Kazakhstan-Siberia Network on Spring Wheat Improvement (KASIB)

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Omsk State Agrarian University named after P.A. Stolypin

KASIB Network

- KASIB was established by CIMMYT in 1999 to unite the research and breeding efforts of the program and institutions in Kazakhstan, Western Siberia and Ural region of Russia.
- Russia
  - Altay Agric. Research Inst. (Barnaul)
  - Kurgan ARI
  - Kurgan-Seed (private company)
  - Omsk State Agric. University
  - Samara ARI
  - South-East ARI (Saratov)
  - Siberian ARI (Omsk)
  - Siberian Crop Science Inst. (Novosibirsk)
  - Chelyabinsk ARI
- Kazakhstan
  - Aktyube Agric. Exp. Station
  - East-Kazakhstan ARI (Ust-Kamenogorsk)
  - Kazakh Grain Research Inst. (Shortandy)
  - Kazakh Farming Inst. (Almaty)
  - Karagandy Crop Science Inst.
  - Karabalyk Agric. Exp. Station
  - Pavlodar ARI
  - Fiton Private company

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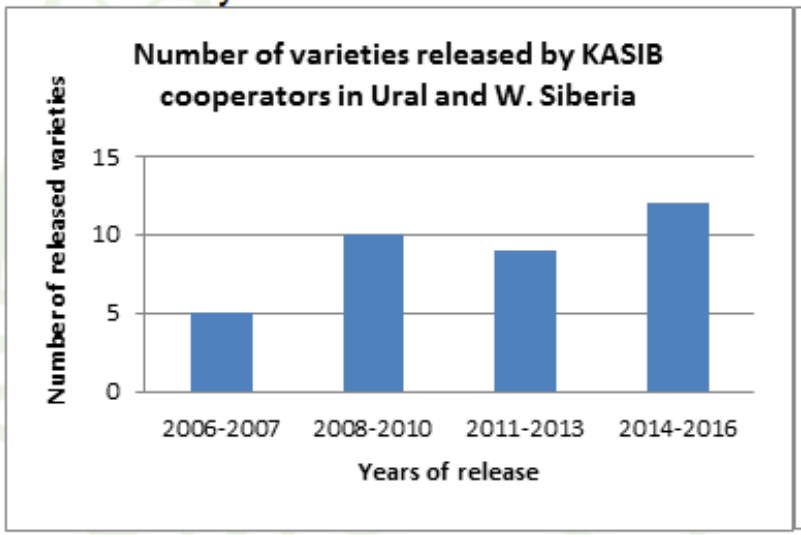
Development of new varieties

1. Cooperative evaluation of spring breeding material for selection of the best variety candidates prior to their submission the State Release Commission.
   36 spring bread wheat varieties released by KASIB institutions in Ural and West Siberia regions from 2005 till 2016 (http://www.gossort.com); also 36 varieties released by KASIB cooperators in Kazakhstan during the same period including 8 Russian varieties. The additional grain production due to KASIB varieties is estimated in tens of millions of USD annually.



