



# Grain Research and Innovation (GRAIN)

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# Grain Research and Innovation (GRAIN)

## Quarter 3: April - June, Fiscal Year (FY) 19

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Cover: Field demonstration for Department of Agriculture, Irrigation and Livestock (DAIL) researchers in Bamyan province, identifying fungal wheat diseases; Research Farm [Exact location address is redacted], Bamyan.  
Source: GRAIN PhotoBank

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\*Annexes submitted to USAID as separate files accompanying the main report.

## List of Acronyms

AMELP	Activity Monitoring, Evaluation, and Learning Plan
ARIA	Agricultural Research Institute of Afghanistan
BSC	Balanced Scorecard
CAAI	Catalyzing Afghan Agricultural Innovation
CIMMYT	International Maize and Wheat Improvement Center
DAIL	Directorate of Agriculture, Irrigation, and Livestock
DG	Director General
DMS	Data Management System
EMMP	Environmental Mitigation and Monitoring Plan
ERF	Environmental Review Form
FAO	Food and Agricultural Organization of the United Nations
FY	Fiscal Year
GCFSI	Global Center for Food Systems Innovation
GRAIN	Grain Research and Innovation
HAU	Haryana Agricultural University
ICARDA	International Center for Agricultural Research in the Dry Areas
IRB	Institutional Review Board
LOP	Life of Project
MAIL	Ministry of Agriculture, Irrigation and Livestock
M&E	Monitoring and Evaluation
MEL	Monitoring Evaluation and Learning
MSc	Master of Science
MSU	Michigan State University
NGO	Non-Governmental Organization
NOFO	Notice of Funding Opportunity
OJT	On-the-job Training
PAU	Punjab Agricultural University
PhD	Doctor of Philosophy
PI	Principal Investigator
PIRM	Premier International Risk Management
PIRS	Performance Indicator Reference Sheet
PIT	Performance Indicator Table
POC	Point of Contact
PPP	Public-Private Partnership
PY	Program Year
RSI	Rahman Safi International Consulting
SAP	Strategic Action Plan
SGP	Small Grants Research Program
SOW	Scope of Work
SRA	Student Research Assistant
STTA	Short-term Technical Advisor
TKW	Thousand Kernel Weight
TOT	Training of Trainers
USAID	United States Agency for International Development
USG	United States Government
USWDP	University Support and Workforce Development Program
WLD	Women's Leadership Development (PROMOTE program)



# 1. Executive Summary

## 1.1 Program Description

The Grain Research and Innovation (GRAIN) project was conceived in response to Government of the Islamic Republic of Afghanistan's need to build the wheat research capacity of the Ministry and Directorates of Agriculture, Irrigation and Livestock (MAIL/DAILs) and the Agricultural Research Institute of Afghanistan (ARIA). This USAID-funded project is being implemented by Michigan State University's (MSU) Global Center for Food Systems Innovation (GCFSI).

The principal objective of GRAIN is to enhance the performance of Afghanistan's Ministry of Agriculture, Irrigation and Livestock in fulfilling its mandate to lead responsive research to identify and disseminate technologies and practices that promise the greatest benefits to wheat sector stakeholders in Afghanistan. Emphasis on a) building the capacity of and creating opportunities for women in agricultural research and b) improving the gender-responsiveness of research and subsequent extension messaging in the wheat sector is integrated throughout program activities. Specific goals are to improve capacity of MAIL/ARIA to:

1. Conduct wheat research (design, implementation, data collection and analysis) that identifies technologies and practices with the potential to improve productivity in the wheat sector;
2. Interpret and share research findings and translate research results into recommended best practices for wheat sector stakeholders, in different agroecological zones; and
3. Identify research priorities in response to key constraints in the wheat sector.

## 1.2 Summary of Key Accomplishments this Quarter

GRAIN's operational tempo this reporting period was quite impressive. With the growing season nearing an end, data collection and harvest on all 24 agronomic research trial sites and two wheat breeding sites were well underway. In the meantime, GRAIN facilitated over forty formal training or coordination events this quarter, engaging over 200 participants (35% women) from 17 provinces and across key partner organizations. Highlights of key accomplishments this quarter are outlined below with additional details provided in the Performance Indicator Table (PIT), narrative, and supporting annexes.

### **Robust Field-Based Learning and Practical Research**

Pre- and post-harvest data collection of the GRAIN-supported ARIA agronomic trials in the five provinces of Nangarhar, Herat, Kandahar, Baghlan and Balkh was successfully completed this quarter. Kabul and Bamyan pre-harvest data collection was ongoing this quarter with trial harvest planned for early July. In addition to identifying optimum agronomic practices for wheat production at the farm level, implementation of these trials creates a "live classroom" for practical on-the-job training for ARIA staff to improve technical skills, data collection and reporting techniques. With GRAIN supporting 27 trials in seven provinces (six of seven agro-ecological zones of the country), outcomes will form the basis for research-based agronomic informational packages specific to each of the seven agro-ecological zones of Afghanistan, to be released through DAILs, universities and extension units, and ultimately delivered to help wheat farmers boost quality and yields.

### **Implementation of Robust Research Training Programs**



Overall this quarter, 11 technical training and in-field instructional sessions were implemented, engaging 134 researchers (19 women). GRAIN's Research Farm Management Training Program brought together 17 Farm Managers from all ARIA's 17 research stations operating in 16 provinces (Kabul has two), while also including Farm Managers from partner universities. Earlier trainings focused on preparing for more effective research implementation, farm budgeting, and financial management, while this quarter focused on data collection, soil health and management, and machinery repair and maintenance. Classroom-based learning and field exercises highlighted the importance of uniformity when collecting data, consistency of chemical fertilizer rate calculation, and proper management and maintenance of tractors and other farming equipment. This quarter, trainers from CIMMYT, ARIA, and GRAIN led the Intermediate Data Analysis and Statistics training program for the first cohort of 22 ARIA researchers from 16 provinces. These researchers were provided advanced learning in experimental design and statistical data analysis, enabling them to better develop and implement advanced multifactorial research projects, while preparing provincial researchers to more accurately analyse data from their trials.



***Documenting plant height of Baghlan province wheat trials by ARIA researchers.***

**Meaningful Youth Skills Development for Employability**

As evident in USAID's new Country Development Cooperation Strategy (CDCS) for Afghanistan, improving the employability of Afghans, particularly youth and women, is essential to sustained development in Afghanistan (Sub-IR 1.3.1). The GRAIN Research Internship Program aims to prepare fourth-year and recently graduated Bachelor of Science (BSc) students in agriculture with in-field research and agronomy experience, as well as the confidence and soft skills needed, to be successful in competitive professional careers in agriculture, particularly in research, development, and innovation.



***Intern learning wheat emasculating technique, in Balkh.***

The internship program, which is currently implemented by GRAIN across four provinces with 20 interns (50% women) accelerated significantly this quarter, with interns participating in a range of learning activities on multiple days, across each week. In total 4200 on-the-job-training (OJT) hours were reported this quarter from 20 interns in Herat (two women; two men), Nangarhar (two women; two men), Balkh (two women; two men), and Kabul (four women; four men).

**Expansion of Opportunities through the Graduate Degree Scholarship Program**

GRAIN's Graduate Degree Scholarships Program for Cohort 2 offers fifteen MSc scholarships in Kabul

University's (KU) newly established MSc Agronomy Program, and four MSc scholarships at Haryana Agricultural University (HAU) in India. After application assessments, MAIL and MSU representatives selected four finalists (one woman) for the HAU scholarships, with all accepting the offer and in the process of submitting visa applications. For KU, GRAIN anticipates that half of the scholars will be female, and there are 41 (22 women) eligible finalists shortlisted to take KU's entrance exam in July. This year's

inclusion of scholarships at KU supports a local institution, and is an effort to overcome barriers that previously confronted some applicants, particularly females, because family expectations restricted international study.

