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# Grain Research and Innovation (GRAIN)

Agreement No. AID-OAA-A-13-00006  
FY19 Quarter 01 (October 1 – December 31, 2018)



This publication was produced for review by the United States Agency for International Development. It was prepared by Global Center for Food Systems Innovation at Michigan State University.

## Grain Research and Innovation (GRAIN)

Quarter 1: October - December, Fiscal Year (FY) 19

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<b>Submission Date:</b>	January 30, 2019
<b>Submitted to:</b>	[redacted] Agreement Officer's Representative
<b>Submitted by:</b>	[redacted] Chief of Party
<b>Implementing Partner:</b>	Global Center for Food Systems Innovation Michigan State University
<b>Activity Start Date:</b>	March 29, 2017 (including initial flex period) September
<b>Activity End Date:</b>	30, 2022

Cover: Preparing for Winter Wheat Trials, [redacted]

Source: GRAIN PhotoBank

### **DISCLAIMER**

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## List of Acronyms

AAIP	Afghanistan Agricultural Inputs Project
ACEP	Afghanistan Civil Engagement Program
AOR	Agreement Officer Representative
ARIA	Agricultural Research Institute of Afghanistan
BHEARD	Borlaug Higher Education for Agricultural Research and Development
CAAI	Catalyzing Afghan Agricultural Innovation
CCAP	Climate Change Adaptation Project
CGIAR	Consultative Group for International Agricultural Research
CHAMP	Commercial Horticulture and Agricultural Marketing Program
CIMMYT	International Maize and Wheat Improvement Center
COR	Contracts Officer Representative
CV	Curriculum Vitae
DAIL	Directorate of Agriculture, Irrigation, and Livestock
DFAT	Department of Foreign Affairs and Trade (Australia)
DLF	Dryland Farming
DMS	Data Management System
EMMP	Environmental Mitigation and Monitoring Plan
ERF	Environmental Review Form
ERR	Environmental Review Record
FAO	Food and Agricultural Organization of the United Nations
FARMS	Facility for Agriculture and Rural Market
FY	Fiscal Year
GCFSI	Global Center for Food Systems Innovation
GIRoA	Government of Islamic Republic of Afghanistan
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
MEL	Monitoring Evaluation and Learning
MSc	Master of Science
MSU	Michigan State University
NGO	Non-Governmental Organization
PAU	Punjab Agricultural University
PDP	Personal Development Plans
PhD	Doctor of Philosophy
PI	Principle Investigator
PIRM	Premier International Risk Management
PIT	Performance Indicator Table
POC	Point of Contact
PPP	Public-Private Partnership
PY	Program Year
Q	Quarter
RADP-N	Regional Agricultural Development Program - North
RSI	Rahman Safi International Consulting
SARD	Support to Agriculture and Rural Development

SGP	Small Grants Research Program
STTA	Short-term Technical Assistance
SWIM	Strengthening Watershed and Irrigation Management
TN	Terhi Now
TOT	Training of Trainers
USAID	United States Agency for International Development
USWDP	University Support and Workforce Development Program
WLD	Women's Leadership Development (PROMOTE program)
WQL	Wheat Quality Laboratory
WFP	World Food Programme
WSDP	Wheat Sector Development 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 filling 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

### **Institutional Capacity Building: Data Management System (DMS) continuing to improve field data collection**

This reporting period saw the DMS transition from the design and development phase, to piloting phase. ARIA and GRAIN developed and are implementing a broad sensitization plan to reach ARIA researchers at all 14 research farms and a more in-depth training calendar for ARIA researchers selected to pilot the system in six ARIA Research Farms this year. There are now 24 digital tablets piloting the DMS, demonstrating how this new technology will enable ARIA research teams and management to monitor and analyze data, view records in real-time, and create experiments via the online dashboard. Following development of the DMS in Program Year One (PY1), ARIA and GRAIN are enthusiastic to continue expanding training opportunities and technical exposure for ARIA scientists, and will implement the system across all ARIA research farms by PY4.

### **Institutional Capacity Building: Partnerships**

Program Year 2 (PY2) commenced with a series of partner and stakeholder consultation meetings to present and discuss the approved Life of Project (LOP) Work Plan, and build upon program successes achieved during GRAIN's first year. GRAIN revisited the project's Strategic Communications Plan this quarter to reaffirm its partner outreach commitment. The monthly highlights flyer distributed to partners and stakeholders was reviewed to ensure content reflects the program's wide-ranging activity implementation, while in October a bi-weekly Snapshot summary of activities was introduced for internal circulation to staff (and the donor). This keeps teams informed of progress across the GRAIN program, and can be utilized during partner/stakeholder collaboration meetings.

### **Institutional Capacity Building: Supporting field research to identify best practices and advance wheat breeding in Afghanistan**

This quarter saw geographic expansion of GRAIN support to ARIA, with the successful design and implementation of seven agronomic wheat research trials, in 21 sets, across seven provinces and six agro-ecological zones. These trials are designed to further evidence-based recommendations for best practices that create potential for increased yield, quality, and economic efficiency. And as an exciting development since last implementation year, GRAIN is supporting ARIA in the implementation of two breeding programs, with five breeding trials in the four provinces of Kabul, Balkh, Nangarhar, and Bamyan, to include evaluation of Afghanistan landraces.

### **Human Capacity Building: Increasing future capacity through internships**

In response to a direct request by MAIL and ARIA, the addition of the Research Internship Program is an exciting new activity in PY2, designed to meet ARIA’s need for increased technical support in data collection, monitoring and data entry fields while also building capacity among future agricultural researchers to support MAIL in developing future human capacity. This quarter, the Internship Program was successfully launched, with eighty-one applications received from students with backgrounds in agronomy, soil science, plant protection, and related areas of wheat research studies at Nangarhar, Balkh, Herat and Kabul Universities.

### **Human Capacity Building: Advancing Employments Prospects for Mentees**

Recruitment of an additional 17 mentees this quarter finalizes a total 63 mentees participating in the first cohort of the GRAIN Women in Agricultural Research Mentorship Program. Seeking to increase the number of women embarking on careers in wheat research, this quarter saw all mentees partake in field trips to research farms, and apply for a variety of skills enhancement courses that include leadership, public speaking, English language, and computer classes.

### **Human Capacity Building: More scholars commence degree training program**

The GRAIN Graduate Degree Scholarship program saw progress for the 11 scholars (ten PhDs and one MSc) from Cohort 1, who had not received visas in time to begin classes in August 2018, (Cohort 1 totals ten PhDs and eight MScs). Three PhD scholars admitted to Haryana Agricultural University (HAU) and one MSc scholar admitted to Punjab Agricultural University (PAU) received visas to start the January semester, and attended GRAIN’s pre-departure orientation. GRAIN anticipates the seven remaining scholars will receive their visas in early January, in time to begin the semester. In the meantime, preparations to announce scholarship opportunities for the second cohort of GRAIN’s Graduate Degree Scholarship Program are well advanced, with this year’s involvement of Kabul University, together with universities in India, expected to enable more women and current ARIA employees to participate in long-term study.

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

Please see the full performance indicator table (PIT) in Annex 01 as well as the PIT narrative in Annex 02. In the quarter, GRAIN contributed to achievements for five of its eight quarterly indicators.

*Table 1. Performance Indicator Table: Quarterly Indicators (Oct-Dec, 2018)*

PIRS #	PERFORMANCE INDICATOR	FREQUENCY	ADDED THIS PERIOD		TOTAL TO DATE	TARGETS		ACHIEVEMENTS	
						LOP	FY19	FY18	FY19
Indicator 1.1 (EG.3.2-7) (HESN I.1.1_In2)	Number of technologies or management practices under research, under field testing, or made available for transfer as a result of USG assistance*	Quarterly	#	16	52	75	10	36	16



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	#	104	344	750	160	240	104
Indicator 1.7	Change of knowledge for ARIA, MAIL and DAIL staff and other GRAIN program participants from pretest to post-test**	Quarterly	#	23	121	40%	40%	41%	22%
			Total	103	297				
Indicator 1.10	Number of Data Management System active users	Quarterly	#	20	40	60	20	20	20
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	#	0	598	875	175	598	0
Indicator 3.2	Amount of cost share for ARIA research and extension activities provided by other institutions	Quarterly	\$	0	-	\$35,000	\$2,000		-
Indicator 3.3	Number of new research collaborations established between USG-supported beneficiaries and other institutions*	Quarterly	#	0	9	47	5	9	-
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	#	66	220	450	100	154	66

## 2. Key Program Activities Accomplished (In Accordance with Annual Work Plan)

**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). Working in collaboration with MAIL advisors through PY2, the degree granting program underscores a priority to expand institutional wheat research expertise in order to improve wheat production in Afghanistan.

#### **Ongoing Support for Scholars**

In December 2018, seven MSc students (2 women) completed their first semester at HAU in India. Scholars are settled into campus life, and earlier accommodations concerns are resolved. In GRAIN's frequent discussions with HAU partners, it is reported that GRAIN scholars regularly attend classes and are focused on their studies. To further support students, HAU has developed plans for an English language course through the College of Basic Science, as well as a Thesis Writing course that all GRAIN scholars are expected to take next semester.



**GRAIN MSc scholars currently studying at HAU in India.**

#### **Placement of Remaining Cohort 1 Scholars**

Because the Indian government carefully scrutinizes visa applications from Afghanistan, ten PhD male students and one MSc male student<sup>1</sup> who had been accepted into Cohort 1 were unable to obtain visas in time to begin the September – December 2018 term. GRAIN liaised with these students and the Indian Embassy throughout FY19 Quarter One (Q1) to obtain visas, with the outcome being three PhD and one MSc students successfully receiving visas, and are scheduled to travel to India in early January. Based on communications with the Indian Embassy, visas for the remaining students are in-process and will be received in time to start the January 2019 term. GRAIN is working closely with HAU and PAU to ensure these students will be able to start this semester, even if they arrive shortly after the registration date. While

**Three PhD and one MSc scholars receiving orientation prior to departing for India.**

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<sup>1</sup> Four will attend HAU and seven will attend PAU.

most students admitted to Cohort 1 attended an orientation session in July 2018, GRAIN will hold a shorter pre-departure meeting for those who did not have visas and will start their first semester in January 2019. On December 31 and prior to their imminent departure, a session was held in Kabul for the four scholars who received visas. GRAIN will organize another session in early FY19 Q2 for the remaining seven scholars.

