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Research Bulletin

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**Results of the
Fourth International
Winter Wheat
Performance Nursery**

by

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North Central Region
Agricultural Research Service
U. S. Department of Agriculture

Office of Agriculture
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The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska - Lincoln
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The assistance of personnel in the Plant Production and Protection Division, Food and Agriculture Organization of the United Nations in making nursery seed shipments to testing sites and nursery inspections at Near East sites is acknowledged. We acknowledge also the continued assistance and cooperation of wheat personnel of the International Maize and Wheat Improvement Center, Mexico, D.F.

We express our sincere appreciation to all of these organizations and people.

SUMMARY

The Fourth International Winter Wheat Performance Nursery was grown in 1972 at 44 sites in 27 countries. Data were reported from 40 sites. The 30 cultivars grown in the nursery included 15 new entries. Twenty-nine cultivars were winter wheats; one was a spring wheat. Data are reported on grain yield, test weight, plant maturity, plant height, lodging, shattering, winter survival, 1000 kernel weight, frost damage, plant diseases, grain protein and lysine content. Two-year mean data summaries also are reported. Supplemental nursery management information is reported for each nursery site.

The nursery mean yield from 38 sites in 1972 was 35.5 q/ha. Individual nursery mean yields ranged from 14.4 to 71.3 q/ha. Bezostaya 1, a winter cultivar from Krasnodar, U.S.S.R., was the most productive cultivar on the average over all reporting sites in 1972. Sava (Yugoslavia), Dacia (Romania), Probstdorfer Extrem (Austria), and Zlatna dolina (Yugoslavia) all produced at least 95% of the mean yield of Bezostaya 1. The wide range of adaptability for these cultivars is indicated by their performance in the nursery in 1972. Bezostaya 1 (USSR), Centurk (Nebraska), Blueboy (North Carolina), and Probstdorfer Extrem (Austria) were the highest yielding cultivars on the average for the two years of 1971 and 1972.

Cultivar means for test weight from 14 sites in 1972 indicate the superiority of Bezostaya 1, Dacia, C.I.15074 (Nebraska), and Rousalka (Bulgaria).

Maturity differences were large between the 29 winter cultivars tested. Nearly 21 days difference existed on the average between the earliest (Rousalka) and the latest (Starke) cultivars grown in 1972.

There was excellent expression of the genetic potential for high grain protein content in Atlas 66 and its derivative cultivars, NE701132 and C.I.15074, in the 1972 IWWP. Relationship between yield level and protein content was not consistent at individual nursery sites.

Cultivar differences in plant height, shattering, lodging, disease resistance and other agronomic traits are discussed.

Results of the Fourth International Winter Wheat Performance Nursery

J. E. Stroike, V. A. Johnson, J. W. Schmidt, P. J. Mattern and
K. D. Wilhelm¹

PROCEDURES

Nursery seed for planting was provided to each cooperator in the approximate quantity requested. Each cooperator was encouraged to adjust row length and spacing to achieve a seeding rate most compatible with local practice. Nursery size is restricted to 30 entries grown in 4 replications.

Data fieldbooks in duplicate accompanied the seed shipment to each nursery site. One completed book was returned to Lincoln, Nebraska, following harvest. A 10-gram seed sample from each harvested plot was also returned to Lincoln for protein and lysine analyses in the University of Nebraska Wheat Quality Laboratory.

CULTIVARS

Fifteen new cultivars were grown in the 1972 IWWPB and 15 were retained from the 1971 nursery. Cultivars are usually grown in the nursery for at least two years. Exceptions to this were Winter Triticale (NB69150) and NS732 grown in 1971 but not 1972. NB69150 was entered in the nursery for only one year, primarily to acquaint cooperators with this germplasm. NS732 was included in the 5th IWWPB in 1973 for its second year of evaluation. Four check cultivars were retained; namely, Bezostaya 1, Blueboy, Atlas 66, and Lerma Rojo 64.

Pedigrees and origins of cultivars in the nursery are given in Table 1. All possess the winter habit of growth except Lerma Rojo 64, a spring type included to provide comparative performance data on spring and winter cultivars from plantings in regions with mild winters. The cultivar, Lilifen, was submitted from a winter x spring

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crossing program, and has been determined by Martinic² to have no vernalization requirement.

Some cooperators included local winter cultivars in the nursery. They were placed at the end of replications. Their performance has been included herein from all sites reporting such data.

NURSERY SITES

The 4th IWWPN was grown at 44 sites in 27 countries. Four of the sites were in the southern hemisphere countries of Argentina, Brazil and Chile. These nurseries are grown about six months later than those in the northern hemisphere. A list of nursery sites and cooperators appears in Table 2.

Field data were received from 40 sites. Seed samples were received from Kunduz, Afghanistan, but the fieldbook was not received in Lincoln. The nursery failed at Shalimar, India due to adverse production conditions. In the southern hemisphere, the Temuco, Chile nursery could not be planted due to excessive rainfall, and the seed for planting the Balcarce, Argentina nursery was misplaced in shipment.

NURSERY MANAGEMENT

Details of nursery management at each site are summarized and reported on pages preceding the table of nursery data. The information includes dates of seeding and harvest, precipitation, irrigation, fertilization, disease development, pest problems, and general description of production conditions.

Fertilizer was applied to 37 of 40 nurseries from which data were reported. Substantial use of irrigation water was reported from only 7 sites. Of the 31 sites that reported no substantial use of irrigation, 28 provided information on the amount of precipitation received for the cycle of the test or a longer period. In this group, 54% received less than 500mm, 32% received from 500 to 1000mm, and 14% received over 1000mm of precipitation.

Diseases reported included *Puccinia graminis tritici*, *Puccinia recondita*, *Puccinia striiformis*, *Erysiphe sp.*, and *Septori sp.* Other hazards or problems identified by cooperators included weeds, bird damage, and insect damage (armyworm, aphids, etc.), which were generally kept under control.

²Personal correspondence with Dr. Z. Martinic.

Table 1. Cultivars grown in the Fourth International Winter Wheat Performance Nursery, 1972.

Name	Origin	Pedigree
Atlas 66	North Carolina, USA	Fronoso/2/Redhart/3/Noll 28
Backa	Yugoslavia	Heine VII/129 genus
Bezostaya 1	USSR	Lutescens 17/Skorospelka 2
Blueboy	North Carolina, USA	Brevor/Norin 10/Anderson/ Coker 55-9
Caribo	West Germany	Cappelle Desprez/Carstens VIII
Carifen 12	Chile	Dijon*2/4/Norin 10/Brevor 14/3/27-15/2/Rex-Rio
Centurk	Nebraska, USA	Kenya 58/2/Newthatch/3/Hope/ 2*Turkey/4/Cheyenne/5/ Parker
C. I. 15074	Nebraska, USA	Warrior/2/Atlas 66/Comanche /3/C. I. 13548
Clarion	Netherlands	H 10/2/Carpo/Generoso
Dacia	Romania	Bucuresti 1/Skorospelka 3
Diplomat	West Germany	Merlin/Format
Hokuei	Japan	Turkey Red II/Martins Amber /2/Tohoku 67
Jyva	Finland	Kakko//1/Varma/G5-20/Kehra
Kirac 66	Turkey	Florence/Yayla 305
Lerma Rojo 64	Mexico	Lerma Rojo/4/Lerma 52/3/ Norin 10/Brevor/2/Yaqui 50
Lilifen	Chile	Nord Desprez/3/Winter Wheat F ₁ /4/Lee/Frontana/2/Newthatch (No. 2357)
Marimp 3	Italy	Impeto/Mara
Maris Nimrod	England	[[(C. I. x 12633 x Yeoman) x Capelle ⁵] x F ₁ (Capelle x Hybrid 46)] x Professeur Marchal ²
Moldova	Romania	Bucuresti 1/Skorospelka 3
NE701132	Nebraska, USA	Atlas 66/Comanche//Lancer
Probstdorfer Extrem	Austria	Probstdorfer Record/Brucker Harrachweizen
Rousalka	Bulgaria	S. 13/C. 54
Sava	Yugoslavia	Fortunato 2*/Redcoat
Starke	Sweden	Banco sib//Eroica/Virtus
Strampelli	Italy	Libero/2/San Pastore/Iacometti, 49
Tamwheat 102 (TX62A4793-7)	Texas, USA	Sinvalochu/Wichita/3/Hope/ Cheyenne//2*Wichita/4/Seu Seun/5/Tasosa
Vakka	Finland	G5-20/Vakka
Victor I	Italy	Mara *3/Frontana/Ky58/Nth 11- 50-35
Zenith	Switzerland	Heine VII/Canadian 3842/3663
Zlatna dolina (Golden Valley)	Yugoslavia	414-57/Leonardo

Table 2. Nursery sites and cooperators of the Fourth International Winter Wheat Performance Nursery, 1972.

Country	Station	Cooperator Receiving Seed
Afghanistan	Kabul	Mir Mohammad Ayub
"	Kunduz	" " "
Algeria	Algiers	Dr. T. Nezzel
Argentina	Balcarce	Ing. Agr. Ernesto F. Godoy
"	Bordenave	" " " " "
Austria	Vienna	Dr. R. Hron
Brazil	Pelotas	Dr. A. M. Schlehuber
Bulgaria	Tolbukhin	Dr. Boris Simeonov
Chile	Temuco	Dr. Ignacio Ramirez A.
Czechoslovakia	Malé Ripnany	Ing. Dezider Michalik
"	Sedlec	Ing. Jaroslav Maly
England	Cambridge	Dr. F. G. H. Lupton
Finland	Jokioinen	Prof. Dr. Rolf Manner
Germany	Monsheim	Dr. A. Lein
"	Weihenstephan	Prof. Dr. G. Fischbeck
Hungary	Martonvasar	Dr. S. Rajki
"	Szeged	Dr. I. Szaniel
India	Shalimar	Dr. M. V. Rao
"	Simla	Dr. M. K. Upadhyay
Iran	Hamadan	Dr. H. Kaveh
"	Karaj	" " "
Iraq	Sulamaniya	Dr. Mohammad Abdul Aziz
Italy	Milano	Dr. M. Carla Scafati
"	Rieti	Dr. Guiseppina Zitelli
Japan	Morioka	Dr. T. Gotoh
Korea	Suwon	Dr. Hyun Ok Choi
Mexico	Toluca	Dr. N. E. Borlaug
Netherlands	Wageningen	Dr. Ir. A. C. Zeven
Romania	Fundulea	Prof. T. E. Muresan
Russia	Krasnodar	Dr. P. P. Lukyanenko
Sweden	Svalof	Dr. Gosta Olsson
Switzerland	Zurich	Dr. G. Popow
Turkey	Ankara	Dr. A. Demircakmak
"	Eskisehir	Dr. Turhan Atay
United States	Colorado	Dr. J. R. Welsh
" "	Nebraska	Dr. V. A. Johnson
" "	New York	Dr. N. F. Jensen
" "	North Carolina	Dr. C. F. Murphy
" "	Oklahoma	Dr. E. L. Smith
" "	Oregon	Dr. W. E. Kronstad
" "	Washington	Dr. R. E. Allan
Yugoslavia	Novi Sad	Prof. Slavko Borojevic
"	Zagreb	Dr. Josip Potocanec

DATA SUMMARIZATION AND STATISTICAL TREATMENT

Data were reported by cooperators as follows:

Yield of grain:—Weight of clean grain produced by the central rows of each plot. Unit of measure = grams, which were converted to quintals per hectare reported herein.

Test weight:—Volume-weight of clean grain. Unit of measurement = kilograms per hectoliter.

Maturity:—Date of flowering = date of anther extrusion from $\frac{1}{3}$ of the spikes in a plot reported as number of days from January 1. Date of ripening = date of physiological maturity reported as number of days from January 1.

Plant height:—Average height of plants, excluding awns. Unit of measurement = centimeters.

Lodging:—Estimated portion of a plot with lodged or down straw at maturity. Unit of measurement = percent.

Shattering:—Estimated portion of grain lost from spikes in the standing border rows of a plot two weeks after harvest of the yield rows. Unit of measurement = percent.

Winter survival:—Estimated portion of live plants in each plot in the spring. Unit of measurement = percent.

Frost damage:—Estimated amount of flower sterility in a plot resulting from spring frosts. Unit of measurement = percent.

1000 Kernel weight:—Weight of one thousand kernels selected at random from clean grain. Unit of measurement = grams.

Diseases:—Severity of the infection and response of cultivars according to the modified Cobb scale for stripe rust (*Puccinia striiformis*) West., leaf rust (*Puccinia recondita*) Rob. ex Desm., and stem rust (*Puccinia graminis tritici*), Eriks. and Henn. for most other diseases, only severity of infection was reported.

Analyses of variance were completed on traits for which data were reported from two or more replications at a nursery site. Means, coefficients of variation, and standard error of a treatment mean are reported for analyzable traits as a part of the individual nursery site data for the 4th IWWPB.

Two-year means for yield and other data from individual nursery sites also are reported for those cultivars grown in both 1971 and 1972. Correlation coefficients and analyses of variance are also reported for the combined years data where possible.

RESULTS AND DISCUSSION

Yield and other agronomic, grain quality and disease data are reported for individual Fourth International Winter Wheat Performance Nursery sites in the northern hemisphere in Tables 3-40. Tables 45 and 46 contain nursery data from two southern hemisphere sites. Supplemental nursery management information is also given for each site. Summary tables of average yields and yield rankings over all nursery sites in the northern hemisphere are reported in Tables 41 and 42. Summaries of agronomic traits and grain quality measurements for each cultivar combined over nursery sites are reported in Table 43.

Two-year analyses of yield and other agronomic traits from individual nursery sites for cultivars grown in 1971 and 1972 nurseries appear in Tables 53-79. Summary tables of average yields and yield rankings for all nursery sites with 2-year combined analysis are reported in Tables 80 and 81. A summary of agronomic traits analyzed from the 2-year period of 1971 and 1972 for as many nursery sites as possible is reported in Table 82.

Blueboy, Centurk and NE701132 produced the highest mean yields among United States cultivars grown in the nursery. The high protein cultivar, NE701132, produced 36.8 q/ha average yield which was 86.4% of the mean of Bezostaya 1.

Nursery sites in the southern hemisphere had a difficult growing season in 1971-72. Excessive rainfall in the fall prevented planting at Temuco, Chile, and severe attacks by diseases were devastating to the Pelotas, Brazil nursery. The nursery in Bordenave, Argentina reported yield data for all cultivars which appear in Table 45. The nursery yield mean was 16.3 q/ha in 1972, slightly less than the 1971 nursery mean. Strampelli, Rousalka and Victor I were the highest yielding cultivars with means of 37.5, 33.0 and 29.5 q/ha, respectively. High yielding cultivars in the northern hemisphere, such as Bezostaya 1, Sava and Dacia, produced yield means of 18.1, 23.8 and 21.8 q/ha, respectively in the Bordenave nursery. Centurk ranked sixth with an average yield of 24.4 q/ha at Bordenave, but yielded 18.1 q/ha in Pelotas, Brazil nursery (Table 46). The nursery mean yield was 5.7 q/ha for the 13 cultivars that produced seed. Cultivar responses to photoperiodism and temperature were important in Chile in 1972, but high incidence of diseases was the most serious yield depressant.

A summary of nursery mean yields of 14 cultivars grown in 1971 and 1972 are reported in Table 80. The data are reported for individual sites. Cultivar yield means for 26 nursery sites ranged from 41.0 q/ha for Bezostaya 1 to 26.7 q/ha for Jyva. The yield grand mean over these sites was 35.3 q/ha, with nursery means ranging from 65.6 q/ha to 15.6 q/ha for Weihenstephan, West Germany and

Ankara, Turkey, respectively. Centurk, Probstdorfer Extrem, and Blueboy cultivars produced 40.4 q/ha mean yields which were 98.5% of the mean of Bezostaya 1.

Test Weight

Cultivar means for test weight from 14 sites of the 1972 IWWPN are compared in Table 43. The range was from 79.2 kg/hl to 70.5 kg/hl for Probstdorfer Extrem and Maris Nimrod, respectively. The grand mean for all cultivars was 75.2 kg/hl. Bezostaya 1, C.I.15074, Dacia and Rousalka were cultivars that produced highest test weights.

Two-year means for 14 cultivars grown in 1971 and 1972 reported in Table 82 also indicate the superiority of such cultivars as Bezostaya 1, C.I.15074 and Probstdorfer Extrem for test weight over a range of environmental conditions.

Maturity

Flowering data for cultivars grown at 25 sites in 1972 are summarized in Table 43. On the average the earliest cultivar to flower was Rousalka at 142.8 days from January 1 as compared to Starke at 163.6 days, the latest cultivar to flower. There was a difference of 20.8 days on the average between the earliest and latest cultivars to flower in the IWWPN in 1972.

Ripening data for cultivars grown at 22 sites in 1972 also are reported. Only 14.8 days average difference between the earliest and latest cultivars was measured. The means for all cultivars show 39.3 days difference from flowering to ripening.

The two-year means for flowering and ripening reported in Table 82 indicate similarities in cultivar performances. Strampelli, Sava and Tamwheat 102 were earliest in maturity and Starke, Vakka and Jyva were late maturing cultivars.

Plant Height and Lodging

Plant height and lodging were closely related in the 1972 IWWPN. The nine shortest cultivars, averaged over 29 locations, also ranked in the top ten for low lodging percentage over 22 locations, with the exception of Strampelli. This cultivar was 7th in plant height but ranked 17th in lodging percent as shown in Table 43. Yield performance among the short-statured cultivars was both high and low. Sava, the 2nd highest yielding cultivar, was only 85.4 centimeters tall on the average. Carifen 12, next to the shortest in height, was 21st in yield rank. Conversely, Probstdorfer Extrem averaged 121 centimeters in height and ranked 4th in mean yield.

Two-year data reported in Table 82 also indicate a close relationship between plant height and lodging for most cultivars. Starke is

an exception. It had a low lodging percentage but was among the tallest cultivars evaluated during the 2-year period. Centurk was relatively short but had a high lodging percentage.

Shattering

Mean shattering reported in Table 43 at nine nursery sites in 1972 was only 5.8%. Cultivar means ranged from 2.3% for Clarion to 11.4% for Marimp 3. Nursery site means ranged from 0.4% at Tolbukhin, Bulgaria to 19.9% at Karaj, Iran. Moderate to heavy shattering occurred at only three nursery sites in 1972; namely, Karaj, Iran; Wageningen, The Netherlands; and Morioka, Japan.

Table 82 includes shattering percentages for 14 cultivars grown in both 1971 and 1972. The grand mean of cultivars was 8.4 percent. Cultivar means ranged from 4.0% for Probstdorfer Extrem to 13.1% for Jyva.

Yield Data

Thirty-eight nursery sites from the northern hemisphere reported data in 1972. The yield mean of 35.5 q/ha for these 38 sites reported in Table 41 is similar to the 1971 mean of 35.0 q/ha for 28 nursery sites. Individual site nursery means were widely different, ranging from 14.4 q/ha at Jokioinen, Finland to 71.3 q/ha at Weihenstephan, West Germany. Nine sites reported mean yields lower than 25 q/ha. Eighteen sites reported mean yields from 25 to 40 q/ha, eight sites yielded on the average from 40 q/ha to 55 q/ha, and three sites had mean yields exceeding 55 q/ha.

Winter cultivar mean yields ranged from 42.6 q/ha for Bezostaya 1 to 26.2 q/ha for Jyva. Sava, Dacia, Probstdorfer Extrem and Zlatna dolina produced at least 95% of the mean yield of Bezostaya 1. The summary of yield rankings in Table 42 indicates the range of adaptability for each cultivar. The higher yielding cultivars, Bezostaya 1, Sava, Dacia, and Centurk ranked in the top ten cultivars 26, 20, 24, and 16 times, respectively.

Winter Survival

Twenty-two nursery sites reported differential winter survival in 1972 with an average of 82.2% survival (Table 43). Winter wheat cultivar means over these 22 sites ranged from 94.1% to 42.5% for C.I.15074 and Victor I, respectively. Cultivars with high winter survival included C.I.15074, Starke, Vakka, Hokuei, Centurk and Jyva. Cultivars ranking low in winter survival were Victor I, Strampelli, Lilifen and Marimp 3. Nursery site means for winter survival ranged from 32.5% at Jokioinen, Finland to 95.0% at Rieti, Italy and Suwon, Korea.

Fourteen cultivars averaged over 9 nursery sites in 1971 and 1972 had 86.4% winter survival. C.I.15074 was again the hardiest cultivar with an average survival of 95.3%, and Strampelli winterkilled the most with 61.7%.

A spring wheat check cultivar, Lerma Rojo 64, grown in the same 22 nursery sites reported above averaged only 29.2% survival. Zero survival of Lerma Rojo 64 was reported from Fundulea, Romania; Svalof, Sweden; Lincoln, Nebraska; Jokioinen, Finland; and Szeged, Hungary. Rieti, Italy reported 93% survival for Lerma Rojo 64.

Winter survival data also were reported from an observation planting of the 4th IWWPN at Lethbridge, Alberta (Table 52). Cultivar survivals were widely different, ranging from zero for 5 entries to 100% for 6 entries in the nursery.

Protein and Lysine Content

Excellent expression of the genetic potential for higher protein content in Atlas 66 and its derivative cultivars was evident in the 1972 IWWPN. Their superiority for high protein content was maintained in every environment tested in 1972. Cultivar means over 24 locations are shown in Table 43. Atlas 66 had the highest percentage of 16.5%. NE701132 and C.I.5074, derivatives of Atlas 66, produced means of 15.3% and 15.2%, respectively. Moldova and Clarion, not known to possess high protein genes, were comparable to NE701132 in both yield performance and protein content when averaged over nursery sites.

Relationships between yield levels and protein content were not clearly established in the 1972 nursery sites. The following tabulation from cultivar means over nursery sites illustrates the various combinations of high yielding, low protein cultivars, high yielding, high protein cultivars, and similar comparisons with low yielding cultivars. An inverse relationship between protein and lysine content also is evident in these cultivars.

Cultivar	Yield		Protein		Lysine/Protein	
	q/ha	Rank	%	Rank	%	Rank
Bezostaya 1	43.4	(1)	13.2	(24)	3.00	(9)
Dacia	41.9	(3)	14.4	(7)	2.98	(12)
Probstdorfer Extrem	41.6	(4)	13.5	(19)	2.91	(26)
Zlatna dolina	40.8	(5)	13.2	(23)	3.00	(8)
Blueboy	40.7	(6)	12.3	(29)	3.13	(1)
Kirac 66	29.9	(26)	14.6	(8)	2.94	(21)
Strampelli	31.2	(24)	12.8	(25)	3.04	(4)
Jyva	26.9	(29)	14.1	(13)	2.97	(14)

Two-year cultivar means for protein within nursery sites also indicate the consistent superiority of the high protein cultivars grown in different environments. This stability of genetic expression of protein should be encouraging to wheat breeders.

Quality data are reported in Table 49 and 50 from Zurich, Switzerland and Svalof, Sweden.

1000 Kernel Weight

One thousand kernel weights were analyzed and reported from 5 nursery sites in Table 43. Cultivar means ranged from 41.3 to 27.5 grams for Dacia and Zenith, respectively. The mean of all cultivars over 5 nursery sites was 33.3 grams. Dacia, Rousalka, Bezostaya 1 and Backa were the superior cultivars for seed weight in 1972.

Frost Damage

Frost damage data were analyzed and reported in Table 43 for 6 nursery sites. Reported on a scale from 0-9, the mean of 29 cultivars over 6 locations in 1972 was 3.5. NE701132, Tamwheat 102, C.I.15074, Centurk, and Probstdorfer Extrem were damaged the least of cultivars tested in 1972. Cultivar means ranged from 2.2 for NE701132 to 6.3 for Victor I.

Cultivars grown in 1971 and 1972 of the IWWPN averaged 2.8 for frost damage, ranging 1.8 to 5.3 for C.I.15074 and Strampelli, respectively (Table 82).

Diseases

Puccinia graminis tritici, *Puccinia recondita*, *Puccinia striiformis*, and *Erysiphe graminis* were the most prevalent diseases reported in 1972. These diseases were reported from 24, 22, 11, and 14 nursery sites, respectively. *Septoria spp.* was also reported for 3 nursery sites. Each disease is included in the appropriate individual location data table.

Reactions to stem rust and mildew are reported in Table 47 for 1972 IWWPN cultivars tested by Dr. D. V. McVey, Cereal Rust Laboratory, St. Paul, Minnesota. These cultivars are also tested each year by Dr. E. E. Saari in the Regional Disease and Insect Screening Nursery grown in the region from India to Morocco at sites where disease epidemics occur naturally on a regular basis. A summary of results from this test in 1972 is reported in Table 51.

Attacks of *Cercospora herp.* were reported from an observation planting of the 4th IWWPN in the polder Southern Flevoland of the Netherlands (Table 48).

Correlation coefficients for yield and other agronomic traits combined over 17 nursery sites for 1972 are reported in Table 44.

NORTHERN HEMISPHERE

AFGHANISTAN

Kabul

- Cooperator(s):** Mir Mohammad Ayub; H. C. Wiggin; P. A. Ahadyar.
- Date of planting (effective germination):** September 15, 1971.
- Precipitation during cycle of test:** Irrigated September 25, December 9, 1971 and April 23, June 5, 17, and 25, 1972.
- Amount of irrigation applied:** 75-100 mm in each of six applications.
- Fertilizer used:** N = 120 kg/ha; P_2O_5 = 120 kg/ha.
- General description of climatic conditions during test:** Not reported.
- Disease development:** Severe development of rust due to excessive snow and rain.
- Insect, weed or pest problems:** Armyworm and weed problems were controlled.
- Date of harvest:** July 12-23, 1972.
- Area harvested for yield:** 5.4 square meters.
- Dates when different notes were taken:**
- Percentage of stand (Fall)—November 17, 1971
 - " " " (Summer)—April 2, 1972
 - Flowering—May 28-June 12, 1972
 - Leaf rust—July 2, 1972
 - Stem rust—July 2, 1972
 - Plant height—July 10, 1972
 - Shattering—August 5, 1972

Data in Table 3

Table 3. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance nursery grown at

Kabul, Afghanistan, 1972.

Cultivar	Yield: q/ha:	Protein ^a : % of	Lysine ^a : % of	Date of		Plant height:cm	Lodg- ing: %	Shat- ting: %	Frost- damage: 0-9	Rust			Fall seedling: stand: %	Spring: seed- ling: stand: %	Date of heading: days from Jan.1	
				Flower- ing: Jan. 1	Ripen- ing: cm					Leaf Sev. : %	Stem Sev. : %	Resp. : Resp. :				
Strampelli	73.2	13.3	2.93	139	186	105	15	2	3	0	0-0	0	0-0	97	95	134
Zlatna dolina (Golden Valley)	66.6	13.5	2.88	142	188	88	0	0	3	65	S-S	80	S-S	94	91	137
Dacia	63.3	16.5	2.75	142	187	124	5	6	3	17	S-S	45	S-S	92	88	137
Victor I	62.8	14.0	2.96	138	186	105	0	11	4	0	0-0	0	0-0	99	92	134
Bezostaya 1	62.8	14.5	2.91	145	186	106	0	0	2	0	0-0	1	0-MS	96	92	141
Marimp 3	62.7	16.2	2.95	141	185	115	0	11	4	76	S-S	91	S-S	92	89	136
Rousalka	62.6	13.8	2.94	139	187	86	13	0	3	95	S-S	98	S-S	94	92	134
Lerma Rojo 64	61.1	14.9	2.87	136	187	91	0	0	4	0	0-0	0	0-0	97	93	131
Lilifen	59.0	15.7	2.81	143	190	90	0	1	4	11	0-S	25	0-S	86	87	138
Tamwheat 102 (TX62A4793-7)	57.9	14.3	2.87	139	186	100	0	0	3	73	S-S	93	S-S	93	90	134
Centurk	56.6	15.7	2.67	146	186	109	6	7	3	0	0-0	2	0-MS	94	86	141
NE701132	54.1	16.7	2.63	143	189	116	23	0	2	8	MS-S	11	S-S	89	83	138
Sava	52.8	14.2	2.88	147	187	99	0	0	4	32	0-S	67	S-S	96	95	142
Backa	52.1	13.8	2.81	144	187	100	0	1	4	36	S-S	94	S-S	97	95	139
Probstdorfer Extrem	49.8	14.7	2.75	150	189	123	13	0	3	58	S-S	85	S-S	94	89	145
Kirac 66	48.4	15.7	2.69	142	189	126	24	6	5	21	S-S	51	S-S	96	92	137
C.I.15074	47.6	16.2	2.88	148	187	124	0	0	4	16	0-S	70	0-S	91	90	143
Moldova	46.8	16.4	2.73	140	186	109	0	0	4	28	S-S	37	S-S	85	82	135
Zenith	46.1	14.4	2.75	156	191	99	3	0	3	88	S-S	97	S-S	96	93	153
Caribo	44.9	11.7	3.03	156	191	105	0	0	3	60	S-S	93	S-S	94	91	153
Atlas 66	41.7	18.8	2.59	145	188	136	35	1	3	21	S-S	38	S-S	96	94	140
Blueboy	38.2	12.6	3.10	145	188	119	23	0	3	81	S-S	98	S-S	97	93	141
Carifren 12	37.3	13.7	2.92	153	190	82	0	0	2	36	S-S	96	0-S	94	87	148
Hokuei	36.8	10.8	3.12	153	188	113	24	0	3	47	S-S	94	S-S	93	93	148
Maris Nimrod	35.8	13.0	2.96	157	190	88	11	0	3	72	S-S	91	S-S	95	92	153
Diplomat	34.8	14.8	2.93	161	193	110	0	1	4	80	S-S	96	S-S	97	93	157
Clarion	29.9	15.6	2.85	154	191	105	13	0	3	92	S-S	99	S-S	97	92	151
Vakka	28.0	14.6	2.99	157	189	120	23	11	3	37	S-S	93	S-S	95	94	152
Jyva	24.9	15.6	2.96	157	192	120	13	3	4	44	S-S	93	S-S	95	93	154
Starke	23.0	14.3	2.95	163	193	123	8	0	4	52	S-S	96	S-S	98	95	159
Mean	48.7	14.7	2.87	147.3	188.2	107.7	8.3	2.1	3.2	41.5		64.5		94.3	90.6	143.1
Standard error of a treatment mean	4.2	--	--	1.6	1.0	3.0	10.1	0.1	0.6	--	--	--	--	--	--	--
Coefficient of variation (%)	17.2	--	--	2.2	1.1	5.6	244.9	12.8	38.8	--	--	--	--	--	--	--

a) One rep only.

ALGERIA

Algiers

Cooperator(s): T. Nezzal.

Date of planting (effective germination): November 26, 1971.

Precipitation during cycle of test: 526.5 mm.

Amount of irrigation applied: None.

Fertilizer used: N = 80 kg/ha; P = 90 kg/ha; K = 50 kg/ha.

General description of climatic conditions during test: Abundant rainfall resulting in late growing season.

Disease development: Good vegetative growth reported, but disease data were not severe for the rusts.

Insect, weed or pest problems: None reported.

Date of harvest: July 6, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 4

Table 4. Agronomic and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Algiers, Algeria, 1972.

Cultivar	Yield q/ha	Date of		Plant height cm	Lodging %	Rust ^a					
		Flowering days from Jan. 1	Ripening			Stripe		Leaf		Stem	
						Sev. %	Resp.	Sev. %	Resp.	Sev. %	Resp.
Rousalka	59.5	124	181	108	0	0	0	0	0	0	0
Strampelli	45.9	124	181	124	3	0	0	0	0	0	0
Centurk	43.9	133	183	135	0	0	0	0	0	0	0
Lilifen	43.0	140	188	123	0	0	0	0	0	0	0
Bezostaya 1	43.0	132	184	118	18	0	0	0	0	0	0
Kirac 66	42.7	132	186	131	20	0	0	80	S	40	S
Zlatna dolina (Golden Valley)	42.5	126	181	101	0	0	0	0	0	10	MR
Moldova	41.9	123	181	124	8	0	0	0	0	1	R
Dacia	38.9	134	183	126	0	0	0	0	0	0	0
Atlas 66	38.8	136	183	130	4	20	MS	0	0	0	0
Sava	37.1	129	181	115	0	0	0	1	S	0	0
Tamwheat 102 (TX62A4793-7)	36.3	133	183	123	0	5	MS	5	MS	0	0
NE701132	35.9	138	181	126	0	1	MR	0	0	0	0
Backa	35.7	128	183	120	0	0	0	10	MS	40	S
Blueboy	35.2	134	183	124	0	0	0	10	MS	1	R
Diplomat	34.4	152	188	133	0	0	0	10	MS	10	S
Maris Nimrod	33.8	149	187	131	0	0	0	10	S	10	S
C.I.15074	31.2	141	183	136	0	80	S	10	MS	0	0
Probstdorfer Extrem	30.0	145	187	129	0	1	R	0	0	10	S
Clarion	29.5	151	191	111	0	0	0	0	0	10	S
Lerma Rojo 64	29.3	111	181	123	15	0	0	0	0	0	0
Carifen 12	29.2	144	186	94	11	0	0	70	MR	40	S
Zenith	28.8	149	187	130	0	0	0	80	MS	10	S
Caribo	27.9	150	188	115	18	0	0	5	MS	20	S
Hokuei	25.2	143	187	128	0	0	0	0	0	10	MS
Marimp 3	24.2	126	181	113	9	0	0	10	S	0	0
Victor I	23.0	124	181	110	0	0	0	20	MS	0	0
Vakka	17.6	151	184	119	0	0	0	0	0	30	S
Jyva	15.1	151	187	129	0	0	0	5	MS	30	S
Starke	12.4	157	191	124	0	0	0	5	MS	10	S
Mean	33.7	136.9	184.2	121.6	3.5	3.6		11.0		9.4	
Standard error of a treatment mean	3.1	0.6	1.1	5.8	6.4	--		--		--	
Coefficient of variation (%)	18.5	0.8	1.2	9.5	364.2	--		--		--	

a) One rep only.

