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AGRICULTURAL INNOVATION PROGRAM

FINAL EVALUATION

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FINAL EVALUATION

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Last, but not least, the evaluation team is thankful to the respondents (farmers, members of research organizations, sector experts, implementing partners, and government officials) for their time and cooperation.

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ACRONYMS

AIP	Agricultural Innovation Program
AVRDC	Asian Vegetable Research and Development Center (World Vegetable Center)
CGIAR	Consultative Group for International Agricultural Research
CIMMYT	Centro Internacional de Mejoramiento de Maíz y Trigo (International Maize and Wheat Improvement Center)
EGA	Economic Growth and Agriculture
FSC	Farm Services Center
GoP	Government of Pakistan
ILRI	International Livestock Research Institute
IP	Implementing Partner
IR	Intermediate Result
IRRI	International Rice Research Institute
KP	Khyber Pakhtunkhwa
MNFSR	Ministry of National Food Security and Research
MSI	Management Systems International
NARC	National Agriculture Research Center
OAPA	Office of Afghanistan and Pakistan Affairs (USAID)
PARC	Pakistan Agricultural Research Council
PIO	Public International Organization
UC	University of California
USAID	United States Agency for International Development

PROGRAM SUMMARY

Table 1 summarizes basic information about the Agricultural Innovation Program (AIP).

TABLE 1: PROGRAM SUMMARY

Title/Field	Program Information
Contract/agreement numbers	PIO grant # AID-BFS-G-11-00002
Contracting/agreement officer's representative (COR/AOR)	
Start date	March 8, 2012
Completion date	March 7, 2017 (extended to March 2018)
Location	Whole of Pakistan
Implementing partner(s)	International Maize and Wheat Improvement Center (CIMMYT)
USAID/Pakistan Mission Strategic Framework objectives addressed	• DO 2: Improved economic status of focus populations and sectors • IR 2.1: Improved economic performance of focus enterprises • IR 2.1.2: Improved capacity of workforce • IR 2.1.3: Increased use of modern technology and management practices • IR 2.2: Improved business enabling environment
Budget	$

The map in Figure 1 illustrates the areas in which AIP operates and the agricultural subsectors it supports in each area.

FIGURE 1: MAP OF PROGRAM ACTIVITIES

EXECUTIVE SUMMARY

The Agricultural Innovation Program (AIP), funded by the United States Agency for International Development (USAID) in Pakistan, aims to increase agricultural productivity and the income of farmers in four sectors (cereals, livestock, vegetables, and horticulture) by increasing the use of modern technology and management practices, improving the performance of value chains, and increasing the capacity of the public and private sectors to support the agricultural production system.

Evaluation Purpose and Questions

The four evaluation questions focus on various aspects of the program's effectiveness. Answers to these questions will help program stakeholders such as the Government of Pakistan (GoP) and the AIP implementing partners (IPs) refine implementation. USAID/Pakistan will incorporate lessons learned into ongoing and future Economic Growth and Agriculture (EGA) activities.

1. To what extent has AIP contributed to revitalizing research and innovation in its focus subsectors?
2. To what extent has AIP's collaboration with the public and private sectors built the capacity of partner institutions in research and development?
3. According to public and private sector partners of AIP, how effective was the implementation of project activities? What can be improved?
4. To what extent did AIP produce any change in knowledge, skills, and attitudes in its trainees?

Summary of Findings and Conclusions

Question 1: A large majority of interview respondents believed that AIP has contributed to revitalizing agriculture research and innovation, attributable mainly to introducing new practices and technologies. The provision of inputs such as genetic material and equipment (technology) was seminal in enabling cash-starved private and public research institutions to conduct applied research. Consequently, records of recipient organizations show sharp increases in the numbers of seed lines, practices, and proposals on which they are working. Thus, from the point of view of respondents, and according to hard indicators, AIP revitalized agricultural research and innovation.

AIP's success can be attributed to exposing Pakistani researchers to technologies and practices that are new to Pakistan. Providing Pakistani researchers with imported germplasm and equipment has shortened the time it takes to get products to market. However, as these basic inputs and technical assistance begin to bear fruit, funding constraints may jeopardize current and future activities. AIP's termination raises concerns about the sustainability of what has been achieved, and even more about the wider dissemination after replication and multiplication. As the input provision period of AIP is nearing its end and the last trials are underway, the challenge now lies in disseminating the work to the majority of farmers, beyond the "innovators" and "early adopters." Thus, future AIP activities should focus on completing all unfinished trials and adaptations and multiplying and more widely disseminating inputs (germplasm and technologies).

Question 2: AIP has been successful at building the research capacity of partner institutions. Overall, 83 percent of interview respondents reported that AIP built the partners' capacity in research and development. AIP's technical training, supplying inputs, and developing linkages between individuals and organizations are the main contributors to capacity building. The program's strategy was to rely on long-

term "multiplier effects" of one-off technical training courses, which build the technical capacities of individuals, expecting that these individuals' capacities will eventually spill over into the organization.

AIP is a magnet using its funding power as a source of attraction, but USAID should work on reinforcing linkages and coordination between AIP and other projects that are working on improving the legislative framework and streamlining the procedural steps to bring innovations (notably germplasm) to market.

Question 3: Roughly two-thirds of interview respondents thought that AIP's implementation was effective and were particularly appreciative of the training. To the extent that AIP assessed beneficiaries' needs, it was successful because it responded to the **technical** needs of organizations. While AIP's implementation was effective overall, a relatively small number of respondents mentioned barriers to implementation including (1) unclear and ineffective marketing and dissemination strategies and (2) poor coordination with stakeholders, largely related to timely funding of activities.

The evaluation team concludes that AIP's implementation has been effective and that the effect of the above-mentioned shortcomings can be mitigated by having a clearer dissemination strategy, more visible marketing actions, and improved coordination between stakeholders. To enhance prospects for sustainability after AIP, USAID should communicate to IPs and the GoP its transition strategy, which should include a formal scaling-up plan. To increase uptake and bolster the dissemination of its results, AIP could consider locating demonstration plots more strategically to enhance visibility. Finally, IPs should explore ways to expand the role of extension workers in extending the use of AIP-supported germplasm and technologies to more remote areas of the provinces.

Question 4: Eighty-one percent of survey respondents said that AIP assessed their individual and organizations' needs. Although AIP did not conduct formal needs assessments, the program consulted with sector experts from all provinces to determine training priorities. An overwhelming majority of the survey respondents who participated in AIP training courses said that the training significantly or moderately increased their knowledge relevant to their research work; that they used the knowledge and skills often in their work; that the training had changed their research practices; and that the practices had become a routine part of their work. Factors that contributed to changing knowledge, skills, and attitudes included exposure to new technologies and practices, the usefulness of the information, technical assistance, and practical demonstrations. The short duration of some training courses, mostly in horticulture, limited their influence on changing knowledge, skills, and attitudes.

In conclusion, respondents generally judged AIP a success in revitalizing agricultural research and innovation; building research capacity; and changing knowledge, skills, and attitudes. The bases for further dissemination are laid, but AIP is not ready to see its products and services reach the majority of farmers until and unless it gives further thought to formally scaling up results within the framework of a clear transition strategy toward the next phase of AIP-related programming. The evaluation team, based on feedback from stakeholders, recommends that local-language speakers be used more often to deliver training courses, and that training of trainers be conducted with extension workers to deploy need-based training sessions to farmers. Finally, the team recommends increasing the frequency of training courses and ensuring that, after the courses, trainers do more frequent on-site follow-up visits with farmers.

Overall, bearing in mind the methodological limitations of this evaluation, notably the possibly non-generalizable character of the findings, stakeholders see AIP as being largely successful in revitalizing research and innovation and in changing the behaviors of trainees.

EVALUATION PURPOSE AND QUESTIONS

The evaluation assessed the extent to which, and how, AIP has built the agricultural research capacity of partner public and private research institutions; contributed to the diffusion of agricultural practices and technologies; and enhanced the knowledge, skills, attitudes, and behaviors of researchers, farmers, and others with whom it has engaged.

USAID/Pakistan will incorporate lessons learned into ongoing and future EGA activities. The primary audiences for the evaluation include:

- The USAID/Pakistan Mission, particularly the EGA team;
- The USAID Office of Afghanistan and Pakistan Affairs (OAPA);
- The IP, the International Maize and Wheat Improvement Center (CIMMYT); and
- The GoP.

Evaluation Questions

The evaluation statement of work (Annex 1: Statement of Work) specified the following four evaluation questions, which are further elaborated in the assignment work plan (Annex 2: Assignment Work Plan).

1. To what extent has AIP contributed to revitalizing research and innovation in its focus subsectors?

2. To what extent has AIP's collaboration with the public and private sectors built the capacity of partner institutions in research and development?

3. According to public and private sector partners of AIP, how effective were the implementation of project activities? What can be improved?

4. To what extent did AIP produce any change in knowledge, skills, and attitudes in its trainees?

PROGRAM BACKGROUND

AIP seeks to increase the agricultural productivity and incomes of farm households by improving the capacity of agricultural researchers to develop and disseminate productivity-enhancing technologies and practices and by strengthening value chains, among other interventions. The program focuses on four sectors: cereals and cereal systems (wheat, maize, and rice), livestock, perennial horticulture, and vegetables. Across all four sectors, the program also focuses on human resource development. Figure 2 illustrates the program architecture: the six research and development "projects" and the activities under each.

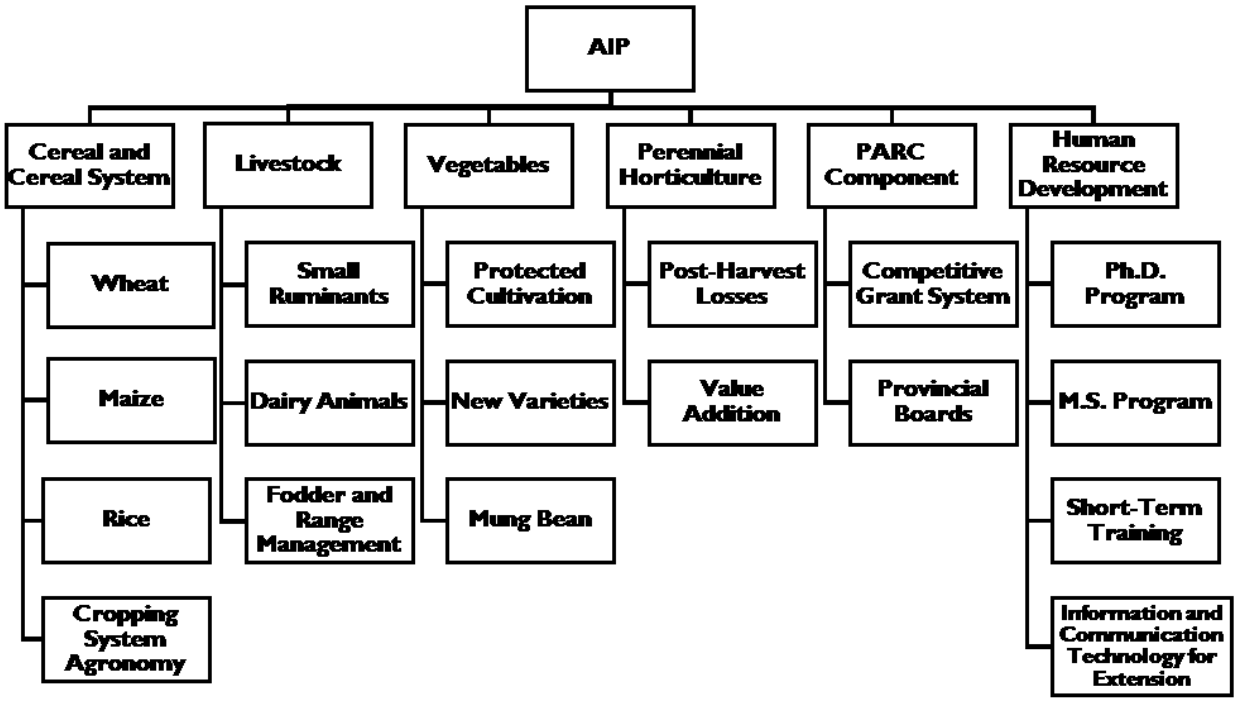
During the program's first five years, its primary activities have included:

- Introducing improved seed/planting/genetic materials (e.g., wheat, maize, maize hybrids, vegetables, fruits, and rice) to public and private sector research organizations. The program anticipated that in the short term, the research organizations would test the material for applicability in different regions of Pakistan and then multiply and disseminate promising varieties. In the longer term, the genetic material should contribute to developing new seed varieties suitable to environments within Pakistan.

- Introducing, testing, adapting, and disseminating innovative machinery and practices (e.g., Happy Seeder, two-wheel tractor, rice harvester, mung bean harvester, and protected cultivation) to improve agricultural productivity.
- Strengthening the country's human resource capacity for applied and adaptive agricultural research through vocational training (of members of research organizations, among others), field days, workshops, and support to students earning graduate degrees.
- Establishing provincial agricultural research boards to manage a small competitive grants activity to support research.

Project management is vested in a consortium of centers of the Consultative Group for International Agricultural Research (CGIAR);[1] the University of California, Davis (UC Davis); and the World Vegetable Center (AVRDC). CIMMYT is the overall lead and the technical lead on wheat, maize, and agronomy, while the International Livestock Research Institute (ILRI) leads livestock and dairy activities, the International Rice Research Institute (IRRI) leads rice activities, AVRDC manages vegetables, and UC Davis leads perennial horticulture. The Pakistan Agricultural Research Council (PARC) serves as both the hosting partner and the lead on the competitive grant system. CGIAR and USAID signed a contribution agreement in 2011 (amended in 2012) under which AIP was implemented in 2013. After a startup and priority-setting phase, AIP began implementation in earnest in 2015.

FIGURE 2: PROGRAM ARCHITECTURE



In 2011-12, USAID/Pakistan began discussions with CIMMYT and PARC to design a new agriculture project. The discussions culminated in a consultation with national stakeholders that identified the priority areas on which the project would work. CIMMYT subsequently identified partners to work in

[1] CGIAR centers in the consortium are the International Maize and Wheat Improvement Center (CIMMYT), the International Livestock Research Institute (ILRI), and the International Rice Research Institute (IRRI).

each area and engaged CGIAR consortium partners ILRI and IRRI to implement activities in livestock and rice, respectively, and non-CGIAR partners AVRDC and UC Davis to work on vegetables and horticulture, respectively. USAID/Pakistan engaged CIMMYT through the window three CGIAR fund, with the funds flowing through the World Bank to CIMMYT which then transferred funds to the other AIP partners, including PARC, on an annual basis. This mechanism allowed USAID to contribute to project design and to approve work plans. Although the mechanism does not require implementing partners to submit financial or progress reports, CIMMYT agreed to provide semi-annual progress reports at the request of USAID/Pakistan.

Theory of Change

The program's theory of change posits that:

- IF the capacity of public and private sector agricultural research institutions to develop and disseminate productivity-enhancing agricultural technologies and practices is improved;
- AND these technologies and practices are disseminated to farmers, along with the information and skills to put them into practice;
- AND producers are better linked to markets;
- THEN agricultural productivity and household income will increase.

The results framework reproduced in Annex 3: Results Framework further elaborates the theory of change.

EVALUATION METHODS AND LIMITATIONS

Evaluation Methods

The evaluation employed a mixed-methods approach that included collecting quantitative and qualitative data from multiple sources (i.e., project documents, beneficiaries, stakeholders, and experts).[2] The evaluation team surveyed public and private research organizations; conducted group interviews with farmers, members of research organizations, extension workers, and other trainees such as teachers and students; and interviewed key informants such as heads of research organizations and various stakeholders. Annex 4: Data Collection Instruments contains the data collection instruments.

Survey of Research Organizations

The evaluation team conducted a structured online survey of all 92 AIP-supported research organizations and their members (Annex 4: Data Collection Instruments contains the survey instruments). The survey of heads of organizations collected organizational-level data on the organizations' research capacity and interaction with AIP. The survey of organizations' members also

[2] The original statement of work suggested using outcome mapping to answer Question 4. This technique is best suited as a developmental evaluation tool to evaluate complex projects, generally bearing unclear objectives and characterized by an evolving package of activities applied in attempts to best impact behavior. It calls for a high intensity of interaction with stakeholders and is time-consuming. It also presumes that stakeholders have systematically documented (typically with ongoing project journals) changes related to the desired outcomes (behavior changes) of interest. For these reasons, the evaluation team discarded outcome mapping as a pertinent technique.

asked broadly about organizational research capacity but focused mostly on individuals' perceptions of the effectiveness of training with respect to building knowledge and skills and changing attitudes.

From data provided by CIMMYT, the evaluation team identified the heads of the 92 research organizations that AIP reports supporting the most intensively[3] and 532 members of those organizations who participated in AIP activities. The evaluation team invited the heads and members of these organizations to respond to the online survey. After repeated telephone reminders, 273 organization members (168 from the cereal subsector, 33 from livestock, 37 from vegetables, and 35 from perennial horticulture) responded to the survey for a response rate of 51 percent. Of these, 19 were women. Thirty-six organization heads responded to the survey, a response rate of 39 percent, which is relatively high for an online survey. Annex 5: Beneficiary Data and Online Surveys provides more detail on the surveys.

Key Informant Interviews

The team conducted 50 semi-structured interviews with key informants associated with the program and external sector experts who could provide feedback on the program's relevance to agricultural development and its design and implementation. These interviews focused on developing a comprehensive understanding of the relevance and effectiveness of AIP in terms of revitalizing research and innovation; implementing program activities; and influencing the knowledge, skills, and attitudes of trainees. The evaluation team purposively selected stakeholders and experts to capture specific expertise, experience, or perspectives. Stakeholders included representatives of USAID, IPs, donor agencies, the National Agriculture Research Center (NARC), PARC, and the Ministry of National Food Security and Research (MNFSR), as well as officials from four provincial governments (see Annex 7: Sampling).

Group Interviews

The evaluation team conducted 65 group interviews with randomly selected[4] beneficiary groups including farmers (37 groups), members of research organizations (13 groups), extension workers (7 groups), and other beneficiaries such as students and teachers (8 groups). The team conducted the group interviews in a sample of 15 districts in all 4 provinces and the Islamabad Capital Territory. It selected the districts based on the criteria of including different agro-climatic zones, various levels of maturity and concentration of AIP activities, and all AIP sectors and subsectors. The team also based the sample selection on accessibility (security). For details on group interviews, see Annex 7: Sampling.

Secondary Data

The evaluation team collected secondary data from information maintained by AIP (see Annex 6: Bibliography for a bibliography). This included program documents and program-supported research reports. The team also used beneficiary data provided by CIMMYT to assess the program's reach and select samples for interviews (Annex 7: Sampling).

[3] AIP reported working with 165 organizations including 7 non-governmental organizations, 17 universities, 28 private sector organizations, and 113 public sector research organizations. The 92 organizations that the evaluation surveyed were those that received grants to build their research capacity and could thus answer questions about this type of AIP support.

[4] The team used a combination of random and convenience sampling to select group interview participants. In the first stage of sampling, the team randomly selected 10 beneficiaries for each group interview. In the second stage, it selected four respondents for convenience based on their availability and the team's ability to contact the selected participants.

Data Analysis

The surveys yielded quantitative information regarding revitalization of research and innovation; capacity of research organizations; relevance and implementation of program activities; and changes in knowledge, skills, and attitudes of trainees. The analysis used descriptive statistics (frequencies, averages, and cross-tabulations) of the quantitative data to describe beneficiary characteristics and perceptions by subsector. When applicable, it used relevant statistical tests, such as the chi-squared and t-tests, to determine the statistical significance of observed differences between various levels of disaggregation, e.g., sector or type of respondent.

The qualitative data from interviews helped explain how and why program activities worked or failed to work. The team used MAXQDA, a specialized software package, to organize, code, and identify patterns in the qualitative data. The analysis used an explanatory approach to integrate quantitative and qualitative data; qualitative findings helped explain trends and findings in the quantitative data. The integration was designed to triangulate the quantitative with the qualitative data and help explain how and why program activities worked—or failed to work—as expected.

Evaluation Limitations

Notwithstanding the efforts of the evaluation team to obtain valid and reliable data, the evaluation has the following limitations.

- **Selection bias:** The evaluation team surveyed all heads and some members of 92 research organizations and randomly selected farmers, members of research organizations, extension workers, and other beneficiaries for group interviews. However, those who chose to respond to online surveys or agreed to participate in interviews may have been systematically different from those who did not respond or participate. This creates the potential for self-selection bias, although it is not practical to determine the magnitude or direction of any resulting bias. The team's inability to contact many of the individuals in the beneficiary sampling frame because of incomplete contact information may also have introduced some bias, e.g., toward (larger) farmers with more reliable contact information. The evaluation design mitigated these potential sources of bias by triangulating findings from multiple sources.

- **Attribution:** Rigorous attribution of outcomes to AIP activities was not possible because the program was not designed to accommodate impact evaluation. Instead, the evaluation team collected data to develop plausible explanations of AIP's contribution to outcomes.

FINDINGS AND CONCLUSIONS

Question 1: Revitalizing Research and Innovation

To what extent has AIP contributed to revitalizing research and innovation in its focus subsectors?

Question 1 examines the extent to which, and the mechanisms by which, AIP partners adapted or adopted productivity-enhancing technologies and practices. It also explores the role of AIP in enhancing the capacities of public sector institutions to conduct research and disseminate results, and their intention and ability to continue doing so after AIP ends.

Findings

Overall, 90 percent of 123 respondents in key informant and group interviews believed that AIP introduced new technologies and practices to the agricultural research community (Figure 3). From that perspective, AIP has been successful in revitalizing agricultural research and innovation in Pakistan. Experts, all of whom were familiar with AIP, were somewhat less convinced of the program's contribution than were other types of respondents, citing issues related to the researchers' skills and overall coordination. For a discussion of the reasons for this discrepancy, see the "Factors Inhibiting Revitalization" section below.

FIGURE 3: DID AIP CONTRIBUTE TO REVITALIZING RESEARCH AND INNOVATION?[5]

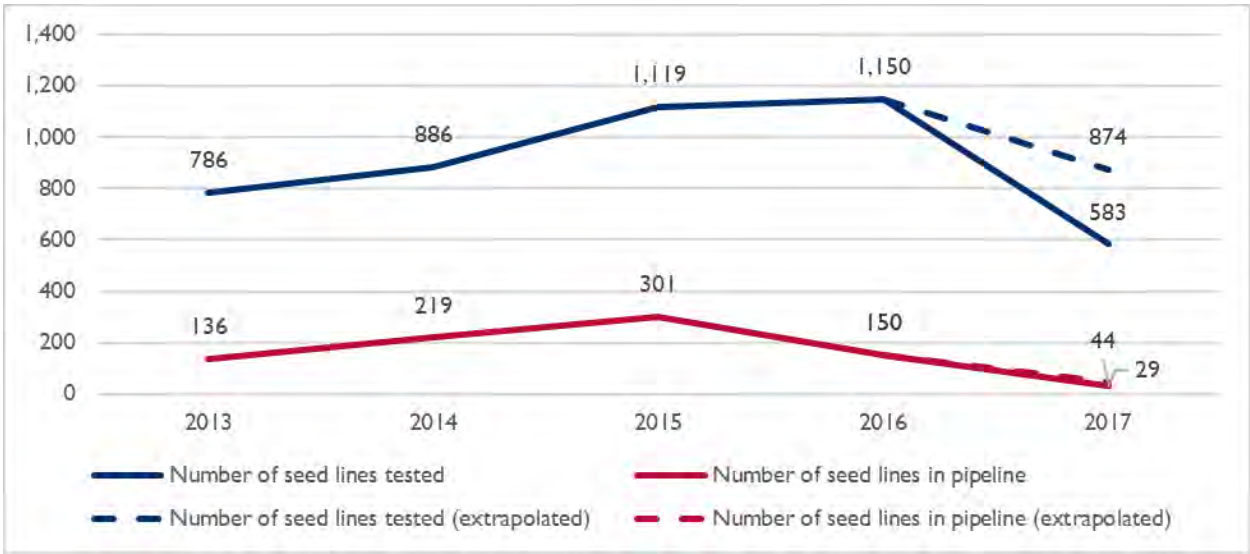
Source: PERFORM key informant and group interviews.

Quantitative data from the small survey of heads of AIP-supported research organizations corroborated the qualitative results reported in Figure 3, i.e., that AIP contributed to revitalizing research. The data show a 46 percent increase between 2013 and 2016 in the volume of new seed lines on which organizations reported they were conducting tests, and a 121 percent increase in the number of seed lines they had in the commercialization pipeline (Figure 4). The growth in both indicators coincided with AIP's implementation trajectory, peaking around 2015 when AIP was fully implemented, suggesting that distributing genetic material contributed to increased research activity. The flat or downward trends beginning in 2016 may, at least in part, reflect the fact that the 2017 numbers cover only the first eight months of the calendar year. Extrapolating from the first 8 months suggests that the number of seed lines in the pipeline may have been as high as 44 and the number of lines tested as high as 874.[6] CIMMYT further explained that as lines provided by AIP were tested, and less promising lines discarded, the number of lines on which an organization was working would naturally decline over time.

[5] The interview guides did not ask directly about "revitalization." The data in this figure represent the percentage of respondents who mentioned, during the interviews, that AIP contributed to enhancing some aspect of research and innovation capacity or practice.

[6] The accuracy of extrapolated numbers depends on strong assumptions about the linearity of results over the course of the calendar year.

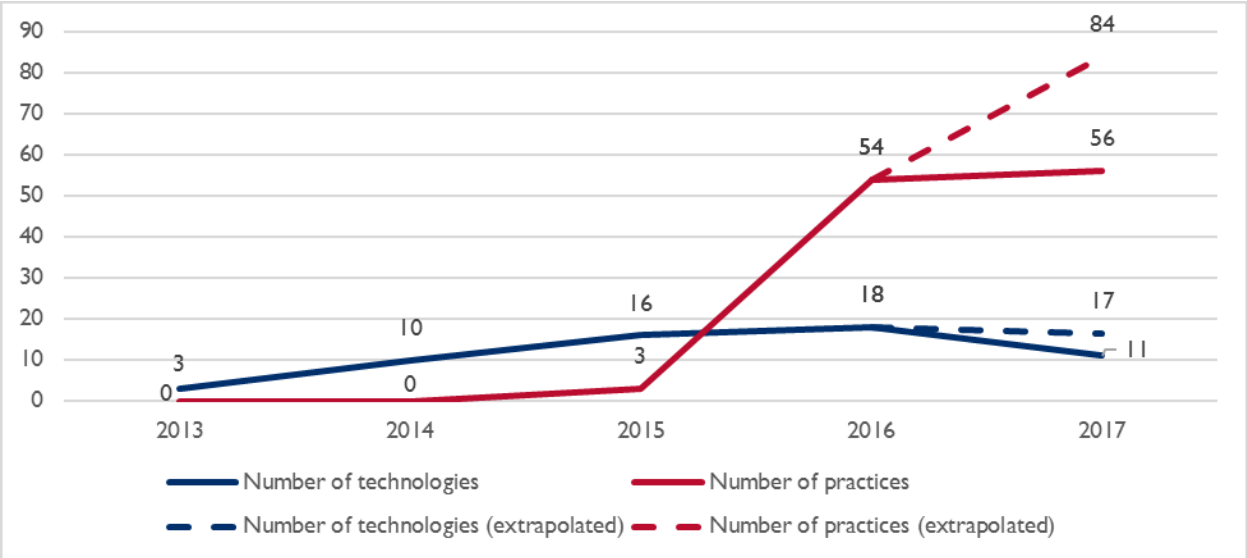
FIGURE 4: GERMPLASM RESEARCH AND INNOVATION



Source: PERFORM survey of beneficiary research organizations.

