCOMPLISHMENTS

Technical Assistance Team Management and Direction

Management - During the second phase of the Project the Technical Assistance Team was focused and driven by client priorities and needs. It functioned as a team and, as a result, it successfully helped the Office of the Inspector General of Forests and the provincial forest departments demonstrate an operational farm forestry program.

Direction - The Technical Assistance Team interpreted and encouraged the project implementation strategy to be extensive rather than intensive. As a result the Project acquired experience addressing the needs of a broad range of farmers who had varying management objectives and farm sizes, and who used different farming systems; and made use of extension staff with different backgrounds, experiences and extension methodologies.

Formalized Industrial Linkages

During preparation of the Technical Assistance Team's first annual work plan in 1989, a strategy was formulated to help create and expand markets for farm grown wood. The driving force behind this strategy was the farmers' stated objective that they were, in part, raising trees on their farms as an alternative cash crop. The strategy included nationwide industrial surveys of wood using industries; national and provincial wood producer-wood user conferences; support of wood use pilot trials in selected pulp and chipboard manufacturing facilities; inclusion of industrialists on tours of farm woodlots and farmer tours to industrial facilities; and strengthening and development of wood using industry associations.

Initiated NGO Involvement

The addition of the NGO competitive grants program to the Project was a positive enhancement that allowed it to impact organizations, groups of people and individuals who otherwise would have benefited from the Project to a much lesser degree. Two groups specifically impacted were those that would not normally be reached by forest department extension officers, and the resource-poorer members of the farming community.

Emphasized Development of Training Materials and Training

Training Materials - The Project developed numerous and varied training materials, in both English and Urdu, that will play a significant role in sustaining its impacts during the coming years.

Training - Short-term expatriate technical advisors provided training in social science, management and technical subjects that were identified as priority areas by the Pakistan Forest Institute and project staff. Training also targeted farmers and extension foresters in structured workshops and in informal, on-farm settings. The latter was the Project's most successful extension activity.

Strengthened Women in Forestry Programs

The Project proactively supported women and women's programs through the recruitment and hiring of women forest extension officers; and by planning, organizing, financially supporting and conducting Women in Forestry conferences. Leadership in involving women in extension forestry programs is being demonstrated by the NGO community.

IMPEDIMENTS TO GREATER SUCCESS AND POSSIBLE SOLUTIONS

Lack of an Institutional Strategic Planning Capability

If the Office of the Inspector General of Forests is to effectively provide strategic guidance to the forestry sector on policy issues and programmatic direction, it is important that a planning and analysis cell be established. The cell should be staffed with trained economists and policy analysts who would analyze and monitor change in policy and provide input for intraprovincial coordination. At present such a cell is not supported by government.

Recommended Solution - That a Planning and Analysis Cell be institutionalized at the federal and provincial levels.

Maintenance of Provincial Forest Department Control

Controlling individuals and controlling their work environment has traditionally been the role of forest department officers. The forest department's and the individual's response to the loss of control that accompanied their new role of helping individuals help themselves, in general, has been a slow and difficult but continuing transition.

Recommended Solution - That forest department control be further reduced by requiring that contractual payments to private nursery operators be made before the seedlings are removed from the nursery; by enacting new forest laws and administrative notices which remove control over the harvest, transport and sale of wood raw materials grown on farmlands; and by decentralizing decision making in collaboration with management training workshops and improved communication networks.

Minimal Emphasis on Management

Forest department activities focused on the attainment of tree planting targets rather than on growing tree crops. The Project's lack of emphasis on management of tree crops negatively influences the department's extension focus, its tree crop management training and its concern for research.

Recommended Solution - That emphasis on tree crop management be increased by relating forestry extension targets to individuals and groups of farmers visited, and not to a specific project activity such as tree planting; and by placing research funds for farm forestry at the disposal of the extension forester to purchase services from research institutions.

Staff Training Limitations

The B.Sc. and M.Sc. professional forestry training programs emphasize training of forest officers rather than educating resource managers. Since these programs tend to emphasize control and its importance, rather than management and problem solving, the transfer of new approaches to the solution of old problems is delayed.

Recommended Solution - That Pakistan Forest Institute's degree program operational objective be the education of resource managers; and that it concentrate on M.Sc. and Ph.D. education.

Budget Limitations

The benefits that the Project derived from providing greater mobility to staff and by computerizing offices were reduced because the appropriation of funds did not take into account the additional operating costs of the modernized system.

Recommended Solution - That administrative policies support financial appropriations that are assigned on the basis of actual estimated costs.

LESSONS LEARNED

The lessons learned are provided in the context of farm forestry project design considerations. They are:

Use of Targets - Design projects to address not only project needs at time of start up, but also needs which may occur if the project is successful implemented.

Informal Training - Although thousands of person-hours of training were delivered in structured workshops, informal farmer training was the Project's most successful extension activity.

Markets - The understanding and reporting of market linkages is an essential component of a farm forestry extension program.

Importance of Industrial Clients - Wood user-wood producer linkages potentially provide nearly an unlimited number of opportunities to sustain farm forestry programs.

Affecting Change in Forest Policies - Policy change that is affected by the institutionalization of programmatic direction are as important and sustainable as those forced through revisions in laws and regulations.

Use of Short-Term Expatriate Technical Assistance - Short-term expatriate technical assistance helps long-term technical assistance team members better understand and present complex technical issues to both the host government and to donor personnel.

Role of Long-Term Expatriate Technical Assistance - Long-term expatriate advisors provide a more risk-free environment that makes it possible for host country decision makers to consider a broader range of implementation alternatives and take bolder decisions.

ACKNOWLEDGEMENTS

It was a pleasure to serve on and lead the Phase II Winrock International Technical Assistance Team. All of the team members; e.g. the expatriate advisors, the patriate advisors, the administrative staff, the clerical staff, the drivers and the facilities maintenance staff, played special roles in helping me understand and function effectively in Pakistan.

Throughout my assignment Abeed Ullah Jan, Inspector General of Forests, served as my government counterpart. During this period I may have been the only expatriate forestry advisor in Pakistan that had total continuity with respect to the counterpart position, and I benefited greatly from it. The unwaivering support for the Forestry Planning and Development Project by the Inspector General of Forests made my job, and everyone's job, easier.

Kh. Hameedullah served, directly or indirectly, as the USAID Project Officer during my tenure on the Project. I gained greatly from his open, frank and insightful advice and guidance. His priority never deviated from making the Forestry Planning and Development Project, USAID's best project. This cornerstone was the single most important factor in helping me to help the Project achieve its objectives.

It is impossible to list all the collegial relationships that I formed while working in Pakistan. They include Dr. Siddiqui and his faculty and scientists at PFI; Mr. Rana Rafiq Ahmed, Dr. Wani, Mr. Aziz, and Imtiaz in the O/IGF; provincial forest officers and staff; farmers; and industrialists. Each of them played a role in helping me focus on actions that were relevant to Pakistan and the Project.

