

CIMMYT Wheat Interventions in Afghanistan: ~~PRESENT~~ STATUS

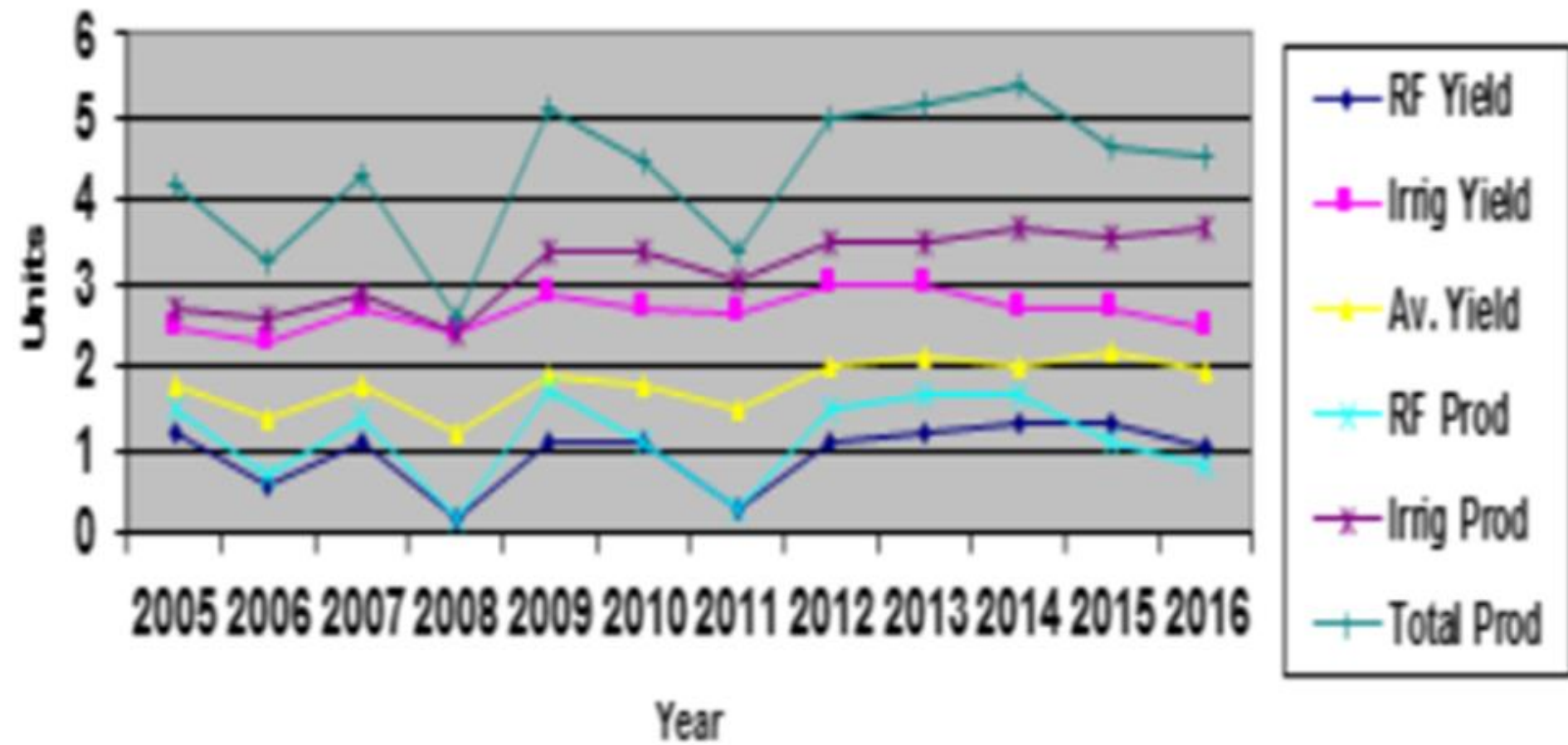
Rajiv K. Sharma

Senior Scientist & Country Representative

CIMMYT-Afghanistan



Afghanistan Wheat Production (m tonnes) and Productivity (t/ha) trends



Promising Lines from 2015-16

SN	Domain	Test Genotype	Pedigree	Average Kg/ha (2015-16)	% Superiority over checks		
					Check 1	Check 2	Check 3
1	Irrigated Condition at South west	NUT - IR -(SW)#2	PFAU/SERI.1B//AMAD/3/WAXWING/4/B ECARD	6710	105	106	108
2		NUT - IR -(SW)#7	NAC/TH.AC//3*PVN/3/MIRLO/BUC/4/2* PASTOR/5/KACHU/6/KACHU	6327	99	100	102
3		NUT - IR -(SW)#8	BECARD/FRNCLN	6817	107	108	110
4		NUT - IR -(SW)#9	FRNCLN/3/KIRITATI//HUW234+LR34/PRI NIA/4/FRANCOLIN #1	6481	102	103	105
5	Irrigated Condition at Central Highland	NUT - IR (CH)#3	PFAU/SERI.1B//AMAD/3/WAXWING/4/ BECARD	6489	112	99	111
6		NUT - IR (CH)#7	BECARD/FRNCLN	6033	104.4	92	103
7		NUT - IR (CH)#8	BECARD/KACHU	5895	102.1	90	101
8		NUT - IR (CH)#9	KIRITATI//HUW234+LR34/PRINIA/3/BAJ #1	6038	104.5	92	104
9	Irrigated Condition at North	NUT - IR (N)#2	PFAU/SERI.1B//AMAD/3/WAXWING/4/B ECARD	5716	106	93	-
10		NUT - IR (N)#3	KANCHAN*2/JUCHI	5515	102	90	99
11		NUT - IR (N)#4	BAJ #1/KISKADEE #1	5445	101	89	96
12	Irrigated Condition at East	NUT - IR (E)#5	BECARD/KACHU	4806	99	102	103
13		NUT - IR (E)#7	PRL/2*PASTOR	5120	105.7	108	110
14		NUT - IR (E)#8	BECARD/FRNCLN	4890	100.9	103	105
15		NUT - IR (E)#9	MUNAL*2/CHONTE	4918	101.5	104	105

Promising Lines from 2015-16

SN	Domain	Test Genotype	Pedigree	Average Kg/ha (2015-16)	% Superiority over checks		
