Stem rust evaluation in Kenya. During the off-and regular season of 2008 a good evaluation of resistance to stem rust in Kenya was conducted. The previous two years failed to produce reliable data. In 2008, more than 700 IWWIP entries were evaluated and approximately 120 entries were identified that possess variable degrees of resistance (a sample is presented in Table 3, p. 191). Personally conducting the evaluation in Kenya was very important, because it allowed a good feel for the germ plasm and confidence in selection. The data singled out F_2 and F_3 segregating populations, tracing their pedigree to resistant parents. Respectively, a stem rust Ug99-resistant F_3 was assembled and distributed in Turkey and outside (Iran, Azerbaijan, and Kazakhstan). The selected entries are being multiplied in Turkey and Oregon, USA, for international distribution. Subsets were sent to Cornell University for haplotyping and to the Cereal Disease Laboratory for seedlings tests to identify possible genes. The selected entries will be used for targeted crosses.

ITEMS FROM THE UKRAINE

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Change in the climate and sowing dates of winter wheat.

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The best conditions for winter wheat yields are at emergence during the 55–60 days in autumn. Winter wheat, planted at both early and late sowing dates, have insufficient winter hardiness and considerably reduced yield ability. When sown earlier than the optimal date, plants develop a heavy aboveground mass and, thus, loose more moisture and nutrients in the autumn than those sown at the optimal date. On the contrary, late-sown plants fail to develop sufficient vegetation and root systems and can not fully use water and nutrients (Zubets MV 2004). The sowing date also influences the phytosanitary state of the wheat crop.

Early sown plants are damaged by Hessian and other flies, cereal aphids, cicadas, and also, to a greater degree, by root rots, brown leaf rust, powdery mildew, Septoria, and virus diseases (Rakhmaninov 1925; Bockman and Knout 1971; Pavlov 1976; Susidko et al. 1976). At the same time, later sown plants are damaged more severely by spring generations of flies (Zagovora 1953) and wheat sawflies (Begzadyan 1984; Peresypkin 1976).

The dependence of winter wheat yield on sowing date was studied at the Plant Production Institute nd. a. V. Ya. Yuriev of the UAAS (the eastern Forest-Steppe of Ukraine) from 1914-17, 1937-41 (Solodkyi 1959), 1970-72 (Matushkin 1985), 1987-90 (Budyennyi et al. 1992), and 2001-07 (Krasilovets et al. 2007). According to these multi-year studies, particularly 1914-90 in the latitude of Kharkov, maximum grain yield in winter wheat after fallow forecrops was obtained when sown on the 25 August (Table 1). When the sowing took-place on 15-18 August, crop yield was 94–96 % compared to the 25th. Sowing on 1, 10, and 20 September reduced this index to 97–99%, 90–92%, and 75–81%,

Table 1. Average yield of winter wheat on fallow at different sowing dates in experiments at the Plant Production Institute nd. a. V. Ya. Yuriev, Ukraine, % of maximum (* maximum yield, t/ha).

Sowing date	1914–17	1937–41	1970–72	1987–90	2001–04	2004–07
15–18 August	94	99	—	97	—	—
25 August	100 (2.55)*	100 (2.20)*	100 (4.54)*	100 (5.21)*	—	—
1 September	—	97	98	99	—	96
10 September	92	90	92	92	96	100 (5.36)*
20 September	75	—	78	81	100 (6.51)*	9-6
25 September	50	—	—	68	98	—

respectively. These studies indicate the optimal sowing dates for winter wheat were 25 August–10 September for the southern Forest-Steppe of the Eastern Ukraine.

Studies between 1987–90 have shown that, for such forecrops as annual grasses, maize for silage, and barley, the highest winter wheat yield was achieved when the crop had been sown from 25 August and 10 September (Budyennyi et al. 1992). Starting roughly from 2001, the highest winter wheat yield was obtained when sown between 10–20 September or 15 days later than in previous years. This phenomenon is conditioned by a rise in temperature. The average yearly temperatures in the latitude of Kharkov rose from 69°C during 1910–66 to 8.1°C between 1981–2000, and to 9°C between 2001–07. This index, compared to the previous period, increased by 1.2°C betweem 1981–2000 and 21°C between 2001–07.

