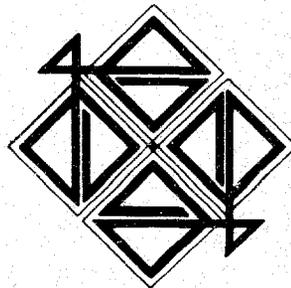


Development Support Training Project USAID Mission to Pakistan

Management of Agriculture Research and Technology (MART)

Training Utilization

1983 - 1992



Prepared by:

**Academy for Educational Development, Inc.
Islamabad, Pakistan / Washington, D.C.**

Submitted to:

**Office of Human Resources Development
U.S. Agency for International Development / Pakistan**

MANAGEMENT OF AGRICULTURE RESEARCH AND TECHNOLOGY

(MART/0489)

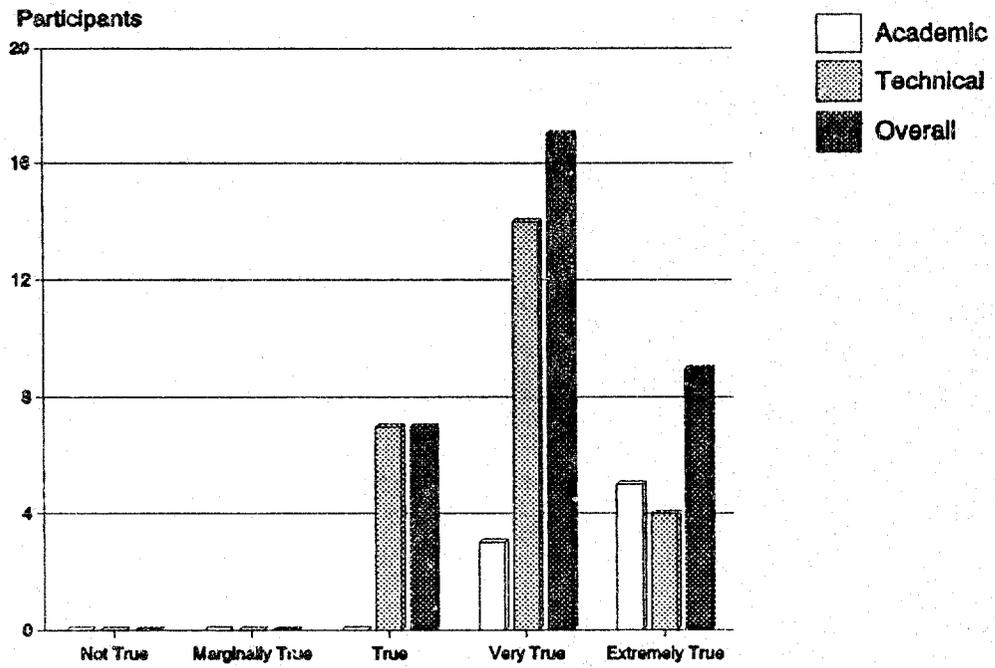
The Follow-Up data-base includes **33** surveys from participants funded under the Management of Agriculture Research and Technology project (MART). Of this number, **8** surveys are from participants that completed long-term academic training leading to the Masters or Doctorate degrees. The total number of MART participants from whom data has been generated is small, however, their random selection makes them representative.

The survey which participants are requested to complete, includes **43** items. For the purposes of this report, **19** items are included. In various ways, these selected items address the general theme of training utilization.

The data for Figures **15** and **16** is limited because these issues pertain only to the eight academic participants who wrote theses or dissertations.

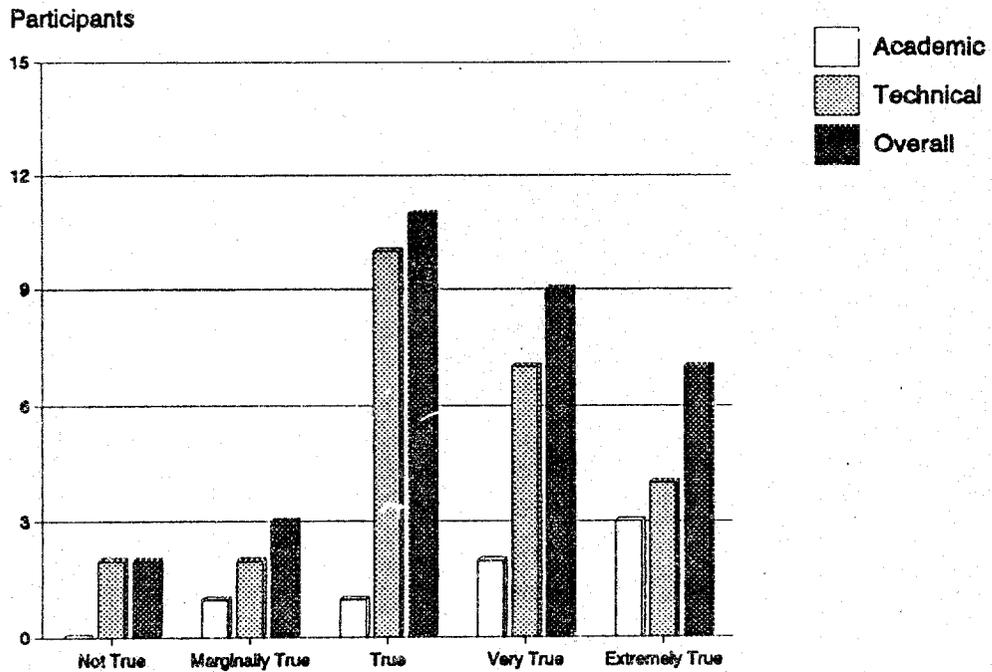
You were placed in an appropriate training program

Fig. 1



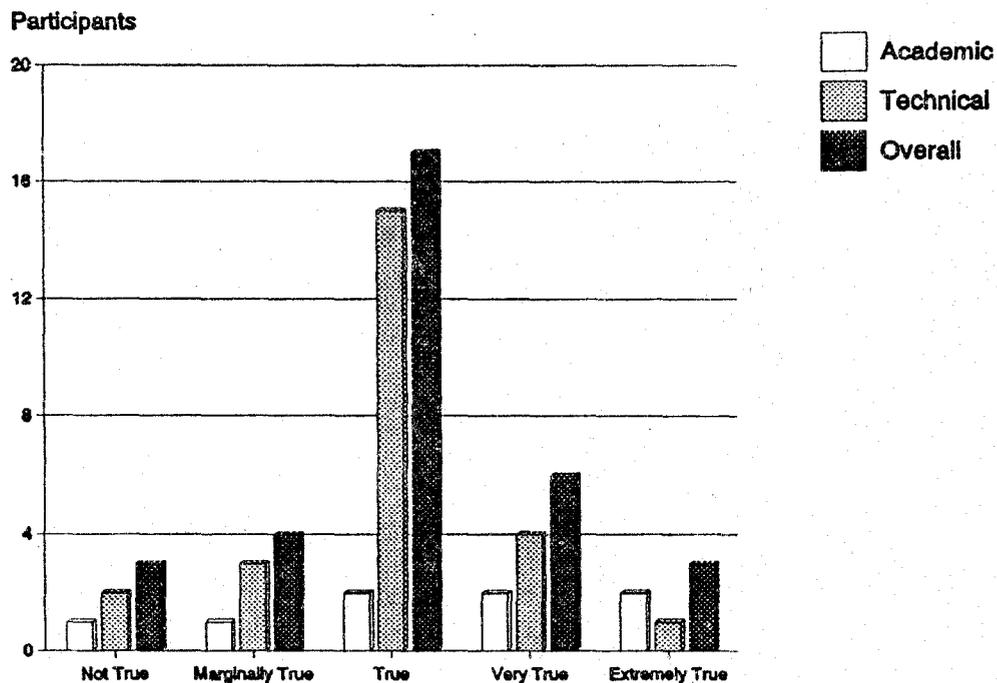
You have been able to use most of your training in Pakistan