### **Recruitment of Cohort 2 MSc Scholars**

GRAIN's Graduate Degree Scholarships Program for Cohort 2 offers eight to ten MSc scholarships in Kabul University's new MSc Agronomy Program, and three MSc scholarships at HAU or PAU (depending on student preference). The new MSc in Agronomy at Kabul University offers a unique opportunity to support scholarships at a local institution, overcoming barriers that have confronted some students, particularly females. It addresses the issues of needing to postpone employment in favor of furthering their education, and challenges where families have resisted permitting students to live abroad. Mastery of English is also not as relevant when studying at Kabul University, as at international universities.

*Eligibility:* GRAIN established eligibility criteria in close collaboration with MAIL/ARIA, with particular focus on ensuring more females could be competitive candidates (aiming for 51% female scholarship recipients). To be eligible, applicants must meet the following criteria:

- Men currently employed by MAIL with preference given to full-time employees of ARIA. This employment requirement is waived for female applicants;
- Women (employed or not) who meet the academic and professional qualifications;
- Strong academic performance at the bachelor's level (minimum 75% overall grade average);
- Relevant educational background and professional experience;
- Strong written and spoken English language skills highly preferred, required for international study; and
- Commitment to a future career in developing agriculture in Afghanistan, particularly in support of wheat sub-sector development through employment with MAIL.

*Recruitment:* Cohort 2 will follow a similar application process as Cohort 1. A Call for Applications draft in Dari and English was shared with MAIL for feedback, and approved by GRAIN's MAIL point of contact (POC) on December 19<sup>th</sup>. MAIL and GRAIN mutually agreed to release the announcement in early January (*refer to Annex 03: GRAIN Graduate Degree Scholarship Announcement*). The release will be circulated within university faculties and student groups, MAIL/DAIL/ARIA websites and social media pages, posted in public spaces within MAIL, ARIA, and regional DAIL/ARIA offices and farms, distributed by email to targeted civil society organizations, as well as PROMOTE's Musharikat and Women's Leadership Development (WLD) programs, and highlighted on the GRAIN Facebook page.

Prospective scholars can then apply online, providing personal information and key documents, such as transcripts from previous degrees and letters of recommendation, as well as answering essay questions related to career motivations that support MAIL's priorities in the wheat sector. Based on specific human capacity development needs prioritized by MAIL during PY2 work planning, third country MSc programs will include Wheat Quality Analysis, Wheat Breeding with an emphasis on Quality Improvements, and Soil Sciences. Portal development began in early December, and will be completed early January. GRAIN anticipates it will be live for four weeks from mid-January to receive submissions.

*Applicant Selection:* Applicants for the MSc in Agronomy at Kabul University who meet the eligibility criteria will be notified and asked to take the Kabul University entrance exams scheduled for late

February/early March. Those who pass will be invited to interview with a selection panel chaired by Dr. [redacted] (MSU), and comprising representatives from MAIL and international organizations such as the International maize and Wheat Improvement Center (CIMMYT) and the International Center for Agricultural Research in the Dry Areas (ICARDA). In-line with MSU's strict transparency and impartiality policy, candidates will be evaluated based on academic qualifications, wheat sector knowledge, past research experience and other relevant credentials like honors and awards, and gender and regional balance.

While eligible applicants for the MSc programs in India will not have to take entrance exams, they will be invited to interview with the same selection panel mentioned above, and evaluated based on similar criteria. In addition, HAU or PAU will need to grant admission to graduate programs.

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

#### **Experimental Research Design Training, November**

As a component of GRAIN's collaborative planning approach, program staff conducted participatory planning through workshop and determined training needs of ARIA. One result of this process determined a need for practical training in experiment research design and layout. The training was conducted at ARIA central research farm [redacted] by a senior researcher and short-term GRAIN consultant. This one-day training included instruction and practice in research design calculation as well as on-the-ground application of the design. The main goal was to enable the ARIA central and regional researchers to develop, design and implement a complicated multifactorial research design. This type of design was requested by ARIA as a major training and implementation need. Furthermore, it greatly increases the evaluation of a number of variables and their interactions. While the majority of the training was conducted in the field, topics covered during the classroom portion of the training were: design types, specifically factorial design, trial layout, and calculations for seeding rates, fertilizer rate, and area.

In total, 17 individuals attended the training (15 men, two women). Participants were from seven provinces to include: Kabul, Balkh, Baghlan, Bamyán, Herat, Nangarhar and Kandahar. Participants included 13 ARIA researchers, three MSc Students from Kabul University, and one GRAIN Wheat Research Adviser. The change in knowledge was 88.2%, as measured by pre and post training evaluations, with the average score increasing by 30 points from pre- to post-test.



***Classroom and field-based learning at ARIA's Badam Bagh Research Farm, Kabul Province.***

As described in GRAIN’s approved PY2 work plan, GRAIN’s short-term training activities will be focused through design and implementation of comprehensive trainings, which package a series of short-term training events into a cohesive program, working with cohorts of participants. In PY1, substantial effort was placed in facilitating a series of participatory planning workshops with ARIA Researchers at both central and regional levels, to accurately determine the most appropriate ARIA training needs, and how best to deliver them in PY2. Continuing this collaborative planning approach in PY2, GRAIN regional and central teams met frequently with MAIL and ARIA to prioritize training topics for this year’s two key short-term research training programs: Research Farm Management Program for ARIA Farm Managers led by GRAIN, and Data Analysis and Statistics Skills led by CIMMYT. Timelines and training methodologies were mutually agreed in consultation with ARIA Researchers and senior leadership through subsequent collaboration meetings.

*DAIL researchers in Nangarhar discussing Farm Management training.*

**Training Program 1: Research Farm Management Training**

The purpose of the Research Farm Management Training is to build capacity among the ARIA Farm Managers at each of the 14 ARIA centers across Afghanistan. This training program is quite dynamic as participants will build skills ranging from administration (financial management, procurement planning, and maintenance planning for equipment) to technical (mathematics for farm managers, soil science and conservation, and research design and layout methods). The training will commence in January, and follow the schedule described below:

*Table 2. Research Farm Management Program Training Implementation Plan*

Month	Research Farm Management Program
January-February	Financial Farm Management
February-March	Research Trial Layout, Mathematic and Data Collection Training
March	Environmental Compliance and Data Management System Training
April	Soil sampling methods, Soil Improvement and Dry Land Training
May	Mechanical Course Training
June	Integrated Farming System Training
July - August	Basic Intermediate Statistics, Farm Plan Mapping using GIS Technology
September	Developing Extension Materials from Research Results

During a collaboration meeting between GRAIN and the Afghanistan Agricultural Inputs Project (AAIP) on December 18, it was agreed that the two projects will partner to deliver the first training in the series, focused on the administrative skills required to develop research budgets and procurement plans aligned with MAIL systems and priorities, to plan for operations and maintenance of research farms, and to conduct basic cost-return analyses for agronomic trials. GRAIN and AAIP will work collaboratively to design and deliver the training content and to share costs associated with participant travel and event hosting, as the training aligns with the objectives of both projects.

**Training Program 2: Data Analysis and Statistics Skills for Wheat Researchers**

The Data Analysis and Statistics Training Program is designed to develop intermediate level skills among ARIA researchers from each of the research centers to improve their capacity to design research as well as analyze, interpret, and communicate results. As a key project partner, CIMMYT is leading implementation of this training program. While there has been past investment from MAIL and donor projects in similar training, this program is unique in that the lead trainers will be qualified



researchers from within ARIA, who have received previous short-term or degree training in these areas. In this way, ARIA, GRAIN, and CIMMYT are working to build organizational capacity to sustain similar training and professional development programs within ARIA in the future.

During CIMMYT Country Director and GRAIN Technical Advisor Dr. [redacted] visit to Kabul in December, the ARIA and GRAIN teams finalized the implementation plan and participants for the program. According to the plan, the Training of Trainers (TOT) will begin in late February with an intensive two-week program in New Delhi, India. Six will attend the ten-day course, comprising four ARIA and two GRAIN participants with extensive data and statistics experience, making them ideal candidates to attend a TOT and then pass on new learning. Equipped with updated training manuals, TOT's will then lead a series of trainings for 17 representatives from the 14 ARIA research farms across Afghanistan. The first stage will engage attendees from north/north-eastern regions, with courses in Balkh on or around March 13 – 17, while Kabul will host similar trainings on or around March 23 – 28, for central/western/eastern regions. A second stage Data Analysis/Statistics Skills training will occur for those same attendees in Balkh and Kabul in August, and a third stage training is scheduled for October.