Through much of my tenure in Pakistan, Melanie Craig was at Headquarters to track down material, respond to requests and remind technical staff of tasks yet to be completed. Without her able assistance our isolation from Headquarters would have been much greater.

I will always retain memories of the friendships I have formed in Pakistan. The friendships were the extra benefit I derived from a very rewarding professional experience. Thanks.

Charles R. Hatch

END OF TOUR REPORT

Charles R. Hatch
Senior Policy and Management Advisor & Chief of Party
June 1989 - July 1994

INTRODUCTION

Background

The second phase of the Forestry Planning and Development Project's contract with Winrock International began March 1, 1989. Included as a part of that contract was a completely reconfigured, and new, Technical Assistance Team. I was selected as Senior Policy and Management Advisor and Chief of Party. The terms of reference for the position are described in Appendix A. I was located in Islamabad and, as outlined in the terms of reference, my counterpart in the Government of Pakistan (GOP) was the Inspector General of Forests. In April of 1989 I visited the project on a 5-week TDY. That TDY provided me an opportunity to interact with outgoing Technical Assistant Team members, USAID staff and GOP personnel.

When I arrived in Pakistan on June 19, 1989 to begin my assignment, all of the expatriate members on the previous Technical Assistance Team had departed. Fortunately, that Team's capable and dedicated office staff remained. During the course of the next six months, the Technical Assistance Team was reestablished.

Staffing Structure and Function

Expatriates filled all of the advisory positions on the initial Technical Assistance Team. Advisory positions on the Phase II team were balanced between overseas and local professionals. I was directly involved in, and responsible for, the selection of individuals in these positions. The Technical Assistance Team was fully staffed and operational by March, 1990.

In 1992 Winrock International received a project-financed grant from USAID, to operate a competitive grants program for Nongovernment Organizations (NGOs) that would complement project activities and objectives. This program was structured as a partially autonomous unit within Winrock International's Technical Assistance Team office. I was responsible for both the administration of the Technical Assistance Team and the NGO Grant Unit. Appendix B lists the members of the Phase II Technical Assistance Team and the NGO Grant Unit, and their period of assignments.

Organization of Report

This is an End of Tour report and not the final project report. The latter is forthcoming and, drawing upon the end of tour reports of all project advisors, will focus on every aspect of the Forestry Planning and Development Project from its inception to its end.

This End of Tour report is largely confined to activities which I directly influenced during the second phase of the project. It is divided into three parts: Major Accomplishments; Impediments to Greater Success and Possible Solutions; and Lessons Learned. Within each of these parts I organized the report by key topics. These topics span a spectrum of policy, planning, training, research and Technical Assistance Team and Grant Unit administration activities since my responsibilities encompassed them all. Appendix C lists the documents which I individually, or in collaboration with others, prepared.

MAJOR ACCOMPLISHMENTS

Provided Technical Assistance Team Leadership

Management - During the second phase of the project, the Technical Assistance Team was focused and driven by client priorities and needs. Clients were defined as tree farmers, industrial farm wood users, provincial forest department staff, the Office of the Inspector General of Forests and USAID. Our dominate objective was to help provincial forest department extension staff serve the needs of tree farmers and industrial farm wood users. This focus was maintained through the timely preparation and implementation of annual work plans which structure activities to meet this objective. Within this objective, policy, training, research and technical assistance needs were identified and addressed.

Most important, the Technical Assistance Team functioned as a team, provided leadership through its actions, and focused on solving problems and facilitating the implementation of project initiatives. This was possible only because communication channels were continuously maintained between team members, and between the team and all of its clients.

As a result, the Technical Assistance Team successfully helped the Office of the Inspector General of Forests and the provincial forest departments to demonstrate an operational farm forestry program, and it helped facilitate and support activities desired by the GOP, USAID and the provinces.

Direction - The Phase II Technical Assistance Team interpreted and encouraged the project implementation strategy to be extensive rather than intensive. Since the project operated across large geographic areas, provincial extension staff were encouraged to seek out and work with farmers, within those areas, who were interested or were easily motivated to plant trees on their farms. This is in contrast to an intensive strategy that focuses project resources on a relatively small geographic area and attempts to involve all farmers within that area.

This extensive strategy resulted in the project acquiring experience in:

1. addressing the needs of a broad range of farmers who had varying farmer management objectives and farm sizes, and who used different farming systems; and

2. using extension staff with different backgrounds and experiences who applied a variety of extension methodologies.

As a result, the Office of the Inspector General of Forests and the provincial forest departments have gained operational experience implementing a farm forestry program capable of impacting the forestry sector on a provincial and national scale.

In an extensive program, the question of its impact on risk averting, resource-poorer farmers frequently arises. The Technical Assistance Team explicitly helped the project address equity by striving to provide all farmers with easy access to tree seedlings, information, and technical assistance regardless of their status or requirements. Although not always achieved, the project moved in this direction and this objective is being attained.

Formalized Industrial Linkages

Although linkages between farmers and farm wood using industries was mentioned in the Project Paper and PC-1, little attention was paid to this activity in the first phase of the project. During preparation of the Phase II Technical Assistance Team's first annual work plan, a strategy was formulated to help create and expand markets for farm grown wood. The driving force behind this strategy was the farmers' stated objective that they were, in part, raising trees on their farms as an alternative cash crop. If farm forestry was to be successful and sustainable, this farmer objective had to be realized.

A strategy was developed to formalize linkages between farmers and farm wood using industries. It included:

1. nationwide industrial surveys of wood using industries in Pakistan to help everyone better understand wood raw material flows, uses and magnitudes;

2. national and provincial farm wood producers - farm wood users conferences to facilitate dialogue between producers and users, and to identify new and expanding market opportunities for farm grown wood;

3. support of wood use pilot trials in selected pulp and chipboard manufacturing facilities;

4. inclusion of wood using industrialists in tours of farm woodlots with farmers, and farmer tours to industrial facilities to observe wood processing procedures and requirements, as a formal part of provincial forest department's extension and outreach program; and

5. strengthening and development of wood using industrial associations that might support and sustain farm wood producer - user linkages.

All of these initiatives were undertaken and, collectively, have helped to institutionalize linkages between farm forestry and Pakistan's farm wood using industries. Appendix D identifies the wood use studies which were undertaken.

Initiated NGO Involvement

The successful implementation of the NGO competitive grants program was a positive addition to the project. Initially, it was unclear whether or not Pakistan had a sufficient number of NGOs that were concerned about the environment, or were willing to include forestry activities in their rural development agendas, to make an effective grants program viable. Two years later, the overwhelming response to this question is now yes.