AUSTRIA

Vienna

Cooperator(s): R. Hron, H. Fossleitner.

Date of planting (effective germination): October 14, 1971.

Precipitation during cycle of test: 633 mm (August + September, 1971–91 mm; October, 1971 thru March, 1972–194 mm; April thru July, 1972–348 mm).

Amount of irrigation applied: None.

Fertilizer used: Preplant–N = 36 kg/ha; P_2O_5 = 108 kg/ha; K_2O = 144 kg/ha. Early spring–N (nitrochalk) = 86 kg/ha.

General description of climatic conditions during test: Good stand before winter but differential winterkill occurred. Sufficient rainfall during vegetation period, and early commencement of lodging. Varied kernel development and quality occurred.

Disease development: Strong, early commencing mildew incidence. Strong incidence of leaf blotch, glume blotch and stem rust. No incidence of leaf rust or stripe rust.

Insect, weed or pest problems: None, weeds controlled.

Date of harvest: July 19–27, 1972.

Area harvested for yield: 3.6 square meters.

Dates when different notes were taken:

Winter survival–April 4, 1972

Mildew–June 5, 1972

Leaf blotch–June 12, 1972

Glume blotch–June 29, 1972

Stem rust–July 10, 1972

Lodging–July 18, 1972

Data in Table 5

Table 5. Agronomic, grain quality and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Vienna, Austria, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging 1-9	Winter survi- val %	Stem ^b rust Sev. %	Mildew Sev. %	Leaf ^b blotch Sev. %	Glume ^c blotch Sev. %
					Flower ing days from Jan. 1	Ripen- ing ^a							
Centurk	55.2	77.0	16.1	2.87	151	202	116	4	95	0	25	20	12
Probstdorfer Extrem	55.2	81.5	13.7	2.91	154	202	135	5	98	17	20	10	2
Maris Nimrod	54.7	70.5	11.9	3.05	159	202	105	5	97	35	15	15	5
Zenith	51.9	75.8	11.5	3.12	160	202	113	3	97	35	20	25	0
Hokuei	51.4	77.8	12.6	3.07	154	202	110	6	99	17	35	5	22
Dacia	50.4	76.5	16.1	2.78	149	200	115	2	93	17	35	25	25
Sava	49.0	72.3	16.3	2.94	147	199	86	2	96	25	1	15	22
Atlas 66	46.9	77.0	18.4	2.70	155	205	129	5	73	7	15	5	1
Backa	46.7	75.3	14.7	2.82	148	199	88	2	84	62	15	20	22
Diplomat	44.2	76.0	11.8	3.31	163	204	111	1	96	17	50	20	0
Caribo	43.9	68.5	11.9	3.06	161	204	111	1	99	35	30	15	0
Blueboy	43.1	71.3	11.7	3.25	152	200	111	3	96	35	70	20	28
Carifen 12	42.8	62.5	12.9	3.24	156	200	84	1	95	37	50	30	22
Clarion	42.6	70.8	12.4	3.01	161	202	105	3	97	50	50	20	3
Bezostaya 1	42.1	75.3	14.8	2.88	151	204	99	3	96	2	50	20	22
Vakka	40.1	71.3	12.1	3.15	160	200	129	5	96	52	32	10	10
Lilifen	39.0	71.8	16.0	3.04	157	203	98	1	38	7	60	15	15
Tamwheat 102 (TX62A4793-7)	37.5	73.5	14.9	2.98	146	190	101	3	96	0	50	35	35
Zlatna dolina (Golden Valley)	37.4	72.8	15.5	2.79	146	199	86	1	93	37	10	20	28
Moldova	36.2	74.5	17.7	2.91	146	199	109	3	91	17	50	25	35
NE701132	36.1	74.5	17.9	2.73	151	204	120	5	97	0	30	10	4
Marimp 3	30.9	70.3	13.8	3.04	152	202	95	2	40	57	35	15	15
Starke	30.9	66.0	12.8	3.16	166	204	126	3	97	17	15	20	0
Kirac 66	30.7	73.8	16.0	3.00	153	205	121	6	93	13	50	30	8
Rousalka	28.0	71.5	17.0	2.80	145	193	85	1	95	25	25	35	40
Jyva	26.2	67.3	12.5	3.17	160	203	130	4	94	52	30	5	0
Strampelli	24.9	73.8	13.4	3.00	151	202	83	2	14	--	--	25	--
C.I.15074	22.8	77.0	18.6	2.82	152	203	124	4	97	12	50	15	12
Victor I	20.8	73.5	16.5	2.82	153	202	83	1	15	--	--	5	15
Lerma Rojo 64	--	--	--	--	--	--	--	--	1	--	--	--	--
Mean	40.0	73.1	14.5	2.98	153.7	201.2	107.1	3.0	82.0	25.2	34.0	18.3	14.4
Standard error of a treatment mean	2.0	0.7	0.3	0.05	0.4	--	1.9	--	3.8	--	--	--	--
Coefficient of variation (%)	9.9	1.9	3.7	3.53	0.5	--	3.6	--	9.2	--	--	--	--

- a) One rep only
b) Two reps only.
c) Three reps only.

BULGARIA

Tolbukhin

Cooperator(s): B. Simeonov; I. Todorov.

Date of planting (effective germination): October 4, 1971.

Precipitation during cycle of test: 313 mm.

Amount of irrigation applied: None.

Fertilizer used: N (NH_4NO_3) = 100 kg/ha; P_2O_5 ($\text{Ca}(\text{H}_2\text{PO}_4)_2$) = 130 kg/ha.

General description of climatic conditions during test: Sufficient rainfall during autumn, at time of emergence; cold winter; summer with normal rainfall.

Disease development: Leaf rust, stem rust and mildew infections were recorded.

Insect, weed or pest problems: None.

Date of harvest: June 28–July 17, 1972.

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken:

Mildew—June 17, 1972

Leaf rust—June 24, 1972

Stem rust—June 28, 1972

Lodging—June 26, 1972

Data in Table 6

Table 6. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Tolbukhin, Bulgaria, 1972.

Cultivar	Yield: q/ha	weight: kg/hl	Protein: %	% of protein:	Date of		Lysine % of protein:	Planting days from Jan. 1	Lodging cm	Shattering %	Winter surv. %	kernel wt. gm	Rust				Rust ^a			
					Flow- Ripening days from Jan. 1	1000							Leaf		Stem		Mildew		Leaf: Stem	
													Sev. %	Resp. %	Sev. %	Resp. %	Sev. %	Sev. %	Sev. %	Sev. %
Sava	51.6	75.2	15.8	2.75	141	178	97	0	0	66	30	1	R	25	MS	1	5	40		
Zlatna Dolina (Golden Valley)	50.7	76.4	15.5	2.78	140	178	91	0	0	71	44	5	MR	10	MR	67	10	25		
Backa	46.3	76.8	15.9	2.90	140	181	96	0	2	74	40	10	MR	40	S	10	15	99		
Victor I	45.3	75.6	15.1	2.95	141	180	91	0	1	77	32	5	MR	10	MR	30	80	10		
Rousalka	43.3	77.2	12.3	2.05	135	180	85	0	1	69	44	0	0	10	MR	25	1	25		
Dacia	42.3	75.6	15.7	2.88	142	179	118	36	0	68	38	1	R	25	MS	80	25	99		
Marimp 3	40.3	75.2	16.8	2.85	141	180	103	11	1	74	35	5	MR	25	MS	45	80	80		
Bezostaya 1	39.6	77.6	16.0	2.84	144	181	105	44	0	65	34	1	R	40	S	80	25	80		
Lilifen	38.7	74.8	--	--	144	185	103	0	0	66	34	0	0	10	MR	80	0	40		
Strampelli	37.3	72.8	15.3	2.89	138	179	98	91	0	71	33	1	R	10	MR	25	80	40		
Centurk	37.0	73.2	16.5	2.80	144	178	110	70	0	68	22	1	R	5	MR	45	25	25		
NE701132	36.3	75.6	17.7	2.71	145	180	109	63	0	78	30	1	R	10	MR	30	1	40		
Moldova	35.6	75.2	17.1	2.72	138	179	114	40	1	72	37	5	MR	10	MR	65	5	99		
Zenith	35.3	72.4	16.4	2.70	150	185	111	3	1	81	22	25	MS	25	MS	10	80	80		
Probstdorfer Extrem	35.3	73.6	16.3	2.77	146	183	123	63	0	73	33	10	MR	25	MS	10	65	80		
Atlas 66	34.3	75.6	--	--	145	180	115	86	1	69	31	1	R	5	MR	30	1	25		
Carifen 12	34.0	60.0	--	--	150	185	85	0	0	63	23	25	MS	40	S	65	99	99		
Blueboy	32.6	68.8	16.0	2.78	144	182	115	19	1	78	25	5	MR	40	S	99	40	80		
Tamwheat 102 (TX62A4793-7)	32.0	66.4	16.0	2.85	141	178	95	30	0	71	23	1	R	10	MR	99	25	65		
Caribo	31.0	69.2	16.5	2.75	152	189	113	31	0	71	26	25	MS	25	MS	65	80	99		
Maris Nimrod	30.0	64.8	15.5	2.86	151	189	100	58	0	72	28	5	MR	40	S	62	40	99		
Lerma Rojo 64	29.7	76.4	16.9	2.82	132	179	97	25	0	56	41	1	R	5	MR	40	5	0		
Clarion	28.6	71.2	--	--	156	191	102	13	0	73	23	25	MS	55	MS-S	80	25	99		
C.I.15074	27.3	75.6	16.1	2.83	145	178	117	66	0	79	24	1	R	10	MR	65	5	65		
Vakka	27.0	67.6	15.9	2.80	151	185	113	48	1	78	24	25	MS	40	S	70	99	99		
Hokuei	24.7	70.0	15.9	2.79	144	181	103	97	0	74	25	5	MR	10	MR	65	25	99		
Diplomat	23.3	73.6	16.2	2.75	156	191	109	0	1	63	28	25	MS	25	MS	99	80	99		
Kirac 66	20.6	70.4	16.1	2.78	145	183	119	91	0	69	23	25	MS	10	MR	99	99	25		
Starke	19.3	65.2	16.7	2.71	159	197	122	13	1	81	19	25	MS	65	S	10	99	99		
Jyva	18.6	67.6	16.4	2.82	152	181	116	95	0	69	22	10	MR	40	S	30	99	99		
Mean	34.3	72.3	16.0	2.77	145.1	182.5	105.7	36.3	0.4	71.2	29.6	9.2		23.3		52.7	43.9	67.1		
Standard error of a treatment mean	2.2	0.0	1.0	0.14	0.0	0.1	2.4	11.3	0.3	5.5	2.1	--	--	--	--	--	--	--		
Coefficient of variation (%)	12.8	0.0	12.7	10.29	0.0	0.1	4.6	62.2	151.8	15.4	14.5	--	--	--	--	--	--	--		

a) From disease nursery.

CZECHOSLOVAKIA

Malé Ripnany

Cooperator(s): J. Schmidt; A. Hlavicka; D. Michalik.

Date of planting (effective germination): October 8, 1971.

Precipitation during cycle of test: 762.9 mm (October, 1971–September, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 60 kg/ha; P = 54 kg/ha; K = 130 kg/ha.

General description of climatic conditions during test: Precipitation and temperature were below normal for October and November but did not affect plant development unfavorably. A mild winter occurred and produced little damage to plants. Excessive precipitation and high temperatures in spring resulted in good vegetative growth, thus much lodging in some cultivars.

Disease development: Powdery mildew occurrence was high; leaf and stem rusts were also prevalent.

Insect, weed or pest problems: None.

Date of harvest: July 22, 1972.

Area harvested for yield: 8 square meters.

Dates when different notes were taken: None reported.

Data in Table 7

Table 7. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Male Ripnany, Czechoslovakia, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Winter survi- val %	Rust				Mildew Sev. %
					Flower- ing from	Ripen- ing Jan 1				Leaf Sev.	Stem Sev.	Leaf Resp.	Stem Resp.	
Bezostaya 1	63.3	64.7	14.9	2.73	148	183	105	0	92	0	0	10	VR	85
Sava	56.2	59.9	15.0	2.95	150	183	83	0	68	0	0	60	M	1
Zenith	55.4	57.2	13.8	3.07	159	187	110	0	75	10	VR	70	S	7
Maris Nimrod	52.0	54.0	13.3	3.11	158	187	102	0	91	50	M	80	S	1
Dacia	51.7	63.0	14.9	2.95	150	185	120	1	92	25	VR-R	40	M	63
NE701132	51.2	67.3	16.5	2.70	152	185	127	1	65	0	0	0	0	14
Caribo	50.4	57.1	12.4	3.22	159	187	105	1	73	20	R	50	M	71
Diplomat	50.0	61.6	13.8	3.02	160	191	115	0	88	0	0	10	R	83
Zlatna dolina (Golden Valley)	48.2	62.9	14.2	2.95	147	181	74	0	69	40	M	50	MS	1
Moldova	45.7	61.6	15.5	2.84	145	180	115	1	74	20	R	30	R	75
Atlas 66	45.3	64.3	18.7	2.58	153	189	126	12	47	10	VR	0	0	42
Clarion	43.9	53.4	15.8	2.91	160	188	94	0	61	20	R	80	MS	28
Centurk	43.6	67.8	14.9	2.89	151	185	126	36	87	0	0	0	0	30
Rousalka	40.6	61.7	15.5	2.95	144	174	84	1	71	5	VR	10	R	19
Carifen 12	40.0	49.5	14.9	2.98	157	186	87	1	71	0	0	0	0	94
Probstdorfer Extrem	37.4	66.9	13.4	2.71	155	188	148	26	87	10	VR	70	MS	53
C.I.15074	34.5	67.7	16.8	2.68	150	186	130	49	89	0	0	0	0	60
Tamwheat 102 (TX62A4793-7)	33.0	60.9	16.4	2.62	149	179	106	11	85	0	0	0	0	98
Blueboy	32.8	60.9	12.6	2.93	151	188	118	10	91	15	VR	80	S	98
Kirac 66	31.3	66.6	15.9	2.84	152	185	131	67	70	0	0	10	VR	96
Starke	30.9	58.7	13.6	3.01	161	191	126	10	93	10	VR	60	MS	46
Backa	30.7	57.1	15.4	2.99	149	183	83	0	66	50	M	50	M	1
Hokuei	28.2	65.2	13.0	2.80	152	187	116	25	85	40	R	90	S	98
Marimp 3	28.2	55.0	15.1	2.93	150	187	92	0	24	15	VR	60	MS	53
Lilifen	22.0	50.7	17.7	2.73	153	186	92	1	8	0	0	0	0	63
Jyva	19.4	56.7	14.6	2.91	160	188	126	35	82	20	MR	90	S	84
Vakka	17.5	58.0	14.1	3.03	160	189	125	26	71	0	0	90	S	98
Strampelli	8.7	61.4	14.2	2.98	151	186	81	0	5	0	0	50	M	10
Lerma Rojo 64	6.1	--	15.9	2.92	151	186	82	0	1	0	0	0	0	45
Victor I	3.5	--	17.0	2.72	150	189	61	0	6	0	0	30	MR-M	1
Mean	36.7	60.4	15.0	2.89	152.9	185.6	106.2	10.4	66.0	12.0		39.0		50.6
Standard error of a treatment mean	1.6	0.2	0.1	0.04	0.1	0.3	1.8	0.7	3.4	--		--		--
Coefficient of variation (%)	8.7	0.8	1.8	2.59	0.2	0.3	3.4	12.6	10.2	--		--		--

a) 9 = maximum; 1 = minimum;

Table 7. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Male Ripnany, Czechoslovakia, 1972. concluded

Cultivar	: Days from : planting to : seedling : emergence	: Amount of : seedling : emergence	: Rapidity of : spring growth	: Plant shoot : stage	: Plant boot : stage	: Fully headed	: Days from : ripening to : seed sprout-
	: 9-1 ^a	: 9-1 ^a	: 9-1 ^a	: days from Jan. 1	: days from Jan. 1	: days from Jan. 1	: ing
Bezostaya 1	16	9	8	108	144	147	10
Sava	16	9	6	108	143	148	8
Zenith	15	9	8	110	152	159	9
Maris Nimrod	15	9	8	109	152	160	9
Dacia	14	9	9	107	141	147	8
NE701132	15	8	8	108	145	150	8
Caribo	15	8	7	110	157	160	10
Diplomat	15	9	8	107	158	156	11
Zlatna dolina (Golden Valley)	15	9	8	108	140	146	7
Moldova	15	9	8	108	139	143	6
Atlas 66	12	8	6	111	147	153	9
Clarion	16	8	6	108	157	162	8
Centurk	17	9	7	109	145	148	10
Rousalka	15	9	7	106	134	140	6
Carifen 12	14	8	7	110	150	156	10
Probstdorfer Extrem	15	9	7	109	150	156	11
C.I.15074	14	9	6	106	145	149	10
Tamwheat 102 (TX62A4793-7)	16	8	8	108	142	147	10
Blueboy	14	9	8	110	144	149	9
Kirac 66	16	9	7	108	147	152	8
Starke	13	9	6	110	159	162	11
Backa	14	8	7	108	142	148	8
Hokuei	14	9	6	111	146	150	11
Marimp 3	14	7	6	108	141	148	8
Lilifen	14	8	7	109	147	152	7
Jyva	15	9	6	110	156	161	9
Vakka	14	8	6	108	157	162	11
Strampelli	15	7	7	111	145	148	7
Jerma Rojo 64	16	6	7	111	144	148	8
Victor I	14	7	6	108	145	148	7
Mean	14.8	8.4	7.0	108.7	147.1	151.8	8.8
Standard error of a treatment mean	--	--	--	--	--	--	--
Coefficient of variation (%)	--	--	--	--	--	--	--

a) 9 = maximum; 1 = minimum;

CZECHOSLOVAKIA

Sedlac

Cooperator(s): J. Schmidt; A. Hlavicka; J. Malý; A. Vernerová.

Date of planting (effective germination): November 2–6, 1971.

Precipitation during cycle of test: 434 mm (October 1, 1971 to August 10, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 55 kg/ha ($(\text{NH}_4)_2\text{SO}_4$ and urea); P = 19 kg/ha (superphosphate); K = 119 kg/ha (KCl).

General description of climatic conditions during test: Winter was mild, with snow cover, yet due to low February temperatures some varieties were damaged. High temperatures in July resulted in accelerated ripening of late cultivars.

Disease development: Late infection of stem rust; medium infection of mildew; but no stripe rust occurred.

Insect, weed or pest problems: None; MCPP herbicide applied May 3, 1972 at 2 kg/ha rate.

Date of harvest: August 2–14, 1972.

Area harvested for yield: 7.8 square meters.

Dates when different notes were taken:

Stand enclosure after emergence—December 7, 1971

Frost damage—March 22, 1972

Winter survival—April 10, 1972

Promptness of spring growth—April 10, 1972

Tillering intensity—May 2, 1972

Stand enclosure after heading—June 12, 1972

Mildew on leaves and stems—June 21, 1972

Mildew on heads—July 11, 1972

Plant height—July 2, 1972

Lodging—August 1, 1972

Stem rust—August 1, 1972

Data in Table 8

Table 8. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Sedlac, Czechoslovakia, 1972.

Cultivar	Yield: q/ha:	Test weight: kg/hl:	Protein: %:	Lysine: % of protein:	Date of		Plant height: cm:	Lodging: %:	Winter survival: %:	Frost damage: 0-9:	1000 kernel wt.: gm	:Mildew		
					Flowering: Days from Jan. 1:	Ripening ^a :						Stem rust : on leaf	Resp.: : and stem	: %
Sava	65.3	77.9	14.1	2.90	162	206	74	4	78	4	38	1	S	10
Maris Nimrod	64.8	71.5	13.7	2.77	171	218	95	59	100	3	41	5	S	40
Zenith	61.8	79.3	13.9	2.74	173	213	101	41	100	3	35	1	S	32
Probstdorfer Extrem	60.0	81.4	14.0	2.84	166	211	119	61	100	2	43	2	R	40
Clarion	58.4	75.4	14.1	2.84	173	215	99	19	80	3	36	1	S	70
Caribo	58.1	75.6	12.5	2.85	173	214	107	25	100	2	40	3	S	59
Centurk	57.9	78.2	14.4	2.93	165	209	97	94	100	2	33	0	0	30
Dacia	57.1	78.1	15.4	2.84	163	207	98	28	84	2	50	0	0	66
Bezostaya 1	57.1	79.5	13.6	2.89	164	209	88	45	100	3	46	1	R	47
Zlatna dolina (Golden Valley)	54.1	76.5	13.7	2.82	162	208	73	8	53	4	39	1	S	30
Blueboy	52.2	72.3	12.9	3.65	167	214	104	48	90	3	33	1	R	70
NE701132	52.1	78.6	16.8	2.62	167	213	104	78	100	2	40	0	0	32
Starke	50.7	78.2	14.5	2.83	177	223	121	48	100	1	34	7	R-S	30
Tamwheat 102 (TX62A4793-7)	50.5	73.1	13.1	3.07	161	206	83	80	100	1	30	0	0	81
Carifen 12	49.9	66.6	13.9	2.92	171	210	78	1	67	3	33	0	0	70
Moldova	47.9	76.8	15.7	2.88	162	208	98	66	80	3	43	0	0-S	55
C.I.15074	47.9	77.5	16.0	2.79	166	213	101	93	100	1	34	0	0	55
Diplomat	47.6	80.1	13.8	2.74	176	224	107	15	100	1	39	2	S	85
Vakka	46.6	74.4	15.2	2.81	171	209	113	89	100	2	37	1	S	55
Rousalka	46.3	79.3	14.8	2.74	159	205	68	0	45	3	47	0	0	58
Hokuei	46.1	76.0	13.5	2.89	165	213	100	93	100	3	35	7	S	55
Jyva	42.1	75.6	15.6	2.77	174	216	116	75	84	1	36	6	S	51
Atlas 66	40.0	77.7	18.1	2.68	169	221	110	70	38	5	40	1	R	40
Lilifen	32.1	73.9	15.1	2.72	172	222	81	0	18	7	43	1	R	66
Kirac 66	30.7	74.3	15.8	2.80	167	214	112	88	79	3	33	0	0	99
Backa	29.8	76.9	16.3	2.70	167	214	68	0	26	5	44	5	S	37
Marimp 3	16.7	79.3	16.8	2.76	166	214	77	0	15	7	39	1	S	55
Strampelli	15.1	78.9	14.6	2.81	163	214	74	6	9	8	40	0	0	55
Lerma Rojo 64	11.1	77.9	16.2	2.68	165	214	74	15	12	8	38	0	0	66
Victor I	7.5	77.4	16.7	2.74	166	215	63	0	9	8	35	0	0	47
Mean	45.2	76.6	14.8	2.81	167.2	213.1	93.4	41.5	72.1	3.3	38.4	1.6		52.9
Standard error of a treatment mean	2.3	0.5	0.2	0.03	0.3	--	1.6	5.0	1.6	0.3	0.7	--	--	--
Coefficient of variation (%)	10.4	1.3	2.6	2.39	0.3	--	3.5	24.0	4.3	15.3	3.8	--	--	--

a) Two reps only.

Table 8. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Sedlac, Czechoslovakia, 1972. concluded.

Cultivar	:Stand : :enclosure:			:Promptness:Initiation :Tillering:of spring :of plant			:Stand : :enclosure:Grain : Germination			:after ripening			
	:Mildew :on heads	:Days from: :planting-:emergence	:after :emergence:0-9	:Tillering by :10% of plants	:Tillering:of spring :intensity:growth	:of plant :stooling	:Stand : :enclosure:Grain : :after : :opment:5	:Stand : :enclosure:Grain : :after : :opment:5	:Germination :after ripening	:after ripening	:after ripening	:after ripening	:after ripening
	: %	:emergence:	0-9	:days from Jan.1:	0-9	0-9	:days from Jan.1:	0-9	0-9	: %	: %	: %	: %
Sava	5	18	1	77	2	3	122	3	2.8	7	40	47	
Maris Nimrod	18	19	1	78	1	5	129	1	4.0	4	54	88	
Zenith	10	21	1	89	3	2	128	2	3.0	8	18	19	
Probstdorfer Extrem	15	19	1	82	4	3	123	1	0.5	20	67	83	
Clarion	55	19	1	87	1	3	126	2	3.0	10	26	49	
Caribo	20	19	1	84	2	3	126	2	3.8	15	42	58	
Centurk	8	20	1	79	3	3	124	2	3.0	87	94	97	
Dacia	40	20	1	84	5	2	123	3	2.3	39	94	96	
Bezostaya 1	15	21	1	79	4	1	121	3	2.0	20	64	79	
Zlatna dolina (Golden Valley)	6	17	1	87	5	3	124	4	2.5	12	55	60	
Blueboy	70	18	1	84	4	1	121	2	4.3	19	42	47	
NE701132	38	21	2	88	2	2	123	2	3.8	5	36	47	
Starke	10	20	1	84	1	4	127	1	4.0	4	38	80	
Tamwheat 102 (TX62A4793-7)	70	19	1	86	4	2	122	3	4.5	0	5	6	
Carifen 12	44	19	0	89	3	2	127	2	6.5	3	28	37	
Moldova	48	19	1	87	2	1	122	4	2.3	26	82	85	
C.I.15074	20	20	1	79	2	3	124	2	2.5	13	52	61	
Diplomat	40	20	2	81	1	4	128	1	2.5	3	14	63	
Vakka	23	20	1	81	2	3	127	1	3.0	40	87	93	
Rousalka	30	20	1	87	5	1	121	3	2.5	6	32	53	
Hokuei	25	20	1	78	3	2	124	2	2.8	46	77	92	
Jyva	8	19	1	78	3	3	128	2	2.5	6	35	51	
Atlas 66	9	18	1	89	4	2	126	4	2.8	30	60	84	
Lilifen	55	19	1	--	6	3	124	5	5.3	14	68	93	
Kirac 66	66	20	1	87	2	5	128	3	4.5	100	100	100	
Backa	18	18	1	100	5	2	121	5	3.3	26	72	80	
Marimp 3	15	18	1	--	7	4	125	7	2.8	56	75	82	
Strampelli	5	18	1	--	6	4	122	7	3.5	34	66	83	
Lerma Rojo 64	9	18	0	--	7	3	121	7	3.8	30	47	57	
Victor I	10	17	1	--	7	5	125	7	3.5	31	62	78	
Mean	26.8	19.1	1	84.2	3.5	2.8	124.4	3.1	3.3	23.8	54.4	68.3	
Standard error of a treatment mean	--	--	--	--	--	--	--	--	--	--	--	--	
Coefficient of variation (%)	--	--	--	--	--	--	--	--	--	--	--	--	

a) Two reps only.

ENGLAND

Cambridge

Cooperator(s): F. G. H. Lupton.

Date of planting (effective germination): November 28–30, 1971.

Precipitation during cycle of test: 363 mm (November, 1971–August, 1972).

Amount of irrigation applied: None.

Fertilizer used: Basic—N = 16 kg/ha; P = 40 kg/ha; K = 40 kg/ha.

Top dressing—N = 68 kg/ha.

General description of climatic conditions during test: Mild, wet winter; cool, dry spring; early summer becoming wet and mild.

Disease development: Moderately severe attack of stripe rust over most of the trial. First observed in early April, and reaching a maximum severity in early July. Moderate attack of *Fusarium*, *Septoria* and *Erysiphe graminis*.

Insect, weed or pest problems: Bird damage to 4th replication for which yield not reported.

Date of harvest: August 9, 1972.

Area harvested for yield: 6 square meters.

Dates when different notes were taken:

Winter survival—March 4, 1972

Stripe rust—July 3–5, 1972

Plant height—July 31, 1972

Lodging—August 7, 1972

Data in Table 9

Table 9. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International winter wheat圃trial in nursery grown at

Cambridge, England, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Stripe rust	
					Flowering ^a days from Jan. 1	Ripening ^b			Sev. %	Resp.
Maris Nimrod	73.6	77.8	10.7	3.13	172	229	100	50	1	VR-R
Caribo	62.7	77.4	10.8	3.11	175	225	111	25	0	O-R
Vakka	60.0	79.1	12.5	2.96	173	223	134	52	1	R
Clarion	59.3	76.4	11.8	3.03	179	225	108	50	1	VR
Starke	59.3	81.3	12.4	3.00	178	239	129	29	2	VR-MR
Carifen 12	58.3	72.3	11.3	3.24	168	214	85	21	2	VR-R
Lilifen	57.6	78.3	13.1	2.90	166	225	96	24	0	VR
Diplomat	57.2	82.7	13.7	2.84	176	227	115	50	0	O
Sava	56.7	77.6	12.4	3.12	161	209	89	23	20	M
Zenith	55.5	78.0	12.6	2.97	173	226	106	25	0	VR
Blueboy	54.3	75.8	11.9	3.07	165	220	110	25	4	VR-M
Marimp 3	53.5	77.7	14.0	2.93	161	208	108	25	18	M
Strampelli	52.8	80.1	11.2	3.16	157	220	106	0	5	MR-M
Probstdorfer Extrem	50.6	79.8	12.6	2.88	165	217	126	8	3	R-M
Hokuei	48.9	77.9	12.5	2.97	167	224	114	62	1	R-MR
Dacia	47.6	80.4	13.5	2.87	165	212	114	26	0	VR
Bezostaya 1	47.0	77.5	12.8	2.96	164	218	104	25	7	M
Moldova	46.4	79.6	13.9	2.89	157	209	110	29	0	VR
Rousalka	46.0	79.0	13.1	2.92	155	210	85	20	0	VR
Victor I	43.9	77.6	13.0	3.02	159	209	90	45	23	M
Backa	42.4	77.0	14.1	2.88	159	219	91	23	33	M-VS
Atlas 66	41.9	80.2	15.5	2.65	165	227	130	30	3	VR-MR
Kirac 66	41.8	79.4	13.6	2.91	166	224	116	95	0	VR
Zlatna dolina (Golden Valley)	40.5	75.3	11.5	3.12	162	211	89	23	48	M-VS
LERMA Rojo 64	40.3	78.4	15.6	2.78	157	211	103	23	1	VR-MR
Jyva	39.4	76.7	12.3	3.03	173	226	133	32	28	M
Centurk	35.3	72.7	12.9	3.17	165	211	114	25	83	VS
NE701132	35.3	77.4	16.1	2.65	167	218	119	26	1	VR-R
Tamwheat 102 (TX62A4793-7)	26.7	72.3	12.4	3.03	159	211	99	0	90	VS
C.I.15074	23.5	75.9	14.6	2.97	168	218	116	0	90	VS
Mean	48.6	77.7	12.9	2.97	165.7	218.8	108.3	29.5	15.5	
Standard Error of a treatment mean	2.9	0.6	0.4	0.04	0.4	--	1.4	17.5	--	
Coefficient of variation (%)	10.3	1.6	5.5	2.67	0.3	--	2.6	118.9	--	

a) Two reps only.

b) One rep only.

FINLAND

Jokioinen

Cooperator(s): R. Manner.

Date of planting (effective germination): September 9, 1971.

Precipitation during cycle of test: 490.8 mm.

Amount of irrigation applied: None.

Fertilizer used: N = 150 kg/ha; P₂O₅ = 75 kg/ha; K₂O = 100kg/ha.

General description of climatic conditions during test: Warmer than normal.

Disease development: Much winter diseases (*Fusarium*, *Thyphula*, and *Sclerotinia*).

Insect, weed or pest problems: None.

Date of harvest: August 7, 1972.

Area harvested for yield: 2 square meters.

Dates when different notes were taken:

Winter survival—May 9, 1972

Flowering—June 22–26, 1972

Plant height—July 29, 1972

Lodging—July 29, 1972

Ripening—July 28–August 4, 1972

Data in Table 10

Table 10. Agronomic and grain quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Jokioinen, Finland, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of Protein	Date of		Plant height cm	Lodging %	Winter survival %
					Flowering	Ripening			
					days from Jan. 1.	days from Jan. 1.			
Starke	45.6	79.1	17.1	2.72	179	217	69	11	78
Jyva	36.2	75.2	18.3	2.71	178	216	66	50	83
Bezostaya 1	31.8	79.6	15.8	2.80	177	212	51	19	60
Vakka	28.0	74.2	16.9	2.78	177	211	69	76	76
Caribo	26.8	77.5	15.6	2.76	178	214	50	9	51
Probstdorfer Extrem	26.8	79.9	16.5	2.64	174	214	64	22	63
Blueboy	26.6	77.1	16.8	2.71	177	214	52	8	55
Clarion	26.5	76.9	17.2	2.56	179	217	48	0	48
Diplomat	25.9	78.3	17.2	2.67	177	217	56	5	59
C.I.15074	25.7	78.9	17.2	2.61	175	210	59	5	60
Zenith	24.8	78.5	17.1	2.62	178	214	54	5	55
Hokuei	24.6	75.1	15.9	2.67	174	211	65	59	83
Centurk	22.9	78.9	16.9	2.84	177	210	51	4	49
NE701132	16.1	77.8	19.4	2.66	178	211	54	9	41
Moldova	12.4	75.6	18.6	2.64	176	210	51	4	41
Dacia	8.9	--	19.4	2.70	176	210	47	9	40
Tamwheat 102 (TX62A4793-7)	4.6	--	17.0	2.72	176	207	42	1	24
Maris Nimrod	2.8	--	16.5	2.76	179	215	39	5	7
Sava	1.2	--	17.6	2.65	--	--	35	0	2
Carifen 12	0.3	--	15.1	2.78	--	--	35	--	1
Rousalka	0.2	--	18.0	2.57	--	--	30	--	1
Zlatna dolina (Golden Valley)	0.1	--	17.2	2.66	--	--	35	--	0
Atlas 66	0.0	--	--	--	--	--	--	--	0
Strampelli	0.0	--	--	--	--	--	--	--	0
Backa	0.0	--	--	--	--	--	--	1	0
Victor I	0.0	--	--	--	--	--	--	--	0
Marimp 3	0.0	--	--	--	--	--	--	--	0
Kirac 66	0.0	--	--	--	--	--	--	--	0
Lilifen	0.0	--	--	--	--	--	--	--	0
Lerma Rojo 64	--	--	--	--	--	--	--	--	0
Mean	14.4	77.5	17.3	2.69	178.0	212.8	51.0	15.1	32.5
Standard error of a treatment mean	3.3	--	--	--	--	--	--	--	6.9
Coefficient of variation (%)	45.5	--	--	--	--	--	--	--	42.3

HUNGARY

Martonvasar

Cooperator(s): S. Rajki; L. Balla.