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

#### Development of Standard Agronomy Wheat Research Protocols

Scientifically sound research protocols are necessary for the consistent implementation of research procedures to collect valid and reliable data for field and laboratory research. GRAIN aims to assist ARIA and University researchers in developing and disseminating research procedures that adhere to international standards (as applicable) and draw from modern literature in the relevant fields of study. Through implementation of PY1 trials alongside ARIA, ICARDA, and Afghan university researchers, GRAIN noted that research protocols, written specifications that direct research activities for consistency across sites, often lack the specificity and details needed to be most effective. During its monitoring missions, monitoring, evaluation and learning (MEL) field monitors

Rep3	Zn0	105-k30	106-k60	117-k0	118-k45	129-k0	130-k45	141-k0	142-k30	Zn0	153-k30	154-k60	165-k45	166-k60	177-k60	178-k0	189-k30	190-k60	Rep4
		Ditch									Ditch								
	Zn0	104-k60	103-k45	116-k60	115-k30	128-k60	127-k0	140-k30	139-k60	Zn10	152-k0	151-k45	164-k45	163-k30	176-k60	175-k0	188-k30	187-k0	
		101-k0	102-k30	113-k45	114-k0	125-k45	126-k30	137-k45	138-k0		149-k60	150-k30	162-k0	161-k60	173-k45	174-k30	185-k60	186-k45	
	Ditch									Ditch									
Zn10	100-k60	99-k45	112-k60	111-k30	124-k0	123-k60	136-k0	135-k45	Zn5	148-k30	147-k0	160-k30	159-k60	172-k0	171-k45	184-k45	183-k30		
	97-k0	98-k30	109-k0	110-k45	121-k30	122-k45	133-k30	134-k60		145-k60	146-k45	157-k0	158-k45	169-k30	170-k60	181-k0	182-k60		
	N2		N3		N1		N0			N1		N3		N2		N0			
	Ditch									Ditch									
Rep2	Zn0	96-k0	95-k45	84-k30	83-k0	72-k3	71-k1	60-k45	59-k0	Zn10	48-k0	47-k30	36-k60	35-k30	24-k30	23-k60	12-k30	11-k0	Rep1
		83-k30	84-k60	81-k60	82-k45	69-k2	70-k0	57-k30	58-k60		45-k60	46-k45	33-k45	34-k0	21-k0	22-k45	9-k45	10-k60	
		Ditch									Ditch								
	Zn10	92-k30	91-k0	80-k60	79-k0	68-k45	67-k30	56-k0	55-k45	Zn0	44-k30	43-k60	32-k30	31-k60	20-k60	19-k30	8-k60	7-k45	
	89-k60	90-k45	77-k45	78-k30	65-k0	66-k60	53-k60	54-k30		41-k45	42-k0	29-k0	30-k45	17-k45	18-k0	5-k0	6-k30		
	Ditch									Ditch									
Zn5	88-k45	87-k60	76-k30	75-k60	64-k30	63-k60	52-k60	51-k0	Zn5	40-k60	39-k45	28-k60	27-k30	16-k30	15-k60	4-k45	3-k0		
	85-k0	86-k30	73-k0	74-k45	61-k0	62-k45	49-k30	50-k45		37-k0	38-k30	25-k0	26-k45	13-k0	14-k45	1-k30	2-k60		
	Ditch									Ditch									
	Ditch																		

Examples of ARIA standardized field research protocols and data collection tools.

documented a number of discrepancies concerning research protocol documentation, as well as implementation. As a result, a participatory learning session was held this quarter in November, at which GRAIN and ARIA identified several deficiencies in the current trial implementation protocols used by ARIA and partners.

As a result of these observations, GRAIN assisted ARIA in standardizing and distributing protocol templates for field trials to be implemented this growing season so that the protocols for each trial are consistent and available at all sites, examples above. A total of 21 protocols were reviewed by GRAIN and ARIA committee. Following the review process major gaps in design and methodology were corrected, standardized, and brought to international standards. These protocols were then distributed to seven provincial ARIA research stations all in a timely manner.

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

##### **Prioritization of Wheat Research Program for PY2**

During PY2 work planning and through ongoing consultations with MAIL and ARIA, GRAIN stakeholders requested GRAIN's continued support of agronomic research trials. This request aligns with GRAIN's commitment to support achievements towards MAIL's WSDP plan which calls for the development of research based agronomical packages specific to each of the seven agro-ecological zones of Afghanistan. Once these practices are developed, they will be released to the DAILs, extension, and ultimately wheat farmers residing within their respective zones.

In preparation for the 2018-2019 trial year, GRAIN supported ARIA in hosting several collaboration sessions with researchers from ARIA, ICARDA, CIMMYT, GRAIN, and AAIP, in an effort to improve coordination and prevent duplication of efforts. Therefore, greater emphasis was placed on conducting trials drawn from modern literature in the area of wheat research.

##### **Supporting ARIA to Improve Research Planning**

The GRAIN research team in Kabul centrally coordinated all research related inputs, and distributed them to seven provincial ARIA research stations in Kandahar, Baghlan, Herat, Balkh, Nangarhar, Bamyán and Kabul. Because ARIA has limited access to resources for timely distribution of trial inputs, GRAIN's support in this regard was essential to ensure materials were received on time as to not miss optimum timelines for land preparation and sowing. These materials comprised pre-weighed and packaged seed and fertilizers, together with equipment including markers, seed-pockets, tape measures and row markers.

##### ***Preparing trial seeds in for dispatch to seven provinces, and field preparation underway in Kabul.***

Trial making, cultivation, seeding and irrigation oversight was coordinated by ARIA, together with GRAIN regional managers and research advisors. To establish effective communication and coordination internally, the GRAIN Wheat Research Director convened weekly coordination Skype calls with the research advisors, and regular collaboration meetings with ARIA senior management, to discuss progress. This communication interface was an effective forum that discussed any supplementary requirements or problems, along with monitoring planting advancement at the ARIA

sites. All GRAIN supported sites were successfully seeded by the end of this quarter, with ARIA Acting Director for Adaptive Research commenting that this season is looking like one of the most successful research trial plantings ARIA has conducted recently.

### **Field Research Conducted in Seven Provinces**

To further evidence-based recommendations for best practices that create potential for increased yield, quality, and economic efficiency, GRAIN is supporting ARIA this year in the implementation of seven agronomic wheat research trials, in 21 sets, across seven provinces and six agro-ecological zones. GRAIN-supported ARIA trials will evaluate yield response to application of one micronutrient zinc (ZnSO<sub>4</sub>), and an alternate form of the macronutrients phosphorus as triple super phosphate (Ca(H<sub>2</sub>PO<sub>4</sub>)) and muriate of potash (potassium) (KCl). These newly introduced nutrient sources have shown promise in wheat yield studies in neighboring countries. Dry land seeding rate and fertility research is being conducted in Kabul, Balkh and Herat provinces, responding to MAIL’s priority of improving wheat production in dryland areas, a component of a broad National Strategy for Dryland Farming Systems currently under development by MAIL.

*Table 3: GRAIN-ARIA Wheat Research Experiments Program for PY2*

Experiment Title/Objective	Provincial Locations of Trials							Experiment Type
	KBL	NGR	BGL	BLK	KDR	BMA	HRT	
Determining the optimum date of sowing for ten varieties								Agronomy
Determining the optimum application rates of Nitrogen (N) and Potassium (K) fertilizer on facultative wheat								Agronomy
Optimum application rates of Nitrogen (N), Potassium (K), and Zinc (Zn) fertilizer on facultative wheat								Agronomy
Determining the optimum seeding rate for two winter wheat varieties								Agronomy
Determining the effect of N+P205 fertilizer on yield and quality of facultative wheat								Agronomy
Determining the optimum seeding rates in rain-fed conditions								Agronomy
Determining the optimum rates of N and P in water stress conditions.								Agronomy
Crossing Block program								Breeding
Shuttle breeding program								Breeding
<b>Total Sets: 27</b>								

**Note:** Trials are currently located in seven provinces: Kabul (KBL), Nangarhar (NGR), Baghlan (BGL), Balkh (BLK), Kandahar (KDR), Bamyan (BMA), and Herat (HRT)

Further, GRAIN support efforts have introduced a multiple factorial trial design for the NKZn trial being conducted in Kabul, Baghlan, Nangarhar and Herat provinces. Rather than evaluating a single nutrient, a multiple factorial design measures the effect of all three nutrients and interaction between nutrients. This design is new to ARIA and will greatly improve wheat research efficiency. This more complex research design also creates substantial opportunity for ARIA and GRAIN to support on-the-job training and skills development for ARIA researchers who may not be familiar with this design. In GRAIN’s PY2 work planning sessions, MAIL advisors were very supportive of this move to more complex designs.

### **Guiding Advanced Breeding Efforts**



GRAIN is partnering with CIMMYT to support ARIA in pursuit of the development of a basic research program focused on wheat breeding. CIMMYT has collected the major wheat landraces from Afghanistan and is storing this germplasm at its international headquarters in Mexico, but ARIA seeks to develop its own in-country basic research/breeding program. This quarter, partnering with CIMMYT, GRAIN made significant progress on this activity, in conducting over 20 key informant interviews with stakeholders from MAIL, ARIA, CIMMYT, the Food and Agricultural Organization of the United Nations (FAO), ICARDA, and GRAIN and conducting an extensive review of publications and production data related to wheat research and quality seed improvements in Afghanistan. This research is compiled in a draft report, essentially a road map that lays out the building blocks of a basic research program. To progress this effort, Dr. [redacted], CIMMYT Country Director and GRAIN Technical Advisor, visited Kabul in December to provide collaborative technical advice in the development of the *Roadmap for Wheat Improvement and Breeding Programs in Afghanistan*. His visit culminated in a “Dinner and Discussion” event on December 18, with key MAIL and ARIA stakeholders joining for a presentation of the draft roadmap and further discussion. It is anticipated that CIMMYT will finalize the report in February 2019 with a presentation to key stakeholders at a Wheat Research Sector Coordination meeting in Q2.

***GRAIN Technical Advisor facilitating dialogue about Roadmap to Improving Wheat Basic Research Capacity of ARIA, with MAIL and ARIA leadership.***

### **Breeding Methods Crossing Block and Shuttle Breeding**

ARIA is in a process of transitioning from a conventional wheat selection program into a more advanced basic breeding program. The initiation of new breeding methods can utilize common varieties, landrace cultivars and experimental lines of wheat and cross them with exotic parents from other sources imported from outside of Afghanistan. Through introduction of new genetic materials, local gene sources will be crossed and hybridized, as well as segregated and selected for desirable traits such as yield, stem length, disease resistance, lodging resistance, heat and drought tolerance, and improved end use (baking) quality. While the Roadmap discussed above will assist in planning to further advance MAIL’s wheat breeding programs in the coming two to five years, in the meantime GRAIN is supporting ARIA in the implementation of two breeding programs, with five breeding trials in the four provinces of Kabul, Balkh, Nangarhar, and Bamyan. The two new breeding methods currently being supported by GRAIN and implemented by ARIA are Crossing Block and Shuttle Breeding.

The Crossing Block method is created by planting rows of elite breeding parental stock and local source materials arranged in rows planted ten days apart. Crosses among superior agronomic parents and other donors are attempted based on the specific objectives of the breeding program, selection for disease resistance or heat tolerance for example. Selections are made from the F1, F2 and other segregating generations until they become pure. Back crosses with elite parents are made as needed to ensure desirable traits in final products. At the end of this selection process a new variety can be released for commercial agricultural use. This process usually takes ten to 12 years.