More importantly, this activity allowed the project to impact organizations, groups of people and individuals who otherwise would have benefited from the project to a much lesser degree. Two groups were specifically impacted; those that would not normally be reached by provincial forest department extension officers, and the resource-poorer members of the farming community. Examples of the former include:

1. students and young adults associated with youth programs;

2. community rural development programs; and

3. women's rural development organizations.

The opportunities of, and benefits from, formally involving NGOs in future environmental awareness and forestry conservation programs has been well demonstrated by this project. Because of the NGO grants, project impacts are more widely distributed throughout rural communities.

Emphasized Development of Training Materials and Training

Training Materials - Training of individuals, and of trainers, has been a major thrust and accomplishment during the second phase of the project. Thousands of persons were trained including farmers, industrial employees, forest department staff, scientists, teachers and students. Training materials were needed to facilitate and increase the effectiveness of this training. Appendix E lists the numerous and varied training materials that were prepared. They include:

Books - 4
Technical Notes - 14
Tree Farmers Guides - 21
Foresters Guides - 4
Project Manuals - 2
Lecture Notes - 10
Training Manuals - 19
Training Videos - 2

These materials will play a significant role in sustaining the impact of the FPD Project during the coming years. Because many are available in both English and Urdu, they can be read and understood by a significant portion of Pakistan's population.

Training - Short-term expatriate technical assistance was used to strengthen, and broaden, degree and non-degree training programs for Pakistan's forest department staff. In all cases, trainers were assigned counterparts and prepared, in advance, training materials for use by themselves and their counterparts, and for distribution to the trainees. Training focused on priority social science, management and technological areas identified by Pakistan Forest Institute and by project staff.

These training programs presented counterparts and trainees an opportunity to broadened their technical approaches to, and strengthen their technical understanding of, resource management alternatives in selected areas. These changes will be institutionalized to the degree that they influence on-going curriculum reforms and mid-career officer training programs. I believe they will.

In terms of numbers trained, most training targeted farmers and extension foresters in an informal, on-farm setting. The training was of one-day duration and took place in farm woodlots, but relied heavily on the extension materials prepared by the project as training aids. Although the FPD Project conducted thousands of person-hours of training in structured workshops and seminars, informal farmer training was its most successful extension activity.

Strengthened Women in Forestry Programs

Women make up half of the rural population in Pakistan, yet the provincial forest departments do not have any women extension officers. Given Pakistan's culture and social customs, this presented a significant obstacle to the project's extension and outreach programs.

The project made significant inroads in this area through its initiatives and proactive support of women and women programs. In 1990, to accelerate the incorporation of women into project activities, the Technical Assistance Team recruited two women who had recently graduated from Pakistan Forest Institute to serve as extension foresters. In collaboration with the Punjab Forest Department, one was assigned to the area around Taxila and one to the area around Rawalpindi. Although the forest department only tacitly accepted, and never formally supported, these women they significantly increased women's program activities. Their most significant accomplishment was to demonstrate to the forest department that women could effectively function as forest extension officers. Unfortunately to date, these women remain the only cases in Pakistan where women were assigned to provincial forest department extension staff positions. Both have left the project, but one is now in a permanent career track position as Lecturer in Forestry at the Pakistan Forest Institute. Her selection was due, in part, to the experience she gained as an extension forester on the FPD Project. The other returned to school and recently graduated with an M.Sc. in Forestry from the Pakistan Forest Institute.

The project's initiative in planning, organizing, financially supporting and holding Women in Forestry conferences significantly helped focus attention on the need to incorporate women into field positions within the forest department extension forestry programs. One conference was held in 1991 and one in 1994.

Leadership to involve women in extension forestry programs has largely been demonstrated by the NGO community. Nearly all women graduating from the Pakistan Forest Institute with forestry degrees have been recruited, and many have been employed, by NGOs in Pakistan. In 1992 the project expanded its focus to include NGO programs and the NGO Grant Unit took the initiative to recruit a women monitoring and evaluation officer as part of its staff. This

action greatly increased the Grant Unit's capacity to assist women focused NGOs to include forestry components in their development programs and training activities.

IMPEDIMENTS TO GREATER SUCCESS AND POSSIBLE SOLUTIONS

Lack of an Institutional Strategic Planning Capability

One of the functions that the Office of the Inspector General of Forests (O/IGF) performs is to provide strategic guidance to the nation and its provinces with respect to policy issues and programmatic direction. To effectively carry out that function, it is important that the O/IGF have a planning and analysis cell staffed with trained economists and policy analysts. Ideally, similar cells would also exist at the provincial level to facilitate national coordination, analysis and monitoring activities, and to strengthen policy analysis of solely provincial issues. At present such cells do not exist.

The absence of this capability hinders the O/IGF from performing one of its important functions in the following ways.

1. Affecting and Monitoring Change in Policy - Although the O/IGF was instrumental in revising the Forest Policy for Pakistan in 1991, legislative changes have yet to be made that support the newly outlined policies. Within the O/IGF a planning and analysis cell is critically needed to assist in the drafting of legislation to affect policy change and, equally important, to monitor its impact so the effectiveness of new policies are measured and understood.

2. Intraprovincial Coordination - Each province is administering one, and generally several, social forestry schemes. Lack of coordination between, and within, provincial social forestry schemes limits the ability of the O/IGF and the provinces to capitalize on the synergistic effects of these programs, and to incorporate lessons that have been learned into future programs.

Recommended Solutions

1. Institutionalize a Planning and Analysis Cell at the federal level within the O/IGF. The cell should be:
   a. staffed by trained forest planners, economists, and policy analysts with strong quantitative skills;
   b. responsible for critically analyzing forest policies, monitoring their impacts, and recommending policy and legislative changes at the Federal level;

c. responsible for monitoring and analyzing national forestry sector development schemes and formulating lessons learned from them; and
d. responsible for providing analytical justifications for PC-1's and appropriation requests.

2. Institutionalize Planning and Analysis Cells at the provincial level in the Office of the Chief Conservator of Forests. The provincial cells would have a mandate similar to the cell at the federal level but their analytical focus would be on provincial issues.

Maintenance of Provincial Forest Department Control

Provincial forest department extension staff were trained to be officers and, for the most part, have served most of their careers as officers. Being an officer, and being in control, is what they have always done. Helping private individuals help themselves as social change agents in a rural development program was a new role. The forest department's and the individual's response to the loss of control that accompanied this new role has generally been a slow and difficult, but continuing, transition. Control is highlighted by the following examples.

1. Giving Advice Rather Than Orders - The extension forester suggests alternatives to farmers and industrialists rather than ordering farmers and industrialists to take a specific action. Advice is not always followed but, historically, orders have been. The inability of forestry extension staff to control the private sector's actions results in lack of interest and understanding of that client's needs. Having the forest department's performance dependent on a client's decision is a difficult transition for both the individual and the institution.