Fig. 2



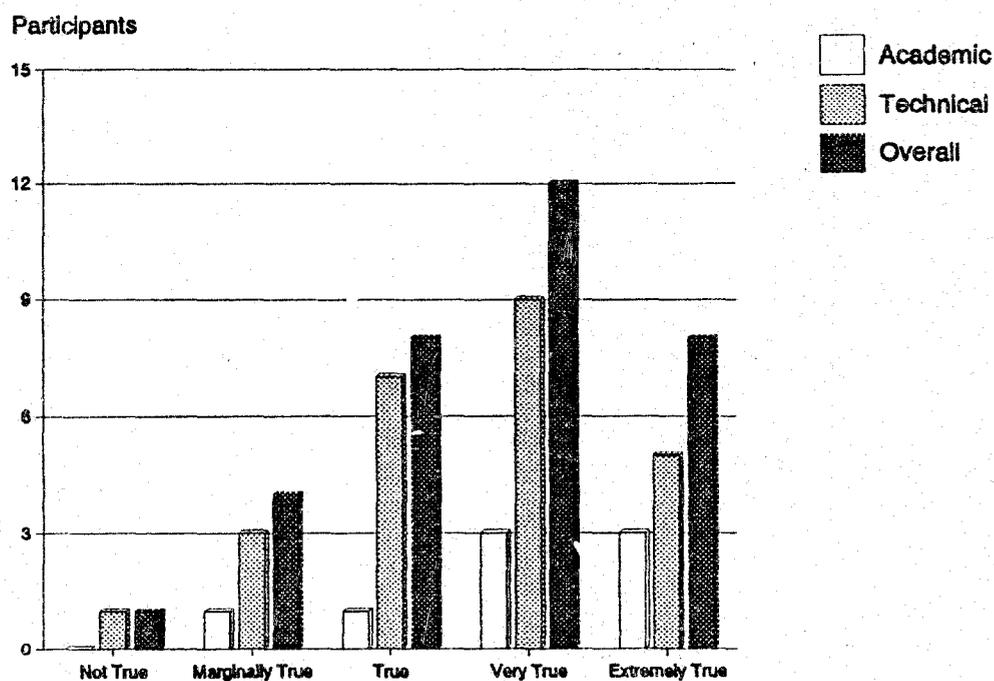
Training has resulted in better management or greater profits in your workplace

Fig. 3



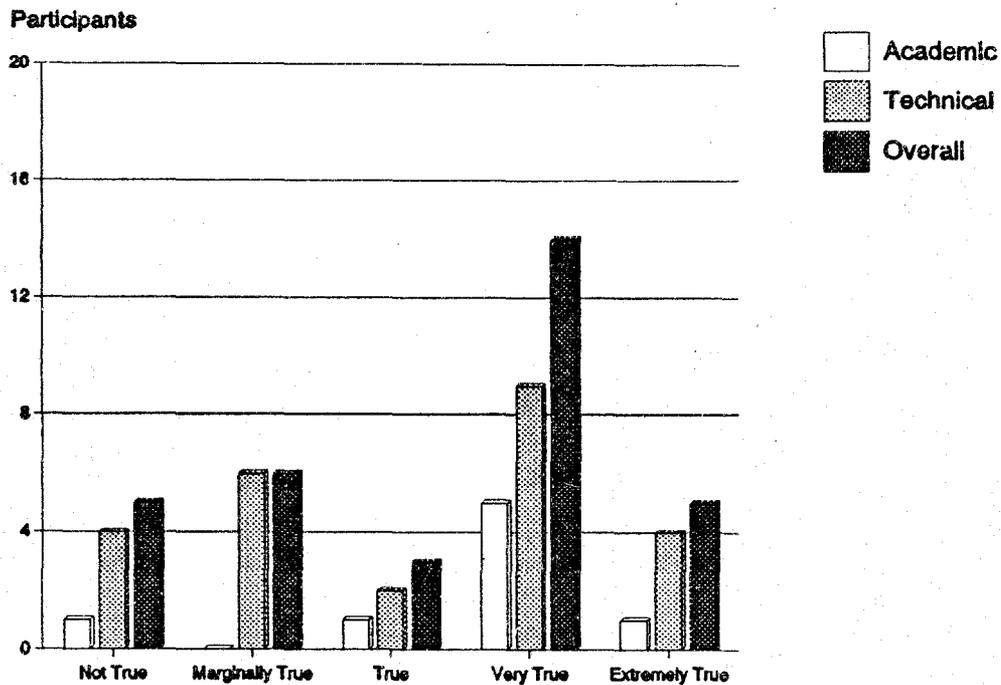
Information gained from training is still relevant