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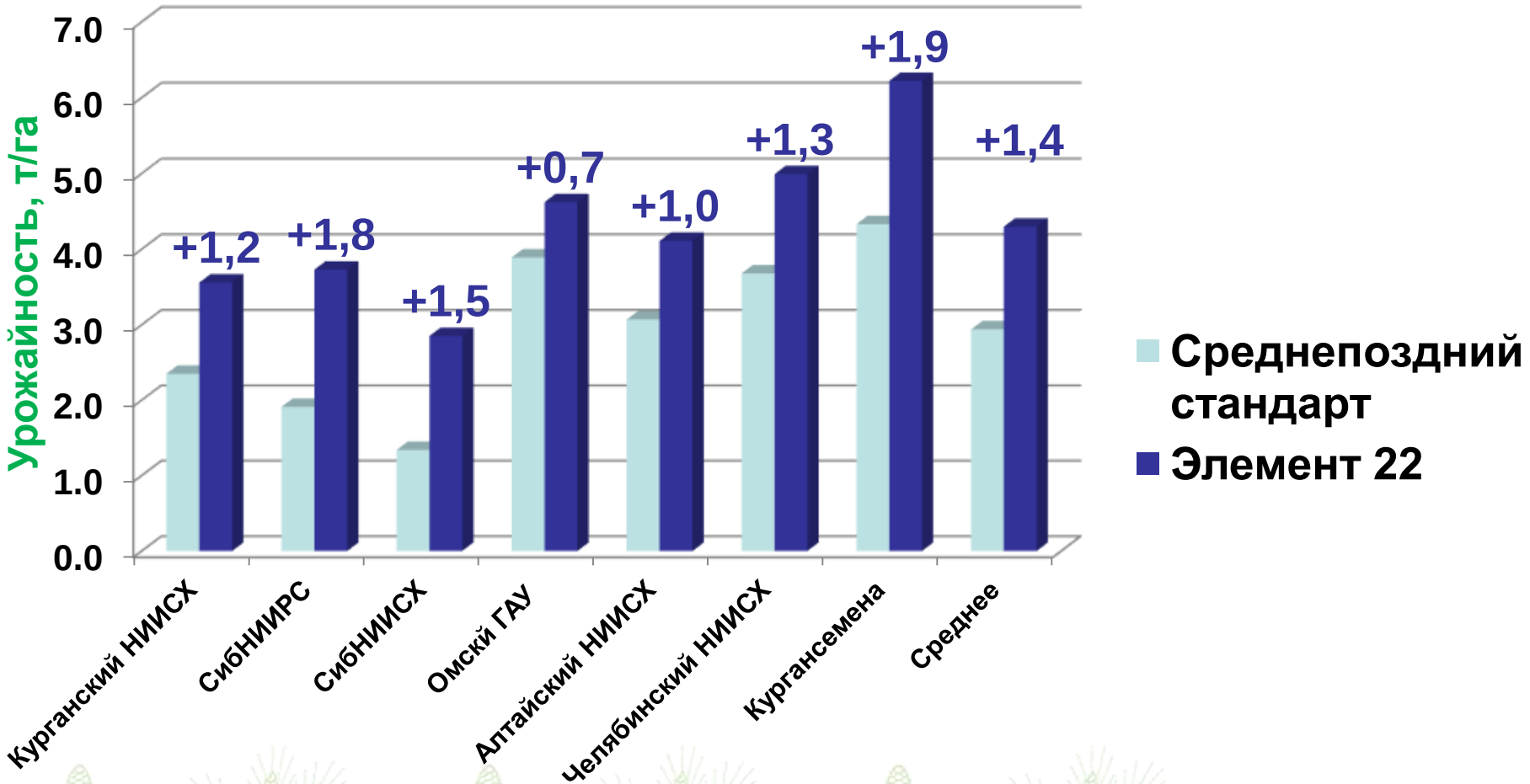
Урожайность нового сорта Элемент 22 (Эритросперум 85- 08) в различных экологических условиях, в т/га



Учреждения сети КаСиб

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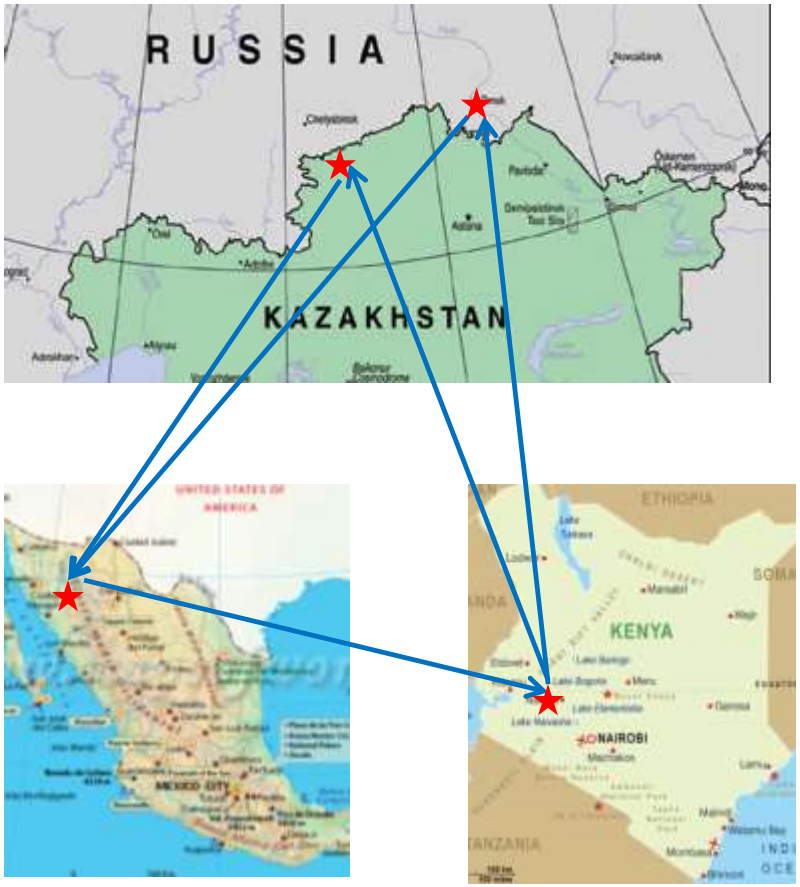
Shuttle breeding