2. Bureaucratic Procedures - Provincial forest departments have used, and continue to use, permit systems to control the harvest, flow and sale of wood. Near traditional forest areas, the permits apply to wood grown on both public and private lands. Elaborate bureaucratic procedures were developed to "manage" the production and distribution of seedlings from private farm nurseries. Initially, the forest department was the sole purchaser of these seedlings, and their contracted price equaled the production cost of the seedlings. Current policies encourage private nursery operators to sell their seedlings to individuals. Under this policy, the forest department enters into a contract with a private nursery operator to produce a fixed number of seedlings at a rate that only partially meets their production costs. The

nursery operator is expected to charge the individual who plants the seedlings the difference between his production costs and the contracted price of the seedlings. However, this does not happen because the implementation of the contractual procedures limits the nursery operator's ability to collect partial payment for seedlings which have been contracted by the forest department. As a result, private farm nurseries which were producing high quality seedlings are rapidly disappearing.

3. Monitoring and Evaluation - Monitoring and evaluation systems are developed and implemented, almost exclusively, to insure compliance with forest department procedures. As a result, they are fault finding mechanisms rather than management tools to identify and solve problems. Thus, forestry extension staff have little incentive to help clients find new ways to solve problems whose solutions vary from standard procedures. Therefore, the extension forester's effectiveness and value is greatly reduced.

Recommended Solutions

1. The forest department must make contractual payments to private nursery operators before the seedlings are removed from the nursery. This would greatly reduce the bureaucracy associated with the production and distribution of tree seedlings raised in private nurseries. In doing so, it would allow private nursery operators the opportunity to capture their full cost of producing tree seedlings. This cost could be borne in part, or totally, by the individuals planting the seedlings.

2. Enact new forest laws and administrative notices which remove provincial forest department control over the harvest, transport and sale of wood raw materials grown on farmlands.

3. Decentralize provincial forest department decision making by introducing new managerial approaches through training workshops, and by implementing improved communication networks, i.e. telephone (mobile and line) and fax links. The management training should be done by professional trainers, and forest department staff should participate in the training as a management team (CCF through RFO).

Minimal Emphasis on Management

Throughout the life of the Forestry Planning and Development Project, the forest department focus was on the attainment of tree planting targets. Tree planting targets were achieved beyond anyone's initial expectations. But, by focusing attention almost exclusively on tree planting, the project nearly missed an opportunity to effectively link wood producers and wood users; a linkage that will sustain farm forestry activities tomorrow and beyond. Most importantly, that linkage shifts the objective of farm forestry from planting trees to growing trees, and growing trees concentrates the focus on issues associated with the management of tree crops. The project's lack of emphasis on management of tree crops caused the following problems.

1. Institutional Focus - Emphasis on tree crop management places entirely different demands on a forest department. Until the forest department's institutional mentality is changed from one of protection and extraction to one of management, the forestry sector has little need for revised forest policies, research and the like.

2. Tree Crop Management Training - Because forest departments have not generally emphasized tree crop management, forestry extension staff lack woodlot management training. Until the client demands that its staff has tree crop management skills, training institutions are less likely to provide them.

3. Importance of Research - A major constraint to applicable, client-focused research is the lack of interest in management on the part of the client. Forest departments continue to be the major client of public forest research institutions. Until extension forestry staff are looking for new solutions to problems, they will have little interest in helping the researcher set research priorities and transfer research results. Emphasis on tree crop management will force forest extension staff to be problem solvers.

Recommended Solutions

1. Relate forestry extension targets to individuals and groups of farmers visited, and not to a specific project activity such as tree planting. The extension forester must be able to, and rewarded for, work on farmers problems (nursery management, tree establishment, pruning, thinning, insect and disease control, marketing, etc.) rather than forest department targets. Tree planting will be sustained by a successful tree farmer.

2. Place most of the research funds for farm forestry at the disposal of the extension forester and not with the research institution. The extension forester should only be allowed to use those funds for the purchase of services from research organizations. This would allow extension forestry staff to set research priorities and would help insure the transfer of research results.

Staff Training Limitations

Nearly 100 percent of the provincial forest department officers received their initial B.Sc. and/or M.Sc. professional forestry training at Pakistan Forest Institute, Peshawar. Historically, the objective of government training institutes like this one has been to train forest officers rather than educate resource managers. Pakistan Forest Institute is no exception. Unfortunately, officer training tends to emphasize control and its importance, rather than management and problem solving. One way this impacts Pakistan's forestry sector is to delay the transfer of new approaches to the solution of old problems. Social forestry programs in Pakistan introduced the concept of participatory management of forest resources to extension foresters. These officers have been, and continue to be, transferred from forestry extension activities to territorial activities. Unfortunately, the participatory management methods that are used extensively in farm forestry have been slow to be incorporated into the management of forests under territorial jurisdiction. If emphasis were placed on educating resource managers, it might hasten the transfer of lessons learned from one forestry activity to another.

Recommended Solutions

1. Make the operational objective of the Pakistan Forest Institute's B.Sc. and M.Sc. programs the education of resource managers. This could be accomplished by implementing the proposed revised curriculum that eliminates outdated training activities and expands the focus on management course work, and by requiring that all students satisfy prerequisites so they enter the two year program with comparable academic backgrounds in social, physical and biological sciences, and math. The latter may require that the program's duration be extended by six months to a year.

2. As rapidly as provincially located universities can develop B.Sc. forestry programs, concentrate Pakistan Forest Institute's resources exclusively on M.Sc. and Ph.D. education. Its mission would be to prepare scientists and faculty for employment in research institutions and universities, to produce specialized resource managers for careers in forest departments, forest industries and other organizations, and to conduct

forestry research that addresses national priorities. Providing organizations with foresters trained at the B.Sc. level would become the sole responsibility of provincially located universities.

Budget Limitations

The project provides to the extension staff within the forest departments an added degree of mobility (vehicles), and partial automation (computerization) of some of their extension program offices. With this mobility, extension staff were able to service much larger areas, geographically, than their territorial counterparts in the department. Unfortunately, the benefits that the project derived from this added mobility and office automation were reduced because the provincial appropriation of funds did not take into account the additional operating costs of this modernized system. Operating funds must be appropriated on the basis of estimated costs if forest departments expect to achieve their stated program objectives.

Recommendations

Administrative policies support financial appropriations that are assigned on the basis of actual estimated costs. Mobile extension staff do not have the same operating budget requirements as territorial staff working a beat, a range or a division. If forest departments are to benefit from office automation and enhanced communication networks, the added costs of maintenance, repair and supplies must be included in the operating budgets.