The survey data also show a marked increase in the number of new practices and technologies (the latter being mostly in the form of machinery and, in the livestock sector, vaccines and artificial insemination products) on which AIP-supported organizations worked (Figure 5). The data show little growth after 2016 in the number of new technologies tested, perhaps because there are only so many types of technological innovations (e.g., zero till seeders, drip irrigation systems, and animal shelters) available and, more importantly, relevant to Pakistan. Therefore, once the technologies were tested and adapted, they required no additional work from the research organizations. Figure 5, like Figure 4, extrapolates earlier trends to the entire 2017 calendar year, illustrating that the number of new practices worked upon in 2017 might reach 84 and the number of technologies could be 17. The (extrapolated) 2017 upward trend in the introduction of new practices is consistent with the idea that practices follow the introduction of other inputs with which they are associated.

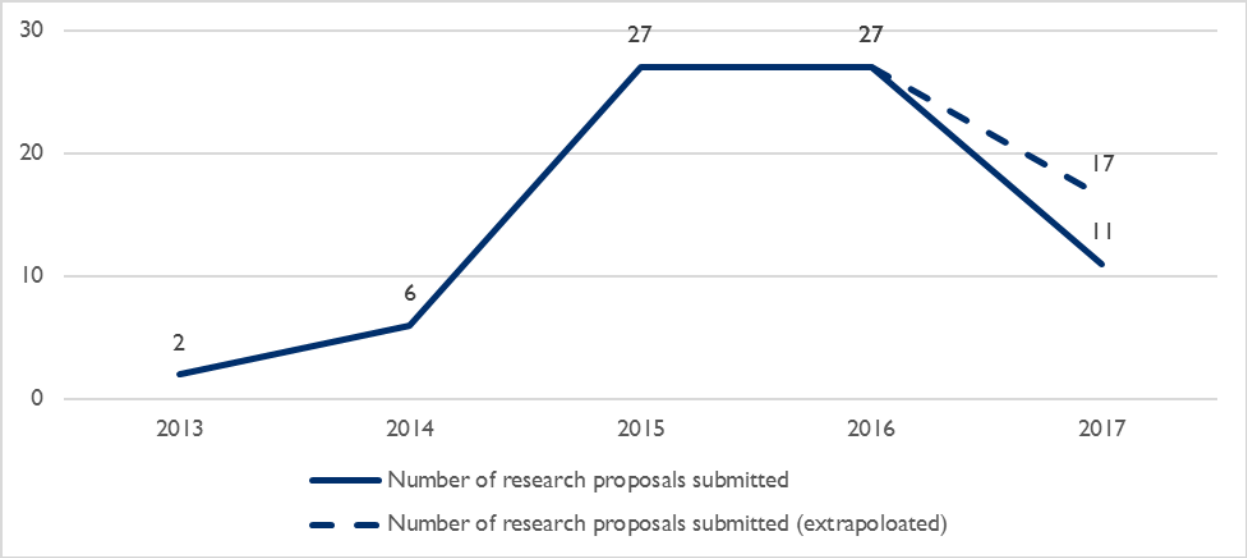
FIGURE 5: NEW TECHNOLOGIES AND PRACTICES TESTED AND INTRODUCED



Source: PERFORM survey of beneficiary research organizations.

Following the program's startup and priority-setting period (2013–2014), supported organizations submitted a much greater number of proposals, a clear sign of increased interest in research (Figure 6). Extrapolating to the entire 2017 calendar year suggests that the number of proposals submitted in 2017 could be as high as 17. This excludes the proposals that PARC, based on recent submissions from the provinces, was in the process of reviewing for award at the time this report was written. CIMMYT explained that the downturn in 2017 may reflect that the eight months of data available in 2017 excludes the end of the year when research centers and universities normally submit proposals.

FIGURE 6: NUMBER OF RESEARCH PROPOSALS SUBMITTED



Source: PERFORM survey of beneficiary research organizations.

Factors Contributing to the Revitalization of Research and Innovation

When asked *how* AIP contributed to revitalizing research and innovation, key informant and group interview respondents identified the introduction of new practices, training and exposure visits, provision of seeds and semen, and the technical assistance that came with the inputs. Figure 7 illustrates the percentage of responses associated with each of these themes, presenting only the most frequently mentioned factors. Respondents explained that the introduction of new practices was important because AIP, through its international network, introduced Pakistani scientists to hitherto unknown or unavailable international practices—for example, to diagnose wheat diseases:

> *"CIMMYT-supported collaborations with international experts enhanced the capacity of our scientists. We developed linkages with international research centers through participation in international trainings. … For example, as a result of CIMMYT-supported training, I learned how to correctly identify the rust on wheat. In the past, sometimes we were not able to correctly diagnose the wheat disease [rust]." – Member of research organization*

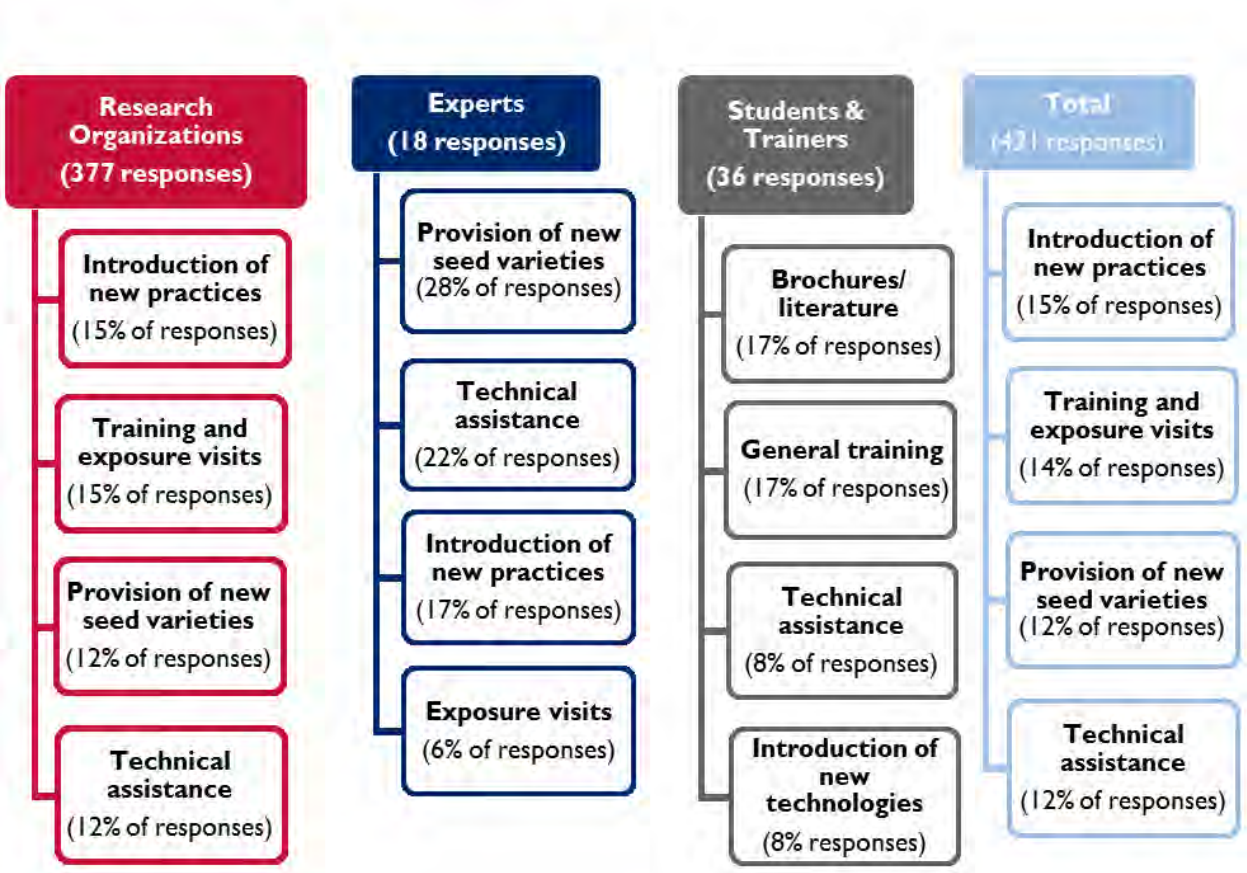
The seeds and technologies that AIP introduced, as well as training in research methods, allowed scientists to apply their skills to testing and screening new seed lines and to adapting imported technologies (e.g., land leveling machinery, drill sowing, livestock shading, tunnel cultivation, and drip irrigation) to work in Pakistan.

> *"AIP-supported trainings increased our research capacity. … I attended a training on research methods in Kenya … that was the most effective activity for my personal capacity building. In*

this training, I learned how to categorize the varieties and collect genetic data for evaluation purposes and conduct research on seed varieties." – Member of research organization

By importing into Pakistan inputs that had already been tried and marketed elsewhere, AIP contributed to revitalizing research and innovation by expanding the pool of genetic material on which researchers could work and by shortening, from 10 to 3, the number of years typically required to certify and register a crop variety. Similarly, according to a member of a public sector research organization, beginning with a proven technology rather than starting from scratch has also considerably reduced the amount of time it takes to adapt and bring to market a piece of equipment or other technology.

FIGURE 7: FACTORS CONTRIBUTING TO REVITALIZATION OF RESEARCH AND INNOVATION



Source: PERFORM key informant and group interviews. The interviews allowed multiple responses to this question, so totals do not necessarily sum to 100 percent.

When disaggregated by sector, the responses show that the livestock, vegetable, and horticulture sectors benefited most from the introduction of new practices through training. With respect to beneficial practices, respondents most frequently mentioned drip irrigation and tunnel farming, insect nets, bags for seed preservation, laser land leveling, sowing wheat on ridges, effective use of fertilizers, artificial insemination in goats, and proper feeding and watering of livestock. The Happy Seeder, laser land leveler, push row planter, and GreenSeeker emerged as technologies that respondents found useful. The practical demonstrations they found most effective included ridge sowing, laser leveling, onion seed production, guava food processing, pruning in guava, preparation of animal feed, construction of sheds for small ruminants, and artificial insemination.

But the provision of more than 1,000 seed lines in the cereal sector is the most important reason for the program's success. This represents the highest volume of inputs in any sector and covers the crops—wheat and maize—on which CIMMYT concentrated its work. The evaluation team concludes that the provision of seeds in the cereal sector was seminal, essential, and necessary in revitalizing research and innovation and was AIP's primary contribution to that end. The initial provision of inputs such as seeds—and the practices that accompany their use—remains the linchpin for revitalization of research and innovation, essential for technological advances, new practices, technical assistance,[7] and training. The sudden departure of UC Davis and, to a lesser extent, AVRDC, cut short efforts to finalize the testing of horticultural practices that would not bear fruit for 10 years or, in vegetables, that would require complementary measures (e.g., fertilization, pesticides, and soil testing).

Factors Inhibiting Revitalization

While few interview participants (17 percent) mentioned factors that may have limited AIP's contribution to revitalizing agricultural research and innovation, their perceptions point to potential improvements in the design of similar USAID activities. Some of the factors do not lie within AIP's manageable interest but can nevertheless inform future similar programming.

Key informant and group interview respondents representing heads and members of research organizations, government officials, trainers, and trainees most frequently mentioned current and prospective **funding constraints**. AIP was fully operational for about 30 months after its initial two-year priority-setting exercise. Yet, some respondents noted that the funding required to carry out trials and to finish those currently underway is already limited. Furthermore, those who noted that AIP is ending were concerned that it could not consolidate and deepen its gains without additional funding. Twenty-six percent of 35 responses (4 responses from members of research organizations, 2 each from IPs and experts, and 1 from a trainer) noted that government research organizations' budgets are not sufficient to sustain the gains achieved through AIP (Question 3 addresses this issue in greater detail).

> *"Our short-term needs in terms of operational expenses and limited staff training were fulfilled, but long-term institutional needs [funding] were not." – Senior government official*

> *"We already had the genetic material but we did not have enough access to farmers to disseminate the genetic material and knowledge due to the lack of money." – Head of research organization*

Funding constraints may also pose a greater threat than research skills to prospects for sustainability. In individual and group interviews, heads and members of Pakistani public and private sector institutions with which AIP worked reported that institution staff were qualified researchers. Researchers in these institutions explained that they possessed the requisite skills but, until AIP, lacked the raw materials (e.g., seeds and equipment) and especially funding that AIP provided to apply their skills.

> *"Under the government structure, we always faced a shortage of funds for conducting research-related activities. … We have no technical issue; the major problem is scarcity of funds. … Technically, I didn't need any learning from AIP, but the major issue was funding." – Member of research organization, Quetta*

[7] Technical assistance is defined as distinct from training. It consists of identifying agricultural needs in Pakistan and matching those with inputs, technologies, and practices that are available to AIP IPs but not previously available in Pakistan. It involves the preparation and assistance to import these various inputs, as well as knowledge and technological transfer that may occur between international and national experts when, for example, internationally sourced seeds are imported and introduced to the laboratories of senior researchers. When national researchers work with these inputs, technical assistance may also involve collaborative work with international researchers to adapt the inputs to Pakistan.

Experts and IP respondents, however, believed that the research institutions do not have enough staff with a high level of technical expertise—for example, with skills acquired through American-style higher education.

To help address this knowledge and skills gap, AIP trained researchers and also supported graduate degree programs for 14 students, 9 for master's degrees and 5 for doctorates. The key informant who spoke to this issue reported that the selection process was transparent. At the time of the evaluation at the end of August 2017, all nine master's students had completed their degrees and returned to Pakistan, but none had found employment. The doctoral students were working on their research.

Only 4 percent of key informants raised a final concern, but these were mostly (42 percent) experts, respondents who have a unique, perhaps more holistic, perspective on the value that AIP adds to revitalizing research and innovation and its repercussions on the rest of the system. When asked to reflect on the role and contribution of AIP in the landscape of Pakistan's agricultural sector, these respondents explained that regulatory and other policy-related barriers limit AIP's contribution to increasing agricultural productivity, notably those concerning certification and registration. A sector expert, for example, explained the issues in the following terms:

> *"The seed registration process is cumbersome and complicated in Pakistan. To be eligible for award of certification by the Federal Seed Certification and Registration Department, the seed companies interested in the KP [Khyber Pakhtunkhwa] seed business are legally bound to test their seed in KP for two years in at least two of the four agro-ecological zones of the province. … This is something difficult and [expensive] for companies to do. [Under AIP] we also tried to identify some farmers who could produce the seeds and register them with the seed certification department but … farmers faced some issues … and our effort was not successful. So, I think we should develop some mechanism to facilitate the farmers in this regard and should make things easy for them." – Sector expert*

Thus, even though AIP may have provided the inputs and financial impetus to spur growth in the volume of research and innovation activity, and its products are about to be more widely distributed to the market, the administrative machinery to ensure buyers that the products meet quality standards is not in place. These missing reforms in the regulatory environment may limit AIP's contribution to Pakistan's agricultural sector.

Conclusions

The data strongly suggest that AIP contributed to improving research capacity and practices in the research organizations with which it worked by distributing imported inputs and training researchers on the new practices with which those inputs are associated. However, the two to three years required to complete tests have not passed, and funding has nearly lapsed, or has already done so in horticulture and vegetables. In these circumstances, AIP has only begun disseminating the results of revitalized research and innovation to farmers and others along the value chain. The evaluation suggests that "innovators" and "early adopters" are the primary beneficiaries of AIP's work to date; getting the majority of (mostly small) farmers to buy and properly use the inputs AIP provided remains a challenge.[8]

At the time of the evaluation, most AIP-supported tests and trials have reached maturity, but some remain to be concluded, notably in vegetables and horticulture. AIP now has an opportunity to

[8] The database from which the evaluation team selected farmers for interviews was missing a large amount of contact information. If larger farmers were more likely to be innovators and early adopters, and were also more likely to have accurate contact information, the perspectives and experiences of the sample of farmers from which the team collected data may not reflect the experience of all farmers who engaged with AIP.

consolidate the early results achieved and focus on dissemination. The strategy of engaging mostly with more progressive farmers to demonstrate new technologies and practices is sound. The challenge is to scale up AIP's results to the majority of farmers. Given that not enough time has elapsed since 2015 to achieve economies of scale sufficient to make these inputs affordable to small farmers, AIP faces a challenge in crossing the chasm between richer, more progressive farmers and the rest of farmers.

In short, and bearing in mind the limits to the data, the evaluation team concludes that although successful in what could be considered a first phase of revitalizing research and innovation, AIP was not in operation long enough to capitalize upon or consolidate the gains to which it contributed: changing technology and management practices, providing farmers with increased access to information, and improving the availability of technology. Identifying sources of funding to more widely disseminate new technologies and practices and continue on a trajectory of increased research activity will be crucial to consolidating AIP's gains in revitalization of research and innovation and increasing agricultural productivity.

Recommendations

For USAID:

To consolidate the results achieved so far, USAID should consider extending AIP funding with the explicit aims of:

- Diverting funding to promising seed lines and technologies for which testing and adaptation are not finished.
- Ensuring that next steps for completing work in horticulture are finished and the work more widely disseminated.
- In preparation for the next phase of programming, developing a strategy to move innovations along the adoption trajectory from "innovators" and "early adopters" to the majority of farmers. Consider developing a separate project to scale up marketing of seed varieties, practices, and technologies at prices affordable to farmers.

For IPs:

- Complete an analysis of all seed lines and technologies upon which work remains to be done and focus funding on completing the work. Do not engage in new activities until the unfinished work is near completion and only fund new activities that can be completed in the remaining life of the project.
- Identify and pursue a corrective course of action to provide further funding and technical assistance to the horticulture, vegetable, and—to a lesser extent—livestock sectors to reinforce the work done and establish the basis for further collaboration.
- Develop and implement a marketing strategy, perhaps in collaboration with private (and public) sector partners, to disseminate the germplasm, practices, and technologies to the majority of farmers—i.e., move beyond demonstration plots to other means of placing the products in more remote areas of the provinces.
- Identify and implement mechanisms to enhance subsistence farmers' access to the inputs and practices hitherto available mostly to progressive—and often larger and more economically advantaged—farmers.

Question 2: Building Research and Innovation Capacity

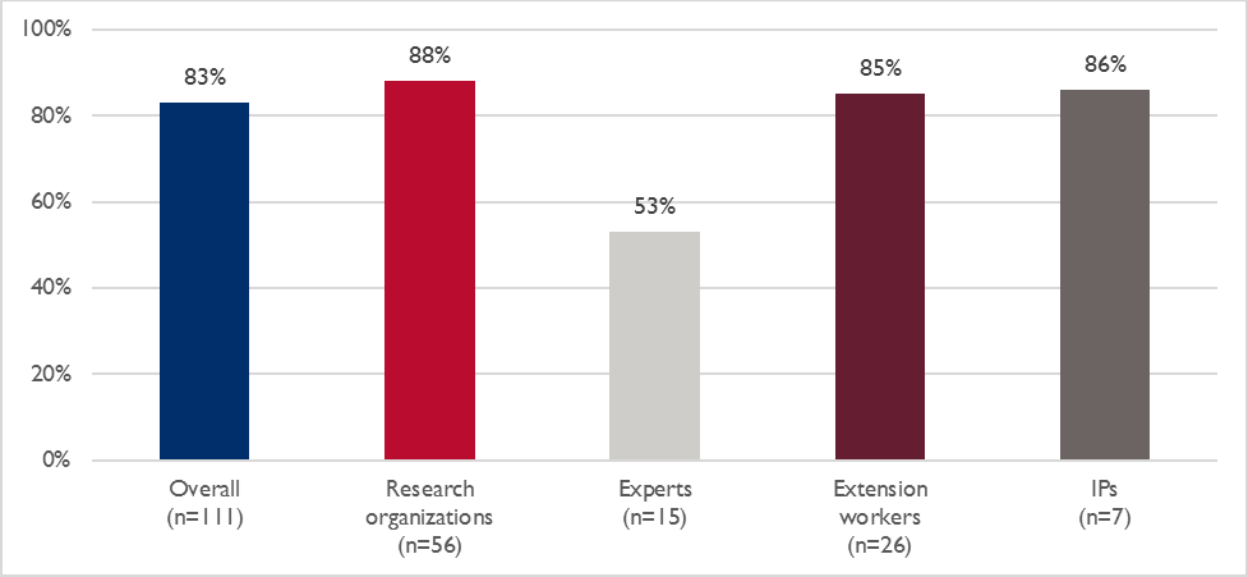
To what extent has AIP's collaboration with the public and private sectors built the capacity of partner institutions in research and development?

This question examines the organizational capacity-building dimension of the program. AIP's notion of building an organization's research capacity is predicated on the hypothesis that the greater the number of individuals supported to work in their domain, the greater the capacity of the organization in which they serve.

Findings

Key informant and group interviews with sector experts, members of research organizations, extension workers, and IP representatives suggest that AIP has been successful at building individual researchers' technical capacity to conduct research, and thus building the capacity of partner institutions (Figure 8). At the organizational level, increases in staff numbers and research activity and output reflect enhanced research capacity. Experts were more guarded than other types of respondents in their perspective on AIP's capacity building. One reason for their divergent perspective is that experts did not see AIP contributing to establishing linkages within the broader interorganizational environment of relationships.

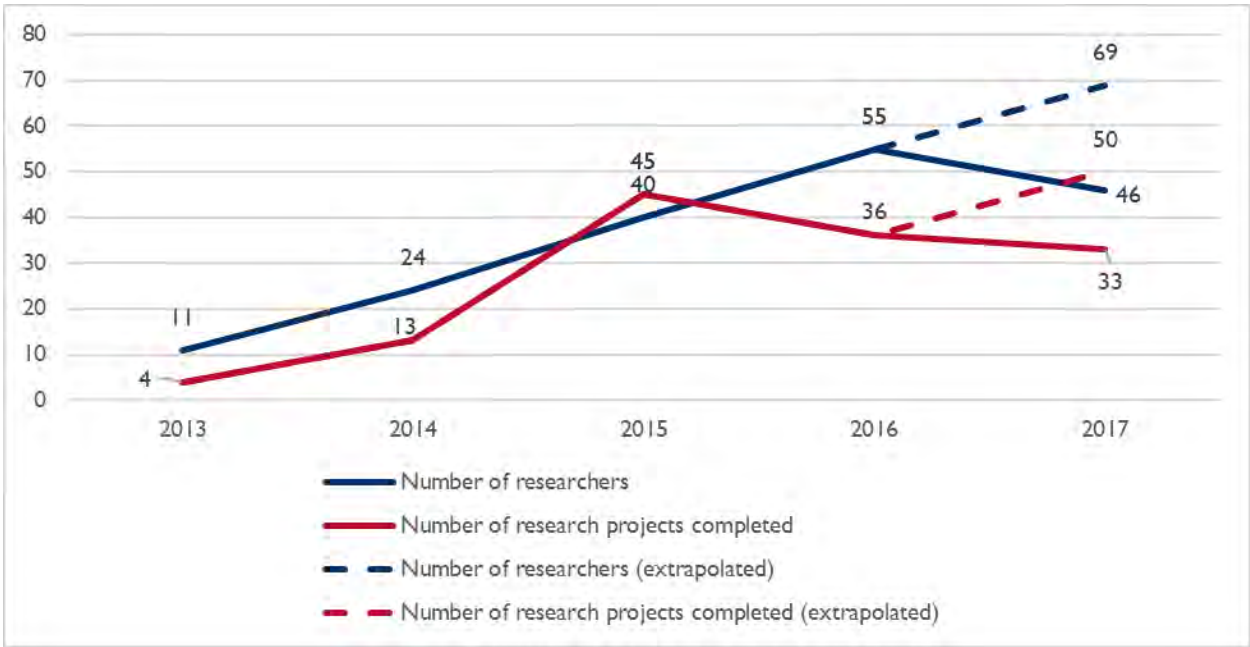
FIGURE 8: PROPORTION OF RESPONDENTS REPORTING THAT AIP BUILT ORGANIZATIONAL RESEARCH CAPACITY



Source: PERFORM key informant and group interviews.

Figure 9 shows that as AIP finished its priority identification phase and began implementing activities in earnest in 2015, the number of researchers employed grew fivefold, while the number of research projects completed (a measure of organizational throughput capacity) grew by a factor of 10. If the 2017 trends were to continue over the course of the calendar year, up to 50 projects could be completed, and 69 researchers could be working on those. This does not include the researchers who might benefit from competitive grants after September–October 2017. These data, based on respondents' records, corroborate the general perception highlighted in the survey that AIP succeeded in building the capacity of organizations in the sense of building the capacity of organizations' researchers.

FIGURE 9: INDICATORS OF RESEARCH ACTIVITY



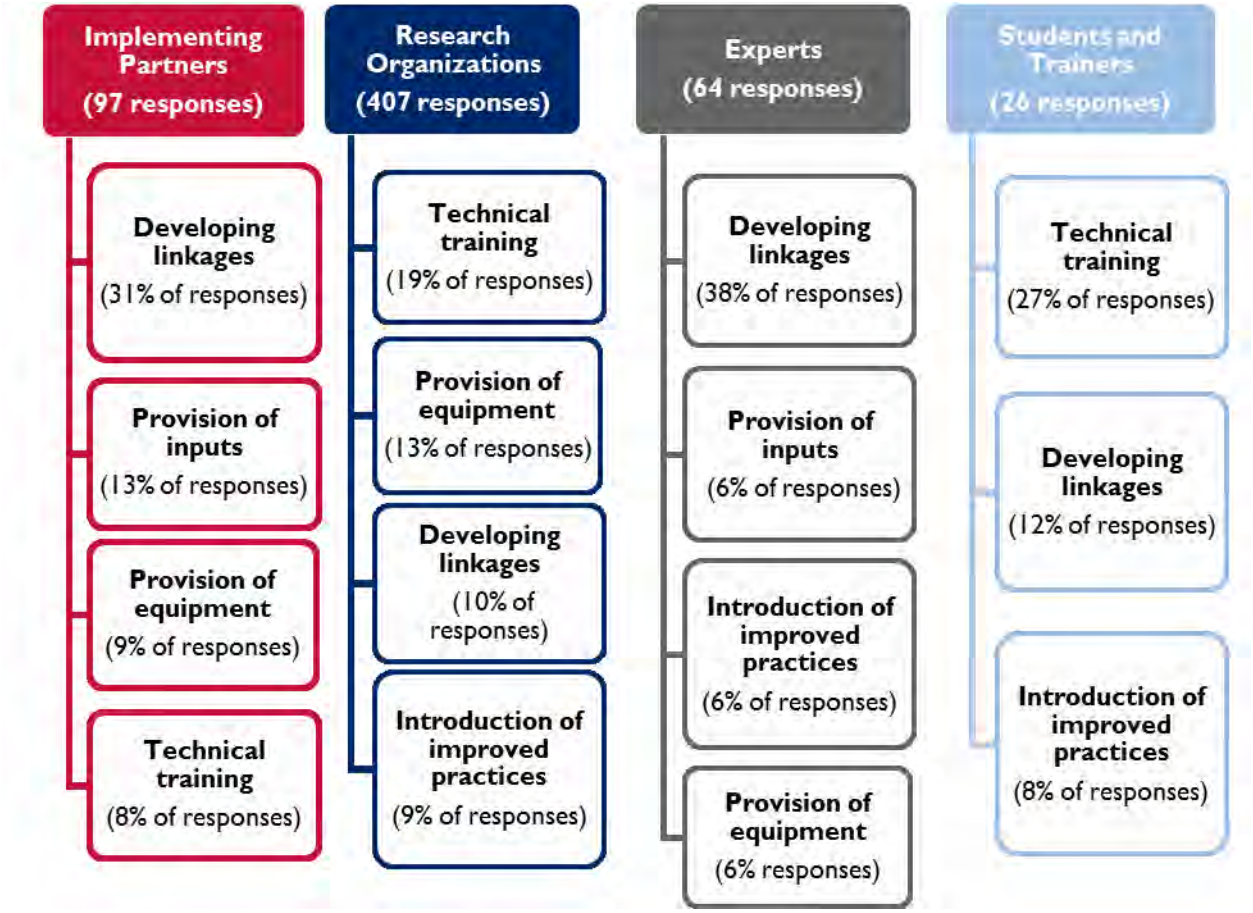
Source: PERFORM survey of beneficiary research organizations

The extent to which AIP assessed and ultimately met beneficiaries' needs is also an indicator of success. Overall, heads of organizations (86 percent) and the members of those organizations (88 percent) who responded to the survey thought that AIP properly assessed their organizations' needs before starting to implement activities. Moreover, 84 percent of organization heads and 84 percent of members believed AIP's assistance met their needs.