Date of planting (effective germination): October 31, 1971.

Precipitation during cycle of test: 384 mm.

Amount of irrigation applied: None.

Fertilizer used: N = 170 kg/ha; P = 100 kg/ha; K = 68 kg/ha.

General description of climatic conditions during test: Favorable conditions in fall, spring and early summer, but too wet at harvesting.

Disease development: Heavy mildew and stem rust; moderate leaf rust infection.

Insect, weed or pest problems: None.

Date of harvest: July 14-18, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Mildew—June 14, 1972

Stem rust—June 25, 1972

Lodging—July 1, 1972

Plant height—July 1, 1972

Data in Table 11

Table 11. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Martonvasar, Hungary, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Shattering %	Winter survival %	Stem rust Resp.	Mildew Resp.
					Flowering	Ripening						
					days from Jan. 1	days from Jan. 1						
Centurk	50.3	75.8	14.1	2.86	152	191	98	45	1	100	R-M	S
Sava	44.6	73.0	13.8	2.93	148	183	75	0	1	85	VS	M
Probstdorfer Extrem	43.2	75.4	12.2	2.97	154	190	114	60	0	100	VS	M-S
C.I.15074	42.7	77.8	15.4	2.88	151	190	102	60	1	100	S-VS	VS
Bezostaya 1	37.6	76.1	13.6	2.95	150	188	80	0	1	95	M	VS
NE701132	37.5	74.9	16.0	2.72	151	194	98	80	1	100	M	VS
Tamwheat 102 (TX62A4793-7)	36.6	66.9	13.5	3.04	148	184	85	0	1	100	M-S	VS
Atlas 66	33.5	73.5	17.2	2.72	156	193	103	30	1	65	M	S
Hokuei	32.7	70.4	11.6	3.11	152	188	92	75	1	100	VS	VS
Zlatna dolina (Golden Valley)	32.6	71.0	13.8	2.98	147	183	72	0	1	95	VS	S
Blueboy	30.6	61.5	11.7	3.26	153	186	98	20	1	95	VS	VS
Dacia	30.2	73.1	14.6	2.94	150	185	94	25	1	100	VS	VS
Rousalka	28.5	72.8	15.3	2.93	144	184	69	0	1	100	VS	VS
Moldova	26.1	71.0	15.7	2.85	146	186	85	20	1	95	S-VS	VS
Maris Nimrod	25.0	54.8	13.0	3.07	159	192	93	0	0	100	VS	S
Zenith	24.7	61.8	13.1	3.11	160	191	92	10	0	100	VS	M-VS
Kirac 66	24.4	69.4	12.9	3.09	154	194	101	65	1	85	S-VS	VS
Caribo	23.9	56.8	12.8	3.01	161	196	100	10	1	100	VS	S-VS
Diplomat	22.9	67.2	13.8	2.99	164	199	101	0	1	100	VS	S-VS
Carifen 12	19.0	48.9	13.7	3.08	156	185	75	0	1	90	VS	VS
Clarion	18.9	54.0	14.7	2.87	158	191	91	0	1	100	VS	VS
Vakka	18.5	54.4	14.0	3.05	161	190	101	30	1	100	VS	M-VS
Starke	18.2	58.8	14.6	2.86	166	198	103	0	1	100	VS	M
Backa	15.5	65.9	16.3	2.82	152	190	68	0	1	75	VS	M
Jyva	14.5	55.3	14.6	2.93	164	191	106	25	2	100	VS	S-VS
Strampelli	11.3	--	16.0	2.80	151	192	65	40	2	40	VS	M
Lilifen	9.6	--	18.2	2.72	157	199	70	0	0	35	R	VS
Marimp 3	5.9	--	17.0	2.84	152	191	65	5	2	50	VS	M
Lerma Rojo 64	3.2	--	19.2	2.63	149	189	59	20	1	10	M	M
Victor I	2.1	--	17.4	2.80	152	191	56	0	1	25	S-VS	M
Mean	25.5	66.4	14.7	2.93	153.9	190.1	86.8	20.7	0.9	84.7		
Standard error of a treatment mean	1.4	0.3	0.1	0.03	0.7	0.7	1.0	3.3	0.4	3.4		
Coefficient of variation (%)	10.9	0.8	1.2	2.14	0.9	0.7	2.2	32.3	88.3	8.0		

HUNGARY

Szeged

Cooperator(s): I. Szaniel; Z. Barabas.

Date of planting (effective germination): October 20, 1971.

Precipitation during cycle of test: 411 mm.

Amount of irrigation applied: None.

Fertilizer used: N (ammonium nitrate) = 50 kg/ha; P_2O_5 (monocalcium dihydrophosphate) = 36 kg/ha; K_2O (potassium oxide) = 40 kg/ha.

General description of climatic conditions during test: Temperature was normal with minimum of -20° C, but only one-half of the normal precipitation received during December through April period.

Disease development: Powdery mildew attack was as usual; some leaf rust, but stem rust infection was higher than normal.

Insect, weed or pest problems: None.

Date of harvest: July 21, 1972.

Area harvested for yield: 7.2 square meters.

Dates when different notes were taken:

Winter survival—March 10, 1972

Lodging—June 15, 1972

Plant height—July 10, 1972

Shattering—July 31, 1972

Data in Table 12

Table 12. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Szeged,

Hungary, 1972										
Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Shattering %	Winter survival %	Stem rust Sev. %
					Flowering	Ripening				
					days from Jan. 1					
Sava	76.1	76.8	15.0	2.83	134	164	85	1	74	12
Probstdorfer Extrem	72.0	80.8	14.7	2.81	142	173	118	1	93	22
Zlatna dolina (Golden Valley)	69.6	76.2	15.3	2.76	138	165	83	2	74	18
Blueboy	69.4	72.4	15.1	2.82	137	166	106	1	86	20
Rousalka	67.4	76.9	15.0	2.85	134	163	83	1	80	15
Bezostaya 1	67.2	79.4	14.9	2.92	137	166	100	1	90	17
Dacia	66.1	77.4	16.0	2.71	138	167	109	1	93	15
NE701132	64.2	79.0	14.6	2.84	144	173	105	0	100	25
Moldova	61.7	77.0	16.1	2.90	134	165	110	3	85	26
Backa	61.0	76.5	16.2	2.71	134	163	85	1	69	42
Clarion	60.1	71.0	15.3	2.76	149	181	101	0	74	38
Maris Nimrod	58.8	68.3	14.5	2.76	148	177	103	1	66	31
Zenith	58.6	75.4	15.2	2.77	146	175	109	0	81	48
Caribo	58.3	73.9	13.4	2.93	148	177	111	0	80	47
Lilifen	57.0	72.9	15.5	2.82	148	178	100	1	51	23
Tamwheat 102 (TX62A4793-7)	54.3	72.4	16.1	2.73	136	165	94	1	90	8
Centurk	53.8	76.8	15.5	2.86	139	168	110	1	94	13
Diplomat	53.2	78.1	14.9	2.86	147	180	113	0	80	47
Carifen 12	53.0	64.1	15.0	2.86	145	172	84	0	73	73
Marimp 3	50.3	75.3	14.6	2.76	141	169	93	1	38	23
Hokuei	49.5	73.4	15.2	2.98	139	170	101	1	81	37
C.I.15074	48.9	79.4	14.8	2.97	141	171	113	0	94	21
Atlas 66	48.8	76.3	15.6	2.77	142	172	111	0	58	25
Vakka	45.9	70.5	16.5	2.79	147	176	110	1	88	46
Kirac 66	43.8	74.7	16.4	2.89	144	172	109	1	69	70
Strampelli	40.9	74.0	16.0	2.74	136	168	91	0	36	18
Jyva	40.5	72.3	16.4	2.81	149	179	115	1	79	48
Starke	38.7	72.8	15.0	2.84	152	183	115	0	80	33
Victor I	30.3	70.9	15.0	2.73	143	173	75	1	33	22
Lerma Rojo 64	--	--	16.3	2.75	--	--	--	--	0	--
Mean	55.8	74.7	15.3	2.82	141.7	171.3	101.4	0.7	72.8	30.4
Standard error of a treatment mean	2.8	0.7	0.8	0.6	0.7	0.7	1.9	0.2	1.8	--
Coefficient of variation (%)	9.9	1.9	10.8	4.42	1.0	0.8	3.7	64.3	5.0	--

INDIA

Simla

Cooperator(s): M. V. Rao; M. K. Upadhyay; B. Ram.

Date of planting (effective germination): June 12, 1971.

Precipitation during cycle of test: 272 mm (rainfall); 38 cm (snowfall).

Amount of irrigation applied: Five applications (no amounts reported).

Fertilizer used: N $\text{Ca}(\text{NO}_3)_2$ = 120 kg/ha; P (superphosphate) = 60 kg/ha; K (murate of potash) = 40 kg/ha.

General description of climatic conditions during test: Drought during March, May and mid-June, 1972; but rains at harvest time.

Disease development: No infection of rusts and powdery mildew observed.

Insect, weed or pest problems: None.

Date of harvest: June 20, 1972.

Area harvested for yield: Basically 2.3 square meters.

Dates when different notes were taken:

Winter survival—Early March, 1972

Plant height—At maturity

Lodging—At maturity

Data in Table 13

Table 13. Agronomic and grain quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Simla, India, 1972.

Cultivar	Yield q/ha	Date of		Plant height cm	1000 kernel wt. gm
		Flowering	Ripening		
		days from Jan. 1			
Lerma Rojo 64	34.5	95	136	84	38
Strampelli	32.3	111	146	73	33
Victor I	29.3	112	143	66	29
Marimp 3	26.9	112	146	81	26
Backa	23.2	113	146	76	26
Moldova	23.2	112	141	84	32
Rousalka	23.0	111	141	61	33
Blueboy	21.6	116	141	91	19
Dacia	20.8	120	141	95	28
Zlatna dolina (Golden Valley)	20.4	114	152	69	28
Kirac 66	19.8	115	146	109	27
Atlas 66	18.8	115	141	108	22
C.I.15074	15.4	123	146	105	22
NE701132	15.0	120	141	98	24
Tanwheat 102 (TX62A4793-7)	14.9	116	146	88	16
Bezostaya 1	14.8	117	146	79	23
Centurk	14.1	118	146	85	17
Caribo	13.4	131	156	96	21
Maris Nimrod	13.0	131	155	84	25
Sava	12.6	116	141	73	15
Zenith	12.4	131	157	81	17
Probstdorfer Extrem	12.1	128	152	90	21
Carifen 12	11.5	129	152	61	26
Lilifen	9.1	123	152	78	23
Diplomat	8.6	138	162	85	27
Vakka	8.2	138	158	86	24
Clarion	8.1	137	159	70	25
Jyva ^a	8.1	138	160	97	29
Hokuei	7.6	123	146	84	16
Starke	1.5	144	167	74	28
Mean	16.7	121.0	148.3	83.1	24.4
Standard error of a treatment mean	2.5	1.0	0.6	4.1	1.5
Coefficient of variation (%)	30.1	1.7	0.8	9.9	11.9
Local cultivar Kalyansona	32.1	115.0	146.0	61.3	30.4

a) Three reps only; Jyva was not included in analysis of variance.

IRAN

Hamadan

Cooperator(s): H. Kaveh; M. A. Vahabian; T. Mahlooji.

Date of planting (effective germination): October 21, 1971.

Precipitation during cycle of test: 320 mm.

Amount of irrigation applied: Three applications of about 800 m³ per irrigation/ha.

Fertilizer used: N (urea) = 120 kg/ha; P₂O₅ (triple superphosphate) = 60 kg/ha.

General description of climatic conditions during test: Very cold winter with snow cover and minimum temperature of -37° C.

Disease development: Not severe.

Insect, weed or pest problems: Bird damage reduced yield effectively.

Date of harvest: July 14, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 14

Table 14. Agronomic and grain quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Hamadan, Iran, 1972.

Cultivar	Yield q/ha	Protein %	Lysine % of protein	Date of		Plant height cm	Winter survival %	1000 kernel weight gm	Bird damage %
				Flowering days from Jan. 1	Ripening				
Hokuei	31.3	11.6	3.04	152	198	71	95	35	1
Maris Nimrod	29.5	11.1	3.34	159	200	66	94	39	5
Blueboy	29.1	12.0	3.11	153	202	77	94	37	0
Starke	28.3	12.9	3.17	163	201	85	92	30	0
Probstdorfer Extrem	28.2	13.4	2.87	156	200	84	95	34	0
Clarion	25.9	12.6	3.11	160	202	62	94	34	0
Carifen 12	25.9	11.3	3.43	156	197	56	95	37	0
Diplomat	25.7	14.4	3.04	160	202	72	96	38	0
Zenith	25.2	13.1	3.09	159	201	66	94	29	0
Kirac 66	25.1	14.5	3.05	153	197	82	94	37	0
Centurk	25.0	13.0	3.14	153	197	73	94	30	1
Caribo	24.9	12.2	3.21	160	196	65	96	35	0
Jyva	24.5	13.8	3.10	159	201	70	95	29	0
Tamwheat 102 (TX62A4793-7)	24.3	12.6	3.07	148	196	69	92	33	4
Bezostaya 1	23.8	12.9	2.97	151	197	80	96	41	9
Vakka	23.2	13.1	3.12	160	201	74	94	31	1
C.I.15074	23.1	14.3	2.97	151	197	76	96	32	1
NE701132	22.7	14.4	2.97	151	197	74	92	34	0
Sava	21.1	12.6	3.21	149	197	63	92	31	3
Dacia	20.1	15.0	3.11	149	197	74	92	38	5
Strampelli	19.0	13.4	3.10	151	198	65	79	37	13
Moldova	18.5	14.4	3.06	148	197	79	94	38	9
Atlas 66	17.4	16.5	2.82	153	198	79	88	32	1
Lilifen	17.4	13.3	3.14	156	201	56	76	41	0
Backa	16.6	15.0	3.00	153	197	60	90	38	26
Marimp 3	13.6	14.9	3.13	151	197	63	84	33	9
Zlatna dolina (Golden Valley)	13.0	14.8	2.97	149	197	60	95	34	35
Lerma Rojo 64	7.9	--	--	150	198	50	33	30	0
Rousalka	6.5	16.2	2.95	162	197	63	96	39	48
Victor I	5.9	15.1	3.11	153	198	49	53	32	49
Mean	21.4	13.6	3.08	154.0	198.3	68.6	88.9	34.5	7.3
Standard error of a treatment mean	2.4	0.6	0.1	2.4	0.9	4.0	3.9	12.0	--
Coefficient of variation (%)	22.6	8.8	3.7	3.1	0.9	11.6	8.8	11.6	--
Local cultivars									
Ommid	30.2	11.7	3.24	153.8	198.5	89.3	94.8	46.8	0
Roshan	19.6	12.2	3.19	148.5	198.5	78.5	78.8	46.3	0

IRAN

Karaj

Cooperator(s): H. Kaveh; M. A. Vahabian; T. Mahlooji.

Date of planting (effective germination): October 16, 1971.

Precipitation during cycle of test: 312 mm.

Amount of irrigation applied: Six applications of about 800 m³ per irrigation/ha.

Fertilizer used: N (urea) = 120 kg/ha; P₂O₅ (Triple Superphosphate) = 60 kg/ha.

General description of climatic conditions during test: Very cold winter and cool spring with above normal precipitation. Minimum temperature was -27° C.

Disease development: Artificial inoculation for stem rust and stripe rust. Epidemy occurred but was rather late.

Insect, weed or pest problems: Some bird damage. Weeded 3 times plus herbicide application.

Date of harvest: July 10, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 15

Table 15. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Karaj, Iran, 1972.

Cultivar	Yield: q/ha	Protein: %	Lysine: % of protein	Date of		Plant height: cm	Lodging: %	Shattering: %	Survival: %	Winter kernel: wt. gm	Rust					
				Flowering: days from Jan. 1	Ripening						Stripe wt. %	Leaf Resp. %	Stem Resp. %	Leaf Resp. %	Stem Resp. %	
Centurk	58.0	11.7	3.27	132	181	120	0	23	96	33	17	S	0	0	5	0-S
Lerma Rojo 64	52.3	12.9	3.04	120	178	98	0	3	55	45	0	0	0	0	0	0
Tamwheat 102 (TX62A4793-7)	50.9	9.6	3.53	129	181	110	0	4	98	29	0	0	0	0	64	S
NE701132	49.3	14.1	2.90	133	180	125	10	18	60	36	2	0-MS	21	S	17	MS-S
Victor I	48.5	11.5	3.24	127	179	85	0	40	50	37	0	0	0	0	0	0
Strampelli	48.4	8.7	3.53	123	178	100	0	30	80	39	0	0	0	0	58	S
Kirac 66	47.0	12.6	3.04	126	180	125	52	38	92	40	0	0	0	0	7	0-S
Lilifen	45.8	12.5	3.05	132	181	103	0	9	92	41	7	0-S	11	0-S	17	MS-S
Atlas 66	44.3	14.2	2.97	129	180	128	30	20	60	34	25	S	7	0-S	13	MS-S
Zlatna dolina (Golden Valley)	43.6	10.8	3.28	128	179	88	0	23	87	36	0	0	0	0	58	S
Moldova	42.6	10.8	3.39	127	180	121	20	5	92	36	0	0	2	0-S	64	S
Dacia	41.9	10.1	3.51	129	180	114	0	20	96	39	0	0	0	0	62	S
Sava	40.8	9.2	3.68	128	178	95	0	18	85	29	0	0	0	0	66	S
Probstdorfer Extrem	40.6	11.3	3.26	140	180	134	0	14	94	34	0	0	2	0-S	37	S
Bezostaya 1	40.6	10.1	3.47	133	179	108	0	28	92	40	0	0	0	0	53	S
C.I.15074	39.8	10.8	3.44	134	180	128	0	40	98	30	35	0-S	6	0-S	25	S
Blueboy	39.3	9.2	3.64	132	181	121	0	5	94	31	5	0-MS	0	0	62	S
Marimp 3	38.8	11.7	3.16	127	178	108	0	50	60	37	0	0	6	0-S	66	S
Rousalka	38.6	9.3	3.53	123	179	86	0	1	89	39	0	0	0	0	83	S
Backa	36.6	10.6	3.41	129	179	98	0	18	80	38	0	0	0	0	72	S
Hokuei	32.6	10.5	3.37	136	182	116	10	15	96	28	1	0-S	0	0	68	S
Zenith	25.7	9.5	3.47	142	182	109	0	13	92	22	0	0	0	0	81	S
Diplomat	25.4	10.0	3.36	143	184	111	0	10	87	30	0	0	0	0	75	S
Vakka	25.2	9.4	3.73	143	183	124	0	25	94	22	0	0	2	0-S	66	S
Maris Nimrod	22.7	9.4	3.56	141	184	113	0	40	77	23	0	0	0	0	67	S
Caribo	22.5	9.6	3.36	139	182	121	0	0	94	24	0	0	0	0	75	S
Carifen 12	19.5	7.7	3.93	140	181	84	0	0	85	22	0	0-N	0	0	99	S
Starke	19.0	10.0	3.55	151	192	118	0	35	92	22	0	0	0	0	66	S
Jyva	16.1	10.9	3.41	144	184	121	0	50	94	22	0	0	2	0-S	68	S
Clarion	15.4	9.2	3.60	144	186	103	0	6	94	20	0	0	6	0-S	72	S
Mean	37.1	10.6	3.39	133.4	180.8	110.3	4.1	19.9	85.2	31.8	3.1		2.2		52.2	
Standard error of a treatment mean	4.3	0.7	0.10	0.8	0.9	3.3	7.0	4.9	4.0	1.2	--		--		--	
Coefficient of variation (%)	23.4	14.0	6.33	1.2	0.9	6.0	345.0	49.1	9.3	7.7	--		--		--	
Local cultivars																
Ommid	33.9	9.75	3.46	126	180	137	70	0	95	37	50	S	0	0-N	50	S
Dayhim	41.5	9.50	3.37	131	180	111	40	3	90	32	30	S	3	0-S	45	S
Voll (1-44-21863)	56.9	11.40	3.17	129	179	136	50	13	96	42	8	0-S	0	0	10	S

IRAQ

Sulaimaniya

Cooperators: A. I. Alaka; M. A. Aziz.

Date of planting (effective germination): November 16, 1971.

Precipitation during cycle of test: 853.7 mm.

Amount of irrigation applied: None.

Fertilizer used: N (ammonium sulfate) = 80 kg/ha; P₂O₅ (triple super-phosphate) = 80 kg/ha.

General description of climatic conditions during test: Winter was exceptionally cold and almost all varieties survived it well.

Disease development: All three rusts appeared, but to different degrees, with leaf rust being most prevalent.

Insect, weed or pest problems: Weeds were effectively controlled by hand.

Date of harvest: June 29, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Stripe rust—May 10, 1972

Leaf rust—May 20, 1972

Stem rust —June 10, 1972

Data in Table 16

Table 16. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Sulaimaniya, Iraq, 1972.

Cultivar	Yield q/ha	Protein %	Lysine % of protein	Date of		Plant height cm	Stripe		Rust		Stem	
				Flowering days from Jan. 1	Ripening		Sev. : %	Resp. : %	Sev. : %	Resp. : %	Sev. : %	Resp. : %
Bezostaya 1	41.7	12.1	2.83	134	165	109	0	0	6	R	1	0-S
Blueboy	40.3	11.4	2.84	135	167	113	1	0-S	3	R	6	MR-S
Victor I	40.0	12.0	2.74	130	161	88	0	0	45	MR	2	0-S
Backa	37.8	12.1	2.73	132	164	93	0	0	51	MR-MS	15	MR-VS
Strampelli	36.9	9.8	3.02	130	161	94	0	0	55	MR-MS	0	0
Centurk	36.7	12.3	2.78	136	168	114	0	0	11	R	1	0-S
Marimp 3	36.3	13.0	2.61	133	164	103	0	0	46	MR-MS	2	0-R
Dacia	33.5	14.5	2.68	138	168	119	0	0	8	R	6	MR-S
Sava	33.1	11.4	2.97	133	164	86	0	0	2	0-R	7	R-S
Tamwheat 102 (TX62A4793-7)	32.9	11.5	2.92	137	167	108	0	0	13	R	5	S
Zlatna dolina (Golden Valley)	32.2	13.3	2.79	134	163	74	0	0	13	R-MS	7	MS-S
Moldova	30.5	13.9	2.68	131	161	115	0	0	1	0-R	3	0-MR
Hokuei	29.9	10.4	2.92	139	170	115	0	0	43	MR-MS	2	0-S
Lilifen	29.5	14.8	2.61	142	174	94	1	0-S	1	R	0	0
NE701132	28.7	14.0	2.66	138	168	120	0	0	1	R	0	0
Kirac 66	28.3	13.8	2.73	134	170	136	0	0	68	MS-VS	6	0-S
Probstdorfer Extrem	28.2	14.0	2.68	143	170	128	0	0	20	R-MR	6	S
Jerma Rojo 64	27.8	11.6	2.76	118	154	99	0	0	1	0-R	0	0
Zenith	26.3	14.1	2.74	147	176	100	0	0	63	MR-MS	6	0-S
Caribo	26.2	12.8	2.69	148	176	114	0	0	56	MR-S	17	S
Rousalka	25.0	12.2	2.80	130	160	80	0	0	1	0-R	2	0-S
C.I.15074	24.8	14.7	2.74	140	168	124	53	S-VS	0	0	3	0-S
Diplomat	24.0	15.2	2.66	150	177	101	1	0-R	21	R-MR	10	S
Atlas 66	23.8	16.4	2.60	137	168	126	2	0-S	0	0-R	0	0
Maris Nimrod	23.8	13.1	2.77	151	177	99	0	0	6	R	5	S
Carifen 12	23.7	11.7	3.00	149	175	80	0	0	53	R-MR	18	MS-S
Clarion	22.0	14.4	2.51	151	177	98	2	0-MR	10	R	20	MS-S
Vakka	19.6	14.9	2.74	151	175	115	0	0	27	MR-MS	10	MS-S
Starke	15.0	16.1	2.54	153	178	109	1	0-S	60	MR-MS	7	MR-S
Jyva	14.8	14.9	2.74	150	176	108	0	0	51	MR-MS	11	S
Mean	29.1	13.2	2.75	139.7	168.7	105.2	2.0		24.5		5.9	
Standard error of a treatment mean	2.6	0.3	0.04	0.6	0.8	2.9	--		--		--	
Coefficient of variation (%)	17.7	4.6	3.25	0.9	1.0	5.5	--		--		--	

ITALY

Milano

Cooperator(s): M. C. Scalfati.

Date of planting (effective germination): From November 30 to December 3, 1971.

Precipitation during cycle of test: 800 mm (from October, 1971 to July, 1972).

Amount of irrigation applied: None.

Fertilizer used: 106N-106P-90K (5-12-10 at seeding; 10-10-10 during the winter; $\text{Ca}(\text{NO}_3)_2$ and NH_4NO_4 used).

General description of climatic conditions during test: A peculiar year due to frequent and abundant rainfall during all the biological cycle.

Disease development: A good infection of mildew; rust infection, particularly stem rust, was mild due to the cause of temperatures during the spring months.

Insect, weed or pest problems: None reported.

Date of harvest: July 15, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Frost damage—March 3 and April 10, 1972

Mildew—May 29, 1972

Lodging—May 15 and June 29, 1972

Dried leaves—June 10, 1972

Leaf rust—June 23, 1972

Stem rust—July 1, 1972

Data in Table 17

Table 17. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Milano, Italy, 1972.

Cultivar	Yield : q/ha	Test weight : kg/hl	Protein : %	% of Lysine : protein	Date of Flowering : days from Jan. 1	Plant height : cm	Lodging : %	Frost damage : 0-9	Rust				Mildew : Resp.	Dried leaves : Resp. 1-5	
									Leaf : %	Stem : %	Sev. : %	Resp. : %			
Blueboy	64.0	73.6	10.7	3.23	145	188	103	65	2	0	0	7	0-MR	M-S	3
Maris Nimrod	56.6	71.1	12.9	3.00	154	194	99	6	2	17	0-S	7	0-MR	0-VR	2
Caribo	55.9	74.5	12.1	2.95	156	194	105	29	2	62	S	22	R-S	VR-M	1
Dacia	55.8	79.6	13.1	3.09	144	187	110	31	2	0	0	0	0	VR-M	3
Clarion	51.8	69.5	13.7	2.90	157	194	99	3	2	3	0-R	2	0-R	R-M	2
Strampelli	51.4	77.3	11.4	3.24	136	186	84	48	2	0	0	0	0	M-S	4
Backa	51.4	77.2	13.6	2.89	138	186	87	21	2	37	MS	1	0-M	0-R	3
Rousalka	51.0	77.3	13.2	2.95	136	186	75	0	2	0	0	2	0-M	R-S	5
Sava	50.1	73.4	13.3	3.00	138	186	82	5	2	0	0	0	0	0	4
Marimp 3	50.0	76.3	13.0	3.08	138	186	92	25	2	30	MS-S	0	0	R-S	4
Diplomat	48.5	78.6	14.0	2.86	157	194	101	0	2	17	R	5	0-MR	M-S	1
Zenith	48.4	75.1	13.5	2.95	156	194	102	10	2	70	S	1	0-R	0-VR	2
Carifen 12	47.5	65.2	13.3	3.04	152	190	81	0	2	17	MR	0	0	R-M	2
Victor I	45.3	73.1	14.0	2.94	138	186	80	4	3	15	0-MR	0	0	VR-M	5
Bezostaya 1	45.2	80.1	12.3	3.03	144	186	97	30	3	0	0	0	0	0-VR	4
Tamwheat 102 (TX62A4793-7)	44.8	74.9	11.9	3.03	144	187	88	5	2	0	0	0	0	R-M	4
Zlatna dolina (Golden Valley)	44.1	74.0	12.7	3.04	138	186	75	3	3	0	0	1	0-R	0	4
Hokuei	43.1	75.9	13.0	3.00	148	189	99	68	3	20	MS	2	0-R	R-S	2
Lerma Rojo 64	42.6	77.9	14.6	2.84	131	183	86	35	2	0	0	0	0	M-S	5
Probstdorfer Extrem	41.8	79.7	13.4	2.90	150	193	114	78	2	35	MR	0	0	0	2
Moldova	40.3	76.0	14.7	2.94	137	186	100	85	2	0	0	0	0	VR-M	4
Lilifen	40.0	70.7	15.0	2.85	150	189	97	3	2	0	0	0	0	R-M	3
Jyva	39.1	74.4	12.9	2.89	157	194	106	28	2	72	S	40	R-VR	R-S	1
Centurk	38.1	74.9	13.8	2.89	144	187	104	82	2	0	0	0	0	0	3
NE701132	37.8	76.1	14.9	2.88	146	189	106	97	2	0	0	0	0	0-VR	3
Starke	36.3	71.6	14.7	2.81	161	195	108	13	2	42	0-S	7	0-R	0-R	1
Vakka	36.0	69.8	14.3	2.91	156	194	113	87	2	55	S	10	0-MS	0-M	2
C.I.15074	36.0	77.9	15.1	2.78	148	187	114	97	3	0	0	0	0	0-R	2
Atlas 66	32.6	76.7	16.6	2.64	148	191	107	95	3	0	0	0	0	0-R	2
Kirac 66	31.3	74.9	15.2	2.80	146	189	115	99	2	72	S	0	0	R-S	2
Mean	45.2	74.9	13.6	2.94	146.3	189.2	97.5	38.3	2.0	18.8		3.6			2.8
Standard error of a treatment mean	2.3	0.7	0.3	0.32	0.3	0.6	2.5	7.4	0.3	--		--			--
Coefficient of variation (%)	10.0	2.0	4.8	4.74	0.4	0.6	5.0	38.9	26.0	--		--			--

ITALY

Rieti

Cooperator(s): G. Zitelli.

Date of planting (effective germination): January 15, 1972.

Precipitation during cycle of test: 300 mm.

Amount of irrigation applied: None.

Fertilizer used: N = 105 kg/ha; P₂O₅ = 115 kg/ha.

General description of climatic conditions during test: Nursery planted on December 10, 1971, but low temperatures (below 0° C with a few minimum values of -52° C) caused delay of germination. Spring time was mild, with several rains in May. Weather during maturation time was good.

Disease development: Not reported.

Insect, weed or pest problems: None reported.

Date of harvest: July 5-20, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 18

Table 18. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Rieti, Italy, 1972.

Cultivar	: Yield : : q/ha :	: Test weight : : kg/ha :	: Protein : : % :	: Lysine : : % of protein :	: Date of Flowering : : days from Jan.1 :	: Ripening : : days :	: Plant height : : cm :	: Shat-ting : : % :	: Winter survival : : % :	: Rust :				: Mildew : : % :	: Septoria : : % :	: Rachis weakness : : % :
										: Leaf : : % :	: Stem : : % :	: Resp. : : % :	: Resp. : : % :			
Bezostaya 1	45.2	77.4	9.9	3.20	140	185	118	2	97	0	0	40	MS	0	0	5
Centurk	44.3	76.0	8.9	3.23	138	186	125	2	95	0	0	50	S	0	80	3
Rousalka	43.3	75.5	11.3	3.11	132	177	92	2	97	0	0	80	S	20	0	4
Strampelli	43.3	72.5	9.1	3.16	132	178	97	3	93	30	MS	70	MS	0	60	4
Zlatna dolina (Golden Valley)	42.5	73.4	10.1	3.17	135	182	91	3	96	20	R	80	S	0	60	11
Lilifen	42.3	75.2	11.0	3.14	146	189	110	1	96	0	0	60	MR	30	70	0
Marimp 3	41.3	72.8	10.7	3.11	135	182	111	4	96	30	MS	40	MS	0	99	6
Dacia	40.3	73.9	9.5	3.41	141	182	126	5	97	20	MR	90	S	0	60	7
Tamwheat 102 (TX62A4793-7)	39.2	70.5	9.8	3.18	139	185	106	1	95	30	R	70	S	0	99	0
Victor I	38.9	73.0	10.5	3.07	135	181	94	5	97	90	S	0	0	0	99	3
Sava	38.4	72.0	9.9	3.01	136	181	95	1	96	0	0	80	S	0	40	2
Lerma Rojo 64	38.3	74.8	12.0	2.90	128	177	104	1	93	20	MS	50	MS	15	40	1
Moldova	37.8	75.9	11.1	3.25	131	177	129	4	98	40	R	99	S	0	80	6
Backa	37.8	73.7	10.4	3.05	135	186	99	6	94	70	S	80	S	0	99	3
NE701132	37.0	77.7	11.3	3.21	143	189	134	1	92	0	0	60	MR	0	0	1
Blueboy	36.6	68.0	7.8	3.41	140	185	122	2	95	30	R	99	S	20	80	8
Atlas 66	36.0	76.7	13.6	2.75	143	189	144	2	94	0	0	40	MS	0	80	2
Probstdorfer Extrem	35.2	76.7	9.5	3.16	147	190	139	2	95	20	R	99	S	0	0	1
C.I.15074	31.7	76.1	11.3	2.97	143	189	142	3	96	0	0	60	MS	0	70	1
Hokuei	26.9	67.4	9.0	2.93	145	188	118	1	95	40	S	99	S	0	0	4
Carifen 12	26.8	65.0	8.5	3.32	148	187	88	2	97	60	MS	99	S	0	99	4
Maris Nimrod	26.5	65.0	8.3	3.16	151	192	110	1	92	30	MR	99	S	0	20	1
Kirac 66	25.2	75.3	10.6	3.22	145	188	141	1	94	40	MS	60	MS	0	90	0
Clarion	23.8	65.0	10.1	2.88	153	192	113	1	95	30	MR	99	S	0	10	2
Diplomat	23.7	69.7	9.9	2.97	155	200	115	4	96	30	R	99	S	40	0	1
Caribo	21.5	65.0	8.9	3.04	151	192	121	1	96	60	MS	90	S	0	30	4
Zenith	18.4	65.0	10.2	2.99	151	192	115	1	95	50	MS	99	S	0	90	1
Vakka	13.0	65.0	9.1	3.12	148	192	135	2	92	80	MR	99	S	0	60	1
Starke	10.2	65.0	11.8	2.68	158	194	119	2	92	70	MR	99	S	0	0	3
Jyva	8.2	65.0	9.6	3.05	148	190	129	3	96	30	S	99	S	0	99	3
Mean	32.4	71.5	10.1	3.10	142.4	186.6	115.9	2.1	95.0	30.7		76.3		4.2	53.8	3.1
Standard error of a treatment mean	1.8	0.6	0.3	0.1	0.3	0.4	2.8	0.7	1.6	--	--	--	--	--	--	--
Coefficient of variation (%)	11.0	1.6	5.4	3.6	0.4	0.5	4.9	64.9	3.4	--	--	--	--	--	--	--

JAPAN

Morioka

Cooperator(s): T. Gotoh; H. Fujiwara.