Fig. 4



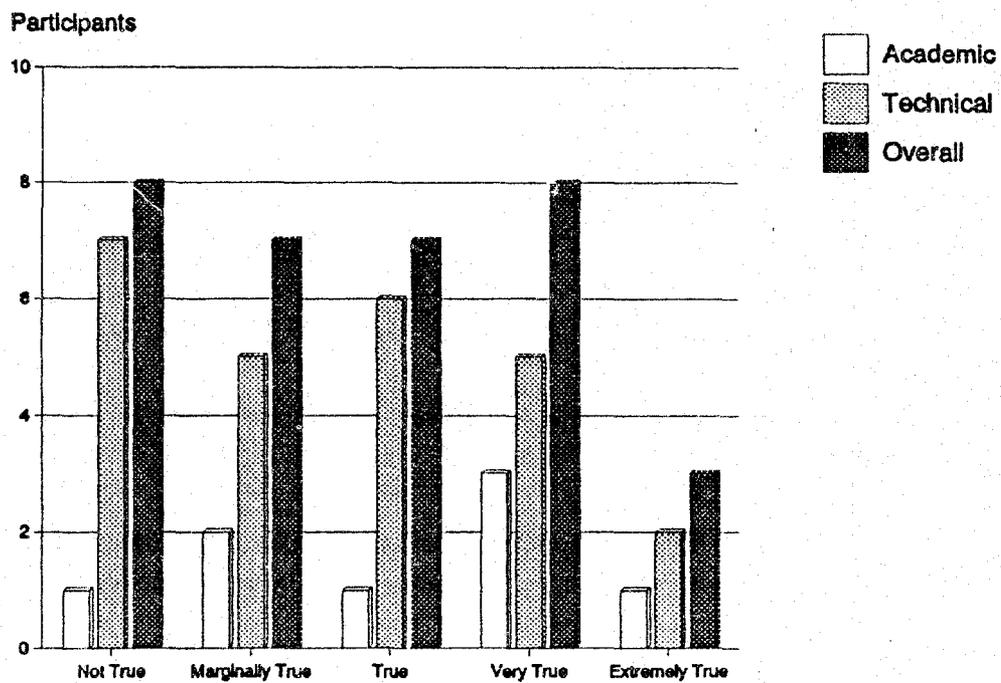
Training has increased in relevancy

Fig. 5



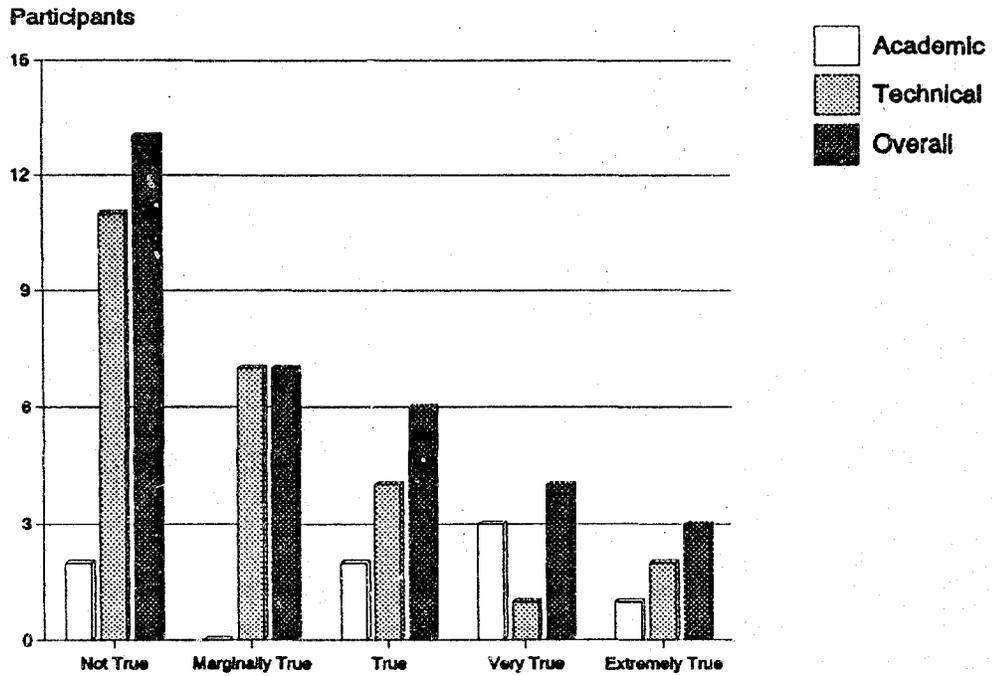
Training will be useful 5 years from your return

Fig. 6



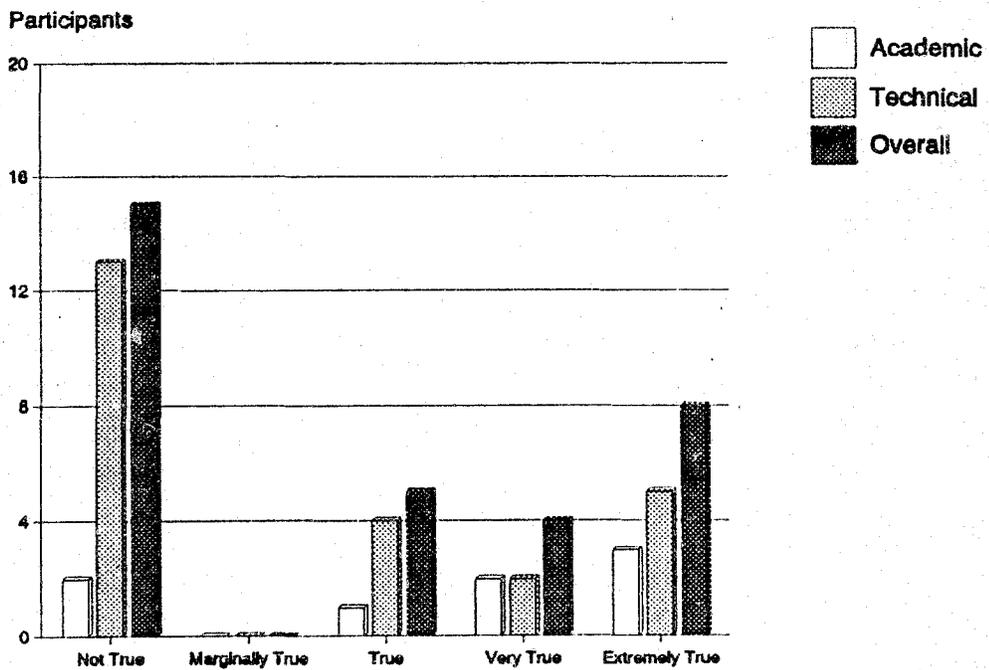
Training will be useful 10 years from your return

Fig. 7



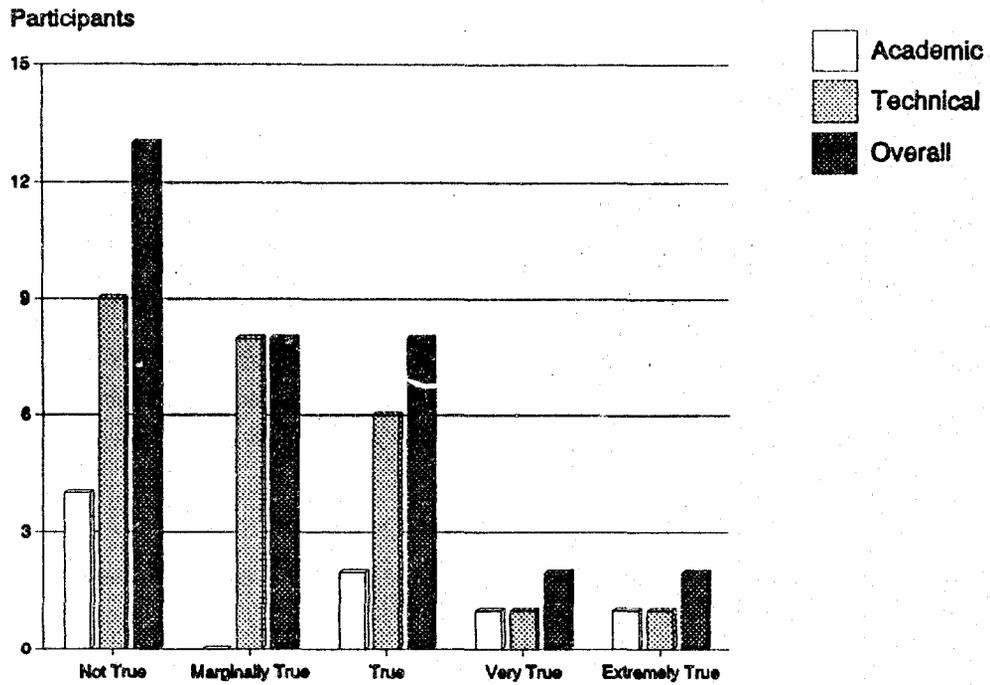
There have been bureaucratic impediments to the use of your training

Fig. 8



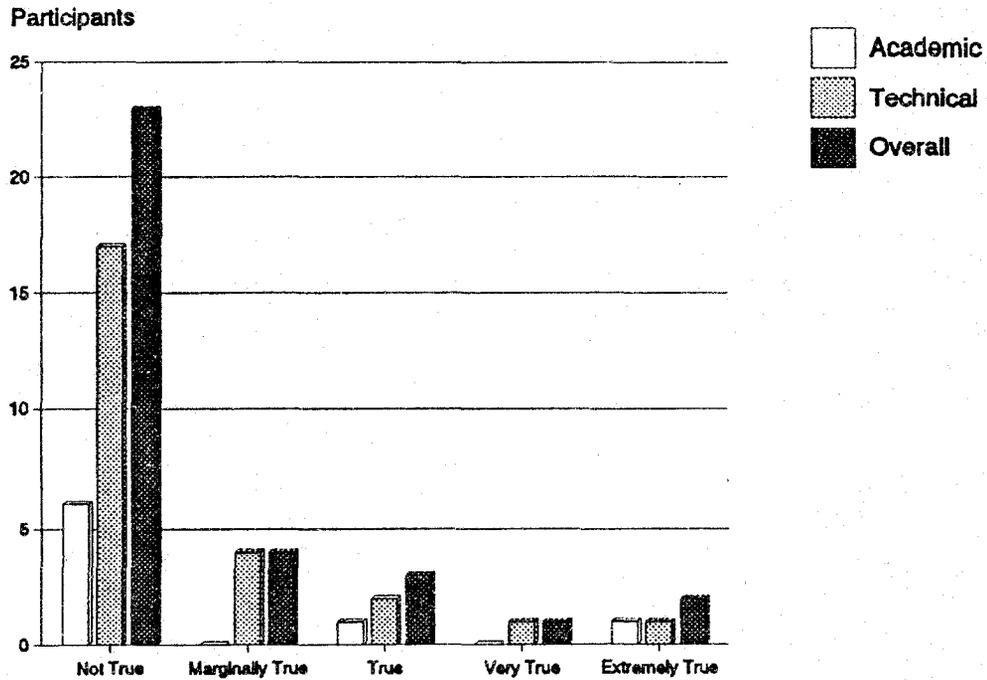
Lack of technology has impeded the use of training