### **Empowering Engagement of Female Future Leaders in Agricultural Research**



**GRAIN mentees advocating clean air, painted a tree on campus. [Exact location address is redacted]**

Nearing the end of programming for the first cohort of women engaged in GRAIN’s Women in Agricultural Research Mentorship Program, a notable result is that nine mentees were selected to compete for a GRAIN scholarship to KU and take the entrance exam in July. . Mentees in GRAIN’s four partner provinces participated in environmental compliance, safe use of pesticides and soil testing trainings at ARIA research stations, while a series of field visits provided exposure to wheat research planning, data collection and land preparation methodologies. A key feature was the introduction of mentees to the full Wheat Value Chain, which involved classroom-based learning sessions and field visits to ARIA’s seed certification laboratories, a private confectionery business owned and operated by a female entrepreneur, food processing company, and a seed processing company. University partners in all four

provinces facilitated other laboratory visits and observations of wheat experiments, including those established under GRAIN’s Small Grants Program (SGP). There were ongoing efforts to increase soft skills capabilities through public speaking and leadership trainings.

### **Expanding the Data Management System (DMS) Pilot**

This quarter the DMS piloting program extended beyond Kabul and Nangarhar to include Kandahar, Herat, Balkh, Baghlan and Bamyan, where GRAIN implements wheat trials. Thirteen additional DMS users were registered, totalling 54 active users, sharing 18 digital tablets distributed among ARIA field researchers in the seven provinces. Piloting activities feature designing experiments, describing dashboard specifications, demonstrating data entry methods, and practicing exporting data to Excel for review and analysis.

### **1.3 Summary of Performance Indicator Progress to Date**

In quarter three of FY’19, GRAIN contributed to eight of its indicators. The summary and description of indicators updated in the quarter is provided below. All indicators are disaggregated by gender and region in Appendix 1.

**Table 01: Updates for Performance Indicator Table (PIT): April 1 – June 30, 2019 (Q3, FY'19)**

PIRS #	PERFORMANCE INDICATOR	FREQUENCY	ADDED THIS PERIOD		TOTAL TO DATE	LOP TARGET	GRAIN Targets By Fiscal Year		GRAIN Achievements By Fiscal Year	
							FY18	FY'19	FY'18	FY'19
Indicator 1.4	Number of wheat lines/varieties advanced by GRAIN supported activities	Annual	#	250	282	80	40	40	32	250
Indicator 1.6 (EG.3.2-1)	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training*^	Quarterly	#	79	460	310	150	160	167	293
Indicator 1.7	Change of knowledge for ARIA, MAIL and DAIL staff and other GRAIN program participants from pre-test to post-test**	Quarterly	# with 40% or more change	111	272	40%	40%	40%	51%	40%
			Total	224	624					
Indicator 1.8	Percentage of females who report increased self-efficacy at the conclusion of USG supported training/programming^*	Semi-annually	Num.	6	33%	50%	50%	50%	0%	33%
			Den.	18						
Indicator 1.9	Number of facilities with improved capacity to conduct wheat research	Semi-annually	#	0	0	6	0	1	0	0
Indicator 1.10	Number of Data Management System active users	Quarterly	#	2	43	30	10	20	20	23
Indicator 2.3 (HESN S.2.3_In3)	Number of individuals attending GRAIN supported working groups or technical gatherings intended to inform research priorities and/or disseminate research findings.	Quarterly	#	212	1,085	275	100	175	598	487
Indicator 3.2	Amount of cost share for ARIA research and extension activities provided by other	Quarterly	\$ USD	156	327	\$2,000	\$0	\$2,000	\$0	\$327

PIRS #	PERFORMANCE INDICATOR	FREQUENCY	ADDED THIS PERIOD		TOTAL TO DATE	LOP TARGET	GRAIN Targets By Fiscal Year		GRAIN Achievements By Fiscal Year	
							FY18	FY'19	FY'18	FY'19
	institutions									
Indicator 3.5 (GNDR-8)	Number of persons trained with USG assistance to advance outcomes consistent with gender equality or female empowerment through their roles in public or private sector institutions or organizations*	Quarterly	#	3	372	150	50	100	154	218

\* Represents a USAID Foreign Assistance Framework (FAF) Indicator

^This number reflects only new people trained in the quarter; please see narrative for the total numbers of people trained, including previous qu participants.

^^ Disaggregated by: concept submitted, approved for proposal development, submitted full proposal, funded, successfully implemented. The achievements reflect only those that are successfully implemented.

FY19 achievements noted with (\*\*) indicate the program is due to exceed the current FY19 target by more than 10%. GRAIN has been successful in organizing training and workshop events that reach more stakeholder groups than originally expected at the start of the project. GRAIN will submit a comprehensive review of the Activity Monitoring, Evaluation, and Learning Plan (AMELP) in early Q4 with recommendation to USAID for modifications to better align targets and more clearly define custom indicators.

## 2. Key Program Activities Accomplished

**Intermediate Result 1:** Improve capacity of MAIL/ARIA to conduct wheat research (research design, implementation, data collection and analysis) that identifies technologies and practices with the potential to improve productivity in the wheat sector.

**Sub-IR 1.A: Improved knowledge and skills of wheat researchers to design and conduct wheat research in lab and field settings.**

### 1.A.1 Sponsorship of Long-Term Degree Training in Field Relevant to Wheat Research

GRAIN's Graduate Degree Scholarship Program will increase the number of Afghan scientists within the country's agriculture and wheat research institutions, and strengthen MAIL capacity to address priorities in the national Wheat Sector Development Plan (WSDP) and recently approved National Research Strategy. The degree-granting program underscores a priority to expand institutional wheat research expertise in order to improve wheat production in Afghanistan.

**Ongoing Support for Cohort 1 Scholars:** As of June 2019, GRAIN supported nine PhD and eight MSc scholars at Haryana Agricultural University (HAU) and Punjab Agricultural University (PAU). A tenth PhD student has yet to receive a visa. During the period, one additional student returned to Afghanistan due to family circumstances, bringing the total to three for the semester (one PhD and two MSc).

Final grades for the spring 2019 semester were posted. The three HAU PhD students received satisfactory to excellent marks in their first semester; among the MSc students, three students received satisfactory to excellent marks in their second semester, but four failed one or more courses (one student failed two courses). Four of five PAU PhD students received satisfactory to excellent marks in their first semester; one student failed one course. Recognizing the challenges Afghan graduate students face in studying abroad, often for the first time, GRAIN is working closely with the Program Coordinators at HAU and PAU, as well as directly with the students, in order to 1) identify the steps necessary to return to good academic standing; 2) communicate consequences of continued poor performance (up to termination of the scholarship); and 3) engage MAIL and ARIA partners in communication with the students in order to strengthen accountability.

In April, GRAIN's Principal Investigator (PI) travelled to India for a co-monitoring visit with a delegation from the MAIL, including ARIA'S Director General (DG), the Director of the Seed Directorate, and a senior policy advisor to the Minister (pictured to the right). At HAU, six of the seven MSc scholars presented their research plans for feedback. The seventh will submit for feedback after completing her summer course. The students had already worked with their HAU advisors to begin their research; as such, the delegation's feedback encouraged students to either implement components of their research in Afghanistan, or when that is not possible, to ensure India-based research is relevant to the agricultural



**ARIA, MAIL and MSU delegation visiting GRAIN scholars in India.**

context of Afghanistan.

**Recruitment of Cohort 2 MSc Scholars:** GRAIN's Graduate Degree Scholarships Program for Cohort 2 offers fifteen MSc scholarships in KU's newly established MSc Agronomy Program, and four MSc scholarships at HAU. GRAIN had originally envisioned only 3 additional international scholarships, but after interviewing applicants, decided to offer 4 to ensure gender and regional diversity. GRAIN established eligibility criteria (described in the Q1 report) in close collaboration with MAIL/ARIA, with particular focus on ensuring more females could be competitive candidates (aiming for 51% female scholarship recipients in Cohort 2).

GRAIN reviewed the 125 applications in Q2, shortlisting 12 women and 19 men for India, as well as 26 women and 31 men for KU. The PI and MAIL representatives conducted interviews for India and English exams on 22-23 April in Kabul, and four finalists (one woman) were selected. Government counterparts approved these four finalists in May, with HAU sending formal acceptance letters in June. GRAIN organized an orientation and visa processing on 18-19 June. GRAIN also supported each of the four to enroll in 1-month English courses in their respective cities to bolster their English skills before starting their degrees in August.



***MSU and MAIL representatives conducting interviews for applicants to fill four new international scholarships to India.***

For KU, all female applicants who met the minimum application requirements were invited to take the entrance exam, tentatively scheduled for July 12. The names of short-listed male applicants were shared with MAIL's Human Resource Department to verify employment, which was one of the eligibility criteria for men. After sharing the list with MAIL, cross-checking employment verification through MAIL and DAIL contacts, and sharing application materials with KU staff, 41 applicants (22 women) remained eligible.