LESSONS LEARNED

The end-of-tour reports prepared by Gary Naughton, and to a lesser degree by George Blake and the advisors associated with the Phase I Technical Assistance Team, overviewed numerous issues that can be cast into a "lessons learned" format for the project. The final project report will contain a composite of the lessons learned for the project from all of these reports.

The list of lessons learned that are given below relate to my end-of-tour report. They are stated in the context of farm forestry project design considerations.

Use of Targets - In forestry bureaucracies of Asia, project targets specify the direction of the program. If targets are trees planted, extension personnel undertake activities which are needed to plant trees. That translates narrowly into nursery and tree planting activities. Time spent by an extension forester helping a farmer manage a tree crop that was planted in an earlier period, is not planting new trees so

time is not targeted for this activity. It is important that farm forestry projects be designed to manage as well as plant tree crops. In successful projects, the time which extension foresters will need to spend providing farmers with technical information that is needed to grow trees, will exceed the time they spend motivating farmers to plant trees. Successful tree farmers plant trees. So projects should be designed to not only address project needs at time of start up (activities associated with the planting of trees), but also needs which may occur if the project is successfully implemented (activities associated with the management of tree crops).

Informal Training - Training is generally couched in the formal context of structured workshop, seminar and course work programs. In farm forestry programs, activities associated with conducting farmer training in the informal, on-farm context as used in extension and outreach programs must be legitimized. The Forestry Planning and Development Project spent thousands of person-hours conducting structured workshops, seminars and conferences, yet the informal farmer training was its most successful extension activity. The project was, on occasion, criticized because it didn't emphasis "traditional" training programs of several days duration for farmers. If farmer training is a major project objective, training programs and formats must lend themselves to the clients schedule. Otherwise, farmers who attend multiple-day, highly structured trainings will tend to come from the population of farmers who are absentee landowners, relatively resource rich, and more formally educated.

Markets - In farm forestry programs, from the start, forest industry needs to be considered a project client. Too often emphasis in placed solely on farmers (wood producers), and wood users (industries) are ignored; yet the key to institutionalizing private forestry is in strengthening the industrial based wood demand and market infrastructure. Although motivation results in trees being planted, markets sustain farm forestry activities and tree planting over the longer term. The understanding and reporting of market linkages is an essential component of a farm forestry extension program.

Importance of Industrial Clients - Wood user-wood producer linkages potentially provide nearly an unlimited number of opportunities to sustain farm forestry programs. Activities which should be considered, while designing farm forestry programs that could help forest industries strengthen their ability to affect linkages, include:

- access to credit for forestry activities and for renovation of manufacturing facilities;

- more extensive research to support industrial forestry needs; and

- formation of a federation of industrial commodity associations at the national level (similar to the National Forest Council of the U.S.) for the purpose of promoting private forestry. Such a federation could give high level recognition to the private forestry sector as a national leader in self-help programs, and provide a long-lasting institutional framework for the sponsorship of tree-farming.

Affecting Change in Forest Policies - The USAID Project Paper envisioned that the project, through the Office of the Inspector General of Forests, would be proactive in formulating and directing a farm forestry policy agenda for Pakistan. This direction was commonly interpreted to imply that a revised forest policy for Pakistan would be formulated, and legislation would then revise existing laws so new administrative regulations could be issued. The policy has been revised, but laws have not yet been passed to affect its implementation. Because no new laws have been passed, many individuals have questioned whether or not Pakistan's forest policy changed as a result of the project. The formal enactment of laws change stated policy. However, the Office of the Inspector General of Forests, through the Forestry Planning and Development Project, proactively affected Pakistan's farm forestry policy agenda through the institutionalization of farm forestry programs within provincial forest departments. Throughout all provinces, farm forestry activities now are being formally incorporated into forest department program objectives, establishment appropriations, and permanent staffing structures. Participatory forestry methods are standard practice within farm forestry programs, and farmer-wood industry linkages are viewed as critical farm forestry components. This is a significant forest policy change that evolved from a programmatic activity. During project design, actions needed to institutionalize a project's activities should be consciously planned with the intent to affect policy. Sustainability, generally, is better served through institutionalization than it is through forced action.

Use of Short-Term Expatriate Technical Assistance - Short-term expatriate technical assistance is frequently used to undertake specialized studies and to train individuals and trainers. An equally important use, however, is to help long-term technical assistance team members better understand complex technical issues, and present them to both host government and donor personnel. In the absence of this use, numerous opportunities to implement project activities in more creative manners are lost.

Role of Long-Term Expatriate Technical Assistance - Because of the punitive nature of bureaucracies, host government officials generally act conservatively with respect to project implementation decisions. Long-term expatriate advisors provide them a more risk-free environment by being there to take responsibility for activities which go astray. Thus, the range of implementation alternatives that are considered is greater, and bolder decisions tend to be made.

APPENDICES

APPENDIX A

TERMS OF REFERENCE

Senior Policy and Management Advisor & Chief of Party

Principal Duties

The principal duties of this position include, but are not limited to, the following:

The counterpart for this position is the Inspector General of Forests (IGF). Develop a strong working relationship with the Inspector General of Forests (IGF) to advise on innovative methods of modernizing the forest department so that it will be able to better establish priorities in allocation of resources, training, and personnel. A major aspect of this will be assistance in the planning, organization, and development of Natural Resource Planning institutions. The consultant will utilize the GOP National Agricultural Commission Report and USAID policy statements regarding development of the public and private sector and management of natural resources for this activity.

Specific Tasks

1. Assists the Office of the Inspector General of Forests (O/IGF) and his staff in the following functional areas:

   a. Develops and monitors compliance with a National Forest Policy and Management Plan for forestry and natural resources, emphasizing private sector development of raw material production as well as processing capacity. Training of both government foresters as well as the private sector entrepreneurs will be high priority.

   b. Develops statistical reports of domestic, public and private wood production and estimates of imports of primary wood products into the country each year. Use these reports to determine trade and the interactions of various policies on the development of the forestry sector in Pakistan.

   c. Establishes, coordinates and encourages provincial and federal forest departments to collaborate with the private sector forest products industry to ascertain requirements of raw material and potential markets within Pakistan and internationally.

d. Carries out analyses of the Forest Department's Annual Programs to provide program direction, and assist in justification of the recurrent and development budgets.

2. Develops strong collegial relationships with other GOP officials that have major responsibilities in natural resources planning and policy implementation in order to promote cooperation and coordination in the planning process.

3. Develops and supervises a series of seminars on subjects of national concern in the forestry/natural resources utilization sector. It is envisioned that a substantial number of short-term consultants will be involved in these seminars.

4. Assists the O/IGF and the Pakistan Agricultural Research Council in awarding grants to public and private research organizations to undertake research on farm and energy forestry topics.