Fig. 9



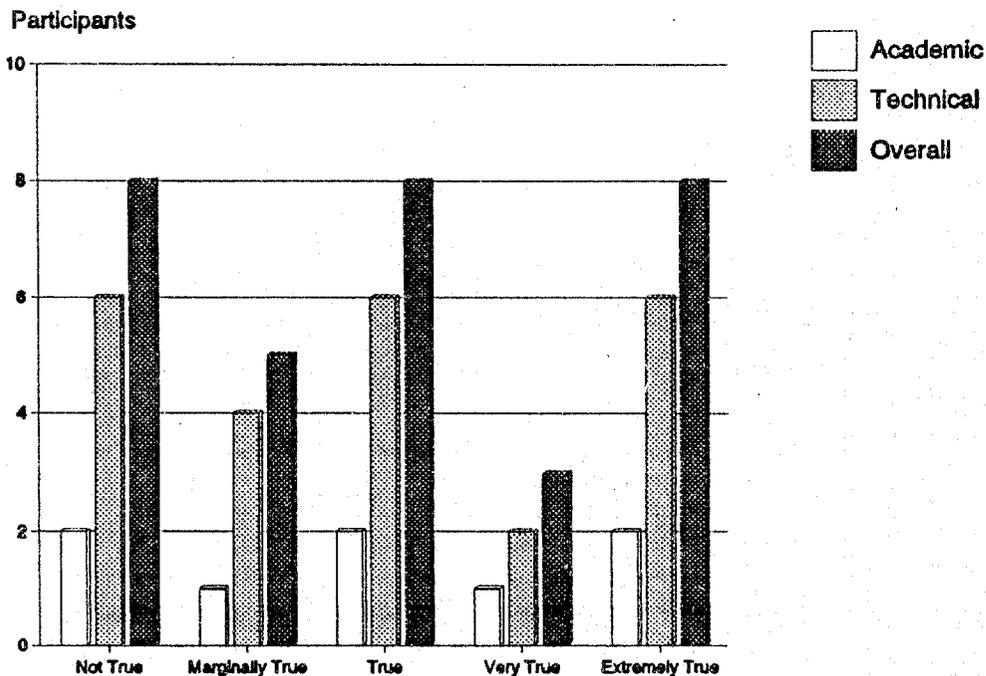
Resistance to new ideas has prevented the use of your training

Fig. 10



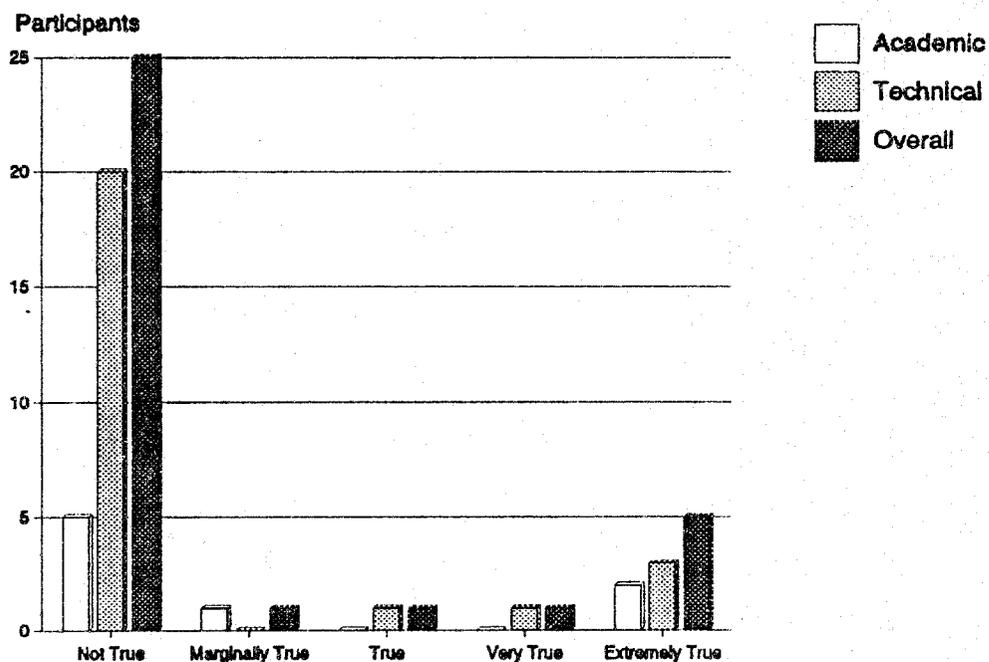
Lack of capital has prevented the use of your training

Fig. 11



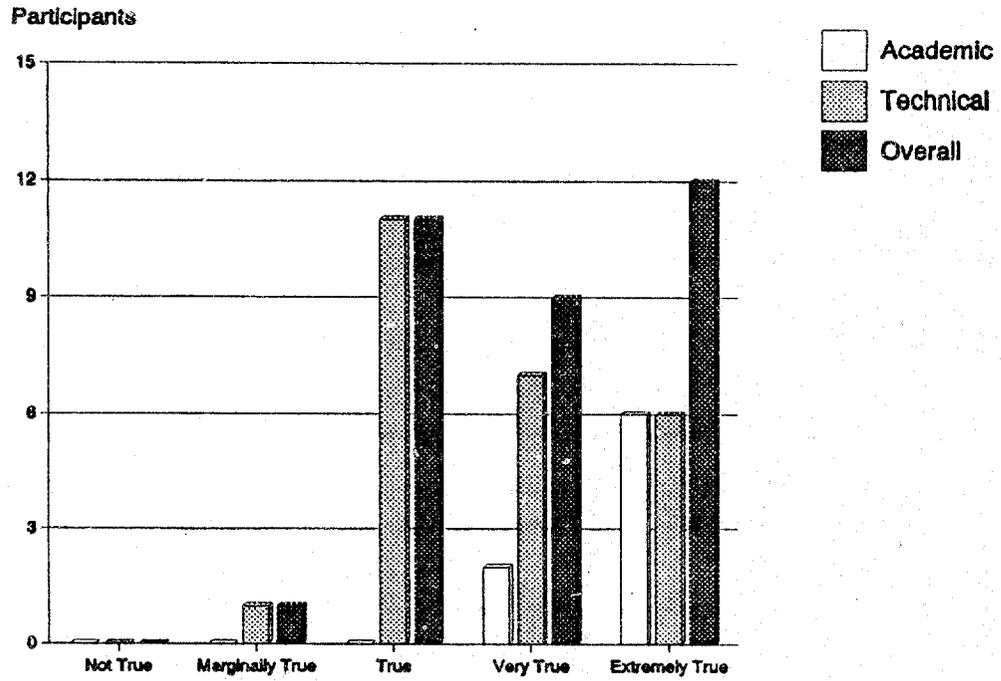
Training was satisfactory but you have been professionally misplaced in Pakistan