					Check 1	Check 2	Check 3
1	Rainfed Spring type	NUT - RF #3	MTRWA92.161/PRINIA/5/S ERI*3//RL6010/4*YR/3/PA STOR/4/BAV92	4254	108	113	102
2		NUT - RF #5	KA/NAC//TRCH/3/DANPHE #1	4223	107	112	101
3		NUT - RF #8	WBLL1*2/4/BABAX/LR42/ /BABAX/3/BABAX/LR42// BABAX	4415	112	117	106
4		NUT - RF #9	SUP152/BLOUK #1	4239	108	113	102
5	Winter wheat (R)	NUT -WW-SA#2	RINA-6/4/BEZ/NAD//KZM (ES85.24)/3/F900K	3694	102	110	97
6		NUT -WW-SA#3	BDME 09 1/K	3484	97	105	92

Promising Lines from 2015-16

SN	Domain	Test Genotype	Pedigree	Average Kg/ha (2015-16)	% Superiority over checks		
					Check 1	Check 2	Check 3
1	Winter Wheat	NUT - WW - IR #4	ATTILA*2/PBW65 //YAKAR	6088	122	123	115
2		NUT - WW - IR #5	AWD99*5725/FL 9547	5720	115	116	108
3		NUT - WW - IR #7	ATTILA/2*PASTOR //YUMAI 29	5886	118	117	110



Promising Lines from 2015-16

SN	Domain	Test Genotype	Pedigree	Average Kg/ha (2015-16)	% Superiority over checks		
					Check 1	Check 2	Check 3
1	Durum Wheat	NUT - Durum#4	P91.272.3.1/3* MEXI75//2*JUP ARE C 2001/5/ARTICO/ AJAIA_3.....	6129	119	104	107
2		NUT - Durum#7	PLATA_7/ILBOR _1//SOMAT_3/3 /SORA/2*PLATA _12//.....	6496	126	111	114
3		NUT - Durum#6	1A.1D 5+1- 06/3*MOJO//RC OL/4/ARMENT//	6085	118	103	107



Promising Lines from 2015-16

SN	Domain	Test Genotype	Pedigree	Average Kg/ha (2015-16)	% Superiority over checks		
					Check 1	Check 2	Check 3
1	Heat Tolerant	NUT -HT # 2	PRL/2*PASTOR	6109	110	110	102
2		NUT -HT # 3	ATTILA*2/PBW65*2//W485/HD29	6178	111	111	103
3		NUT -HT # 5	SAUAL #1/KACHU	6008	108	108	100
4		NUT -HT # 9	PRL/2*PASTOR*2/ /VORB	6029	109	109	101