Factors Contributing to Capacity Building

Figure 10 summarizes the analysis of 594 coded excerpts from interviews that help explain how AIP support contributed to capacity building. Technical training, new seed varieties, and developing linkages between individual researchers and between institutions emerged as the most important contributors.

FIGURE 10: FACTORS CONTRIBUTING TO CAPACITY BUILDING



Source: PERFORM key informant and group interviews. The interviews allowed multiple responses to this question, so totals do not necessarily sum to 100 percent.

Respondents spoke mostly of horizontal linkages (between individual researchers or between institutions working at the same level in the agricultural sector) but a few mentioned vertical linkages (from research to consumer). These linkages are important because they establish functional relationships between people and organizations that work along the entire value chain connecting agricultural research to production to markets, and they constitute a key element of institutionalization.

> *"ILRI may serve as a bridge to connect livestock professionals with the farmers. Through my association with ILRI, I may be able to improve my skills and knowledge and transfer the same to livestock farmers for resolving their issues." – Senior government official*

Members of research organizations in KP particularly found forums such as Farm Services Centers useful to establish vertical linkages and reach out to consumers.

> *"In KP we have Farm Services Centers (FSCs) …. we link up the farmers and agriculture research institutes through FSCs to disseminate the inputs we received from AIP…. FSCs also played a role to develop the seed value chain…..Drip irrigation system is also another AIP-supported intervention that was disseminated at the farm level through FSCs." – Member of research organization*

One of the unintended benefits of AIP is that it created a pole of attraction for researchers and their institutions. Through its funding power and mere physical presence in Pakistan, AIP has grown a network of connections with itself at the center, and has also permitted the establishment of interconnections between the hitherto noncollaborating organizations that surround it as satellites. AIP also has offered a platform for CGIAR and non-CGIAR partners to work together under one umbrella and, in doing so, has established the foundations of a possible institutionalization of those relationships.

> *"AIP brings all related agricultural technologies and expertise to one platform which brought positive change and enhanced the productivity of agriculture. AIP has basically provided a platform for researchers, scientists, the public sector, and private companies to collectively enhance the agriculture sector. … In other words, AIP worked as a hub for bringing people [scientists and researchers] to work together." – Head of research organization and expert*

It is interesting to note that experts and IP respondents believed that developing linkages is the most important factor contributing to capacity building, whereas members of research organizations, students, and trainers identified technical training as the primary factor. This is understandable in light of the respective positions these respondents occupy within the constellation of organizations. Meanwhile, heads of research organizations emphasized the importance of money for facilities and supplies (e.g., laboratory equipment or work implements) or research grants, new genetic material, and the introduction of new research practices as key contributors to capacity building. The conclusion that emerges from these findings is that AIP's key contributions to building the research and development capacity of partner institutions are money, genetic material, training for researchers, and establishing linkages.

While AIP has contributed to establishing relationships within the agricultural research community, and begun to form horizontal linkages within the agricultural sector, some respondents expressed concern that once AIP shuts down, the tendency of agricultural research institutions to work in silos will once again prevail, and that the connections created between researchers of various organizations could be lost.

A majority of heads of organizations (83 percent of 23 heads who responded to these survey questions) believed that AIP's assistance—as delivered so far—produced lasting change in their organizations' research practices. Even though this constitutes a subsample of a small sample, the responses showed no significant differences across sectors. Respondents from the horticulture sector provided no data for this question; this supports the finding, discussed under Question 4, that less than sustainable results may have been achieved in that sector.

Factors Inhibiting Capacity Building

PARC was charged with establishing provincial agricultural research boards, in part to better tailor technical assistance to the specific conditions prevailing at the provincial level. However, because of bureaucratic barriers that prevented PARC from establishing financial accounts to receive and disburse funds, this component did not fully materialize. Moreover, except in Punjab, which already had a board, the provincial boards were not established because the provincial assemblies did not pass the required legislation. Without the guidance of the provincial boards, even scientists' efforts to build their individual capacities based on their research interests may have missed addressing localized needs.

> *"We have the linkages, but they need to be strengthened because the international exposure and international research-related activities should mainly be undertaken at PARC, within the research system of the provincial government. If the linkages are strengthened, then the provincial government will also have access to new, innovative technologies." – Senior government official*

Also, some program activities in vegetables and horticulture suffered from the untimely closure of the UC Davis and AVRDC components.

While most respondents believed that establishing linkages was one of AIP's most significant and important contributions to enhancing research capacity and outcomes, a few mentioned limitations with respect to linkages and coordination. The nine respondents who spoke to these issues believed that AIP needed to focus on building linkages along the entire value chain from research to markets in order to better connect beneficiary farmers with research and research outputs and, eventually, with markets. Two specifically noted that establishing public-private partnerships was crucial to scaling up and more widely disseminating research results to farmers.

Conclusions

Research organizations' records of staff capacity, research activity, and throughput indicate that AIP successfully built the research capacity of organizations. It did so by reinforcing individuals' research capacity by providing training, enhancing facilities, and supplying genetic material.

By its mere presence in country, AIP contributed to establishing linkages between organizations. It acted as a hub, attracting researchers in quest of money or inputs, and brought together, for the first time in Pakistan, CGIAR and non-CGIAR partners to work together under one umbrella to address constraints in key subsectors of agriculture. However, perhaps because it had not developed or communicated an exit strategy, AIP did not manage to consolidate these one-off contacts. It did not leverage them to join or create self-sustaining networks of knowledge transfer that would support sustained change in organizational capacities in the absence of external funding. Because of the relative absence of government funding and coordination, there is little likelihood that such institutional contacts can be maintained without the presence of AIP's IPs, the only viable source of research funding at the time of the evaluation.

Recommendations

For USAID and IPs:

- Advocate with the government to better fund agricultural research and extension. Greater funding for research could extend and sustain the research-related gains of AIP. An adequately funded extension program will enable extension workers to be more effective partners to "socialize" the use of germplasm, technologies, and practices in more remote areas of the provinces.

For IPs:

- Use a more participatory approach to determining the needs of farmers in specific agro-climatic environments and deliver training and technical support accordingly. Support the GoP in extending the Model Farm Services Centers to regions other than KP to provide an easily accessible set of structures offering a platform to gather farmers' inputs and ideas for improved training or technical assistance with germplasm and technologies in their areas.

Question 3: Effectiveness of Program Activities

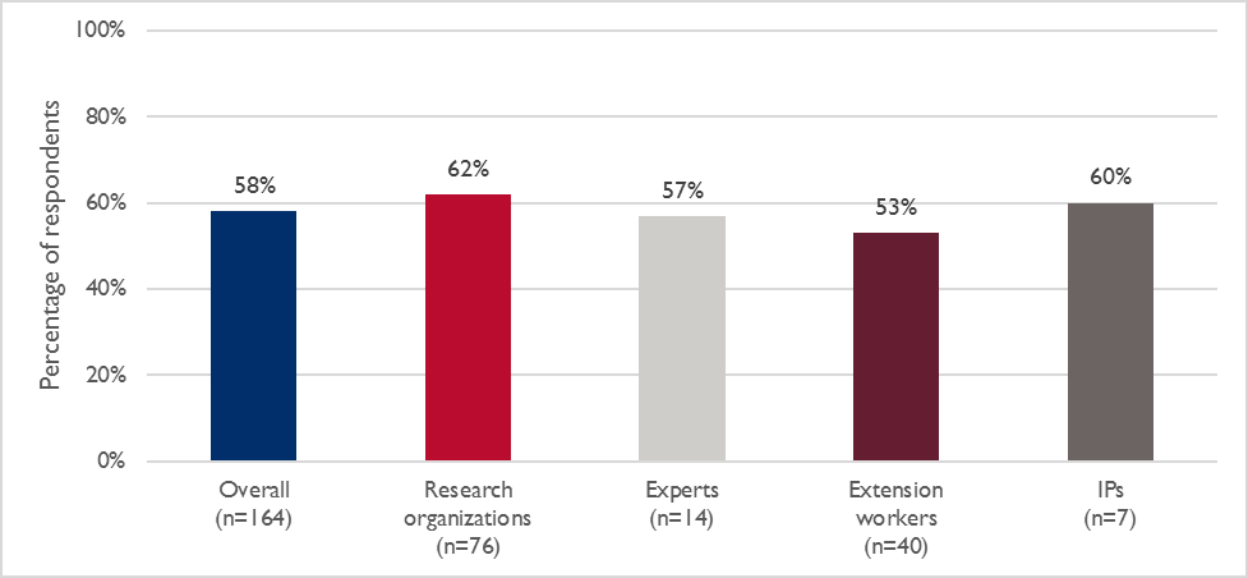
According to public and private sector partners of AIP, how effective was the implementation of project activities? What can be improved?

Findings

The evaluation team assessed the effectiveness of AIP implementation approaches by gauging the extent to which they contributed to the intended outcomes on which the evaluation focused, i.e., revitalizing research and innovation, building the capacity of partner institutions, and enhancing the knowledge, skills, and attitudes of trainees. The interviews did not ask directly about "effectiveness" but, instead, asked whether an objective had been met (e.g., capacities enhanced) and then followed up with questions about "how" to explore linkages to AIP activities and approaches. This line of questioning also revealed implementation challenges that informed recommendations on how to improve performance.

Fifty-eight percent of key informant and group interview respondents believed that AIP's implementation was effective (Figure 11). This contrasts with findings for the other evaluation questions, where over 80 percent of respondents judged that revitalization occurred; that organizational capacity was built; or that AIP changed knowledge, attitudes, and skills. This is not necessarily inconsistent with other findings, however: respondents may be satisfied with the outcomes but still see room for improvement in the ways in which AIP achieved those outcomes.

FIGURE 11: EFFECTIVENESS OF AIP ACTIVITY IMPLEMENTATION



Source: PERFORM key informant and group interviews.
Note: The evaluation team did not ask directly about problems with implementation. Instead, when asking about implementation, interviewers asked why implementation approaches were, or were not, effective.

These numbers can be explained in terms of the factors that contributed to or inhibited effective implementation.

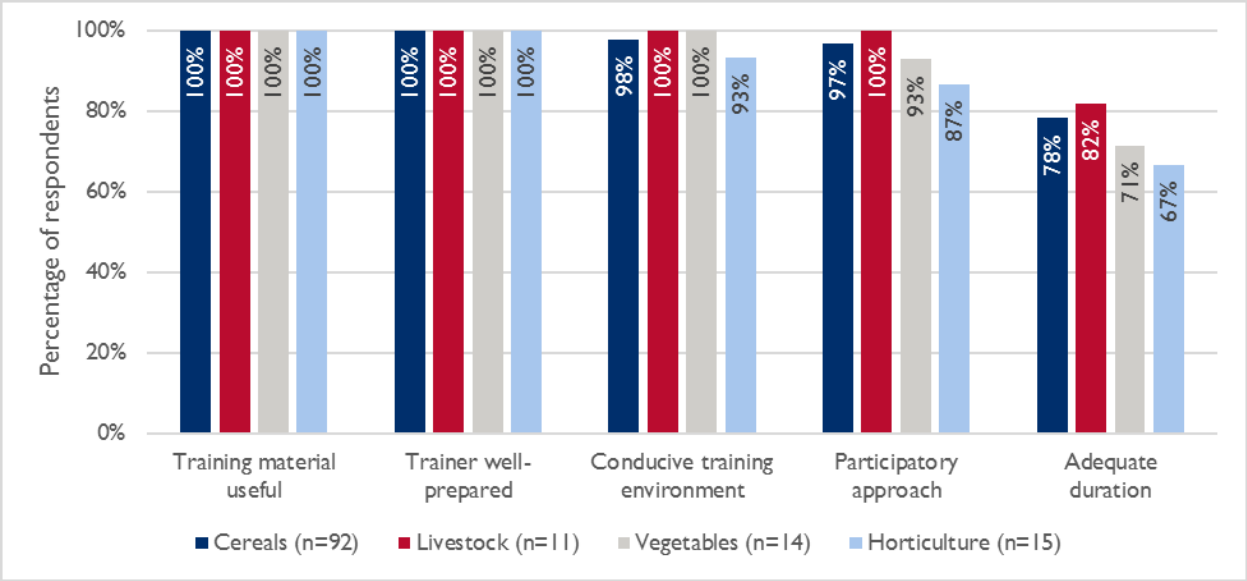
Effectiveness of Training Implementation

Along with introducing genetic material and technologies, training underpins AIP's approach to revitalizing research and innovation. Because training differs from other activities in important ways, and

because the evaluation team collected detailed information on training, this section focuses exclusively on implementation of training, while the next section addresses implementation of other program activities.

A large majority of the 115 survey respondents[9] who participated in training were satisfied with all aspects of the training (Figure 12). There was no statistically significant difference between men and women with respect to perceptions of training or other aspects of implementation.

FIGURE 12: SATISFACTION WITH TRAINING



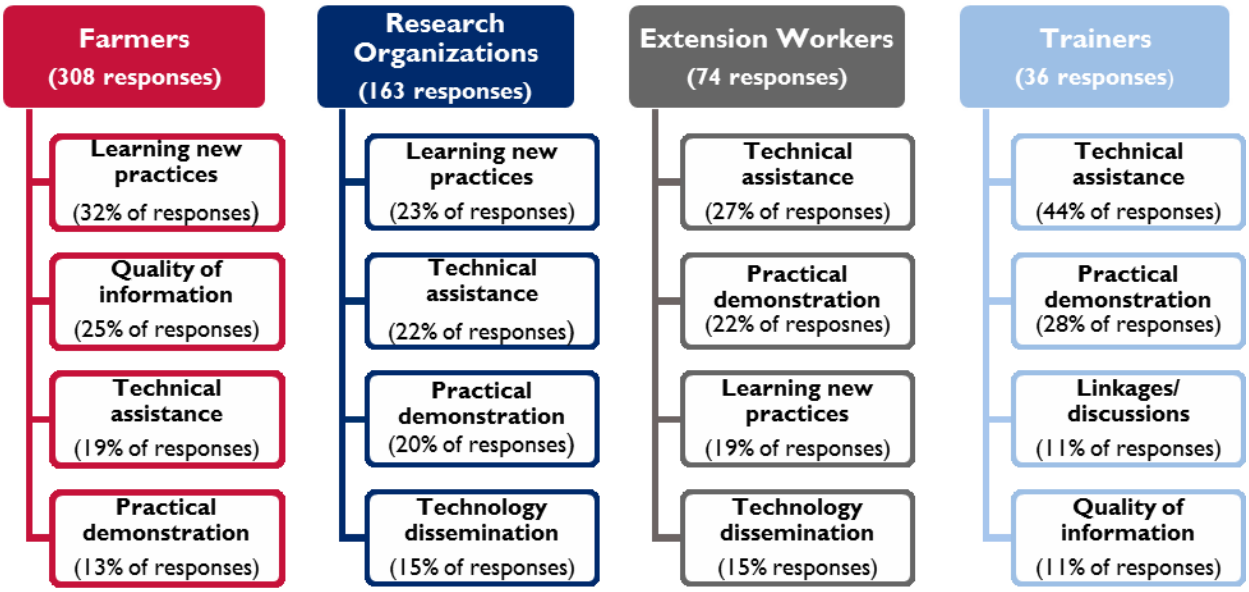
Source: PERFORM survey of beneficiaries of AIP training.

To elicit nuanced perceptions of how training contributed to changing knowledge, attitudes, and practices, the evaluation team asked trainees and students about their experiences with and perceptions of AIP's training approach. Respondents most frequently mentioned exposure to new practices, the high quality and usefulness of the information and training, technical assistance,[10] practical demonstrations, and exposure to new technologies as strengths of the training approach (Figure 13).

[9] The number of respondents in Figure 12 is greater than 115 because some respondents represented multiple sectors.

[10] Technical assistance is introducing and enabling the farmers to learn to use new and/or improved crop and livestock management equipment. This includes provision of new/improved machinery, equipment, utensils, etc., and related operational and maintenance skills. It excludes other training.

FIGURE 13: STRENGTHS OF AIP'S TRAINING APPROACH

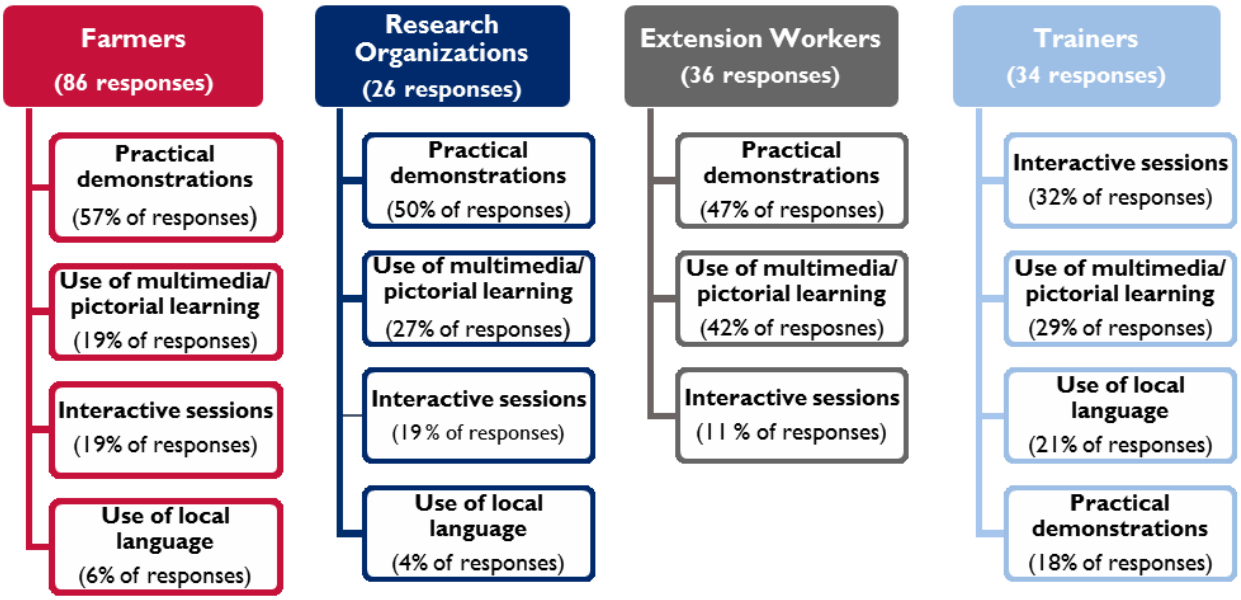


Source: PERFORM key informant and group interviews.

When asked why training was effective, individual and group interview respondents spoke of the efficacy of practical demonstrations, use of multimedia/pictorial materials, interactive sessions, and training in local languages (Figure 14).

> *"In Thatta, nobody [has ever] succeeded in establishing a nursery due to the hot temperature, but we gave them the idea of a greenhouse shade net and they [farmers] saw the seedling production with their own eyes when we established a vegetable nursery there in the field. Now at least they have seen that they can establish a vegetable nursey by following the techniques we practiced in front of them. Previously they were bringing seedlings from Thailand, but now they are confident that they can establish a nursery for seedlings as well." – Research organization member*

FIGURE 14: MOST SUCCESSFUL TRAINING DELIVERY MECHANISMS



Source: PERFORM key informant and group interviews. The interviews allowed multiple responses to this question, so totals do not necessarily sum to 100 percent.

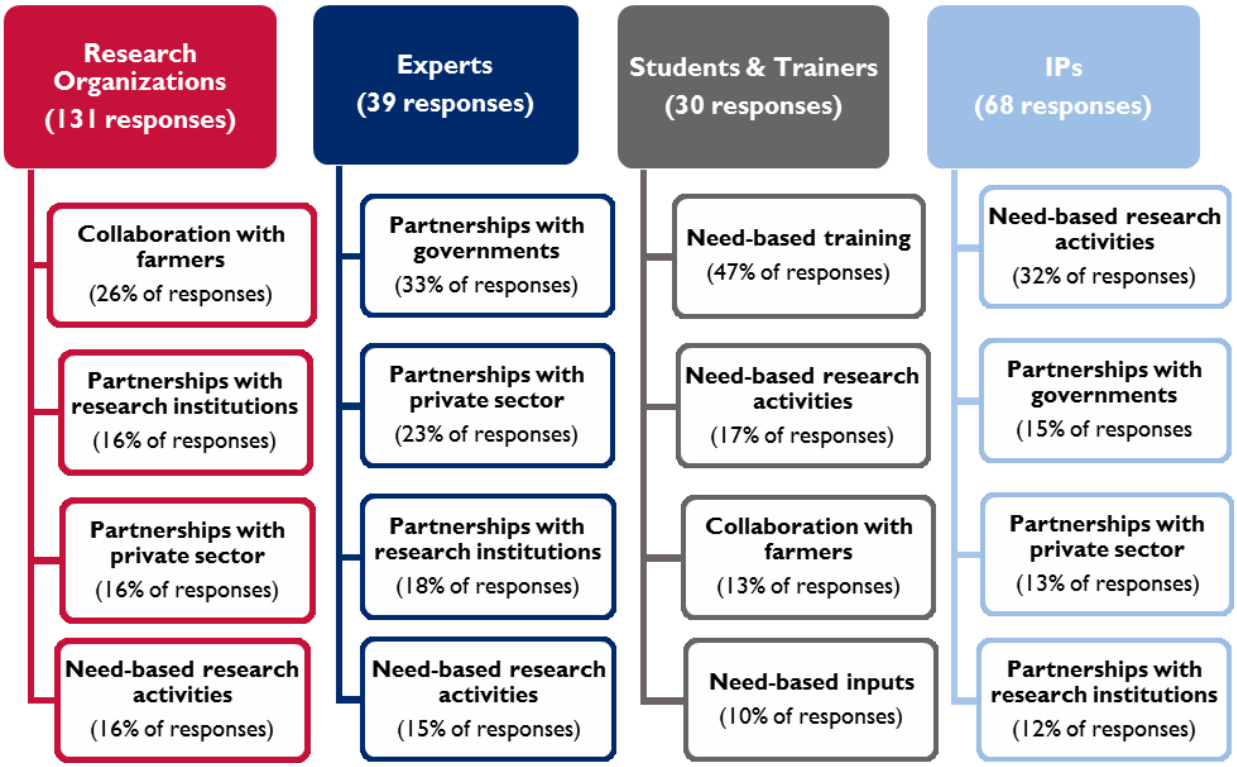
Survey respondents noted, regardless of the frequency of training sessions, that their duration was insufficient. In key informant and group interviews, trainers, extension workers, and members of research organizations also noted that the length of individual training events was not sufficient (17 of 35 responses), which corroborated the survey responses. Farmers (11 responses) also mentioned that they needed more frequent follow-up sessions and practical demonstrations.

> *"We usually design five-day agriculture-related training courses. But the people from CIMMYT visited us for half a day. They were coming for field observations but not frequently. Although we offered to let them stay in a safe and secure environment, they were coming only occasionally." – Trainer and research organization member*

Factors Contributing to Effective Implementation of Other AIP Activities

Figure 15 depicts the percentage of 390 responses from key informant and group interviews that mentioned specific factors that contributed to effective implementation of AIP activities. The qualitative data support the key finding of the survey: AIP was successful because it responded to the **technical** needs of organizations.

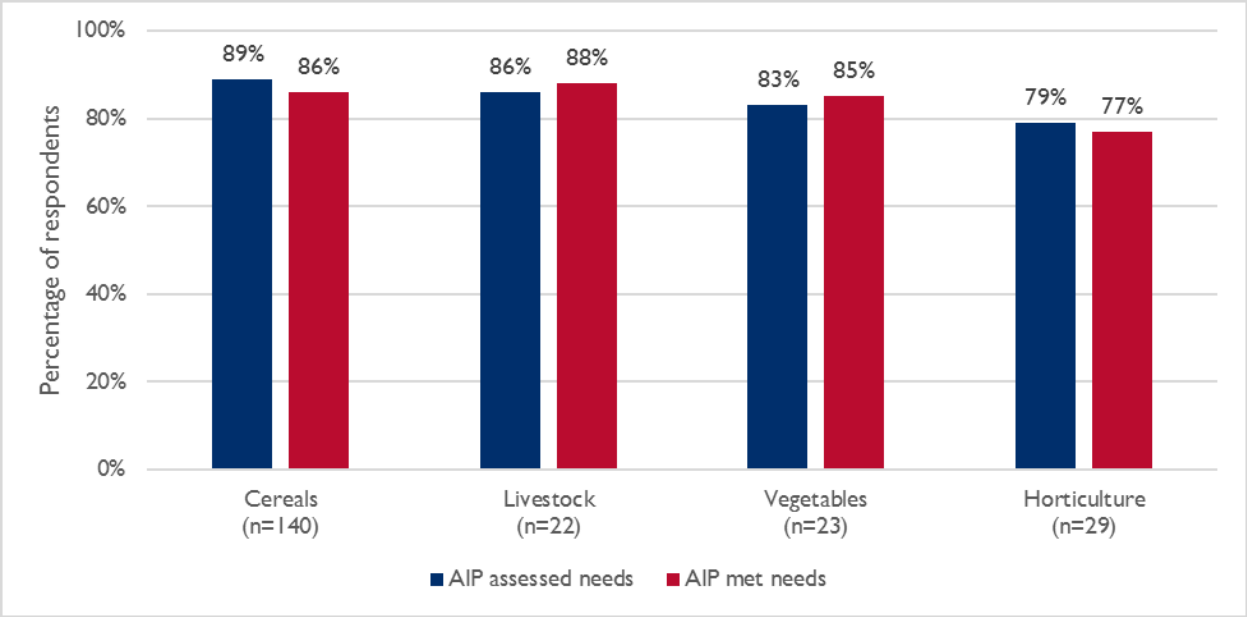
FIGURE 15: FACTORS CONTRIBUTING TO EFFECTIVE IMPLEMENTATION



Source: PERFORM key informant and group interviews. The interviews allowed multiple responses to this question, so totals do not necessarily sum to 100 percent.