Shuttle Breeding is employed to reduce time taken to develop a variety. This also exposes breeding populations to diverse environments and also different pathogen populations/ races making the final product more adapted. Shuttle Breeding is planned in Nangarhar and Bamyan.

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

In response to a direct request from MAIL and ARIA towards the end of the previous program year, the ARIA Research Internship Program was launched to meet needs for expected additional support in areas of field data collection, monitoring, and data entry. Consultation and planning meetings with ARIA and MAIL leadership during October and November were integral in finalizing the internship program framework, which will develop practical skills and expose university students and recent graduates to agricultural research. GRAIN staff gave presentations to Deans of agriculture faculties at four partner universities, highlighting the benefits of MAIL and universities collaborating to enable on the job training and knowledge acquisition that support the future recruitment MAIL employees.

Beginning in January, each intern is required to commit to four hours per day for three days per week at their job placement. In total, they will work a minimum of 60 hours monthly, with most internship periods concluding on September 30 of PY2. Their internship period will be guided by Personal Development Plans (PDP), detailing each individual's career goals and mapping how this can be achieved. GRAIN anticipates placing a total 20 interns in 2019, as follows: eight in Kabul, and four in each of remaining three participating provinces, with a 51% target for female interns. Successful applicants will participate in an orientation training coordinated by GRAIN, then in association with ARIA/DAIL preferences, be allocated an internship position that best aligns to preferred fields of study and academic achievements.

On December 9, GRAIN met with MAIL's Human Resources Manager, [redacted] who endorsed the value of the program, and stated how it potentially offers a pipeline of future MAIL employees who would arrive better qualified in key areas, due to knowledge acquired via their internships. He also indicated that completion certificates signed by the Minister could be issued by MAIL to each intern. These certificates will recognize newly gained experience, and can be utilized when applying for future employment with MAIL.

Application forms were distributed in early December through university faculties, and announcements posted on notice boards to attract applicants from agronomy, soil science, plant protection, and areas relating to wheat research. GRAIN regional office teams issued application forms through Nangarhar, Balkh and Herat Universities, as well as DAIL and ARIA offices. Earlier orientation and planning collaboration meetings with ARIA/DAIL had confirmed program support and that DAIL/ARIA would accommodate intern placements, with researchers prepared to provide training and technical guidance. Submissions were received through the final week of December. The following table disaggregates applications by gender and province.

Table 4: ARIA Research Internship Program Applicants by Province and Gender as of December 2018

Province	Female	Male	Total
Kabul	8	18	26
Nangarhar	3	17	20
Herat	5	15	20
Balkh	3	12	15
<b>Grand Total:</b>	<b>18</b>	<b>62</b>	<b>81</b>

Interviewing prospective interns will commence in early January, by a panel including ARIA, Kabul University and GRAIN representatives. Contract signing and orientation will commence in late January/early February. The internship program will run from January to September 2019, allowing for eight full months of high impact learning and field experiences. ARIA Director [redacted] and ARIA Director of Adaptive Research, [redacted], welcomed the introduction of the program, which will continue to recruit interns annually over the next three years. Upon reviewing a number

of intern applicants' resumes, [redacted] commented that these candidates were among the best qualified he had seen over the years of welcoming interns to work at ARIA Badam Bagh.

***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.***

Implementation of the Women in Agricultural Research Mentorship program was in progress in Herat, Balkh and Kabul by the close of PY2, having recruited 46 mentees under the guidance of six mentors. Unfortunately, the unstable security situation in Nangarhar prevented the Kabul-based Gender Advisor from travelling there to help the mentor complete mentee selection. GRAIN was fortunate to bring on an eighth mentor who is the [redacted] at Kabul University. While not responsible for directly supporting individual mentees, she will provide oversight and advice concerning mentee program structure and implementation. GRAIN's Eastern Region Manager had conducted mentorship orientation presentations for the Dean and Agriculture Faculty staff over previous weeks, and involved the Nangarhar mentor in university and DAIL collaboration meetings providing program progress updates.

***GRAIN Gender Advisor, mentor and Eastern Region Manager interviewing mentee applicant in Nangarhar.***

Similar to other partner universities, Nangarhar University focus groups were organized and hosted by the Dean to explain the mentorship program to female students, with the GRAIN manager and mentor attending to provide additional information and respond to questions. Application forms were distributed in early October, and 11 were received for assessment by the end of that month. Security clearance by GRAIN's risk management team enabled the Gender Advisor to travel to Jalalabad on November 11, to join the mentor in conducting mentee interviews over two days. Ten of the 11 applicants were invited into the Nangarhar mentorship program, joining the 46 mentees who had been accepted by the end of PY2. During November and December, the program admitted another seven mentees from Kabul, bringing the total to 63 female mentees (16 in Herat, ten in Balkh, 27 in Kabul, and ten in Nangarhar Provinces).

This concludes the recruitment of mentees and mentors for PY2, with focus now shifting to rolling out activities to support personal and professional development, and encourage them to consider careers in the wheat sector, particularly as researchers.

**Mentee Trainings**

GRAIN's Gender Advisor continued developing mentorship workshop and training materials this reporting period, with support from capacity building and communications teams, and in regular consultation with mentors to ensure suitability for mentee use. Training materials are designed to align with needs outlined in mentee PDPs, which were completed with support from their respective mentor. PDPs outline goals, and action steps required to advance career aspirations and personal growth, with mentees identifying requirements such as computer literacy, curriculum vitae (CV) preparation, research proposal writing, and assistance in broadening practical research and field experience.

With the support of regional teams, the Gender Advisor organized planning sessions that incorporated group discussions with mentees and mentors, to collaboratively identify and refine training modules that were practical and achievable. Once mutually agreed and prioritized, these activities were integrated into the six-month mentorship plan that each mentor will implement with their mentee. These group meetings commenced in September with a visit to Balkh, and continued October 28 – 30 in Herat, and in Nangarhar on November 11 – 13. These are backed by weekly phone calls between the Gender Advisor and mentors (who in turn are in regular contact with their assigned mentees), to monitor progress and offer support advice. Mentors share a monthly written report with the GRAIN Gender Unit that summarizes mentee interactions and achievements, general observations, and recommendations. GRAIN maintains an open-door policy where mentors can contact the office at any time.

***Mentor meeting with her group of mentees from Kabul University to discuss skills course options.***

To meet the needs of mentees after reviewing their PDPs, the Gender Advisor is finalizing presentations and accompanying training materials on topics such as public speaking and leadership. All participating universities have offered classrooms for GRAIN trainings and mentor-mentee meetings. In response to mentee interest and following discussions last quarter with PROMOTE's WLD project, GRAIN provided mentees information on WLD's Jawana Women's Leadership and Empowerment Courses. These are professional and personal skills enhancement classes commencing in February in Balkh, Nangarhar, Herat and Kabul. Course duration is 12 weeks, and along with English classes, curriculum options include communications, professional presentation techniques, and proposal writing. GRAIN teams in all regions provided assistance to mentees in preparing applications, with a total 78 submitted for assessment by WLD. All mentees applied, together with three women under GRAIN's Bridging Program who had unsuccessfully applied for earlier MSc scholarships, and who recognized the benefits these courses offer in improving future prospects. Outcomes from course applications will be known in January.

While many mentorship training activities will commence in the second quarter, the GRAIN Western Region Wheat Research Advisor provided Basic Experimental Design training to 16 mentees in Herat on November 17, in coordination with the Gender Advisor and two Herat-based mentors. This was replicated in Balkh (ten mentees) on October 9, and Kabul on October 30 (22 mentees), with all trainings accompanied by field trips to the respective university research farms. A similar training in Methods of Wheat Sowing was conducted by mentors in Herat on November 24 (14 mentees) and Kabul on December 4-5 (19 mentees). Balkh completed this in the previous quarter. Safe Use of Pesticides is planned for January. Although Nangarhar's ten mentees joined the program later, in addition to completing PDP's and applying for WLD/Jawana courses, all participated in a field trip to ARIA's Sheshambagh Research Station, to inspect agronomy and wheat experiments currently being supported by GRAIN. (*Refer Annex 04: GRAIN Training Participants List*)

***GRAIN Western Region Wheat Research Advisor providing Basic Experimental Design training to Herat mentees.***

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

During interviews for GRAIN's Graduate Degree Scholarship Program, fundamental challenges for women became evident. Rather than being academically underqualified, they more commonly had insufficient work experience, poor English ability and lack of self-confidence. A recurring issue was also family resistance to allow female applicants to travel to India, which is the location of universities selected for Cohort 1 scholars. Following awarding the first round of scholarships, 11 women joined the Bridging Courses program.

The application portal for Cohort 2 scholarships will open in January, and will enable more women to access an advanced degree because they will have the option to apply to study at Kabul University in the Masters in Agronomy program. GRAIN envisions that up to ten scholars will be placed at the University, therefore eliminating the requirement to travel outside Afghanistan, and also reducing the higher-level English proficiency requirements.

Recent meetings with the WLD/Jawana program discussing course availability, revealed a curriculum selection including English classes, and a variety of life skills and soft skills trainings to improve self-confidence and personal presentation. Classes are intended to improve critical thinking, problem solving, public speaking, leadership, and to develop more effective overall communication capabilities. Each course duration is 12 weeks, requiring attendance three days each week for four hour sessions, and conducted in Herat, Balkh, Nangarhar and Kabul, which will conveniently serve the eleven women in the Bridging Courses program.

In collaboration with WLD, and through GRAIN's Gender Unit, outreach was provided to the eleven women in the Bridging Courses program verbally and/or through email, during November and early December. In identifying courses that most appealed them, the Gender Advisor also referenced supplemental information compiled on each individual (noting strengths and weaknesses), during the scholarship interview process last program year. WLD/Jawana applications were distributed for various courses, with GRAIN teams providing coordination for submission during the final week of December. Three women participating in the Bridging courses program decided to apply for WLD/Jawana course, with others citing timing conflicts to their schedules. Applicants will be advised in January if their applications have been approved, with courses commencing in February. By seeking solutions that bridge personal skills gaps evident during earlier scholarship interviews, and increasing experiential knowledge through field trips to university or ARIA research farms, GRAIN seeks to encourage these women to apply again for scholarships, and increase the number of women qualifying for acceptance to long-term degree training.