5. Ensures that adequate terms of reference are prepared for all short-term expert advisors required for this project and that the long-term Technical Assistance Team, continuing consultants, and single assignment consultants working in conjunction with the GOP, combine to fulfil the terms of reference and the specific tasks of all personnel described in the project scope of work.

6. Monitors and evaluates project progress and recommends modification in approach as appropriate.

7. Supports USAID Mission in coordinating the Forestry Planning and Development Project with other related Mission projects in the agriculture and energy sectors.

8. Participates in, and contributes to, USAID Mission policy dialogue and discussion with the GOP to achieve coordination among forestry, energy, and agricultural policies, programs and institutions.

9. Carries out Chief of Party functions:

   a. Provides leadership for the long-term team, continuing consultants, and single assignment consultants;

   b. Assists GOP in coordinating all activities of the Project which involve U.S. contractor presence;

   c. Schedules and supervises Technical Assistance Team activities to complete the Scope of Work by September, 1994;

d. Assists in developing annual work plans that support the Project Implementation Plan; and,

e. Assists the GOP and USAID in updating the Project Implementation Plan as necessary.

10. Keeps USAID informed of the activities and progress of the project and the technical assistance team.

APPENDIX B

TECHNICAL ASSISTANCE TEAM AND NGO GRANT UNIT MEMBERS

Technical Assistance Team

Advisors

Charles R. Hatch	Sr. For Policy & Mgmt Adv.	6/19/89- 7/31/94
Gary G. Naughton	Field Demonstration For.	7/10/89- 5/31/93
George M. Blake	Training & Research Adv.	9/04/89- 8/31/92
Mahmood Iqbal Sheikh	For Mgmt Specialist	2/25/90- 9/30/94
Tahir Wadood Malik	Training & Comm Coord	11/19/89- 9/30/94

Technical Staff

Mamoona Muhammed Wali	Extension Forester	11/18/90- 5/03/92
Nighat Mansoor	Extension Forester	11/18/90- 7/16/91
Gohar Rehman	Data Base Cell Off	8/18/91- 4/29/93
Ayaz Mehmood	Data Base Cell Off	8/18/91- 5/15/92
Ghulam Q. Shah	Data Base Cell Off	6/15/92-12/17/92
Raja M. Omer	Data Base Cell Off	11/15/92- 9/30/94
Shauket Ali Khan	Data Base Cell Off	12/18/92- 4/29/93

Office Staff

Imtiaz A. Sheikh	Admin Officer	5/27/85- 4/09/92
Obaid-ur-Rehman	Accountant	4/12/92- 9/30/94
Khalid Naseer	Secretary	8/05/85- 6/30/91
Haroon Abassi	Secretary	8/01/91-12/30/91
Farman Ullah	Secretary	1/13/92- 2/18/92
M. Afzal Khan	Secretary	5/03/92- 5/05/94
Muhammad Din	Secretary	5/24/94- 9/30/94
M. Munir Malik	Secretary	3/29/87- 9/30/94
M. Aqeel Abbasi	Secretary	4/15/90- 9/30/94
Mohammad Parvez	Chauffeur	6/02/85- 9/30/94
M. Ibarat	Chauffeur	2/01/87-10/21/89
Nazar Shabarti	Chauffeur	10/22/89- 9/30/94
Munir Ahmed	Chauffeur	5/08/88- 9/30/94
Feroze Masih	Janitor	5/27/85- 9/30/94
Masood Alam	Maintenance Engineer	5/27/85- 9/30/94
Muhammad Alam	Gardener	5/27/85- 9/30/94

NGO Grant Unit

Management

Ahmed S. Bokhari	Grant Unit Mgr	6/22/92- 9/30/94

Technical Staff

Qasim M. Ahmed	M&E Officer	11/15/92- 9/30/94
Farhat Naseer	M&E Officer	12/15/92- 9/30/94

Office Staff

Haroon Abassi	Secretary	7/15/92- 9/30/94
Ch. Rashid Ahmed	Chauffeur	3/01/93- 9/30/94
Irfan Masih	Janitor	9/08/92- 9/30/94

APPENDIX C

DOCUMENTS PREPARED BY C.R. HATCH

Journal Articles

Iqbal, M., J.A. Moore and C.R. Hatch. 1992. Estimation of crown biomass production Populus nigra Italica Muench in Pakistan. Pakistan Journal of Forestry 42(3):118-129.

Omer, R.M., S.A. Khan and C.R. Hatch. 1992. Private farm nurseries in Punjab and NWFP. Pakistan Journal of Forestry 42(4):180-190.

Technical Documents

Naughton, G.G. and C.R. Hatch. 1991. Thinning block plantations. Forestry Planning and Development Project, Technical Note No. 7, 8 p. plus charts.

Sheikh, M.I., M. Mustafa and C.R. Hatch. 1991. The effects of three different sized polythene tubes on Eucalyptus camaldulensis seedling development. Forestry Planning and Development Project, Research Report No. 2, 4 p.

Naughton, G.G. and C.R. Hatch. 1992. Measuring farm grown trees. Forestry Planning and Development Project, Technical Note No. 8, 9 p.

Sheikh, M.I. and C.R. Hatch. 1993. Expected returns from farm grown trees. Forestry Planning and Development Project, Foresters Field Guide No. 4, 4 p.

Omer, R.M., S.A. Khan and C.R. Hatch. 1993. A study of farm nurseries in Punjab and NWFP. Forestry Planning and Development Project, Research Report No. 5, 27 p.

Van Den Beldt, R., C. Hatch, C. Sastry, J. Raintree, S. Ghosh, N.C. Saxena and D. Garrity. 1994. Farm forestry comes of age-the emerging trend in Asia. Farm Forestry News 6(2):1,4-7.

Proceedings

Bentley, W.R., C.R. Hatch and J.C. Gordon. 1994. Impact of forest resources and forest policies on agricultural productivity and environmental quality. In Proceedings of an International Symposium titled World Agricultural Resources in the 21st Century: Environmental Quality - Natural Resources Technologies, May 5-6, 1993, Winrock International, Morrilton, Arkansas, p. 140-157.

Hatch, C.R. and G.G. Naughton. 1994. Using industrial wood markets to sustain farm forestry: the Pakistan experience. In Proceedings of an International Workshop titled Marketing of Multipurpose Tree Products, December 6-9, 1993, Baguio City, Philippines, (In Press).

Implementation Analyzes

Naughton, G.G. and C.R. Hatch. 1990. Social Forestry under the Forestry Planning & Development Project - joining hands with Social Welfare Programs for general welfare. Background Paper. Forestry Planning and Development Project. 5 p.

Naughton, G.G. and C.R. Hatch. 1990. Review of Kissan Nursery Operation Policies under the Forestry Planning & Development Project. Discussion Paper. Forestry Planning and Development Project. 5 p.