Date of planting (effective germination): September 24, 1971.

Precipitation during cycle of test: 1034 mm (September, 1971–July, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 70 kg/ha; P = 150 kg/ha; K = 100 kg/ha as compound fertilizer applied at seeding time. N = 46 kg/ha as $(\text{NH}_4)_2\text{SO}_4$ in spring.

General description of climatic conditions during test: Duration of snow cover was abnormally short (55 days), therefore, damage by snow mold was rare but plants received cold injury by low temperatures. Temperatures ranged from -15.1°C to 30.0°C .

Disease development: Infection by leaf rust was less than normal year, and its symptoms developed late. Infection by stem rust was very rare and no yellow rust was observed.

Insect, weed or pest problems: None. Measurement of shattering was slightly harmed by birds.

Date of harvest: July 11–25, 1972.

Area harvested for yield: 1.8 square meters.

Dates when different notes were taken:

Winter survival—April 11, 1972

Leaf rust—July 5, 1972

Data in Table 19

Table 19. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Morioka, Japan, 1972.

Cultivar	Yield g/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Shattering %	Winter survival %	Leaf rust	
					Flowering days from Jan. 1	Ripening				Sev.	Resp.
Tamwheat 102 (TX62A4793-7)	31.3	78.8	15.2	2.85	153	193	85	3	100	7	R-M
Vakka	29.2	73.5	15.7	2.70	162	199	105	13	100	50	S-VS
Hokuei	28.5	78.7	14.7	2.87	157	195	103	16	100	60	S-VS
Sava	27.8	78.9	15.3	2.82	152	190	78	18	95	7	VR-MR
Blueboy	26.9	75.8	16.2	2.82	157	197	96	12	100	25	M-S
Diplomat	26.4	72.6	17.4	2.72	165	204	100	26	100	35	MS-S
Caribo	24.8	64.5	17.0	2.73	166	203	98	35	100	75	S-VS
Marimp 3	24.6	76.8	18.0	2.72	154	193	84	1	93	40	M-S
Maris Nimrod	24.1	67.3	16.4	2.71	164	201	83	11	99	17	R-M
Clarion	23.4	61.8	19.8	2.67	168	204	84	7	99	10	VR-M
Victor I	22.7	75.4	17.1	2.70	155	194	73	6	77	45	MS-S
Backa	22.7	75.7	18.4	2.72	154	193	77	1	96	45	M-S
Probstdorfer Extrem	22.1	74.5	17.0	2.76	161	202	95	4	97	62	MS-VS
Zlatna dolina (Golden Valley)	22.1	79.0	15.9	2.72	155	192	71	6	97	5	VR-MR
Rousalka	21.8	79.0	16.6	2.72	150	194	75	18	98	16	VR-R
Atlas 66	21.0	77.5	19.9	2.66	158	199	101	6	97	6	VR-M
Zenith	19.4	71.3	17.2	2.61	162	200	88	13	100	62	M-VS
Dacia	18.9	73.3	18.6	2.63	156	198	92	10	100	5	VR-MR
Jyva	18.2	69.4	15.7	2.76	164	201	97	6	100	99	VS
Strampelli	18.0	78.7	15.1	2.81	156	194	78	0	87	42	M-S
Bezostaya 1	17.7	75.8	16.5	2.79	158	198	90	6	100	10	VR-MR
Moldova	17.5	76.6	17.5	2.83	153	193	94	3	100	7	R-MR
NE701132	15.9	75.3	18.2	2.74	157	200	85	5	99	9	VR-R
C.I.15074	14.9	76.6	19.1	2.77	158	197	91	2	98	12	VR-R
Lilifen	13.0	61.2	19.1	2.89	163	204	76	9	78	2	VR-R
Kirac 66	12.6	71.8	17.4	2.75	157	201	85	4	99	99	VS
Carifen 12	12.2	59.0	17.2	2.96	166	200	61	18	93	94	S-VS
Starke	12.0	62.9	17.5	2.68	169	206	102	10	100	82	S-VS
Centurk	10.2	73.5	17.9	2.71	158	199	79	10	97	15	VR-R
Lerma Rojo 64	1.0	--	20.7	2.72	159	203	--	--	2	35	M-S
Mean	20.7	72.9	17.2	2.75	158.9	198.0	86.9	9.6	93.2	35.9	
Standard error of a treatment mean	3.0	1.1	0.3	0.03	0.8	1.1	3.0	7.0	1.6	--	
Coefficient of variation (%)	28.5	3.0	3.7	2.73	1.0	1.1	7.0	145.4	3.3	--	

KOREA

Suwon

Cooperator(s): Hyun Ok Choi; Dong Woo Ree.

Date of planting (effective germination): October 10, 1971.

Precipitation during cycle of test: 403.3 mm.

Amount of irrigation applied: None.

Fertilizer used: N (urea) = 105 kg/ha; P (muriate diphosphate) = 60 kg/ha; K (potassium chloride) = 60 kg/ha.

General description of climatic conditions during test: Mild winter; high temperature in spring; humid at heading time.

Disease development: Leaf rust, stem rust and *Septoria* were major diseases.

Insect, weed or pest problems: None.

Date of harvest: July 3, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Leaf rust—June 20–24, 1972

Stem rust—June 20–24, 1972

Data in Table 20

Table 20. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Suwon, Korea, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Winter survival %	Rust			
					Flowering days from Jan. 1	Ripening				Leaf		Stem	
										Sev. %	Resp. %	Sev. %	Resp. %
Zlatna dolina (Golden Valley)	51.7	76.1	11.9	3.16	139	177	93	0	100	12	MS	28	MR-MS
Bezostaya 1	50.2	77.7	12.8	3.04	144	179	108	15	95	3	MR	1	R
Sava	50.1	77.1	12.4	3.18	142	175	94	0	100	6	R-MR	42	MS-S
Rousalka	47.7	76.1	13.8	3.10	138	176	87	0	100	13	MR-MS	47	MR-S
Marimp 3	45.6	77.3	13.5	3.03	139	176	105	30	86	27	MR-MS	26	MS-S
Backa	45.4	77.1	13.8	2.97	141	177	98	1	95	32	MS-S	46	MS-S
Victor I	43.7	76.1	13.9	3.01	140	177	87	0	80	32	MR-MS	8	MS-S
Strampelli	42.9	76.0	11.1	3.36	143	175	99	38	84	2	R-MR	3	R-MR
Vakka	42.7	66.8	12.8	3.21	146	180	122	5	100	30	MR-MS	52	MS-S
Caribo	42.3	71.2	11.8	3.18	144	185	120	0	100	17	MS	32	MS-S
Moldova	40.6	78.3	13.1	3.12	137	176	116	77	99	6	R-MR	10	MR-MS
Lilifen	39.5	72.9	14.3	3.05	142	179	106	0	83	0	R	0	R
Dacia	39.3	77.4	14.2	3.03	139	176	113	85	100	28	R-MR	58	MS-S
Probstdorfer Extrem	39.3	78.2	13.5	2.95	145	180	120	63	100	10	R-MR	48	S
Zenith	38.0	73.6	12.9	3.12	146	183	114	0	95	37	MR-MS	57	S
Blueboy	38.0	71.7	10.8	3.34	144	178	110	28	100	23	MR-MS	80	MS-S
Centurk	37.9	77.2	13.1	3.14	143	177	113	71	100	27	MR	3	R
Maris Nimrod	37.6	67.4	11.4	3.27	143	184	106	1	100	20	MR-MS	47	MR-S
Tamwheat 102 (TX62A4793-7)	35.2	73.2	12.9	3.18	142	175	97	65	98	42	MR-MS	15	R-MR
Clarion	34.9	69.4	11.8	3.15	146	184	112	0	90	3	R-MR	22	MS-S
Diplomat	34.3	73.8	12.7	3.16	145	185	116	0	95	18	MR-MS	21	MR-MS
NE701132	33.2	78.2	15.1	2.82	142	175	108	77	100	0	R	2	R
C.I.15074	33.0	79.4	14.4	3.09	144	177	109	60	100	25	MR-MS	62	MS-S
Atlas 66	32.9	73.2	15.2	2.91	144	177	112	85	95	2	R	1	R
Carifen 12	32.8	58.5	12.5	3.25	144	182	86	0	96	45	MS-S	33	MR-S
Lerma Rojo 64	31.6	79.1	13.1	2.94	134	176	100	3	65	23	R-MR	11	MR
Kirac 66	31.2	74.4	13.7	3.03	142	179	117	90	100	82	S	36	MR-MS
Hokuei	30.3	73.8	12.6	2.99	144	181	102	63	96	8	MR-MS	5	MR-MS
Jyva	28.1	70.7	11.9	3.28	144	182	129	25	100	35	MR-MS	22	MR-MS
Starke	19.9	70.7	14.7	3.03	149	186	121	8	98	30	MR-MS	16	MR-MS
Mean	38.3	74.1	13.0	3.10	142.5	178.8	107.2	29.5	95.0	21.3			27.8
Standard error of a treatment mean	3.1	1.1	0.5	0.1	0.2	0.7	2.0	8.9	1.1	--			--
Coefficient of variation (%)	16.1	3.1	7.2	3.5	0.3	0.8	3.8	60.3	2.2	--			--

MEXICO

Toluca

Cooperator(s): CIMMYT.

Date of planting (effective germination): November 10, 1971.

Precipitation during cycle of test: 475.2 mm.

Amount of irrigation applied: 2 sprinkling applications; 9 applications by gravity flow. 2 hrs.; ± 20 mm lamina.

Fertilizer used: Uranitro (46%); superphosphate triple (46%); granulated 80-80-00 at sowing, 40-00-00 at 43-44 days after.

General description of climatic conditions during test: Average maximum temperatures = 20.07° C; average minimum temperature = 0.88° C for most of the cycle; clear days with strong breeze, drizzling rain by night; strong winds of the south, southeast and north.

Disease development: Funguses, Puccinias, septoria, etc.

Insect, weed or pest problems: Root aphids controlled by gravity irrigation. Many predators (rats and birds) were present.

Date of harvest: July 7-August 10, 1972.

Area harvested for yield: 2.4 square meters.

Dates when different notes were taken:

Disease—June 19, 1972

Data in Table 21

Table 21. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Toluca, Mexico^a, 1972.

Cultivar	Yield q/ha	Protein ^b %	Lysine ^b % of protein	Date of		Plant height cm	Lodging %	Winter survival %	Stripe ^c		Rust Leaf ^b		Stem ^b	
				Flowering days from Jan. 1	Ripening				Sev. %	Resp.	Sev. %	Resp.	Sev. %	Resp.
Maris Nimrod	64.3	10.1	3.26	203	260	111	0	100	1	R	30	S	50	S
Sava	58.8	13.7	2.96	190	245	98	0	100	20	S	0	0	0	0
Dacia	58.1	13.4	3.03	187	234	115	23	100	5	MR	0	0	40	S
Caribo	55.8	11.0	3.03	205	261	129	4	100	1	R	40	S	1	MS
Lilifen	54.6	14.0	2.93	177	247	108	0	100	5	MR	5	MS	10	S
Zenith	52.0	12.4	3.03	207	261	106	1	100	1	R	5	S	10	S
Carifen 12	50.7	12.1	3.18	200	256	91	0	100	1	R	50	S	50	S
Rousalka	46.5	14.3	2.95	179	232	85	0	100	5	MR	0	0	10	S
Zlatna dolina (Golden Valley)	46.4	13.4	2.86	186	238	89	0	100	5	S	0	0	50	S
Clarion	46.3	11.1	3.18	210	264	116	1	100	3	R	10	MS	20	S
Blueboy	46.0	13.7	2.96	190	249	108	6	100	6	R-MR	10	S	20	S
Tamwheat 102 (TX62A4793-7)	44.7	14.0	2.92	182	239	110	58	100	90	S	0	0	1	MR
Backa	43.9	15.2	2.93	194	245	105	0	100	11	R-S	5	MS	20	S
Moldova	43.0	15.1	2.99	183	236	120	45	100	5	MR	10	S	80	S
Marimp 3	42.7	14.3	2.95	178	227	100	0	100	3	R-MR	0	0	10	S
Bezostaya 1	39.9	12.9	2.93	190	243	105	34	100	3	R-MR	1	MR	20	S
NE701132	35.2	14.9	2.93	189	247	121	48	100	8	MR	0	0	1	MS
Centurk	33.6	14.4	2.84	188	238	119	75	100	3	R-MR	40	S	1	MR
Hokuei	33.0	12.8	2.89	192	255	108	73	100	3	0-MS	0	0	5	S
Victor I	32.6	15.5	2.93	168	224	85	0	100	3	R-MR	20	S	10	S
Kirac 66	30.4	14.6	2.87	182	240	123	56	100	5	MR	60	S	80	S
Starke	30.0	10.3	3.27	222	262	131	0	100	1	0-R	50	S	5	S
Atlas 66	29.7	17.0	2.55	187	247	120	75	100	6	MR-MS	0	0	0	0
Strampelli	25.7	15.5	2.99	171	227	91	1	100	5	MR	1	R	20	S
LERMA Rojo 64	24.8	15.8	2.81	167	230	96	43	55	55	S	0	0	1	MR
Probstdorfer Extrem	23.2	13.0	2.94	208	262	129	75	100	1	0-R	5	MS	5	S
C.I. 15074	22.4	15.1	2.83	191	248	125	48	100	90	S	0	0	1	MR
Diplomat	20.8	12.9	2.91	217	271	113	0	100	1	R	70	S	0	0
Vakka	20.3	12.8	3.03	214	265	128	50	100	3	R	30	S	10	S
Jyva	13.6	13.5	2.95	214	268	128	58	100	5	R	40	S	5	S
Mean	39.0	13.6	2.96	192.1	247.2	110.3	25.7	98.5	11.8		16.1		17.9	
Standard error of a treatment mean	4.9	--	--	0.9	2.5	3.0	8.2	0.9	--		--		--	
Coefficient of variation (%)	25.2	--	--	0.9	2.0	5.5	63.4	1.9	--		--		--	

a) Planted November 10, 1971.
b) One rep only.
c) Two reps only.

MEXICO

Toluca

Cooperator(s): CIMMYT.

Date of planting (effective germination): December 11, 1971.

Precipitation during cycle of test: 452.7 mm.

Amount of irrigation applied: 1 sprinkling application at sowing; 9 applications by gravity flow. 2 hrs; ± 20 mm lamina.

Fertilizer used: Uranitro (46%); superphosphate triple (46%; granulated 80-80-00 at sowing, 40-00-00 at 43-44 days after.

General description of climatic conditions during test: Average maximum temperature = 20.09° C; average minimum temperature = 0.91° C for most of the cycle; clear days with strong breeze, drizzling rain by night; strong winds of the south, southeast and north.

Disease development: Funguses, Puccinias septoria, etc.

Insect, weed or pest problems: Root aphids controlled by gravity irrigation. Many predators (rats and birds) caused much damage.

Date of harvest: July 19-August 10, 1972.

Area harvested for yield: 2.5 square meters.

Dates when different notes were taken:

Diseases—June 19, 1972

Data in Table 22

Table 22. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Toluca, Mexico^a, 1972 .

Cultivar	Yield q/ha	Protein ^b %	Lysine ^b % of protein	Date of		Plant height cm	Lodging %	Rust					
				Flowering days from Jan. 1	Ripening			Stripe Sev. %	Leaf Resp. %	Stem Sev. %	Stem Resp. %	Stem Sev. %	Stem Resp. %
Lilifen	52.6	14.1	2.84	163	234	116	0	1	R	5	MR	5	S
Rousalka	48.3	14.3	2.83	159	216	100	0	5	MR	5	MS	60	S
Dacia	45.6	14.6	2.77	164	217	121	34	5	MR	1	S	80	S
Maris Nimrod	42.6	11.4	3.34	183	235	116	0	1	R	5	MS	80	S
Carifen 12	42.1	13.0	3.12	178	230	95	0	1	R	60	S	60	S
Sava	40.9	14.0	2.92	167	224	99	8	5	S	1	MS	10	S
Victor I	39.2	16.0	2.88	160	211	100	0	5	MR	1	S	50	S
Zenith	38.3	12.4	2.93	184	236	121	3	1	R	50	S	40	S
Zlatna dolina (Golden Valley)	37.2	13.7	2.79	164	221	91	0	20	S	0	0	5	S
Moldova	36.9	15.5	2.75	161	211	128	11	5	MR	1	R	40	S
Blueboy	35.8	13.8	2.91	166	227	126	48	10	S	10	MS	20	S
Backa	33.6	16.1	2.78	170	227	115	5	40	S	0	0	1	R
Caribo	33.1	10.7	3.29	184	241	140	0	20	S	70	S	60	S
Marimp 3	30.6	15.1	2.95	161	211	110	45	5	MR	1	S	30	S
Lerma Rojo 64	30.3	15.8	2.77	147	199	115	19	5	MR	30	S	30	S
NE701132	30.1	14.8	2.80	168	224	134	70	1	R	10	S	10	S
Bezostaya 1	30.0	13.5	2.95	169	228	114	60	5	S	1	MR	20	S
Tamwheat 102 (TX62A4793-7)	28.0	15.6	2.79	160	216	111	60	90	S	0	0	0	0
Centurk	26.5	14.4	2.86	168	220	130	65	5	MR	0	0	1	MR
Clarion ^c	22.9	16.3	2.79	190	241	118	7	5	R	10	S	5	S
Probstdorfer Extrem	19.7	14.5	2.92	182	243	138	50	5	MS	5	MR	30	S
Atlas 66	18.3	16.7	2.70	167	225	130	70	5	MR	30	S	0	0
Strampelli	17.7	14.0	3.07	154	212	106	45	5	S	0	0	50	S
Hokuei	17.2	14.4	2.94	176	236	111	85	20	S	0	0	50	S
C.I.15074	14.8	15.9	3.08	170	231	134	77	90	S	0	0	1	R
Kirac 66	14.6	15.7	2.78	162	224	121	85	5	MS	60	S	60	S
Diplomat	12.2	14.7	3.13	201	273	134	0	1	R	80	S	1	MR
Vakka	10.9	15.8	2.76	190	270	139	65	5	R	50	S	30	S
Starke	7.5	11.4	3.20	206	272	128	0	1	R	60	S	5	S
Jyva	6.8	14.6	2.96	191	270	134	65	10	S	50	S	50	S
Mean	29.0	14.4	2.92	171.5	230.2	119.2	33.4	12.7		19.9		29.5	
Standard error of a treatment mean	4.5	--	--	0.9	1.6	3.5	7.9	--	--	--	--	--	--
Coefficient of variation (%)	30.8	--	--	1.0	1.4	5.9	47.3	--	--	--	--	--	--

a) Planted December 11, 1971.

b) One rep only.

c) Three reps only. Not included in analysis of variance.

THE NETHERLANDS

Wageningen

Cooperator(s): J. Sneep; A. C. Zeven; H. Masselink.

Date of planting (effective germination): October 25, 1971.

Precipitation during cycle of test: 661.1 mm.

Amount of irrigation applied: None.

Fertilizer used: $P_2O_5 = 45$ kg/ha; $K_2O = 45$ kg/ha.

General description of climatic conditions during test: Lowest temperature in winter was -17° C; spring was dry; and summer was wet and rather cool.

Disease development: Mildew attacked most varieties. No stripe rust.

Insect, weed or pest problems: None reported.

Date of harvest: July 26–August 10, 1972.

Area harvested for yield: 4.5 square meters.

Dates when different notes were taken:

Winter survival—March 22, 1972

Mildew—June 14, 1972

Lodging—June 23, 1972

Plant height—June 28, 1972

Data in Table 23

Table 23. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Wageningen, The Netherlands, 1972.

Cultivar	Yield	Test weight	Protein	Lysine	Date of		Plant	Lodging	Shattering	Winter survival	Frost damage	Mildew Sev.
	q/ha	kg/hl	%	% of protein	Flowering	Ripening	height					
					days from Jan. 1	days from Jan. 1	cm	%	%	%	0-9	%
Zlatna dolina (Golden Valley)	50.7	78.0	10.6	3.32	158	212	95	0	16	85	2	46
Maris Nimrod	49.9	72.5	11.2	3.24	169	220	103	0	5	91	1	0
Sava	48.0	75.5	12.0	3.23	158	208	95	0	11	79	3	0
Strampelli	47.0	74.3	10.8	3.33	156	209	104	0	26	56	5	26
Marimp 3	44.4	74.3	12.4	3.21	159	214	110	0	28	73	4	10
Caribo	44.3	76.3	11.2	3.12	171	220	125	0	5	90	2	43
Zenith	44.3	81.4	11.9	3.11	170	216	118	0	6	85	2	0
Rousalka	43.7	78.8	12.7	3.09	154	207	95	0	38	70	4	6
Backa	41.9	79.3	13.2	3.11	159	213	99	16	13	80	3	0
Victor I	41.3	76.4	11.9	3.19	160	214	89	0	23	43	8	45
Clarion	41.3	74.9	11.2	3.23	171	222	117	0	4	86	2	62
Dacia	40.8	77.0	12.1	3.29	160	211	117	63	18	80	3	37
Blueboy	40.6	75.7	10.3	3.39	161	208	130	0	9	89	2	63
Bezostaya 1	39.6	79.9	11.0	3.22	160	212	106	0	6	81	3	12
Lilifen	39.4	74.6	12.1	3.16	164	220	105	0	9	65	4	65
Probstdorfer Extrem	39.3	82.3	11.3	3.06	149	213	140	14	5	84	3	0
Carifen 12	39.2	69.4	12.0	3.32	167	212	189	0	8	89	2	45
Starke	37.7	77.9	11.1	3.24	175	230	132	0	5	93	1	5
Diplomat	36.9	78.8	12.1	2.96	171	232	122	0	14	85	2	65
Hokuei	36.3	77.3	11.1	3.26	163	214	126	30	6	76	3	6
Lerma Rojo 64	35.6	80.8	12.6	3.02	155	207	107	8	6	65	5	46
Centurk	33.1	78.8	11.8	3.18	163	214	116	70	11	81	2	26
Tamwheat 102 (TX62A4793-7)	33.1	74.0	11.3	3.33	159	211	101	35	14	81	2	84
Jyva	33.1	77.7	12.0	3.11	169	216	134	53	10	85	2	0
Moldova	32.9	78.1	12.8	3.12	156	208	110	63	16	88	2	63
Vakka	31.2	77.5	12.7	3.00	167	216	133	53	23	81	3	11
Atlas 66	30.4	80.4	13.8	2.98	161	213	120	75	16	84	2	0
NE701132	23.7	78.9	14.1	2.92	161	212	118	68	8	85	2	63
Kirac 66	18.0	74.5	14.6	2.93	164	214	129	83	6	85	2	63
C.I.15074	16.9	79.8	14.2	2.89	165	213	113	80	5	91	1	25
Mean	37.9	77.1	12.1	3.15	162.3	214.2	113.1	23.6	12.3	80.2	2.7	30.6
Standard error of a treatment mean	1.5	0.6	0.3	0.06	2.8	0.9	2.4	6.4	2.8	2.4	0.4	--
Coefficient of variation (%)	7.9	1.6	4.8	3.98	3.4	0.8	4.2	53.9	45.6	6.0	28.4	--

ROMANIA

Fundulea

Cooperator(s): T. Muresan; N. Eustatiu; G. Ittu.

Date of planting (effective germination): October 17, 1971.

Precipitation during cycle of test: 456.1 mm (August 1, 1971–July 1, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 100 kg/ha; P_2O_5 = 70 kg/ha.

General description of climatic conditions during test: Normal precipitation during autumn. Winter was very dry with low temperatures, especially in the second part. Precipitation was above normal in the spring.

Disease development: Climatic conditions favored the attack of leaf rust and especially stem rust.

Insect, weed or pest problems: Weeds controlled by herbicide.

Date of harvest: July 2, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Frost damage—March 10, 1972

Winter survival—March 20, 1972

Plant height—June 15, 1972

Stripe rust—June 17, 1972

Lodging—June 18, 1972

Leaf rust—June 20, 1972

Stem rust—June 20, 1972

Data in Table 24

Table 24. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Fundulea, Romania, 1972.

Cultivar	Yield : q/ha	Test weight : kg/hl	Protein : %	Lysine : % of protein	Date of		Plant height : cm	Winter lodging : %	Frost survival : %	Frost damage : 0-9	Stripe		Rust		Stem	
					Flowering : days from Jan. 1	Ripening					Sev. : %	Resp. : %	Sev. : %	Resp. : %	Sev. : %	Resp. : %
Dacia	48.0	79.3	15.4	2.83	141	172	110	0	100	4	0	0	60	S-VS	50	S-VS
Centurk	46.6	79.3	14.0	3.08	141	171	107	3	100	3	0	0	17	R-MR	5	R-MR
Probstdorfer Extrem	46.5	80.8	14.4	2.87	144	180	120	0	100	3	0	0	62	MS-VS	72	VS
Bezostaya 1	45.5	81.3	12.8	3.01	142	179	98	0	100	4	0	0	65	MS-VS	72	VS
Moldova	44.8	78.7	16.0	2.73	140	171	112	0	100	5	0	0	8	MR-MS	42	MS-VS
NE701132	44.5	79.4	16.0	2.68	144	173	105	10	100	3	0	0	8	R	6	R-MR
C.I.15074	44.2	80.9	16.5	2.85	142	173	115	15	100	3	52	VS	9	R-MS	6	MR
Tamwheat 102 (TX62A4793-7)	43.6	75.8	13.6	3.13	141	171	92	0	100	3	0	0	60	S-VS	22	MS-S
Zlatna dolina (Golden Valley)	42.8	77.0	13.6	2.96	141	172	76	0	99	7	0	0	37	MS-S	57	S-VS
Rousalka	42.8	79.2	15.5	2.80	137	171	80	0	100	5	0	0	11	MR-MS	37	MS-S
Sava	41.2	78.3	13.8	3.06	140	173	84	0	99	6	0	0	19	MR-S	57	S-VS
Blueboy	37.5	73.4	11.9	3.32	143	178	102	0	100	5	0	0	37	MS	67	S-VS
Hokuei	35.7	76.6	12.6	3.06	144	179	98	0	100	4	0	0	67	S-VS	80	VS
Maris Nimrod	32.4	67.8	13.7	2.96	150	184	98	0	100	6	0	0	31	MR-MS	80	VS
Kirac 66	31.2	78.2	14.7	2.88	145	176	117	28	98	6	0	0	90	VS	16	MS-VS
Clarion	29.7	67.0	16.0	2.84	151	182	96	0	100	5	0	0	55	MR	52	VS
Diplomat	29.3	75.7	14.6	2.87	152	183	101	0	100	5	0	0	77	S-VS	45	MS-VS
Vakka	27.6	68.8	14.3	3.07	149	184	105	0	100	4	0	0	67	VS	90	VS
Zenith	26.9	70.4	14.6	2.90	148	181	97	0	100	5	0	0	85	VS	77	VS
Caribo	26.2	66.8	14.9	2.84	150	182	106	0	100	6	0	0	85	VS	80	VS
Atlas 66	25.8	77.7	18.9	2.70	148	181	114	0	68	9	7	MS	24	R-MR	6	MS-VS
Backa	22.2	74.5	14.3	2.90	143	179	76	0	73	8	0	0	87	VS	85	VS
Jyva	20.0	67.2	14.9	2.99	149	184	107	0	100	4	0	0	70	MS-VS	70	VS
Starke	10.5	64.7	16.2	2.94	155	186	107	0	100	5	0	0	80	VS	67	VS
Carifen 12	10.1	54.3	13.9	3.01	149	181	76	0	90	7	0	0	95	VS	85	VS
Lilifen	8.4	74.4	18.0	2.66	153	184	77	0	13	9	0	0	10	R-MR	0	0
Marimp 3	1.1	--	--	--	143	181	78	0	9	9	0	0	92	VS	80	VS
Strampelli	1.1	--	16.1	2.88	148	182	66	0	5	9	0	0	80	VS	75	VS
Victor I	1.0	--	--	--	148	181	64	0	4	9	0	0	85	VS	32	MS-VS
Lerma Rojo 64	--	--	--	--	--	--	--	0	0	9	--	--	--	--	--	--
Mean	29.9	74.1	14.9	2.92	145.6	178.4	95.9	1.9	81.9	5.4	2.0		54.2			52.2
Standard error of a treatment mean	1.4	0.6	0.2	0.04	0.0	0.0	2.9	--	2.0	0.2	--		--		--	
Coefficient of variation (%)	9.1	1.7	3.2	2.76	0.0	0.0	5.9	--	4.9	9.1	--		--		--	
Local cultivars																
F26-67	38.2	76.8	13.0	3.02	140	174	89	0	94	6	0	0	59	VS	90	VS
F133-67	37.4	80.6	17.4	2.75	141	175	90	0	98	6	0	0	71	S-VS	14	MS-S
F51-68	48.6	80.8	13.9	3.00	142	176	92	0	96	4	0	0	7	R	15	MR-MS
F4R-69	10.1	76.9	14.0	2.94	145	178	80	0	16	7	0	0	71	VS	11	MS

RUSSIA

Krasnodar

Cooperator(s): P. P. Lukyanenko

Date of planting (effective germination): October 15, 1971.

Precipitation during cycle of test: 170 mm.

Amount of irrigation applied: None.

Fertilizer used: N = 120 kg/ha; P = 90 kg/ha; K = 45 kg/ha.

General description of climatic conditions during test: Minimum temperature was -30° C. It was drought during grain development with temperatures $+35$ to 37° C.

Disease development: Slight development.

Insect, weed or pest problems: Sparrows, Lema and Eurygaster.

Date of harvest: July 10, 1972.

Area harvested for yield: 6.6 square meters.

Dates when different notes were taken:

Winter survival—March 24, 1972

Lodging—April 24 and May 30, 1972

Stripe rust—June 2 and July 4, 1972

Leaf rust—June 13, 1972

Stem rust—June 15, 1972

Data in Table 25

Table 25. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Krasnodar, Russia, 1972.

Cultivar	Yield : q/ha	Test ^a : weight : kg/hl	Protein : %	Lysine : % of : protein	Date of		Plant : height : cm	Lodging : %	Shattering : %	Winter : survival : %	Rust		
					Flowering : days from Jan. 1	Ripening					Stripe	Leaf	Stem
											Sev. : %	Sev. : %	Sev. : %
Backa	45.8	76.0	16.9	2.76	137	167	93	0	6	100	0	1	0
Rousalka	43.8	72.7	16.4	2.90	133	164	86	0	4	100	0	1	0
Zlatna dolina (Golden Valley)	42.8	72.3	15.7	2.89	136	166	84	0	1	100	0	0	0
Bezostaya 1	40.0	74.6	16.1	2.78	139	168	104	0	0	100	0	1	0
Sava	40.0	72.3	15.8	2.77	139	166	91	0	4	100	1	0	0
Probstdorfer Extrem	39.1	75.6	17.6	2.67	142	169	120	65	3	100	6	2	0
Marimp 3	38.9	71.0	17.1	2.78	140	168	100	0	5	56	0	0	0
Strampelli	37.8	73.4	14.9	2.87	133	165	94	0	6	78	0	4	0
Blueboy	35.4	69.9	15.9	2.79	140	168	105	0	3	100	0	18	0
Dacia	34.7	72.8	18.0	2.77	137	166	114	63	5	100	0	0	0
Moldova	33.9	74.1	17.8	2.88	134	163	120	0	4	100	0	0	0
Zenith	32.0	70.1	18.9	2.67	147	170	95	0	2	41	0	5	5
Caribo	30.3	70.1	18.5	2.72	147	172	102	0	2	100	0	4	4
NE701132	30.2	73.5	18.2	2.89	140	169	105	58	2	100	0	0	0
Victor I	30.0	68.1	16.7	2.80	137	166	80	0	5	36	0	29	0
Lilifen	30.0	69.7	18.8	2.82	141	169	96	0	0	100	0	0	0
Tamwheat 102 (TX62A4793-7)	29.0	68.9	17.0	2.80	137	166	99	80	2	100	0	0	0
Maris Nimrod	27.0	66.8	18.6	2.77	147	172	94	0	0	100	0	13	0
Kirac 66	26.5	74.7	17.7	2.94	139	171	113	80	2	41	0	50	0
Atlas 66	26.0	71.5	20.6	2.67	140	168	110	73	5	100	25	4	0
Carifen 12	25.8	61.5	18.8	2.95	145	168	71	13	1	100	0	1	5
Vakka	25.5	65.7	18.5	2.74	146	172	94	0	3	100	0	13	0
Centurk	25.0	72.7	17.8	2.78	139	167	107	65	6	100	40	1	0
Clarion	24.7	68.5	20.0	2.69	148	178	89	0	1	30	0	0	4
Jyva	21.8	68.0	20.1	2.72	147	174	97	0	5	100	0	19	0
Diplomat	21.6	73.3	19.3	2.74	151	180	91	9	2	100	0	10	0
Starke	19.9	70.1	20.2	2.69	151	177	81	5	0	100	0	26	0
Hokuei	18.8	66.0	17.6	2.77	142	167	99	80	3	100	0	1	0
C.I.15074	13.7	71.5	17.9	2.78	142	167	105	0	3	100	83	0	0
Lerma Rojo 64	10.0	72.6	--	--	101	125	67	0	1	8	0	15	0
Mean	30.0	70.9	17.8	2.79	139.9	167.6	96.7	19.6	2.8	86.3	5.1	7.3	0.6
Standard error of a treatment mean	1.9	--	0.1	0.04	6.1	7.6	4.2	4.0	0.5	1.3	--	--	--
Coefficient of variation (%)	12.4	--	1.3	2.80	8.8	9.1	8.8	40.5	37.0	3.1	--	--	--

a) Two reps only.