The factors listed in Figure 15 emphasize one strength of AIP's implementation approach: that it identified and responded to recipients' needs. Indeed, the new varieties of seeds that AIP provided were in response to expressed needs, and AIP also satisfied requests for more need-based activities that tracked with the crops' schedules. The extent to which AIP assessed and met perceived organizational performance needs provides solid proxy indicators for respondents' judgment about the program as a responsive, need-driven activity. While these perceptions varied across sectors, a majority of survey respondents in all sectors reported that AIP had assessed and met their needs (Figure 16). The somewhat lower percentages in the horticulture sector may reflect the early departure of UC Davis, well before the 5–10 years required for interventions to come to fruition.

FIGURE 16: NEEDS ASSESSED AND MET BY SECTOR



Source: PERFORM survey of beneficiaries of AIP training.

Factors Inhibiting Effective Implementation of Other AIP Activities

Relatively few key informant and group interview respondents mentioned suggestions or recommendations for improving program implementation.[11] Among the 190 excerpts that noted issues with implementation, 35 percent mentioned issues with training (addressed above). Other issues respondents mentioned included:

- Unclear and ineffective marketing and dissemination strategies (91 responses that included 29 from research organizations, 18 from experts, 12 from farmers, 9 from trainers, 8 from IPs, and 15 from other respondents).
- Insufficient coordination (42 responses that included 13 from research organizations, 19 from experts, 5 from IPs, and 5 from other respondents), including:
    - Poor institutional linkages associated with inadequate coordination with stakeholders (13 of the responses that mentioned insufficient coordination), notably with the GoP (9 responses), and
    - IPs' being insufficiently leveraged with the private sector (7 responses) and with extension workers' (15 responses) and farmers' interest groups (8 responses).

  Thus resulting in:

- Insufficient targeting of interventions (29 responses that included 13 from research organizations, 11 from experts, 3 from IPs, and 2 from other respondents), in particular improper needs assessments and issues with funding.

[11] The interviews did not ask directly about implementation. Instead, interviewers asked about the effectiveness of AIP activities, and of AIP overall, and then about reasons for activities' being effective or ineffective. In the follow-on questions, interviewers probed specifically for implementation-related reasons for the effectiveness or ineffectiveness of activities.

The rest of this section addresses each of these in detail.

Dissemination and marketing: Respondents most frequently mentioned the underutilization of extension workers as a factor that limited AIP's effectiveness in its role of disseminating technologies and practices to farmers. They believed that AIP should have provided extension workers with resources (e.g., funds and equipment) to work with farmers in their fields throughout the cropping season and to advise them as problems occurred. While respondents confirmed the efficacy of demonstration plots with progressive farmers as a dissemination strategy, some believed that there were not enough strategically located plots to exhibit results and thus encourage wide dissemination of promising seeds, practices, and technologies. Some also expressed concern that the relatively high cost of inputs and machinery constituted a barrier to widespread adoption of program-promoted technologies and practices, especially among small farmers. The private sector also wanted to be more involved in dissemination and marketing.

Insufficient coordination: Although 73 percent of heads of organizations the team surveyed were satisfied with coordination, interviews with these heads, and with experts and senior government officials, revealed a more nuanced perspective. Among the 10 respondents, the most common coordination issue mentioned (by 4 respondents) related to timely release of funds to pursue research and dissemination, lapses that damaged relationships between implementers and farmers. One respondent from Balochistan noted the difficulty partners in locations far from Islamabad had in attending coordination meetings called on short notice, effectively excluding them from the decision-making process.

The absence of provincial agricultural research boards—except in Punjab—poses a problem in coordinating with extension departments at the district level. However, all respondents recognized that PARC potentially has a key role in coordinating work across and among provinces. Finding a way to enable PARC and its provincial delegations to manage funds may lay the foundation for a more coordinated, effective, and sustainable implementation of AIP activities.

Ten percent of interview respondents (a majority of whom were heads of organizations) mentioned that expending more effort on **developing linkages** horizontally (between organizations at the same level) and vertically (between stakeholders at different levels of the research-inputs-production value chain) is likely to contribute to sustainable and visible change.

Targeting of interventions: Analysis of the excerpts relevant to the targeting of AIP activities suggests that in some ways, AIP's approach to identifying and addressing sector needs was not sufficient.

> *"Projects should be designed to address the unmet needs of the sector; they should be need-based. We can benefit from these projects only if the projects are designed and delivered according to the need of a specific region. Otherwise, we will not benefit from these projects [interventions]." – Head of organization, Faisalabad*

While this excerpt, and others like it, are not consistent with AIP's mandate (i.e., AIP was not designed to meet every unmet need), it does illustrate a common theme that emerged from the interviews. The bureaucratic issues that prevented PARC from fully playing its anticipated role in provincial coordination, and the failure to establish the provincial boards, compromised AIP's coordination at the provincial and district levels. During interviews, farmers and others often asked for additional interventions because the services and products AIP delivered did not always meet their localized needs. The evaluation team concluded that, while AIP largely met organizations' needs, the needs identification process did not always reflect the range of perspectives of farmers. Since AIP did not incorporate "**ordinary farmers**" into the intervention delivery mode, it did not address some of their area-specific needs. Although working through progressive farmers is a tested method of dissemination, it was not

enough in this instance, at least within the program time frame, to effectively "market" AIP interventions and promote uptake across the chasm from "early adopters" to "majority" users.[12]

Issues with funding: Funding was also an operational irritant that limited the effectiveness of AIP's implementation. First, for some, there was not enough money to finish projects, let alone undertake new ones that beneficiaries saw as necessary. Members of research organizations and extension workers noted that after AIP support ends, they will not have the financial resources to continue expanding reach and supporting farmers (70 percent of 27 responses).

Among those who addressed funding issues, 20 percent spoke of the need to streamline funding procedures so users, the majority of whom they expected to be subsistence farmers, can better access the next wave of AIP technology, and 17 percent called for some form of subsidization of small farmers. However, AIP was not designed to alleviate financial constraints through subsidization.

> *"To make the interventions acceptable and get their buy-in, farmers should be given incentives such as free inputs and financial assistance. Later, when they will see improvement in production due to the intervention, they will adopt the new technologies and practices easily and their fellow farmers will follow them as well." – Member of research organization*

Concerns about funding also arose in two other contexts: promoting dissemination and facilitating timely implementation of annual work plans. In the context of promoting dissemination and increasing uptake of AIP-supported products and services, not only did a few respondents call for subsidizing inputs to farmers, some also mentioned providing incentives for extension workers and scientists:

> *"Unless we give a royalty to the private sector and allocate funds for research, we cannot develop our agriculture. Moreover, there is no incentive for a researcher who is doing research and innovation. There should be some reward system to encourage those who are working on research and innovation." – Head of research organization*

Conclusions

Of 164 interview respondents, 58 percent thought AIP's implementation was effective. Analyzing the "effectiveness" of implementation from the point of view of the annual work plans and the semiannual monitoring reports AIP submits to USAID, the evaluation team concluded that the program effectively implemented its planned activities. The plans and reports emphasized building the technical capacity of individuals through training, supplying inputs, and supporting research projects. Although there are instances of "broken commitments" related to budget cutbacks for UC Davis and AVRDC, AIP largely delivered on its planned activities.

Training was also effective, with the quality of the information, skills of the trainers, practical demonstrations, and appropriate and high-quality materials contributing to its effectiveness. The effectiveness of training increases when extension workers conduct the training in local languages, and when training accompanies the provision of inputs and reinforces their proper use, i.e., practical demonstrations.

Although few respondents spoke of problems, their experiences and perceptions may point to ways to improve implementation.

The evidence suggests that the project's inability, due to limited government resources, to fully utilize extension workers may have compromised the dissemination of information and training on the use of

[12] The conclusion that AIP did not effectively engage small farmers may be biased because the evaluation team found it difficult to identify and collect data from small farmer beneficiaries.

new technologies to small farmers. Limited evidence also suggests that, to disseminate information more effectively, the program could modify its approach of working intensively with progressive farmers and demonstration plots to locate plots in more widely visible locations. The findings also lead the team to conclude that if provincial authorities, private sector actors, and farmers' interest groups were more involved in AIP decision-making on who gets what, when, and where to produce what result, AIP could better tailor its interventions to match the needs of a wider range of beneficiaries.

AIP has just finished providing inputs and is now ready to consolidate its technical contribution (i.e., finish trials and adaptions of machinery/technology and practices) and seek opportunities to scale up dissemination of improved varieties, technologies, and practices. Assuming a two-to-three-year time frame to achieve wide adoption of, for example, a seed variety, some of AIP's products might be expected to be coming to maturity about now. AIP has reached a turning point in its life cycle where it now needs to focus on multiplication and accessing the market. Yet, some of the activities are facing constraints due to insufficient training (discussed further under Question 4) and unfinished business (due to limited funding or the end of funding), with the most acute problems in horticulture and vegetables. Better leveraging public-private partnerships may help support the tasks of completing ongoing research and expanding dissemination.

Operational constraints impeded the effective implementation of some AIP activities. Chief among these were burdensome GoP procedures for decision-making and release of funds.

Finally, the program did not share an exit strategy with the evaluation team or indicate that it has developed one. This is important because an exit strategy would dictate what next steps should be taken to build upon results.

Recommendations

For USAID:

- Consider supporting innovative financing mechanisms, e.g., Development Credit Authority guarantees, to help poorer farmers gain easier access to productivity-enhancing technologies and practices.

For IPs:

- Continue using demonstration plots as a means of disseminating technologies and practices but consider locating them strategically to enhance visibility and effectiveness.
- Explore ways to engage extension workers more fully to extend the use of AIP-supported technologies and practices to more remote areas of the provinces.
- Ensure sufficient funding to finish adapting technologies and support partners in seed multiplication and disseminating technologies to ensure their widespread availability.
- Increase the duration of training courses and, when offering them, ensure that trainers conduct more frequent on-site follow-up visits with farmers to help them promptly address their immediately pressing needs.
- Make sure that training courses incorporate more practical sessions and continue to make use of visual materials, reducing the recourse to lectures.

Question 4: Changes in Knowledge, Skills, and Attitudes

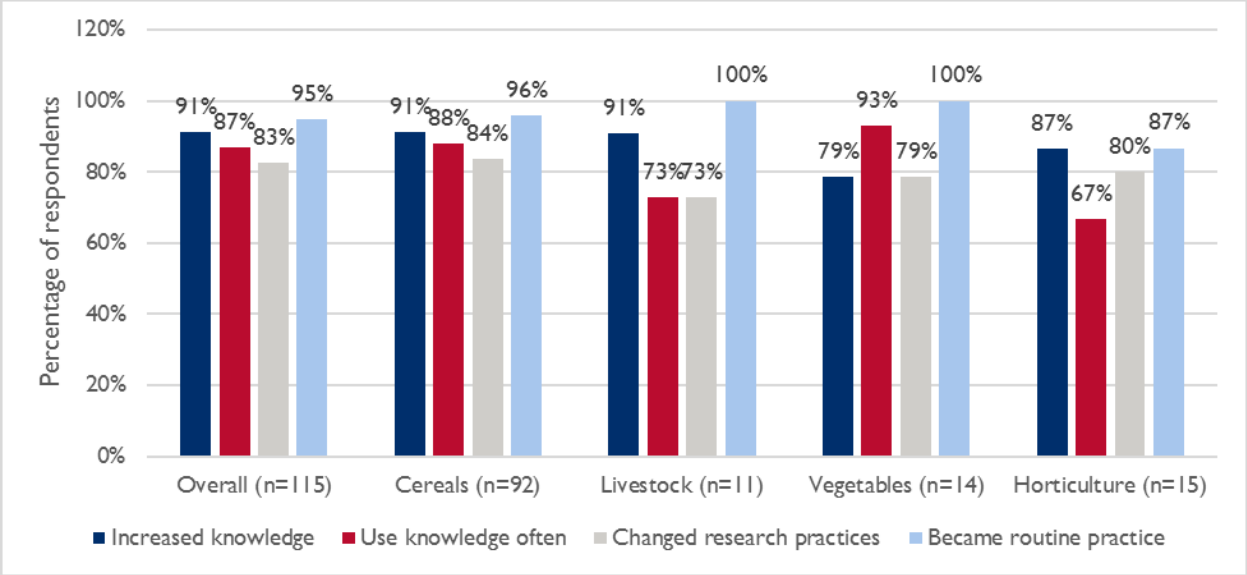
To what extent did AIP produce any change in knowledge, skills, and attitudes in its trainees?

To assess whether AIP training changed the knowledge, skills, and attitudes of members of research organizations, the survey asked training participants about the extent to which the training increased their knowledge and skills and about the extent to which these have become a routine part of their work.

Findings

Eighty-one percent of 115 survey respondents said that before providing training, AIP assessed their individual and organizational needs. Although AIP did not conduct formal needs assessments, the program consulted sector experts from all provinces to determine training priorities. An overwhelming majority of the survey respondents who participated in AIP training courses said that the training increased their knowledge relevant to their research work; that they used the knowledge and skills often; that the training had changed their research practices; and that the new practices had become a routine part of their work (Figure 17).

FIGURE 17: EFFECTIVENESS OF AIP TRAINING BY SECTOR



Source: PERFORM survey of beneficiaries of AIP training.

The only significant difference between sectors was that respondents from the vegetables and cereal sectors were significantly more likely than respondents from the livestock and horticulture sectors to say they used new knowledge often in their work.[13] The horticulture sector most probably lags behind the other sectors for two reasons: The IP, UC Davis, departed one year earlier than planned, and the horticulture crop cycle—5 to 10 years before trees bear commercial quantities of fruit—is much longer than the cycle for cereals. There was no statistically significant difference between the responses of men and women.

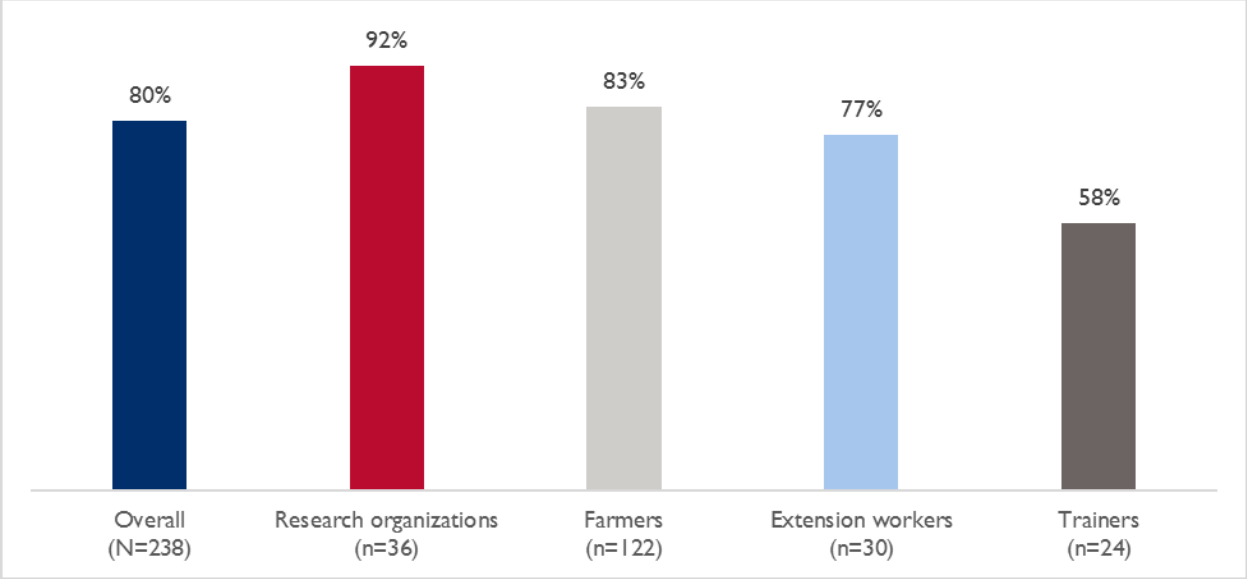
[13] The difference between the cereal and horticulture sectors is significant at $\alpha < 0.01$, while the difference between the cereal and livestock sectors is significant at $\alpha < 0.10$.

"Learning from training remains with us, and where needed, we put that into practice. For instance, whenever I write a research paper, learning from 'Scientific Writing' is put into practical use." – Research organization member

Findings from group and individual interviews were consistent with the survey findings; a majority of respondents reported positive changes in their knowledge, skills, and attitudes (Figure 18). Notably, 83 percent of all farmers—and 85 percent of female farmers—reported acquiring new knowledge and skills and changing their attitudes. By sector, 83 percent of farmers from the cereal sector, 72 percent from the vegetables sector, 73 percent from the horticulture sector, and 100 percent from the livestock sector reported that AIP training produced positive changes in their knowledge, skills, and attitudes.

Survey evidence also suggests that trainees in the cereal sector realized somewhat more consistent benefits (across knowledge, skills, and practical application of knowledge) than those in other sectors. CIMMYT's experience in Pakistan, the early closing of horticulture and vegetables activities, and the length of time required to realize the production benefits of some horticulture interventions may have contributed to these differences.

FIGURE 18: EFFECTIVENESS OF AIP TRAINING BY TYPE OF TRAINEE



Source: PERFORM key informant and group interviews.

Factors Contributing to Changes in Knowledge, Skills, and Attitudes

In key informant and group interviews, members of research organizations reported that they expected to continue practicing newly acquired skills because the skills are relevant to their work and have increased their research capacity and improved organizational productivity (23 of 50 responses). However, they also noted that a lack of funding for research or dissemination may limit their ability to continue new research practices or provide support to farmers.

Similarly, of the 83 percent of farmers who reported learning new knowledge, skills, and attitudes, 100 percent said that they intended to continue the newly learned techniques and practices, their rationale being increased crop yield (38 percent of 107 responses), general usefulness of new practices to perform routine tasks (20 percent of responses), and increased income (15 percent of responses). The 21 farmers (17 percent of 122) who said they did not intend to continue the practices explained that the cost of the practices (67 percent of responses) and not being able to obtain required inputs in the

market (33 percent of responses) may prevent them from doing so. The farmers who expressed these views were most likely small farmers with limited financial resources.

> *"I will continue with the improved crop practices learned through my interaction with the project because I have personally observed the benefits. Before my association with the project, I was sowing local seed that was enough only to fulfill my domestic needs. Then I used the new recommended seed and fertilizers, which increased my production more than five times. I am now selling the extra production to generate income as well." – Farmer, Quetta*

Conclusions

Based on the perceptions of respondents, the evaluation can conclude that the new practices and technologies AIP-supported training introduced enhanced beneficiaries' knowledge, skills, and attitudes. Farmers report intending to continue to use these new skills and practices because they have improved livestock and crop productivity, increased income, reduced manual labor, and improved time efficiency. However, affordability of and access to inputs and machinery, as well as the need for follow-up training to extend knowledge and cement skills, may limit small farmers' uptake of new practices. The somewhat depressed results in the horticulture sector (relative to other sectors) illustrate the importance of a sustained interaction with farmers, especially in a sector where some interventions require years to affect production outcomes.

Research organizations and extension workers report their intention to continue to use the skills they gained because they improved their organizations' work productivity and benefited farmers.

> *"We have worked with the farmers and they are so happy because through the direct seeding of rice technology their income has been increased to Rs. 10,000 per acre, and [they have gained] other savings like labor and time because they are now producing a resource-saving rice variety." – Research organization member*

Recommendations

For USAID and IPs:

- Train extension workers to become trainers and use them more extensively to deploy need-based training to farmers in the areas the extension workers serve.
- Ensure that IPs better identify farmers' needs and that training caters better to those needs.

CONCLUDING REMARKS

When gauged against the views of stakeholders, AIP was successful. As with any project, AIP experienced operational issues, and although respondents may be, on the whole, satisfied with the outcomes of AIP, some see the potential to improve the ways in which the program achieved those outcomes. The operational issues can be solved—e.g., funding processes can be streamlined and made even more transparent. Overall, however, the partners are effectively implementing the program, which emphasizes technical capacity building, distribution of genetic material and equipment, adaptive research, and exposure to new practices.

AIP has enabled Pakistan to leverage an import substitution program that has shortened the time span that it takes to get inputs from the research stage to market. But now that the efforts to exploit and ready (certify and register) those inputs are nearing their end, AIP is confronted with the challenge of

disseminating the fruits of its work beyond progressive farmers (the "innovators" and "early adopters") to the broader majority of largely subsistence farmers. Given what some have called the "sprinkling" of AIP's activities, the dissemination and marketing strategies need to be thought through—perhaps following a formal approach to scaling up, such as MSI's own well-grounded one[14]—to move on to the next stage of this program. It is necessary to think through how to scale up current gains because the program has not reached a "tipping point" of a sufficiently large number of people to bring about the objectives stated in the AIP results framework.

Although AIP has acted as a pole of attraction for stakeholders, it has not yet strengthened the network it has contributed to sufficiently to build functional and self-sustaining horizontal and vertical linkages along the research-production-marketing value chain. The decision regarding how and to what extent to go about building and strengthening these linkages depends more on the GoP (and PARC) than on USAID and AIP IPs. Involving the GoP in designing and managing what could be a package of follow-through actions to AIP will not only build the GoP's ownership but may also enable future activities to respond more sensitively to specific geo-climatic and crop needs articulated by those who, in the end, are responsible for increasing agricultural productivity in Pakistan: the provincial authorities. Consulting the GoP will also provide AIP with an opportunity to co-develop, from a program instead of a project perspective, an exit strategy that transitions the program into one that better satisfies grounded, endogenously determined needs and does so in a systematic approach to scaling up.

These general conclusions lead the evaluation to recommend that AIP be extended with a clear plan to scale up its results and with the longer-term objective of institutionalizing its gains to ensure their sustainability.

[14] Management Systems International, *Scaling up—From Vision to Large-Scale Change: A Management Framework for Practitioners*, 2nd ed. (MSI, 2012), http://www.msiworldwide.com/wp-content/uploads/Scaling-Up-Framework.pdf.

ANNEX 1: STATEMENT OF WORK

Statement of Work (SOW)
for
Agricultural Innovation Program
Office of Economic Growth and Agriculture

Assignment Title:	Agricultural Innovation Program
Assignment Type:	Mid-term Performance Evaluation of Agricultural Innovation Program
DO Team Assignment POC:	
PMU Assignment Manager:	
Start Date of the Assignment:	February 01 2017
End Date of the Assignment:	June 30 2017
Estimated Total Time to Complete the Assignment (months) calendar day	5 months

Relevant/Target Decision Timeline

This is the midterm evaluation of the Agricultural Innovation Program (AIP). The evaluation will start o/a January 15, 2017 and will be completed o/a March 15, 2017. The project is expected to end in March, 2017 but no-cost extension until March 2018 is under consideration. If the project end date is extended, the information from the evaluation will be used to improve project implementation; the lessons learned will be used in on-going or new activities in the Office of Economic Growth and Agriculture (EGA), while also measuring impact of the AIP activity on the agricultural sector of Pakistan.

Background Information

Table 1: Activity/Project Summary

Contract/Agreement Number/Grant:	PIO Grant # AID-BFS-G-11-00002
Agreement Officer's Representative/Activity Manager	
Activity/Project Start Date:	March 8, 2012
Activity/Project End Date:	March 7, 2017
Location of Activities (Provinces/Districts):	Whole of Pakistan
Implementing Partner:	CIMMYT
USAID/Pakistan Mission Strategic Framework Linkages:	DO 2: Improved economic status of focus populations and sectors IR 2.1: Improved economic performance of

1

	focus enterprises IR 2.1.2: Improved capacity of workforce IR 2.1.3: Increased use of modern technology and management practices IR 2.2 Improved Business Enabling Environment
	$

Activity/Project Description

The "Agricultural Innovation Program for Pakistan" (AIP) works to increase agricultural productivity and incomes in the agricultural sector through the promotion and dissemination of improved technology and modern practices in the following sectors: cereals (wheat, maize, and rice), livestock and horticulture (fruits and vegetables). Project management is vested in a unique consortium of CGIAR Centers and the Pakistan Agricultural Research Council (PARC), led by the International Maize and Wheat Improvement Center (CIMMYT). AIP aims to foster the emergence of a dynamic, responsive and competitive system of science and innovation that is 'owned' by Pakistan and will catalyze equitable growth in agricultural production, productivity and value. AIP puts particular emphasis on building partnerships between public research and those it serves, including farmers and the private sector; increasing investments; generating, sharing and making use of agricultural knowledge for development; and demonstrating and building awareness of the development impacts and returns from agricultural innovation.

AIP operates through three "Activity Windows": research and development projects, a competitive grants system, and human resource development (HRD). Work within these activity windows addresses complex agricultural systems which is divided into four "Science Windows": 1) cereals and cereal systems; 2) livestock; 3) vegetables; and, 4) perennial horticulture. A major indicator of AIP's success will be the number of smallholder farmers who adopt or benefit from productivity or value-enhancing technologies. CIMMYT is the primary implementing partner and prime grantee, managing and having overall responsibility for AIP, and providing direct oversight of the agronomy, wheat and maize activities within the cereals and cereal systems science window. Four international partners (the International Livestock Research Institute, or ILRI; University of California, Davis (UC Davis); The World Vegetable Center, or AVRDC; and the International Rice Research Institute, (IRRI)) lead on projects in livestock, fruit trees, vegetables and rice, respectively, while PARC serves as both the hosting partner and the lead on a province-inclusive competitive grants system. Combined, those organizations are CIMMYT's "primary partners."