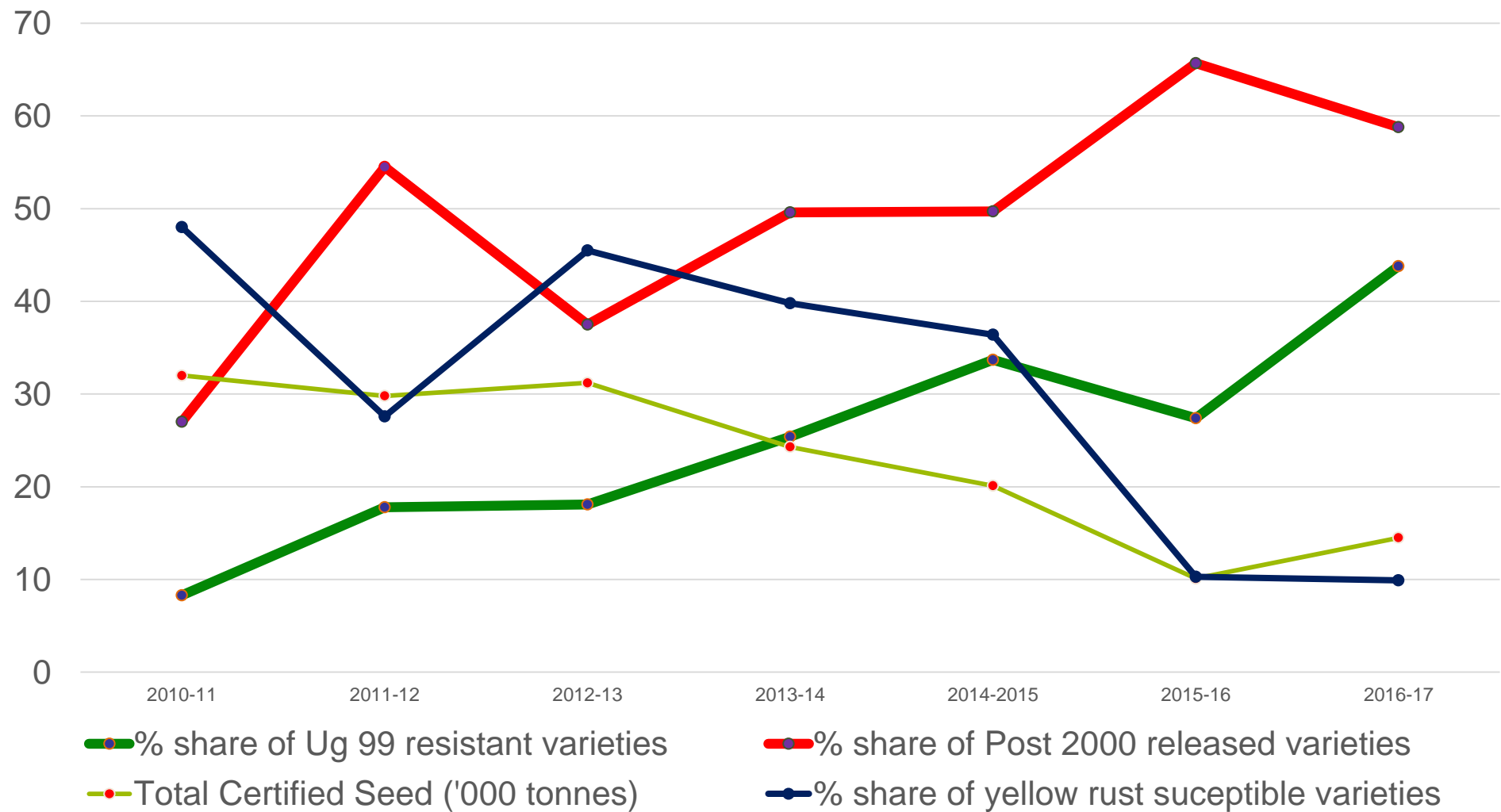


National Rust Screening Nursery: Seed Chain Varieties

NO	Variety	2016								2015*	2014*	2013*	2012*	CS
		BLK	BGL	HLM	HRT	KBL	KDH	TKR	NGR					
1	Mazar-99	TR	5MR	0	0	5R	0	0	0	0	10 MR	20 M	TR	
2	Parva-02	TR	5R	20MR	5R	0	0	0	0	0	TR	5 R	NA	
3	Solh-02	20MR	30MS	20MR	20MR	30S	TR	0	10MR	TR	TR	10R	10 MR	
4	Ghori-96	20MR	10MR	10MR	20MS	60S	10MR	0	10MR	10 MR	30 S	80 S	40 MS	830
5	Pamir-94	30MS	20MR	5R	10MR	10R	TR	0	10R	20 MR	40 MS	20 MR	40 MS	
6	Muqawim-09	5R	10MR	0	10MR	5R	0	0	5R	0	10 MR	40 MS	NA	
7	Sheshambagh-08	0	10MR	20MS	10MR	20MR	0	10MS	10MR	10 MR	10 MR	20 MR	20 MR	
8	PBW-154	60S	30MS	40MS	40MS	40S	40MS	0	TR	20 MR	30 S	80 S	20 MS	180
9	Dorokhshan-08	20MR	20MS	TR	0	10R	TR	0	TR	TR	20 MS	10 MR	5 MS	