GRAIN hosted an information session on 22 May in order to explain the scholarship requirements and help students prepare for the entrance exam, including disseminating nine text books from which the entrance exam is based to encourage study and preparation. In June, KU informed GRAIN that the English exam requirement could not be waived, so applicants will also sit for that on 12 July. GRAIN will offer scholarships to nine women and six men with the top scores.

This year's addition of scholarships at KU supports a local institution and helps overcome barriers that have confronted some students, particularly females. Providing scholarships within Afghanistan means that government employees will not have to fear losing their jobs while furthering their education; for women, it helps eliminate the barrier that their families will not permit them to live abroad. As of June, negotiations with KU were still ongoing, in part because of the time required to articulate and agree to a vision for recruitment of women and transparency in selection criteria. GRAIN anticipates that an agreement will be signed in July.

### ***1.A.2 Facilitation of Short-Term Training for Wheat Research***

GRAIN implemented 41 training activities this quarter, totalling 293 training recipients this period (versus a target of 160). More information about this can be found under *Activity 1.3 Summary of Performance Indicator Progress to Date*.

**Research Farm Management Training Program:** Designed in collaboration with ARIA at both central and regional levels, a feature of GRAIN's short-term training activities this year is the Research Farm Management Training Program, a series of seven sessions aiming to build capacity among Farm Managers at all ARIA research stations. GRAIN continued training for the first cohort, consisting of 17 Farm Managers from 17 research stations in 16 provinces where ARIA operates research stations, as well as two Farm Managers from partner universities. The second of seven sessions was held at ARIA's Research Farm in Kabul [Exact location address is redacted] on 2-3 April, with classroom and field-based demonstrations involving data collection and improving accuracy when calculating chemical fertilizer rates. Consistency in data collection and application of assigned treatments are essential in improving overall quality and reliability of research conducted by GRAIN partners, thus improving credibility of recommendations for farmers.

The third training on Soil Management and Dry Land Farming took place on 29-31 May, in Balkh province. Twenty-seven participants (three women) from 16 provinces, comprising ARIA Farm Managers, ARIA researchers, Balkh University professors, and GRAIN interns, attended a combination of theoretical and practical field and laboratory exercises that included visits to ARIA's Dedhadi Research Farm and the Yasmin Laboratory. The trainees met again in Kabul for the fourth training on Agricultural Machinery on 24-25 June, which focused on management and maintenance of tractors and other farming equipment. These trainings create uniformity of practice across all ARIA research stations, enabling Farm Managers to pass on learnings in their provinces, and adding to overall operational sustainability.

**Data Analysis Training Series:** In association with the International Maize and Wheat Improvement Center (CIMMYT), GRAIN launched the first researcher-level implementation of this year's Data Analysis and Statistics Training program. Training for the first cohort was held in both Kabul on 6-10 April (for 16 participants) and in Balkh on 20-24 April (for seven participants). During this first session, facilitated by co-trainers from ARIA, CIMMYT, and GRAIN, participants were taught experimental design and statistical data analysis, including utilization of the open source statistical software, R-Project, to analyze agronomic research data. At the end of the first training



***Practical session on analyzing data conducted at ARIA in Kabul.***

session, participants received scenario-based homework assignments to reinforce recently acquired skills. As participants complete these assignments, trainers will follow up with them individually, thus improving knowledge and skill retention between sessions; the second and third sessions are planned for August and October. This training is currently co-led by GRAIN and ARIA, with the intention that the increased capacity will enable ARIA itself to train staff and further regional research teams' ability to design and analyse trials at the regional level.

**Training on Deriving Farmer Recommendations from Agronomic Experiments:** On May 22 and June 3, a senior Agricultural Economist Expert from MSU conducted webinars for the GRAIN wheat research staff and their in-country colleagues. The goal of the training was to acquaint

participants with concepts and methods developed by CIMMYT in the 1980s for using simple socio-economic analysis to determine which treatment tested in on-farm trials was “best” and would be the most appropriate basis for recommendations to the target group of farmers. A total of 25 individuals participated in this training of trainers activity, including 15 GRAIN staff, 8 interns, and three University or ARIA researchers. An overview of the methods was given in the May 22 webinar and a practice exercise was provided for the participants to work on afterwards. Results of the exercise were reviewed during the June 3 webinar along with additional examples. References and links to CIMMYT publications related to the design and analysis of on-farm experiments were provided, and a template Excel worksheet for carrying out the analysis was circulated later in June.

**In-Field and On-the-Job Training:** Improving the quality of data collected from GRAIN-supported wheat trials and to standardize alignment of data collection methods utilized across all regions, GRAIN Wheat Research Specialists delivered training on Practical Data Collection for six participants on 13-14 May (two GRAIN/ARIA focal points from Balkh and two from Baghlan; two GRAIN interns working at ARIA’s research farm in Balkh). This training was also provided in Bamyan on 22-23 May for ten participants. Basics of Seed Production and Data Collection Methodology training was conducted 20-21 May in Kabul, Herat and Balkh, and involved 16 research interns (eight from Kabul, four from Herat and four from Balkh), comprising 50% women.

### ***1.A.3 Creation of Locally Adapted Procedures for Implementation of Field and Lab Research***

Through partnership with CIMMYT, GRAIN completed the bulk of the work on the field data collection manual, which will be finalized early next quarter. The manual is intended to assist ARIA wheat researchers in timely and uniform data collection of appropriate parameters, across all research stations.

### ***1.A.4 Implementation of Field and Lab Research (including Gender Responsive Research)***

**Agronomic Field Trials Data Collection:** Pre-harvest and post-harvest data collection of GRAIN-supported ARIA agronomic trials in Nangarhar, Herat, Kandahar, Baghlan and Balkh was successfully completed this quarter. Kabul and Bamyan pre-harvest data collection was ongoing this quarter with trial harvest planned for early July. In addition to identifying optimum agronomic practices for wheat production at the farm level, trial implementation creates a “live classroom” for practical on-the-job training for ARIA staff to improve technical skills, data collection and reporting techniques. With GRAIN supporting 27 trials in seven provinces (six of seven agro-ecological zones of the country), outcomes will form the basis of research-based agronomic informational packages specific to each of the seven agro-ecological zones of Afghanistan, to be released through DAILs, universities and extension units, and ultimately delivered to assist wheat farmers boost production quality and yields. Parameters of ARIA’s agronomy



***Documenting plant height of Baghlan province wheat trials by ARIA researchers.***



experiments gathered to date include: plant height, fall stand, disease observation, insect damage observation, days to heading, days to maturity, tiller numbers, bundle weight, spike length, and thousand kernel weight (TKW). In addition to the above-mentioned five regions where work has been completed, Kabul and Bamyan pre-harvest data collection is currently underway, with post-harvest tasks commencing early Q3, including bundle weight, spike length, TKW, and grain yield.

Regular observational field visits were conducted by GRAIN's wheat researchers and M&E team during the quarter. GRAIN's phone and Skype communications provide ARIA regional researchers, with backup advice and guidance to continue applying consistent data collection and



***Bundle weight data collection from Date of Sowing Trials, in Herat. Soil sampling practical session at ARIA lab, Balkh.***

field management practices that optimize outcomes. Farm management practices such as weed control, irrigation and fertilizer application were executed at all regional trials on time, and according to documented research protocols. GRAIN monitoring and guidance related to data collection at these sites aims to minimize measurement errors, thus supporting MAIL/ARIA efforts to improve consistency in data collection practices at all ARIA research stations. For example, taking five random samples and applying the average, for say, spike length or plant height, reveals the standard measurement that is recorded for analysis and comparative scrutiny across farm trials.

**Basic Wheat Breeding Program:** ARIA's basic breeding program supported by GRAIN, selected 250 wheat genotypes from F<sub>2</sub> segregation population of crossing blocks in Nangahar province, and planted them in Bamyan in May, together with 90 genotypes of F<sub>1</sub> generation. These genotypes will be advanced to the next generation through the shuttle breeding program, which operates between Nangahar and Bamyan provinces. The selected genotypes demonstrated resistance to stripe rust and leaf rust diseases in the field. One of the objectives of the basic breeding program is to develop resistant varieties to prominent wheat diseases, which cause significant yield losses in areas prone to wheat diseases. Incorporating resistant genes into new varieties is the most efficient and economically viable approach to manage diseases in wheat.