TABLE 2: ACTIVITY/ RESEARCH PROJECTS AND RESPECTIVE IMPLEMENTING PARTNERS

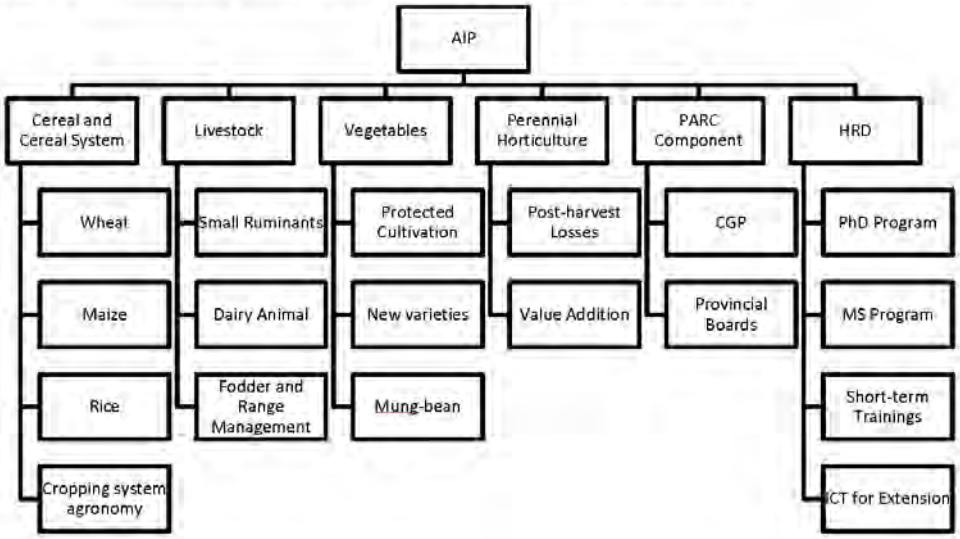
	Wheat, Maize, Agronomy	Rice	Livestock and Dairy	Vegetables	Perennial Horticulture
Research and Development Project	CIMMYT	IRRI	ILRI	AVRDC	UC Davis
Human Resource Development	CIMMYT	IRRI	ILRI	AVRDC	UC Davis
Competitive Grant System	Pakistan Agricultural Research Council (PARC)				

2

The table shows the science window in the top row and the activity window in first column, while each cell represents implementing partners or sub-partners. CIMMYT is leading not only research and development projects in wheat, maize and system agronomy, but is also responsible for human resource development in these areas. The HRD component is comprised of training scientists, farmers, provincial extension workers and private sector partners in application of new technology and management practices. Similarly, IRRI, ILRI, AVRDC and UC Davis are responsible in their respective sub-sectors. The role of PARC was to create Provincial Agricultural Research Boards (PARBs) in Sindh, Khyber Pakhtunkhwa and Balochistan, while Punjab had a functioning PARB prior to the implementation of AIP.

Each of the activities under AIP has a range of sub-components that is presented in Figure 1.

Figure 1: Depiction of sub-activities under each research and development project.



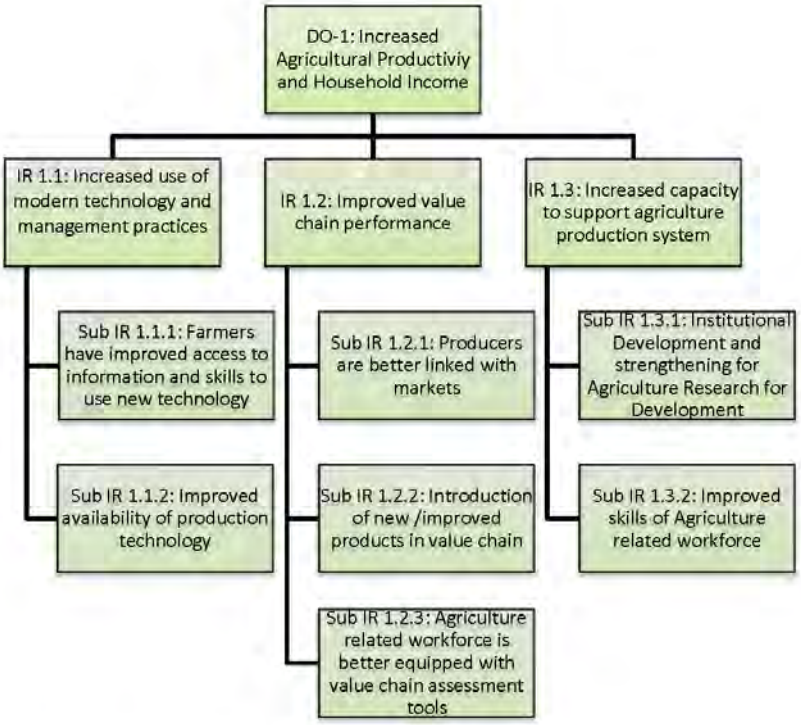
Development Hypothesis and theory of change

The Agricultural Innovation Program (AIP) works to increase agricultural productivity and incomes in focus areas and sectors. This goal will be achieved through a three-pronged approach:

1. The project aims to transform agriculture research into functional technology and improved management practices that can be brought to scale in order to increase agricultural yields, thus meeting the long term objective of increased productivity and household income. The activities will focus on availability of agriculture-related technology and management practices for the farmers.
2. The Project will identify constraints in selected value chains and will identify best practices for the improvement of value chain performance. The activities will focus on linking farmers with markets, service providers, input suppliers, retailers and whole sellers.
3. The project will improve the capacity of agricultural systems by training farmers, researchers, extension workers and private sectors partners. This will address both institutional development for strengthening agriculture research, and individual skill development to build the capacity of the agriculture-related work force including students, researchers, farmers and others to improve agriculture productivity in order ultimately to impact positively the economy of the country.

This three-pronged approach is shown in following result framework.

4



Anticipated Results and Associated Performance Indicators

Intended Results

The overall development objective of the project is to increase agricultural productivity and incomes in its selected focus areas and sectors. The project will increase incomes of small-scale farmers and ranchers, including women through increasing crop and livestock productivity, improving farm management practices, and fostering new and stronger market linkages for agricultural inputs and outputs.

The project scope will be pursued through the implementation of three technical components and one operational component:

- Introduction of new technologies and management practices;
- Strengthening value chains for vegetables, livestock, and cereals;
- Training human resources to improve knowledge and skills around agricultural production, research and development.

Key performance indicators include:

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1. Project-related household incomes of USG targeted beneficiaries
2. Percentage of female participants in USG-assisted programs designed to increase access to productive economic resources (assets, credit, income or employment) (GNDR-2)
3. USD sales data of firms receiving USG-funded assistance (EG.5-1)
4. Number of micro, small and medium enterprises (MSMEs), including farmers, receiving business development services from USG assisted sources (EG.3.2-3)
5. Number of households benefiting directly from USG assistance (EG.3-1-mod)
6. Number of persons receiving training on skills development
7. Number of farmers and others who have applied improved technologies or management practices with USG assistance (EG.3.2-17)
8. Number of micro and small enterprises linked to larger-scale firms as a result of USG assistance to the value chain
9. Number of acres under improved technologies or management practices with USG assistance (EG.3.2-18)

List of Existing Project Documents and Information

1. Baseline surveys reports
2. Semi-annual reports 2014-2016
3. M&E plan
4. Other survey reports
5. Quarterly newsletters

Purpose, Audience and Learning Objective

Purpose of Evaluation: This will be a mid-term evaluation to determine if the project is in line with its objectives. Lessons learnt will be incorporated into on-going and future EGA activities.

Audience: The primary audiences for the evaluation includes: 1) the USAID/Pakistan mission, particularly the EGA Team, 2) the USAID Office of Afghanistan and Pakistan Affairs (OAPA), (3) the implementing partner, CIMMYT, (4) and the Government of Pakistan (GOP).

TABLE 3: SUMMARY OF PURPOSE, AUDIENCE AND LEARNING OBJECTIVE

Assignment Purpose	Intended Audience	Learning Objective	Information Source	Timeline (TBC)
To understand mechanisms of change in agricultural sector	USAID-EGA, AIP, GoP, OAPA	Has AIP had positive impact on research and innovation in agricultural sector?	CIMMYT, Public and Private sector partners, beneficiaries	Feb-Apr 2017
To understand the institutional development of public and sector	USAID-EGA, AIP, GoP, OAPA	Has AIP's collaboration with the public and private sector built	CIMMYT, Public and Private sector partners, beneficiaries	Feb-Apr 2017

6

partners		the capacity of partner institutions in research and development?		
To understand human resource development and the process of diffusion and adoption of new technologies	USAID-EGA, AIP, GoP, OAPA	Did AIP produce any change in knowledge, skills and attitude in its trainees?	CIMMYT, Public and Private sector partners, beneficiaries	Feb-Apr 2017

KEY EVALUATION/STUDY/ASSESSMENT QUESTIONS

Evaluation Questions

The evaluation requires an independent review of AIP's contribution to human and institutional development in agricultural sector. The development objective of AIP is to increase household income and productivity of farm households through the increased use of improved management practices and technologies, better linkages to value chains, and increased capacity of agricultural research and development systems. This independent assessment will measure the impact of AIP on the diffusion of innovation and revival of research and development in public and private institutions.

The specific questions are:

Question 1: To what extent has AIP contributed to revitalizing research and innovation in its focus sub-sectors compared to baseline?

Question 2: To what extent has AIP's collaboration with the public and private sector built the capacity of partner institutions in research and development?

Question 3: According to public and private sector partners of AIP, how effective were the implementation of project activities? What can be improved?

Question 4: To what extent did AIP produce any change in knowledge, skills and attitude in its trainees?

METHODOLOGY

The evaluation will employ different methods by utilizing a document review; semi-structured interviews with partners, beneficiaries, government officials in the sector, and sector experts; focus group discussions, and perception survey. The evaluation will rely both on qualitative and quantitative data. The analysis should progress from findings to conclusions and recommendations for future interventions.

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Data Collection

TABLE 4: DATA COLLECTION METHODS

Data Collection Methods (click here for additional guidance on selecting data collection method)
Extraction: Collect data from semi-annual progress reports and studies done by AIP's socio-economic component, and other sub partners.
Structured observation : MSI can decide which level of structured observation it would like. The project will provide a list of activities, sites, and facilities involved in the project.
a) **Unstructured observations:** Discussion with other stakeholders like private businesses, seed companies, Govt. officials of the livestock and agriculture/livestock department
b) **Key Informant Interviews (KIIs)**— The project will provide a list of key informants for interview.
c) **Survey** –Surveys through semi-structured questionnaires will also be useful for data collection in focus sub-sectors.
Focus group discussions (FGDs): Focus group discussions with beneficiaries both male and female, to gauge the value and suitability of training, measure the adoption of technology, and any spill-over effect.
d) **Community interview—** May be valid for seed producing villages, or where livestock components worked

Data Analysis

EGA recommends that MSI propose the most appropriate data analysis plan based on the evaluation questions and desired results. Below is only a general recommendation.

Question 1:

It deals with introduction of technology and modern practices in agricultural sector. Mostly data will be qualitative; evaluator should look in to mechanism how these new technologies were adopted/adapted by partners to enhance agricultural productivity. This question will also deal will role of AIP to re-vitalize public sector institutions in terms of their ability to conduct research, outreach to farmers, and enthusiasm to continue the process. The evaluator will find evidence and indicators of re-vitalization of research and development public sector institution.

Question 2:

It will deal with institutional development side of the project. While working with national and international scientists and providing opportunity of training and exposure, is there any change in capacity of partner institutions? There are many approaches to analyze institutional change. Evaluators should use appropriate tools to study and analyze institutional change with respect to their ability to do research, innovation and development.

Questions 3:

This questions deals with suitability and acceptability of project interventions by public and private partners. The data will be mainly qualitative collected from partner organizations. The analysis will tell us how demand driven was these activities, and how the technologies introduce by AIP filled gap in demand and supply. The analysis of the question will be simple but robust enough to show the perception of partners about AIP's ability to address their needs, keeping in view limitations of AIP in terms of time and resources.

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Question 4:

One of the components of AIP is human resource development. AIP trained farmers, women, students, researchers, and teachers in different aspects of agriculture. The evaluation should apply Outcome Mapping Techniques to check what the effect of these training programs has been thus far. The analysis will tell us how knowledge provided in these sessions converted in to skill and became an attitude. For example, seeking and applying good agricultural practices is not only skill, but also an attitude. Outcome Mapping (by International Development Research Center, Canada) will tell us how input in the form of training will be an output in terms of improved knowledge and outcome in terms of skill or change in attitude. Evaluator needs both quantitative and qualitative data to check before and after effects and with and without effects.

More generally the evaluation will employ rigorous analytical methods to review qualitative and quantitative data for these questions. Qualitative data will provide rich evidence of the outcomes associated with project interventions and, more importantly, how project interventions contributed to anticipated results, reasons interventions may have failed to produce anticipated results, and unanticipated results. The evaluation team will use rigorous content analysis and coding techniques to identify key themes in the qualitative data and use quantitative analysis (e.g., descriptive statistics, cross-tabulation, or regression) methods to report results and identify patterns and correlations in the data. The evaluation team will obtain relevant and high quality quantitative data from the project M&E system and other project records, and it will use methods appropriate to the data to identify patterns and draw out findings. The analysis will disaggregate results by gender whenever applicable and draw out sex-specific conclusions and recommendations.

Gender Considerations

Project beneficiaries also include women. The gender consideration will be a cross-cutting aspect of the evaluation. The project trained women in food processing, seed preservations, nursery raising and livestock management. MSI can get lists of women beneficiaries from the project. Analysis of data will tell us constraints in women participation in agricultural activities.

TEAM COMPOSITION

The evaluation team will consist of three experts. The evaluation team will include:

One International or National Team leader/evaluator: A senior evaluator with a strong background in agriculture, agricultural research and development, and diffusion/adoption of technologies in less developed countries. The team leader will assign responsibilities within the team and ultimately be responsible for:

- Designing specifics of the evaluation approach;
- Supervising execution and implementation;
- Conducting spot checks of team member's work;
- Guiding data analysis; and
- Drafting reports, presentations and other deliverables.

The team leader should have the following qualifications:

- Holds at least a master's degree in a relevant field with a minimum of 15 years of experience, or a Ph.D. in a relevant field with at least 10 years of experience.
- Demonstrated experience in conducting high quality evaluations to USAID standards. Specific experience in agricultural research and development is a plus.
- Excellent communication (written, presentation, and spoken) and interpersonal skills.
- Fluency in written and spoken English.

Two National Agricultural value chain sector specialists: Two agriculture or value chain experts in Pakistani context.

- At least a master's degree, or equivalent, in a relevant field with at least ten years specific professional experience in the field of agricultural development, particularly in agribusiness development and in cereal, horticulture, and livestock management.
- Fully conversant with the principles of diffusion and adoption of technology, human resource development and capacity building of agricultural workforce.
- Prior experience working in Pakistan.
- Prior experience evaluating similar projects.
- Excellent analytic and writing skills and command of written and spoken English and Urdu. Fluency in the languages spoken by interview subjects is a plus.
- Willing and able to travel in the project areas.
- Sensitivity to issues related to local culture and gender.

All evaluation team members will provide a signed statement attesting to a lack of conflict of interest, or describing an existing conflict of interest relative to the project being evaluated.

DELIVERABLES

Deliverables under this evaluation include:

- **Assignment Work Plan (AWP):** Proposed approach, methodology, timeline, staff composition, and estimated budget for completion of the work requested in the SOW. The AWP draft will be reviewed and approved by USAID before any work begins on the assignment. The AWP draft will be revised and finalized during the team planning meeting (TPM) once an assignment team is in country. The finalized AWP can be modified with PERFORM COR approval throughout implementation of the assignment if conditions or needs change. The finalized AWP with attached COR-approved amendments will be used as the basis for assessing completion and quality of the assignment.
- **Debriefing Note-Outline**: The evaluation team will prepare and submit a debriefing document that outlines the team's preliminary findings, conclusions, and recommendations at least 24 hours in advance of the briefing. This may also be accompanied by a presentation of the findings.
- **Debriefing with USAID/Pakistan on Findings, Conclusions, and Recommendations:** The team will present the major findings of the evaluation to USAID/Pakistan (EGA, PERFORM COR). The team will consider USAID comments for use in the draft report, as appropriate.
- **Draft Evaluation Report:** The report will answer the evaluation questions and will include findings, recommendations, and conclusions across the components/sub-components. The draft evaluation report (not to exceed 40 pages) will be submitted to PERFORM COR for

USAID/Pakistan review and comments. USAID will submit all comments to the evaluation team leader and evaluation advisor.

- **Final Evaluation Report:** The final evaluation report will incorporate final comments provided by the USAID/Pakistan EGA office (through PERFORM COR). USAID comments are due within 10 working days after the receipt of the initial final draft.
- **One-page Brief**: A brief on the key qualitative and quantitative findings and conclusions relative to the evaluation questions will be developed for use by USAID decision makers and other interested stakeholders. This document will be written in English and can be translated and disseminated as desired by PERFORM COR.
- **A Presentation to USAID/Pakistan**: A presentation on the final report will be given to USAID/Pakistan and/or other stakeholder including IPs, if request.
- **DEC upload**: After the report is approved, PERFORM will uploaded it to the DEC.
- **Raw Data Submission:** Per ADS 579 - USAID Development Data –all primary data sets1 (both quantitative and qualitative) collected for this assignment will be submitted to USAID in electronic format within 30 days of completion.

Reporting Guidelines

The evaluation report will follow standard guidelines as laid out in Appendix 1 of USAID'S Evaluation Policy and operationalized in the Automated Directives System 203.3.1.8 (Documenting Evaluations), reproduced in Annex 2. The evaluation report will follow the structure given below (the section titles and order are illustrative):

- Title page
- Table of contents, tables and charts
- List of acronyms
- Acknowledgements
- Program summary
- Map showing the location of program activities
- Executive summary (ideally not to exceed 5 pages)
- Evaluation purpose and evaluation questions
- Program background. This information provides important context for understanding the evaluation purpose, questions, methods, findings and conclusions and includes:
    - the problem statement;
    - the theory of intervention;
    - the design of the program;
    - the program's results framework; and,
    - Program implementation, including the current status of the project.
- Evaluation methods and limitations, describing in detail the evaluation design and methods with explanation as to why they were chosen, with additional information provided in the annexes, if required.
- Summary of data analysis, including methods and other relevant observations.
- Findings and conclusions. This section (or sections) will include findings and conclusions for each evaluation question. If there are a large number of findings, there will be a synthesis or summary of findings for each question that establishes the connection with the conclusions that follow.

[1] This includes data sets from surveys, FGD transcripts, tally sheets and codes from qualitative software.

- Recommendations. This section will highlight key recommendations formulated as actionable statements of what remains to be done, consistent with the evaluation's purpose, and grounded in the evaluation's findings and conclusions.
- Annexes
  - Evaluation statement of work
  - Evaluation methods and limitations
  - Data collection instruments
  - Data analysis plan
  - Bibliography of documents reviewed
  - List of individuals and agencies contacted
  - Disclosure of any conflicts of interest
  - Statement of differences (only if applicable)
  - Evaluation team bios

EVALUATION MANAGEMENT

PERFORM/MSI will manage the entire evaluation process and will propose a detailed activities plan and schedule in AWP for USAID review and approval.

TABLE 5: ILLUSTRATIVE LEVEL OF EFFORT SCHEDULE

Tasks	Team leader	Team member	Team member
Pre-arrival work (document review and initial findings)	6	6	6
Team Planning Meetings	12	12	12
Field work	18	18	18
Quantitative/qualitative data analysis	12	12	12
Report writing and initial findings debriefing	6	6	6
Submission of draft report	6		
USAID review	6 *		
Revisions and re-submission	6		
USAID review	6*		
Submission of final Report	6		
Travel**	4		
Total	**76**	**54**	**54**

*USAID LOE **if the expert is international

PERFORM/MSI should propose a timeline for the evaluation process.

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ANNEX 2: ASSIGNMENT WORK PLAN

Final Evaluation of the Agricultural Innovation Program

Assignment Work Plan (EVL.014)

March 13, 2017

Revised: June 23, 2017

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

AIP	Agriculture Innovation Program
AJK	Azad Jammu and Kashmir
AOR	Agreement Officer's Representative
AVRDC	The World Vegetable Center
CGIAR	Consultative Group for International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
COR	Contracting Officer's Representative
DEC	Development Experience Clearinghouse
EGA	Economic Growth and Agriculture
IRRI	International Rice Research Institute
GB	Gilgit-Baltistan
GoP	Government of Pakistan
KP	Khyber Pakhtunkhwa
MNFSR	Ministry of National Food Security and Research
OAPA	Office of Afghanistan and Pakistan Affairs
PARC	Pakistan Agricultural Research Council
PSM	Propensity score matching
SOW	Statement of Work
TPW	Team planning workshop

SUMMARY

Assignment Work Plan (AWP) Number	EVL.014
AWP Title	Final Performance Evaluation of the Agricultural Innovation Program
USAID/Pakistan Requesting Office	Office of Economic Growth and Agriculture
Requesting Office Point of Contact	
PERFORM Assignment Manager	
Start Date	February 01, 2017
End Date	November 1, 2017
Total AWP Cost Estimate	

ASSIGNMENT PURPOSE

The evaluation will focus largely on assessing the extent to which the program has built the research and development capacities of partner institutions; revitalized agricultural research and innovation; and affected the knowledge, skills, attitudes, and behavior of researchers, farmers, and others with which it has engaged. Lessons learnt will be incorporated into on-going and future Economic Growth and Agriculture (EGA) activities. The primary audiences for the evaluation include: 1) the USAID/Pakistan mission, particularly the EGA Team, 2) the USAID Office of Afghanistan and Pakistan Affairs (OAPA), (3) the implementing partner, CIMMYT, (4) and the Government of Pakistan (GoP).

BACKGROUND

AIP aims to foster the emergence of a dynamic, responsive, and competitive system of science and innovation that is 'owned' by Pakistan and will catalyze equitable growth in agricultural production, productivity, and value. The program emphasizes building partnerships between public research institutions and those it serves, including farmers and the private sector; increasing investments; generating, sharing, and making use of agricultural knowledge for development; and demonstrating and building awareness of the development impacts and returns from agricultural innovation. The development objective of the Agriculture Innovation Program (AIP) is to increase the agricultural productivity and incomes of farm households by improving the capacity of agricultural researchers to develop and disseminate productivity-enhancing technologies and practices and by improving value chain linkages.

AIP focuses on four sectors: cereals (wheat, maize, and rice), livestock, horticulture, and vegetables. Project management is vested in a consortium of Consultative Group for International Agricultural Research (CGIAR) centers;[1] the University of California, Davis (UC Davis); and the World Vegetable

[1] The International Maize and Wheat Improvement Center (CIMMYT), the International Livestock Research Institute (ILRI), and the International Rice Research Institute (IRRI).

Center (AVRDC). CYMMIT is the overall lead and the technical lead on wheat, maize, and agronomy while ILRI leads livestock and dairy activities, the International Rice Research Institute (IRRI) leads rice activities, the World Vegetable Center (AVRDC) manages vegetables, and UC Davis leads perennial horticulture. The Pakistan Agricultural Research Council (PARC) serves as both the hosting partner and the lead on a province-inclusive competitive grants system.

METHODS

Evaluation Questions

The evaluation statement of work (SOW) specified the following four evaluation questions.

Question 1: To what extent has AIP contributed to revitalizing research and innovation in its focus sub-sectors?

Explanation: This question examines the extent to which AIP contributed to introducing new technologies and practices in the agricultural sector. It assesses the role of AIP in re-vitalizing public sector institutions' abilities to conduct research and disseminate promising technologies and practices to farmers, and the likely sustainability of the research and outreach capacities built. The evaluation focuses on the outcomes of AIP's work with respect to research and development in public sector institutions.

Question 2: To what extent has AIP's collaboration with the public and private sector built the capacity of partner institutions in research and development?

Explanation: This question focuses on institutional development, i.e., the extent to which AIP contributed to institutional change in public and private partner research institutions. AIP worked with national and international scientists and provided opportunities for training and exposure. This question examines the effects of this work on institutional capacity to conduct research, innovate, and support development. An organizational capacity assessment tool will be adapted from the institutional development literature to address this question.

Question 3: According to public and private sector partners of AIP, how effective were the implementation of project activities? What can be improved?

Explanation: This question addresses the effectiveness of the implementation approaches employed by the implementing partners. It will examine the extent to which interventions were demand-driven and filled gaps in supply or demand for research skills, technologies, or practices. The analysis will seek the perception of partners about AIP's ability to address their needs, keeping in view AIP's limitations in terms of time and resources.

Question 4: To what extent did AIP produce any change in knowledge, skills, and attitudes in its trainees?

This question focuses on the effect of AIP on individuals' knowledge, skills, and attitudes. AIP trained farmers, women, students, researchers, and teachers in different aspects of agricultural research and production. The analysis will apply outcome mapping techniques to assess the effect of the training on knowledge and the extent to which trainees converted knowledge to skills and changed attitudes. For example, seeking and applying good agricultural practices is not only skill, but also an attitude. The outcome mapping technique will determine how training improves knowledge, develops skills, and changes attitudes. The analysis will apply appropriate and practical techniques to attribute changes in

knowledge, skills, and attitudes to AIP training. The question will also explore the extent to which and the mechanism through which partners (farmers and partner organizations) adopted/adapted new technologies.

Methods of Data Collection and Analysis

The evaluation team will employ a mixed-methods design drawing on quantitative and qualitative data collected from various primary and secondary sources (e.g., project documents, research papers, beneficiaries, stakeholders, and experts) using surveys, key informant interviews, group interviews, and document review. The evaluation will also attempt to determine the extent to which changes in outcomes are attributable to program activities. The geographic scope of the evaluation includes all four provinces of Pakistan, Gilgit-Baltistan (GB), and Azad Jammu and Kashmir (AJK). Table 5 summarizes the detailed plan for collecting and analyzing data to answer each evaluation question. Proposed sources of data include:

- Quantitative data from an online survey of beneficiary public sector institutions and research organizations,[2] private partner organizations,[3] and members of public sector institutions and partner organizations. About 20 percent of survey respondents will be women.
- Qualitative data from group interviews with all types of beneficiaries including members of public sector research organizations and private partner organizations, researchers, students, teachers, extension workers, and farmers. The team will conduct about 20 percent of the interviews with women.
- Qualitative data from key informant interviews (KIIs) with USAID/EGA, CIMMYT, and other partner organizations, government officials, sector experts, and trainers.
- Secondary data from AIP background documents, reports, and databases.

Survey of Project Beneficiary Public and Private Organizations

Two types of online surveys will be conducted with public and private organizations: a census survey of all 100 beneficiary public and private organizations[4] to collect organizational level data on organizations' research capacity and institutional capacity, and a survey of a sample of 700 individual members of public and private organizations to collect data on individuals' perceptions of the effectiveness of training, outcomes with respect to building knowledge and skills and changing attitudes, and outcomes with respect to adoption.

For the online survey of individual members of public and private organizations, the evaluation team will survey at least 700 members of public and private organizations in a way that at least five members are surveyed from each organization. With this approach and an assumed design effect of 1.5, this sample size is sufficient to produce estimates with a 5 percent margin of error at a 95 percent confidence level.

The evaluation team will monitor both surveys online without involving a sub-contractor. CIMMYT will provide a list of beneficiary organizations and a list of members of these organizations including their

[2] These are federal or provincial governments' research institutions/centers which conduct research on cereals (wheat, maize, and rice), livestock, horticulture, and vegetables. Examples of such research institutes include Cereal Crops Research Institute (CCRI), Nowshera, Wheat Research Institute, Sakrand, and Agriculture Research Institute, Mingora Swat.

[3] In addition to public sector research institutions, AIP also partners with private organizations which work on cereals (wheat, maize, and rice), livestock, horticulture, and vegetables at different levels of value chain. Examples of such partner organizations include Bayer Crop Sciences, Karachi and Petal Seeds Pvt., Mardan.

[4] The approximate number of public and private research organizations AIP worked with is 100.

email addresses and telephone numbers. USAID and CIMMYT will be requested to notify beneficiary organizations by email of the upcoming AIP evaluation and introduce MSI as third-party evaluator. Following the introductory email, MSI will send each beneficiary organization and their members a link to an online survey requesting them to complete the online survey within seven days. The organizational level survey will be sent to the head of each organization requesting them to provide information on the organization's research capacity and institutional capacity using the organization's records and performance data. After seven days, the evaluation team will send a gentle reminder email to those who would not respond to the survey. If the reminder email does not elicit a response within five days, the evaluation team will telephone respondents who did not complete the survey and ask them to either complete the interview on the phone or to complete the online survey at their earliest convenience.