- Shuttle breeding by incorporation of global wheat genetic resources to enhance resistance to diseases, especially leaf and stem rust.
- As a result of shuttle breeding program between CIMMYT and KASIB more than 10,000 populations and lines were evaluated in Russia and Kazakhstan and more than 2,000 combining adaptation and disease resistance were selected.
- The best lines already submitted for official state testing and varieties Sigma (Russia) and Stepnaya-60 (Kazakhstan) already released and cultivated by farmers.
- Due to the global threat of Ug99 stem rust systematic efforts were undertaken to screen KASIB germplasm in Kenya. Overall more than 1800 asseccions were tested in 2008-2015 and more than 150 resistant to pathogene in Russia and Kazakhstan were selected. This resistant set was distributed to all KASIB cooperators as well as to other wheat breeding programs in Russia and Kazakhstan.



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Количество линий и сортов, отобранных из популяций челночного материала СИММИТ в российских НИУ на завершающих этапах селекционного процесса, 2016 г.

Учреждение-оригинатор	Количество сортов и линий, отобранных из популяций челночного материала, шт.		% от общего количества сортообразцов в питомнике		Доля челночного материала в селекционном процессе, %
	КСИ	Размножение	КСИ	Размножение	
Самар. НИИСХ	1	1	2,0	11,1	**1,2**
Чел. НИИСХ	9	1	18	20	**25,3**
Кургансемена	1	-	2,4	-	**13,8**
Кург. НИИСХ	79	-	30,0	-	**33,5**
ГАУ Сев. Зауралья	2	-	12,0	-	**54,0**
Омский ГАУ	17	3	77,3	37,5	**54,1**
СибНИИСХ	5	-	8,3	-	**4,8**
СибНИИРС					**25,4**

Training

- Training and integration of Russian and Kazakh wheat researchers and breeders unto global scientific community:

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Информация об обучающихся из Евразийских стран

Всего обучающихся – **795**

Из них:

- **По программам ВО - 784**

Бакалавриат – 580

очное- 414

заочное- 166

Магистратура – 84

очное- 52

заочное- 32

Специалитет – 120

очное- 106

заочное- 14

- **По программам СПО – 10**

очное- 9

очно-заочное - 1

8 специальностей СПО
19 направлений бакалавриата
16 направлений магистратуры
2 специалитет

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Всего обучающихся по всем направлениям и специальностям ВО и формам обучения

Уровень подготовки	Казахстан		Кыргыз-стан		Узбекистан		Туркменис-тан		Таджикис-тан	
	очн	заочн	очн	заочн	очн	заочн	очн	заочн	очн	заочн
бакалавриат	406	161	4	0	1	2	2	0	0	1
магистратура	52	32	0	0	0	0	0	0	0	0
специалитет	106	14	0	0	0	0	0	0	0	0
всего по формам обучения	564	207	4	0	1	2	2		0	1
всего обучающихся	771		4		3		2		1	

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Количество обучающихся по программам ВО