Furthermore, approximately 100 F<sub>1</sub> genotypes were harvested in Balkh province, after successful crosses were made between parental lines carrying desirable traits for improved grain yield, quality and resistance to diseases. The F<sub>1</sub> generation will be planted this fall in Nangarhar. Similarly, the F<sub>1</sub> generation from crosses between parental lines that were made earlier in the season in Kabul are due for harvesting early Q3. These activities enhance technical capacity of the ARIA breeding team through developing improved wheat varieties, and also improve coordination and communication between regional research stations and ARIA. This is an important element in managing and



***Crossing wheat lines to improve yield and resistance to diseases, at [Exact location address is redacted] ARIA Research Farm Kabul.***

implementing large-scale future programs.

The wheat breeding roadmap being developed for ARIA by GRAIN, and in cooperation with CIMMYT, will provide guidance, or a 'roadmap', for implementation of an improved basic wheat research plan. It is designed to facilitate new wheat cultivars that are resistant to diseases such as stripe, rust and leaf rust, and carry high yielding and improved quality traits. A presentation on the roadmap is scheduled in July, for ARIA leadership, researchers and farm managers.

#### **1.A.5. Facilitation of ARIA Research Internship Program**

As evident in USAID's new Country Development Cooperation Strategy (CDCS) for Afghanistan, improving the employability of Afghans, particularly youth and women, is essential to sustained development in Afghanistan (Sub-IR 1.3.1). The GRAIN Research Internship Program aims to prepare fourth-year and recently graduated Bachelor of Science (BSc) students in agriculture with in-field research and agronomy experience, as well as the confidence and soft skills needed, to be successful in competitive professional careers in agriculture, particularly in research, development, and innovation. The internship program, which is currently implemented by GRAIN across four provinces with 20 interns (50% women) accelerated significantly this quarter, with interns participating in a range of learning activities on multiple days, across each week. In total 4200 on-the-job-training (OJT) hours were reported this quarter from 20 interns currently placed in Herat (two women; two men), Nangarhar (two women; two men), Balkh (two women; two men), and Kabul (four women; four men).



**Interns assisting in square meter yield sampling in Kabul.**



**Intern learning wheat emasculation technique, in Balkh.**

#### **Field-Based Learning and Intern Training:**

Under the guidance of an assigned ARIA research supervisor (who is a GRAIN focal point), each intern partakes in a comprehensive activity schedule that is coordinated and monitored by GRAIN's Regional Managers. Working within different ARIA research station departments, such as soil science, crop improvement, or plant protection, and complementing formal training sessions, interns regularly work in the field supporting data collection and trial management of ARIA wheat researchers. For example, they

observed and assisted in threshing and sifting techniques, safe and controlled fertilizer application, and data collection on pre- and post-harvest parameters. In Nangarhar and Balkh, interns also had the novel experience of supporting basic breeding trials, and being trained in the specialized skill of emasculation, where they learned to cut open spikelets to expose the insides of the florets, before removing anthers with forceps to create

"female heads", for use in crossing. The emasculation process is necessary to ensure cross-pollination, in order to achieve the desired wheat variety. For these trainings and field visits, interns are often part of a group that also include Student Research Assistants (SRA, see Activity 3.B.1) and GRAIN Mentees (see *Activity 1.B.1 Implementation of Women in Agricultural Research Mentorship Program*), with the provincial Farm Manager or GRAIN specialist discussing aspects of the particular field visit.

Building on previous intern training, this quarter's formal training focused on Data Collection Methodology and Basic Seed Production, facilitating deeper understanding and professional exposure to broader networks of peers and highly experienced agronomists, researchers and wheat breeders. In addition to intern-specific training, GRAIN routinely invites research interns to participate in other GRAIN or partner hosted trainings and workshops, thus furthering their professional development and networking within the sector. For example, an Introduction to Soil Testing training for twelve participants on 20 May in Balkh, included the two female interns from that province; on 3 June, six interns participated in GRAIN's Socio-Economic Analysis of Agronomic Trials webinar. A summary of intern participation is provided in *Annex 3: List of Training Activity Participants*.

The practical skills and in-depth sector knowledge provided by the training program give GRAIN interns a distinct advantage when being considered for future ARIA employment compared to their peers who unfortunately have few field-learning opportunities through standard undergraduate agriculture degree programs.

**Building Leadership Potential- Participation in Youth in Peace Roundtable:** Beyond technical skill development, GRAIN seeks to improve soft skills and civil engagement among youth interns (as aligned with CDCS IR 3.1). Seven interns (three women) from four provinces were sponsored by GRAIN to attend the Youth and Peace Roundtable at the US Embassy in Kabul on 23 April, an event promoting peer discussions concerning peace-making efforts in Afghanistan.



**GRAIN interns participated in the Youth and Peace Roundtable at US Embassy.**

**Additional Intern Recruitment to Fill Gaps:**

In May, ARIA requested support in the form of additional interns to assist with data entry for the remainder of the program year, at Research Station's Soil Laboratory in Kabul [Exact location address is redacted]. From ten candidates interviewed on 12 June, three were selected (two women) to commence a six-month internship program beginning 1 July. This brings the long-term ARIA Research Internship Program participants total to 23 (12 women). As a shorter-term activity, GRAIN accepted the Herat DAIL Director's intern support request for a one-month field learning experience. These two students are graduating from Herat's Agricultural Veterinary Institute (AVI), following a two-year vocational program, and will work alongside ARIA Researchers at [Exact location address is redacted] Research Farm learning pre- and post-harvest data collection techniques.

**Sub-IR 1.B: Improved knowledge and skills and opportunities for women to design and conduct research in lab and field settings.**

**1.B.1 Implementation of Women in Agricultural Research Mentorship Program.**

This quarter involved substantial in-field practical and learning opportunities for mentees, and saw the continuation of a productive collaboration with USAID's PROMOTE Women's Leadership Development (WLD) program through its Jawana activity, and provision of computer classes and personal empowerment sessions.



**GRAIN Mentees visiting Nangarhar University Agriculture Faculty soil testing lab.**

**Bridging the Gap – Preparing Mentees for Scholarship Opportunities:** As the key objective of this activity is supporting university students and young professional women to develop skills to pursue agricultural sector careers, a group of mentees recently achieved a major milestone, when nine were selected as finalists for cohort 2 GRAIN Graduate Degree Scholarships, thus being invited to take the entrance exam for KU's Masters of Agronomy Program. In all, 13 GRAIN mentees applied in a field of 125 candidates, and were able to draw upon extensive trainings acquired through GRAIN's

Women in Agricultural Research Mentorship Program. Central to the mentorship curriculum is providing guidance in areas relating to professional presentation, proposal writing, increased self-esteem, CV writing and interviewing techniques – attributes that contributed and complimented the scholarship application and interview process. These efforts to bridge the skill and knowledge gap between male and female applicants is further explained in Activity 1.B.2.

**Increased Emphasis on In-Field Learning:** Responding to feedback from stakeholders last quarter, and noting increased activity on the research stations during the spring and summer seasons, this quarter saw increased field visits and field-based learning for mentees. The field-based training focused on three areas, including environmental safety, data collection, and exploration of stakeholders in the Wheat Value Chain. A full outline of the mentee-focused activities of this reporting quarter are found in *Annex 4*.



**Left to right: Mentees explore the full Wheat Value Chain with visits in Balkh to a seed production company; Mentees in Herat visiting a flour milling company; Mentees in Kabul visiting seed certification laboratory at ARIA.**

In addition to increased field learning, GRAIN continued classroom-based soft skills development. On 12 May in Balkh, six mentees attended Public Speaking training, and a similar event was held for four Herat mentees on 18 May. On 12 June in Balkh, nine mentees attended Principles of Leadership training, then on 26 June in Kabul, 17 mentees attended Public Speaking training.

**Connecting Mentees with Opportunities through USAID’s PROMOTE Program** Reaching out to the 53 mentees in Balkh, Herat and Kabul, GRAIN facilitated the enrolment of 47 women in Jawana’s three-month skills enhancement courses, which commenced in March and April. The security situation in Nangarhar resulted in WLD discontinuing classes there, however those 10 mentees received trainings and participated in field visits as per GRAIN’s curriculum.