Group Interviews

The evaluation team will conduct 85 group interviews to collect qualitative data about 'how' AIP activities were effective in revitalizing research and innovation, improving the capacities of public sector institutions to conduct research and disseminate research results to farmers, and changing institutions' capacities in research, innovation, and development. The group interviews will also explore how the technologies introduced by AIP filled gaps in demand and supply and how AIP trainings were effective in improving trainees' knowledge and skills and the extent to which skills translated into attitudes. Each group interview will consist of three to four participants.

Sampling for Group Interviews

The evaluation team will select respondents from research organizations and partner organizations purposely to capture sectoral knowledge and ensure geographic coverage. In total, the team will conduct 24 group interviews with research and partner organizations. Each group interview will include participants from at least two organizations. A maximum of 96 individuals from research and partner organizations will be interviewed (Table 1).

TABLE 1: GROUP INTERVIEWS – RESEARCH ORGANIZATIONS

	Cereals	Livestock	Vegetables	Horticulture	Total
Public research institutions	3	3	3	3	12
Private research organizations	3	3	3	3	12
Total	6	6	6	6	**24**

The evaluation team will select group interview respondents from among beneficiary farmers and other trainees randomly, stratifying by sub-sector and geographic region. In total, the evaluation team will conduct 39 group interviews with beneficiary farmers and 22 group interviews with other trainees (e.g., extension workers, university students and teachers, and NGOs). Each group interview will consist of three to four participants for a maximum of 156 farmers and 88 other trainees (Tables 2 and 3).

TABLE 2: GROUP INTERVIEWS – BENEFICIARY FARMERS

Province	Cereal			Livestock		Vegetable		Horticulture			Total
	Maize	Wheat	Rice	Small Ruminants	Dairy Animals	Protected Cultivation	Mung-Bean	Citrus	Guava	Pistachio	
Punjab	2	3	3	2	3	1	1	2		-	17
Sindh	2	3	-	-	-	1	-	-	1	-	7
KPK	2	3	-	-	2	1	-	-	-	-	8
Baluchistan	-	3	-	1	-	-	-	-	-	1	5
Gilgit-Baltistan	1	-	-	-	-	1	-	-	-	-	2
Totals	7	12	3	3	5	4	1	2	1	1	-
	22			8		5		4			39

TABLE 3: GROUP INTERVIEWS – OTHER TRAINEES

Provinces	Extension Workers and Technicians					Student	Teacher	NGOs
	Cereal	Livestock	Vegetable	Horticulture	Total			
Punjab	1	1	1	1	4	3	3	3
Sindh	1	-	1	1	3			
KPK	1	1	1	-	3			
Baluchistan	1	1	-	1	2			
Totals	4	3	3	3	-	3	3	3
	22							

Stakeholder and Expert Interviews

The evaluation team will conduct about 39 semi-structured key informant interviews with stakeholders and experts associated with the project who can provide feedback on the project's design, implementation, and outcomes. The evaluation team will purposively select key informants to capture specific expertise, experience, or perspectives. Potential informants include representatives from USAID, CIMMYT and other implementing partners, PARC, Ministry of National Food Security and Research (MNFSR), provincial governments, and provincial line departments (Table 4).

TABLE 4: KEY INFORMANT INTERVIEWS

Respondent Type	Number of Interviews
USAID/Pakistan EGA office	2
Experts on cereals, livestock, vegetables, and horticulture	5
Pakistan Agricultural Research Council (PARC)	2
Ministry of National Food Security and Research (MNFSR)	2
Provincial governments (policy makers)	6
Provincial line departments	6
Trainers (who provide trainings in four focus sectors)	5
CIMMYT and other IPs (IRRI, ILRI, AVRDC, and UC Davis)	5
Research institutions and partner organizations	4
Donors (other than USAID)	2
Total	**39**

Secondary Review

In addition to primary data, the evaluation team will use the extensive secondary information that the project has produced and maintained. The team will use information in project documents to develop a thorough understanding of the project and relevant measures of anticipated exposure to project interventions in each sub-sector. The team will also use quantitative data from the project's databases to document the magnitude and geographic distribution of project activities in each sub-sector.

Data Analysis

The evaluation will employ rigorous methods to analyze qualitative and quantitative data. Quantitative data will provide evidence of what happened, e.g., the number of trainees and farmers that mentioning that program activities improved their knowledge and skills. Qualitative data will provide rich evidence of how project activities contributed to changing or not changing beneficiaries' knowledge, skills, and attitudes. When relevant, the analyses will disaggregate results by AIP focus sub-sectors, sex, and geographic region.

The analysis process will involve generating findings for each separate data method (e.g., beneficiaries, a comparison group of non-beneficiary farmers, and the various groups of stakeholders). These findings or "lines of evidence," will be collected as they relate to specific questions. The answers that each line of evidence provide will be compared to the others to determine whether they converge or diverge. Where they converge, the team will report answers based on reasonably strong evidence. Where answers from different lines of evidence diverge, the team will attempt to explain differences, examine

the strength of the evidence associated with each line of evidence and, absent a strong preponderance of credible evidence for one line, will present both as findings of the research.

Content Analysis: The evaluation will use content analysis to examine and quantify patterns in the qualitative responses to open-ended survey questions and key informant and group interviews. Content analysis identifies themes relevant to answering the evaluation questions, records the frequency with which the themes occur, and examines the content of the illustrative text to better understand the meaning of and context in which statements were employed. The evaluation team will use qualitative analysis software—MAXQDA—to manage and analyze qualitative data.

Descriptive Statistics: Descriptive statistics provide simple summaries of quantitative and qualitative data, and form the basis of the quantitative analysis of data from the survey and structured portions of key informant and group interviews. Appropriate statistical tests (e.g., t-test, Chi-square test, and Fisher's exact test) will be used to check whether differences or relationships between two variables/respondent categories are significant or not. Data visualization techniques will be used as appropriate to communicate results. Additionally, the results will be compared to those of a baseline where baseline data are available.

Data Management

Data from semi-structured and group interviews will be recorded through interview notes and, where appropriate, audio recordings, from which transcripts can be prepared. Interview notes will be drafted in Urdu and/or English and summaries will be prepared in English.

All interview notes, summaries, recordings, and transcripts will be stored in a secure folder to which only the assignment team and PERFORM staff working on the evaluation will have access. The storage and transfer of data collected as part of this evaluation will adhere to ADS 579 and DQA standards requirements.

All interim data (e.g., field notes) generated during the evaluation will be deposited in a unified, cloud-based digital repository such as Dropbox or Google Drive. The data collection team should finish notes within three days of completing an interview. All notes will be uploaded to an agreed upon location upon completion. The assignment manager will review notes within two days of their upload.

Limitations and Mitigations

Some of the key limitations of the proposed approach and methods the team will use to mitigate the influence of the limitations include:

- **Respondent Bias**: Key informants and project beneficiaries constitute the primary sources of information for answering all evaluation questions. The interview data are subject to cognitive biases. The evaluation team will design and pretest instruments carefully and systematically triangulate evidence from a variety of methods and sources to minimize potential bias and ensure the validity and reliability of findings.
- **Language/translation**: Language may introduce some less of fidelity due to multiple levels of translation. The geographic spread of AIP activities implies that data will likely be collected in multiple local languages. While conducting the survey or interviews, all questionnaires and interview guides will be translated from the original English into Urdu and then, when necessary, orally into local languages. The local language responses are usually recorded in Urdu and findings are presented in English. To minimize errors, the PERFORM assignment team will thoroughly train enumerators and verify the translations and analysis carefully with the enumerators to ensure that responses have been interpreted as accurately as possible. The

team will also use closed responses where possible in the qualitative interviews to limit interpretation bias.

- **Response Rates**: The evaluation involves data collection from famers from rural parts of Pakistan. Accessing remote areas and contacting farmers will be challenging and that could negatively affect the response rate. The PERFORM team will work closely with CIMMYT and other implementing partners to access farmers. Additionally, the team will select a contingency sample to cover potential low response rates and enumerators will be instructed to make several attempts to contact respondents.
- **Online Survey Response Rate**: Generally online surveys tend to have low response rates. To overcome this limitation, the PERFORM team will send multiple reminders to respondents and, as a last resort, attempt to conduct the interview by telephone. The PERFORM team will also ask the implementing partner, CIMMYT, to request survey respondents to complete the online survey.
- **Attribution**: The design, which is largely dictated by the baseline survey, will not rigorously attribute outcomes to program activities. To the extent possible, the analysis will identify and attempt to rule out alternative explanations for observed outcomes to achieve a level of plausible attribution.

Implementation

Team Planning Workshop

Prior to beginning fieldwork, the PERFORM assignment team will participate in a team planning workshop (TPW) to refine the evaluation design (i.e., sampling, data analysis plan, and instruments) and plan fieldwork. Prior to the TPW, all team members will review background documents (e.g., baseline studies and other surveys) and summarize them to answer the evaluation questions. During the TPW, the team will meet with USAID, CIMMYT, and other implementing partners to gain a thorough understanding of project objectives, implementation mechanisms, and the evaluation purpose and context. Prior to the end of the TPW, the team will conduct a data rehearsal meeting to familiarize EGA staff with the evaluation plan and anticipated results. At the end of the TPW, the evaluation team will conduct a data collection instruments review workshop with USAID and CIMMYT. Data collection instruments will be pre-tested before starting the fieldwork.

TABLE 5: SUMMARY OF PROPOSED DATA COLLECTION AND ANALYSIS METHODS

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
Question 1: To what extent has AIP contributed to revitalizing research and innovation in its focus sub-sectors compared to baseline?	Public sector institutions/ research organizations	Online/telephonic survey	Census of public sector institutions/research organizations	• Quantitative analysis of perceptions regarding contribution of AIP in revitalizing research and innovation. Data will be disaggregated by sub-sectors (i.e., cereals, livestock, vegetables, and horticulture) and gender and geographic regions where possible.	• Response bias • Low response rate due to accessibility issues in rural areas and internet access • Recall bias
	Members of public sector institutions/ research organizations	Group interviews	Purposive sampling of representatives of public sector institutions/research organizations	• Qualitative analysis of perception of members of public sector institutions regarding the contribution of AIP to revitalizing research and innovation in its focus sectors. • Interviews will provide perceptions of members of public sector institutions about 'how' activities were effective or not in revitalizing research and innovation, improving the capacities of public sector institutions to conduct research and dissemination. These data will also explore the mechanisms through which changes have occurred, and will allow plausible attribution to program activities.	
	Partner research organizations	Online/telephonic survey	Census of partner research organizations	• Quantitative analysis of perceptions regarding the contribution of AIP to revitalizing research and innovation. Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture). • Triangulation with responses of public sector institutions.	
	Partner research organizations	Group interviews	Purposive sampling of representatives of partner organizations	• Interviews will provide perceptions of partner organizations about 'how' activities were effective or not in revitalizing research and innovation, improving the capacities of public sector institutions to conduct research and	

PERFORM ASSIGNMENT WORK PLAN 9

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
				dissemination. These data will also explore the mechanisms through which these changes occurred, and will allow plausible attribution to program activities. • Triangulation with responses of public sector institutions.	
	Stakeholders (e.g., IPs)	Key informant interviews	Purposive sampling of key stakeholders including CIMMYT (and other IPs), trainers, PARC, and USAID	• Interviews will provide perceptions of key stakeholders about 'how' activities were effective or not in revitalizing research and innovation, and the mechanism through which these changes have taken place. • Triangulation with responses of public sector institutions.	• Response bias • Differing involvement of various partners and lack of knowledge of the program • Some relevant experts may not be available.
	Experts including national and international scientists, researchers, and universities' faculty	Key informant interviews	Purposive sampling of experts, national and international scientists, and faculty members of public universities involved in the program	• Qualitative analysis of experts' perceptions regarding the contribution of AIP to revitalizing research and innovation in its focus sectors. • Interviews will provide perceptions of experts about 'how' activities were effective or not in revitalizing research and innovation, and the mechanisms through which these changes have taken place. • Triangulation with responses of public sector institutions.	
	Government, stakeholder, and project documents, reports, and databases	Secondary review of materials	N/A	• Culling data based on analysis of patterns and trends. • Descriptive statistics and cross tabulations of statistical data on project outcomes.	N/A

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
Question 2: To what extent has AIP's collaboration with the public and private sector built the capacity of partner institutions in research and development?	Public sector institutions/ research organizations	Online/telephonic survey	Census of public sector institutions/research organizations	• Quantitative analysis of perceptions of public sector institutions/research organizations regarding the contribution of AIP to changes in their capacities for research, innovation, and development. Data will be disaggregated by sub-sectors (i.e., cereals, livestock, vegetables, and horticulture) and gender and geographical regions where possible.	• Response bias • Low response rate due to accessibility issues in rural areas and internet access • Recall bias
	Public sector institutions/ research organizations	Group interviews	Purposive sampling of public sector institutions/research organizations	• Qualitative analysis of public sector institutions/research organizations' perceptions regarding the contribution of AIP to changing their capacities for research, innovation, and development. • Interviews will provide perceptions of beneficiaries about 'how' activities were effective or not in changing institutions' capacity for research, innovation, and development. These data will also explore the mechanisms through which these changes have taken place, and allow plausible attribution to program activities.	
	Partner research organizations	Online/telephonic survey	Census of partner research organizations	• Quantitative analysis of partner organizations' perceptions regarding changes in capacity of public sector institutions for research, innovation, and development. Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture). • Triangulation with responses of public sector institutions.	

PERFORM ASSIGNMENT WORK PLAN 11

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
	Partner research organizations	Group interviews	Purposive sampling of partner organizations	• Interviews will provide perceptions of partner organizations about 'how' program activities were effective or not in changing capacities of public sector institutions for research, innovation, and development. These interviews will also provide data on 'how' change in capacities, if any, affected these partner organizations. • Triangulation with responses of public sector institutions.	
	Stakeholders (e.g., IPs)	Key informant interviews	Purposive sampling of key stakeholders including CIMMYT (and other IPs), trainers, PARC, and USAID	• Interviews will provide perceptions of key stakeholders about 'how' program activities were effective or not in changing institutions' capacities for research, innovation, and development. • Triangulation with responses of public sector institutions.	• Response bias • Differing involvements of various partners and lack of knowledge the program • Some relevant experts may not be available.
	Experts including national and international scientists, researchers, and universities' faculty	Key informant interviews	Purposive sampling of experts, national and international scientists, and faculty members of public universities involved in the program	• Qualitative analysis of experts' perceptions regarding the contribution of AIP to changing institutions' capacities for research, innovation, and development. • Triangulation with responses of public sector institutions.	
	Government, stakeholder, and project documents, reports, and databases	Secondary review of materials	N/A	• Culling data based on analysis of patterns and trends. • Descriptive statistics and cross tabulations of statistical data on project outcomes.	N/A
	Public sector institutions/ research organizations	Online/telephonic survey	Census of public sector institutions/research organizations	• Quantitative analysis of perceptions of public sector institutions/research organizations regarding the contribution of AIP to providing demand-driven technologies to partner	

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
Question 3: According to public and private sector partners of AIP, how effective were the implementation of project activities? What can be improved?				organizations / meeting their research and technology needs, i.e., supply side. • Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture), and gender and geographical regions where possible. • Triangulation with responses of partner organizations.	• Response bias • Low response rate due to accessibility issues in rural areas and internet access • Recall bias
	Public sector institutions/ research organizations	Group interviews	Purposive sampling of public sector institutions/research organizations	• Qualitative analysis will explore whether public sector institutions/research organizations are producing demand-driven technologies. These data will also explore 'how' the technologies introduced by AIP filled gaps in demand and supply, from the supply side perspective. • Triangulation with responses of partner organizations.	
	Partner research organizations	Online/telephonic survey	Census of partner research organizations	• Quantitative analysis of partner organizations' perceptions of whether public sector institutions/research organizations are providing demand-driven technologies, i.e., demand side. • Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture). • Triangulation with responses of public sector institutions.	
	Partner research organizations	Group interviews	Purposive sampling of partner organizations	• Qualitative analysis will explore whether public sector institutions/research organizations are producing demand-driven technologies. These data will also explore 'how' the technologies introduced by AIP filled gaps in demand and supply, from a demand side perspective. • These data will also identify gaps, if any, in demand and supply of technologies.	

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
				• Triangulation with responses of public sector institutions.	
	Government, stakeholder, and project documents, reports, and databases	Secondary review of materials	N/A	• Culling data based on analysis of patterns and trends. • Descriptive statistics and cross tabulations of statistical data on project outcomes.	N/A
Question 4: To what extent did AIP produce any change in knowledge, skills and attitude in its trainees?	Public sector institutions/ research organizations	Online/telephonic survey	Census of public sector institutions/research organizations	• Quantitative analysis of the perceptions of trainees about knowledge, skills, and attitudes using outcome mapping. Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture), and gender and geographical regions where possible.	• Response bias • Low response rate due to accessibility issues in rural areas and internet access • Recall bias
	Public sector institutions/ research organizations	Group interviews	Purposive sampling of trainees	• Qualitative analysis of the perceptions of trainees about knowledge, skills, and attitudes using outcome mapping. • Interviews will provide perceptions of trainees about 'how' AIP trainings were effective or not in improving their knowledge and building skills. It will also explore how skills of trainees translated, or not, into attitudes. These data will also explore the mechanism through which these changes have taken place, and will allow plausible attribution to program activities.	
				•	

PERFORM ASSIGNMENT WORK PLAN 19

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
	Other trainees (e.g., teachers, students, NGOs, and line department staff)	Group interviews	Purposive sampling of trainees	• Qualitative analysis of the perceptions of trainees about knowledge, skills, and attitudes using outcome mapping. • Interviews will provide the perceptions of trainees about 'how' AIP trainings were effective, or not, in improving their knowledge and building skills. It will also explore how skills of trainees translated, or not, into attitudes. These data will also explore the mechanisms through which these changes have taken place, and will allow plausible attribution to program activities.	
	Partner research organizations	Online/telephonic survey	Census of partner research organizations	• Quantitative analysis of the perceptions of partner organizations about knowledge, skills, and attitudes of beneficiary farmers. Data will be disaggregated by program focus sub-sectors (i.e., cereals, livestock, vegetables, and horticulture), and gender and geographical regions where possible. • Triangulation with responses of beneficiary farmers and public organizations	
	Partner research organizations	Group interviews	Purposive sampling of partner organizations	• Interviews will provide the perceptions of partner organizations about 'how' AIP trainings were effective, or not, in changing knowledge, skills, and attitudes of trainees (researchers, and farmers). • Triangulation with responses of public sector institutions.	
				•	
	Beneficiary farmers (both male and female)	Group interviews	Purposive sampling of beneficiary farmers	• Qualitative analysis of the perceptions of trainees about knowledge, skills, and attitudes using outcome mapping.	

PERFORM ASSIGNMENT WORK PLAN 15

Evaluation Question	Data Source	Data Collection Method	Sampling	Method of Data Analysis	Limitations/Risks
				• Interviews will provide the perceptions of beneficiary farmers (trainees) about 'how' AIP trainings were effective, or not, in improving their knowledge and building skills. It will also explore how skills of trainees translated, or not, into attitudes. These data will also explore the mechanisms through which these changes have taken place, and will allow plausible attribution to program activities.	
				•	
	Government, stakeholder, and project documents, reports, and databases	Secondary review of materials	N/A	• Culling data based on analysis of patterns and trends. • Descriptive statistics and cross tabulations of statistical data on project outcomes.	N/A
	Stakeholders (e.g., IPs)	Key informant interviews	Purposive sampling of trainers	• Interviews will provide the perceptions of trainers about 'how' AIP trainings were effective, or not, in changing knowledge and skills of trainees (e.g., farmers and researchers, students, and teachers) • Triangulation with responses of trainees (e.g., farmers and researchers, students, and teachers)	• Response bias • Some relevant experts/trainers may not be available.

DELIVERABLES

Deliverables under this assignment include:

- **Detailed Methodology, Data Analysis Plan, Data Collection Tools and Data Collection Plan:** During the team planning workshop (TPW), the assignment team will prepare a detailed methodology, data analysis plan, data collection tools and a data collection plan for the assignment. The methodology in the AWP will be updated and the AWP revised as needed at the end of the TPW and submitted for PERFORM COR approval. The data analysis plan, data collection tools and data collection plan will be submitted to the PERFORM COR for approval at the end of the TPW and before the start of fieldwork.

- **Data Collection Completion Report:** At the conclusion of data collection, PERFORM will submit to the PERFORM COR a final data collection schedule indicating dates and location of data collection activities and persons or groups interviewed if relevant.

- **Debriefing with USAID/Pakistan of Findings, Conclusions, and Recommendations:** At or near the conclusion of data analysis the assignment team will present the major findings, conclusions, and recommendations to USAID/Pakistan. As appropriate, the team will consider USAID comments during the debriefing when writing the draft report.

- **Draft Report:** The draft report will answer the assignment questions and will include findings, conclusions, and recommendations across the components/sub-components. The draft report (not to exceed 30 pages) will be submitted by PERFORM to the PERFORM COR for USAID/Pakistan review and comments. The PERFORM COR will submit all comments to the draft report to PERFORM within two to three weeks of receipt of the draft report.

- **Final Report:** The final report will address all USAID/Pakistan comments. PERFORM will finalize the report and submit it to the PERFORM COR for approval within two to three weeks.

- **One-page Brief:** A brief of the key (qualitative and quantitative) findings, conclusions and recommendations related to the assignment questions will be developed by PERFORM for use by USAID/Pakistan decision makers and other relevant stakeholders. This document will be written in English and may be translated and disseminated as desired by USAID/Pakistan. PERFORM will submit the document to the PERFORM COR after the final report is approved.

- **Presentation(s) to USAID/Pakistan:** Presentation(s) of the final report will be made to USAID/Pakistan, implementing partners and other relevant stakeholders if desired by USAID/Pakistan.

- **Raw Data:** Per ADS 579 - USAID Development Data – all quantitative data collected for this assignment will be submitted to USAID/Pakistan in electronic format within 30 days of completion. Qualitative data will be delivered as 1) the coded segments used in analysis extracted from MAXQDA in an excel format or 2) tally sheets, as applicable to the analysis.

- **Development Experience Clearinghouse (DEC) Review:** Once the report is finalized, USAID/Pakistan may conduct a DEC review of the report. The PERFORM COR will share the DEC version of the report with PERFORM for final editing, formatting and uploading to the DEC.

ANTICIPATED SCHEDULE OF ACTIVITIES AND LEVEL OF EFFORT

Table 6 describes the roles and responsibilities of each proposed assignment team member, and Table 7 gives detail of the anticipated assignment schedule and level of effort.

TABLE 6: ASSIGNMENT STAFFING WITH ROLES AND RESPONSIBILTIES

Position	Status	Roles and Responsibilities
Team Lead/Evaluator	Expat STTA	The team leader will be an experienced evaluator with superior social science research skills and, if possible, experience in agriculture development and institutional capacity building. The team leader will be responsible for leading the team (including guiding and supervising the activities of the firm contracted to conduct the survey), managing assignments among team members to complete the fieldwork, and completing deliverables on time and to required quality standards.
Sector Specialists	Local STTA	The three agricultural sector specialists will collectively have expertise in institutional development, value chain development, livestock, and horticulture. They will participate fully in all aspects of the evaluation including the TPW, developing data collection instruments, collecting and analyzing data, and contributing to the report.
Translator / Notetakers	Local STTA	The team will include three local language-speaking translators/ notetakers. They will translate for field team members when necessary and facilitate qualitative data collection activities which include, but are not limited to, conducting interviews, taking interview notes, and preparing transcripts and interview summaries.
Research assistants	Local STTA	Three local research assistants will help the evaluation team monitor online surveys and coordinate fieldwork activities. The role of research assistants includes, but is not limited to, making follow-up calls to survey respondents, conducting telephonic surveys, if necessary, coordinating qualitative data collection field activities, and preparing weekly data collection reports.
Data analysts	Local STTA	Two local data analysts will help the team code and analyze the qualitative and quantitative data. The analysts contribute to the analysis phase of the evaluation.
Assignment manager	PERFORM LTTA	The assignment manager will oversee the evaluation and facilitate the work of the team as required. This will include preparing a draft evaluation design; coordinating all travel and logistics; facilitating meetings with USAID/Pakistan; participating in the TPW, data rehearsal, data analysis, and initial debrief; reviewing draft reports; and ensuring that the team adheres to the strict deadlines for deliverables contained in the AWP.
Data analyst	PERFORM LTTA	The data analyst will oversee the overall data analysis including, but not limited to, managing, coding, and analyzing qualitative data.
Statistician	PERFORM LTTA	The statistician will oversee overall quantitative data analysis. This will include managing, cleaning, and analyzing quantitative data.
PERFORM advisor	PERFORM LTTA	The evaluation and assessments advisor will provide evaluation expertise. He will otherwise be responsible for reviewing and approving all aspects of the assignment and is ultimately responsible for ensuring that the team completes the assignment on time and to the required quality standards.