№ п/п	Направление подготовки (бакалавриат, магистратура)	Количество обучающихся
1	**Агрономия**	**83**
2	**Землеустройство и кадастры**	**65**
3	**Экономика**	**62**
4	Агроинженерия	55
5	Продукты питания из растительного сырья	46
6	Агрохимия и агропочвоведение	43
7	Природообустройство и водопользование	38
8	Продукты питания животного происхождения	37
9	Ветеринарно-санитарная экспертиза	31
10	Менеджмент	31
11	Зоотехния	25
12	Садоводство	25
13	Эксплуатация транспортно-технологических машин и комплексов	25
14	Стандартизация и метрология	23
15	Лесное дело	21
16	Экология и природопользование	21
17	Техносферная безопасность	20
18	Геодезия и дистанционное зондирование	9
19	Товароведение сырья и продовольственных товаров	4
№ п/п	**Направление подготовки (специалитет)**	**Количество обучающихся**
1	**Ветеринария**	**99**
2	Прикладная геодезия	7

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KASIB Funding

- Financial support to KASIB Network was provided by different organizations:
- CIMMYT
- FAO
- World Bank
- Melinda and Bill Gates Foundation
- CRP WHEAT
- Ministry of Agriculture, Republic of Kazakhstan
- Ministry of Finance of Russian Federation through Eurasian Food Security Center, Moscow State University named after Lomonosov
- Starting from 2013 **Eurasian Center for Food Security** supported CIMMYT (through CGIAR Fund Council) activities for Kazakhstan-Siberia network on spring wheat improvement in order to develop new varieties and stabilize grain production in Western Siberia, Kazakhstan and Central Asia.

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CIMMYT Funding proposal for Russia funding for 2017-2021

Activities	Details of annual activities
1.1. KASIB Cooperative trial*	Yield trial with 70-80 entries conducted at 10 cooperating Russian institutes
1.2. KASIB Shuttle breeding*	Development of new germplasm, its evaluation and selection at 10 cooperating Russian institutes
2.1. Training of Russian wheat scientists**	2-3 young scientists trained at CIMMYT-Mexico for 3 months; 3-5 wheat scientists attend international meetings
2.2. Training of Kazakh and Central Asian scientists**	1-2 young scientists trained at CIMMYT-Mexico for 3 months; 2-3 wheat scientists attend international meetings
2.3. Central Asian students education in Russia**	3-5 Master degree students education at Omsk State Agrarian University
Grand total	

Support letters for this proposal: Altai ARI (Barnaul), Kurgan ARI, Siberian Crop Res. Inst. (Novosibirsk), Omsk State Agric. University, Tyumen Agric. Academy, Kurgan Semena private company.

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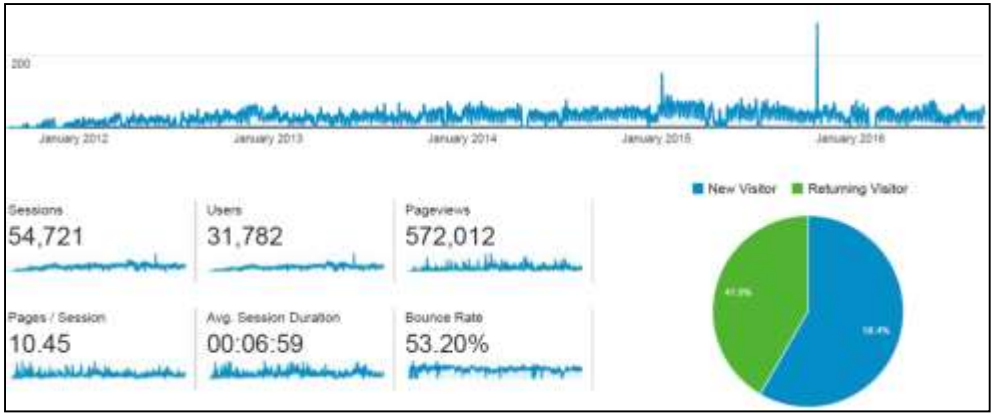
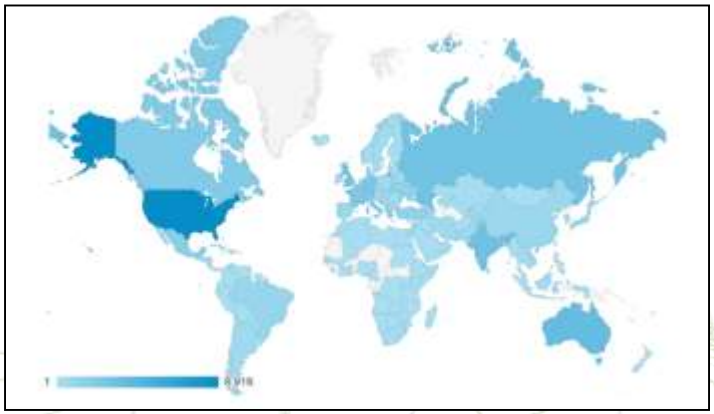
Russia-CAC-CIMMYT potential collaboration areas: GRIS