Fig. 12



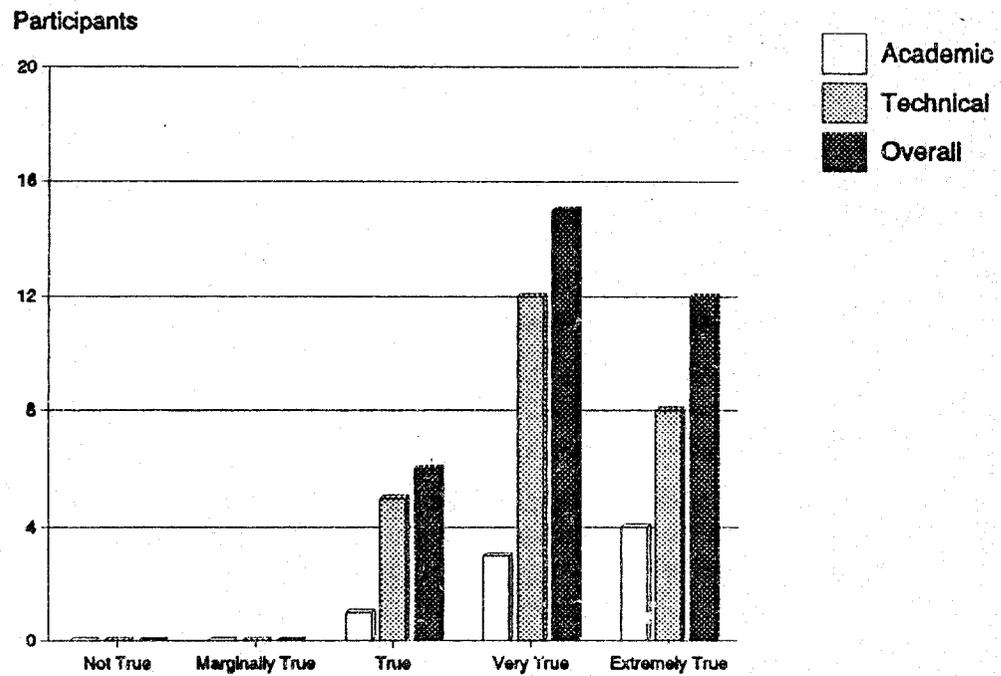
Training contributes to Pakistan's development

Fig. 13



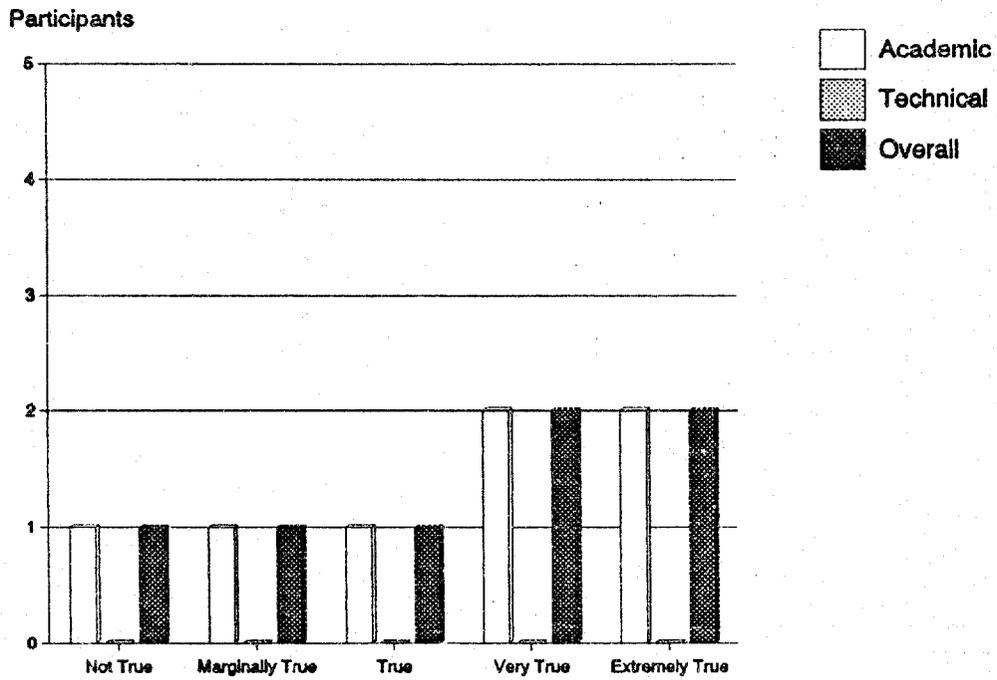
Training promotes the transfer of technology and skills to Pakistan

Fig. 14



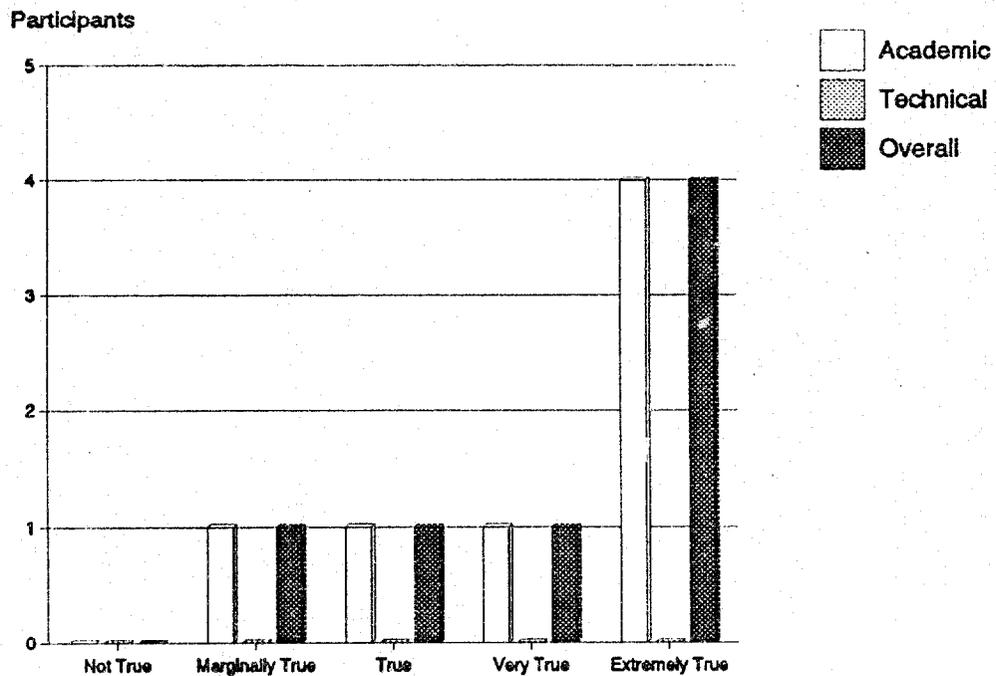
Research you conducted has contributed to Pakistan's development