**Evolving the Mentorship Program:** In preparation for the program’s cohort 1 to conclude in August, GRAIN’s Gender Advisor and regional managers began participatory planning meetings with mentors, mentees and university partners, discussing experiences, challenges, and drawing upon feedback to further improve the curriculum for the next program year. Information gathered will be evaluated and discussed among GRAIN’s mentorship, programing, communication and capacity building teams, in preparation for inclusion in the PY3 Work Plan.



*Left to right: GRAIN mentees attending WLD leadership and Jawana classes in Kabul, Herat and Balkh.*

### **1.B.2 Facilitation of Bridging Courses for Women Pursuing Advanced Degrees**

Family resistance to female travel for international studies continues to be a challenge for many young women in Afghanistan. While scholarships awarded last year through GRAIN’s Graduate Degree Scholarships Program were to India, cohort 2 this year includes opportunities to apply for the Master’s in Agronomy at KU. This bridging course activity comprises 11 women who were shortlisted last year but not selected for the first scholars’ cohort, yet demonstrated a desire to apply again. Separate from GRAIN’s mentees who also applied for scholarships, three of these women submitted applications this year, of which two were assessed as eligible, and will take the entrance exam in July.

### **Sub-IR 1.C: Improved institutional processes and facilities conducive to effective, collaborative wheat research.**

#### **1.C.2 Implementation of ARIA Data Management System (DMS)**

**In-field piloting of the DMS:** Central to the ongoing development of the DMS has been regular interaction and consultation with ARIA leadership, along with researchers who will use the system, and regular updating of dashboard features to ensure they meet ARIA’s needs and

expectations. Last quarter's DMS training and orientation program included Kabul and Nangarhar, with this reporting period extending to ARIA field researchers in Herat, Balkh, Baghlan, Bamyan and Kandhar where GRAIN implements wheat trials. Thirteen additional DMS users were registered this quarter, bringing the total to 54 active users at eight provincial ARIA research farms. Much like in Kandahar where there is no GRAIN office, tablet inputs from the ARIA researchers in Bamyan and Baghlan will be monitored through a central remote DMS dashboard in Kabul. Technical assistance is mainly remote, supplemented with occasional GRAIN staff training and support visits or advanced operational trainings in neighboring provinces. To date, GRAIN has distributed 18 digital tablets to ARIA researchers as part of the DMS piloting program. This enables hands-on familiarization of the new technology, with the added benefit that having devices in their possession allows colleagues to also become accustomed to their use, hence increasing acceptance by observing firsthand the advantages the DMS offers over traditional paper-based records. As the DMS piloting program continues to expand in scale, GRAIN's monitoring, evaluation and learning (MEL) unit has introduced face-to-face and Skype bi-weekly learning sessions where ARIA researchers and database developers discuss updates and DMS design. Helpdesk support is also operating where regional ARIA researchers can directly contact the M&E team, with DMS queries.



***DMS familiarization session for mentees in Nangarhar.***

**Evolving Design:** In response to increased complexity in the design of agronomic trials (a positive outcome of GRAIN's support to ARIA), split-plot and strip-plot design capabilities in the DMS that were developed during the previous quarter, continue being refined by the database team. Meetings with ARIA's lead researchers in April and May were productive forums for the exchange of ideas and discussion concerning software testing, to continually update DMS functionality. Feedback was shared at a meeting with the ARIA trial focal point on 15 May, and also with ARIA researchers on 12 June, which has been consolidated into the DMS, and includes adding extra parameters, increasing tablet review options, and rearranging dashboard edit options. The field research app was recently updated and now displays the data and identification number of experiments that facilitate data collection on the tablet interface. GRAIN's MEL team continues planning additional trainings with ARIA researchers to further refine updates, and



***Left to right: Simulating an experiment for data collection training in Nangarhar; Classroom session for ARIA researchers in Balkh; Practical session on data collection in Herat.***

continue improving DMS functionality.

**Training and Socialization:** Researchers from Baghlan joined their counterparts in Balkh on 14-15 April for DMS orientation training. The MEL team also delivered classroom and practical DMS training to 33 (four women) ARIA pilot researchers, GRAIN program staff, and Small Grants Program (SGP) recipients, who participate in GRAIN-funded ARIA/University collaborative experimental research. Training included step-by-step guidance on designing experiments, describing dashboard specifications, demonstrating data entry methods, and practicing exporting data to Excel for review and analysis. GRAIN's MEL team worked closely with ARIA researchers to pilot the DMS in Nangarhar, Balkh, Herat, Kandahar and Kabul, providing support as they worked online to collect data from ARIA's winter wheat trials. Training typically includes using a tablet to simulate an experiment for data collection, then accessing the DMS and entering relevant data. In addition to the trainings provided to ARIA and GRAIN researchers during this quarter, the MEL team also introduced basic use and functions of the DMS to GRAIN interns, mentors and mentees, and SGP recipients.

### ***1.C.3 Support the Sustainable Operations of Current or New ARIA Research Lab and Field Facilities***

#### **Activity 1.C.3: Support of Sustainable Operations of Current or New ARIA Research Lab and**

**Identifying a Wheat Quality Lab to Support Testing Capacity:** As reported in the previous quarter, in preliminary analysis, 32 Afghan wheat varieties were shown to have very poor end-use (baking) characteristics or potential. Reports from CIMMYT this quarter indicate that Afghan germplasm grown in Mexico proved to be more favorable in baking functionality than when grown in Afghanistan. Similar improved quality (baking potential), has been observed with same-source germplasm wheat grown in neighboring central Asian countries. Given these preliminary results, GRAIN's intended role in improving wheat quality in Afghanistan centers on supporting MAIL/ARIA in developing a robust breeding program to introgress more than adequate end-use quality into Afghan wheat, and to continue supporting ARIA in agronomic trials evaluating practices that may improve one or more quality factors. Furthermore, GRAIN proposes identifying a nearby wheat quality lab (for example, in India), which can be utilized for the identification of lines from introgressed quality genes and to enable convenient shipping of samples for quality analysis. Additionally, the Lactic Acid Sedimentation Test, a rapid, simple, comparison test that can be used to determine relative differences in wheat and flour quality, may be very useful for rapid in-country analysis. In PY3 work planning, GRAIN and partners are pursuing plans to train ARIA staff to implement this test. In pursuing both an out-of-country lab partner and presenting reasonable alternatives for rapid in-country analysis, and considering ARIA's breeding and agronomic research programs, GRAIN's recommendation is that this is a prudent and viable alternative for quality testing of breeding program lines for the next five to eight years.

**Connecting ARIA to Digital Research Resources (Digital Libraries):** To join the international research communities in their fields of study, it is imperative that MAIL and University researchers have access to relevant, recent, and scientifically refereed literature and communities of practice. GRAIN and ARIA leadership at the national and provincial levels have discussed the value of

connecting provincial research stations to online and digital reference libraries to improve researchers' access to and use of international and regional publications to inform their research methodologies and to stay connected with the broader global research community.

As a key activity, GRAIN will launch digital resource centers at ARIA offices in Balkh, Herat, Nangarhar, and Kabul this program year. Significant progress towards this activity has been achieved, including: 1) initial design of a digital resource references website ([LINK](#)); 2) onboarding of a local technical expert to lead training and roll-out of the digital libraries; 3) further learning about current research habits through the Digital Library Survey; 4) procurement or acquisition of about 60% of the computers and furniture needed for the centers; and 5) meaningful coordination with USAID's Catalyzing Afghan Agricultural Innovation Project (CAAI).

While GRAIN will focus on establishing resource centers at four partner ARIA locations this year, CAAI is positioned to support the public universities. With that in mind, and recognizing the informative results collected last quarter, GRAIN extended the Digital Library Survey previously conducted with 21 ARIA employees, to include 57 respondents from partner universities and additional ARIA staff from 13 ARIA regional research stations. This survey sought to understand the access and use needs of ARIA researchers of international research literature and preferences for expanded access (content areas, mode of searching, language preferences, etc.), along with their research aspirations and memberships in research organizations. Results will be report to ARIA and USAID in early Q4.