***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)**

A major priority during GRAIN's first program year was the development of an effective DMS that will enable ARIA and GRAIN to collect technical information directly from the field, through the use of android tablets. There are currently 24 tablets being utilized during the DMS piloting phase, demonstrating how this new technology will allow research teams and management to monitor and evaluate records, by viewing a real-time online dashboard supplying up to date records from all 14 ARIA research farms.

Led by sub-partner [redacted] International Consulting (redacted), which also provides MEL to the project, development of the DMS represents a major breakthrough in data management for ARIA, as previously there had been no digital mechanism for comprehensively capturing, storing and

analyzing wheat research data. Throughout the final months of PY1, [redacted] and GRAIN facilitated extensive consultation meetings with MAIL and ARIA leadership, as well as ARIA researchers, demonstrating system features and receiving feedback and recommendations to collaboratively improve system design and function. This feedback enabled updates to further streamline the ARIA user interface experience, refine data collection parameters, and improve protocol navigation and the ability to create experiments directly from the DMS dashboard.

Pilot testing by ARIA researchers continued this reporting period, specifying how to display experiment design layouts, and data flow from the field to the dashboard. This collaborative interaction with ARIA resulted in clarifying key data field denotations, modifying existing parameters in terms of measurement units and labeling, removal of duplicative parameters (i.e. same parameters but different names), and modifying the layout to integrate split-plot design in the system. The [redacted] database team continues fine tuning of research protocols and final modification of parameters, with testing and feedback sessions extending over coming months to engage more ARIA scientists in more provinces.



***This quarter saw ongoing DMS training sessions that increased system awareness for ARIA researchers, and provided feedback to continue streamlining features to suit ARIA data specifications, and interface usability.***

An important component of DMS implementation is continuing to familiarize ARIA staff with the system, in order to promote acceptance of the new technology, and foster support and enthusiasm to migrate from paper records to entering data via a tablet. One example of this is when GRAIN arranged a two-day training workshop presented by [redacted] in Kabul on Nov 27 – 28, on DMS design techniques, and involving 15 ARIA researchers (one woman) from Balkh, Bamyan, Baghlan, Herat, Nangarhar, Kandahar and Kabul. As with past trainings, it involved describing the motivation behind the DMS concept, highlighting reasons why it was developed, benefits it will deliver to ARIA, and how it can contribute to advancing wheat research in Afghanistan. Instruction was provided on how to design an experiment in the DMS dashboard, with hands-on access for participants to each view the experiment and subsequent data collection on the tablet, from a field location at an ARIA research farm. Participants were then able to review the submitted field data via the dashboard back in a laboratory training environment. There will be increased emphasis on future sustainability of the DMS, with GRAIN and RSI working alongside ARIA and MAIL to develop a plan where ARIA ultimately assumes full management and responsibility of the system.

ARIA-led experiments operating the DMS are in preparation, with training and oversight provided by [redacted] for experiments that will be conducted next quarter. Bamyan, Baghlan, Herat, Nangarhar, and Kandahar will each conduct one, while two will happen in Kabul. Once deployed, [redacted] and GRAIN will provide regular support and on-site guidance at research farms, along with dashboard technical support.

As of this quarterly reporting period, a number of presentations, training workshops, and on-the-job support for the DMS have been provided to various stakeholders and ARIA staff in Kabul, and in the regions. *Table 5* below provides a list of presentations on DMS, and *Table 6* provides formal trainings on DMS conducted as of Dec 31, 2018.

*Table 5: Presentation on DMS to various stakeholders as of Dec 31, 2018*

Date	Duration	Number of Participants	Objectives	Organization
June-10-2018	2 hours	8	DMS overview presentation to ARIA DG	ARIA and GRAIN
June-19-2018	2 hours	5	DMS overview presentation to ARIA leadership	ARIA and GRAIN senior management
June-20-2018	2 hours	3	Update USAID- Agriculture office on DMS progress	USAID, GRAIN senior leadership
July-08-2018	3 hours	22	Review progress, and solicit feedback from technical teams	ARIA leadership, ICARDA, JICA, CIMMYT, PHDC, GRAIN team
July-16-2018	3 hours	2	Review parameters for further revision in DMS	ARIA DMS Committee
Aug-01-2018	2 hours	3	Review requested changes in DMS	ARIA senior management
Aug-17-2018	1 hour	1	Overview of DMS	GRAIN DCOP
Aug-29-2018	1 hour	6	DMS overview at MAIL	AAIP Director, Seed Directorate, GRAIN team
Oct-14-2018	2 hours	6	Review requested changes in DMS	ARIA, and GRAIN senior leadership

*Table 6: Trainings on DMS to various stakeholders as of Dec 31, 2018*

Date	Duration	Number of Participants	Training Topic	Organization
Aug-26-2018	3 hours	21	Basic DMS Training	ARIA, Kabul, Balkh, Herat, and Nangarhar Agriculture Faculty lecturers
Sep-02-2018	2 days	7	Data Management System (Internal Training)	GRAIN Balkh, Herat and Nangarhar Regional Research Advisers, GRAIN Balkh, Herat, Nangarhar and Kandahar Regional MEL officers
Sep-26-2018	1 day	18	Data Management System Training for ARIA Teams	Kabul ARIA senior researchers, GRAIN Balkh, Herat, Nangarhar and Kabul Region Managers
Nov 27-2018	2 days	23	Comprehensive Data Management System	Central, Regional, and Provincial ARIA researchers, GRAIN technical team, GRAIN provincial MEL team

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

#### **Supporting MAIL Investment in Wheat Quality Laboratory Testing Capacity**

Efforts related to this activity this quarter focused on consultations with international technical expertise and MAIL partners to identify alternatives to GRAIN-funded construction of a new laboratory for wheat quality analysis for research and import inspection purposes.

#### **Background**

As described in Afghanistan's WSDP and reiterated in GRAIN LOP work planning, there is vast opportunity for improvement of grain quality in wheat grown in Afghanistan. For this reason, MAIL

is interested in establishing in-country capabilities to test grain and flour quality parameters such as gluten type, moisture, ash, solvent retention, protein, water absorption, mixability, presence of amylase, color, etc. for two primary purposes: 1) to test domestic and imported grain and flour for protein as it enters the country for quality and safety assurances and 2) to analyze end-use quality parameters of wheat to inform wheat breeding and agronomic research as a part of MAIL's national wheat improvement program.

GRAIN's earlier work plan had indicated the project would support planning of a wheat quality research laboratory, some equipment and supply purchases, training of technicians, and sustainability planning with MAIL. This earlier plan was formulated in early PY1, at which time MAIL and GRAIN discussed options for MAIL to fund construction and major equipment purchases through MAIL's development budget or on-budget project funding such as AAIP. The proposed lab would be modest in size and scope, tailored to the needs of ARIA in informing wheat research. To assist MAIL in determining next steps, GRAIN has appointed a wheat quality expert, [redacted], to develop recommendations and next steps that could be taken by GRAIN and other donors to establish a wheat quality lab.

However, in PY1 Q4, following several consultations between the GRAIN consultant, GRAIN, and MAIL partners, including two group Skype presentations and discussions, it became clear MAIL requested that USAID, through GRAIN, completely fund the activity and also asked that the scope be expanded beyond the modest laboratory for wheat research purposes, to include quality and safety testing for imported flour and grain. As the requested scope and cost implications for GRAIN support grew, and as the risks associated with managing the proposed laboratory were shared by the experienced GRAIN consultant, GRAIN sought USAID guidance on next steps. In summary, the concerns discussed included:

1. **Safety/Explosive Hazards:** Wheat flour dust in an enclosed space like a laboratory is highly explosive. As described by the GRAIN consultant and demonstrated in several examples of flour mill explosions in the U.S and other countries, flour dust explosions can be highly destructive and result in loss of life. The ingredients required for an explosion are 1) sufficient flour dust in the air; 2) a relative humidity less than 50%; and 3) a spark. In existing wheat quality laboratories, these conditions are prevented by a sophisticated dust removal system, relative humidity control, and a high-quality electrical system. Conditions in Afghanistan, including dry air, low quality electrical systems, and often poor maintenance of air handling systems, raises explosion hazard concerns.
2. **Costs:** As the requested scope of GRAIN's funding for the establishment of the laboratory grew, the costs associated far exceeded the allocated budget for this activity. Specific costs include:
  - a. **Building:** In earlier discussions, MAIL and ARIA colleagues indicated that the purpose of the laboratory would be to support the wheat research program, and that the laboratory could be housed in a planned building at Badam Bagh Research Farm (with funding already allocated in MAIL's development budget) intended for wheat genomics research laboratories. In discussions held on September 18, 2018, MAIL partners indicated that the laboratory should also be used to test the quality of imported wheat and flour and that it is unclear which MAIL Directorate would manage the laboratory. With this change, ARIA leadership advised that the genomics building would no longer be suitable for housing the Wheat Quality Laboratory, and that other options, including new construction, should be considered with funding provided by GRAIN. Note, construction is prohibited in the current GCFSI cooperative agreement.
  - b. **Wheat Quality Laboratory Furnishings:** It is anticipated that in a new building the Wheat Quality Laboratory would require significant upgrading. This upgrading includes but is not



limited to upgrading the electrical system, and installing a system to protect sensitive equipment from blackouts; electrical backup system; air handling systems; sinks; and laboratory benches. As major renovations, these upgrades are likely to be considered “construction” under USAID rules, which is strictly prohibited in the GCFSI Cooperative Agreement.

- c. **Wheat Quality Laboratory Equipment:** A wheat quality laboratory would require a significant investment in equipment. Currently, these funds are not identified in the GRAIN budget. Beginning in November 2017, GRAIN has been in discussion with the World Bank funded AAIP project, and preliminary indications are that funds are available in their budget. However, in the past, MAIL’s procurement system has been insufficient to use these funds for the purchase of equipment for the many other labs AAIP has constructed, therefore MAIL has asked GRAIN to fund all equipment purchases.
- d. **Sustainability:** Given ARIA’s frequent challenges in timely procurement, operations, and maintenance of existing programs and facilities, it is reasonable to anticipate future challenges in sustaining operations of a new facility in the long-term. This concern has also been raised by some MAIL representatives.