Fig. 15



Subject of your thesis was a topic relevant to conditions in Pakistan

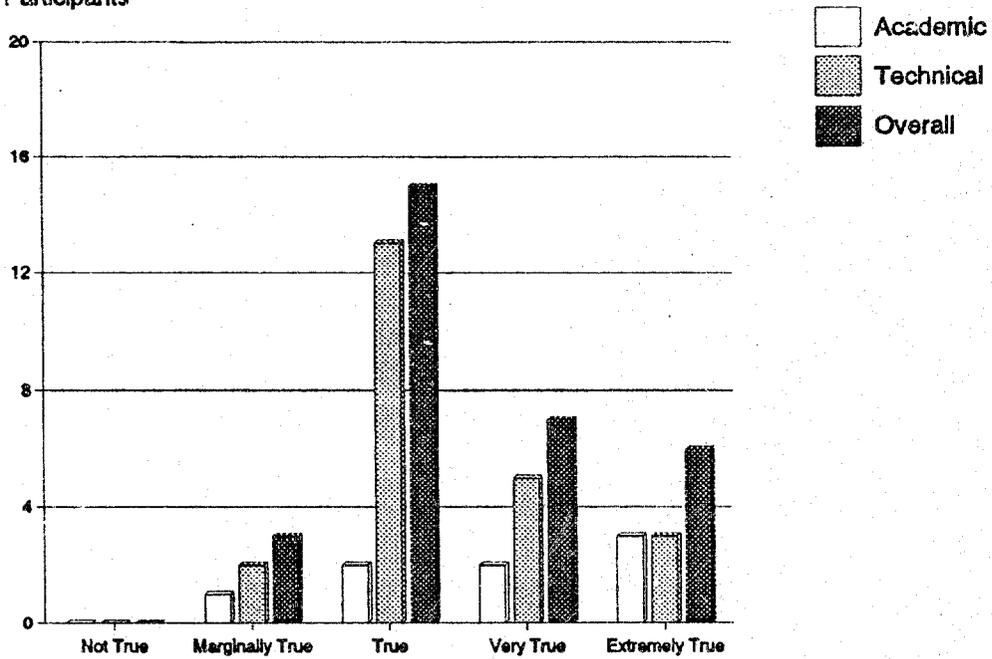
Fig. 16



Your supervisors have been receptive to new ideas gained from training

Fig. 17

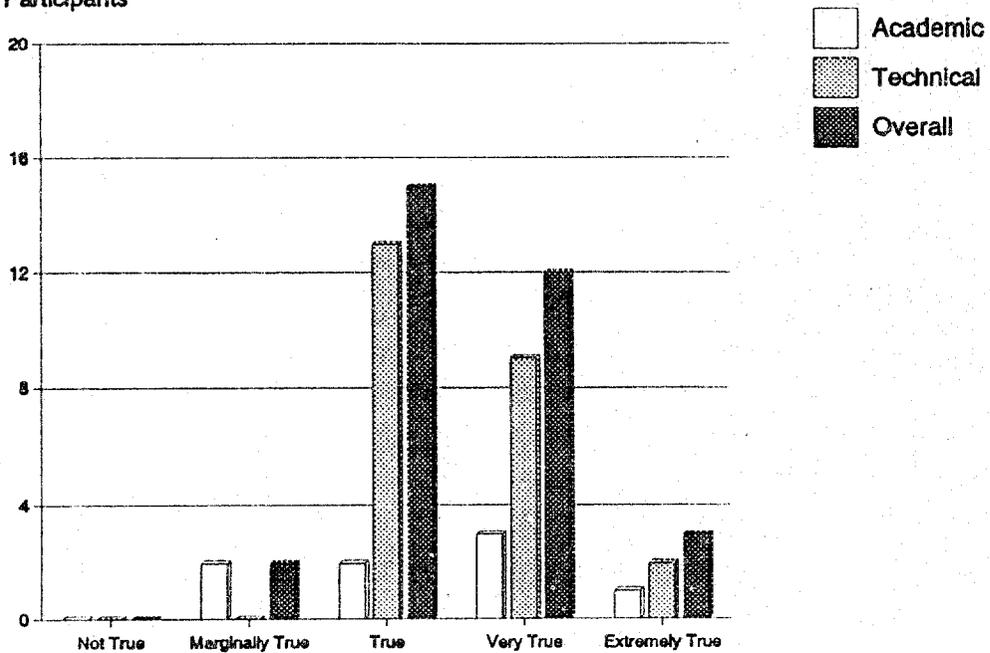
Participants



Your co-workers have been interested in information you gained from training

Fig. 18

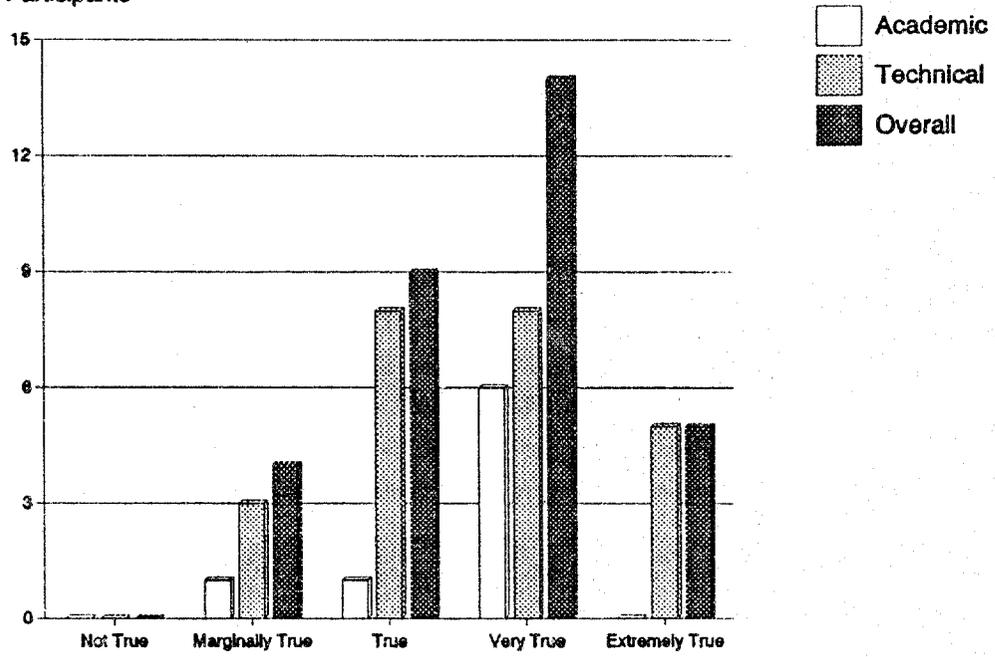
Participants



You have been able to introduce your co-workers to your training

Fig. 19

Participants



PARTICIPANT COMMENTS

The following participant comments have come to the Follow-Up office as part of the narrative portion of the survey questionnaire and others have come to Follow-up as letters. Only participants trained under the Management of Agriculture Research and Technology (MART) project are included in this sample. In general, the comments tend to corroborate the data, however, they may also indicate issues that are not sufficiently addressed by the survey.

Participant #1

(The participant) is in the public sector and earned a Doctorate at Kansas State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently an Associate Professor at the University of Agriculture in Faisalabad.

(The participant) received the following letter from the Chief Minister's Secretariat, Government of the Punjab:

The Chief Minister has desired to convey his deep appreciation on your excellent performance during your studies leading to a PhD in Grain Science at Kansas State University. The Chief Minister wants to congratulate you for accomplishing a three year course in less than two and a half years and for maintaining a perfect 4.0 cumulative grade point average. This is indeed a most outstanding accomplishment. The Chief Minister wishes you every success in the future and has expressed the hope that you will continue to serve your country and people with this same dedication and hard work.

The following letter was sent by (the participant's) department at Kansas State University to Dr. Ghulam Rasul Chaudhary, Secretary of Agriculture for the Government of Punjab. The letter is signed by Dr. Walker and Dr. Ponte:

Dear Dr. Chaudhary,

This is to advise you that (the participant) has successfully completed his PhD degree in Grain Science. We are very pleased that he was able to do this in less than two and a half years, an unusually short period. (Three years is the normal minimum.) He also maintained a perfect 4.0 cumulative grade point average, a very unusual accomplishment, especially for one whose native language is not English. It is a tribute to his ability, hard work and dedication to a goal.

Please note that (the participant) now holds two PhD degrees, one in Food Technology and one in Grain Science. This should be a great asset to your country. Such a combination and his preparation in a wide area related to cereal grain foods, is quite unusual and should prepare him exceptionally well for his career.

He concluded his dissertation research with a project on the electrophoretic identification and technological characterization of Pakistani wheats. During the course of his investigations, he has observed something of potential interest to wheat breeders. He has observed that the presence of a particular high molecular weight glutenin

subunit, identified as "Band 20", may be correlated with the wheat's ability to produce a good quality, unleavened flat bread (i.e. chapati)

In his tests of the eleven most prevalent Pakistani wheats, and several North American wheats, this "Band 20" was present only in the two older Pakistani lines C591 and C273. These wheats are already known to produce excellent chapati. This information if found to be generally true, would be very valuable to the breeders in your country, where more than 70% of the domestic wheat consumption is in the form of chapatis.