10	Gul-96	5R	5MR	TR	0	0	0	0	20M	0	5R	20 MR	NA	
11	Lalmi-01	5R	10MR	5R	TR	0	TR	0	0	10 MS	5 MR	10 MR	0	
12	Lalmi-02	5R	10R	5R	0	10R	0	5MR	0	10 MR	TR	20 MR	20 MR	
13	Chonte#1	TR	5R	5R	20MS	10MR	20MS	0	0	TR	20 MR	10 R	NA	
15	Baghalan-9**	10MR	10MR	10MR	0	10MR	TR	0	10MR	10 MR	60 S	10 MR	NA	
16	Lalmi-03	TR	10R	0	TR	10R	0	0	0	TR	5 MR	0	TMR	
17	Darulaman-07	10R	10MR	0	TR	20MR	0	0	TR	5 R	20 S	20 MR	TR	
18	Daima-96	0	TR	0	5R	TR	0	0	0	10 MR	60 S	60 MS	20 MS	
19	Koshan-09	TR	10MR	0	0	10R	0	5MS	0	0	5 R	60 MS	20 M	
20	Herat-99	60S	30MS	0	40MS	80S	10MR	0	20M	20 MS	60 S	80 S	60 S	432

* 2015, 2014, 2013, 2012 data are best on most sever recorded.

Share (%)/ Quantity of Different Categories of Varieties in Wheat Certified Seed Production