- Genetic Resources Information System: wheatpedigree.net
- 174.417 wheat varieties information: pedigree, country, status, agronomic traits, genes with references

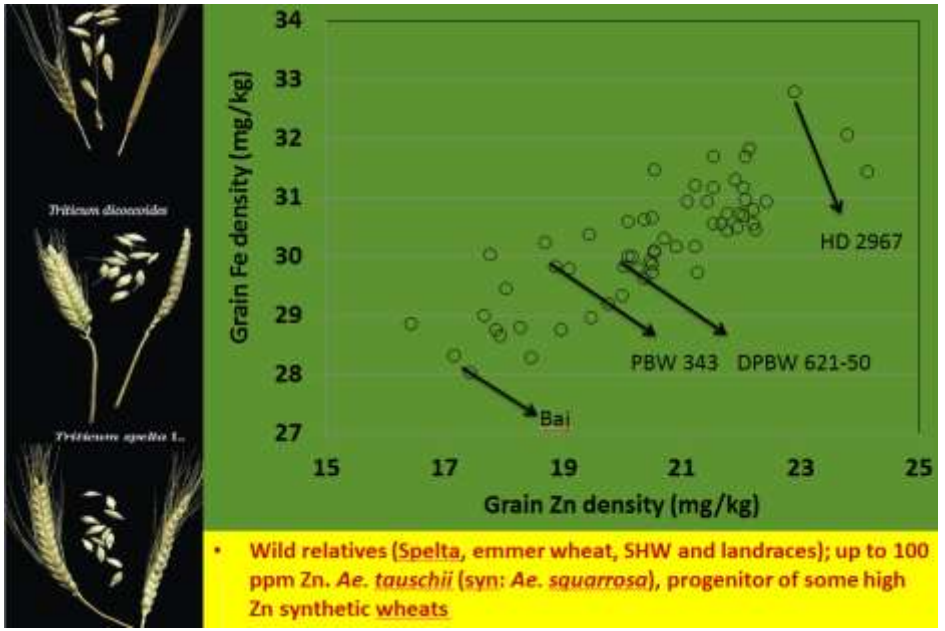




Country	Acquisition			Behavior		
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration
	54,721 % of Total: 100.00% (54,721)	58.39% Avg for View: 58.04% (0.54%)	31,951 % of Total: 100.54% (31,779)	53.20% Avg for View: 53.20% (0.00%)	10.45 Avg for View: 10.45 (0.00%)	00:06:59 Avg for View: 00:06:59 (0.00%)
1. United States	8,919 (16.30%)	61.16%	5,455 (17.07%)	57.60%	7.02	00:05:05
2. Australia	3,656 (6.68%)	40.54%	1,482 (4.64%)	31.97%	14.31	00:09:17
3. India	3,200 (5.85%)	70.12%	2,436 (7.62%)	64.94%	8.34	00:04:58
4. Russia	2,970 (5.43%)	26.67%	792 (2.48%)	40.54%	16.48	00:10:30
5. United Kingdom	2,799 (5.12%)	52.47%	1,464 (4.58%)	46.81%	13.79	00:08:25
6. Germany	2,589 (4.73%)	50.52%	1,308 (4.09%)	46.54%	12.39	00:07:57
7. France	2,435 (4.45%)	51.29%	1,249 (3.91%)	38.36%	13.56	00:08:49
8. Canada	2,108 (3.85%)	57.60%	1,216 (3.81%)	52.18%	8.66	00:06:32

Russia-CAC-CIMMYT potential collaboration areas: healthy wheat grain

- Iron and Zink deficiency in less developed countries affect 2-3 billion people especially children
- Increase Fe and Zn content in grain by 30-40% will improve health of huge population
- Zn-Shahti variety released in India, Zinkol variety released in Pakistan
- Purple grain wheat