Two of his papers have been accepted by the *Journal of the Science of Food and Agriculture*, and a third just returned today from the reviewers with the notification that it will be accepted after some minor revisions. We plan to submit at least three more papers, based on his dissertation, to reviewed scientific journals.

We believe that (the participant) should be recognized for his excellent academic record, his significant research accomplishments, and the very short time that he took, thus saving the project considerable money. This recognition should serve as an incentive to other Pakistani students to complete their studies and return more quickly to their homeland so they can apply their new knowledge and skills to their country's benefit.

Participant #2

(The participant) is in the public sector and completed short-term technical training in Agriculture Research Methodology and Range Management at West Texas State University. His scholarship was funded under the Management of Agricultural Research and Training project (MART/0489). He is currently the Director of the Cotton Research Station in Multan.

Since returning from training, (the participant) has been awarded the Presidential Pride of Performance Award by the President of Pakistan on March 23rd, 1991. The award was granted in recognition for (the participant's) outstanding research work in the development of special cotton crops. He has introduced several new cotton varieties that have proven particularly suitable for conditions found in the Punjab.

(The participant's) training in the US was directly related to the work he performs in Pakistan. Specifically, the research methodology component of his course has contributed to his cotton research. Since his return he has developed two new varieties of cotton which have been introduced to farmers and the Cotton Research Station has been working on the development of other varieties of cotton. (The participant) has introduced cotton varieties that have been developed in Mississippi and have potential for further development in the

Punjab. He is also working on a "multi-cropping" project in which sugar cane, wheat and cotton are grown in the same environment.

"The Cotton Research Station in Multan is engaged in the improvement and development of cotton crops in the Punjab. Since its inception, the station has developed ten varieties of cotton. The production technology of cotton is another important area in which the station is working. Experiments for small farm technology is also studied at the station as is multi cropping and relay cropping combining cotton and sugar cane or cotton and wheat.

New strains of medium long staple cotton are showing promise in the Punjab and it is hoped that these will play an important role in the production of commercial varieties. New extra-long staple strains are also being developed and will soon be commercialized.

Research at the Cotton Research Station is continuous and very promising. Several important developments are taking place, including heat-tolerant, early-maturing and short-statured plants suitable to conditions in the Punjab."

Participant #3

(The participant) is in the public sector and completed short-term technical training in Integrated Pest Management at Oregon State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently an entomologist at the Sugar Crops Research Institute in Mardan.

"My training at Oregon State University provided me with general knowledge in pest control. It also helped me to gain confidence for continuing my implementation of means for fighting pests. I am doing this by avoiding unnecessary and defective aerial spraying conducted for the past four decades in the Peshawar valley. As a result of this training, approximately 50 million rupees have been saved through conservation methods. Approximately 25 million rupees have been generated from higher yields."

Participant #4

(The participant) is in the public sector and completed short-term technical training in Crop Research at the University of California, Davis. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently employed by the government of Punjab Agriculture Department.

"On the whole, USAID training programs are of great importance. They expand and broaden the educational and technical skills of their participants and place them on an international scale. However, there is one point I would like to make: many of the participants, after receiving training are not assigned duties in line with their training and thus the objective of training remains unfulfilled. Nevertheless, I have approximately 35 research papers to my credit. Most of these have been published after receiving my USAID training at the University of California. Thus, USAID training went a long way in my publication and research activities."

Participant #5

(The participant) is in the public sector and completed short-term technical training in Arid Zone Research at the University of Arizona. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently a Scientific Officer at the Pakistan Agricultural Research Council.

"I attended the training course in Arid Zone Research at the University of Arizona from August to October. About 68% of the total geographic land areas of Pakistan is arid which is a threatening problem in the development of the country. The problem also exists in the United States but they have adequate resources to improve irrigation practices. This is done through drip, sprinkler and furrow irrigation systems in order to utilize most of the barren land, enhance agricultural production and lead the world. The application of these techniques are not difficult to follow in Pakistan but there must be sufficient resources and trained manpower. In this respect, short-term training organized by USAID are not only useful for the exchange of views with highly qualified, trained and experienced scientists but also for the transfer of advanced scientific technology used for increased agricultural production."

Participant #6

(The participant) is in the public sector and completed short-term technical training in Livestock Improvement at Iowa State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently employed by the Punjab provincial government.

"My training cannot be utilized due to the lack of equipment and lack of more trained manpower in my department."

Participant #7

(The participant) is in the public sector and completed short-term technical training in the Management of Agriculture Research and Technology at the University of California Davis. His scholarship was funded under the Management of Agriculture Research and Technology project (MART/0489). He is currently an agronomist at the Sugar Crops Research Institute in Mardan.

"The ten weeks of training under MART was well-organized. I appreciate the services provided by personnel involved in the management of this program. This course greatly broadened my understanding of managing agriculture research in general and my field of specialization. I believe that the exchange of ideas in various fields was very useful for professionals of both Pakistan and the United States. I can never forget the good time I enjoyed and the attitude of people at UC Davis was rewarding. This was a very useful program for improving my professional stature in Pakistan."

Participant #8

(The participant) is in the public sector and completed a Doctorate in Veterinary Medicine at Ohio State University. His scholarship was funded under the Management of Agriculture Research and Technology project (MART/0489). He is currently an Assistant Professor in the Department of Clinical Medicine and Surgery at Faisalabad Agriculture University.

"It has been almost one a half months since I returned from the US. My senior colleagues in the department by acting out of their deeply entrenched proclivity of procrastination have not provided me a work desk or office where I can sit to prepare my lectures or spend time preparing a research proposal to put my US training to use. If my past experience is any guide and from the mood which prevails here, I do not think I will be able to put my training to use."

The experience of other US-trained persons I speak with is more or less the same. In the winter of 1990, I attended a short training at Winrock Institute in Arkansas with about forty other Pakistanis. During an open session, the negative bureaucratic attitude was singled out as the most important impediment to the effective use of know-how and skills gained from international training. It is my considered opinion that unless such impediments are eliminated, USAID's investment in trained manpower for Pakistan will be futile."

Participant #9

(The participant) is in the public sector and completed a Doctorate in Agriculture at Virginia Polytechnic Institute. His scholarship was funded under the Management of Agriculture Research Technology project (MART/0489). He is currently an Assistant Agriculture Chemist at the Soil and Water Testing Laboratory in Bahawal Nagar.

"After returning from my USAID program I joined the Soil and Water Testing Laboratory. My current position is an administrative post. I requested my government to place me in the Ayub Agriculture Research Institute in Faisalabad where research facilities are available. Thus far, I have not been successful in being replaced. I am not satisfied in my current post. A lot of money has been spent on my training but I have not been properly placed. Moreover, seventeen months after my return to Pakistan, I am receiving the same pay I was getting in 1987 before I left for the United States. My family was with me in the US during my training and my children became accustomed to the English language. Now my children are facing difficulties in their education because they can not attend English-medium schools.

Despite these problems, I love my country and have started two research projects with the help of local farmers. The first is a survey of sulphur fertilized and gypsum applied soils for soil improvement and crop yield. The other is an attempt to determine reasons for low crop yields and provide recommendations to local farmers based on soil and water analysis."

INTERVIEWS

The interviews conducted in the field, like the narrative statements, supplement the data collected from the surveys. Only interviews conducted with MART participants are included in this sample. The limited cross-section of interviews presented here indicate that training has been effective for the transfer of technology and skills, however, the interviews also indicate that there are certain obstacles to the successful utilization of training. In general, the field interviews demonstrate that Jefferson Fellows and Associates believe their training was a valuable experience and in various ways contributes to the development of Pakistan.

