Table 3. Comparison of four foliar fertilizer treatments on eight traits of paratill cultivated wheat. Means in a column with different letters are significantly different at 0.05 probability level (Duncan test). BY: biological yield, GY: grain yield, HI: harvest index, TKW: 1,000-kernel weight, GN: grain number, PN: plant number, SN: spike number, and SS: seed number/spike.

Treatment	BY (g/m^2)	GY (g/m^2)	HI (%)	TKW (g)	GN (n^o/m^2)	PN (n^o/m^2)	SN (n^o/m^2)	SS (n^o)
T_0	1,224.67 A	394.33 A	32.20 A	31.40 A	12,576.33 A	177.33 A	485.00 A	26.00 B
T_1	1,280.67 A	389.67 A	30.63 A	32.93 AB	11,758.67 A	167.33 A	544.33 A	23.00 AB
T_2	1,289.33 A	387.33 A	30.33 A	32.93 B	11,758.67 A	168.00 A	535.00 A	23.33 AB
T_3	1,247.33 A	400.33 A	32.10 A	31.87 AB	12,564.00 A	168.00 A	517.33 A	24.33 AB
T_4	1,231.67 A	359.67 A	29.50 A	31.17 A	11,537.67 A	164.33 A	528.33 A	22.00 A

ITEMS FROM AFGHANISTAN

CIMMYT
P.O. Box 5291, Kabul, Afghanistan.

Mahmood Osmanzai, M. Aziz Osmanzai, and Tom Payne.

The 2007 harvest of wheat in Afghanistan was good, due to normal environmental conditions during both winter and spring. The extent of drought and high temperature was typical for Afghanistan. Consequently, yield levels were normal. Yellow rust levels on wheat were low to high at various testing sites. Cereal balance at the national level in 2007 is presented in Table1.

Table1. Cereal balance in Afghanistan in 2007.

Crop	Area ($x10^6$ ha)	Production ($x10^6$)	Surplus/deficit ($x10^6$ t)
Irrigated wheat	1,071	2,878	
Rain-fed wheat	1,395	1,606	
All wheat	2,466	4,484	-433
Rice	170	370	-93
Maize	137	360	0
Barley	236	370	0
All cereals	3,009	5,584	-526

The overall wheat price was $250/t in October 2006 and increased to $320/t, an increase of 13.4% on the previous month and 29.8% increase on the same month of last year.

Wheat is the number one staple crop in Afghanistan and is grown almost everywhere in the country. Winter wheat is grown in central areas where winters are cold. A small number of hectares of spring-sown wheat is grown in areas where it is too cold for winter wheat or when autumn planting is missed. Mainly spring and facultative types are sown in the autumn in most parts of the country. Most of the rain-fed crops are grown in early spring. Maize and rice are important summer cereal crops in Afghanistan, but because of two decades of unrest and 5 years of drought, maize and rice have received less attention. Six-row barley is grown and mainly used for feeding horses in the northern provinces where they are used for transport. Hulless barley is used in central areas as food either direct or mixed with faba bean for the preparation of special breads

The seed policy now calls for certified seed production to be grown by farmers. The total amount of certified wheat seed produced in 2007 was 7,900 t by NGOs, and the public and private sectors. Five NGOs, six Improved Seed Enterprises, Agriculture Research Institute of Afghanistan (ARIA) farms, and 12 recently established, private seed enterprises in 10 provinces with initial support from the FAO continue to produce certified wheat seed. Breeder and foundation seed in 2007 was produced by implementing partners such as the FAO and ARIA.

Two wheat lines have been released by the ARIA and the Ministry of Agriculture, Irrigation and Livestock (MAIL) with technical support of CIMMYT–Afghanistan. **Darulaman-07**, from the cross WEAVER/4/NAC/TH.AC//*3PVN/3/MIRLO/BUC (origin 23rd ESWYT #30) and **Ariana-07** (PASTOR/3/KAUZ*2/OPATA//KAUZ, origin 23rd ESWYT #34).

In collaboration with ARIA, three lines of bread wheat were identified as candidate cultivars for release consideration in 2008 (Table 2). These lines have been tested at multiple locations in Afghanistan for the past 4 years. To further confirm their performance, these lines are being tested at 10 sites in the National Uniform Trial (NUT) in Afghanistan. Four promising bread wheat lines were identified based on their performance in the 2004–05, 2005–06, and 2006–07 yield trials by a project in collaboration with ARIA and the FAO. These lines are being further tested in advanced yield trials at multiple sites (Table 2).

Table 2. Bread wheat lines in consideration for cultivar release in 2008 or under Advanced Yield Trials.

Cross	Origin
Lines considered for release in 2008	
Prl/2*Pastor	24th ESWYT#47
CROC_1/AE.SQUARROSA (205)//KAUZ/3/ATTILA	35th IBWSN#157
SW89.5181/Kauz	35th IBWSN#228
Lines from advanced yield trials:	
SW89.5181/KAUZ	25th ESWYT#5
Cal/NH//H567.71/3/Seri/4/Cal/NH//H567.71/5/2*Kauz/6/WH576/7/WH542	25th ESWYT#8
Fiscal	25th ESWYT#13
Yubileinaya75/3/Agri/Bjy//Vee/4/Pyn/Bau	24th ESWYT#47

Table 3. High-yielding bread wheat lines with adult-plant resistance for stem rust in testing at ten sites in Afghanistan in 2006–07.