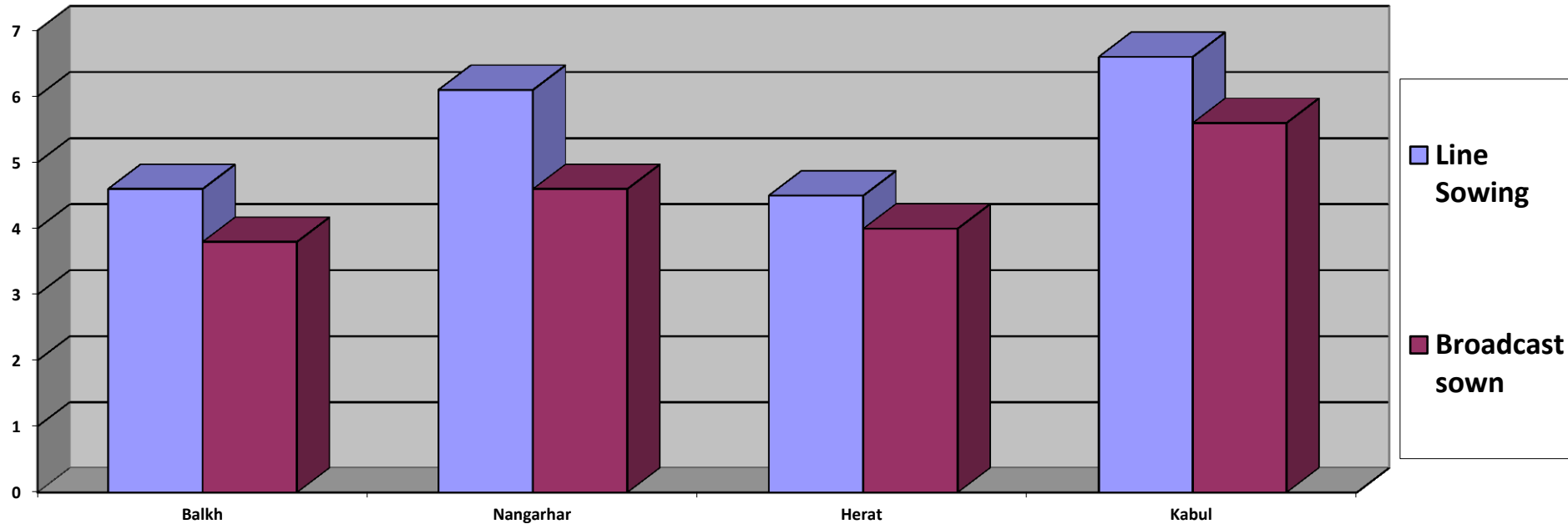


Yield in Farmer Fields

	Tons/ ha (difference %)	Irrigated*	Rainfed*
Demonstrations	Average	4.54 (39)	1.16 (45)
	Maximum	7.66 (70)	1.8 (28)
	Minimum	2.86 (48)	0.7 (40)
Farmer Practice	Average	3.28	0.8
	Maximum	4.52	1.4
	Minimum	1.94	0.5



Line Sowing Advantage



Impact: Research

Year	Crop	Experiments conducted	Experiments rejected	% Rejection
2012-13	Wheat	117	21	18
	Maize	6	2	33
2013-14	Wheat	151	10	7.2
	Maize	9	1	7
2014-15	Wheat	132	2	1.5
	Maize	14	0	0



Seed Shared by Demo Farmers

	2015-16		
Province	# of demos	Shared with	Ratio
Kabul	120	525	4.3
Nangarhar	120	240	2
Herat	160	700	4.37
Balkh	140	320	2.4
Total	540	1640	3.07

Production Management Recommendations 2015-16

No	Crop	Issue	Location	Optimum	Prob 'F'
1	Winter wheat	Date of planting	C: Kabul	Oct 25 – Nov 10	0.01
2			N: Baghlan	Nov 25 – Dec 11	0.01
3			SW: Kandahar	Dec 01 - 15	0.01
4			E: Nangarhar	Nov 01 - 15	0.01
5		Seed rate	C: Kabul	100 – 110 Kg/ha	0.05
6			SW: Helmand	90 – 100 Kg/ha	0.02
7	Facultative wheat	Seed rate	C: Kabul	110 – 120 Kg/ha	0.01
8			SW: Herat	110 – 120 Kg/ha	0.02
9			E: Nangarhar	90 – 100 Kg/ha	0.01
10	Rainfed	Date of planting	N: Balkh	Nov 12 - 22	0.02
11			N: Baghlan	Dec 01 -16	0.01
12			C: Kabul	Nov 08 - 18	0.01
13		Seed rate	N: Kunduz	80 – 90 Kg/ha	0.01
14			N: Baghlan	80 – 90 Kg/ha	0.02
15			SW: Helmand	70 – 80 Kg/ha	0.01
16	Testing different level of fertilizer (N & P2O5) on facultative wheat.		C: Kabul	N, 110 P, 70 Kg/ha	0.01

Capacity Building/ Engagement

No	Items	Years					
		2012	2013	2014	2015	2016	Total
1	Trainees Sent Abroad	8	17	10	11	26	72
2	Researcher Benefited from in Country Trainings & Workshops	200	147	214	118	44	679
3	DAIL's Extension Workers & Farmers Attended Field Days & Trainings	0	275	889	522	478	1686

Afghanistan Wheat Collection

- Total of **1667** sown for rejuvenation, characterization and DNA analysis.
- Total of **1171** germinated genotypes characterized and sent to Mexico for DNA analysis.

Note: Remaining 496 genotypes didn't germinate due to old seed and poor storage conditions.



Communications

1. Sharma, RK and ML Jat 2015. Potential CA interventions to boost productivity of wheat based cropping systems in Afghanistan. At: IWC, Sydney
2. Ghanizada et al., 2015. Seasonal variation in yellow rust incidence in Afghanistan during last few years. At: 14th International CR & PM Conference, Helsingor.
3. Rizvi et al., 2015. The history of wheat breeding in Afghanistan. In: The world wheat book, vol. 3.
4. Sharma, RK. 2016. Wheat blast in South Asia: Should we fear? Current Science, vol 111, No. 7
5. Obaidi et al., 2016. Employing phenology to delineate wheat agro-climatic zones in Afghanistan. JAS, vol. 9, no. 1



THANK YOU



QUESTIONS ???