Through the support of an Agricultural and Life Sciences library expert at MSU, the initial design of the Digital Reference Website was completed in June. The website provides links to 39 open-access or free membership repositories, libraries, and databases in fields ranging from agronomy and plant protection to the social and development sciences. Project staff are reviewing the resources and providing ongoing feedback to the MSU librarian for further refinement. As of 24 June, GRAIN on-boarded a PhD-level agricultural scientist from Herat University as a short-term local consultant, who in coordination with MSU's librarian will lead the development of a comprehensive training package and promotional materials, to support roll out and use of the digital libraries in Q4 and into PY3. Training will include explanation and practice of basic online search techniques, vetting of sources for credibility, and an important emphasis on proper citation and plagiarism prevention.

**Intermediate Result 2:** Improved capacity of MAIL/ARIA to conduct wheat research (research design, implementation, data collection and analysis) that identifies technologies and practices with the potential to improve productivity in the wheat sector.

***Sub-IR 2.A: Improved knowledge and skills of wheat research to develop conclusions from research findings and to disseminate results that informs future research.***

### **2.A.1 Facilitation of Research Conferences and Workshops**

Dissemination of research results and collaboration between researchers, extension professionals, and policy makers from MAIL and universities is important in demonstrating the value of agricultural research. As with this program year, GRAIN is again supporting ARIA and other partners in the planning of an Annual ARIA National Wheat Research Conference in PY3. While ARIA has hosted this conference for the past two years, GRAIN technical teams are working alongside ARIA leadership to evolve the conference format and improve its effectiveness,



including the addition of professional development sessions, a call-for-abstracts for invitation to present oral presentations or posters, and working group-styled breakouts to bring various stakeholders together to tackle key issues. Unlike previous years, GRAIN is proposing this conference be open to any qualified presenter from government, academia, international research centers, and even the private sector, to enable broader exchange of ideas.

During a GRAIN visit to Herat on 30 April, GRAIN's Deputy Chief of Party, Communications Manager, and Western Region Manager met with the Chancellor of Herat University, who invited ARIA and GRAIN to facilitate the next National Wheat Research Conference at Herat University. Agreeing this was an opportunity to evolve and improve the annual conference, and send a positive message that ARIA welcomed regional inclusion, in the following days GRAIN met the ARIA Director General (DG) and provided a briefing. Together with GRAIN, the DG consulted MAIL's Deputy Minister Ghafari on 7 May to further discuss the concept. That meeting concluded with shared agreement to further explore the Herat University option, noting if successful, it could be the catalyst for similar national conferences to be held in the provinces, rather than traditionally staged in Kabul.

Feasibility was further discussed on 15 June in Herat with the University Chancellor, Dean of Agriculture Faculty, and University Research Director at a meeting organized by GRAIN's Western Region Manager, when GRAIN Kabul leadership visited on a subsequent trip. This included a campus inspection of potential conference facilities, and an understanding that a conference facilitation committee comprising all parties would be formed during the quarter, to formally assemble conference budget, logistics and program projections. The GRAIN team then met to seek perspectives from the regional DAIL Director the following



**GRAIN leadership meeting with Herat University Chancellor to discuss ARIA's annual conference.**

day, who expressed support and enthusiasm for the national conference to happen in Herat. While the ARIA DG had intended to travel to Herat and join GRAIN in these meetings, she was inadvertently delayed in Kabul on other matters, and unable to attend. A subsequent three-way Skype conference between the DG, Herat University Chancellor and GRAIN occurred on 30 June to follow up on developments, which concluded with 3 July agreed as the date for the Chancellor to come to Kabul and meet directly with the DG and GRAIN.

This was the first occasion when ARIA has considered partnering with a university as a host location for its prominent annual National Wheat and Barley Conference. Early discussions mutually agreed that the conference format would be designed to include regional representation from around the country, with January 2020 identified as a tentative period to stage the three-day event. GRAIN will continue providing support coordination for this initiative, alongside ARIA and university leadership. *(Refer to Activity 2.B.1 Facilitation of Workshops and Trainings Between Researchers and Extensions for more about the conference.)*

### ***2.A.2 Short-Term Training on Presenting and Publishing Research Results***

Training materials were developed this quarter with implementation of training planned in the final quarter of this program year, and provides opportunities to present and publish results as they become available. The training materials for the scientific writing class were developed for the purpose of conducting training to Kabul, Herat, Nangahar and Balkh Universities professors and ARIA researchers who have been involved in implementing research projects through GRAIN's small grant program. The purpose of the training is to enhance capacity of the professors and researchers on preparing manuscripts that will have a high probability of being accepted for publication in international journals. The research projects are focusing on different aspects of wheat productivity improvement and are being implemented jointly between the university's professors and ARIA researchers.

### ***Sub-IR 2.B: Improved knowledge and skills of researchers and extension personnel to develop research-based best practice recommendations for farmers and others in the wheat value chain.***

#### **2.B.1 Facilitation of Workshops and Trainings Between Researchers and Extensionists**

GRAIN sees connecting research to extension, through collaborative workshops and trainings, as an essential activity in the pathway for designing needs-based research and ensuring research-based recommendations reach the wheat sector stakeholders, including farmers. Activities reported under The Annual Wheat Research Conference (Activity 2.A.1), Training and Translation of Research into Extension and Outreach (Activity 2.B.2), and Facilitation of Work Groups (Activity 3.A.1) are making progress in connecting researchers and extensionists in training and workshops.

#### ***2.B.2 Training on Translation of Research into Extension and Outreach***

GRAIN extension specialists and management worked this quarter to design training materials to support implementation of the Translating Research Information into Extension Training Packages, which will be a comprehensive training program piloted next quarter, with the aim of bringing research and extension personnel together for practical training in research methods, tools, and techniques. Drawn from ARIA and DAIL offices in GRAIN's four partner provinces, training participants will in turn disseminate learnings through various extension channels that cascade educational information and practical guidance to farmer and private sector levels, within the Wheat Value Chain. Based on translation of ARIA research outcomes, the curriculum consists of three primary components; being the importance of developing effective written materials such as factsheets, publications, brochures and posters, then understanding and compiling compelling and informative PowerPoint presentations that include the option of producing short videos to effectively convey how to follow methods and procedures. The third component is accessing mass media and social media to optimize extension communication. This may include utilizing radio, TV, targeted text messaging, Facebook and Whatsapp. Training implementation will roll out fully by PY3.

#### ***2.B.3 Development of Zone-Specific Packages of Best Practice Recommendations***

While ARIA and CIMMYT have released fact sheets for five wheat growing zones of Afghanistan based on agronomic research between 2013 and 2017, these recommendations have not

reached a broad research, extension, or farmer audience. In collaboration with ARIA and CIMMYT, GRAIN re-invigorated efforts to develop extension and farmer-ready products based on these research-supported best-practice recommendations.

GRAIN's technical and communications teams, with additional support from a hired graphic designer, create the initial design concept for products to promote best-practice agronomic recommendations for key activities such as date of sowing, seed rate, fertilizer rate, timing of irrigation for winter wheat, fall sown spring wheat, and rain-fed wheat. These recommendations were developed based on CIMMYT-supported trials between 2013 and 2017 and included provinces in four of the seven agro-ecological zones of Afghanistan. (Kabul, Nangarhar, Herat and Balkh). These results will be combined with 2018 – 2019 ARIA trials conducted under the guidance of GRAIN. The first phase in the series of agronomic educational packages will be released in the final quarter this program year, and continued in the first quarter of PY3 with the aim of release in preparation for the 2019-2020 growing season.

***Intermediate Result 3: Improved capacity of MAIL/ARIA to identify research priorities in response to key constraints in the wheat sector.***

**Sub-IR 3.A: Strengthen collaboration between MAIL research units, public extension systems and private sector stakeholders along with wheat value chain.**

**3.A.1 Facilitation of Work Groups Between ARIA, Extension, Universities and Private Sector**

GRAIN aims to take a more active role in supporting MAIL's effort to better align programs and activities within the wheat sector. Working groups provide opportunities for better coordination and knowledge sharing for a broad range of stakeholders, including MAIL/DAIL/ARIA staff, Afghanistan university faculty and students, private sector, and international donors. Regular meetings with this objective both in the provinces, as well as the central level in Kabul, need to be institutionalized for progress to be sustained.

Following a Wheat Working Group workshop that GRAIN facilitated in Q2 which raised several issues that adversely affect the cohesive development of wheat production in Herat province, planning this quarter focused on the collaborative establishment of smaller work groups tasked with formulating strategies that can be presented to provincial and national governments. Participants at the earlier Wheat Working Group included local processors, wholesalers, extensionists, millers, and Food and Agricultural Organization of the United Nations (FAO). Two primary needs were highlighted as fundamental to future strategic planning, and will be central to discussions at a work group meeting planned for next quarter in Herat. The first was a call for increased bottom-up input into ARIA's annual research topics, and secondly, a greater collective voice in requesting extension support for the private and farm sectors.