### **This Quarter and Next Steps**

Ultimately, due to the concerns described above related to 1) safety, 2) cost, and 3) sustainability, the Head of the Office of Agriculture at USAID/Afghanistan informed GRAIN leadership in a meeting on September 24, 2018, that USAID is not supportive of pursuing project funding for the construction of a wheat quality laboratory at this time. Subsequently, in early October 2018, the OAG Director spoke with H.E. MAIL Minister and H.E. MAIL Deputy Minister to share this update. Revisions to the GRAIN Program Year Two work plan and LOP budget reflect this decision.

Considering that this activity is understandably a top priority for MAIL as measurement of wheat quality is important for improving wheat variety selection and the evaluation of imported flour, GRAIN is pursuing alternatives to building a new wheat quality laboratory. These alternatives, which were investigated this quarter by the GRAIN field team under the guidance of the consultant, may include: pursuing public-public partnerships (PPPs) between MAIL and private laboratories in Afghanistan, facilitating agreements between MAIL and international research organizations for cost-effective laboratory analysis, proposing cost-effective field-based solutions for rapidly testing key quality parameters of grain and flour at entry points, and investigating private third-party testing options.

Moving into Q2, the GRAIN team will continue to investigate these options in consultation with private and public sector stakeholders. Because the focus of the GRAIN consultant’s work has shifted to these alternatives, and due to the partial U.S Government shutdown as of 31 December 2018, a final report with recommendations will be delayed with new anticipated date of presentation being end of February 2019.

**Intermediate Result 2:** 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 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***

Ongoing discussions with ARIA leadership has determined the National Wheat Conference should occur in the second half of the program year. This is principally due to a demanding annual calendar

set by ARIA, involving events like the Annual Review Meeting of Agricultural Experimental Results, and the Wheat and Barley Conference, as well as planned trainings that require attendance of delegates also wishing to participate at the GRAIN conference. Staging a national conference later this year optimizes opportunities to present a greater range of validated wheat trial results, as a major agenda feature is to comprehensively deliberate wheat research findings. A later date also makes sense because the DMS will have achieved a great awareness saturation among ARIA researchers, with discussion anticipated to be more incisive, and based on upcoming DMS implementation training plans. Staging the national conference towards the back end of this year will also coincide more closely with the conclusion of GRAIN's inaugural mentorship and internship programs. Many of these participants are undergraduate students, who with increased agricultural awareness gathered through the year, will benefit more because they better comprehend conference agenda topics.

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

This activity is anticipated to commence FY19Q3-Q4, aligned with opportunities to present and publish results, to include international conference opportunities and ARIA National Wheat and Barley Conference.

***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**

As GRAIN wheat breeding and agronomy trials results become available and are validated in early FY19, capacity building and communication teams will work alongside provincial wheat researchers to design workshop materials and commence training of MAIL Extension Directorate teams.

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

This activity is planned to commence in Q3-Q4 as a component of training for Small Grants Program grantees and as a specific training session in the Research Farm Management Training Program (see [Activity 1.A.2](#)).

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

GRAIN's LOP Work Plan calls for the development of zone-specific, agronomic practice-based recommendation packages in PY3-PY4. This involves the development of research-based extension educational/informational material related to an array of agronomic research being conducted in each of the six agro-ecological zones of Afghanistan. GRAIN supported ICARDA in PY1 to conduct agronomic research in all zones, and in PY2 is supporting ARIA to implement agronomic trials in five of the six agro-ecological zones. While GRAIN's collaborative partners ICARDA and AAIP have been conducting agronomic practice research in all agro-ecological zones since 2014, subject to accessing that historical data, GRAIN intends to jump start the process by utilizing relevant information and developing research-based preliminary reports, in order to begin drafting applicable extension materials.

GRAIN will enlist the support of short-term technical assistance (STTA) to review all records, and determine the selection of valid data that can be converted into viable zonal agronomic practices. If successful, this could accelerate the release of these packages by up to two years. The STTA will present these results to ARIA, GRAIN and other research partners to:

- Conclude where or if there is sufficient historical trial data available to determine sound practice recommendations for farmers; and
- Recommend priorities for trials (varieties, locations, parameters, regression models) for 2019-2020 field trials that fill gaps in research-supported recommendations.

This information will better enable GRAIN, ARIA, ICARDA and CIMMYT to work collaboratively, to design research crucial to commence releasing comprehensive zone-specific packages in PY3. This quarter, GRAIN secured ARIA's commitment to share all past trial data for 2014 to 2018 with GRAIN no later than end of January. With this data in hand, GRAIN will work with CIMMYT to determine the best next steps, likely including recruitment of additional national STTA to assist in data analysis and interpretation.

**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 the wheat value chain.***

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

During the first week of October, GRAIN representatives inspected the privately owned and operated [redacted] flour milling company in [redacted], in conjunction with supporting MAIL's efforts to better align its program and efforts with the wheat sector. This group distributes its output among 25 wholesalers around the country, is contracted by World Food Programme (WFP) to produce flour, and is currently contracted by the Government of the Islamic Republic of Afghanistan (GIROA) to supplement additional vitamins and minerals to the processed flour. TN was established ten years ago, and currently imports 60 percent of wheat for milling purposes. It is enthusiastic to contribute to future working group activities that may lead to increased national wheat yields, and acknowledged the importance of cooperation between government and the private sector.

Also in October, GRAIN met with the FAO project management team to discuss how a Wheat Working Group in Herat could assist to unit government, university, private sector and donors, and better coordinate sector interests within the wheat value chain. FAO Project manager, Pavel Burian, described how other sectors involved through FAO's value chain activities (such as saffron), had established successful working groups, and that a similar committee to support wheat sector advancement was feasible.

Next month, Herat DAIL is hosting the Agriculture and Rural Development Sector Meeting, which will be attended by eleven organizations including FAO, WFP, and other non-governmental organizations (NGO). Also in attendance, GRAIN's Western Region Manager has been invited by the DAIL Director to share the concept of the Wheat Working Group, and will facilitate discussion of wheat sector challenges to collaboratively seek to identify proposed solutions. These will be collated and presented by GRAIN to the DAIL Director, who will in turn share with ARIA, extension agents and farmers, for feedback and comment. GRAIN continues its advocacy to mobilize and promote the shared benefits that a Wheat Working Group can generate, along with supporting DAIL and ARIA to increase NGO, university and private sector engagement.

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

Described in [2.A.1](#) and [3.A.1](#).

**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**

Established to foster research collaboration between MAIL/ARIA and leading agricultural departments at the four partner universities, the SGP invested considerable effort this quarter in finalizing concept proposals, financial forecasts submitted by applicants, and preparing to implement approved experiments. As of September 30, ten of the eleven proposals were being evaluated, with all requiring additional support in order to meet minimum criteria. GRAIN conducted environmental screening of all experiments, with the eleventh applicant successfully requesting and being granted time extension, due conflicting professional commitments (and this remains in place).

***Land preparation for evaluation of available local wheat varieties resistance to leaf rust resistance in Afghanistan experiment.***

A substantial challenge for applicants was budgeting and implementation planning, which has required more GRAIN staff assistance to Principle Investigators (PI) and Co-PI's than initially anticipated. Together with GRAIN's regional and operations teams, the Capacity Building Unit coordinated guidance for the three small grants applicants in Balkh, two in Herat, two in Nangarhar, and three in Kabul. This involved revising procurement plans, travel calculators, startup research materials inventory, and schedules for land preparation and seed sowing. GRAIN facilitated collaborative discussions with and among PI's, Deans of Agricultural Faculties and ARIA/DAIL senior management, to secure allocation of land required to conduct experiments, and liaised regularly MAIL/DAIL/ARIA leadership to provide progress updates.

*Table 7: Summary of Small Grants Program Concepts and Proposals as of December 2018*

#	Small Grants Research Title	University	Approved Budget	Status
1	Investigating Quality of Imported Wheat	Balkh	\$7,038	Approval expected January (Laboratory based)
2	Performance of Wheat Varieties Under Different Tillage Systems	Balkh	\$4,027	Seeds in the ground
3	Evaluation of Animal Manure and Urea Fertilizer Impact on the Quality of Bread Wheat Production in Balkh Province of Afghanistan	Balkh	\$4,664	Seeds in the ground
4	Effect of Integrated Animal Manure and NPK Application on Quality and Quantity of Wheat Varieties in Herat Province	Herat	\$8,851	Seeds in the ground
5	Study of Salinity Stress and Fertilizer Interaction on Yield and Physiological Characteristics of Wheat in Herat Province	Herat	\$9,999	Commencing in January 2019
6	Effect of weed management practices on wheat grain and straw yield	Kabul	\$3,593	Seeds in the ground
7	Evaluation of available Afghanistan local wheat varieties for leaf rust resistance and grain yield	Kabul	\$9,999	Seeds in the ground
8	Studies on seed borne disease of wheat and management of wheat black point ( <i>Alternaria alternata</i> ) with bio agent ( <i>Trichoderma viride</i> )	Kabul	\$10,000	Laboratory based and Commencing January

9	Effect of anti-transparent application on yield of wheat under limited irrigation	Nangarhar	\$6,255	Seeds in the ground
10	Wheat bread fortification with soybean and potato as a new bakery product	Nangarhar	\$8,661	Laboratory based and Commencing January

As proposal evaluations moved towards the final decision stage, a range of documentation was concurrently being drafted in Dari, Pashto and English, and included the Grants Implementation Manual, along with various agreement materials outlining mutual partnership expectations. These outputs were a result of extensive consultative meetings with university and MAIL/ARIA representatives, as well as PI's and their teams. Upon conclusion and co-signing, these documents will serve as a mainstay underpinning this round, and future collaborations between GRAIN, universities, MAIL/DAIL/ARIA and grantees.

Letters confirming funding approval for nine collaborative research experiments between universities and ARIA/DAIL were dispatched on November 9 to grant recipients, with the tenth (*Investigating Quality of Imported Wheat* research), expected to be confirmed early January. SGP funding has been released, with six grantees of the nine already reporting seeds in the ground. *Table 7* details the status of the ten experiments.