In the latitude of Kharkov between August–October 1969–71 and 1986–89, the average monthly temperatures came nearer to the climatic norm. From August–October 1969–71, the average air temperature was 0.3°C higher and 0.1°C higher in 1986–89 compared to the climatic norm. Since 2001, the average monthly temperature in the Kharkov latitude has risen considerably (August–October, see Table 2). On average during 2001–08, this index exceeded the climatic norm by 1.7°C.

Table 2. Hydrothermal conditions in the latitude of the Plant Production Institute nd. a. V. Ya. Yuriev, Kharkov, Ukraine.

Month	Average montly air temperature (°C)			Total monthly precipitation (mm)			Hydrothermal coefficient		
	2001–08	Climatic norm	± norm	2001–08	Climatic norm	± norm	2001–08	Climatic norm	± norm
April	9.6	8.2	+1.2	32.6	35.7	–3.1	—	—	—
May	16.5	15.4	+1.1	44.9	47.9	–3.0	0.9	1.0	–0.1
June	19.4	19.4	0.0	81.0	63.5	+17.5	1.3	1.1	–0.2
July	22.7	21.3	+1.4	80.2	64.2	+16.0	1.2	1.0	+0.2
August	22.2	20.0	+2.2	44.9	55.2	–10.3	0.8	0.9	–0.1
September	15.7	14.2	+1.5	51.7	38.0	+13.7	—	—	—
October	8.8	7.3	+1.5	47.1	35.0	+12.1	—	—	—
7-month index	16.4	15.1	+1.3	382.4	339.5	+42.9	1.1	1.0	+0.1

These studies have shown that between 2003–05, the planting of winter wheat on both black fallow and after peas between 10–20 September, when compared to 1 September, favor a considerable improvement of the phytosanitary state. Planting winter wheat on black fallow on 20 September reduced damage by flies in the autumn by 91.5%, and after a pea forecrop by 96.0 %, compared to the planting on 1 September; the biological efficiency of root rot development with these forecrops in this period was 53.1 and 90.7 %, respectively. The yield increase of winter wheat sown on black fallow on 20 September was 1.42 t/ha after a pea forecrop and 0.64 t/ha after sowing on 1 September (Krasilovets et al. 2006).

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ITEMS FROM UNITED KINGDOM

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Genetic biodiversity for stripe and stem rust resistance in African wheat genotypes.

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This new program, launched in February 2008, involves the genetic and phenotypic characterisation of over 500 African wheat genotypes for resistance to the new virulent stem rust, *P. graminis* Ug99-derived strains, and to stripe rust, *P. striiformis*. Stem rust resistance will be assessed in field trials in Njoro, Kenya, the first trial taking place in March 2009, and by seedling tests. This collection also will be assessed for stripe rust resistance in South Africa and the UK. The population is being assessed for molecular diversity using SSR and AFLP markers. This program is a collaboration between Dr. Lesley A. Boyd at the JIC, Norwich, UK; Prof. Zakkie Pretorius and Dr. Renée Prins of the University of the Free State, Bloemfontein, RSA; Dr. Ruth Wanyera, KARI, Njoro, Kenya; and Dr. Susanna Dreisigacker, CIMMYT, Mexico. The student working on this project is Mr. Turnbull Chama. This work is supported by UK, BBSRC/DfID funding under the Sustainable Agriculture Research for International Development (SARID) initiative.

Fine mapping of durable resistance to stripe rust in the South African wheat cultivar Kariega.

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The objective of this study is to use an EST marker strategy to fine map previously identified QTL for effective adult-plant resistance to stripe rust in the cultivar Kariega. Two major QTL have been identified, *QYr.sgi-7D* and *QYr.sgi-2B.1*, as well as minor QTL, which included *QYr.sgi-4A* and *QYr.sgi-2B.2*. All evidence indicates that the 7D QTL is the *Lr34/Yr18* complex. To date, one EST-derived marker has mapped to each of the 2BS intervals, and one marker has mapped to 4AL in the target QTL interval. These ESTs provide anchors for further EST-derived marker development within the QTL intervals. This program is a collaboration between Dr. Lesley A. Boyd at the JIC, Norwich, UK and Profs. Zak-