Hatch, C.R. 1990. Development of Forest Science Education in Pakistan's Agriculture Universities. Discussion Paper prepared for USAID. Forestry Planning and Development Project. 8 p.

Naughton, G.G. and C.R. Hatch. 1991. Proposed Strategy for Support of NGO Activities. Strategy Paper. Forestry Planning and Development Project. 5 p.

Hatch, C.R. and G.G. Naughton. 1991. Private sector strategy for Phase II of the Forestry Planning and Development Project. Discussion Paper prepared for USAID. Forestry Planning and Development Project. 5 p.

Hatch, C.R. and G.G. Naughton. 1993. Remaining Life-of-Project Kissan Nursery Policy. Discussion Paper prepared for USAID. Forestry Planning and Development Project. 4 p.

Hatch, C.R. and B.A. Wani. 1993. Pakistan Forest Institute Research Review. Evaluation Report prepared for the Government of Pakistan and USAID. Forestry Planning and Development Project. 7 p.

Formal Reports

Hatch, C.R. and S.P. Dhall. 1990. Indo-US Workshop on Modelling Agroforestry Systems. Final Report prepared for the USAID Agricultural Research Project and Winrock International. 8 p. plus attachments.

Grebner, D.L. and C.R. Hatch. 1994. Review of the Forestry Planning & Development Project. Final Report prepared for the Government of Pakistan, USAID and Winrock International. 32 p. plus appendices.

Hatch, C.R. and R.M. Omer. 1994. Prototype Harvest Schedule for Changa Manga Irrigated Plantation Using Linear Programming Methodologies. Report prepared for the Punjab Forest Department, Lahore, Pakistan. Forestry Planning & Development Project. 31 p. plus appendices.

Major Documents Edited

Proceedings of the International Seminar on Pakistan Forest Policy held in Karachi March , 106 p.

Abeed Ullah Jan's 1993 book titled "Review and Analysis of Forest Policies of Pakistan", 146 p.

M.I. Sheikh's 1993 book titled "Trees of Pakistan", 142 p.

Abeed Ullah Jan's 1993 book titled "Forest Policy Administration and Management in Pakistan", 193 p.

Periodic Management Reports

Annual Work Plans
1989 (Jul 89-Jun 90)
1990 (Jul 90-Jun 91)
1991 (Jul 91-Jun 92)
1992 (Jul 92-Jun 93)
1993 (Jul 93-Sep 94)

Quarter Project Reports
1989 (Apr-Jun, Jul-Sep, Oct-Dec)
1990 (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec)
1991 (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec)
1992 (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec)
1993 (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec)
1994 (Jan-Mar)

Purpose Level Monitoring Reports
1991 (Apr 91-Sep 91)
1992 (Oct 91-Mar 92, Apr 92-Sep 92)
1993 (Oct 92-Mar 93, Apr 93-Sep 93)
1994 (Oct 93-Mar 94)

Annual Survey of Training Reports
1989 (Jan-Dec)
1990 (Jan-Dec)
1992 (Jan-Dec)
1993 (Jan-Dec)

APPENDIX D

WOOD USE STUDIES UNDERTAKEN

A Study of Tree Farm Wood Utilization for Wood Pulp Production in Pakistan. 1990. Consultant Report by Gerald G. Wire.

Marketing Farm Produced Timber in Pakistan. 1990. Consultant Report by Wendell P. Clark.

The Wood Shortage in Pakistan: Hypothetical Contradictions. 1990. Analytical Study by Charles W. McKetta.

Consumption of Wood in the Chipboard/Particle Board and Hardboard Industries of Pakistan. 1990. Consultant Report by National Management Consultants.

A Survey of the Pulp and Paper Industry in Pakistan. 1990. Consultant Report by T. A. Ansari.

Wood Consumption in the Flue-Cured Virginia Tobacco Industry in Pakistan. 1990. Consultant Report by G.M. Khattak and Mohammad Iqbal.

Wood Consumption Survey of the Railway Industry in Pakistan. 1990. Consultant Report by Envoforestry (Pvt) Limited.

Wood Use in the Match Industry of Pakistan. 1991. Consultant Report by K.M. Siddiqui and Saliheen Khan.

Wood Use in the Plywood Industry of Pakistan. 1991. Consultant Report by K.M. Siddiqui and Saliheen Khan.

Wood Use in the Mining Industry of Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.

A Study of Wood Yards in Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.

Wood Use in the Brick Kiln Industry of Pakistan. 1991. Consultant Report by Turkpak International (Pvt) Limited.

A Survey of the Sawmilling/Crate/Box Making Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.

A Survey of the Furniture Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.

A Survey of the Truck & Bus Body, Tractor Trolley and Boat Building Industry in Pakistan. 1991. Consultant Report by MSJ Research Institute.

A Wood Use Overview of the Sawmilling/Crate/Box Making; Truck & Bus Body, Tractor Trolley and Boat Building; and Furniture Industries of Pakistan. 1991. Consultant Report by MSJ Research Institute.

Wood Use in the Sports Equipment Industry. 1991. Consultant Report by Envoforestry (Pvt) Limited.

Pulp & Paper Making from Tree Farm Grown Eucalyptus camaldulensis at Adamjee Paper & Board Mills Ltd., Nowshera, Pakistan. 1991. Consultant Report by Gerald G. Wire.

Veneer Slicing Consultancy. 1993. Consultant Report by B.F. (Ted) Swain.

Forest Extension/Outreach with Emphasis on Log Grading Rules. 1994. Consultant Report by Gary G. Naughton.

APPENDIX E

TRAINING MATERIALS PREPARED BY THE PROJECT

Books

Jan, A.U. 1993. Review and Analysis of Forest Policies of Pakistan (English). Pictorial Printers, Islamabad, 146 p.

Jan, A.U. 1993. Fundamentals of Photointerpretation and Photogrammetry (English). Pictorial Printers, Islamabad, 103 p.

Sheikh, M.I. 1993. Trees of Pakistan (English). Pictorial Printers, Islamabad, 142 p.

Jan, A.U. 1993. Forest Policy Administration and Management in Pakistan (English). Pictorial Printers, Islamabad, 193 p.

Technical Notes

No. 1. Marketing Farm Forestry Products (English/Urdu). 1990. R. Zarif & G.G. Naughton.

No. 2. Farm Windbreaks (English/Urdu). 1990. G.G. Naughton.

No. 3. Tree Planting (English/Urdu). 1990. M.I. Sheikh.

No. 4. Some Fodder Trees of Pakistan (English). 1991. M.I. Sheikh.

No. 5. Raising of Nurseries (English/Urdu). 1991. M.I. Sheikh.

No. 6. Seed Collection (English/Urdu). 1991. M.I. Sheikh.

No. 7. Thinning Block Plantations (English/Urdu). 1991. G.G. Naughton & C.R. Hatch.