Cross	Origin
WBLL1*2/4/YACO/PBW65/3/KAUZ*2TRAP//KAUZ	2nd EBWYT#9
WBLL1*2/KURUKU	2nd EBWYT#10
WBLL1*2/KUKUNA	2nd EBWYT#14
CAL/NH//H567.71/3/SERI/4/CAL/NH/H567.71/5/2*KAUZ/6/PASTOR	2nd EBWYT#17
NAC/TH.AC//3*PVN/3/MIRLO/BUC/4/2*PASTOR	2nd EBWYT#19
MILAN/KAUZ//PASTOR/3/PASTOR	2nd EBWYT#27

Several high-yielding bread wheat lines with adult-plant resistance or specific resistance genes were identified and are being tested in the National U Trial at 10 diverse sites in Afghanistan (Table 3). These lines will provide high-yielding, stem rust-resistant cultivars to the farmers in the next 2 years.

Yellow rust.

The wheat-cropping seasons of 2003–04 and 2005–06 were dry, making assessment of yellow rust during these seasons impossible. However, the 2004–05 and 2006–07 cropping seasons were conducive to yellow rust infection in the eastern and central regions of Afghanistan. The 2007 data shows susceptibility of PBW 343, which indicates the presence of new virulence to *Yr27*. We found that it was useful to keep the plots for rust evaluation under frequent irrigation and demonstrated to ARIA. In 2006–07, 28 lines of Avocet were planted at the Kunduz, Heart, Nangarhar, and Kabul research stations.

Ug99 is a threat, and concerned people and partners are informed. Selected lines with adult-plant resistance are being tested further for adaptation and yield. High-yielding bread wheat lines with adult-plant resistance or specific resistance genes were identified and are being tested in the NUT at 10 diverse sites in Afghanistan in hopes of making high-yielding, stem rust-resistant cultivars available to the farmers in the next 2 years.

ITEMS FROM ARGENTINA

CORDOBA NATIONAL UNIVERSITY
College of Agriculture, P.O. Box 509, 5000 Córdoba, Argentina.

The usefulness of crossing methods in recurrent selection schemes.

R.H. Maich.

During 20 days of September and October 2007, one technician emasculated and approach pollinated 229 wheat and 125 triticale spikes. A total of 17,482 fertile florets were emasculated and 13,767 hybrid seeds were obtained, with a seed set of 78.7%. Approximately 39 hybrid seeds per spike or parent combination enabled a field evaluation of the S_0 progenies that were evaluated under rain-fed and no-till field conditions using one-row plots, 1.3-m long and spaced 0.20 m apart, with a seeding rate of 100 seeds/m^2. In order to obtain the next cycle of the recurrent selection scheme applied in both species, a selection index consisting of 11 traits was used. At the moment, we are in the sixth (triticale) and ninth (wheat) cycles of recurrent selection.

Morphophysiological changes of wheat seedlings after six cycles of recurrent selection.

G.B. Melchiore and R.H. Maich.

The objective of this study was to measure the genetic progress for several seedling morphophysiological wheat traits after six cycles of a recurrent selection scheme conducted under rain-fed conditions. The cycles were characterized through eight variables measured in laboratory: length of the first leaf, number and length of seminal roots, dry weight of the radical system, dry weight of the aerial biomass, and the relation of root to shoot. Except for the seminal radical system dry weight, the remaining traits showed significant differences between the mean values corresponding to the different cycles. Among the recurrent selection cycles evaluated, a negative tendency was verified for both dry weights. In conclusion, the seedling aspects were not neutral with respect to the selection pressure applied to the more conspicuous grain-yield components. A probable progressive adaptation was attained in order to diminish the consumption of water before anthesis, conserving more water for the period in which the number of seed is determined.

An agronomical approach to higher performance in rain-fed bread wheat.

A.C. Masgrau and R.H. Maich.

The results reported here were obtained from an experience carried out during 2006 at Monte Cristo (Province of Cordoba). No-till bread wheat was cultivated on soybean and corn residue. The stored soil water (0.0–1.6 m) was estimated by means of gravimetric measurements. The soil moisture contents were 133.6 mm (soybean residue) and 147.2 mm (corn residue). The soybean residue soil analysis included organic matter (2.55 %), N–NO_3^- (9.6 ppm), S-SO_4^- (1 ppm), and phosphorus (21.9 ppm).

Three bread wheat genotypes were evaluated. On soybean residue, each genotype was cultivated under the following treatments: normal seeding rate (90 kg/ha) with and without phosphorus and at a low-seeding rate (45 kg/ha) with and without phosphorus. On corn residue each genotype was cultivated under a normal and low-seeding rate (without phosphorus). Each treatment was 1 ha. For phosphorus fertilization (15 kg P/ha), triple superphosphate was used. Bread wheat cultivated on soybean residue performed better than that cultivated on corn residue (two q/ha). De-