Participant #10

(The participant) is in the public sector and completed a Doctorate in Agriculture Engineering at Iowa State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently an Assistant Professor at the Agriculture University of Faisalabad.

(The participant) had been back in Pakistan for only two weeks and was very enthusiastic about his new degree, the research he had conducted and the prospects for his future research. We visited his laboratory and he informed me that he tried to select a research project for his dissertation that would permit him to conduct research under circumstances he would find in Pakistan. His interests are water-logging and salinity, a major problem throughout much of Pakistan. In defining his dissertation proposal, he had taken into consideration such issues as irrigation technology in Pakistan, appropriate technology and technology transfer to Pakistan or the university. He had been helped by Professor Ramash Kanwar from India on the faculty of Iowa State University. Prof. Kanwar was aware of the conditions that Dr. Niaz would face in Pakistan and supervised his dissertation according to those conditions. The participant has published three articles in Pakistan on his dissertation research and will continue to publish from his dissertation. In the future he hopes to publish his entire dissertation and thereby foster the transfer his research.

Participant #11

(The participant) is in the public sector and completed short-term technical training in Agriculture at the University of Minnesota. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently the Dean of the Agriculture University in Faisalabad.

(The participant) is a senior faculty member in the department of agriculture economics and rural development, had been chairman of two departments and is currently a university Dean. (The participant) had earned his Doctorate at the University of Wisconsin in 1963 on a USAID scholarship and had subsequently attended three USAID technical programs. He spoke in glowing terms of his experiences in the US, how it had taught him to think critically, had taught him the value of merit and rigorous academic work. He spoke of such abstractions as justice, social values in America and the distinction between these in the US and in Pakistan. He concluded, however, by saying that although his experiences in the US had transformed him, it was

not meant for everyone and in the final analysis these types of experiences do more harm than good. He spoke of unreasonably elevated expectations, social and cultural imperialism and corruption that USAID conscientiously and unconsciously fosters through its programs. His conclusion seemed to be that while USAID's training programs were good for him, they are not so good for others. I got the impression that his cynicism was misplaced and that he was disgruntled over affairs in the university.

Participant #12

(The participant) is in the public sector and completed short-term technical training in Animal Husbandry at Iowa State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently a Professor at the Agriculture University in Faisalabad.

The participant is a senior faculty member in the department of livestock management, faculty of dairy science. In 1962 he earned his Doctorate at the University of Wisconsin, Madison in dairy research and in 1988 had attended a USAID short course at Iowa State University in animal husbandry. (The participant) could not talk enough of his experiences at Wisconsin, how it had changed him as a young man, taught him how to work long hours, the importance of scholarly integrity in research and the social values of American society. In short, it seemed to have sensitized him to American society in a way that continues today. He maintains contact with his former class-fellows at Wisconsin and faculty members whom he visited when he returned in 1988. The short course at Iowa State University, Ames was very good for him. The coordinators of the course were helpful and did everything he could expect of them. For (the participant), the short course was a good "refresher" for a senior scholar and researcher.

Participant #13

(The participant) is in the public sector and completed a Doctorate in Zoology at the University of Rhode Island. He is currently the Assistant Director of Fisheries at the Fisheries Research and Training Institute in Lahore. His scholarship was funded under the Management of Agriculture Research and Technology project (MART/0489).

During his doctorate program the participant conducted research on fish larva and diet from waste. The subject of his research was not only important for Pakistan but it was unique among similar projects in the US and he is able to

teach the subject of his research. He is providing training to the technical staff of the research institute in fisheries department of the Punjab government and private fish farmers. He is conducted quarterly one-week refresher courses for farmers on various aspects of fish farming and monthly refresher courses for the technical staff of the Punjab fisheries department.

The participant is currently working on the formulation of diet for various stages of fish development and monitoring the feeding system and its impact on the growth of fish at the institute's experimental tanks. From this research, he hopes to contribute towards the development of commercial feed for fish, something he never thought of before attending graduate studies in the United States.

In the future, the participant would like to introduce a cost-effective medicated diet for each stage of fish development. He maintains contact with his colleagues at the University of Rhode Island and shares the latest development in his research.

Participant #14

(The participant) is in the public sector and completed short-term technical training in Agriculture Research and Methodology at West Texas State University. His scholarship was funded under the Management of Agriculture Research and Technology project (MART/0489). He is currently a Senior Research Officer in the Veterinary Research Institute in Peshawar.

The participant has made good use of his training, especially in guiding the research work of the staff in his institute. He has also been made Director of the Planning and Development Cell of the Veterinary Research Institute because of his experience in his field.

The participant was critical of the scope of the course he attended. It included statistical techniques for agricultural research workers, whereas he would have preferred a course including laboratory techniques for microbiological and parasitological studies. Since the group included participants from diverse fields it was not possible to cater to the specific needs of each individual member. Nevertheless, the use of computers for statistical analysis was very much appreciated and he considered it the most useful part of the course. He was also highly appreciative of AED's arrangements for him to join the Society of American Parasitologists.

Participant #15

(The participant) is in the public sector and completed a Doctorate in Animal Nutrition at Virginia Polytechnic Institute. His scholarship was funded under the Management of Agriculture Research and Technology project (MART/0489). He is currently an Assistant Research Officer for the Livestock and Dairy Development Department of the government of Punjab.

The participant is using his training adequately. The problem selected by the participant for his PhD dissertation was directly related to livestock production in Pakistan. There is a country-wide shortage of forage crops, especially during the winter months and resulting in the loss of millions of tons in meat and milk. Utilization of wheat straw, which is a surplus byproduct in the agricultural fields, has potential for meeting the nutritional requirements of animals through the chemical and biological treatment of straw to make it more digestible and palatable. The results achieved by the participant are encouraging and he is using the new technology on the government farms in the punjab. The participant is trying to extend the results to the commercial livestock farms which is expected to bring about a significant improvement in the production of meat and dairy products.

The major handicap in the achievement of the objectives is the bureaucratic control in the livestock department which has been in existence since the British colonial period. The participant has been working as an Assistant Research Officer for the last 19 years. He has not been promoted even though he has earned a Doctorate. The head of the Animal Nutrition Center is a person with no academic background or experience in animal nutrition. In spite of these handicaps the participant is continuing his work with enthusiasm. He has under publication 7 research papers in Pakistan and the United States.

Participant #16

(The participant) is in the public sector and earned a Doctorate in Agronomy from Colorado State University. His scholarship was funded under the Management of Agricultural Research and Technology project (MART/0489). He is currently a Senior Scientific Officer at the National Agriculture Research Center (NARC) in Islamabad.

(The participant's) research at Colorado State University was in plant breeding and genetics with an emphasis on wheat research using the haploid breeding technique. Although it normally takes approximately seven years to generate a new wheat variety using this technique, he found that the process could be reduced to two years. He has also arranged to have hybrid seeds he developed in the United States brought to Pakistan for further research and commercial

use. He had returned to Pakistan only two months prior to his interview and he was posted at the Wheat Research Station in NARC where his US training is directly related to his work.

Soon after returning to Pakistan, (the participant) participated in the national Wheat Research seminar (October, 1991) and conducted a seminar in Faisalabad (November, 1991) at the Ayub Research Institute. There was sufficient interest in his subject that he has been asked to act as an advisor to faculty and staff on the subject of haploid breeding techniques. He is also conducting a study to determine the different types of wheat research that is being conducted throughout Pakistan and coordinating research in Pakistan with similar efforts in Mexico. In the near future he will meet with several wheat pathologists that are expected from Nepal to jointly plan a project for disease control in new crops.

(The participant) has published several papers in such journals as Agronomy Abstracts in the United States and two others are being prepared for American journals.