Russia-CAC-CIMMYT potential collaboration areas: wheat pre-breeding

- Vavilov Institute and CIMMYT Gene Bank hold huge collections of wheat and wheat relatives.
- They are maintained, kept but under-utilized
- Focused utilization of genetic resources for major biotic and abiotic stresses
- Synthetic wheat already studied and utilized in Omsk State Agric. University

	Genome	CIMMYT	World	No. Utilized	% used
Triticum dicoccum	AABB	779	??	24	3
Triticum dicoccoides	AABB	880	1390	31	2
Triticum timopheevii	AAGG	280	640	2	0
Triticum monococcum	AA	880	1520	120	8
Triticum urartu	AA	392	516	21	4
Aegilops speltoides	(~BB) SS	140	540	34	6
Aegilops bicornis	(~BB) S^bS^b	14	28	0	0
Aegilops longissima	(~BB) S^lS^l	10	59	2	3
Aegilops tauschii	DD	400~600	1144	400	35

Russia-CAC-CIMMYT potential collaboration areas: hybrid wheat

- Main reason for private companies to move into wheat breeding
- Syngenta-USA: first commercial hybrids will be available in 2020
- Du-Point: 70 people team working on HW
- CIMMYT program on HW
- Identification of traits important for hybrid wheat

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Russia-CAC-CIMMYT potential collaboration areas: Perennial wheat

- Land Institute, Kansas, US
- Alternative strategies

16ENTRY	NAME	OC	Donor Wheatgrass species
101	MADSEN//CHINESE SPRING/PI531718	US-WSU	Th.elongatum
102	MADSEN//CHINESE SPRING/PI531718	US-WSU	Th.elongatum
103	MADSEN//CHINESE SPRING/PI531718	US-WSU	Th.elongatum
104	TAM110/PI401201//JAG & 2137	US-TLI	Th.intermedium
105	TAM110/PI401201//JAG & 2137/3/PI520054/4/PI401168/5/(TAM110/PI401201//JAG & 2137)	US-TLI	Th.intermedium
106	PI573182/BFC2-4//BFC2-N/3/PI440048/4/(TAM110/PI401201//JAG & 2137)/5/(PI636500/PI414667//PI414667/3/(PI573182/PI314190//BFC1-FF))	US-TLI	Th.intermedium
107	PI634318/PI414667	US-TLI	Th.junceiforme
108	KANDURA1137/C3-3891	US-TLI	Th.intermedium
109	(KEQIANG/NANDA2419)/AG.INTERMEDIUM//WHEAT	CHINA	Th.intermedium
110	(KEQIANG/NANDA2419)/AG.INTERMEDIUM//WHEAT	CHINA	Th.intermedium
111	HEZUO#2/AG.INTERMEDIUM//WHEAT	CHINA	Th.intermedium
112	WHEAT-AGROPYRON INTERMEDIUM PARTIAL AMPHIPLOID	RUSSIA	Th.intermedium
113	WHEAT-AGROPYRON PONTICUM PARTIAL AMPHIPLOID	RUSSIA	Th.ponticum
114	NODAK/AG.INTERMEDIUM	US-MSU	Th.intermedium
115	WHEAT-AGROPYRON PONTICUM PARTIAL AMPHIPLOID	US-OSU	Th.ponticum
116	WHEAT-AGROPYRON PONTICUM PARTIAL AMPHIPLOID	OTHER	Th.ponticum
117	VILMORIN 27*2/AG.INTERMEDIUM	FRANCE	Th.intermedium
118	WHEAT-AGROPYRON PONTICUM PARTIAL AMPHIPLOID	USA	Th.ponticum
119	T.DURUM/AG.ELONGATUM	CIMMYT	Th.elongatum
120	WHEAT-AGROPYRON INTERMEDIUM PARTIAL AMPHIPLOID	RUSSIA	Th.intermedium
121	TH.INTERMEDIUM (PERENNIAL CHECK)	US-TLI	
122	JL#24	SWE-SLU	
123	JL#46	SWE-SLU	
124	JL#118	SWE-SLU	
125	BEZOSTAYA1	RUSSIA	
126	UKR-OD 952.92/AE.SQUARROSA(1031)		
127	PER.GRASS CONTROL	TUR	