SWEDEN

Svalof

Cooperator(s): Gosta Olsson.

Date of planting (effective germination): September 29, 1971.

Precipitation during cycle of test: 706 mm (September, 1971–August, 1972).

Amount of irrigation applied: None.

Fertilizer used: N ($\text{Ca}(\text{NO}_3)_2$) = 90 kg/ha; P = 72 kg/ha.

General description of climatic conditions during test: A very mild winter with 100% survival in Swedish winter wheats. Sufficient precipitation available, and the summer was warmer than normal.

Disease development: No attacks of rusts but a normal attack of mildew. *Septoria nodorum* attack also.

Insect, weed or pest problems: None.

Date of harvest: August 3–15, 1972 (dried on field before threshing).

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken:

Winter survival—April 11, 1972

Plant height—July 16, 1972

Mildew—July 13, 1972

Lodging—August 1, 1972

Data in Table 26

Table 26. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Svalof, Sweden, 1972.

Cultivar	Yield	Test weight	Protein	Lysine	Date of		Plant height	Lodging	Shattering	Winter survival	1000 kernel wt.	Mildew sev.	Septoria ^a modorum	Pearling ^a resistance
	q/ha	kg/hl	%	% of protein	Flowering days from Jan. 1	Ripening	cm	%	%	%	gm	%	1-9	1-9
Diplomat	67.8	78.3	11.6	3.17	176	222	100	0	1	100	40	40	5	6
Maris Nimrod	67.5	69.5	12.1	3.16	175	219	90	0	0	100	36	0	7	6
Caribo	65.0	73.8	11.0	3.20	175	221	100	0	0	100	39	42	7	5
Jyva	63.3	75.2	11.3	3.17	174	221	110	20	4	100	35	7	7	7
Centurk	61.6	78.0	11.7	3.10	167	214	99	16	0	100	33	8	5	7
Starke	61.1	76.3	11.1	3.34	179	225	113	9	0	100	34	7	5	7
Probstdorfer Extrem	60.6	80.9	12.0	3.07	170	218	108	50	0	100	39	3	3	7
Clarion	60.3	71.9	13.2	2.95	175	219	91	0	0	100	33	40	7	6
Bezostaya 1	53.3	77.8	12.0	3.10	168	218	89	4	0	100	42	18	7	7
Sava	53.0	76.1	13.9	3.12	164	215	72	0	0	95	34	1	7	7
Vakka	52.6	73.6	12.1	3.18	173	219	104	55	2	100	31	15	9	7
Hokuei	52.3	78.2	11.5	3.00	168	218	96	65	0	95	41	15	5	6
Zlatna dolina (Golden Valley)	51.8	75.8	13.7	2.99	165	215	78	2	0	94	37	15	7	6
Blueboy	51.3	72.9	10.9	3.32	169	219	101	14	0	96	37	40	7	5
Dacia	51.2	75.2	15.4	2.90	164	213	96	20	4	99	46	25	7	6
Zenith	48.0	76.3	12.3	3.07	172	219	89	1	0	99	28	10	6	7
Atlas 66	44.8	77.5	14.6	2.85	166	220	96	20	0	69	36	7	7	6
Moldova	42.1	75.4	15.5	2.85	164	215	91	19	3	98	40	30	8	6
Backa	41.0	74.3	15.0	2.82	165	216	68	0	0	79	35	7	9	6
C.I.15074	38.0	76.8	17.2	2.80	165	215	100	23	0	99	39	40	5	7
NE701132	37.8	76.1	15.5	2.82	164	216	93	7	0	100	39	35	7	6
Tamwheat 102 (TX62A4793-7)	36.8	73.5	13.8	3.01	164	213	85	6	0	95	31	40	7	7
Marimp 3	34.0	73.4	15.4	2.80	167	217	74	0	0	63	29	20	9	6
Rousalka	32.2	74.7	16.5	2.84	161	213	71	0	1	100	42	30	9	6
Carifen 12	26.7	59.2	15.3	2.88	170	215	72	0	0	93	26	35	8	7
Kirac 66	26.7	70.4	15.0	2.89	170	213	94	75	0	85	30	35	8	6
Lilifen	17.0	65.6	16.0	2.94	169	217	73	0	0	58	30	30	9	6
Strampelli	13.6	67.9	15.8	2.92	167	217	68	5	0	38	24	16	7	6
Victor I	1.2	--	--	--	--	--	--	--	0	2	--	--	--	7
Lerma Rojo 64	--	--	--	--	--	--	--	--	0	0	--	--	--	--
Mean	45.2	74.1	13.6	3.01	168.7	217.2	89.9	14.6	0.5	85.1	35.2	21.8	6.9	6.3
Standard error of a treatment mean	2.9	0.4	0.3	.06	0.2	0.3	1.6	3.2	0.4	2.0	0.7	--	--	--
Coefficient of variation (%)	12.9	1.0	4.1	4.01	0.3	0.2	3.5	44.4	187.3	4.7	3.9	--	--	--

a) One rep only.

SWITZERLAND

Zurich

- Cooperator(s):** G. Popow; F. Weilenmann.
Date of planting (effective germination): October 11, 1971.
Precipitation during cycle of test: Not reported.
Amount of irrigation applied: None.
Fertilizer used: N = 90 kg/ha; P₂O₅ = 80 kg/ha; K₂O = 180 kg/ha.
General description of climatic conditions during test: Winter, mild; spring, early and relatively cold; summer, late and wet.
Disease development: Very great attack of powdery mildew, but very little attack of other diseases.
Insect, weed or pest problems: None.
Date of harvest: July 31–August 7, 1972.
Area harvested for yield: 2.52 square meters.
Dates when different notes were taken:
Powdery mildew—June 2, 1972
Lodging—July 6, 1972
Plant height—July 20, 1972

Data in Table 27

Table 27. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Zurich, Switzerland, 1972.

Cultivar	Yield	Test weight	Protein	Lysine	Date of		Plant height	Lodging	1000 kernel wt.	Mildew	
	q/ha	kg/hl	%	% of protein	Flowering days from Jan. 1	Ripening	cm	%	gm	Sev. %	Resp.
Maris Nimrod	58.8	73.3	13.2	2.98	172	195	104	3	39	0	0
Victor I	54.3	76.4	13.9	3.05	161	182	91	0	30	30	MR-S
Marimp 3	53.5	77.9	14.6	2.95	161	182	103	9	33	40	MR-S
Zlatna dolina (Golden Valley)	52.1	77.8	12.7	3.13	161	187	91	8	35	52	MS-S
Caribo	52.0	77.6	13.0	3.02	177	190	116	0	38	60	S
Backa	48.3	76.4	15.4	2.96	162	192	98	6	41	10	MR
Dacia	45.9	78.5	14.8	3.01	162	185	116	19	42	55	S
Sava	43.4	75.5	14.3	3.00	161	184	90	3	33	15	MR-MS
Bezostaya 1	42.6	78.7	13.7	2.93	167	195	106	6	42	47	MS-S
Zenith	42.5	78.1	15.1	2.85	174	187	114	18	29	15	MR
Clarion	40.8	74.9	14.1	2.99	176	187	109	0	34	52	S
Moldova	40.6	75.9	15.4	2.95	159	180	116	26	37	52	S
Strampelli	40.1	72.6	13.5	3.06	159	185	104	34	30	65	S
Diplomat	40.1	81.0	14.0	2.95	176	193	118	0	40	60	S
Probstdorfer Extrem	39.5	79.0	14.0	2.89	169	196	134	60	33	40	MS-S
Centurk	35.9	74.5	14.9	2.92	170	185	118	54	29	35	MR-S
Rousalka	35.2	76.6	15.0	2.91	159	171	93	3	37	35	MR-MS
Starke	35.0	74.1	14.8	2.88	179	190	130	20	27	10	MR
Jyva	34.9	74.3	14.8	2.82	176	190	130	53	30	55	MS-S
Blueboy	33.6	73.3	13.9	3.07	168	189	113	41	30	65	S
Vakka	31.9	73.7	15.3	2.87	173	187	125	65	31	37	MR-S
Atlas 66	31.7	74.3	15.8	2.89	168	192	114	75	32	20	MR-MS
Lilifen	30.8	75.6	15.1	2.95	167	187	106	3	34	75	S
Carifen 12	28.2	61.3	14.9	3.05	171	190	85	11	26	72	S
Lerma Rojo 64	27.0	75.7	14.9	2.81	156	178	100	9	34	82	S
Hokuei	25.0	74.1	13.9	2.88	171	195	108	63	29	55	S
NE701132	24.5	77.5	15.1	2.90	167	185	123	29	33	60	S
C.I.15074	23.2	77.4	14.9	2.98	167	192	124	40	29	60	S
Tamwheat 102 (TX62A4793-7)	20.0	69.1	14.9	2.93	164	193	103	6	24	67	S
Kirac 66	19.2	69.3	15.4	2.94	168	185	121	80	27	62	S
Mean	37.7	75.1	14.5	2.95	167.4	187.6	110.0	24.7	32.9	46.1	
Standard error of a treatment mean	3.2	0.5	0.4	0.05	0.8	0.0	2.8	16.4	1.2	--	
Coefficient of variation (%)	16.9	1.5	5.0	3.06	1.0	0.0	5.2	51.5	7.2	--	

TURKEY

Ankara

Cooperator(s): A. Demirlicakmak; Y. Ergün; K. Yakar; A. Klatt;
E. Rice.

Date of planting (effective germination): November 25, 1971.

Precipitation during cycle of test: 349 mm (November, 1971–July, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 80 kg/ha; P₂O₅ = 65 kg/ha.

General description of climatic conditions during test: Rains started late in fall. Cold winter but with snow cover, thus little cold damage. Very dry March and April, but above average rainfall in June and July.

Disease development: Good stem rust development, and some stripe rust and leaf rust.

Insect, weed or pest problems: None reported.

Date of harvest: July 25, 1972.

Area harvested for yield: 4 square meters.

Dates when different notes were taken:

Leaf rust—July 4, 1972

Stripe rust—July 4, 1972

Stem rust—July 4, 1972

Data in Table 28

Table 28. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Ankara, Turkey, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Plant ^a height cm	1000 kernel wt. gm	Stripe		Rust Leaf		Stem	
							Sev.	Resp.	Sev.	Resp.	Sev.	Resp.
							%		%		%	
Moldova	31.6	77.9	14.7	2.98	85	40.8	0	0	0	0	40	S
Bezostaya 1	31.2	80.0	12.8	2.89	90	41.8	0	0	0	0	40	S
NE701132	30.8	79.1	15.4	2.76	95	37.0	0	0	20	MS	20	S
Probstdorfer Extrem	30.6	79.8	14.6	2.74	105	37.5	10	MS	20	S	20	S
Lerma Rojo 64	30.1	79.9	16.0	2.65	75	35.3	0	0	10	MR	20	S
Dacia	30.1	76.7	15.4	2.82	80	39.8	0	0	0	0	40	S
C.I.15074	29.1	80.4	15.2	2.83	100	33.0	70	S	0	0	30	S
Kirac 66	29.1	76.4	12.4	3.02	105	32.0	0	0	5	S	60	S
Victor I	29.0	78.2	14.6	2.92	60	34.0	0	0	10	MS	30	MS
Atlas 66	27.3	75.6	17.8	2.67	100	32.5	10	S	5	MS	20	MR
Diplomat	24.4	76.4	14.9	2.88	85	35.8	0	0	40	MS	10	MR
Hokuei	24.3	75.2	12.3	2.86	85	33.5	1	S	20	S	40	S
Zlatna dolina (Golden Valley)	24.2	76.3	14.1	2.85	60	39.0	0	0	0	0	20	S
Rousalka	24.1	79.2	14.4	2.93	70	45.0	0	0	0	0	60	S
Blueboy	24.0	73.3	11.9	3.03	85	33.5	0	0	10	MR	40	S
Backa	23.6	76.2	14.6	2.80	60	40.3	--	--	--	--	40	S
Centurk	23.5	77.2	12.7	2.98	80	27.3	0	0	0	0	90	S
Tamwheat 102 (TX62A4793-7)	22.3	75.7	12.6	3.00	70	29.8	5	S	5	MR	50	S
Marimp 3	21.4	77.2	16.2	2.86	70	35.3	0	0	10	MR	30	MR
Lilifen	20.5	72.1	17.2	2.77	70	37.5	0	0	10	MS	5	S
Sava	20.1	76.1	13.7	2.88	55	32.0	--	--	10	MS	40	MS
Strampelli	18.6	79.1	15.5	2.76	65	37.8	0	0	10	MS	30	S
Maris Nimrod	18.3	61.5	13.2	2.97	75	28.0	0	0	0	0	60	S
Caribo	15.6	60.8	13.8	2.84	85	23.3	0	0	10	MS	40	S
Zenith	14.8	68.8	14.2	2.86	80	24.5	0	0	0	0	60	S
Cariflen 12	12.9	61.9	13.9	3.07	65	26.3	0	0	30	S	60	S
Clarion	11.9	54.2	16.5	2.76	75	17.5	0	0	0	0	80	S
Jyva	10.8	50.3	14.8	2.98	90	17.0	0	0	0	0	70	S
Vakka	9.2	56.3	15.3	2.89	90	17.5	--	--	0	0	80	S
Starke	8.6	53.8	14.8	2.92	105	17.0	0	0	0	0	60	S
Mean	22.4	72.2	14.5	2.87	80.5	32.1	3.6		7.5		42.8	
Standard error of a treatment mean	1.9	--	0.3	0.04	--	--	--		--		--	
Coefficient of variation (%)	17.1	--	4.5	2.91	--	--	--		--		--	

a) One rep only.

TURKEY

Eskisehir

Cooperator(s): Rifat Gerek; H. Kutluk; E. J. Rice.

Date of planting (effective germination): October 25, 1971.

Precipitation during cycle of test: 308.8 mm (September 1, 1971 to August 31, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 30 kg/nk; P₂O₅ = 60 kg/nk.

General description of climatic conditions during test: Winter was very heavy with snow cover extended until spring; spring was very dry.

Disease development: Stem rust occurred late in the season.

Insect, weed or pest problems: None.

Date of harvest: July 15, 1972.

Area harvested for yield: 8 square meters.

Dates when different notes were taken:

Frost damage—March 7, 1972

Lodging—July 22, 1972

Plant height—July 22, 1972

Shattering—July 15–31, 1972

Data in Table 29

Table 29. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Eskisehir, Turkey, 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Frost damage 0-9	Stem rust sev. %
					Flowering	Ripening				
					days from Jan. 1	days from Jan. 1				
Blueboy	36.6	79.3	13.1	2.97	146	188	85	11	4	0
Maris Nimrod	36.1	79.0	14.1	2.68	152	194	69	4	4	22
Clarion	35.0	79.8	15.3	2.64	153	197	71	1	4	50
Kirac 66	34.7	84.6	15.1	2.68	146	190	94	23	4	2
Probstdorfer Extrem	33.9	84.1	14.1	2.86	148	190	98	15	3	6
Centurk	33.6	83.5	13.6	2.75	146	186	81	14	4	0
Hokuei	33.5	82.7	12.4	3.03	149	189	79	18	4	6
Zenith	32.8	82.3	14.7	2.64	149	192	76	0	4	12
Bezostaya 1	32.7	84.4	13.0	2.95	147	188	84	3	4	10
Backa	32.2	82.8	14.3	2.73	145	185	69	0	7	10
Caribo	30.7	80.2	14.5	2.79	151	193	75	1	4	18
Carifen 12	30.5	76.0	14.1	2.86	148	187	61	0	5	10
Tamwheat 102 (TX62A4793-7)	30.4	82.4	13.6	2.94	143	185	78	20	3	0
Starke	29.2	80.8	15.3	2.66	149	199	81	6	4	48
Vakka	29.0	79.0	14.3	2.75	152	191	79	3	3	0
Dacia	28.9	82.0	14.8	2.76	144	184	90	5	4	2
Victor I	28.7	80.8	14.2	2.82	145	183	61	0	7	2
Sava	28.5	80.9	13.4	2.87	146	191	68	0	5	0
Moldova	28.4	82.6	15.0	2.83	143	184	91	9	5	0
NE701132	28.4	83.3	15.6	2.70	146	186	84	18	3	10
C.I.15074	28.3	83.8	15.8	2.98	147	185	90	8	3	0
Lilifen	28.1	81.3	15.1	2.70	147	192	89	0	7	0
Rousalka	27.8	82.8	14.9	2.72	143	183	73	0	4	0
Strampelli	27.7	82.4	12.8	2.86	143	183	71	30	7	0
Atlas 66	27.6	80.7	17.1	2.81	147	189	100	10	6	0
Zlatna dolina (Golden Valley)	26.8	80.8	14.9	2.68	145	183	62	0	5	22
Diplomat	26.2	81.4	16.4	2.68	153	198	74	1	4	47
Jyva	25.4	79.3	15.9	2.74	152	193	78	0	3	37
Lerma Rojo 64	23.9	82.8	15.0	2.70	143	184	72	28	7	0
Marimp 3	22.6	80.8	15.5	2.74	145	184	74	0	7	22
Mean	29.9	81.5	14.6	2.78	147.0	188.5	77.8	7.5	4.5	11.2
Standard error of a treatment mean	1.4	0.5	0.3	0.0	1.5	1.6	2.4	1.9	0.2	--
Coefficient of variation (%)	9.1	1.1	3.8	2.5	2.1	1.7	6.3	50.9	8.3	--

UNITED STATES

Colorado

Cooperator(s): J. R. Welsh.

Date of planting (effective germination): September 29, 1971.

Precipitation during cycle of test: 254 mm.

Amount of irrigation applied: 1 application of 101.6 mm.

Fertilizer used: N (ammonium nitrate) = 56 kg/ha.

General description of climatic conditions during test: Very dry season, but rains were very timely.

Disease development: 15B2 stem rust developed from artificial inoculations.

Insect, weed or pest problems: None.

Date of harvest: July 26, 1972.

Area harvested for yield: 3.7 square meters.

Dates when different notes were taken:

All data except flowering—July 10, 1972

Data in Table 30

Table 30. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Fort Collins, Colorado, 1972.

Cultivar	Yield q/ha	Test weight ^a kg/hl	Protein %	Lysine % of protein	Date of flowering days from Jan. 1	Plant height cm	Lodging %	Winter survival %	Stem rust	
									Sev. %	Resp.
Clarion	95.1	73.4	15.1	2.83	164	106	0	100	28	MR-S
Zenith	90.0	77.1	14.4	3.00	161	115	0	100	24	R-S
Caribo	88.4	71.9	14.0	3.02	164	118	0	100	13	R-S
Blueboy	84.3	71.5	14.4	2.95	154	112	50	100	42	S
Maris Nimrod	83.3	70.2	13.4	3.04	164	104	0	90	36	MR-S
Dacia	78.3	77.9	16.0	2.96	151	112	15	100	11	MS-S
NE701132	78.2	79.1	16.2	2.95	153	122	45	100	0	O-R
Probstdorfer Extrem	77.2	79.9	15.4	2.85	156	132	25	100	18	MS-S
Rousalka	75.2	75.2	15.1	2.97	148	81	0	100	3	R
Tamwheat 102 (TX62A4793-7)	74.7	77.0	14.4	2.95	149	95	5	100	2	O-R
Zlatna dolina (Golden Valley)	74.6	73.9	13.1	3.09	150	76	0	98	1	O-R
Sava	74.4	75.9	14.0	3.03	150	81	0	83	1	O-R
Bezostaya 1	74.2	79.5	14.4	2.96	154	107	0	100	31	S
Moldova	72.7	76.5	16.5	2.91	149	112	20	90	8	R-S
Carifen 12	72.3	64.8	14.7	3.00	157	84	0	98	10	R-MR
Lilifen	70.4	75.3	15.0	2.95	155	94	0	65	3	R
Diplomat	70.4	73.4	15.2	2.94	166	112	0	100	8	MR-S
Hokuei	67.9	76.0	14.2	2.94	153	108	70	100	16	MR-S
Backa	67.3	75.7	15.2	2.99	154	83	0	75	7	R-S
Marimp 3	67.0	76.9	15.3	2.99	153	90	0	60	5	R-MS
Centurk	64.8	77.5	15.8	2.89	154	117	55	100	2	O-R
Victor I	63.7	75.5	14.4	2.96	154	73	0	55	3	R
Strampelli	62.1	76.0	14.0	3.02	148	84	20	70	1	R
C.I.15074	62.1	78.2	17.4	2.86	154	118	70	100	4	R-MR
Starke	61.0	71.7	15.2	2.85	168	120	0	100	23	S
Atlas 66	59.8	77.0	18.0	2.71	155	123	25	83	3	O-R
Kirac 66	58.3	75.6	16.2	2.97	155	116	94	98	10	MR-S
Jyva	55.7	72.5	15.0	2.93	162	125	0	100	18	MS-S
Vakka	53.4	73.1	15.1	2.94	161	124	35	100	15	R-S
Lerma Rojo 64	52.8	78.6	17.1	2.87	150	105	10	10	0	O-R
Mean	71.0	75.2	15.1	2.94	155.5	104.9	18.0	89.1	11.5	
Standard error of a treatment mean	3.8	--	10.2	0.05	0.5	1.9	5.1	2.3	--	
Coefficient of variation (%)	10.6	--	2.6	0.06	0.6	3.7	57.0	5.1	--	

a) One rep only.

UNITED STATES

Nebraska

Cooperator(s): V. A. Johnson; J. W. Schmidt.

Date of planting (effective germination): October 15, 1971.

Precipitation during cycle of test: 708.2 mm (August, 1971–July, 1972).

Amount of irrigation applied: 75 mm (preplant application).

Fertilizer used: N = 45 kg/ha; P₂O₅ = 45 kg/ha.

General description of climatic conditions during test: Moderately dry fall, winter and early spring. Very little snow cover, but not extremely cold. Excessive moisture in late May and June.

Disease development: Moderate development of leaf and stem rusts, and heavy attack of *Septoria tritici*.

Insect, weed or pest problems: None

Date of harvest: July 14, 1972 for most varieties. Five varieties harvested August 2, 1972.

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken:

Winter survival—March 23, 1972

Leaf rust—June 23, 1972

Septoria—June 23, 1972

Stem rust—June 29, 1972

Lodging—July 14, 1972

Data in Table 31

Table 31. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Lincoln, Nebraska, 1972.

Cultivar	Yield : q/ha	Test weight : kg/hl	Protein : %	Lysine : % of protein	Date of flowering : Jan. 1	Plant height : cm	Lodging : %	Winter survival : %	kernel wt. : gm	Rust		Septoria ^b %		
										Leaf : %	Stem : %			
NE701132	47.5	76.9	16.0	2.81	152	115	11	66	32	1	R	1	MR-R	39
Centurk	43.2	76.0	14.9	2.89	151	108	36	70	27	8	R	1	MR-R	28
Tamwheat 102 (TX62A4793-7)	39.6	68.9	13.7	3.02	150	94	33	69	24	40	S	28	S	50
C.I.15074	37.5	77.5	16.9	2.82	152	121	11	89	29	80	S	5	MR	28
Bezostaya 1	37.2	75.5	13.8	2.97	152	97	11	59	35	3	R	60	S	39
Probstdorfer Extrem	36.9	73.1	14.7	2.86	155	119	8	78	28	70	MS-S	30	MS-S	11
Dacia	36.8	71.7	15.4	2.74	151	106	8	55	35	5	R	35	S	39
Moldova	32.8	71.6	16.3	2.80	149	98	25	48	34	8	R	18	S	55
Hokuei	30.3	67.5	13.3	2.95	155	106	99	71	23	75	S	50	S	17
Blueboy	27.3	61.3	12.2	3.21	152	104	41	45	25	40	MS-R	80	S	6
Kirac 66	24.0	73.1	15.3	2.93	157	115	6	16	29	99	S	3	MR-R	17
Zenith	22.9	63.9	14.6	2.85	157	95	17	50	19	90	S	15	S	17
Rousalka	18.8	64.2	16.5	2.82	148	73	77	40	32	1	R	10	S	61
Caribo	16.3	67.0	15.9	2.87	162	95	0	55	19	70	MS-S	35	S	11
Vakka	15.8	56.1	16.6	2.87	159	108	91	69	18	85	S	45	S	17
Zlatna dolina (Golden Valley)	14.8	66.7	15.7	2.69	153	67	6	11	29	1	R	13	S	22
Clarion	13.5	51.1	18.0	2.88	163	83	0	45	18	20	MR	15	S	22
Jyva	12.6	57.4	17.7	2.86	160	106	77	61	18	99	S	50	S	44
Diplomat	9.9	55.1	18.3	2.73	164	89	0	63	27	95	S	20	S	17
Maris Nimrod	9.7	54.4	16.6	2.79	163	82	11	55	21	80	MS-S	15	MS-MR	11
Sava	8.5	63.9	16.5	2.84	154	63	3	7	23	3	R	15	S	39
Carifen 12	6.7	42.6	15.8	2.98	161	67	50	9	18	95	S	60	S	17
Starke	5.3	54.8	17.5	2.80	165	96	8	64	16	95	S	20	MS-S	11
Atlas 66	3.8	--	18.2	2.71	155	102	3	1	30	8	MR-R	2	MR-R	16
Victor I	2.0	--	18.3	2.70	--	--	--	0	28	--	--	--	--	--
Lilifen	0.6	--	15.7	2.91	--	--	--	0	--	--	--	--	--	--
Strampelli	0.0	--	--	--	--	--	--	0	--	--	--	--	--	--
Backa	0.0	--	--	--	--	--	--	0	--	--	--	--	--	--
Marimp 3	0.0	--	--	--	--	--	--	0	--	--	--	--	--	--
Jerma Rojo 64	--	--	--	--	--	--	--	0	--	--	--	--	--	--
Mean	19.1	64.8	15.9	2.9	155.8	96.2	26.3	39.9	25.5	48.8		26.1		26.0
Standard error of a treatment mean	2.1	--	--	--	--	--	--	--	--	--		--		--
Coefficient of variation (%)	21.6	--	--	--	--	--	--	--	--	--		--		--

a) One rep only.
b) Two reps only.

UNITED STATES

New York

Cooperator(s): N. F. Jensen.

Date of planting (effective germination): September 24, 1971.

Precipitation during cycle of test: 1039 mm (August 1, 1971–July 31, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 33.6 kg/ha (preplant) + 51.5 kg/ha (spring application) of NH_4NO_3 ; P_2O_5 = 67.2 kg/ha; K_2O = 67.2 kg/ha.

General description of climatic conditions during test: One of the wettest years on record.

Disease development: Minimal.

Insect, weed or pest problems: Minimal.

Date of harvest: Last week of July, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Winter survival—May 24, 1972

Plant height—Mid-July, 1972

Data in Table 32

Table 32. Agronomic and grain quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Ithaca, New York, 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of protein	Plant height cm	Winter survival %
Backa	37.7	74.2	14.1	3.05	74	90
Caribo	35.9	72.2	12.6	3.19	97	90
Sava	34.6	73.4	13.6	3.05	72	90
Probstdorfer Extrem	33.7	77.9	13.2	3.08	111	90
Zenith	33.0	76.5	14.8	2.89	95	90
Blueboy	32.9	73.8	13.0	3.26	100	90
Dacia	31.8	75.7	14.2	3.12	101	90
Maris Nimrod	30.7	67.7	14.3	3.04	93	90
Bezostaya 1	28.5	77.9	13.1	3.10	94	90
Diplomat	28.1	74.9	14.8	2.97	95	90
Vakka	27.8	73.7	14.6	3.09	108	90
Atlas 66	26.7	77.1	16.1	2.95	106	73
Jyva	26.5	71.0	15.0	3.10	104	90
Clarion	24.7	70.8	15.0	3.04	89	90
Rousalka	23.7	73.9	14.7	2.89	71	90
Zlatna dolina (Golden Valley)	23.2	67.7	13.4	3.13	68	90
Moldova	23.2	73.9	15.8	2.90	100	90
NE701132	21.0	75.3	15.1	2.95	102	90
Hokuei	20.2	74.0	13.4	2.92	97	90
C.I.15074	20.1	79.5	16.0	3.01	103	90
Starke	19.8	60.0	15.9	3.03	109	90
Tamwheat 102 (TX62A4793-7)	19.5	68.6	14.1	3.14	82	90
Marimp 3	18.8	74.2	14.7	3.17	76	46
Centurk	18.0	75.3	14.6	3.18	101	90
Carifen 12	16.1	62.2	14.5	3.24	69	90
Kirac 66	15.2	74.9	15.3	2.90	105	75
Strampelli	9.5	68.5	15.0	3.14	70	42
Lilifen	1.4	--	18.3	2.78	71	13
Victor I	1.0	--	14.7	2.99	--	1
Lerma Rojo 64	--	--	15.1	2.93	--	1
Mean	23.6	72.8	14.6	3.04	91.4	77.3
Standard error of a treatment mean	1.9	--	--	--	1.2	3.8
Coefficient of variation (%)	15.9	--	--	--	2.5	9.8

a) One rep only.

UNITED STATES

North Carolina

Cooperator(s): C. F. Murphy.

Date of planting (effective germination): October 15, 1971.

Precipitation during cycle of test: 1262 mm (July, 1971–June, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 101 kg/ha; P = 101 kg/ha; K = 101 kg/ha.

General description of climatic conditions during test: Poor. Extremely warm and wet to mid-January, then a sudden severe freeze; cool spring with heavy rain at maturity.

Disease development: Barley yellow dwarf virus was severe, mildew was severe, and there was some leaf rust.

Insect, weed or pest problems: None reported.

Date of harvest: June 26, 1972.

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken: None reported.

Data in Table 33

Table 33. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Rowan County, North Carolina, 1972.

Cultivar	Yield q/ha	Test weight ^b kg/hl	Protein %	Lysine % of protein	Date of flowering ^a : days from Jan.1	Plant ^a : height : cm	Lodging %	Winter survival ^a %	Leaf rust ^a : sev. %	Mildew ^a : sev. %
Tamwheat 102 (TX62A4793-7)	32.9	74.6	12.9	2.94	136	93	6	98	70	15
Centurk	31.2	78.4	13.1	2.99	135	93	2	100	15	42
Dacia	30.3	69.3	14.5	2.91	137	103	1	98	26	32
Hokuei	29.2	74.4	13.5	2.88	137	108	51	100	15	8
Bezostaya 1	29.0	77.1	13.8	2.85	134	90	0	90	8	32
Probstdorfer Extrem	28.6	76.4	14.2	2.80	139	123	4	100	8	7
NE701132	28.4	76.9	14.6	2.85	138	113	7	100	26	50
Caribo	26.9	68.5	13.6	2.86	145	100	0	95	8	8
C.I.15074	25.1	78.4	15.1	2.84	137	118	13	100	60	35
Blueboy	24.0	72.4	12.6	2.96	133	95	0	100	70	42
Clarion	23.7	65.8	15.0	2.88	145	95	0	98	15	42
Maris Nimrod	22.8	67.3	13.6	3.00	141	95	1	95	42	7
Moldova	22.5	71.8	15.9	2.96	128	90	4	98	42	70
Zlatna dolina (Golden Valley)	21.7	69.5	15.3	2.91	131	63	0	90	8	70
Zenith	21.6	67.1	15.9	2.79	145	85	0	100	42	0
Carifen 12	21.3	58.7	13.8	3.22	139	73	0	100	15	42
Sava	21.0	73.1	14.3	2.98	133	63	0	75	42	7
Atlas 66	18.9	73.5	17.2	2.58	137	98	7	93	32	15
Vakka	18.0	66.8	15.8	2.90	145	100	8	100	70	0
Rousalka	17.9	68.6	16.0	2.83	126	63	0	93	32	32
Kirac 66	17.7	73.7	13.7	2.99	138	123	2	98	70	25
Diplomat	17.1	68.5	15.0	2.87	145	98	0	95	8	8
Jyva	13.3	67.0	15.4	2.82	147	105	4	100	70	7
Starke	12.1	58.8	16.5	2.82	145	103	0	98	70	1
Backa	11.3	72.2	16.3	2.77	134	60	0	35	50	15
Strampelli	8.5	71.0	15.4	2.84	130	65	1	55	15	32
Lilifen	6.1	--	17.4	2.82	142	80	0	20	15	32
Victor I	1.9	--	18.2	2.89	136	55	0	4	70	60
Marimp 3	1.3	--	--	--	134	60	0	4	70	42
Lerma Rojo 64	--	--	--	--	--	--	--	1	--	--
Mean	20.1	70.8	14.9	2.88	137.5	89.7	3.8	80.6	37.4	26.8
Standard error of a treatment mean	1.4	--	0.5	0.05	1.4	3.5	3.9	7.7	--	--
Coefficient of variation (%)	14.0	--	6.3	3.35	1.5	5.6	205.4	13.5	--	--

a) Two reps only.

b) One rep only.

UNITED STATES

Oklahoma

Cooperator(s): E. L. Smith; L. H. Edwards.

Date of planting (effective germination): October 10, 1971.

Precipitation during cycle of test: 795.25 mm (July, 1971–June, 1972).

Amount of irrigation applied: None.