***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***

While efforts have been made in the past to map gender roles along various agricultural value chains, this does not seem to have been done for the wheat value chain. Additionally, the ability to design and implement social science research, such as gender-responsive value chain mapping, will enable universities and MAIL researchers to better target their research and extension efforts to audiences in each community based on current gender roles.

GRAIN is currently partnering with Kabul University [redacted] and GRAIN's MEL partner RSI to design and implement a wheat value chain assessment that is responsive to gender and family roles as well as responsive to regional differences to better understand the role of women along the wheat value chain, from production to processing and marketing. This study will draw extensively from secondary data and review of existing literature. Through this study, GRAIN will also have the opportunity to engage female university faculty and students as researchers, enumerators, and data analysts in a way that builds research capacity. To the extent possible, this study will sample communities in multiple agro-ecological zones.

Through several coordination meetings with Kabul University's [redacted], GRAIN and Kabul University have agreed for three Kabul University [redacted] to participate in the study. Significant progress on this activity is planned for Q2 during which time the study's literature review, methodology, measurement instruments (surveys, focus group protocols, etc.) will be developed collaboratively with GRAIN, Kabul University, and [redacted] with student training to commence in March and data collection to commence in April, pending approval by MSU's Institutional Review Board (IRB).

The results of this research will inform future GRAIN activities. For example, the value chain mapping can be a resource used by University faculty or MSc and PhD candidates when preparing their research proposals. It will also be a key tool in helping ARIA determine how to prioritize research and extension materials that are gender responsive.

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

Similarly, to PY1, GRAIN will facilitate workshops and seminars on gender-responsive and socially inclusive agricultural research during pre-proposal grantee workshops and annual research conferences, anticipated to begin in Q2-3. Gender-responsive research design and implementation training will also be a significant component of the pre-application training and workshops for interested grantees. During drafting of revised evaluation tools for grant concepts and proposals this quarter, GRAIN placed particular emphasis on social inclusion and the importance of directly including women alongside men in research (encouraging diversity among PI and Co-PI as well as student engagement as research assistants) and considering social inclusion as an analytical approach.

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

Feedback from the participants in PY1 indicated that gender-responsive and socially inclusive research are relatively new topics to many of GRAIN’s stakeholders (internal and external). Feedback from last year’s workshops outlined the additional effort required in this area, with some researchers being resistant to the concept, or misunderstanding what is gender-responsive research, and possessing a more simplified view of the definition of women’s empowerment programs. In PY2, this activity will require intentional sensitization with GRAIN stakeholders, to include program staff, ARIA and MAIL partners, subcontractors, and peer organizations.

The International Women’s Day events GRAIN will host or co-host this year with MAIL and ARIA will emphasize defining and understanding the importance of gender-responsiveness in research and extension design and implementation. This theme will be introduced at the inaugural Women in Agriculture International Speaker Series presentation in March. This event will connect GRAIN mentees and other female project beneficiaries to women from around the world who are leading research, extension, production, and innovation in various value chains. Speakers will be linked via webinar to participants gathered at GRAIN program offices where required logistical support is available. For the inaugural event, GRAIN has invited [redacted] as its inaugural guest speaker. As a leading advocate for women in agriculture and girls in science and technology, building on the legacy of her late grandfather [redacted], [redacted] would participate via webinar at the GRAIN sponsored event coinciding with International Women’s Day in March. GRAIN has also commenced discussions with the Catalyzing Afghan Agricultural Innovation (CAAI) project to pursue opportunities to co-host these events in the future.

## 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 35 field monitoring missions were undertaken in the quarter across project sites, including six in Balkh, seven in Herat, six in Kabul, four in Kandahar, and 12 in Nangarhar. Details of performance indicator data collected this quarter are available in *Annex 01: Performance Indicator Table* and *Annex 02: Explanation of PIT*.

Table 8: Summary of Monitoring and Evaluation Activities this Quarter

Activities	Oct	Nov	Dec
Weekly field monitoring by field MEL teams			



Preparing and uploading the field monitoring tracker and event reports to program team (bi-weekly)			
Collecting, recording, analyzing, and validating regional data			
Reviewing and cleaning data as it is input in the database			
Facilitating monitoring support meetings with regional teams			
Soliciting feedback from program teams for program learning workshop			
Facilitating quarterly program learning workshop			
Reporting MEL quarterly data, including Afghan Info			

### 3.2 Learning and Adaptation

#### **Ongoing Dialogue Between MEL and Program Teams**

Capacity development programming requires consistent interactive feedback and agile program response, to take full advantage of progress at each step, and ensure the program continues to meet the needs of those who may fall behind. With this intent, GRAIN’s MEL program includes both basic quantitative measures of progress (performance indicator tracking), as well as qualitative learning components and built-in reflection points for incorporation of learning. Sharing routine monitoring findings by the MEL team with program teams is integral to project learning. Using the project’s online project management and communication platform, Teamwork Projects, the MEL team shares field monitoring findings on a regular basis. At the end of December, the MEL team switched the reporting of monitoring findings from monthly to biweekly in order to provide more timely information to the program team. These findings were reviewed by program management and technical teams, and subsequent changes were incorporated into programming to improve implementation practices or clarify findings.

#### **3.3 Communications and Outreach**

As one focus of the all-staff “Focus on Progress, Learning and Team Strength” retreat, GRAIN staff participated in a refresher discussion of key aspects of GRAIN’s recently updated Strategic Communications Plan. Agenda sessions facilitated by the Communications Director and Communications Specialist reiterated the importance of accuracy in activity reporting, and Branding and Marking on USAID materials. They were joined by GRAIN’s Central Regional Director who led an open discussion on GRAIN’s partner and stakeholder engagement strategy, implemented during the first program year, and which continues to expand. The GRAIN team as a whole talked over various aspects of MAIL, ARIA, DAIL and partner university collaboration meetings, and GRAIN’s involvement at these meetings, which are intended to encourage timely information exchanges. Utilized as forums to supply program updates, canvass feedback and promote mutual collaboration in the design and maintenance of program activities, coordination meetings enable partners and stakeholders to interact with a variety of GRAIN project team members. These collaboration meetings are primarily guided by the Partner and Stakeholder Contact List, which as part of the overall communications plan, features the names and contact details of key partners and stakeholders with whom GRAIN staff routinely meet. They also receive periodic update emails, such as the program monthly highlights flyer. The Partner and Stakeholder Contact List is updated regularly, and reinforces GRAIN’s collaborative commitment to partners, stakeholders and the donor.

Complimenting GRAIN’s monthly highlights flyer, a bi-weekly Snapshot flyer was introduced from October, providing a brief, bulleted list of program achievements that is distributed to targeted recipients, including the MAIL POC and donor. GRAIN’s Facebook page continues to provide activity updates to a broad range of stakeholders that include university students, GRAIN

scholarship recipients, mentors, interns, MAIL/ARIA/DAIL employees, and a broader public wheat sector audience. This quarter “sharing” of GRAIN posts has increased over the previous, with social media continuing to increase as a means of outreach to a younger demographic within and linked to the wheat sector.

The Communications Unit continues to service high volumes of written/spoken translation layout needs. These include operating manuals, Work Plan activity agreement documentation like those required for Small Grants Program grantees and associated universities supporting experiments, refining PowerPoint presentations for orientation activities, such as internships and mentorships, and ongoing support for various training materials. A Safe Use of Pesticides poster used as a component of Environmental Compliance training was produced in English, Dari and Pashto, to support safe spraying of pesticides in accordance with GIRoA government environmental regulations (poster illustration under [Activity 3.8 Environmental Compliance](#)). In addition to GRAIN trainings, support from MAIL/ARIA/DAIL, partner universities and extension agents, will see these posters distributed extensively over coming months, as well as at specific GRAIN outreach events, such as Farmer’s Day and official ARIA conferences.

### 3.4 Partner and Stakeholder Collaboration

#### MAIL/DAIL/ARIA

Maintaining current relationships and broadening outreach to build new sector linkages continued throughout the quarter, ensuring MAIL, ARIA and DAIL leadership and staff in Kabul and at provincial level received regular face-to-face interaction, along with emails from GRAIN team members. At minimum, bi-weekly collaboration meetings with the ARIA Director General and ARIA Acting Director for Adaptive Research were convened to provide program updates, seek administrative guidance, and coordinate future planning and technical implementation. Similar meetings were conducted by GRAIN regional office representatives’ with DAIL/ARIA management in Balkh, Nangarhar and Herat discussing a broad range of matters, including trials, small grants, internships, mentorships and the upcoming call for Cohort 2 degree scholarship applications. GRAIN’s Badam Bagh office provides onsite access to ARIA senior management and staff, and enables regular interaction with departments including [redacted]

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*DAIL Director in Nangarhar addressing attendees at a GRAIN organized collaboration meeting.*

Regular phone discussions and email exchanges with GRAIN’s MAIL Focal Point [redacted], to provide a project update and detail next steps. In fact, in a meeting on December 10, the DM commented favorably on the high quality of GRAIN activities, and said he had indicated similar to the donor. He particularly complimented GRAIN’s close coordination with MAIL, indicating that other donor programs can learn from GRAIN’s model of participatory planning and transparent monitoring/reporting. GRAIN Advisor and CIMMYT Country Director, [redacted] together with GRAIN divisional managers, presented the draft *Roadmap for Wheat Breeding Programs* on December 19 to MAIL/ARIA leadership, who included [redacted], [redacted], [redacted], and [redacted]. This was a particularly productive gathering that facilitated extensive dialogue relating to future research planning, and human and organizational capacity needs.



Met MAIL [redacted] Media [redacted] on November 24, to provide an overview of the PY2 Work Plan and GRAIN communications strategy. The MAIL communications department assisted in promoting awareness of the GRAIN's Degree Scholarship Program, and is anticipated to again support the upcoming announcement for Cohort 2. In a meeting with the MAIL [redacted] on December 9, GRAIN's Capacity Building Program Manager and Gender Advisor discussed GRAIN's internship program. This was followed that day by a visit with MAIL's [redacted] updating her on the Women in Agriculture Research Mentorship program progress and associated PY2 activities supporting GRAIN's gender strategy.