Russia-CAC-CIMMYT potential collaboration areas: joint conferences and training

- Integration in global research community
- 2010 International Wheat Conference in St. Petersburg
- Central Asian Wheat Conferences in Kazakhstan and Kyrgyzstan
- 2017 International Winter Wheat Travelling Seminar Krasnodar-Rostov
- ……

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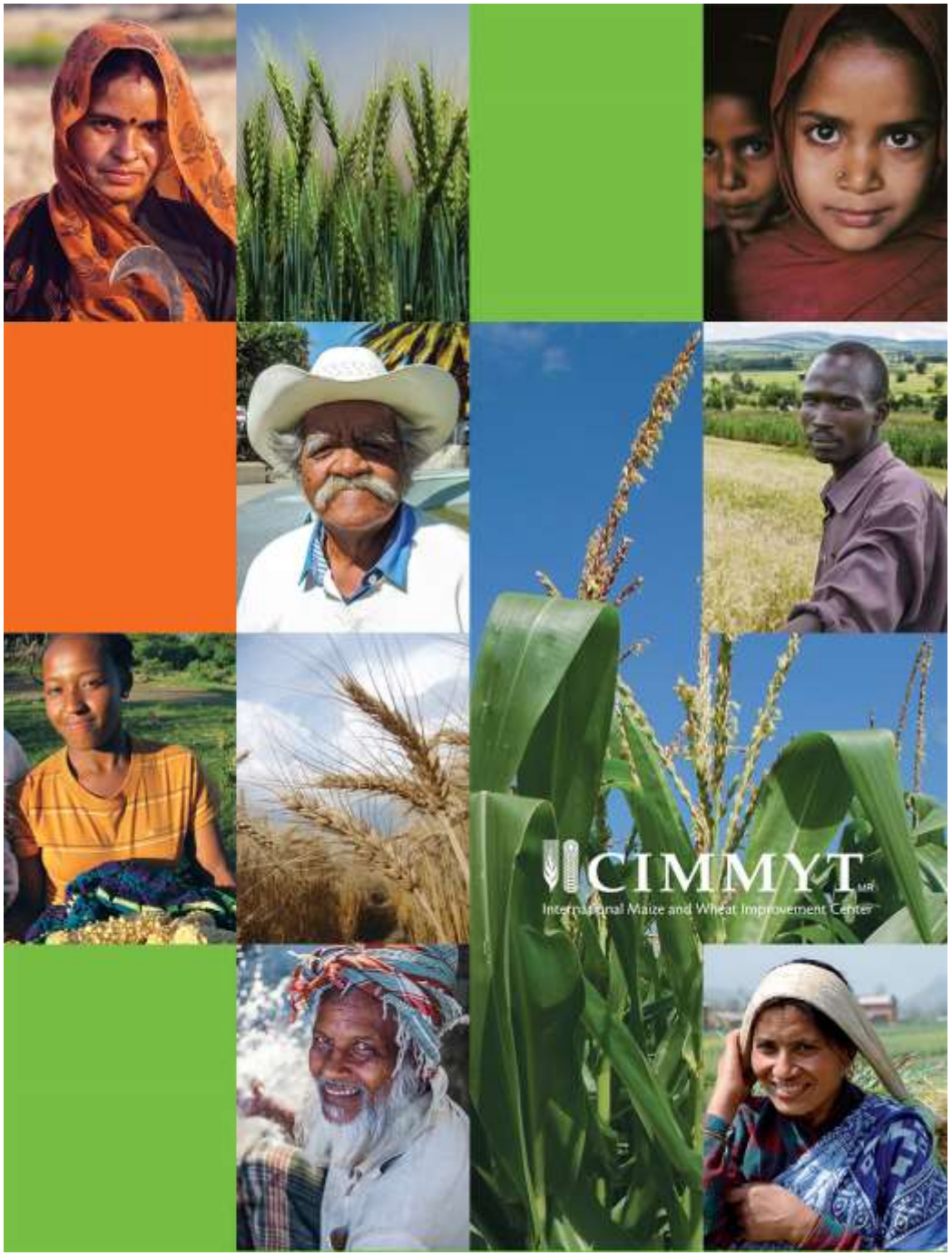

Thank you for your interest!