Based on encouraging feedback from DAIL and ARIA at Herat when GRAIN met to discuss workshop outputs, a similar training plan for other provinces where GRAIN works has been developed. GRAIN will seek to meet with the ARIA DG to brief this proposal, and present the organizational structure and procedures incorporated into an educational package. Based on that meeting, GRAIN proposes to commence liaising with provincial authorities and stakeholders to establish Wheat Working Groups in Balkh and Nangarhar.

### **3.A.2 Participation in and Facilitation of Stakeholder Conferences and Workshops**

GRAIN is supporting ARIA in the development of a Strategic Action Plan (SAP) and Balanced Score Card, which define key action items and performance indicators necessary for successful implementation of the Ministry's National Research Strategy. To draw together the most comprehensive range of participative concepts and ideas for consideration, GRAIN facilitated two consultative workshops on 13 and 16 June in Kabul and Herat, which were attended by ARIA and MAIL leadership, and representatives of 13 research farms, extension units, and university partners. These stakeholders provided constructive feedback and recommendations to further develop the SAP, and guide ARIA's future strategic priorities. These stakeholders provided constructive feedback and recommendations to further develop the SAP, and guide ARIA's future strategic priorities.

***Sub-IR 3.B: Strengthened collaboration between MAIL and University researchers to respond to priorities in the wheat sector.***

### **3.B.1 Implementation of Small Grants Research Program (SGP) for Collaborative Research**

**Implementation of Field and Lab Research Funded by SGP Round #1 Funding:** Of the ten proposals awarded under this MAIL and Universities collaborative research program, two are implemented within laboratory environments, and eight as field-based experiments. The grant on Quantity and Quality of Imported Wheat in Afghanistan, which was awarded on 8 November 2018, was cancelled this quarter as the research team (after receiving several time extensions), failed to address GRAIN's suggested revisions and shared comments. In addition, the Principal Investigator (PI) was admitted to a PhD Program and was unable to continue the grant process. As this is an important the research topic, is an important research area, GRAIN is investigating alternative ways to implement this research. An eleventh applicant also received time extensions to submit a proposal; however, due to other work commitments, the PI withdrew from the process. The nine funded experiments are underway, with seven field activities applying fertilizers, irrigation, data collection and data analysis from the research fields, as required. The two laboratory-based experiments require equipment and research materials that have not been locally available, and arrangements are in progress to source required equipment and research materials outside the country. *Annex 5: List of SGP Ongoing Research* provides a more comprehensively detailed status update.

**GRAIN sponsored Field Day in Herat:** In close collaboration with Herat DAIL and Herat University, a SGP Field Day was conducted on 30 April. Ninety-two people from the University and DAIL (including GRAIN mentees and interns), the Agriculture and Veterinary Institute, and Wheat Working Group representation from the private and farm sectors were present. The field day highlighted two grants: *Effect of animal manure and NPK on wheat quality and quantity*, and *Effect of salinity and chemical fertilizer on wheat quality and quantity*. DAIL and Herat



***Herat regional manager providing updates on SGP experiment in the green house***

University leadership spoke to the audience about the importance of research and extension, and how GRAIN's SGP is delivering valuable wheat research that has the potential to deliver outcomes that increase the yield and quality of wheat produced in Afghanistan. Grant recipients described the theory behind their concepts and how their experiments were progressing. All were invited to partake in field visits to inspect the experiments at [Exact location address is redacted] ARIA's Research Station, followed by the University's farm research facility, where further on-site explanations and Q&A's were provided.

**Engaging Students through Field-Based Learning:** As evident in USAID's recently released CDCS for Afghanistan, engaging youth in field-based learning to better prepare them for careers is critically important. Through the SGP, 25 SRAs were engaged in field and laboratory research this quarter, in areas such as fertilizer application, weeding, irrigation, field monitoring, pre-harvest and post-harvest data collection, and using the DMS for research data collection, data entry, soil sampling etc. In addition to SRA's paid engagement to support SGP grants, they also attended field days, field visits, and training sessions organized by GRAIN.



*Left to right: SRAs in Nangarhar collecting spike length data; SRAs in Balkh participated in a practical session on emasculating; SRAs in Herat collecting spike length data.*

**Monitoring and Support for Ongoing Grants:** During this quarter, monthly coordination meetings were held with PIs and Co-PIs with each respective Region Manager, Wheat Research Team, Capacity Building and Operations Teams. In the meetings, technical progress, procurement and financial progress, challenges, concerns and problems were discussed and addressed. These monthly coordination meetings benefited the smooth implementation of the grants. In addition to the monthly coordination meetings, quarterly reports were also submitted to GRAIN in a template which was developed by the Capacity Building Team for each grant, detailing individual project activities, challenges, expense disbursements, and implementation outputs to date. Additionally, monthly procurement requests were submitted by PIs and Co-PIs by the end of each month. Grantees who required budget modifications due to changes in cost or availability of budgeted items, submitted modification requests for review and approval by GRAIN Operations Team. As further described in Activity 2.A.2, GRAIN developed training materials this quarter to be delivered in Q4, focused on improving scientific writing among grantees.

**De-Scoping of Small Grants Program:** Receiving informal notice from the USAID/Afghanistan mission on 27 May 2019, GRAIN leadership put an immediate hold on advertisement of the solicitation for new research concepts. Subsequent discussions with the Mission and GRAIN AOR in June informed the team that the grants program will be de-scoped, with no additional grants to be awarded beyond those already funded. This comes as part of USAID/Afghanistan's overall

review of their portfolio of activities. At the time of Q3 end, formal notification and detailed explanation were pending guidance from GRAIN's Agreement Officer.

Prior to this notification, GRAIN facilitated multiple stakeholder meetings at the provincial and central level in order to identify research priority areas that respond to farmer, extension, and policy-level needs in the country. Less formal consultations were held in Balkh, Herat, and Nangarhar, seeking input from the private sector, research, and extension. This effort culminated in a Research Question and Research Topic Prioritization Workshop on 14 May with 24 participants from various stakeholder units including MAIL Extension, MAIL Cereal Crops, ARIA Director General and Department Heads, CIMMYT, FAO, and university partners. Participants reviewed over 100 research topic suggestions from the regions and collectively identified four priority research areas for the 2019 Call for Concepts including: 1) Climate-Smart Agriculture, 2) End-Use Quality Improvement, 3) Socio-Economics Research and Policy Recommendations, and 4) Dissemination of Research-Based Best Practices. The fourth category aims to connect researchers and extension in order to implement demonstrations and trials on farmers' fields and to measure barriers to adoption of new technologies and practices.

With full support of ARIA and MAIL leadership, GRAIN launched a robust campaign to solicit new grants beginning with the broad release of the Notice of Funding Opportunity (NOFO) on released on 19 May 2019. Sessions were held at KU on 21 May for 22 attendees, Herat University on 26 May for 19 attendees, and Nangarhar University on 23 May for 22 attendees, announcing this year's opportunity and providing workshop-style support for quality concept paper development. A similar event scheduled for 28 May in Balkh was cancelled after notification to pause activities was received.

Given the SGP is a linchpin activity for GRAIN, with outcomes cross-cutting GRAIN's Results Framework, efforts in Q4 and a part of PY3 work planning will focus on creative solutions to address the critical research areas that would have been funded through this year's grants, and to continue to nourish the budding partnerships between MAIL and University researchers.

***Sub-IR 3.C: Improved knowledge and skills of wheat researchers and extension staff to recognize gender roles in the wheat value chain and develop research priorities that are gender responsive.***

### ***3.C.1 Gender Mapping in the Wheat Value Chain***

GRAIN finalized a scope of work with the project's M&E partner Rahman Safi International Consulting (RSI), to facilitate the Central Region Gender Mapping in the Wheat Value Chain Study, which commenced this quarter and will continue into the Q4. This activity aims to identify roles and power-dynamics in wheat production, processing, marketing, and consumption among men and women, to better target future research and outreach activities. Through a mixed method, exploratory approach, this study aims to map gender roles along the full wheat value chain in Central Afghanistan and to identify constraints and opportunities for women to participate in the value chain.