Fertilizer used: Preplant: N (NH_4NO_3) = 20 kg/ha; P_2O_5 = 50 kg/ha
Topdress: N = 50 kg/ha.

General description of climatic conditions during test: Favorable conditions in fall and winter. Drought stress in spring. Extreme temperature stress in March and April (high and low temperatures), especially severe on early maturing types.

Disease development: Some leaf rust in late spring.

Insect, weed or pest problems: None.

Date of harvest: June 5–15, 1972.

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken:

Flowering—April and May, 1972

Ripening—May and June, 1972

Plant height—May 15, 1972

Leaf rust—May 17, 1972

Data in Table 34

Table 34. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Stillwater, Oklahoma, 1972.

Cultivar	Yield q/ha	Test weight ^a kg/hl	Protein %	Lysine % of protein	Date of		Plant height ^a cm	Winter survival ^a %	Frost damage 0-9	Leaf rust ^a		Tillers per sq. ft. ^a
					Flowering ^a days from Jan. 1	Ripening ^a				Sev. %	Resp.	
Tamwheat 102 (TX62A4793-7)	34.9	77.2	16.1	2.78	112	149	78	95	0	20	MR-M	67
NE701132	34.4	79.8	17.0	2.79	112	151	90	95	0	20	MR-M	65
Hokuei	31.7	76.6	14.3	3.02	114	152	90	95	0	20	S	53
Centurk	30.9	80.4	15.7	2.90	111	149	81	95	0	15	S	66
Blueboy	30.8	75.3	15.2	2.91	107	147	84	95	2	30	S	48
Bezostaya 1	30.3	80.4	15.4	2.91	109	150	74	95	2	20	M	45
Dacia	30.2	76.0	16.8	2.81	111	154	88	95	0	35	S	40
C.I.15074	29.2	80.4	17.2	2.86	114	152	89	95	0	50	S	63
Probstdorfer Extrem	27.4	77.2	16.7	2.76	121	155	96	95	0	5	R	46
Zenith	25.8	72.8	17.6	2.71	124	157	82	95	0	30	S	40
Clarion	25.1	69.5	17.4	2.77	128	163	85	95	0	50	S	48
Carifen 12	22.0	64.0	15.0	3.01	120	154	65	95	0	60	S	51
Vakka	21.0	68.9	18.3	2.88	126	158	87	95	0	40	S	51
Rousalka	20.8	73.4	18.0	2.78	103	152	65	95	2	15	S	31
Caribo	20.8	68.9	17.2	2.80	124	159	87	95	0	45	S	32
Sava	20.0	75.3	18.0	2.87	107	150	57	95	6	20	M	30
Moldova	19.9	77.2	18.2	2.84	106	150	80	95	1	45	S	40
Kirac 66	18.5	77.2	16.5	2.80	113	154	92	80	1	55	S	36
Maris Nimrod	17.6	68.2	15.9	2.76	124	158	81	95	0	50	S	46
Jyva	16.1	70.2	18.3	2.86	128	160	90	95	0	45	S	43
Atlas 66	15.9	72.8	19.4	2.71	118	158	87	80	3	20	S	38
Diplomat	15.7	71.4	17.8	2.78	131	162	83	95	0	50	S	42
Starke	14.6	69.5	19.4	2.74	137	168	86	95	0	40	S	33
Marimp 3	12.4	73.2	17.8	2.80	112	159	56	80	7	45	S	29
Backa	12.3	70.8	20.3	2.76	111	154	61	95	7	50	S	28
Zlatna dolina (Golden Valley)	11.1	74.1	19.2	2.70	108	160	56	95	6	40	S	29
Strampelli	9.4	74.7	15.9	2.96	110	155	58	50	7	30	S	34
Victor I	0.0	--	--	--	--	--	--	0	--	--	--	--
Lilifen	0.0	--	--	--	--	--	--	10	--	--	--	--
Jerma Rojo 64	--	--	--	--	--	--	--	0	--	--	--	--
Mean	20.6	73.9	17.2	2.82	116.0	155.1	78.5	82.8	1.5	35.0		43.5
Standard error of a treatment mean	1.7	0.9	0.3	0.03	0.5	0.8	2.3	--	0.4	--		--
Coefficient of variation (%)	16.9	1.7	4.1	1.90	0.6	0.7	4.2	--	34.0	--		--

a) Two reps only.

UNITED STATES

Oregon

Cooperator(s): W. F. Kronstad; J. A. Ruppert.

Date of planting (effective germination): November 20, 1971.

Precipitation during cycle of test: 1393.2 mm (September 1, 1971–September 1, 1972).

Amount of irrigation applied: None.

Fertilizer used: N (urea) = 62 kg/ha.

General description of climatic conditions during test: Heavy winter rains eroded two 10" ditches through reps two and three.

Disease development: Not reported.

Insect, weed or pest problems: Good weed control from herbicides (Diuron) application on December 5, 1971.

Date of harvest: September 5, 1972.

Area harvested for yield: 1.5 square meters.

Dates when different notes were taken:

Winter survival—June 19, 1972

Stripe rust—June 19, 1972

Leaf rust—June 19, 1972

Plant height—September 5, 1972

Lodging—September 5, 1972

Shattering—September 20, 1972

Data in Table 35

Table 35. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Corvallis, Oregon, 1972.

Cultivar	Yield q/ha	Test weight ^a kg/hl	Protein ^a %	Lysine ^a % of protein	Plant height cm	Lodging %	Rust ^a			
							Stripe		Leaf	
							Sev.	Resp.	Sev.	Resp.
Caribo	52.0	76.1	10.9	3.07	115	0	1	R	20	S
Probstdorfer Extrem	46.8	77.7	11.4	2.96	130	30	10	S	5	MS
Bezostaya 1	46.5	77.7	11.1	3.04	104	0	30	S	5	MS
Maris Nimrod	45.3	74.9	11.3	3.09	102	0	1	R	1	MR
Lilifen	44.4	76.4	11.8	3.07	91	0	1	R	1	R
Moldova	44.4	76.5	12.1	3.01	114	8	60	S	1	R
Backa	42.2	74.4	10.5	3.27	87	0	80	S	1	MS
Strampelli	42.2	76.5	10.9	3.20	88	5	20	S	1	R
Vakka	41.6	76.8	11.4	3.08	131	0	10	MR	30	S
Blueboy	41.5	74.6	11.3	3.14	108	5	60	S	1	R
Carifen 12	40.8	72.5	10.2	3.33	80	0	1	R	40	S
Clarion	40.7	73.3	11.8	3.05	96	0	1	R	1	MS
Kirac 66	40.3	76.5	13.3	2.94	132	73	1	R	30	S
Dacia	40.0	76.4	11.9	3.09	111	0	10	MS	1	R
Zenith	39.1	75.5	11.4	3.13	108	0	1	R	20	S
Hokuei	38.8	76.4	11.0	3.14	110	82	99	S	20	S
Centurk	38.8	79.6	11.6	3.15	114	20	60	S	10	MR
Lerma Rojo 64	37.9	78.3	11.8	3.11	95	23	10	MS	1	R
Marimp 3	36.8	75.3	11.6	3.17	100	0	80	S	1	R
Sava	36.6	74.0	11.1	3.29	86	0	80	S	1	R
Jyva	36.5	75.9	11.1	3.12	125	0	1	R	80	S
Diplomat	35.5	76.5	12.3	3.13	111	0	1	R	40	S
C.I.15074	34.7	74.8	12.4	3.03	123	40	99	S	0	0
Atlas 66	33.8	75.6	14.9	2.79	133	18	1	R	1	R
NE701132	33.4	76.5	13.8	2.87	123	35	10	MS	1	R
Rousalka	33.1	75.9	12.3	3.02	80	0	10	MS	1	R
Starke	31.8	73.4	12.3	2.96	121	0	1	R	60	S
Tamwheat 102 (TX62A4793-7)	31.0	73.7	13.2	2.95	93	13	99	S	0	0
Zlatna dolina (Golden Valley)	27.5	71.2	11.7	3.00	74	0	99	S	20	S
Victor I	24.0	73.8	11.1	3.17	84	0	99	S	0	0
Mean	38.6	75.6	11.8	3.08	105.5	11.7	34.5		13.1	
Standard error of a treatment mean	4.3	--	--	--	2.9	4.5	--	--	--	--
Coefficient of variation (%)	22.4	--	--	--	5.6	77.8	--	--	--	--

a) One rep only.

UNITED STATES

Washington

Cooperator(s): R. E. Allan; C. J. Peterson.

Date of planting (effective germination): October 15, 1971.

Precipitation during cycle of test: Not reported.

Amount of irrigation applied: None.

Fertilizer used: None.

General description of climatic conditions during test: Not reported.

Disease development: Not reported.

Insect, weed or pest problems: None.

Date of harvest: August 31, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 36

Table 36 Agronomic and grain quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Pullman, Washington, 1972.

Cultivar	Yield q/ha	Test weight ^a kg/hl	Protein %	Lysine % of Protein	Date of flowering ^a days from Jan. 1	Plant height cm
Clarion	69.1	75.3	14.2	2.91	166	96
Blueboy	63.9	72.2	13.9	2.96	161	102
Rousalka	60.8	77.0	15.4	2.83	156	65
Caribo	60.8	73.5	15.4	2.88	166	102
Maris Nimrod	55.2	73.1	15.1	2.91	166	95
Tamwheat 102 (TX62A4793-7)	52.1	78.0	15.6	2.88	157	81
Probstdorfer Extrem	51.4	79.1	14.0	3.05	163	116
NE701132	49.4	77.7	15.5	2.90	158	110
Hokuei	47.1	77.9	15.0	2.92	162	96
Bezostaya 1	47.0	78.7	15.5	3.01	161	94
Carifen 12	46.7	71.3	16.1	2.95	164	69
Zenith	46.3	76.0	15.4	2.87	166	94
Dacia	45.1	76.4	16.1	2.90	159	99
Zlatna dolina (Golden Valley)	45.0	74.6	13.8	3.01	159	61
Starke	44.4	77.1	14.7	2.85	166	109
Diplomat	44.2	77.8	16.3	2.80	166	105
Kirac 66	42.7	79.2	14.8	2.95	162	123
Backa	41.6	76.9	16.1	2.84	160	67
C.I.15074	40.9	79.1	14.7	2.92	160	106
Sava	39.5	73.7	15.1	2.85	160	68
Atlas 66	38.3	75.7	15.3	2.87	163	109
Vakka	38.0	73.8	15.6	2.85	164	120
Victor I	37.6	75.6	15.8	2.91	160	64
Jyva	37.1	73.9	15.2	2.96	166	109
Centurk	36.7	80.1	15.6	2.85	159	99
Moldova	36.7	76.5	16.1	2.87	156	94
Lerma Rojo 64	36.3	77.4	15.4	2.77	158	83
Lilifen	33.9	74.4	15.7	2.86	163	86
Marimp 3	33.5	75.3	15.5	2.95	160	69
Strampelli	29.3	77.0	14.4	2.86	158	69
Mean	45.0	76.1	15.2	2.90	161.5	91.8
Standard error of a treatment mean	2.2	--	0.7	0.0	--	3.7
Coefficient of variation (%)	9.9	--	8.8	3.4	--	8.1
Local cultivars						
Nugaines	64.0	78.8	--	--	163	--
Luke	64.3	78.8	--	--	164	--

a) One rep only.

WEST GERMANY

Monsheim

Cooperator(s): Alfred Lein.

Date of planting (effective germination): October 27, 1971.

Precipitation during cycle of test: 179 mm (January to June, 1972).

Amount of irrigation applied: None.

Fertilizer used: October 1971— P_2O_5 = 120 kg/ha; K_2O = 200 kg/ha

February, 1972—N = 30 kg/ha

March, 1972—N = 60 kg/ha

April, 1972—N = 20 kg/ha

General description of climatic conditions during test: No winter damage, low water supply during winter, dry period between April and June.

Disease development: Heavy mildew attack during May to June.

Insect, weed or pest problems: Some damage by *Cricetus cricetus*.
Sprayed with Certiol DP (4 l/ha) and Cycocel (.5 l/ha) on April 12, 1972.

Date of harvest: August 18, 1972.

Area harvested for yield: 4,375 square meters.

Dates when different notes were taken:

Mildew—June 28, 1972

Lodging—July 13, 1972

Data in Table 37

Table 37. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Monsheim, West Germany, 1972.

Cultivar	Yield q/ha	Protein %	Lysine % of protein	Date of		Plant height cm	Lodging %	Winter survival %	Mildew sev.. %
				Flowering days from Jan. 1	Ripening				
Maris Nimrod	52.6	11.5	3.17	159	206	69	1	100	22
Blueboy	44.6	11.4	3.32	150	198	71	0	100	96
Lillifen	44.2	12.4	3.18	150	202	68	0	100	93
Probstdorfer Extrem	43.5	12.4	3.11	156	203	81	11	100	41
Rousalka	43.4	12.8	3.04	144	197	70	0	100	74
Zenith	42.3	13.1	2.99	162	207	71	0	100	79
Zlatna dolina (Golden Valley)	41.9	11.8	3.11	146	198	67	1	100	41
Bezostaya 1	41.7	12.0	3.29	150	203	70	1	100	88
Centurk	41.1	14.3	2.99	150	197	70	1	100	35
Dacia	39.6	12.6	3.18	150	198	77	8	100	44
Carifen 12	39.3	11.7	3.26	156	203	61	0	100	96
Caribo	39.0	11.5	3.13	161	207	74	0	100	96
Atlas 66	37.6	14.6	3.08	150	202	89	3	100	46
Hokuei	37.0	11.9	3.13	150	205	78	39	100	66
Moldova	36.9	13.0	3.11	146	196	75	6	100	85
Tamwheat 102 (TX62A4793-7)	36.7	12.2	3.40	147	196	66	0	100	99
C.I.15074	36.2	15.7	2.97	150	197	74	1	100	77
Strampelli	36.1	11.4	3.18	145	196	71	28	90	68
Marimp 3	35.7	12.8	3.23	148	198	71	11	100	77
Sava	35.0	13.4	3.06	147	197	64	0	100	27
Clarion	31.5	12.9	3.07	162	208	72	0	100	88
Victor I	30.6	12.5	3.16	147	199	65	0	90	68
Kirac 66	30.1	14.3	2.93	150	206	78	14	100	79
Starke	29.4	13.9	2.96	162	209	91	0	100	27
NE701132	28.4	16.5	2.71	150	203	74	0	100	55
Jyva	27.5	13.4	3.07	158	208	95	10	100	55
Diplomat	27.5	12.9	3.01	161	208	84	0	100	96
Backa	27.2	14.0	2.97	147	204	68	0	100	27
Vakka	26.8	12.6	3.22	160	203	79	26	100	44
Lerma Rojo 64	25.5	13.5	2.99	143	194	76	4	90	96
Mean	36.3	13.0	3.10	151.8	201.6	73.9	55	99.0	66.2
Standard error of a treatment mean	2.2	0.3	0.04	0.9	0.6	1.8	3.6	0.0	--
Coefficient of variation (%)	11.9	4.6	2.80	1.2	0.6	4.9	129.7	0.0	--

WEST GERMANY

Weißenstephan

Cooperator(s): G. Fischbeck.

Date of planting (effective germination): October 23, 1971.

Precipitation during cycle of test: 430.5 mm (November, 1971–August, 1972).

Amount of irrigation applied: None.

Fertilizer used: N = 30 kg/ha; P₂O₅ = 120 kg/ha; K₂O = 200 kg/ha.

General description of climatic conditions during test: Winter temperatures were above local average; no snow cover; spring was dry; summer had average temperature and rainfall.

Disease development: Severe mildew attack and glume blotch, *Septoria nordorum*.

Insect, weed or pest problems: Sprayed with 5 l/ha of Arelit (weed control) on March 30, 1972.

Date of harvest: August 7–14, 1972.

Area harvested for yield: 1.52 square meters.

Dates when different notes were taken:

Winter survival—February 2, 1972

CCC (0.5 l/ha) application—April 24, 1972

Mildew on leaves and stems—June 10–20, 1972

Mildew on heads—July 13, 1972

Lodging—August 4, 1972

Data in Table 38

Table 38. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Weihenstephan, West Germany, 1972.

Cultivar	Yield	Test weight	Protein	Lysine	Date of		Plant	Lodging	Winter	Spikes/m ²	Mildew	Mildew
	: q/ha	: kg/hl	: %	: % of protein	Flowering	Ripening	height	: %	: %		: on stems	: on heads
Maris Nimrod	88.5	76.0	10.4	3.31	161	226	103	0	95	642	28	30
Zenith	87.1	81.4	11.2	3.15	162	226	109	0	93	688	33	20
Sava	84.7	80.8	11.3	3.24	152	220	85	0	89	758	23	33
Caribo	84.1	79.1	10.1	3.29	164	227	115	0	96	683	43	23
Centurk	81.6	80.6	11.0	3.28	157	224	114	38	98	1156	45	25
Clarion	80.0	78.7	11.5	3.22	165	227	108	0	98	733	55	40
Probstdorfer Extrem	78.8	82.3	11.5	3.08	159	227	130	28	98	718	40	23
Starke	75.4	82.1	11.5	3.10	170	230	126	5	95	711	25	18
Blueboy	74.3	77.3	10.5	3.36	158	225	115	8	94	788	55	53
Dacia	73.9	80.8	11.7	3.15	154	221	112	8	96	789	53	33
Zlatna dolina (Golden Valley)	73.5	79.4	10.7	3.26	152	220	87	5	90	807	50	25
Lilifen	72.9	79.7	11.8	3.01	157	224	94	0	85	643	60	68
Backa	71.6	81.7	13.1	2.85	153	223	89	0	89	629	35	28
Jyva	71.4	79.2	11.8	3.16	165	228	129	15	95	707	40	18
Victor I	71.1	80.2	11.7	3.12	154	221	84	0	85	724	53	35
Marimp 3	71.0	80.5	12.3	3.12	154	221	96	0	88	673	48	30
Bezostaya 1	70.9	79.9	11.7	3.23	158	226	101	0	95	774	60	38
Strampelli	70.0	79.9	10.9	3.21	151	220	102	28	85	673	50	38
Moldova	69.0	79.7	11.7	3.18	150	220	114	13	95	742	58	40
Diplomat	68.8	81.7	11.0	3.25	166	228	114	0	98	603	63	28
Atlas 66	67.0	82.9	13.6	2.86	156	223	128	34	93	766	35	18
Hokuei	66.9	80.2	12.0	3.17	158	226	115	64	95	852	48	28
Rousalka	66.6	80.7	12.5	3.06	146	218	88	0	98	740	60	55
Vakka	66.2	78.1	11.9	3.08	164	227	133	41	99	796	35	35
NE701132	63.7	82.4	12.3	2.95	156	223	116	18	99	945	63	35
Carifen 12	62.9	69.2	12.4	3.07	159	225	82	0	95	934	58	63
Tamwheat 102 (TX62A4793-7)	61.3	77.8	11.1	3.32	153	221	102	10	98	929	73	68
C.I.15074	58.7	83.1	13.0	3.06	157	224	117	8	98	1018	70	40
Kirac 66	54.9	74.0	12.4	3.16	158	225	127	51	94	1006	58	43
Lerma Rojo 64	52.8	79.6	12.7	3.03	145	216	98	15	86	789	73	55
Mean	71.3	79.6	11.7	3.14	157.1	223.7	107.7	12.8	93.5	780.5	49.7	36.2
Standard error of a treatment mean	1.7	0.3	0.2	0.05	0.2	0.0	1.5	4.9	1.1	--	--	--
Coefficient of variation (%)	4.6	0.7	3.8	3.45	0.3	0.0	2.8	76.2	2.3	--	--	--

YUGOSLAVIA

Novi Sad

Cooperator(s): S. Borojevic; I. Mihaljev.

Date of planting (effective germination): October 21, 1971.

Precipitation during cycle of test: 335.9 mm.

Amount of irrigation applied: 100 mm.

Fertilizer used: N = 83 kg/ha; P_2O_5 = 88 kg/ha; K_2O = 72 kg/ha.

General description of climatic conditions during test: Not reported.

Disease development: Severe attack of stem rust and mildew occurred.

Insect, weed or pest problems: None reported.

Date of harvest: July 8-10, 1972.

Area harvested for yield: 4 square meters.

Dates when different notes were taken: Not reported.

Data in Table 39

Table 39. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Novi Sad, Yugoslavia, 1972.

Cultivar	Yield : q/ha	Test weight : kg/hl	Protein : %	Lysine : % of protein	Date of		Plant height : cm	Lodging : %	Rust				Winter leaf area damage ^a : %
					Flowering : days from Jan. 1	Ripening			Leaf		Stem		
									Sev. : %	Resp. : %	Sev. : %	Resp. : %	
Zlatna dolina (Golden Valley)	63.8	73.9	13.9	2.88	137	176	89	6	12	MS-S	22	VS	0
Backa	59.0	76.7	14.9	2.87	138	177	93	8	27	VS	30	VR-VS	0
Probstdorfer Extrem	56.4	75.4	15.2	2.79	145	183	120	60	25	S-VS	43	S-VS	0
Rousalka	54.6	75.4	14.7	2.90	136	176	88	8	0	O-S	18	S-VS	0
Sava	53.5	72.0	14.5	3.01	137	176	88	6	2	O-S	37	S-VS	0
Marimp 3	52.1	73.6	14.7	2.85	139	177	101	18	20	S-VS	67	S-VS	60
Atlas 66	49.3	69.5	18.2	2.63	145	183	111	70	0	O-MR	10	O-VS	60
Bezostaya 1	49.2	78.3	14.3	2.91	137	176	101	38	3	S	10	S-VS	0
Strampelli	47.8	71.5	13.8	2.95	138	176	94	38	13	S-VS	25	VS	80
NE701132	46.7	72.7	16.2	2.79	145	181	105	80	0	0	0	0	0
Centurk	43.7	74.9	15.1	2.78	140	177	102	88	0	O-MS	0	0	0
Victor I	43.0	70.8	15.3	2.81	140	152	84	0	16	S-VS	2	O-VS	30
Moldova	42.1	75.0	15.9	2.88	132	175	108	65	10	S	8	O-VS	0
Blueboy	41.7	67.9	13.3	3.08	140	177	103	25	18	S-VS	30	S-VS	0
Carifen 12	41.5	59.8	13.3	3.07	148	184	84	0	27	S-VS	62	VS	50
Dacia	41.3	75.8	15.8	2.81	140	177	109	65	7	O-S	15	S-VS	0
Lilifen	38.6	75.1	16.2	2.83	148	186	99	15	1	O-S	0	0	80
Kirac 66	36.2	70.6	15.1	2.93	145	183	107	85	31	S-VS	15	S-VS	0
Maris Nimrod	35.4	63.0	13.8	2.90	150	187	99	85	27	S-VS	63	VS	0
Zenith	35.4	74.2	15.8	2.76	152	190	102	78	13	S-VS	45	VS	0
Caribo	34.7	72.7	14.4	2.85	156	191	108	40	13	S-VS	27	VS	0
Hokuei	34.0	70.5	13.6	2.96	142	181	101	92	12	S-VS	37	VS	0
C.I.15074	33.2	75.6	16.8	2.83	145	183	106	88	0	0	5	O-VS	0
Tamwheat 102 (TX62A4795-7)	32.9	67.4	15.0	2.93	140	177	93	58	5	O-S	5	S-VS	0
Clarion	31.4	67.3	14.8	2.84	152	189	105	53	17	S-VS	32	VS	0
Vakka	28.2	68.3	14.6	3.02	148	186	109	80	45	S-VS	60	VS	0
Diplomat	27.8	77.5	14.3	2.87	153	191	113	10	10	S-VS	11	VS	0
Jyva	27.5	69.1	15.1	2.89	150	185	114	35	25	S-VS	67	VS	0
Starke	26.6	68.9	14.0	2.99	157	195	117	18	15	S-VS	45	VS	0
Lerma Rojo 64	26.0	68.7	16.0	2.77	140	180	190	28	0	0	0	0	100
Mean	41.1	71.7	14.9	2.88	143.8	180.9	101.3	44.5	13.1		26.4		15.3
Standard error of a treatment mean	1.9	0.9	0.2	0.05	0.3	4.6	1.9	7.9	--		--		--
Coefficient of variation (%)	9.1	2.6	2.4	3.22	0.4	5.1	3.8	35.7	--		--		--

a) One rep only.

YUGOSLAVIA

Zagreb

Cooperator(s): J. Potocanac; P. Javor.

Date of planting (effective germination): October 22, 1971.

Precipitation during cycle of test: Not reported.

Amount of irrigation applied: None.

Fertilizer used: N = 145 kg/ha; P₂O₅ = 90 kg/ha; K₂O = 90 kg/ha.

General description of climatic conditions during test: Dry autumn, rainy spring and rained at harvesting time.

Disease development: Slight attack of leaf rust, heavier attack of stem rust, but no attack of *Puccinia glumarum* although it was found on the field.

Insect, weed or pest problems: None.

Date of harvest: July 23, 1972.

Area harvested for yield: 4 square meters.

Dates when different notes were taken: None reported.

Data in Table 40

Table 40. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Zagreb, Yugoslavia, 1972.

Cultivar	Yield : q/ha	Test ^a : weight : kg/hl	Protein : %	Lysine : % of : protein	Date of		Plant : height : cm	Lodging : %	Rust ^a		Mildew ^a : %	Heading : date	Frost : damage ^a		
					Flowering ^a : days from Jan. 1	Ripening ^a : days from Jan. 1			Leaf : %	Stem : %				Resp. : %	Resp. : %
Zlatna dolina (Golden Valley)	53.8	69.3	11.3	3.13	148	181	81	0	40	30	MR	70	S	142	1.5
Sava	45.6	64.4	12.3	3.16	150	183	86	0	50	60	MR	40	R	144	1.5
Victor I	45.0	66.2	13.4	3.04	148	183	83	0	5	2	R	90	S	143	3.5
Backa	42.5	69.0	12.6	3.09	148	182	87	0	45	60	S	60	S	143	2.5
Rousalka	41.3	67.9	13.4	2.92	145	179	86	0	10	15	MR	40	R	138	0
Bezostaya 1	40.0	62.4	11.0	3.27	151	184	103	0	35	80	S	90	S	146	0
Strampelli	40.0	68.0	12.1	3.14	147	183	93	34	10	60	S	60	S	142	2.5
Moldova	36.9	66.4	12.9	3.05	146	183	105	34	30	80	S	70	S	137	1.5
Centurk	33.7	66.4	13.1	3.10	154	186	101	81	10	10	R	70	S	148	0
Lilifen	33.7	62.6	13.7	2.98	158	192	95	0	40	60	S	90	S	150	0
Marimp 3	33.1	63.8	11.3	3.25	150	185	99	0	40	70	S	60	S	144	3.5
Diplomat	32.5	70.4	13.1	2.97	164	189	97	0	40	25	S	70	S	160	0
Dacia	30.6	64.1	11.9	3.27	150	182	109	54	60	99	S	70	S	144	0
Carifen 12	30.0	46.8	12.9	3.07	159	185	79	1	30	90	S	60	S	151	0
Lerma Rojo 64	29.4	65.8	13.9	2.94	143	178	96	31	0	1	R	90	S	134	2.5
Maris Nimrod	28.8	52.2	12.4	3.18	163	190	97	23	30	80	S	40	R	158	0
Atlas 66	27.5	65.7	14.9	2.93	156	187	110	85	45	80	S	50	MR	148	1.5
Hokuei	27.5	55.0	11.1	3.29	158	185	103	94	20	90	S	70	S	150	0
Tamwheat 102 (TX62A4793-7)	26.9	54.4	13.2	3.16	153	179	96	31	40	90	S	90	S	145	0
NE701132	24.8	66.0	12.9	3.01	156	188	104	88	30	80	S	70	S	148	0
Caribo	22.5	51.1	12.1	3.10	163	192	106	18	40	70	S	50	MR	127	0
Zenith	21.2	55.7	12.8	3.07	163	191	101	11	10	70	S	15	R	158	0
Probstdorfer Extrem	20.6	55.0	12.4	3.07	158	186	113	90	60	90	S	15	R	150	0
C.1.15074	20.0	66.9	12.3	3.30	157	186	110	80	50	80	S	90	S	149	0
Clarion	20.0	46.5	13.6	3.09	165	192	90	0	60	60	S	60	S	159	0
Blueboy	18.1	46.3	11.7	3.32	154	183	108	41	45	99	S	90	S	146	0
Kirac 66	17.5	59.8	14.7	2.97	159	187	107	95	10	10	R	90	S	149	0
Starke	10.0	40.2	15.4	3.00	168	196	109	0	30	60	S	40	R	164	0
Vakka	19.3	39.7	14.1	3.08	162	189	112	81	80	99	S	60	S	158	0
Jyva	16.2	44.0	15.5	3.01	162	190	107	63	45	99	S	40	R	159	0
Mean	28.9	59.1	12.9	3.10	155.3	185.9	99.1	34.4	34.7	63.3		63.3		147.8	0.7
Standard error of a treatment mean	2.4	--	0.6	0.07	--	--	2.1	8.5	--	--	--	--	--	--	--
Coefficient of variation (%)	16.3	--	8.7	4.23	--	--	4.3	49.4	--	--	--	--	--	--	--
Local cultivar Sanja	57.6	68.2	--	--	147	182	80	0	20	45	MR	50	MR	140	0

a) One rep only.

Table 41. Summary of average "Yield" in quintals per hectare for cultivars grown in the 4th International Winter Wheat Performance Nursery, 1972

(Northern Hemisphere).

Cultivar	Kabul, :Afghanistan:	Algiers:Vienna: :Algeria:Austria:	Tolbukhin, :Bulgaria	Male Ripnany, :Czechoslovakia:	Sedlac, :Czechoslovakia:	Cambridge, :England	Jokioinen, :Finland	Martonvasar, :Hungary	Szeged, :Hungary	Simla, :India	
Bezostaya 1	62.8	43.0	42.1	39.6	63.3	57.1	47.0	31.8	37.6	67.2	14.8
Sava	52.8	37.1	49.0	51.6	56.2	65.3	56.7	1.2	44.6	76.1	12.6
Dacia	63.3	38.9	50.4	42.3	51.7	57.1	47.6	8.9	30.2	66.1	20.8
Probstdorfer Extrem	49.8	30.0	55.2	35.3	37.4	60.0	50.6	26.8	43.2	72.0	12.1
Zlatna dolina (Golden Valley)	66.6	42.5	37.4	50.7	48.2	54.1	40.5	0.1	32.6	69.6	20.4
Blueboy	38.2	35.2	43.1	32.6	32.8	52.2	54.3	26.6	30.6	69.4	21.6
Maris Nimrod	35.8	33.8	54.7	30.0	52.0	64.8	73.6	2.8	25.0	58.8	13.0
Centurk	56.6	43.9	55.2	37.0	43.6	57.9	35.3	22.9	50.3	53.8	14.1
Caribo	44.9	27.9	43.9	31.0	50.4	58.1	62.7	26.8	23.9	58.3	13.4
Rousalka	62.6	59.5	28.0	43.3	40.6	46.3	46.0	0.2	28.5	67.4	23.0
Zenith	46.1	28.8	51.9	35.3	55.4	61.8	55.5	24.8	24.7	58.6	12.4
NE701132	54.1	35.9	36.1	36.3	51.2	52.1	35.3	16.1	37.5	64.2	15.0
Moldova	46.8	41.9	36.2	35.6	45.7	47.9	46.4	12.4	26.1	61.7	23.2
Backa	52.1	35.7	46.7	46.3	30.7	29.8	42.4	0.0	15.5	61.0	23.2
Tamwheat 102 (TX62A4793-7)	57.9	36.3	37.5	32.0	33.0	50.5	26.7	4.6	36.6	54.3	14.9
Clarion	29.9	29.5	42.6	28.6	43.9	58.4	59.3	26.5	18.9	60.1	8.1
Hokuei	36.8	25.2	51.4	24.7	28.2	46.1	48.9	24.6	32.7	49.5	7.6
Diplomat	34.8	34.4	44.2	23.3	50.0	47.6	57.2	25.9	22.9	53.2	8.6
Marimp 3	62.7	24.2	30.9	40.3	28.2	16.7	53.5	0.0	5.9	50.3	20.9
Atlas 66	41.7	38.8	46.9	34.3	45.3	40.0	41.9	0.0	33.5	48.8	18.8
Carifen 12	37.3	29.2	42.8	34.0	40.0	49.9	58.3	0.3	19.0	53.0	11.5
Lilifen	59.0	43.0	39.0	38.7	22.0	32.1	57.6	0.0	9.6	57.0	9.1
C.I.15074	47.6	31.2	22.8	27.3	34.5	47.9	23.5	25.7	42.7	48.9	15.4
Strampelli	73.2	45.9	24.9	37.3	8.7	15.1	52.8	0.0	11.3	40.9	32.3
Kirac 66	48.4	42.7	30.7	20.6	31.3	30.7	41.8	0.0	24.4	43.8	19.8
Vakka	28.0	17.6	40.1	27.0	17.5	46.6	60.0	28.0	18.5	45.9	8.2
Victor I	62.8	23.0	20.8	45.3	13.5	7.5	43.9	0.0	2.1	30.3	29.3
Starke	23.0	12.4	30.9	19.3	30.9	50.7	59.3	45.6	18.2	38.7	1.5
Jyva	24.9	15.1	26.2	18.6	19.4	42.1	39.4	36.2	14.5	40.5	8.1
Lerma Rojo 64	61.1	29.3	--	29.7	16.1	11.1	40.3	--	3.2	--	34.5
Mean	48.7	33.7	40.0	34.3	36.7	45.2	48.6	14.4	25.5	55.8	16.7

Table 41. Summary of average "Yield" in quintals per hectare for cultivars grown in the 4th International Winter Wheat Performance Nursery, 1972.

(Northern Hemisphere). continued.