TABLE 7: ANTICIPATED ASSIGNMENT SCHEDULE AND LEVEL OF EFFORT

Assignment Phase	Location of Activity	Anticipated Schedule	Deliverable(s)	Team Leader	Sector Specialist #1	Sector Specialist #2	Sector Specialist #3	Note Taker #1	Note Taker #2	Note Taker #3	Data Analyst #1	Data Analyst #2	Research Assistant #1	Research Assistant #2	Research Assistant #3
Travel	Local / international	-		18	6	6	6	6	6	6	2	2			
Preparation	Home base	May 15 - 26		10	5	5	5	2	2	2					
TPW	Islamabad	May 29 – June 9	• Data rehearsal (June 9)	13	11	11	11								
Eid-ul-Fitre Holidays		June 25 – July 2													
Instruments review workshop and approval of instruments	Islamabad	July 5 – 21	• Draft data collection and analysis plans • Draft instruments		2	2	2								
Training of notetakers and interviewers, and pre-testing	Islamabad	July 24 – Aug. 3	• Revised instruments after pre-testing	9	8	8	8	8	8	8	2	2	2	2	2
Fieldwork	Rural districts and capitals of Punjab, Sindh, Baluchistan, GB, and ICT	Aug. 4 – Sept. 12	• Data collection completion report (Sept. 18)	9	32	32	32	32	32	32			18	18	18
Analysis	Islamabad	Sept. 13 – Oct. 12	• Debriefing note outline to USAID/Pakistan (Oct. 11)	24	20	20	20				24	24			
Reporting	Islamabad	Oct. 13– Nov. 2	• Debriefing with USAID (Oct. 12) • Draft report to USAID (Nov. 2) • Final report to USAID/Pakistan	20	6	6	6				6	6			

PERFORM ASSIGNMENT WORK PLAN 19

Assignment Phase	Location of Activity	Anticipated Schedule	Deliverable(s)	Team Leader	Sector Specialist #1	Sector Specialist #2	Sector Specialist #3	Note Taker #1	Note Taker #2	Note Taker #3	Data Analyst #1	Data Analyst #2	Research Assistant #1	Research Assistant #2	Research Assistant #3
			• Final one-page summary to USAID												
			Total LOE	103	90	90	90	48	48	48	34	34	20	20	20

LOE Summary by Position

Status	Position	LOE (days)
STTA	Team Lead	103
STTA	Sector experts (3 persons)	270
STTA	Note takers (3 persons)	144
STTA	Data analysts (2 persons)	68
STTA	Research assistants (3 persons)	60
Total LOE		**645**

COST ESTIMATE

A break-down of costs by the four line items is below:

Direct Labor	
Travel	
Other Direct Costs	
Subcontractors	
Grand Total	

**Total cost estimates do not include cross-cutting costs, indirect costs, or the MSI fee.*

PERFORM COR APPROVAL

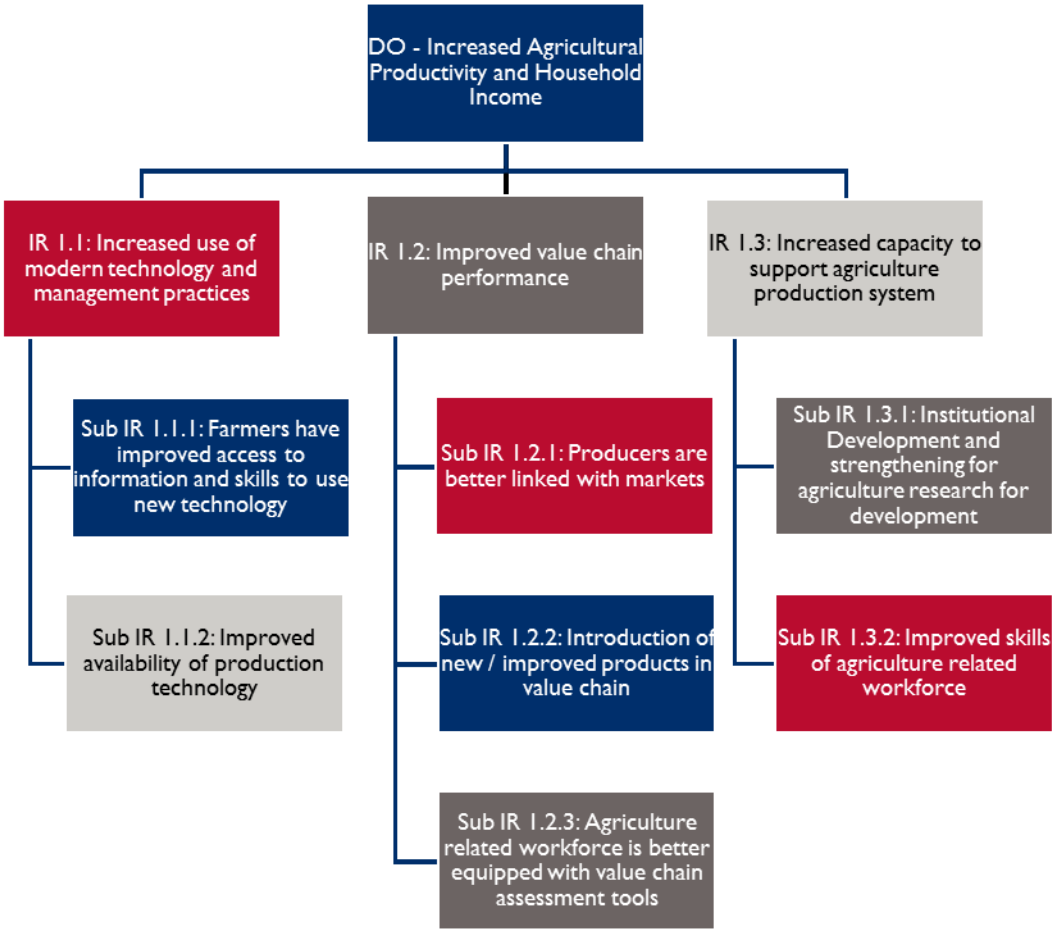
[COR will indicate approval by signing below or indicating "approval" by return email].

Contracting Officer's Representative (COR) **Date**

PERFORM ASSIGNMENT WORK PLAN 21

ANNEX 3: RESULTS FRAMEWORK

FIGURE 19: AIP RESULTS FRAMEWORK



ANNEX 4: DATA COLLECTION INSTRUMENTS

AGRICULTURE INNOVATION PROGRAM
(Survey Questionnaire for Members of Research and Partner Organizations)

Serial number ***(FOR OFFICE USE ONLY)***		Start Time: hh:mm (AM/PM):	
Interviewer ID:		End Time: hh:mm (AM/PM):	
		Interview Date: DD/MM/YY	

Introduction:

My name is_____ . I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by CIMMYT and its partners. AIP aims to build the research and development capacities of partner institutions to revitalize agricultural research and innovation and affect the knowledge, skills, attitudes, and behavior of its trainees.

The interview will take approximately 40-50 minutes. We will treat everything you say here confidentially. We will not use your names in reports or attribute anything you say to you.

Module A: Background						
A1. Respondent name						
A2. Name of organization/Research institution						
A3. Location of organization/institution (City in which organization is located)						
A4. Is this a government (public sector) organization?	Yes				1	
	No				0 (SKIP QUESTION A9)	
A5. Gender	Male				0	
	Female				1	
A6. Age of respondent in years	Years					
	Refused to answer				-77	
A7. Education of respondent	Under graduate	Graduate/B. A/B.Sc.	Masters	Ph.D.	Refused to answer	
	1	2	3	4	-77	
A8. What best describes the nature of your current position	Research				1	
	Managerial				2	
	Both reserch & managerial				3	
	Refused to answer				-77	
A9. What best describe the level of your position (Basic pay scale or equivalent) (NOTE: SKIP THIS QUESTION IF RESPONDENT ANSWERS "NO" TO QUESTION A4)	Basic pay scale					
	Refused to answer				-77	
A10. How many years have you worked in this organization (Years)	Years					
	Refused to answer				-77	
	Years					

A11. How many years have you worked in your current position (Years)	Refused to answer	-77

A12. In which AIP activities were you engaged? (CIRCLE ALL THAT APPLY)	Cereals: Wheat	1
	Cereals: Maize	2
	Cereals: Rice	3
	Cereals: Agronomy	4
	Livestock: Small ruminants	5
	Livestock: Dairy animals	6
	Livestock: Fodder and range management	7
	Vegetable: Protected cultivation	8
	Vegetable: New verities	9
	Vegetable: Mung bean	10
	Horticulture: Post-harvest losses	11
	Horticulture: Value addition	12

NOTE:

- **The following questions are meant to elicit responses of members of organizations that worked with AIP.**
- **Supervisors and enumerators should read every question along with responses aloud, unless instructed otherwise. Options for DK/NA are not to be read aloud.**

Module B: Institutional and Human capacity assessment

DEFINITION:

AIP: A USAID-funded project to enhance the research capacities of public and private sector agricultural and livestock research organizations with the aim of increasing agricultural and livestock productivity. It is implemented by the International Maize and Wheat Improvement Center (CIMMYT), International Livestock Research Institute (ILRI), International Rice Research Institute (IRRI), University of California-Davis (UC Davis), the World Vegetable Centre (AVRDC), and the Pakistan Agricultural Research Council (PARC).

To what extent do you agree or disagree with the following statements? (CIRCLE ONE NUMBER)

Question #	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know	N/A
Q1.	Your organization is conducting research to improve agricultural or livestock productivity.	4	3	2	1	-88	-99
Q2.	AIP support has improved your organization's capacity to conduct research to improve agricultural or livestock productivity.	4	3	2	1	-88	-99
Q3.	AIP support has improved the quality of the research your organization conducts.	4	3	2	1	-88	-99
Q4.	AIP support to your organization has created a lasting change in the organization's capacity to conduct research?	4	3	2	1	-88	-99
Q5.	As a result of AIP support, the working environment at your organization is more supportive of research.	4	3	2	1	-88	-99
Q6.	New research and development practices introduced by AIP have become part of the routine practice of this organization?	4	3	2	1	-88	-99
Q7.	The leadership of your organization is more supportive of adopting new research techniques or practices since receiving assistance from AIP.	4	3	2	1	-88	-99
Q8.	AIP accurately assessed your organization's needs	4	3	2	1	-88	-99
Q9.	AIP designed its assistance to meet those needs						

Question #	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know	N/A
Q10.	AIP's support improved your organization's capacity for research.	4	3	2	1	-88	-99
Q11.	AIP has effectively coordinated with your organization throughout the project period.	4	3	2	1	-88	-99

Question #	Dimensions	Significantly Improved	Somewhat Improved	Minimally Improved	No Improvement	Don't Know	N/A
Q12.	To what extent, if any, has AIP support to your organization improved the organization's capacity to conduct research? (CIRCLE ONE NUMBER)	4	3	2	1	-88	-99
Q13.	To what extent, if any, has AIP support to your organization improved the organization's capacity to disseminate the results of your research? (CIRCLE ONE NUMBER)	4	3	2	1	-88	-99

Question #	Training provided by AIP		
Q14.	Did you receive any trainings through AIP? (CIRCLE ONE NUMBER)	**Yes**	**No**
		1	0 ***GO TO Q23***
Q15.	Before providing trainings, did AIP assess your own learning needs. (CIRCLE ONE NUMBER)	**Yes**	**No**
Q16.	Before providing trainings, did AIP assess your organization's learning needs. (CIRCLE ONE NUMBER)	**Yes**	**No**
		1	0
Q17.	**To what extent do you agree or disagree with the following statements? (CIRCLE ONE NUMBER FOR EACH QUESTION)**		

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
a. The training material was useful.	4	3	2	1
b. The trainer was well-prepared.	4	3	2	1

	c. The training environment was conducive to learning.	4	3	2	1
	d. The trainer used a participatory approach.	4	3	2	1
	e. The training duration was enough to learn new knowledge or skills.	4	3	2	1
Q18.	To what extent, if at all, did this training increase your knowledge relevant to your research work? (CIRCLE ONE NUMBER)	**Significantly increased**	**Moderately increased**	**Slightly increased**	**Did not increase**
		4	3	2	1 ***GO TO Q22***
Q19.	How often do you use this knowledge in your work? (CIRCLE ONE NUMBER)	**Very often**	**Often**	**Sometimes**	**Never**
		4	3	2	1
Q20.	**To what extent do you agree or disagree with the following statement:** The new knowledge and skills you gained through AIP have become a routine part of your work. (CIRCLE ONE NUMBER)	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
		4	3	2	1
Q21.	To what extent, if at all, have the new knowledge and skills you gained through AIP changed the way you conduct research? (CIRCLE ONE NUMBER)	**Significantly Changed**	**Moderately Changed**	**Slightly Changed**	**Did not Change**
		4	3	2	1
Q22.	To what extent, if at all, did this training improve your organization's overall capacity to conduct research? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1
Supporting research through grants					
Q23.	Did your organization receive any grants from AIP to support research? (CIRCLE ONE NUMBER)			**Yes**	**No**
				1	0 ***GO TO Q26***
Q24.	To what extent, if at all, was this funding relevant to address the needs of your organization so as to become better enabled to conduct research? (CIRCLE ONE NUMBER)	**Very Relevant**	**Moderately Relevant**	**Slightly Relevant**	**Not Relevant**
		4	3	2	1
Q25.	To what extent, if at all, did this funding actually improve your organization's capacity to conduct research? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1
Upgrading research facilities or equipment					

Q26.	Did your organization receive any assistance from AIP to upgrade the organization's research facilities or equipment? (CIRCLE ONE NUMBER)			**Yes**	**No**
				1	0 ***GO TO Q29***
Q27.	To what extent, if at all, was this assistance relevant to address the needs of your organization so as to become better enabled to conduct research? (CIRCLE ONE NUMBER)	**Very Relevant**	**Moderately Relevant**	**Slightly Relevant**	**Not Relevant**
		4	3	2	1
Q28.	To what extent, if at all, did this assistance actually improve your organization's capacity to conduct research? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1
Genetic material (Seed varieties/Sperm samples)					
Q29.	Did your organization receive new genetic material (e.g., seed varieties or new or revived sperm samples) for research form AIP? (CIRCLE ONE NUMBER)			**Yes**	**No**
				1	0 ***GO TO Q32***
Q30.	To what extent, if at all, was this genetic material relevant to address the needs of your organization so as to become better enabled to conduct research? (CIRCLE ONE NUMBER)	**Very Relevant**	**Moderately Relevant**	**Slightly Relevant**	**Not Relevant**
		4	3	2	1
Q31.	To what extent, if at all, did this genetic material actually improve your organization's capacity to conduct research? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1
New technologies					
Q32.	Did AIP provide your organization with new agricultural or livestock technologies to test for applicability in Pakistan? (CIRCLE ONE NUMBER) ***Note:*** *"Agricultural or livestock technologies" refers to physical items (e.g., machinery, greenhouses, irrigation equipment, vaccines, etc.) to improve agricultural or livestock production.*			**Yes**	**No**
				1	0 ***GO TO Q35***
Q33.	To what extent, if at all, were those technologies relevant to address the needs of your organization so as to become better enabled to introduce new productivity-enhancing technologies to farmers? (CIRCLE ONE NUMBER)	**Very Appropriate**	**Moderately Appropriate**	**Slightly Appropriate**	**Not Appropriate**
		4	3	2	1
Q34.	To what extent, if at all, did these technologies actually improve your organization's capacity to introduce new productivity-enhancing technologies to farmers? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1
New practices					

Q35.	Did AIP provide your organization with new agricultural or livestock practices to test for applicability in Pakistan? (CIRCLE ONE NUMBER) ***Note:*** *New agricultural or livestock practices refer to activities or ways of doing things that improve agricultural or livestock production. Examples may include cultivation practices (zero tillage planting), irrigation practices, harvesting or post-harvest practices, covered/vertical cultivation, feeding practices (fodder), animal husbandry practices, etc.*			**Yes**	**No**
				1	0 ***GO TO MODULE 'C'***
Q36.	To what extent, if at all, were these practices relevant to address the needs of your organization so as to become better enabled to introduce new productivity-enhancing practices to farmers? (CIRCLE ONE NUMBER)	**Very Appropriate**	**Moderately Appropriate**	**Slightly Appropriate**	**Not Appropriate**
		4	3	2	1
Q37.	To what extent, if at all, did these technologies improve your organization's capacity to introduce new productivity-enhancing practices to farmers? (CIRCLE ONE NUMBER)	**Significantly Improved**	**Moderately Improved**	**Slightly Improved**	**Did not Improve**
		4	3	2	1

Module C: Information / Consent Form

C1. Can you share your mobile number? ***(CIRCLE ONE NUMBER)***

Yes GO TO C1A	No GO TO C2	Do not Have Mobile GO TO C2	*(DO NOT READ)*	
			Don't Know GO TO C2	Refused to Answer GO TO C2
1	2	3	-88	-77

C1A. Record mobile number

Number1:

Number 2:

C2. Can you share your landline number? ***(CIRCLE ONE NUMBER)***

Yes GO TO C2A	No GO TO C3	Do not Have Landline GO TO C3	*(DO NOT READ)*	
			Don't Know GO TO C3	Refused to Answer GO TO C3
1	2	3	-88	-77

C2A. Record landline number

City/Area Code | Phone number

City/Area Code | Phone number

Note: if response is "yes" in either C1 or C2, then ask C3.

C3. Can we contact you via mobile or landline in the future if we need additional information? (CIRCLE ALL THAT APPLY)

Cell	Landline	No
1	2	3

Thank respondent

AGRICULTURE INNOVATION PROGRAM
(Organizational Survey)

Serial number ***(FOR OFFICE USE ONLY)***		Start Time: hh:mm (AM/PM):	
Interviewer ID:		End Time: hh:mm (AM/PM):	
		Interview Date: DD/MM/YY	

Introduction:

My name is _____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT), in partnership with the International Livestock Research Institute (ILRI), International Rice Research Institute (IRRI), University of California- Davis (UC Davis), the World Vegetable Centre (AVRDC), and the Pakistan Agricultural Research Council (PARC).

The interview will take approximately 45-60 minutes. We will treat everything you say here confidentially. We will not use your names in reports or attribute anything you say to you.

Module A: Background		
A1. Respondent name		
A2. Name of organization/Research institution		
A3. Location of organization/institution (City in which organization is located)		
A4. Is this a government (public sector) organization?	Yes	1
	No	0
A5. In which AIP activities were you engaged? (CIRCLE ALL THAT APPLY)	Cereals: Wheat	1
	Cereals: Maize	2
	Cereals: Rice	3
	Cereals: Agronomy	4
	Livestock: Small ruminants	5
	Livestock: Dairy animals	6
	Livestock: Fodder and range management	7
	Vegetable: Protected cultivation	8
	Vegetable: New varieties	9
	Vegetable: Mung bean	10
	Horticulture: Post-harvest losses	11
	Horticulture: Value addition	12
A6. Interviewer name:		
A7. Entered by:		
A8. In which year did your organization start working with AIP?		

Module B: Institutional and Human Capacity Assessment

Based on your organization's records, please provide information on the following aspects of your organization's activities from 2013 through 2017.

Note:

1. ***Please provide information about each calender year e.g., 2013= January 01,2013 – December 31, 2013, and so on***
2. ***Please provide annual numbers, NOT cumulative numbers on these indicators (don't add numbers of previous years), unless otherwise stated.***
3. ***Write -99 if not applicable.***

This section applies to all sectors.
(This note will not be in the online instrument.)

Question #		Year				
		2013	2014	2015	2016	2017
Q1.	How many proposals did this organization submit to obtain funding for agricultural or livestock research in each of the following years?					
Q2.	How many of these proposals were successful in obtaining funding in each of the following years?					
Q3.	How many researchers did this organization engage in each of the following years?					
Q4.	How many research projects did this organization complete in each of the following years?					

To what extent do you agree or disagree with the following statements? (CIRCLE ONE NUMBER)

Question #	Statements about AIP implementation	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Q5.	AIP implementing partners accurately assessed my organization's needs	4	3	2	1	-99
Q6.	AIP implementing partners designed their assistance to meet my organization's needs.	4	3	2	1	-99
Q7.	AIP support has improved my organization's capacity to conduct research.	4	3	2	1	-99
Q8.	AIP support has improved the quality of the research my organization conducts.	4	3	2	1	-99
Q9.	AIP support to my organization has created a lasting change change in its **capacity** to to conduct research.	4	3	2	1	-99

Question #	Statements about AIP implementation	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Q10.	AIP support to my organization has created a lasting change in its research **practices**.	4	3	2	1	-99
Q11.	AIP effectively coordinated with my organization throughout the project period.	4	3	2	1	-99

Question #	Training provided by AIP				
Q12.	Did this organization receive any trainings through AIP implementing partners such as CIMMYT, ILRI, IRRI, AVRDC/WorldVeg or UCDavis? (CIRCLE ONE NUMBER)			Yes	No
				1	0 *GO TO Q15*
Q13.	To what extent, if at all, was the training designed to address this organization's capacity gaps to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1
Q14.	To what extent, if at all, did the training improve this organization's capacity to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1
Supporting research through grants					
Q15.	Did your organization receive any grants from AIP to support research? (CIRCLE ONE NUMBER)			Yes	No
					0 *GO TO Q18*
Q16.	To what extent, if at all, were these grants relevant to address the organization's capacity gaps to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1
Q17.	To what extent, if at all, did these grants actually improve the organization's capacity to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1
Upgrading research facilities or equipment					
Q18.	Did your organization receive any assistance from an AIP implementation partner such as CIMMYT, ILRI, IRRI, AVRDC/WorldVeg or UCDavis to upgrade the organization's research facilities, including equipment? (CIRCLE ONE NUMBER)			Yes	No
				1	0 *GO TO Q 21*
Q19.	To what extent, if at all, was this assistance relevant to address the organization's capacity gaps to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1
Q20.	To what extent, if at all, did this assistance actually improve the organization's capacity to conduct research? (CIRCLE ONE NUMBER)	Great Extent	Moderate Extent	Some Extent	No Extent
		4	3	2	1

Genetic material (Seed varieties/Sperm samples)			
Q21.	Did your organization receive new genetic material (e.g., seed varieties or sperm samples) for research from an AIP implementation partner such as CIMMYT, ILRI, IRRI, AVRDC/WorldVeg and UCDavis? (CIRCLE ONE NUMBER)	**Yes**	**No**
		1	0 ***GO TO Q26***

Based on your organization's records, please provide information on the following aspects of your organization's activities from 2013 through 2017. **Note:** 1. ***Please provide information about each calender year e.g., 2013= January 01,2013 – December 31, 2013, and so on*** 2. ***Please provide annual numbers, NOT cumulative numbers on these indicators (don't add numbers of previous years), unless otherwise stated.*** 3. ***Write -99 if not applicable.***		Year				
		2013	2014	2015	2016	2017
Q22.	How many seed varieties not widely commercially available before 2013 was this organization testing for suitability to Pakistan in each of the following years? ***Note:*** *This question refers to adaptive research to determine the suitability of an existing variety to Pakistan. It does not refer to selective breeding to develop new lines. Since testing may take several years, the values reported here may be cumulative. Report the number of varieties on which the organization was actively conducting research in each year.*					
Q23.	How many seed lines not widely commercially available before 2013 did this organization have its commercialization pipeline in each of the following years? ***Note:*** *Report the number of lines on which the organization was actively conducting research, or had in the pipeline to be approved for commercialization, in each year. Numbers may be cumulated each year.*					

Q24.	To what extent, if at all, was this genetic material relevant to address the organization's capacity gaps to conduct research? (CIRCLE ONE NUMBER)	**Great Extent**	**Moderate Extent**	**Some Extent**	**No Extent**
		4	3	2	1
Q25.	To what extent, if at all, did this genetic material improve the organization's capacity to conduct research? (CIRCLE ONE NUMBER)	**Great Extent**	**Moderate Extent**	**Some Extent**	**No Extent**
		4	3	2	1

New technologies						
Q26.	Did a AIP partner such as CIMMYT, ILRI, IRRI, AVRDC/WorldVeg or UCDavis provide your organization with new agricultural or livestock technologies to test for applicability in Pakistan? (CIRCLE ONE NUMBER) ***Note:*** *"Agricultural or livestock technologies" refers to physical items (e.g., machinery, greenhouses, irrigation equipment, vaccines etc.) that have the potential to improve agricultural or livestock production.*				**Yes**	**No**
					1	0 ***GO TO Q30***
Based on your organization's records, please provide information on the following aspects of your organization's activities from 2013 through 2017. **Note:** 1. ***Please provide information about each calender year e.g., 2013= January 01,2013 – December 31, 2013, and so on*** 2. ***Please provide annual numbers, NOT cumulative numbers on these indicators (don't add numbers of previous years), unless otherwise stated.*** 3. ***Write -99 if not applicable.***					**Year**	
		2013	**2014**	**2015**	**2016**	**2017**
Q27.	Apart from seed varieties, how many agricultural / livestock AIP promoted **technologies** not widely available before 2013 was this organization testing for their applicability to the Pakistan agricultural sector in each of the following years? ***Note:*** *"Agricultural technologies" refers to physical items (e.g., machinery, greenhouses, irrigation equipment, etc.) that have the potential to improve agricultural production. Since testing may take several years, the values reported here may be cumulative. Report the number of technologies on which the organization was actively conducting research in each year.*					
Q28.	To what extent, if at all, were those technologies relevant to address the organization's capacity gaps to introduce new productivity-enhancing technologies to farmers? (CIRCLE ONE NUMBER)	**Great Extent**	**Moderate Extent**	**Some Extent**	**No Extent**	
		4	3	2	1	
Q29.	To what extent, if at all, did these technologies actually improve your organization's capacity to introduce new productivity-enhancing technologies to farmers? (CIRCLE ONE NUMBER)	**Great Extent**	**Moderate Extent**	**Some Extent**	**No Extent**	
		4	3	2	1	

New practices						
Q30.	Did AIP provide your organization with new agricultural or livestock practices on which to test for applicability in Pakistan? (CIRCLE ONE NUMBER) ***Note:*** *New agricultural or livestock practices refer to activities or ways of doing things that have the potential to improve agricultural or livestock production. Examples may include cultivation practices (zero tillage planting), irrigation practices, harvesting or post-harvest practices, covered/vertical cultivation, feeding practices (fodder), animal husbandry practices, etc.*				**Yes** 1	**No** 0 ***GO TO MODULE 'C'***

Based on your organization's records, please provide information on the following aspects of your organization's activities from 2013 through 2017. **Note:** 1. ***Please provide information about each calender year e.g., 2013= January 01,2013 – December 31, 2013, and so on*** 2. ***Please provide annual numbers, NOT cumulative numbers on these indicators (don't add numbers of previous years), unless otherwise stated.*** 3. ***Write -99 if not applicable.***		**Year**				
		2013	**2014**	**2015**	**2016**	**2017**
Q31.	How many AIP promoted livestock **practices** not widely used before 2013 was this organization testing for applicability to farmers in each of the following years? ***Note:*** *"Livestock practices" refers to activities or ways of doing things that have the potential to improve livestock health or production. Examples may include feeding practices (fodder), animal husbandry practices, etc. Since testing may take several years, the values reported here may be cumulative. Report all livestock practicies on which the organization was actively conducting tests in each year.*					

Q32.	To what extent, if at all, were these practices relevant to improving your organization's capacity to introduce new productivity-enhancing practices to farmers? (CIRCLE ONE NUMBER)	**Very Relevant**	**Relevant**	**Somewhat Relevant**	**Not relevant**
		4	3	2	1
Q33.	To what extent, if at all, did these practices improve your organization's capacity to introduce new productivity-enhancing practices to farmers? (CIRCLE ONE NUMBER)	**Great Extent**	**Moderate Extent**	**Some Extent**	**No Extent**
		4	3	2	1

Module C: Information / Consent Form

C1. Can you share your mobile number? ***(CIRCLE ONE NUMBER)***

Yes GO TO C1A	**No** GO TO C2	**Don not Have Mobile** GO TO C2	***(DO NOT READ)***	
			Don't Know GO TO C2	**Refused to Answer** GO TO C2
1	2	3	-88	-77

C1A. Record mobile number

Number1:

Number 2:

C2. Can you share your landline number? ***(CIRCLE ONE NUMBER)***

Yes GO TO C2a	**No** GO TO C3	**Don not Have Landline** GO TO C3	***(DO NOT READ)***	
			Don't Know GO TO C3	**Refused to Answer** GO TO C3
1	2	3	-88	-77

C2A. Record landline number

City/Area Code									Phone number								

City/Area Code									Phone number								

Note: if response is "yes" either C1 or C2, then ask C3.

C3. Can we contact you via cell/landline in the future if we need additional information? (CIRCLE ALL THAT APPLY)

Cell	**Landline**	**No**
1	2	3

Thank respondent

Group Interview Guide
Farmers
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**
A3. Venue:	**A4. City/district:**
A7. Start time:	**End time:**
A10. Moderator name:	**A11. Note taker name:**

Instructions to Note taker:

1. Assign each respondent a unique code, i.e., R1, R2, etc., and use these codes to identify individuals' responses to each question.

Instructions to interviewer:

1. Read the introduction below
2. Have members introduce themselves [name, village etc.]

INTRODUCTION

My name is _____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 90 -120 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If all respondents say yes, continue the interview. If no, try to motivate respondents by answering their questions and explaining the importance of recording the interview. If all respondents do not agree to the recording, do not record the interview.