Importantly, this study is being implemented as a capacity building activity by GRAIN, for researchers and students from KU's Faculty of Agriculture. As such, GRAIN is providing training to faculty members and students, to prepare them to actively participate in study design, focus group facilitation, data collection, and qualitative data analysis. Roles and responsibilities of each party were developed early in the quarter, with the study implemented in three stages: literature

review, workshop, and focus groups/interview sessions. The workshop was completed in the quarter.

Fundamental to the study, an initial workshop was held 18 June, where 26 attendees (12 women; 14 men) from DAIL/MAIL and partner organizations (including NGOs, private sector providers, DAIL District extension representatives and vocational educational institutions) participated. The goal was to provide an updated gender map of the wheat value chain, with the output being utilized to inform primary research in the areas identified as those filled by women, as well as areas offering potential to be filled by women.

For the workshop session, the facilitator divided participants into three main groups. Each group mapped women's roles on flip charts, then presented findings to the broader group. Observations were exchanged, along with Q&A related discussions during the various presentations. The second phase of the study planned for Q4, involves implementation of more formal dialogue and focus groups in the field.

### **3.C.2 Assessing Research for Gender-Responsiveness**

By considering gender dynamics in agricultural research, ARIA and university partners will be better able to identify best practices and technologies that are more likely to be adopted by farmers, and other agricultural stakeholders comprising both genders. However, with the absence of a socio-economic research unit at ARIA, interdisciplinary research between social scientists and physical scientists in agriculture is currently limited.

Building on previous efforts to integrate measures of gender-responsiveness and social inclusion in research, this quarter GRAIN leadership sought the advice of Michigan State University's Center for Gender in Global Context ([GenCen](#)), for collaboration in developing a rubric to guide the assessment of project and partner research activities for gender responsiveness. GenCen is an interdisciplinary center in MSU's International Studies and Programs office focused on gender and women's studies with faculty and students focusing on how processes of global change affect gender relations locally, nationally, and internationally. The tool, which in its first draft, will be introduced to ARIA, University, and CIMMYT partners in early Q4 for further refinement. Using these jointly created guidelines, GRAIN will incorporate an interdisciplinary focus into research planning for PY3, using this tool and in consultation with MSU expertise.

### **3.C.3 Training on Gender-Responsive Research Design and Implementation**

No significant events or activities to report towards this activity this quarter.

## **3. Project Management**

### **3.1 Monitoring, Evaluation, and Learning**

In the quarter, routine activities were undertaken by the MEL team in order to provide timely feedback for activity-level improvement. A total of 63 field monitoring missions were undertaken in the quarter across project sites. Details of performance indicator data collected this quarter are available in *Annex 01: Detailed PIT* and *Annex 02: PIT Explanations*.

### **3.2 Learning and Adaptation**

Based on routine monitoring findings shared by the MEL team and GRAIN project management, modifications were incorporated into project activities by program teams to improve streamlining of procedures and program performance. Collaboration between the MEL and program managers was further strengthened by formalizing bi-weekly meetings within a team forum environment, to discuss findings and determine where productive improvements can be made. A primary outcome was for program teams in some areas, to more closely facilitate MEL to process findings earlier, and for those to return to teams for consideration and program fine tuning.

The Digital Library Survey was updated this quarter, and sought to more deeply understand the needs of ARIA researchers regarding access to, and use of international research literature. This also included preferences for expanded access (content areas, mode of searching, language preferences, etc.), and which research organizations' memberships could be most beneficial. Recent survey findings and recommendations are being processed and will be presented to ARIA early next quarter.

MEL facilitated a Gender Mapping Workshop, which provided increased awareness of primary research areas most advantageous to supporting the advancement of gender inclusion programming efforts. Workshop findings will be utilized as next steps are developed in the current implementation of the Central Region Gender Mapping in the Wheat Value Chain Study.

### **3.3 Communications and Outreach**

A routine review of tools and templates utilized in GRAIN training sessions was implemented by the communications team this quarter, ensuring branding and marking consistency across all relevant materials. In an effort to broaden exposure of GRAIN's Facebook page, selected training agendas included the Facebook address across the top for participants to see, with an invitation to visit the page to understand more about GRAIN activities. The Communications Manager led a training session for 17 mentees at KU on Public Speaking, which involved how to prepare in advance, then confidently present in order to connect with an audience.



***GRAIN meeting with MAIL DM of Irrigation and Natural Resources in May, also included the ARIA DG.***

GRAIN engaged a graphic design company in June to work under the supervision of the communications team, on the production of a series of extension materials conveying best-practice recommendations. Based on research derived from agronomic trials conducted in association with ARIA by GRAIN and CIMMYT, these products will in due course be distributed among research, extension and farmer audiences. (For more information refer to *2.B.3 Development of Zone-Specific Packages of Best Practice Recommendations*).



A second Safe Use of Pesticides poster is in development. The first focused upon the correct protective clothing that should be used when preparing and spraying pesticides, and has been circulated among ARIA, DAIL, extension agents and university agricultural faculties, as well as utilized in all GRAIN environmental compliance training. This poster will be circulated among ARIA, MAIL and other stakeholder for review and comment next quarter, prior to final approval and distribution.

### **3.4 Partner and Stakeholder Collaboration**

Appreciating the value of close collaborative associations, GRAIN technical teams and management continued close communications and met regularly with leadership from MAIL, ARIA, DAIL, and the four partner universities, in Kabul and the provinces. At a minimum, bi-weekly meetings were convened with the ARIA Director General to provide program updates on activities, seek administrative guidance, and coordinate future planning and implementation. There was also regular face-to-face interaction with ARIA research scientists, and facilitation of field visits to monitor technical implementation and seek feedback. Similar meetings were held in Balkh, Nangarhar, and Herat provinces by GRAIN regional managers, to keep MAIL staff involved and updated with regard to program activities. A meeting with the Deputy Minister of Irrigation and Natural Resources on June 7, provided updates on GRAIN progress and accomplishments, as did another with the MAIL Spokesman and Communications Advisor on May 22. This was preceded by a meeting with Herat University Chancellor on June 15, continuing discussions regarding the ARIA national conference. *(Refer to Annex 6: Additional Partner and Stakeholder Meeting Details)*

[Security report redacted]

### **3.6 Environmental Compliance**

GRAIN continues its vigilance in the application of the highest standards of environmental awareness and monitoring practices across all program activities, which are in compliance with approved Environmental Management and Mitigation Plans (EMMP). A priority is to extend awareness through regular trainings designed to promote risk reduction and personal safety. Environmental compliance trainings were conducted in Kabul on 1 April, for 17 ARIA managers from 15 research stations, located across 15 provinces. Similarly, on 13 April nine mentees in Herat and on 26 May six mentees and two interns in Balkh attended this training. Training highlighted a continued focus on maintaining and increasing awareness and knowledge among ARIA farm managers, who are responsible for oversight of research activities occurring on their respective farms. The curriculum involves guidance on the safe and proper handling of pesticides in the field, as well as in a laboratory environment. There is emphasis upon the importance of correctly using personal protection equipment during all facets of handling; ranging from mixing and spraying, to cleaning tools, transporting and storing pesticide. First aid and emergency response procedures are featured, as is becoming familiar with laws and regulations relating to the use of pesticides, which can also assist in preventing unauthorized access to hazardous chemicals.

[Staffing report redacted]

### **3.8 Sub-Awards**

In the quarter, CIMMYT focused on deliverables for the second scope of work (SOW2) that runs through September 2019, which includes working on a roadmap for a comprehensive national wheat improvement program; ongoing technical support from CIMMYT Country Director [Name of person redacted]; delivering the Beginner/Intermediate Data Analysis and Statistics Training for ARIA Regional Researchers; and developing/updating the Trial Protocol Manual. Additionally, GRAIN and CIMMYT worked on SOW3 which includes a 'CIMMYT Academy', which is a competitive, 6-month training program at the Borlaug Institute for South Asia for 4 ARIA researchers, which will run through September 2020. [Amount redacted] This modification will be completed in the next quarter.

The purchase order with RSI is unchanged; they will provide MEL services through 2022. Towards the end of the quarter, GRAIN worked with PIRM on the terms for renewal of the contract for logistical support, risk management and security, which expires in October 2019. The contract for expatriate lodging and headquarters office space [Exact location address is redacted] is good through the end of February 2020.

[Summary of budget table redacted]