Cultivar	: : Hamadan, : Iran	: : Karaj, : Iran	: : Sulaimaniya, : Iraq	: : Milano, : Italy	: : Rieti, : Italy	: : Morioka, : Japan	: : Suwon, : Korea	: : Toluca ^a , : Mexico	: : Toluca, : Mexico	: : Wageningen, : The Netherlands	: : Fundulea, : Romania	: : Krasnodar, : Russia	: : Svalof, : Sweden
Bezostaya 1	23.8	40.6	41.7	45.2	45.2	17.7	50.2	30.0	39.9	39.6	45.5	40.0	53.3
Sava	21.1	40.8	33.1	50.1	38.4	27.8	50.1	40.9	58.8	48.0	41.2	40.0	53.0
Dacia	20.1	41.9	33.5	55.8	40.3	18.9	39.3	45.6	58.1	40.8	48.0	34.7	51.2
Probstdorfer Extrem	28.2	40.6	28.2	41.8	35.2	22.1	39.3	19.7	23.2	39.3	46.5	39.1	60.6
Zlatna dolina (Golden Valley)	13.0	43.6	32.2	44.1	42.5	22.1	51.7	37.2	46.4	50.7	42.8	42.8	51.8
Blueboy	29.1	39.3	40.3	64.0	36.6	26.9	38.0	35.8	46.0	40.6	37.5	35.4	51.3
Maris Nimrod	29.5	22.7	23.8	56.6	26.5	24.1	37.6	42.6	64.3	49.9	32.4	27.0	67.5
Centurk	25.0	58.0	36.7	38.1	44.3	10.2	37.9	26.5	33.6	33.1	46.6	25.0	61.6
Caribo	24.9	22.5	26.2	55.9	21.5	24.8	42.3	33.1	55.8	44.3	26.2	30.3	65.0
Rousalka	6.5	38.6	25.0	51.0	43.3	21.8	47.7	48.3	46.5	43.7	42.8	43.8	32.2
Zentih	25.2	25.7	26.3	48.4	18.4	19.4	38.0	38.3	52.0	44.3	26.9	32.0	48.0
NE701132	22.7	49.3	28.7	37.8	37.0	15.9	33.2	30.1	35.2	23.7	44.5	30.2	37.8
Moldova	18.5	42.6	30.5	40.3	37.8	17.5	40.6	36.9	43.0	32.9	44.8	33.9	42.1
Backa	16.6	36.6	37.8	51.4	37.8	22.7	45.4	33.6	43.9	41.9	22.2	45.8	41.0
Tamwheat 102 (TX62A4793-7)	24.3	50.9	32.9	44.8	39.2	31.3	35.2	28.0	44.7	33.1	43.6	29.0	36.8
Clarion	25.9	15.4	22.0	51.8	23.8	23.4	34.9	22.9	46.3	41.3	29.7	24.7	60.3
Hokuei	31.3	32.6	29.9	43.1	26.9	28.5	30.3	17.2	33.0	36.3	35.7	18.8	52.3
Diplomat	25.7	25.4	24.0	48.5	23.7	26.4	34.3	12.2	20.8	36.9	29.3	21.6	67.8
Marimp 3	13.6	38.8	36.3	50.0	41.3	24.6	45.6	30.6	42.7	44.4	1.1	38.9	34.0
Atlas 66	17.4	44.3	23.8	32.6	36.0	21.0	32.9	18.3	29.7	30.4	25.8	26.0	44.8
Cariflen 12	25.9	19.5	23.7	47.5	26.8	12.2	32.8	42.1	50.7	39.2	10.1	25.8	26.7
Lilifen	17.4	45.8	29.5	40.0	42.3	13.0	39.5	52.6	54.6	39.4	8.4	30.0	17.0
C.I.15074	23.1	39.8	24.8	36.0	31.7	14.9	33.0	14.8	22.4	16.9	44.2	13.7	38.0
Strampelli	19.0	48.4	36.9	51.4	43.3	18.0	42.9	17.7	25.7	47.0	1.1	37.8	13.6
Kirac 66	25.1	47.0	28.3	31.3	25.2	12.6	31.2	14.6	30.4	18.0	31.2	26.5	26.7
Vakka	23.2	25.2	19.6	36.0	13.0	29.2	42.7	10.9	20.3	31.2	27.6	25.5	52.6
Victor I	5.9	48.5	40.0	45.3	38.9	22.7	43.7	39.2	32.6	41.3	1.0	30.0	1.2
Starke	28.3	19.0	15.0	36.3	10.2	12.0	19.9	7.5	30.0	37.7	10.5	19.9	61.1
Jyva	24.5	16.1	14.8	39.1	8.2	18.2	28.1	6.8	13.6	33.1	20.0	21.8	63.3
Lerma Rojo 64	7.9	52.3	27.8	42.6	38.3	1.0	31.6	30.3	24.8	35.6	--	10.0	--
Mean	21.4	37.1	29.1	45.2	32.4	20.7	38.3	29.0	39.0	37.9	29.9	30.0	45.2

a) Planted one month later than other Toluca nursery.

Table 41. Summary of average "Yield" in quintals per hectare for cultivars grown in the 4th International Winter Wheat Performance Nursery, 1972.

(Northern Hemisphere). continued.

Cultivar	Location									
	Zurich, Switzerland	Ankara, Turkey	Eskisehir, Turkey	Fort Collins, Colorado, U.S.A.	Lincoln, Nebraska, U.S.A.	Ithaca, New York, U.S.A.	Rowan Co., North Carolina, U.S.A.	Stillwater, Oklahoma, U.S.A.	Corvallis, Oregon, U.S.A.	Pullman, Washington, U.S.A.
Bezostaya 1	42.6	31.2	32.7	74.2	37.2	28.5	29.0	30.3	46.5	47.0
Sava	43.4	20.1	28.5	74.4	8.5	34.6	21.0	20.0	36.6	39.5
Dacia	45.9	30.1	28.9	78.3	36.8	31.8	30.3	30.2	40.0	45.1
Probstdorfer Extrem	39.5	30.6	33.9	77.2	36.9	33.7	28.6	27.4	46.8	51.4
Zlatna dolina (Golden Valley)	52.1	24.2	26.8	74.6	14.8	23.2	21.7	11.1	27.5	45.0
Blueboy	33.6	24.0	36.6	84.3	27.3	32.9	24.0	30.8	41.5	63.9
Maris Nimrod	58.8	18.3	36.1	83.3	9.7	30.7	22.8	17.6	45.3	55.2
Centurk	35.9	23.5	33.6	64.8	43.2	18.0	31.2	30.9	38.8	36.7
Caribo	52.0	15.6	30.7	88.4	16.3	35.9	26.9	20.8	52.0	60.8
Rousalka	35.2	24.1	27.8	75.2	18.8	23.7	17.9	20.8	33.1	60.8
Zenith	42.5	14.8	32.8	90.0	22.9	33.0	21.6	25.8	39.1	46.3
NE701132	24.5	30.8	28.4	78.2	47.5	21.0	28.4	34.4	33.4	49.4
Moldova	40.6	31.6	28.4	72.7	32.8	23.2	22.5	19.9	44.4	36.7
Backa	48.3	23.6	32.2	67.3	0.0	37.7	11.3	12.3	42.2	41.6
Tamwheat 102 (TX62A4793-7)	20.0	22.3	30.4	74.7	39.6	19.5	32.9	34.9	31.0	52.1
Clarion	40.8	11.9	35.0	95.1	13.5	24.7	23.7	25.1	40.7	69.1
Hokuei	25.0	24.3	33.5	67.9	30.3	20.2	29.2	31.7	38.8	47.1
Diplomat	40.1	24.4	26.2	70.4	9.9	28.1	17.1	15.7	35.5	44.2
Marimp 3	53.5	21.4	22.6	67.0	0.0	18.8	1.3	12.4	36.8	33.5
Atlas 66	31.7	27.3	27.6	59.8	3.8	26.7	18.9	15.9	33.8	38.3
Carifen 12	28.2	12.9	30.5	72.3	6.7	16.1	21.3	22.0	40.8	46.7
Lilifen	30.8	20.5	28.1	70.4	0.6	1.4	6.1	0.0	44.4	33.9
C.I.15074	23.2	29.1	28.3	62.1	37.5	20.1	25.1	29.2	34.7	40.9
Strampelli	40.1	18.6	27.7	62.1	0.0	9.5	8.5	9.4	42.2	29.3
Kirac 66	19.2	29.1	34.7	58.3	24.0	15.2	17.7	18.5	40.3	42.7
Vakka	31.9	9.2	29.0	53.4	15.8	27.8	18.0	21.0	41.6	38.0
Victor I	54.3	29.0	28.7	63.7	2.0	1.0	1.9	0.0	24.0	37.6
Starke	35.0	8.6	29.2	61.0	5.3	19.8	12.1	14.6	31.8	44.4
Jyva	34.9	10.8	25.4	55.7	12.6	26.5	13.3	16.1	36.5	37.1
Lerma Rojo 64	27.0	30.1	23.9	52.8	--	--	--	--	37.9	36.3
Mean	37.7	22.4	29.9	71.0	19.1	23.6	20.1	20.6	38.6	45.0

Table 41. Summary of average "Yield" in quintals per hectare for cultivars grown in the 4th International Winter Wheat Performance Nursery, 1972.

(Northern Hemisphere). concluded.

Cultivar	Cultivar mean yield over 38 locations				q/ha	% of Bezostaya 1
	: Monsheim : West Germany	: Weihenstephan, : West Germany	: Novi Sad, : Yugoslavia	: Zagreb, : Yugoslavia		
Bezostaya 1	41.7	70.9	49.2	40.0	42.6	100.0
Sava	35.0	84.7	53.5	45.6	41.9	98.4
Dacia	39.6	73.9	41.3	30.6	41.8	98.1
Probstdorfer Extrem	43.5	78.8	56.4	20.6	40.6	95.3
Zlatna dolina (Golden Valley)	41.9	73.5	63.8	53.8	40.5	95.1
Bluebooy	44.6	74.3	41.7	18.1	40.4	94.8
Maris Nimrod	52.6	88.5	35.4	28.8	40.3	94.6
Centurk	41.1	81.6	43.7	33.7	39.6	93.0
Caribo	39.0	84.1	34.7	22.5	39.3	92.3
Rousalka	43.4	66.6	54.6	41.3	38.9	91.3
Zenith	42.3	87.1	35.4	21.2	38.2	89.7
NE701132	28.4	63.7	46.7	24.8	36.8	86.4
Moldova	36.9	69.0	42.1	36.9	37.4	87.8
Backa	27.2	71.6	59.0	42.5	36.2	85.0
Tamwheat 102 (TX62A4793-7)	36.7	61.3	32.9	26.9	36.1	84.7
Clarion	31.5	80.0	31.4	20.0	36.1	84.7
Hokuei	37.0	66.9	34.0	27.5	34.3	80.5
Diplomat	27.5	68.8	27.8	32.5	33.3	78.2
Marimp 3	35.7	71.0	52.1	33.1	32.7	76.8
Atlas 66	37.6	67.0	49.3	27.5	32.6	76.5
Carifen 12	39.3	62.9	41.5	30.0	32.4	76.1
Lilifen	44.2	72.9	38.6	33.7	32.2	75.6
C.I.15074	36.2	58.7	33.2	20.0	31.6	74.2
Strampelli	36.1	70.0	47.8	40.0	31.2	73.2
Kirac 66	30.1	54.9	36.2	17.5	29.5	69.2
Vakka	26.8	66.2	28.2	9.3	29.2	68.5
Victor I	30.6	71.1	43.0	45.0	28.7	67.4
Starke	29.4	75.4	26.6	10.0	27.4	64.3
Jyva	27.5	71.4	27.5	6.2	26.2	61.5
Lerma Rojo 64	25.5	52.8	26.0	29.4	29.6 ^a	68.4
Mean	36.3	71.3	41.1	28.9	35.5 ^b	--

a) Mean yield averaged over 29 locations for which Bezostoya 1 averaged 43.3 q/ha.

b) Excluding the mean yield of Lerma Rojo 64.

Table 42. Summary of "Yield" rankings for cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972. (Northern Hemisphere).

Cultivar	: Kabul, :Afghanistan	: Algiers, :Algeria	: Vienna, :Austria	: Tolbukhin, : Bulgaria	: Male Ripnany, :Czechoslovakia	: Sedlac, :Czechoslovakia	: Cambridge, : England	: Jokioinen, : Finland	: Martonvasar, : Hungary	: Szeged, : Hungary
Bezostaya 1	5	5	15	8	1	9	17	3	5	6
Sava	13	11	7	1	2	1	9	19	2	1
Dacia	3	9	6	6	5	8	16	16	12	7
Probstdorfer Extrem	15	19	2	15	16	4	14	6	3	2
Zlatna dolina (Golden Valley)	2	7	19	2	9	10	24	22	10	3
Blueboy	22	15	12	18	19	11	11	7	11	4
Maris Nimrod	25	17	3	21	4	2	1	18	15	12
Centurk	11	3	1	11	13	7	27	13	1	17
Caribo	20	24	11	20	7	6	2	5	18	14
Rousalka	7	1	25	5	14	20	19	21	13	5
Zenith	19	23	4	14	3	3	10	11	16	13
NE701132	12	13	21	12	6	12	28	14	6	8
Moldova	18	8	20	13	10	16	18	15	14	9
Backa	14	14	9	3	22	26	21	25	24	10
Tamwheat 102 (TX62A4793-7)	10	12	18	19	18	14	29	17	7	16
Clarion	27	20	14	23	12	5	4	8	21	11
Hokuei	24	25	5	26	23	21	15	12	9	21
Diplomat	26	16	10	27	8	18	8	9	19	18
Marimp 3	6	26	22	7	24	27	12	27	28	20
Atlas 66	21	10	8	16	11	23	22	23	8	23
Carifen 12	23	22	13	17	15	15	6	20	20	19
Lilifen	9	4	17	9	25	24	7	29	27	15
C.I.15074	17	18	28	24	17	17	30	10	4	22
Strampelli	1	2	27	10	28	28	13	24	26	26
Kirac 66	16	6	24	28	20	25	23	28	17	25
Vakka	28	28	16	25	27	19	3	4	22	24
Victor I	4	27	29	4	30	30	20	26	30	29
Starke	30	30	23	29	21	13	5	1	23	28
Jyva	29	29	26	30	26	22	26	2	25	27
Lerma Rojo 64	8	21	--	22	29	29	25	--	29	--

Table 42. Summary of "Yield" rankings for cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972. (Northern Hemisphere), continued.

Cultivar	: Simla, : India	: Hamadan, : Iran	: Karaj, : Iran	: Sulaimaniya, : Iraq	: Milano, : Italy	: Rieti, : Italy	: Morioka, : Japan	: Suwon, : Korea	: Toluca, : Mexico	: Toluca, ^a : Mexico	: Wageningen, : The Netherlands	: Fundulea, : Romania	: Krasnodar, : Russia
Bezostaya 1	16	15	15	1	15	1	21	2	17	16	14	4	4
Sava	20	19	13	9	9	11	4	3	6	2	3	11	5
Dacia	9	20	12	8	4	8	18	13	3	3	12	1	10
Probstdorfer Extrem	22	5	14	17	20	18	13	14	21	26	16	3	6
Zlatna dolina (Golden Valley)	10	27	10	11	17	5	14	1	9	9	1	9	3
Blueboy	8	3	17	2	1	16	5	16	11	11	13	12	9
Maris Nimrod	19	2	25	25	2	22	9	18	4	1	2	14	18
Centurk	17	11	1	6	24	2	29	17	19	18	22	2	23
Caribo	18	12	26	20	3	26	7	10	13	4	6	20	13
Rousalka	7	29	19	21	8	4	15	4	2	8	8	10	2
Zenith	21	9	22	19	12	27	17	15	8	6	7	19	12
NE701132	18	18	4	15	25	15	23	22	16	17	28	6	14
Moldova	6	22	11	12	21	13	22	11	10	14	25	5	11
Backa	5	25	20	4	7	14	12	6	12	13	9	22	1
Tamwheat 102 (TX62A4793-7)	15	14	3	10	16	9	1	19	18	12	23	8	17
Clarion	27	6	30	27	5	24	10	20	20	10	11	16	24
Hokuei	28	1	21	13	18	20	3	28	24	19	20	13	28
Diplomat	25	8	23	23	11	25	6	21	27	28	19	17	26
Marimp 3	4	26	18	7	10	7	8	5	14	15	5	27	7
Atlas 66	12	23	9	24	29	17	16	24	22	23	27	21	20
Carifen 12	23	7	27	26	13	21	27	25	5	7	17	25	21
Lilifen	24	24	8	14	22	6	25	12	1	5	15	26	16
C. I. 15074	13	17	16	22	28	19	24	23	25	27	30	7	29
Strampelli	2	21	6	5	6	3	20	8	23	24	4	28	8
Kirac 66	11	10	7	16	30	23	26	27	26	21	29	15	19
Vakka	26	16	24	28	27	28	2	9	28	29	26	18	22
Victor I	3	30	5	3	14	10	11	7	7	20	10	29	15
Starke	29	4	28	29	26	29	28	30	29	22	18	24	27
Jyva	30	13	29	30	23	30	19	29	30	30	24	23	25
Lerma Rojo 64	1	28	2	18	19	12	30	26	15	25	21	--	30

a) Seeded one month later.

Table 42. Summary of "Yield" rankings for cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972. (Northern Hemisphere), continued.

Cultivar	: :Svalof, :Sweden	: :Zurich, :Switzerland	: :Ankara, :Turkey	: :Eskisehir, :Turkey	: :Colorado, :U.S.A.	: :Fort Collins, :U.S.A.	: :Lincoln, :U.S.A.	: :Ithaca, :U.S.A.	: :Rowan Co., :U.S.A.	: :Stillwater, :U.S.A.	: :Corvallis, :U.S.A.	: :Pullman, :Washington, :U.S.A.
Bezostaya 1	9	9	2	9	13	5	9	5	6	3	10	
Sava	10	8	21	18	12	21	3	17	16	20	20	
Dacia	15	7	6	16	6	7	7	3	7	14	13	
Probstdorfer Extrem	7	15	4	5	8	6	4	6	9	2	7	
Zlatna dolina (Golden Valley)	13	4	13	26	11	16	16	14	26	29	14	
Blueboy	14	20	15	1	4	10	6	10	5	10	2	
Maris Nimrod	2	1	23	2	5	20	8	12	19	4	5	
Centurk	5	16	17	6	21	2	24	2	4	17	25	
Caribo	3	5	24	11	3	14	2	8	15	1	4	
Rousalka	24	17	14	23	9	13	15	20	14	26	3	
Zenith	16	10	25	8	2	12	5	15	10	15	12	
NE701132	21	27	3	20	7	1	18	7	2	25	8	
Moldova	18	12	1	19	14	8	17	13	17	6	26	
Backa	19	6	16	10	19	28	1	25	25	7	18	
Tamwheat 102 (TX62A4793-7)	22	29	18	13	10	3	22	1	1	28	6	
Clarion	8	11	27	3	1	17	14	11	11	12	1	
Hokuei	12	26	12	7	18	9	19	4	3	16	9	
Diplomat	1	14	11	27	17	19	10	22	22	22	16	
Marimp 3	23	3	19	30	20	29	23	29	24	19	29	
Atlas 66	17	22	10	25	26	24	12	18	21	24	21	
Carifen 12	25	24	26	12	15	22	25	16	12	11	11	
Lilifen	27	23	20	22	16	26	28	27	29	5	28	
C.I.15074	20	28	7	21	24	4	20	9	8	23	19	
Strampelli	28	13	22	24	23	27	27	26	27	8	30	
Kirac 66	26	30	8	4	27	11	26	21	18	13	17	
Vakka	11	21	29	15	29	15	11	19	13	9	22	
Victor I	29	2	9	17	22	25	29	28	28	30	23	
Starke	6	18	30	14	25	23	21	24	23	27	15	
Jyva	4	19	28	28	28	18	13	23	20	21	24	
Lerma Rojo 64	--	25	5	29	30	--	--	--	--	18	27	

Table 42. Summary of "Yield" rankings for cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972. (Northern Hemisphere), concluded.

Cultivar	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia
Bezostaya 1	8	17	8	6
Sava	20	3	5	2
Dacia	10	10	16	13
Probstdorfer Extrem	4	7	3	23
Zlatna dolina (Golden Valley)	7	11	1	1
Blueboy	2	9	14	26
Maris Nimrod	1	1	19	16
Centurk	9	5	11	9
Caribo	12	4	21	21
Rousalka	5	23	4	5
Zenith	6	2	20	22
NE701132	25	25	10	20
Moldova	15	19	13	8
Backa	28	13	2	4
Tamwheat 102 (TX62A4793-7)	16	27	24	19
Clarion	21	6	25	25
Hokuei	14	22	22	18
Diplomat	27	20	27	12
Marimp 3	19	16	6	11
Atlas 66	13	21	7	17
Carifen 12	11	26	15	14
Lilifen	3	12	17	10
C.I.15074	17	28	23	24
Strampelli	18	18	9	7
Kirac 66	23	29	18	27
Vakka	29	24	26	29
Victor I	22	15	12	3
Starke	24	8	29	28
Jyva	26	14	28	30
Lerma Rojo 64	30	30	30	15

Table 43. Summary of agronomic, quality and yield data for winter cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972, (Northern Hemisphere).

Cultivar	Test weight		Date of				Plant height		Lodging		Shattering	
	kg/hl	rank	Flowering		Ripening		cm	rank	%	rank	%	rank
			days from Jan. 1	rank	days from Jan. 1	rank						
Number of sites	14		25		22		29		22		9	
Bezostaya 1	78.7	2	148.7	11	189.4	12	99.8	13	11.7	14	4.8	11
Sava	76.1	14	146.1	5	186.7	6	85.4	5	1.8	1	5.9	18
Dacia	77.6	4	147.4	10	187.2	9	108.8	21	25.3	19	7.2	23
Probstdorfer Extrem	79.2	1	153.1	20	193.0	20	121.0	23	38.5	23	3.2	3
Zlatna dolina (Golden Valley)	76.4	12	145.5	4	186.5	4	80.6	3	2.4	5	5.6	14
Blueboy	73.1	24	149.5	13	189.6	13	107.1	17	19.3	16	3.7	6
Maris Nimrod	70.5	29	157.6	22	195.3	25	97.9	11	13.6	15	6.5	19
Centurk	76.5	11	149.2	12	188.2	10	107.1	18	45.0	26	6.7	22
Caribo	73.3	23	158.8	25	195.4	26	107.3	19	9.1	13	5.0	12
Rousalka	77.6	5	142.8	1	184.3	1	82.0	4	2.0	3	7.3	24
Zenith	75.9	16	157.8	23	194.2	23	102.3	14	9.0	12	3.9	8
Moldova	77.2	9	143.5	2	185.3	2	107.5	20	29.0	21	4.2	9
NE701132	77.6	6	149.9	15	189.9	15	109.8	22	42.9	25	3.7	7
Tamwheat 102 (TX62A4793-7)	73.3	22	146.4	7	187.0	7	95.0	10	23.2	18	2.8	2
Backa	77.3	8	147.0	9	188.8	11	86.9	6	3.4	7	5.2	13
Clarion	71.8	28	159.6	27	196.6	27	98.5	12	6.9	10	2.3	1
Hokuei	75.4	18	151.3	18	191.5	18	104.3	15	57.7	28	4.7	10
Diplomat	77.5	7	160.7	28	198.7	28	106.3	16	3.8	8	6.6	20
Atlas 66	77.1	10	150.7	16	191.1	17	116.0	29	46.5	27	5.8	15
Marimp 3	76.3	13	146.6	8	187.2	8	93.6	9	6.5	9	11.4	29
Carifen 12	64.9	19	155.4	21	191.8	19	79.2	2	2.7	6	3.2	4
C.I.15074	78.2	3	150.8	17	189.6	14	112.7	24	40.8	24	5.9	16
Lilifen	74.1	21	152.1	19	193.3	21	92.4	8	2.0	2	3.4	5
Strampelli	76.0	15	144.5	3	186.5	5	88.7	7	20.8	17	7.8	25
Vakka	72.5	27	158.2	24	194.0	22	114.4	26	36.4	22	8.7	26
Kirac 66	74.4	20	149.8	14	191.0	16	115.5	28	64.8	29	6.6	21
Starke	72.7	26	163.6	29	199.1	29	113.9	25	8.2	11	5.9	17
Victor I	75.5	17	146.3	6	186.2	3	79.1	1	2.2	4	10.2	28
Jyva	72.8	25	159.0	26	195.0	24	114.6	27	28.0	20	8.9	27
Mean	75.2		151.5		190.8		100.9		20.8		5.8	
Standard error of a treatment mean	0.7		0.6		0.7		1.2		3.8		2.1	
Coefficient of												

Table 43. Summary of agronomic, quality and yield data for winter cultivars grown in the "4th International Winter Wheat Performance Nursery," 1972,

(Northern Hemisphere), concluded.

Cultivar	Winter survival		Frost damage		1000 kernel weight		Protein		Lysine/protein		Yield	
	%	rank	%	rank	gm	rank	%	rank	%	rank	q/ha	% of Bezostaya 1
Number of sites	22		6		5		24		24		36	
Bezostaya 1	91.0	8	2.8	8	40.7	3	13.2	24	3.00	9	43.4	100.0
Sava	80.7	22	4.0	23	32.2	17	13.4	20	3.02	6	42.3	97.5
Dacia	89.7	13	2.9	12	41.3	1	14.4	7	2.98	12	41.9	96.5
Probstdorfer Extrem	92.9	3	2.5	5	35.4	9	13.5	19	2.91	26	41.6	95.9
Zlatna dolina (Golden Valley)	81.6	18	3.9	22	37.4	7	13.2	23	3.00	8	40.8	94.0
Blueboy	90.3	11	2.9	13	31.2	19	12.3	29	3.13	1	40.7	93.8
Maris Nimrod	87.0	17	3.3	17	34.1	13	12.8	26	3.04	3	40.5	93.3
Centurk	91.4	6	2.5	4	29.6	22	13.9	16	2.97	13	40.4	93.1
Caribo	90.4	10	2.9	11	32.5	16	12.8	27	3.00	10	39.8	91.7
Rousalka	83.5	20	3.4	19	40.8	2	14.2	11	2.94	19	38.8	89.4
Zenith	87.3	16	3.2	15	27.5	29	13.7	18	2.95	17	38.6	88.9
Moldova	87.6	15	3.3	18	38.0	6	14.7	5	2.97	15	37.5	86.4
NE701132	89.3	14	2.2	1	34.6	12	15.3	2	2.83	28	37.3	85.9
Tamwheat 102 (TX62A4793-7)	90.0	12	2.3	2	27.6	26	13.4	21	3.04	5	36.8	84.8
Backa	74.2	24	4.6	25	40.1	4	14.5	6	2.90	27	36.4	83.9
Clarion	84.1	19	3.1	14	29.3	23	13.9	15	2.94	18	36.1	83.2
Hokuei	92.3	5	3.2	16	30.3	20	12.7	28	3.01	7	35.2	81.1
Diplomat	90.6	9	2.8	10	34.9	11	14.0	14	2.94	20	34.2	78.8
Atlas 66	70.5	25	4.5	24	33.5	14	16.5	1	2.77	29	33.1	76.3
Marimp 3	56.9	26	5.5	26	35.0	10	14.3	9	2.96	16	32.5	74.9
Carifen 12	81.3	21	3.5	20	28.2	25	13.3	22	3.12	2	32.2	74.2
C.I.15074	94.1	1	2.3	3	29.7	21	15.2	3	2.93	24	32.3	74.4
Lilifin	56.3	27	5.5	27	38.7	5	15.0	4	2.91	25	31.8	73.3
Strampelli	52.7	28	5.6	28	35.7	8	12.8	25	3.04	4	31.2	71.9
Vakka	92.1	4	2.8	9	28.8	24	13.9	17	2.99	11	29.9	68.9
Kirac 66	78.8	23	3.7	21	31.9	18	14.6	8	2.94	21	29.9	68.9
Starke	92.9	2	2.6	7	26.4	28	14.2	12	2.93	23	28.3	65.2
Victor I	42.5	29	6.3	29	33.2	15	14.3	10	2.93	22	28.1	64.7
Jyva	91.1	7	2.6	6	27.6	27	14.1	13	2.97	14	26.9	62.0
Mean	82.2		3.5		33.3		13.9		2.97		35.8	--
Standard error of a treatment mean	3.0		0.4		1.6		0.2		0.02		1.6	
Coefficient of variation (%)	7.3		20.5		7.9		5.7		3.52		15.4	

Table 44. Correlation coefficients for yield and other agronomic traits combined over 17 nursery sites of the International Winter Wheat Performance Nursery, 1972.

Trait	Yield	Test weight	Flowering	Ripening	Plant height
Test weight	0.25**	1.00			
no. of obs.	1904	1904			
Flowering	-0.00	0.44**	1.00		
no. of obs.	1784	1784	1784		
Ripening	0.27**	0.41**	0.75**	1.00	
no. of obs.	1784	1784	1784	1784	
Plant height	0.09**	-0.15**	0.20**	0.12**	1.00
no. of obs.	1868	1868	1784	1784	1868
Lodging	-0.06*	0.00	-0.01	-0.03	0.15**
no. of obs.	1507	1507	1423	1423	1507

** Significant at the 1% level.

* Significant at the 5% level.

SOUTHERN HEMISPHERE

ARGENTINA

Bordenave

Cooperator(s): S. E. Garbini; E. F. Godoy.

Date of planting (effective germination): July 28, 1972.

Precipitation during cycle of test: 333.3 mm.

Amount of irrigation applied: None.

Fertilizer used: None.

General description of climatic conditions during test: Intensive frost in August and October; high temperatures, with intense and dry winds in December.

Disease development: Moderate intensity of stripe, leaf and stem rusts.

Insect, weed or pest problems: "150CA" (*Cirphis unipunata* and *Laphigma frugiperda*) present in December.

Date of harvest: December 21, 1972 to January 15, 1973.

Area harvested for yield: 3 square meters.

Dates when different notes were taken:

Frost damage—July 15, 1972

Stripe rust—November 27, 1972

Plant height—November 4–December 20, 1972

Leaf rust—December 10, 1972

Stem rust—December 10, 1972

Lodging—December 19, 1972–January 13, 1973

Shattering—December 20, 1972–January 12, 1973

Data in Table 45

Table 45. Agronomic, grain quality, and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at

Bordenave, Argentina, 1972.

Cultivar	Yield : q/ha	Test weight : kg/hl	Protein : %	Lysine : % of protein	Date of		Plant height : cm	Frost damage : 0-9	Rust					
					Flowering : days from Jan. 1	Ripening			Stripe		Leaf		Stem	
									Sev. : %	Resp. :	Sev. : %	Resp. :	Sev. : %	Resp. :
Strampelli	37.5	71.8	13.7	2.96	306	356	98	7	2	R	0	0	25	S
Rousalka	33.0	74.3	14.6	3.00	307	361	85	2	4	R-MR	2	0-R	0	0
Victor I	29.5	72.1	15.8	2.90	306	363	80	3	0	0	30	0-S	0	0
Marimp 3	27.7	74.2	15.5	2.88	311	363	95	3	11	MS-S	40	S	25	S
Moldova	25.4	74.8	15.8	3.00	311	362	119	2	0	0-R	22	MS-S	25	S
Centurk	24.4	78.6	16.6	2.84	318	363	114	0	70	S	6	0-S	0	0
Blueboy	23.9	65.4	15.6	2.73	316	362	105	1	3	R-MR	22	S	60	S
Sava	23.8	71.2	14.1	3.03	318	362	95	0	8	MS	5	R-MR	30	S
Dacia	21.8	71.5	16.4	2.82	319	364	120	1	0	0	22	MS-S	42	S
Zlatna dolina (Golden Valley)	20.8	67.9	14.8	2.91	320	364	86	3	45	S	0	0-R	27	S
Tamwheat 102 (TX62A4793-7)	20.2	66.9	16.9	2.81	313	359	100	1	82	S	0	0	0	0
Kirac 66	19.7	74.8	17.9	2.77	314	361	118	2	0	0	72	S	20	S
NE701132	19.2	77.3	16.7	2.84	319	363	121	1	5	R	20	MS	0	0
Bezostaya 1	18.1	79.4	16.1	2.68	319	364	101	0	9	R-MS	25	MS-S	47	S
Backa	18.1	77.0	17.0	2.77	324	365	95	3	0	0	25	MS-S	37	S
Lerma Rojo 64	17.9	74.1	15.3	2.78	298	361	93	5	0	0	65	S	0	0
Atlas 66	17.7	73.7	19.3	2.66	319	363	124	4	3	R-MS	12	MS-S	10	MS-S
C.I.15074	15.8	79.9	17.9	2.83	321	365	118	0	82	S	25	S	20	S
Lilifen	12.7	67.5	18.2	2.80	322	366	104	5	5	R-MR	0	0-R	17	S
Probstdorfer Extrem	12.5	75.3	17.0	2.67	326	366	114	0	7	MR-MS	25	MS-S	32	S
Carifen 12	10.4	54.5	17.2	2.97	326	363	85	4	0	0	80	S	25	S
Zenith	7.6	65.1	19.0	2.78	333	370	100	3	0	0	75	S	65	S
Hokuei	6.4	64.5	16.6	2.74	328	365	101	1	7	MR-MS	15	S	40	S
Clarion	5.6	61.3	19.7	2.71	336	371	91	2	0	0	2	R	67	S
Caribo	5.2	--	19.6	2.75	332	368	100	2	0	0	47	S	37	S
Maris Nimrod	4.4	--	19.0	2.77	332	366	93	2	0	0	80	S	67	S
Vakka	2.9	--	19.9	2.83	340	373	96	0	0	0	57	0-S	55	S
Jyva	2.8	--	19.7	2.88	340	373	91	0	0	0	55	0-S	57	S
Diplomat	1.8	--	19.3	2.80	340	375	83	3	0	0	70	S	65	S
Starke	1.2	--	19.2	2.77	342	373	76	2	0	0	65	S	70	S
Mean	16.3	71.4	17.1	2.82	321.8	364.9	100.0	2.1	11.4		32.1		32.2	
Standard error or a treatment mean	1.5	--	0.6	0.06	0.9	1.4	2.8	0.3	--		--		--	
Coefficient of variation (%)	18.9	--	7.1	3.88	0.5	0.8	5.7	27.2	--		--		--	

BRAZIL

Pelotas

Cooperator(s): M. Rocha.