GROUP PROCESS:
We value the contribution of each group member and therefore I expect that each person will respond in turn to the questions.

First, I'd like to ask you all to introduce yourselves.

Respondent Code	Name	Sex (M/F)	Village	District	Sector
R1					
R2					
R3					
R4					

Q1. In which type of trainings / **learning activities** did you participate? (EQ4)
[Probe for demonstration plots, exposure visits, site advice from extension workers etc.]

Q2. What did you expect to learn from trainings / learning activities provided by [name of AIP supported institution]? (EQ4)

Q3. What did you learn from [name of AIP supported institution] trainings / learning activities? (EQ4)

Q4. Which trainings / learning activities were most and least useful for you, and why? (EQ4)
[Probe for frequency / intensity / quality of learning activities / ease of transferring knowledge to others etc.]

Q5. How could learning activities be improved? (EQ4)

[Probe for frequency / intensity / quality of learning activities / ease of transferring knowledge to others, content covered, etc.]

Q6. What learning aids were most and least useful for you, and why? (EQ4)

[Probe for factsheets, manuals, samples of equipment / materials, videos, radio programs, etc.]

Q7. How could the learning aids be improved? (EQ4)

[Probe for visual impact, ease of access, robustness of learning aids etc.]

Q8. What, if anything, will you continue to apply from what you have learned from AIP trainings and other activities? Why or why not? (EQ4)

Q9. How could the overall support from AIP be improved? (EQ4,3)

[Probe for any other support such as structures, technology/tools, seed varieties etc.]

Thank you for participating in this group interview

Group Interview Guide
Extension Workers
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**
A3. Venue:	**A4. City/district:**
A5. Start time:	**End time:**
A7. Moderator name:	**A8. Note taker name:**

Instructions to Note taker:

2. Assign each respondent a unique code, i.e., R1, R2, etc., and use these codes to identify individuals' responses to each question.

Instructions to interviewer:

3. Read the introduction below
4. Have members introduce themselves [name, specialty, years in their current positions]

INTRODUCTION

My name is_____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 2 hours (120 minutes). We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If all respondents say yes, continue the interview. If no, try to motivate respondents by answering their questions and explaining the importance of recording the interview. If all respondents do not agree to the recording, do not record the interview.

Note to interviewers: *If the respondents ask for the meaning of word 'research', read the following definition.*

> ***Research*** *is the process of developing or adopting livestock and agricultural productivity-enhancing technologies and practices.*

GROUP PROCESS:

We value the contribution of each group member and therefore I expect that each person will respond in turn to the questions.

First, I'd like to ask you all to introduce yourselves. Can you please give your name, your position or title, and the number of years of experience you have as an extension worker.

Respondent Code	Name	Sex (M/F)	Position/title	Experience in years	Sector	Institution
R1						
R2						
R3						
R4						

INTRODUCTORY QUESTION

Q1. In which AIP supported activities have you participated?
[Probe for learning, teaching, and adaptive research activities on technologies or practices]

QUESTIONS ROLE AS PROVIDERS OF TRAINING / ORIENTATION

Q2. What [AIP supported] orientation / training activities have you conducted? Describe how those activities were conducted? (EQ4)

[Probe for the types of people for whom the activities were conducted;
[Probe also for demonstrations, exposure visits, adaptive research on technologies or practices, field days, meetings with individual farmers, etc.]

Q3. Which of these activities were most and/or least effective in teaching farmers about new technologies and practices, and why? (EQ4)

[Probe for teaching techniques / frequency / intensity / quality of learning activities and materials]

Q4. What types of orientation / training activities will you continue to conduct, and why? (EQ4)

Q5. How could the learning / orientation activities for farmers be improved? (EQ4)

[Probe for teaching techniques / frequency / intensity / quality of learning activities and materials].

Q6. What learning aids have you used? (EQ4)
[Probe for factsheets, manuals, samples of equipment / materials, videos, radio programs, etc.]

Q7. Which learning aids have been most and least effective in teaching farmers about new technologies and practices? Why? (EQ4)

Q8. What types of learning aids will you continue to use, and why? (EQ4)
[Probe for factsheets, manuals, samples of equipment / materials, videos, radio programs, etc.]

Q9. How could the learning aids for farmers be improved? (EQ4)
[Probe for visual impact, ease of access, robustness of learning aids etc.]

QUESTIONS ON ROLE AS LEARNERS

Q10. In which type of trainings / **learning activities** did you participate? (EQ4)
[Probe for adaptive research methodology, lab techniques, management practices, teaching, demonstrations etc.]

Q11. Which trainings / learning activities were most and least useful for you, and why? (EQ4)
[Probe for frequency / intensity / quality of learning activities / ease of transferring knowledge to others etc.]

Q12. What did you expect to learn from trainings / learning activities provided by [name of AIP supported institution]? (EQ4)

Q13. What did you learn from [name of AIP supported institution] trainings / learning activities? (EQ4)

Q14. What **learning aids** were most and least useful for you, and why? (EQ4)
[Probe for facts sheets, training material / equipment, manuals, case studies, videos/audiovisual aids, etc.]

Q15. How could the learning aids be improved, it all? (EQ4)
[Probe for visual impact, ease of access, robustness of learning aids etc.]

Q16. What, if anything, will you continue to apply from what you have learned from AIP trainings and other activities? Why or why not? (EQ4)

Q17. How could the training you received from AIP be improved? (EQ4)
[Probe for frequency / timeliness / intensity of trainings / quality of teachers / appropriateness of materials received]

CLOSING QUESTION

Q18. How could the overall support from AIP be improved? (EQ4, all)

Thank you for participating in this group interview

Group Interview Guide for
Members of Research / Partner Organizations
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**
A3. Venue:	**A4. City/district:**
A5. Start time:	**End time:**
A6. Moderator name:	**A7. Note taker name:**

Instructions to Note taker:

3. Assign each respondent a unique code, i.e., R1, R2, etc., and use these codes to identify individuals' responses to each question.

Instructions to interviewer:

5. Read the introduction below
6. Have members introduce themselves [name, specialty, years in their current positions]

INTRODUCTION

My name is _____ . I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 90–120 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No)
If all respondents say yes, continue the interview. If no, try to motivate respondents by answering their questions and explaining the importance of recording the interview. If all respondents do not agree to the recording, do not record the interview.

Note to interviewers: *If the respondents ask for the meaning of word 'research', read the following definition.*

> ***Research*** *is the process of developing or adotping livestock and agricultural productivity-enhancing technologies and practices.*

GROUP PROCESS:

We value the contribution of each group member and therefore I expect that each person will respond in turn to the questions.

Introductions:

Respondent Code	Name	Sex (M/F)	Sector	Institution
R1				
R2				
R3				
R4				

Q19. Why did your organization decide to collaborate with AIP; what needs did you **expect** the collaboration to address? (EQ2,1)

Q20. What organizational needs did your collaboration with AIP meet? How did it meet these needs, and if did not, why not? (EQ2,1)

Q21. Did AIP enhance your organization's **capacity** to conduct research and disseminate results? If yes, please tell me about some of the most important capacities built and explain how AIP contributed to building these capacities? If AIP did not build your organization's capacity, please explain why not? (EQ2)

Q22. If AIP contributed to building your organization's capacity, do you think this is a change you can sustain after AIP ends (in other words, a lasting change)? If yes, why / how is it sustainable? If no, why is it not sustainable? (EQ2)

Q23. In which type of **trainings / learning activities** did you participate? (EQ4)
[Probe for research methodology, lab techniques, management practices – including seed selection, land preparation, irrigation, etc.–, specific technologies or practices, etc.]

Q24. What did you expect to learn from trainings / learning activities provided by [name of AIP supported institution]? (EQ4)

Q25. What did you learn from [name of AIP supported institution] trainings / learning activities? (EQ4)

Q26. Which trainings / learning activities were most and least useful for you, and why? (EQ4)

Q27. What **learning aids** were most and least useful for you, and why? (EQ4)
[Probe for training material, manuals, videos etc.]

Q28. What, if anything, will you continue to apply from what you have learned from AIP trainings and other activities? Why and how? If none, why not? (EQ4)

Q29. How could the trainings and the learning aids from AIP be improved? (EQ4,3)

[Learning activities: Probe for frequency / intensity / quality of learning activities / ease of transferring knowledge to others etc.]

[Learning aids: probe for visual impact, ease of access etc.]

Q30. How, if at all, could the program be improved? What practices should be continued? (EQ3)

[Probe for support such as structures, technology/tools, seed varieties, etc.]

Thank participant for the time afforded to the interview

Group Interview Guide
Trainers / Teachers
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**
A3. Venue:	**A4. City/district:**
A5. Start time:	**End time:**
A6. Moderator name:	**A7. Note taker name:**

Instructions to Note taker:

4. Assign each respondent a unique code, i.e., R1, R2, etc., and use these codes to identify individuals' responses to each question.

Instructions to interviewer:

7. Read the introduction below

INTRODUCTION

My name is_____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 90-120 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If all respondents say yes, continue the interview. If no, try to motivate respondents by answering their questions and explaining the importance of recording the interview. If all respondents do not agree to the recording, do not record the interview.

GROUP PROCESS:

We value the contribution of each group member and therefore I expect that each person will respond in turn to the questions.

First, I'd like to ask you all to introduce yourselves. Can you please give your name, your position or title, and tell us how many years you have been working in the sector.

Respondent Code	Name	Sex (M/F)	Position/title	Experience in years	Sector	Institution
R1						
R2						
R3						
R4						

Q31. What [AIP supported] teaching / training activities have you conducted? Briefly describe how were those activities conducted? (EQ4)
[Probe for the types of people for whom the activities were conducted and how their needs were assessed]
[Probe also for demonstrations, exposure visits, adaptive research on technologies or practices, contacts in the field and other experiential l /adult learning techniques]

Q32. Which of these **activities** were most and/or least effective in teaching trainees about new technologies and practices, and why? (EQ4)
[Probe for teaching techniques / frequency / intensity / quality of learning activities and materials]

Q33. What types of trainings / learning **activities** should be continued, and why? (EQ4)

Q34. How could the training / learning **activities** be improved? (EQ4)
[Probe for teaching techniques / frequency / intensity / quality of learning activities and materials].

Q35. What types of teaching / training **aids** have you used? (EQ4)
[Probe for factsheets, manuals, samples of equipment / materials, videos, etc.]

Q36. Which teaching / training **aids** have been most and least useful? Why? (EQ4)

Q37. How could the teaching / training **aids** be improved? (EQ4)
[Probe for visual impact, ease of access, robustness of learning aids etc.]

Q38. How could the overall support from AIP be improved? (EQ4, all)

Thank you for participating in this group interview

Key Informant Interview Guide
IPs, USAID, PARC/MNFSR/Provincial Governments
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**	
A3. Venue:	**A4. City/district:**	
A5. Institution/Organization:	**A6. Respondent Name and Gender**	**A7. Start time: End time:**
A8. Moderator name:	**A9. Note taker name:**	
Instructions to interviewer: 8. Read the introduction below		

INTRODUCTION

My name is _____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 40–50 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If respondent says yes, continue the interview. If no, try to motivate respondent by answering their questions and explaining the importance of recording the interview. If respondent does not agree to the recording, do not record the interview.

Q1. Please explain your involvement in AIP

Q2. How were the beneficiary research institutions selected? (EQ3)
[Probe for selection criteria and ask interviewee to rank them]

Q3. How, if at all, did your organization decide which AIP program activities to implement? (EQ3)

Q4. Which needs did AIP **intend** to address? (EQ3)

Q5. Which needs **did** AIP address? (EQ3)

Q6. How well, or not, is the agricultural research and innovation system performing in Pakistan?

Q7. How, if at all, did AIP contribute to building research capacity of organizations in each of the following sectors; cereals, vegetables, livestock, horticulture? (EQ2)

Q8. Which interventions were most effective? Which interventions were least effective? Why or why not? (EQ2)
[Probe for professional development, equipment, fund raising, staffing, promotion, technology, policy, work processes and procedures, culture or leadership]

Q9. What are main bottlenecks in adoption of technologies introducted by AIP?

Q10. How, if at all, could the program be improved? What practices should be continued? (EQ3)

Thank respondent for his / her time

Key Informant Interview Guide
Heads of Research/Partner Organizations
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**	
A3. Venue:	**A4. City/district:**	
A5. Institution/Organization:	**A6. Respondent Name and Gender:**	**A7. Start time: End time:**
A8. Sector represented: (CIRCLE ALL THAT APPLY) 1. **Cereals** 2. **Livestock** 3. **Horticulture** 4. **Vegetables**		
A9. Moderator name:	**A10. Note taker name:**	
Instructions to interviewer: 1. Read the introduction below		

INTRODUCTION

My name is _____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT).

The interview will take approximately 40–50 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If all respondent says yes, continue the interview. If no, try to motivate respondent by answering their questions and explaining the importance of recording the interview. If the respondent does not agree to the recording, do not record the interview.

Q39. Why did your organization decide to collaborate with AIP? (EQ3)

Q40. What needs did you expect the collaboration to address? (EQ3)

Q41. What organizational needs did your collaboration with AIP meet? How did it meet these needs and, if it did not, why not? (EQ3)

Q42. How did AIP enhance, if at all, your research activities? Why or why not? (EQ1)

Q43. How did AIP enhance, if at all, your organization's **capacity** to conduct research and disseminate results? Why or why not? (EQ2)

[*Probe* for *most important capacities built and explain how AIP contributed to building these capacities]*

Q44. **If AIP contributed to building the organization's capacity**, do you think this is a change you can sustain after AIP ends (in other words, a lasting change)? If yes, why / how is it sustainable? If no, why is it not sustainable? (EQ2)

Thank participant for the time afforded to the interview

Key Informant Interview Guide
Experts
Agriculture Innovation Program (AIP) Final Evaluation

A1. Language:	**A2. Date:**	
A3. Venue:	**A4. City/district:**	
A5. Institution/Organization:	**A6. Respondent Name and Gender:**	**A7. Start time: End time:**
A8. Moderator name:	**A9. Note taker name:**	
Instructions to interviewer: 2. Read the introduction below		

INTRODUCTION

My name is _____. I work for a research organization based in Islamabad. We are conducting a study to assess the impact of the Agricultural Innovation Program (AIP) implemented by the International Maize and Wheat Improvement Center (CIMMYT). AIP aims to (1) build the capacities of public and private sector agricultural and livestock research organizations to develop productivity-enhancing agricultural and livestock technologies and practices, (2) enhance the skills of researchers, and (3) promote dissemination of technologies and practices to farmers.

The interview will take approximately 40–50 minutes. We will treat everything you say here confidentially. We will not use your name in our reports or give your name to anyone outside of the research team. We would like to record the conversation so we can refer to the recording when we prepare our notes.

Do I have your permission to record the interview? (Yes/No _____)
If respondent says yes, continue the interview. If no, try to motivate respondent by answering their questions and explaining the importance of recording the interview. If respondent does not agree to the recording, do not record the interview.

INTRODUCTION: Have respondent describe what he / she does in the sector?

Q1. What are the most pressing needs for improving the production and the quality of cereals, vegetables, livestock, and horticulture in Pakistan? (EQ3)

Q2. What do you know about AIP?

a. ***IF RESPONDENT KNOWS ABOUT AIP:*** How, if at all, did AIP contribute to the revival of research and innovation in Pakistan system? If no why not?

Q3. In your opinion, how does a project that focuses on building local capacity to develop and disseminate productivity-enhancing agricultural and livestock technologies and practices contribute to meeting pressing needs of the Pakistani agricultural sector? (EQ3)?

Q4. What are some of the impediments and / or facilitating factors for the functioning of agricultural research and development in Pakistan?

Q5. How, if at all, could USAID improve the design and implementation of its interventions in the Pakistani agricultural sector? (EQ3)

Q6. How, if at all, could USAID better support the agriculture and livestock sector in Pakistan? (EQ3)

Thank respondent for the time invested in the interview

ANNEX 5: BENEFICIARY DATA AND ONLINE SURVEYS

CIMMYT Pakistan shared a list of 54,653 beneficiaries who had received assistance from any of the 5 IPs, i.e., CIMMYT, IRRI, AVRDC, ILRI, and UC Davis. The list contained information on beneficiary's name, sector, CNIC number, sex, contact number, district, organizational association, and type. The list included 373 different categories of beneficiaries which were reclassified into six broad categories: i) farmers, ii) extension workers, iii) members of public sector organizations, iv) members of private organizations, v) staff members of IPs, and vi) other. The distribution of beneficiaries by IP and type is given in Table 2.

TABLE 2: DISTRIBUTION OF BENEFICIARIES BY TYPE

Beneficiary Type	Number of Beneficiaries by IP				
	CIMMYT	IRRI	AVRDC	ILRI	UC Davis
Farmers	33,960	1,214	2,435	3,921	2,596
Extension workers	79	82	-	-	295
Members of public sector organizations	5,365	13	-	352	2,880
Members of private organizations	40	1	-	-	31
Project staff members	3	-	-	-	25
Other	1,005	-	-	171	185
Total	40,452	1,310	2,435	4,444	6,012

Though the list says there were 54,653 beneficiaries, the number of unique beneficiaries was far lower. The list included an entry for a beneficiary each time she or he received assistance under AIP. The automated removal of repeated beneficiaries from the list was next to impossible, as CNIC numbers, contact numbers, and organizational association were not available in most of the cases. Moreover, for cases with contact numbers, more than 1,000 contact numbers were repeated 4 or more times. Of these, 8 contact numbers were repeated more than 100 times, and one number was repeated 389 times. The manual deletion of beneficiaries based on their names (which could be misspelled in many cases) and locations (which are missing in most cases) would be an unreliable way of preparing a list of unique beneficiaries. Therefore, in principle it was agreed that the evaluation team would use the original list in selecting the sample respondents, and in case the same person was selected more than once in a sample, she or he would be interviewed only once. Table 3 provides the number of beneficiaries of each type who were listed with CNIC and contact information.

TABLE 3: NUMBER OF BENEFICIARIES WITH CNIC AND CONTACT INFORMATION

Beneficiary Type	No. of Beneficiaries	With Contact Details	With CNIC Information
Farmers	44,126	22,085	21,667
Extension workers	456	336	70
Members of public sector organizations	8,610	6,179	911
Members of private organizations	72	55	20
Project staff members	28	22	4
Other	1,361	1,258	1,073
Total	54,653	29,935	23,745

Online Survey of Private and Public Organizations

The evaluation used two types of surveys: i) a survey of beneficiary public and private organizations informing on organizations' research and institutional capacity, and ii) a survey of members of public and private organizations informing on individuals' perceptions of the effectiveness of training and outcomes with respect to changes in knowledge, skills, attitudes, and adoption. The evaluation team managed and monitored both surveys online without involving a subcontractor.

CIMMYT Pakistan shared a list of 142 heads/principal investigators from 92 organizations that have worked with AIP, 130 of whom had both contact numbers and email addresses on the list. Six had phone numbers but no email addresses; the team contacted them by phone to obtain their email addresses. The link to the online organization-level survey and a questionnaire in Microsoft Word format were emailed to all 136 heads/principal investigators requesting them to provide information on the organization's research and institutional capacity using the organization's records and performance data. Seven days after sending the survey link, a gentle reminder email was sent to those who did not respond to the survey. If the reminder email did not produce a response within five days, the evaluation team contacted respondents by telephone twice with a gap of a week and asked them either to complete the survey using the online link or to fill in the Word document and return it. Despite repeated attempts, only 30 heads/principal investigators filled in the online survey or sent back the completed questionnaire in Word format.

The link to the online survey was emailed to 467 members requesting them to provide information on individuals' perceptions of the effectiveness of training and outcomes with respect to changes in knowledge, skills, attitudes, and adoption. Seven days after sending the survey link, a gentle reminder email was sent to those who did not respond to the survey. If the reminder email did not produce a response within five days, the evaluation team contacted respondents by telephone three times with a gap of three days and asked them to complete the survey either using the online link or on the phone. Despite repeated attempts, the team managed to complete the interview with only 262 respondents (both online and on the phone). In the data cleaning stage, the team found that there were 32 invalid interviews, and these were excluded from the analysis.

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ANNEX 7: SAMPLING

Key Informant and Group Interviews

TABLE 4: GROUP INTERVIEWS – RESEARCH ORGANIZATIONS BY SECTOR

Group Interviews	Cereals	Vegetables	Horticulture	Multisector	Total
Research institutions	6	1	2	4	13
Total	**6**	**1**	**2**	**4**	**13**

TABLE 5: GROUP INTERVIEWS – BY GENDER

Interviews	No. of Participants		Total
	Male	Female	
Group Interviews	203	28	231

TABLE 6: GROUP INTERVIEWS – RESPONDENT TYPE BY GENDER

Interviews	Research Institutions		Farmers		Trainees		Total
	Male	Female	Male	Female	Male	Female	
Group interviews	42	0	124	19	37	9	231

TABLE 7: GROUP INTERVIEWS – RESEARCH ORGANIZATIONS BY PROVINCE

Group Interviews	Punjab	KP	Sindh	Balochistan	ICT	Total
Research institutions	5	2	3	2	1	13
Total	**5**	**2**	**3**	**2**	**1**	**13**

TABLE 8: GROUP INTERVIEWS – BENEFICIARY FARMERS

Province	Cereal	Livestock	Vegetable	Horticulture	Multisector	Total
Punjab	7	6	1	3	-	17
Sindh	3	1	2	-	-	6
KP	6	1	-	-	1	8
Balochistan	2	-	1	1	1	5
ICT	-	-	-	-	1	1
Totals	**18**	**8**	**4**	**4**	**3**	**37**

TABLE 9: GROUP INTERVIEWS – OTHER TRAINEES

Provinces	Extension Workers and Technicians					Student	Teacher
	Cereal	Livestock	Horticulture	Multisector	Total		
Punjab	2	-	1	-	3	3	5
Sindh	-	-	2	-	2		

Provinces	Extension Workers and Technicians					Student	Teacher
	Cereal	Livestock	Horticulture	Multisector	Total		
KP	1	-	-	-	1		
Balochistan	-	-	-	1	1		
Totals	**3**	**-**	**3**	**1**	**7**	**3**	**5**

TABLE 10: KEY INFORMANT INTERVIEWS

Respondent Type	Number of Interviews
USAID/Pakistan EGA office	1
Experts on cereals, livestock, vegetables, and horticulture	14
Pakistan Agricultural Research Council (PARC)	1
Ministry of National Food Security and Research (MNFSR)	1
Provincial governments (policymakers)	1
Provincial line departments	5
Trainers (who provide training in four focus sectors)	3
CIMMYT and other IPs (IRRI, ILRI, AVRDC, and UC Davis)	7
Research institutions and partner organizations	17
Total	**50**

Surveys

CIMMYT shared a list of 8,682 beneficiaries from public and private research organizations. Out of these 8,682, the list provided phone numbers for only 6,234, and email addresses for none. From the 6,234 members with phone numbers, 1,238 unique members were identified manually using computerized national identity card (CNIC) number, phone number, organizational association, geographic information, name, and father's name. All of the 1,238 uniquely identified members were contacted (maximum up to 4 times) on the given phone numbers to obtain their email addresses. The team managed to obtain email addresses from 467 members, and another 34 confirmed their availability for interviews over the phone as they did not have email addresses. Thirty-one members refused to take part in the survey because they either were not interested or could not recall the AIP activities so were unable to answer any questions regarding AIP. The remining 467 members could not be contacted because their phone numbers as listed were not correct, their phones were switched off, or calls were not answered despite repeated attempts. It is pertinent to mention here that 239 members contacted by the team reported they were not beneficiaries of AIP.

The team managed to complete the interview with 262 respondents (49 percent response rate). Figure 20 depicts the sampling process.

FIGURE 20: INDIVIDUAL SURVEY SAMPLING

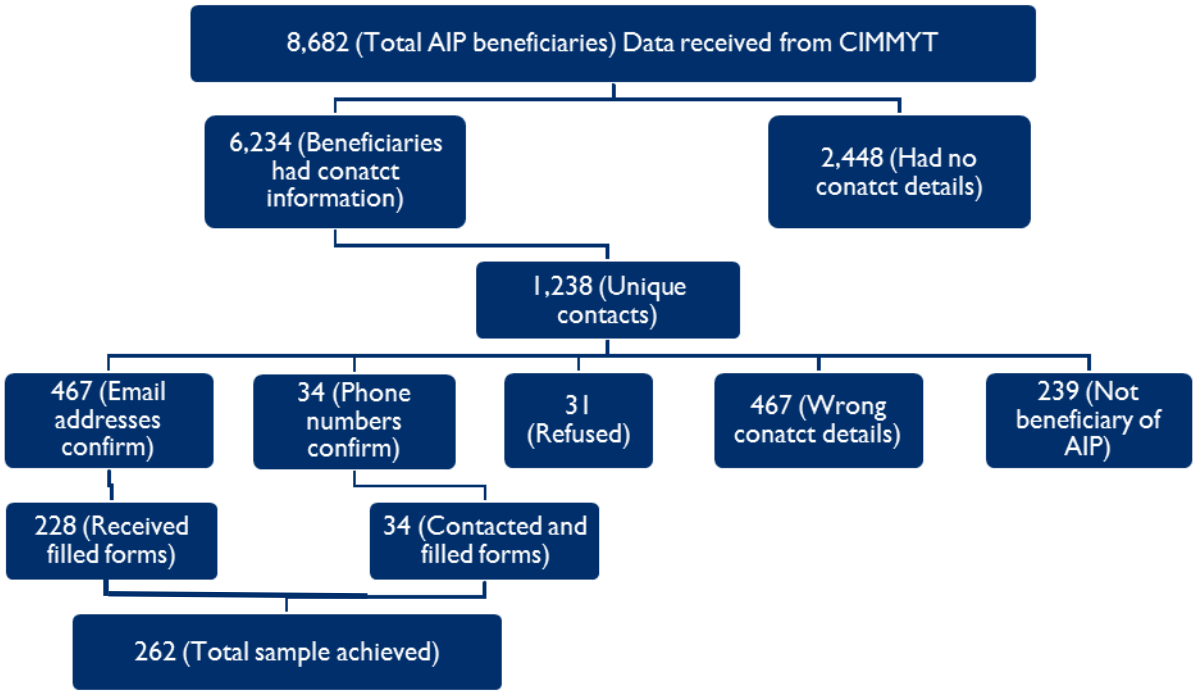

TABLE 11: INDIVIDUAL SURVEY RESPONDENTS BY SECTOR

Subsector	Number of Respondents
Cereals	168
Livestock	33
Vegetable	37
Horticulture	35
Total	**262**[15]

From data provided by CIMMYT, the evaluation team identified the heads of all 92 AIP-supported research organizations and 532 organization members who had participated in AIP activities. The evaluation team invited these organization heads and members to respond to the online survey. After repeated telephone reminders, 273 organization members (168 from the cereal subsector, 33 from livestock, 37 from vegetables, and 35 from horticulture) responded to the survey for a response rate of 51 percent. Of these, 19 were women. Only 36 organization heads responded to the survey, a response rate of 39 percent, which is relatively high for an online survey.

[15] The total number here is different (less) than the sum of the respondents from all sectors because some of the respondents work in multiple sectors.

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