***GRAIN team meeting with MAIL HR Director to discuss the Internship program.***

### **Universities**

This quarter saw extensive coordination efforts surrounding the launch of the internship program, and finalizing documentation to enable funds release and commencement of small grants program experiments. This necessitated multiple contacts during each week with University Deans, faculty, and staff, as well as PI's, to discuss to discuss such topics as partner agreement terms (and coordinate multiple signatures for each document), procurement lists and implementation schedules. These engagements were facilitated by GRAIN's regional offices, along with Kabul-based capacity building and communications teams. The mentorship program also required multiple discussions each week with university faculty representatives and mentees, who predominantly comprise fourth year students. The security situation in Nangarhar delayed travel to interview and select mentees in the province, which did proceed this quarter with the collaborative support of the Dean and faculty staff.

All partner universities worked closely with GRAIN teams in the regions and in Kabul to prepare and promote awareness of the second intake of applications for GRAIN's degree training program. This was especially relevant to Kabul University, which will also participate this year by accepting up to ten scholars. The GRAIN office located at Kabul University regularly host faculty staff, mentees and mentors, as well as visiting MAIL senior management.

### **Other Development Partners**

Meetings with other development partners this quarter included:

- Western Region Manager met FAO on October 3 to discuss Wheat Working Group;
- Northern Region Manager attend a collaborative meeting on Drylands Agriculture Policy with World Bank in Balkh on October 15;
- GRAIN's eastern region team participated in a coordination meeting in Nangarhar with the Adaptive Research Director ARIA, as well as AAIP and ICARDA (November 15);
- Collaboration continued with AAIP at the MAIL office in Kabul on December 9, with GRAIN providing briefings on implementation planning;
- Coordination meeting with CAAI and University Support and Workforce Development Program (USWDP) in Kabul on December 16; and
- GRAIN Central Region Manager met with AAIP finance specialist regarding financial management training for ARIA farm managers on December 22.

### 3.5 Security

Although the security situation remains unpredictable, no incidents significantly affected project implementation during this reporting period. However, security concerns delayed the Gender Advisor’s trip to Nangarhar to conduct mentee interviews during October, and she was later cleared to travel on 11 November. The trip to Jalalabad spanned three days and was incident free, with all work related tasks achieved successfully. Daily security appraisals for all provinces where GRAIN operates continue to be provided during the morning managers’ skype conference, which involves all GRAIN offices. The [redacted] team continues emailing security updates to all staff during the work day.

### 3.6 Staffing

The start of PY2 saw regional teams join their colleagues in Kabul for a four-day all-staff retreat, which served as a strategic reflection of PY1 program

*The all-staff retreat offered GRAIN teams the opportunity to collectively review and prepare PY2 strategies.*

implementation. It was an opportunity to collectively review

lessons learned, streamline current procedural policies and synchronize team goals. Held during the first week of December, “Focus on Progress, Learning and Team Strength” retreat sessions throughout the day included group planning discussions of activities such as scholarships, internships and wheat trials, along with reaffirming reporting procedures, and review of partner/stakeholder communications outreach. A fundamental purpose for this shared team exercise was to strengthen understanding of GRAIN program objectives and activities, and realign team efforts to deliver high-quality outputs within a cohesive, motivated and enthusiastic team framework.

Staffing numbers for the GRAIN project at conclusion of this quarter totals 26 (five female), including four internationals (two female). These staffing figures include embedded RSI staff who are members of the GRAIN MEL team. At the end of the quarter, selection for a new MEL Director is well underway by RSI. In the meantime, RSI’s senior leadership is providing interim support to ensure all MEL functions are fully supported. Recruitment is also underway for a new Director of Capacity Building, with 45 applications already received, many meeting GRAIN’s preferred criteria.

Table 9: GRAIN Staffing Updates, October-December 2018

Afghanistan Based Staff	Total Staff		Staff Hired		Staff Resigned or Terminated	
	Male	Female	Male	Female	Male	Female
<b>National Staff</b>	19	3	2	0	2	1
<b>Expatriate Staff</b>	2	2	0	0	0	0
<b>Total</b>	21	5	2	0	2	1

### 3.7 Sub-Awards

This quarter, GRAIN had an ongoing dialogue with ICARDA to finalize their PY1 deliverables. This is the last set of deliverables as the sub-award has not been renewed. GRAIN amended the sub-award agreement with CIMMYT, expanding and extending the scope of work through September 2019, as well as increasing the budget accordingly from \$46,771.30 to \$191,025.28. In addition to their work on the roadmap for a comprehensive national wheat improvement program, the amendment also added 1) support for ongoing technical support as [redacted]; 2) development and delivery of Beginner/Intermediate Data Analysis and Statistics Training for ARIA Regional Researchers; and 3) Development/Updating of the Trial Protocol Manual.

Purchase agreements for logistical support, risk management and security was consolidated under a single entity (redacted) in August 2018; the contract will need to be renewed in July 2019. The contract for expatriate lodging and headquarters office space (redacted) will expire at the end of February 2019 and contract negotiations are currently underway for the upcoming year.

### **3.8 Environmental Compliance**

An environmental screening process was conducted for all GRAIN field activities, which included concept proposals being evaluated for GRAIN Small Grants Program funding, and the support of agronomic trials implemented in collaboration with ARIA. A total of 11 SGP experiments are expected to be conducted at provincial universities in Kabul, Balkh, Herat and Nangarhar, with each subjected to assessment via an Environmental Review Form (ERF).

Three of the 11 SGP experiments were declared low-impact by the Agreement Officer Representative (AOR) and the Mission Environmental Officer, therefore only the Environmental Review Form (ERF) was needed for full compliance. The remaining eight grants were evaluated as a moderate risk to the environment, and in turn required a second level of screening involving the Environmental Review Record (ERR), which also includes the Environmental Mitigation and Monitoring Plan (EMMP). SGP grantees and ARIA farm managers will be required to submit a monthly report and mitigation action directly to GRAIN, which will be entered into the DMS, and provided on a quarterly basis to USAID. This reporting process will commence in the next quarter.

Similarly, GRAIN supported Agronomic Research Trials were screened, and followed an identical process as described in the SGP clearance process. The 21 agronomic trials were screened by the approved ERF/ERR clearance process, with an accompanying EMMP. Likewise, the reporting process is directed through GRAIN, with data then entered into the DMS. The GRAIN Environmental Monitoring Checklist consists of the following five categories:

1. Project phase and activity (example such as pesticide application);
2. Potential environmental impact (effects on human health and safety);
3. Proposed Mitigation action (container disposal);
4. Planned mitigation indicator (Dari and Pashto translated labels); and
5. Evidence of mitigation (description and photo documented evidence).

A third level of approval is required for purchasing pesticides for grants or trials, utilizing the Pesticide Procurement Form, which necessitates AOR/Contracts Officer Representative (COR) level clearance, and is found in the approved GRAIN Research and Innovation Environmental Manual. Any pesticide purchase request must be subsequently listed in USAID's Pesticide Evaluation Report and Safe Use Action Plan.



**Pesticide Applicator Safety Poster ready for distribution in Dari and Pashto**

Agricultural inputs used in the SGP and trials consist of seed, fertilizer, insecticides, fungicides and herbicides. The seed was not purchased, but provided by ARIA. There were seven winter wheat varieties and eight facultative wheat varieties. Three insecticides were approved, and are all low in mammalian toxicity. Two herbicides are in the low to moderately toxic category, and two fungicides for foliar application and seed treatment were approved for use by GRAIN; both being in the moderately toxicity

range. A total of five formulations of fertilizers will be used for trials and grants. Four products are considered macronutrient sources of NPK and one formulation was a micronutrient supplying Zn.

As a component of the Environmental Compliance training in March, GRAIN produced a Safe Use of Pesticides poster (above) focusing upon appropriate clothing required when using pesticides. For distribution primarily in Dari and Pashto through ARIA and DAIL, as well as university agricultural faculties and MAIL extension agents, the poster is the first in a series that strives to ensure pesticide application is conducted safely, and in compliance with Afghan government environmental regulations. All applicators are required to be trained and must score 90% on the pre/posttest. All applications must follow label directions for mixing, applying, storing and discarding of empty pesticide containers. All applicators must wear appropriate protective clothing, as described on product label.

### 3.9 Summary Budget

The first table below presents the PY2 budget plus PY1 carry forward in column two, by cost category and total (\$7,168,467). Expenditures for the reporting period are presented in column three, by cost category and total (\$867,376). Total expenditures for the fiscal year are presented in column four, by cost category and total (\$867,376). The total encumbered amount<sup>2</sup> is presented in column five (\$1,607,432.37). Percent expensed for the fiscal year, inclusive of encumbrances, is presented in column six, by cost category and total (35%). The second table below presents the LOP spending, including encumbrances, compared to the LOP budget and current obligation.

Table 10. Quarterly and Fiscal Year Spending

Cost Category	PY2 budget plus PY1 carry forward	Expenditures Period: Q1 October 1 to December 31, 2018	Total Expenditures Period: October 1, 2018 to September 30, 2019	Encumbrance	Percent Expensed, including Encumbrances Period: October 1, 2018 to September 30, 2019
Salary & Wages	1,042,291.75	226,949.60	226,949.60		22%
Fringe Benefits	278,833.83	23,833.87	23,833.87		9%
Allowance	211,835.61	30,856.38	30,856.38		15%
Travel	371,287.50	8,543.50	8,543.50		2%
Equipment & Supplies	169,685.36	5,729.22	5,729.22		3%
Sub-awards & Grants	390,000.00	0.00	-		0%
Other Direct Costs	3,685,797.17	392,481.62	392,481.62	1,607,423.37	54%
Indirect Costs	1,018,736.08	178,982.03	178,982.03		18%
<b>Total</b>	<b>\$ 7,168,467</b>	<b>\$ 867,376</b>	<b>\$ 867,376</b>	<b>\$ 1,607,423</b>	<b>35%</b>

Table 11. LOP Spending compared to LOP Budget and Obligation

Description	Total	LOP Expenditures, including Encumbrances	Percent Expensed, including Encumbrances
LOP budget	\$ 19,500,000	\$ 6,063,232	31%
Obligation	\$ 9,150,000	\$ 6,063,232	66%

<sup>2</sup> GRAIN encumbered money in Y1 to cover the full costs of educating the graduate students. This ensures that funds required for the entire degree program are reserved.