No. 8. Measuring Farm Grown Trees (English/Urdu). 1992. G.G. Naughton & C.R. Hatch.

No. 9. Air Seasoning (English/Urdu). 1992. G.G. Naughton.

No. 10. Tree Planting and Extension (English/Urdu). 1992. M.I. Sheikh.

No. 11. Suitable Tree Species for Different Agro-Ecological Regions and Civil Divisions of Pakistan (English). 1992. M.I. Sheikh.

No. 12. Economic Opportunities from Tree Farming (English). 1993. N.A. Malik & G.G. Naughton.

No. 13. Insects and Diseases of Poplars (English). 1993. M.I. Chaudhry, A. Chaudhry & M.I. Sheikh.

No. 14. Hardwood Veneer Log Grading [Interim Guidelines] (English). 1994. G.G. Naughton & A. Jah.

Tree Farmers Guides

No. 1. Marketing Farm Grown Timber (English/Urdu). 1991. G.G. Naughton.

No. 2. Pruning Timber Trees (English/Urdu). 1992. G.G. Naughton.

No. 3. Managing Coppice Sprouts (English/Urdu). 1992. G.G. Naughton.

No. 4. Farm Trees - Chinaberry (English/Urdu). 1992. G.G. Naughton.

No. 5. Farm Trees - Ber (English/Urdu). 1992. G.G. Naughton.

No. 6. Nursery Seedlings - Grading, Root Pruning and Hardening Off (English/Urdu). 1993. M.I. Sheikh.

No. 7. Estimating Weight of Standing Eucalyptus Trees (English/Urdu). 1993. G.G. Naughton.

No. 8. Instructions for Raising a Poplar Nursery (English/Urdu). 1993. M.I. Sheikh.

No. 9. Farm Trees - Neem (English/Urdu). 1993. M.I. Sheikh.

No. 10. Farm Trees - Black Locust (English/Urdu). 1993. F. Naseer.

No. 11. Farm Trees - Asmani (English/Urdu). 1993. F. Naseer.

No. 12. Farm Trees - Eucalyptus (English/Urdu). 1993. M.I. Sheikh.

No. 13. Farm Trees - Sissoo (English/Urdu). 1993. M.I. Sheikh.

No. 14. Steps in the Planting of Poplar (Urdu). 1993. M.I. Sheikh.

No. 15. Farm Trees - Kikar (English/Urdu). 1994. M.I. Sheikh.

No. 16. Farm Trees - Bans (English/Urdu). 1994. R.M. Omer.

No. 17. Poplar Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.

No. 18. Mulberry Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.

No. 19. Shisham Veneer Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.

No. 20. Semal Log Grades (English/Urdu). 1994. G.G. Naughton & A. Jah.

No. 21. Farm Tree - Semal (English). 1994. R.M. Omer.

Foresters Field Guides

No. 1. Suitable Poplar Clones for Different Ecological Zones in Pakistan (English/Urdu). 1993. M.I. Sheikh.

No. 2. Species Recommended for Different Edaphic & Climatic Sites and Method of Planting (English/Urdu). 1993. M.I. Sheikh.

No. 3. Establishing Seed Production Areas (English/Urdu). 1993. M.I. Sheikh.

No. 4. Expected Returns from Farm Grown Trees (English/Urdu). 1993. M.I. Sheikh & C.R. Hatch.

Other Training Materials

Project Manuals

No. 1. The Use of Computer Spreadsheets for Compiling Monthly & Quarterly Reports on Physical Achievements & Financial Expenditures (English). 1989. N.K. Aziz & M.R. Dove.

No. 2. Field Guide for Farm Forestry (English). 1989. N.K. Aziz & M.R. Dove.

Lecture Notes

Forest Sociology for M.Sc. Students (English). 1989. M.I.A. Niazi.

Research Methods Notes (English). 1992. H. Zuuring.

MYSTAT Workshop Notes (English). 1992. H. Zuuring.

Lessons in Soil-Plant Water Relationships (English). 1992. M. Behan.

Forest Ecology (English). 1992. M. Behan.

Forest Valuation Theories and Applications (English). 1992. C.W. McKetta.

Forest Economics and Forest Management (English). 1992. C.W. McKetta.

Forest Guard and Forester Lecture Notes (Urdu). 1994. 16 chapters produced by Habitat Integrated - Pakistan.

Forester and Forest Guard Visual Training Aids (Urdu). 1994. 70 flip charts produced by Habitat Integrated - Pakistan.

Training Manuals

Beginner's Guide to Computer & Disk Operating System (English). 1990. M.Q.A. Shah.

Introduction to Computers (English). 1990. T.W. Malik.

Manual for Planting of Poplars (English/Urdu). 1990. M.I. Sheikh.

Containerized Nurseries - A Field Manual for the Assistance of Nursery Farmers (Urdu). 1990. Compiled by T.W. Malik.

Use of Video as a Training Aid (English). 1990. G.G. Naughton & T.W. Malik.

A Guide to Tree Planting on Saline, Sodic and Waterlogged Soils (English). 1991. N.E. Marcar & D. Crawford.

Interpersonal and Communication Skills for Professionals in Natural Resources (English). 1991. M.J. Zimmer & M.D. Clausen.

Facilitator Training (English). 1991. M.J. Zimmer & M.D. Clausen.

Workshop Manual for Tree Seed Technology Training Course (English). 1991. F.T. Bonner, J.A. Vozzo, W.W. Elam & S.B. Land, Jr.

Workshop Manual for Land Use Planning Methodologies in Social Forestry (English). 1991. J.E. Force & D. Forester.

Planning an International Symposium in Pakistan (English). 1992. J.A. Vozzo.

Planning a Pakistan National Tree Seed Symposium (English). 1992. J.A. Vozzo.

Designing a Particleboard Panel of Desired Parameters (English). 1992. S.M. Yasin & T.A. Qureshi

Improving the Quality of Wood Produced from Eucalyptus Trees (English). 1992. S.M. Yasin & S.M. Raza.

Woody Plant Seed Manual [Pakistan] (English). 1992. M. Khan & R.A. Khan.

Planting Technique (English/Urdu). 1993. A.U. Jan & M.I. Sheikh.

Farmers and Tree Planting (Urdu). 1993. M.I. Sheikh.

Eucalyptus Nursery and Planting Guide (Urdu). 1993. M.I. Sheikh.

Common Terms and Definitions Used in Watershed Management (English). 1994. B.A. Wani.

Predicting the Suitability of a Wood Species of Known Density for Producing Desired Density Particleboard (English). 1994. S.Mohammad Yasin

Training Videos

Kissan Nursery Operations (English/Urdu). 1990. 8 minutes.

Tree Planting (English/Urdu). 1990. 10 minutes.