a major challenge to wheat breeding efforts. To achieve this goal, purposeful collaborative work was initiated in 1996 by Kyrgyz Agricultural Cooperative ‘MIS’, CIMMYT-Turkey and CIMMYT-CAC. Since 2004, this work has been further supported by ICARDA and SIDA across the diverse agro-climatic zones of the country with elevation ranging from 500 to 2000 masl. The wheat improvement efforts have focused on developing improved varieties with yield potential of 9 to 10 t/ha, possessing resistance to diseases and high end-use quality. Annual crop losses caused by rust diseases (*Puccinia striiformis* f. sp. *tritici* and *P. triticina*) in Kyrgyzstan are 10-30%. In 2001, an epiphitotic of yellow rust was recorded in Kyrgyzstan with crop losses estimated between 70 and 90%. A few hundred resistance lines were selected, that went through breeding program for adaptation to ecological conditions, and yield trials were conducted for selection of the most promising lines. The advanced lines from yield trials were sent to Kenya for testing their reaction to stem rust. These lines are being further evaluated in three ecological zones of Kyrgyzstan: Issyk-Kul, Naryn and Chu regions. Besides these yield trials, germplasm received in the international nurseries from CIMMYT and ICARDA are regularly tested and promising lines are advanced to advanced yield trials. These international collaborations have resulted in development of new wheat and triticale varieties – ‘Azibrosh’, ‘Almira’, ‘Jamin’, ‘Zubkov’, ‘Zagadka’, ‘Aichurek’, ‘Keremet’, ‘Merim-MIS’, ‘Cholpon’, ‘Alesha’ and ‘Missim’. Also, a number of promising lines and varieties resulting from the International and National programs in Kyrgyzstan are being further evaluated in competitive varietal yield trials. These include ‘Petr’, ‘Hans’, ‘Suleiman’, ‘Maksat’ and Farhad. Simultaneously, preliminary seed production of promising varieties is being carried out.

61. Effect of crop season on stem rust epidemics and identification of resistant bread wheat genotypes to current stem rust population in Ethiopia

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In Ethiopia, wheat grows in two seasons, March to July and August to December. Hundred five to 205 obsolete/commercial and advanced bread wheat genotypes, and 220 other advanced genotypes were planted in two-rows of 1m x 0.4m plot either in one or both seasons and evaluated from 1996 to 2004 and 2008, respectively. In 2009, forty seven stem rust resistant genotypes selected from preliminary evaluation in 2008 were re-evaluated at Agarfa, Ethiopia and Njoro, Kenya in two-rows of 1m x 0.4m plot using either artificial inoculation of Ug99 variants or natural stem rust epidemics enhanced by susceptible variety as spreader rows. This work was done with the objectives to characterize stem rust epidemics variation by seasons and to identify stem rust resistant genotypes. Stem rust epidemics varied by seasons, with low severity between March to July and high severity between August and December. More number of wheat genotypes was found infected in the latter season. However, susceptible and resistant bread wheat cultivars predominantly and invariably escaped stem rust infection in the March to July crop season. Thus, this season can be exploited as one of the method of stem rust management options. Out of genotypes evaluated over years to stem rust in August-December, K6295-4A is the most resistant variety in Ethiopia. Among genotypes evaluated in Ethiopia and Kenya in 2009, ETBW5538,
ETBW5540, ETBW5542, ETBW5545, ETBW5559, ETBW5576 ETBW5579 and ETBW5584 were found to be as resistant as the best standard check cultivar, K6295-4A.

62. Ukrainian and Russian common wheat varieties carrying the stem rust resistance gene Sr1RSAmigo conferring resistance to Ug99
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Till the end of the 20th century the rye stem resistance gene Sr31 located on the 1BL/1RS translocation, the most widespread alien translocation among commercial varieties (Rabinovich 1998), was effective to all known stem rust races. However, with the appearance of the race Ug99 (TTKSK) with virulence to Sr31 (Pretorius 2000) in Uganda, later in Kenya and with the threat of its further spread, the situation dramatically changed. Among the genes conferring resistance to the stem rust race TTKSK is Sr1AR, located on the rye 1AL/1RS translocation from Amigo (Jin 2006), which is also designated Sr1RSAmigo (Olson et al. 2010). The 1AL/1RS translocation is the second wide-spread alien translocation among the commercial varieties. In most varieties it derives from the variety Amigo developed in the USA in 1976. The fragment the rye chromosome 1R in Amigo derives from the Argentinean rye Insave through the octoploid triticale Gaucho (Sebesta and Wood 1978).

In connection with the threat of spread of the stem rust race Ug99, of importance is identification of wheat material with effective stem rust resistance genes, in particular, identification of varieties with the rye 1AL/1RS translocation. The objective of our investigation was identification of the 1AL/1RS translocation among Ukrainian and Russian common wheat varieties using storage proteins as genetic markers. The secalin block Gli-A1w (GLD 1A17) is a convenient biochemical marker for the 1AL/1RS translocation and, thus, this Sr gene.

The material of investigation included 226 winter common wheat varieties of Ukrainian breeding and 24 Ukrainian spring common wheat varieties. Acid polyacrylamide gel electrophoresis of gliadins from 10–20 single seeds of each variety was performed by the procedure of Kozub and Sozinov (2000).

The allele Gli-A1w, which is a marker for the 1AL/1RS translocation, was identified in eight winter common wheat varieties of Ukrainian breeding (Expromt, Kolumbia, Zolotokolosa, Smuglyanka, Vesnyanka, Monolog, Rastavitsa, Knyaginya Olga) and in one spring variety (Etyud). Among the Russian varieties analyzed, the rye 1AL/1RS translocation was identified in the winter variety Bogdanka.