Date of planting (effective germination): June 8, 1972.

Precipitation during cycle of test: Not reported.

Amount of irrigation applied: None.

Fertilizer used: N = 18 kg/ha, P₂O₅ = 69 kg/ha (diammonium phosphate in the row); N = 46 kg/ha (urea).

General description of climatic conditions during test: Excessively rainy in June and July; rainy and cooler than normal in August, September and October.

Disease development: Severe attack of Septoria, stem and leaf rusts, and fusarium head blight (scab).

Insect, weed or pest problems: Bird damage on early maturing varieties.

Date of harvest: December 6-10, 1972.

Area harvested for yield: 3 square meters.

Dates when different notes were taken: None reported.

Data in Table 46

Table 46. Agronomic and disease data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Pelotas, Brazil, in 1972.

Cultivar	Yield q/ha	Date of flowering days from Jan. 1	Plant height cm	Leaf rust Resp.	Stem rust		Scab Resp.
					Sev. %	Resp.	
Centurk	18.4	302	95	R	0	R	R
Strampelli	11.1	284	85	R	30	S	MR
Rousalka	8.1	284	85	R	90	S	--
Atlas 66	7.4	302	100	S	20	MR	--
Kirac 66	6.8	284	100	S	0	R	--
Marimp 3	6.4	286	90	MS	20	S	--
Sava	5.0	293	80	R	70	S	MR
Moldova	3.0	299	105	R	99	S	--
Blueboy	2.5	284	80	-	30	VS	--
Lilifen	2.2	305	95	R	0	R	--
Bezostaya 1	1.7	305	85	-	50	S	S
Zlatna dolina (Golden Valley)	1.5	305	80	R	99	VS	--
Victor I	0.2	260	70	-	--	--	--
Hokuei	--	308	95	-	70	VS	--
Probstdorfer Extrem	--	316	90	VS	70	S	MR
Tamwheat 102 (TX62A4793-7)	--	305	70	-	30	VS	--
C.I.15074	--	305	90	S	30	S	--
Jyva	--	--	--	S	70	VS	--
Vakka	--	--	--	VS	70	VS	--
Starke	--	--	--	S	50	VS	--
Lerma Rojo 64	--	239	85	-	--	--	MS
Backa	--	305	75	S	70	S	--
Clarion	--	325	80	MR	90	VS	--
Dacia	--	305	105	R	99	VS	S
Maris Nimrod	--	325	90	S	70	VS	--
Zenith	--	325	--	VS	70	VS	--
Caribo	--	325	80	R	90	VS	--
Diplomat	--	325	80	VS	90	VS	--
NE701132	--	305	105	R	80	S	--
Carifen	--	316	65	S	99	VS	--
Mean	5.7	300.8	86.9	--	59.1	--	--
Standard error of a treatment mean	--	--	--	--	--	--	--
Coefficient of variation (%)	--	--	--	--	--	--	--

Table 47. Stem rust and mildew reactions of cultivars in the 4th International Winter Wheat Performance Nursery grown at St. Paul, Minnesota, 1972^a.

Cultivar	Mildew %	Stem rust	Cultivar	Mildew %	Stem rust
Hokuei	10	40S	Clarion	20	40S
Bezostaya 1	10	60S	Victor I		winter killed
Probstdorfer Extrem	t	40S	Marimp 3	t	40S
Blueboy	10	60S	Dacia	40	60S
Tamwheat 102 (TX62A4793-7)	40	40S	Zlatna dolina (Golden Valley)	20	40S
Atlas 66	t	20S	Maris Nimrod	0	40S
C.I.15074	40	20S	Zenith	0	40S
Jyva	10	40S	Rousalka	10	60MS-S
Centurk	10	10S	Caribo	10	40S
Vakka	t	40S	Diplomat	40	10S
Starke	0	20S	Kirac 66	60	20S
Sava	0	20S	Lilifen		winter killed
Strampelli	10	40S	NE701132	40	10S
Lerma Rojo 64		winter killed	Carifen 12	20	40S
Backa	t	40S	Moldova	20	40S

a) In cooperation with Dr. D. V. McVey, Cereal Rust Laboratory, North Central Region, Agriculture Research Service, United States Department of Agriculture.

Table 48. Agronomic and disease data for the 30 cultivars in an observation nursery of the 4th International Winter Wheat Performance Nursery grown in the polder Southern Flevaland of The Netherlands in 1972.^a

Cultivar	Growth stage ^b	Cultivar	Growth stage ^b
Hokuei	5.5	Clarion	4.3
Bezostaya 1	5.3	Victor I	5.7
Probstdorfer Extrem ^c	5.3	Marimp 3	5.9
Blueboy	5.3	Dacia	5.9
Tamwheat 102 (TX62A4793-7) ^c	5.9	Zlatna dolina (Golden Valley) ^c	5.9
Atlas 66 ^c	5.1	Maris Nimrod	4.7
C.I.15074	5.5	Zenith	5.1
Jyva	4.3	Rousalka ^c	6.2
Centurk ^c	5.5	Caribo	4.3
Vakka	4.7	Diplomat	4.3
Starke	3.7-4.3	Kirac 66	5.7
Sava	5.9	Lilifen	5.5
Strampelli	5.9	NE701132	5.7
Lerma Rojo 64	6.1	Carifen 12	5.1
Backa	5.9	Moldova	5.9
Mean	5.4		

a) Reported by Dr. H. H. Lamberts and Dr. J. Mesdag.

b) According to Feekes - scale in which: 3.7 - flag leaf ligule just visible; 4.3 - boot just visible; 4.5 - boot swollen; 4.7 - boot opening; 5.1 - first head just visible; 5.3 - 1/4 of heading completed; 5.5 - 1/2 of heading completed; 5.7 - 3/4 of heading completed; 5.9 - heading complete; 6.1 - beginning of flowering.

c) Attacked by footrot (*Cercospora herp.*).

Table 49. Milling and baking quality for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Svalof, Sweden^a, in 1972.

Cultivar	Falling number	Pearling resistance	Flour yield %	Protein content %	Zeleny value	Gluten content %	Valori-meter value	Loaf volume ml
Hokuei	310	6.3	58	12.5	24	26.4	54	742
Bezostaya 1	310	6.5	73	13.0	42	27.6	56	794
Probstdorfer Extrem	310	6.9	71	12.8	39	26.7	54	780
Blueboy	310	5.2	59	11.2	9	22.1	44	735
Tamwheat 102 (TX62A4793-7)	225	6.8	68	14.6	45	33.9	52	1061
Atlas 66	310	6.4	51	15.4	34	37.5	56	880
C.I.15074	310	6.8	66	17.9	65	42.2	70	997
Jyva	310	7.3	69	12.2	26	26.4	52	917
Centurk	199	7.1	65	12.2	41	25.8	40	758
Vakka	232	7.3	68	13.6	27	28.6	44	1024
Starke	310	6.6	73	11.9	19	26.4	46	721
Sava	225	6.7	51	14.5	27	29.9	52	845
Strampelli	--	6.1	--	--	42	--	--	--
Lerma Rojo 64	--	--	--	--	--	--	--	--
Backa	175	6.2	44	15.4	33	29.0	--	751
Clarion	309	5.8	53	12.4	13	25.7	40	734
Victor I	--	6.6	--	--	--	--	--	--
Marimp 3	215	6.2	48	14.8	41	29.4	--	846
Dacia	198	5.9	50	16.0	50	31.5	54	787
Zlatna dolina (Golden Valley)	205	6.4	49	14.2	29	26.5	46	782
Maris Nimrod	246	5.7	52	12.5	10	26.4	40	799
Zenith	310	7.1	69	12.8	45	27.1	52	872
Rousalka	219	6.2	56	16.5	35	34.4	--	852
Caribo	310	5.4	51	11.6	20	22.0	38	668
Diplomat	310	5.5	63	12.0	32	20.3	48	664
Kirac 66	82	6.1	50	15.1	39	28.6	46	--
Lilifen	--	6.1	--	--	36	--	--	--
NE701132	222	6.1	66	15.9	65	37.0	70	1119
Carifen 12	310	6.9	55	14.3	66	29.1	--	923
Moldova	187	5.9	55	15.7	43	32.2	56	960
Mean	256	6.3	59	13.9	36	29.0	50	840

a) Reported by Dr. Gösta Olsson.

Table 50. Quality data for the 30 cultivars in the 4th International Winter Wheat Performance Nursery grown at Zurich, Switzerland in 1972^a.

Cultivar	Zeleny value	Protein %	Cultivar	Zeleny value	Protein %
Hokuei	40	11.0	Clarion	34	11.2
Bezostaya 1	69	13.1	Victor I	32	10.7
Probstdorfer Extrem	66	13.7	Marimp 3	40	11.6
Blueboy	40	11.0	Dacia	58	11.7
Tamwheat 102 (TX62A4793-7)	53	12.0	Zlatna dolina (Golden Valley)	39	9.6
Atlas 66	58	13.2	Maris Nimrod	--	10.0
C.I.15074	57	14.0	Zenith	68	13.3
Jyva	35	14.4	Rousalka	40	12.3
Centurk	67	12.8	Caribo	45	10.9
Vakka	44	14.3	Diplomat	50	11.6
Starke	46	13.4	Kirac 66	52	11.8
Sava	36	10.9	Lilifen	50	12.5
Strampelli	40	10.7	NE701132	72	14.1
Lerma Rojo 64	36	12.3	Carifen	68	12.4
Backa	38	12.0	Moldova	42	11.5
Mean	49	12.1			

a) Reported by Dr. G. Popow and F. Weilenmann.

Table 51. Disease reactions of cultivars from the 4th International Winter Wheat Performance Nursery grown in the 2nd Regional Disease and Insect

Screening Nursery^a, 1972.

Cultivar	Yellow rust ^b			Leaf rust ^b			Stem rust ^b			Septoria ^c	
	Avg. : coef. : inf. :	High : score:	Location	Avg. : coef. : inf. :	High : score :	Location	Avg. : coef. : inf. :	High : score :	Location	Avg. : score	High score
	Atlas 66	18.1	80S	Lebanon	2.3	20MS	Egypt	23.9	60S	Egypt	3.3
Bezostaya 1	10.7	40S	Turkey	3.4	20MS	Turkey	36.0	100S	Turkey	4.4	7
Hokuei	5.8	30MS	Nepal	17.4	80S	Turkey	41.0	100S	Turkey	4.2	7
Probstdorfer Extrem	0.7	5MS	Nepal	3.9	25MS	Turkey	31.7	80S	Turkey	3.4	5
Blueboy	6.7	20S	India	13.3	100S	Turkey	57.1	100S	Turkey	4.3	7
Tamwheat 102 (TX62A4793-7)	14.0	40S	India	4.4	40MS	Turkey	42.9	100S	Turkey	4.2	8
C.I.15074	14.0	30S	Nepal	4.1	30S	Turkey	41.9	100S	Turkey	3.2	6
Jyva	3.3	20S	Turkey	29.4	80S	Turkey	29.3	100S	Turkey	2.8	4
Centurk	1.2	10MR	Lebanon	2.0	30MR	Turkey	26.8	100S	Turkey	5.4	8
Vakka	1.3	10MS	Turkey	15.0	60S	Italy	18.8	60S	Italy	2.4	4
H.G. Susceptible check	20.0	100S	Egypt	41.5	100S	Italy	26.7	60S	Egypt	8.2	9
Starke	0.2	tS	Turkey	21.1	80S	Yugoslavia	35.0	100S	Turkey	4.0	6
Sava	0	0	--	4.7	40S	India	25.8	60S	Italy	3.8	5
Strampelli	0	0	--	10.2	50S	Yugoslavia	26.8	60S	Egypt	5.5	8
Lerma Rojo 64	4.1	20MS	Nepal	6.0	30S	India	22.6	60S	Turkey	6.6	9
Backa	6.3	20MS	Turkey	13.2	60S	Italy	49.0	100S	Turkey	3.6	4
Clarion	1.3	10MS	Turkey	12.7	60S	Algeria	49.3	100S	Turkey	3.8	6
Victor I	1.5	10MS	Nepal	30.1	100S	Italy	30.0	80S	Turkey	3.8	8
Marimp 3	0.4	5MR	Nepal	21.2	100S	Italy	39.4	100S	Turkey	3.4	7
Dacia	1.2	10MR	India	4.8	20MS	Turkey	54.2	100S	Turkey	3.5	6
Zlatna dolina (Golden Valley)	4.3	20MS	Lebanon	1.0	10S	Turkey	36.5	100S	Turkey	4.0	8
Maris Nimrod	0.0	tR	Turkey	8.6	40S	India	52.9	100S	Egypt	2.4	5
Zenith	0.7	5MS	Turkey	17.2	80S	Italy	49.3	100S	Egypt	3.4	8
Rousalka	0.4	5MR	Nepal	1.1	20MR	Algeria	25.7	100S	Turkey	4.5	6
Caribo	0	0	--	21.1	60S	Italy	50.7	100S	Egypt	3.0	5
Diplomat	1.6	10MS	Turkey	34.0	100S	Algeria	24.2	100S	Egypt	3.0	5
Kirac 66	0.4	5MR	Nepal	46.4	100S	Yugoslavia	57.1	100S	Egypt	5.2	7
Lilifen	1.0	10MR	Lebanon	0.2	tMS	India	5.7	20S	India	3.8	7
NE701132	0.8	10MR	Turkey	7.9	80S	Algeria	26.7	100S	Turkey	5.0	7
Carifen 12	0.0	tR	India	24.4	50S	India	53.3	100S	Turkey	4.0	8
Tossan Susceptible check	23.2	100S	Lebanon	52.1	100S	Egypt	49.0	65S	Nepal	6.2	8
Moldova	4.0	20S	India	0.1	tMR	Nepal	45.0	100S	Turkey	5.4	6

a) In cooperation with Dr. E. E. Saari, Arid Lands Agricultural Development Program, The Ford Foundation, Beirut, Lebanon.

b) Average of coefficients from all locations. YR:11 locations; LR:11 locations; SR: 7 locations.

c) Average score on 0-9 basis: 4 locations. All high scores from North Africa.

Table 52. Winter survival data for 30 cultivars in the 4th International Winter Wheat Performance Nursery, Lethbridge, Alberta, Canada, 1971-72^a.

Cultivar	Replication		Mean
	I	II	
Bezostoya 1	100	100	100
C. I. 15074	100	100	100
Hokuei	100	100	100
NE701132	100	100	100
Probstdorfer Extrem	100	100	100
Vakka	100	100	100
Centurk	90	100	95
Jyva	90	100	95
Tamwheat 102 (TX62A4793-7)	100	90	95
Blueboy	90	80	85
Rousalka	90	40	65
Dacia	80	30	60
Zenith	70	50	60
Moldova	65	25	45
Starke	80	0	40
Caribo	50	15	33
Maris Nimrod	35	2	19
Zlatna dolina (Golden Valley)	35	2	19
Kirac 66	25	3	14
Sava	10	15	13
Carifen 12	15	2	9
Diplomat	15	2	9
Clarion	5	0	3
Atlas 66	2	0	1
Strampelli	2	0	1
Backa	0	0	0
Lilifen	0	0	0
Marimp 3	0	0	0
Victor I	0	0	0
Jerma Rojo 64 ^b	0	0	0
Mean	52	39	46

a) In cooperation with Dr. M. N. Grant.

b) Spring wheat.

Table 53. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Algiers, Algeria in 1971 and 1972.

Cultivar	Yield q/ha	Date of flowering days from Jan. 1	Date of ripening days from Jan. 1	Plant height cm	Lodging %
Strampelli	47.8	123	177	108	13
Bezostaya 1	42.0	130	180	106	14
Centurk	39.2	131	178	119	20
Backa	38.5	127	178	103	6
Blueboy	38.0	131	178	110	5
Sava	37.8	128	177	98	5
Tamwheat 102 (TX62A4793-7)	35.5	131	178	109	5
Atlas 66	32.5	132	180	118	17
C.I.15074	28.2	138	178	119	16
Probstdorfer Extrem	25.4	142	182	115	16
Hokuei	24.1	138	181	108	5
Vakka	14.1	146	181	102	14
Jyva	11.8	152	185	107	21
Starke	8.8	157	189	102	28
Mean	30.3	136.1	180.2	108.8	13.2
Standard error of a treatment mean	2.9	1.7	1.0	3.3	8.4
Coefficient of variation (%)	19.5	0.8	1.0	8.5	111.0

Analysis of Variance

Source of variation	d.f.	Mean Squares				
		Yield	Flowering	Ripening	Plant height	Lodging
Total	111					
Years (Y)	1	321.3*	493.1**	1712.9**	29737.7**	14743.1**
Reps/years	6	39.4	0.9	3.2	82.4	333.0
Cultivars (C)	13	1154.7**	777.7**	88.3**	366.6**	409.8
C x Y	13	69.2*	22.6**	8.3**	84.8	558.5**
Error	78	34.9	1.1	3.4	85.4	213.7

Correlation Coefficients

Trait	Yield	Flowering	Ripening	Plant height
Flowering	-0.79**	1.00		
Ripening	-0.35**	0.69**	1.00	
Plant height	0.19*	0.13	0.56**	1.00
Lodging	-0.28**	0.11	-0.23*	-0.47**

Table 54. Two-year means and analyses for agronomic traits of 14 cultivars grown in the international winter wheat performance trials in Austria in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height ^a cm	Winter survival %
					Flowering days from Jan. 1	Ripening ^a		
Centurk	62.8	80.1	15.0	2.93	146	193	101	97
Probstdorfer Extrem	60.2	82.2	14.3	2.85	149	195	118	99
Sava	55.9	77.0	15.0	3.01	143	193	78	98
Hokuei	51.6	79.6	13.2	3.05	148	198	100	99
Backa	48.4	78.3	14.7	2.89	144	192	79	90
Bezostaya 1	48.2	79.4	14.1	2.96	147	198	90	98
Blueboy	47.4	74.7	12.9	3.14	148	197	98	98
Atlas 66	46.4	79.4	18.1	2.74	149	201	115	86
Vakka	44.2	75.6	13.9	3.02	155	196	112	98
Starke	40.5	73.0	14.0	3.02	161	200	101	99
Tamwheat 102 (TX62A4793-7)	38.7	76.1	14.4	3.01	142	187	91	98
Jyva	35.9	73.7	14.0	3.02	155	199	113	97
Strampelli	33.8	78.0	13.6	2.96	145	195	79	37
C.I.15074	32.8	80.2	17.7	2.83	148	194	110	98
Mean	46.2	77.7	14.6	2.96	148.6	195.3	98.6	92.3
Standard error of a treatment mean	3.7	1.7	--	--	0.9	--	--	6.3
Coefficient of variation (%)	13.8	1.6	--	--	0.6	--	--	8.6

^a One rep only in one or more years.

Source of variation	d.f.	Analysis of Variance Mean Squares			
		Yield	Test weight	Flowering	Winter survival
Total	111				
Years (Y)	1	3213.2**	1502.4**	2386.5**	2340.6**
Reps/years	6	111.1	2.6	0.7	78.0
Cultivars (C)	13	699.1**	59.3*	211.9**	2146.7**
C x Y	13	106.8**	23.1**	6.1**	316.4**
Error	78	40.4	1.6	0.7	63.4

** Significant at the 1% level.

Trait	Correlation Coefficients		
	Yield	Test weight	Flowering
Test weight	0.59**	1.00	
Flowering	-0.41**	-0.70**	1.00
Winter survival	0.37	0.15	-0.05

* Significant at the 5% level.

Table 55. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Tolbukhin, Bulgaria in 1971 and 1972.

Cultivar	Yield q/ha	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %	Shattering %
				Flowering days from Jan. 1	Ripening			
Sava	46.8	16.6	2.78	141	182	94	0	0
Backa	42.3	17.2	2.79	141	185	94	24	1
Bezostaya 1	37.1	16.2	2.74	145	187	104	55	0
Tamwheat 102 (TX62A4793-7)	36.0	16.1	2.87	142	182	96	61	0
Centurk	34.8	16.9	2.74	145	182	107	81	0
Atlas 66	34.5	--	--	146	186	111	84	0
Probstdorfer Extrem	32.6	16.6	2.68	147	188	117	74	0
Strampelli	32.5	16.2	2.84	139	182	95	93	0
Blueboy	30.6	15.8	2.77	145	187	111	52	0
Vakka	26.0	16.3	2.75	152	190	111	55	0
C.I.15074	24.8	17.6	2.77	145	183	113	77	0
Hokuei	21.0	16.6	2.75	145	186	101	95	0
Jyva	20.5	17.4	2.75	154	189	110	84	0
Starke	20.2	17.2	2.73	161	200	117	6	1
Mean	31.4	16.7	2.77	146.1	186.2	105.7	60.0	0.2
Standard error of a treatment mean	2.6	--	--	0.6	1.4	2.0	13.3	0.3
Coefficient of variation (%)	20.96	--	--	1.7	0.1	4.8	31.1	215.0

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares					
		Yield	Flowering	Ripening	Plant height	Lodging	Shattering
Total	111						
Years (Y)	1	310.6*	69.1**	2470.3**	1087.5**	8314.5*	5.1**
Reps/years	6	61.5	0.0	0.0	22.9	251.2	0.2
Cultivars (C)	13	530.5**	273.5**	190.3**	562.7**	7540.3**	0.5
C x Y	13	53.2	3.0**	15.6**	31.6	1422.5**	0.5*
Error	78	43.3	0.0	0.0	25.7	349.0	0.2

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Flowering	Ripening	Plant height	Lodging
Flowering	-0.55**	1.00			
Ripening	-0.43**	0.73**	1.00		
Plant height	-0.28**	0.55**	0.14	1.00	
Lodging	-0.32**	-0.13	-0.04	-0.01	1.00
Shattering	0.08	0.06	-0.08	0.17	-0.38**

* Significant at the 5% level.

Table 56. Two-year means for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Cambridge, England in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Lodging %
Sava	51.9	76.4	13.8	3.06	14.5
Starke	49.0	72.7	14.2	2.91	19.5
Blueboy	48.5	76.5	13.3	3.05	22.5
Vakka	46.5	79.9	14.7	2.89	56.0
Probstdorfer Extrem	45.0	81.3	14.2	2.87	46.0
Bezostaya 1	42.7	80.6	14.5	2.89	18.5
Backa	42.3	77.9	15.6	2.86	24.0
Atlas 66	38.8	78.2	16.3	2.71	51.0
Hokuei	36.4	78.5	14.4	2.93	73.0
Jyva	31.5	76.1	14.7	2.93	53.0
Centurk	30.8	75.4	15.1	3.06	48.0
C.I.15074	18.7	74.8	16.3	2.94	35.5
Strampelli	--	77.7	--	--	--
Tamwheat 102 (TX62A4793-7)	--	70.3	--	--	--
Mean	40.2	76.9	14.7	2.92	38.5

^a One rep. only in one or more years.

Table 57. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Marton-vasar, Hungary in 1971 and 1972.

Cultivar	Yield	Test weight	Protein ^a	Lysine ^a	Date of		Plant height	Lodging
	q/ha	kg/hl	%	% of Protein	Flowering	Ripening	cm	
					days from Jan. 1	days from Jan. 1		%
Centurk	51.1	79.3	13.7	2.94	150	191	96	33
C.I.15074	42.6	80.7	15.8	2.85	150	191	100	45
Probstdorfer Extrem	42.1	79.2	13.6	2.88	153	192	113	33
Sava	41.5	77.0	14.8	2.84	147	186	71	0
Bezostaya 1	39.8	79.3	14.3	2.91	149	190	81	0
Hokuei	38.2	77.2	12.9	2.98	151	191	92	40
Blueboy	36.4	69.7	12.8	3.27	151	190	94	13
Atlas 66	36.0	76.5	18.4	2.73	154	194	105	28
Tamwheat 102 (TX62A4793-7)	34.8	72.6	13.4	2.99	147	185	77	0
Vakka	26.9	65.5	14.2	2.97	159	194	97	15
Starke	26.4	66.8	15.0	2.86	165	200	100	0
Strampelli	23.8	--	15.5	2.83	147	190	67	20
Backa	22.8	73.0	16.4	2.81	149	190	65	0
Jyva	22.1	65.5	15.1	2.88	162	196	97	13
Mean	34.6	74.0	14.7	2.91	152.3	191.3	89.5	17.0
Standard error of a treatment mean	4.7	--	--	--	0.8	1.8	3.3	11.3
Coefficient of variation (%)	20.1	--	--	--	0.5	0.5	5.6	48.9

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares				
		Yield	Flowering	Ripening	Plant height	Lodging
Total	111					
Years (Y)	1	1728.6**	339.5**	357.1**	612.9*	12432.1*
Reps/years	6	97.0	0.8	1.6	19.5	56.0
Cultivars (C)	13	630.8*	255.2**	123.2**	1780.8**	2093.7
C x Y	13	172.7**	4.6**	27.0**	87.1**	1016.8**
Error	78	48.6	0.5	0.9	24.9	68.8

Correlation Coefficients

Trait	Yield	Flowering	Ripening	Plant height
Flowering	-0.44**	1.00		
Ripening	-0.08	0.62**	1.00	
Plant height	0.25**	0.55**	0.35**	1.00
Lodging	0.09	0.09	-0.13	0.42**

** Significant at the 1% level.

* Significant at the 5% level.

Table 58. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Karaj, Iran in 1971 and 1972.

Cultivar	Yield q/ha	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %	Shattering %	Winter survival %	1000 kernel wt. gm
				Flowering days from Jan. 1	Ripening					
Tamwheat 102 (TX62A4793-7)	59.7	10.5	3.44	126	173	115	6	2	99	29
Strampelli	58.3	9.8	3.48	120	172	106	30	19	88	36
Centurk	54.3	12.0	3.27	129	175	123	27	12	95	32
Sava	49.9	10.7	3.54	124	172	101	1	12	87	29
Blueboy	49.2	10.1	3.48	129	173	122	5	5	95	32
Bezostaya 1	47.0	11.1	3.37	129	173	114	11	16	94	38
Hokuei	45.6	11.1	3.28	132	177	118	15	8	97	29
C.I.15074	44.3	11.2	3.41	129	174	126	9	21	96	30
Backa	44.1	12.9	3.24	126	173	103	3	16	84	36
Atlas 66	43.0	14.8	2.90	126	173	135	39	16	78	30
Probstdorfer Extrem	40.7	11.8	3.19	136	175	133	10	7	96	34
Vakka	31.3	11.0	3.48	137	177	123	4	16	94	26
Starke	27.7	10.5	3.50	145	184	122	0	20	94	30
Jyva	26.5	12.1	3.29	139	177	126	5	31	95	26
Mean	44.4	11.4	3.35	130.4	174.8	119.1	11.9	14.4	92.2	31.2
Standard error of a treatment mean	4.8	--	--	0.9	0.9	3.1	8.9	6.1	5.1	3.2
Coefficient of variation (%)	17.8	--	--	1.7	1.5	5.5	117.0	63.2	5.64	6.8

^a One rep. only in one or more years.

Table 58. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Karaj, Iran in 1971 and 1972, concluded.

Analysis of Variance									
Source of variation	d.f.	Mean Squares							
		Yield	Flowering	Ripening	Plant height	Lodging	Shattering	Winter survival	1000 kernel wt.
Total	111								
Years (Y)	1	4530.1**	1666.3**	4412.6**	1323.4**	9162.2**	8437.3**	798.2	29.5
Reps/years	6	147.0	33.3**	6.9	255.0**	1510.8**	249.4	18.0	36.4
Cultivars	13	846.5**	362.8**	85.1**	838.8**	1510.8**	456.0	258.5	107.7
C x Y	13	188.2**	6.8	6.2	78.3*	640.4**	293.8**	207.3**	79.5**
Error	78	62.3	5.1	6.8	43.0	194.1	82.2	27.0	4.5

Correlation Coefficients							
Trait	Yield	Flowering	Ripening	Plant height	Lodging	Shattering	Winter survival
Flowering	-0.68**	1.00					
Ripening	-0.55**	0.74**	1.00				
Plant height	-0.05	0.27**	-0.10	1.00			
Lodging	0.31**	-0.32**	-0.36**	0.32**	1.00		
Shattering	-0.43**	0.39**	0.54**	-0.14	-0.25**	1.00	
Winter Survival	0.12	0.11	-0.15	0.29**	0.08	-0.21*	1.00
1000 Kernel wt.	0.37**	10.37**	-0.20*	-0.25**	-0.05	-0.16	-0.19*

** Significant at the 1% level.

* Significant at the 5% level.

Table 59. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Sulaimaniya, Iraq in 1971 and 1972.

Cultivar	Yield q/ha	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm
				Flowering days from Jan. 1	Ripening	
Strampelli	40.9	11.8	3.06	126	158	96
Bezostaya 1	40.5	12.9	2.92	132	161	106
Blueboy	39.0	13.2	2.85	132	163	110
Backa	37.0	14.2	2.84	130	160	89
Centurk	35.4	13.7	2.90	134	164	113
Tamwheat 102 (TX62A4793-7)	33.9	13.7	2.92	134	163	101
Sava	33.7	13.2	3.04	131	160	84
Hokuei	30.0	12.9	2.97	138	167	106
Probstdorfer Extrem	28.5	15.9	2.75	140	168	117
C.I.15074	27.6	15.9	2.85	137	165	121
Atlas 66	23.8	17.8	2.74	134	164	124
Vakka	20.7	16.6	2.88	148	173	105
Jyva	16.5	17.4	2.78	148	173	102
Starke	13.6	18.0	2.76	153	179	98
Mean	30.1	14.8	2.88	136.8	165.5	105.2
Standard error of a treatment mean	1.6	--	--	0.7	1.2	4.0
Coefficient of variation (%)	15.4	--	--	0.8	0.8	4.0

^a One rep only in one or more years.

Analysis of Variance

Source of Variation	d.f.	Mean Squares			
		Yield	Flowering	Ripening	Plant height
Total	111				
Years (Y)	1	17.4	622.3**	1068.9**	2508.0**
Reps/years	6	8.4	3.2	0.3	125.5
Cultivars (C)	13	616.2**	461.8**	271.3**	1040.1**
C x Y	13	20.9	3.8**	11.2**	131.1**
Error	78	21.4	1.2	2.0	18.1

Correlation Coefficients

Trait	Yield	Flowering	Ripening
Flowering	-0.80**	1.00	
Ripening	-0.71**	0.95**	1.00
Plant height	-0.10	0.19*	0.22*

** Significant at the 1% level.

* Significant at the 5% level.

Table 60. Two-year means for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Simla, India in 1971 and 1972.

Cultivar	Yield q/ha	Date of		Plant height cm	1000 kernel wt. gm
		Flowering	Ripening		
		days from Jan. 1			
Strampelli	35.7	106	147	78	32
Blueboy	29.2	109	148	102	30
Atlas 66	28.8	106	144	113	27
Sava	26.2	109	146	80	25
Backa	22.5	106	149	78	32
Centurk	19.0	110	150	95	25
Bezostaya 1	18.7	110	149	89	32
Tamwheat 102 (TX62A4793-7)	18.7	109	149	90	23
C.I.15074	17.5	116	151	112	26
Probstdorfer Extrem	16.4	122	155	109	30
Hokuei	15.8	117	153	98	22
Vakka	9.0	127	159	95	27
Jyva	6.7	130	161	99	28
Starke	2.1	137	165	97	26
Mean	19.0	115.3	151.8	95.4	27.5

^a One rep. only in one or more years.

Table 61. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Rieti, Italy in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of protein	Date of		Plant height cm	Shattering %	Winter survival %
					Flowering	Ripening			
					days	from Jan. 1			
Strampelli	48.3	76.7	10.9	3.15	135	186	90	10	93
Bezostaya 1	45.3	79.0	12.6	3.03	141	191	107	8	95
Backa	43.3	75.7	12.6	3.00	137	190	93	13	92
Tamwheat 102 (TX62A4793-7)	43.3	74.4	11.3	3.17	140	187	97	4	95
Sava	43.2	75.0	12.2	3.04	139	187	84	8	95
Blueboy	40.1	69.9	10.3	3.30	143	191	112	8	95
Centurk	39.3	77.7	12.5	3.09	140	192	111	10	93
Probstdorfer Extrem	39.3	77.5	12.0	3.04	148	194	123	4	95
Atlas 66	31.2	75.9	16.7	2.69	145	193	126	5	93
C.I.15074	30.8	78.1	14.9	2.89	145	193	128	13	95
Hokuei	30.7	69.6	12.1	2.89	146	195	105	4	95
Vakka	16.6	65.0	12.6	3.01	152	197	121	11	93
Starke	11.9	65.0	13.9	2.80	161	201	113	3	96
Jyva	11.2	65.0	12.3	3.01	154	196	118	11	97
Mean	33.9	73.2	12.6	3.01	144.6	192.1	109.0	8.0	94.7
Standard error of a treatment mean	3.4	1.5	--	--	1.5	1.4	3.7	2.7	1.4
Coefficient of variation (%)	12.5	1.6	--	--	0.3	0.5	3.7	19.5	3.9

^a One rep. only in one or more years.

Table 61. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Rieti, Italy in 1971 and 1972, concluded.

Analysis of Variance								
Source of variation	d.f.	Mean Squares						
		Yield	Test weight	Flowering	Ripening	Plant height	Shattering	Winter survival
Total	111							
Years (Y)	1	467.0*	298.0**	594.3**	2931.5**	14265.1**	3960.3**	2.0
Reps/years	6	47.6	5.4	0.3	0.2	117.1	11.4	55.4*
Cultivars	13	1243.5**	217.7**	408.0**	130.6**	1489.2**	91.1	14.2
C x Y	13	95.0**	18.0**	18.3**	16.3**	109.7**	59.0**	15.7
Error	78	17.9	1.3	0.2	0.9	16.3	2.4	13.8

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Correlation Coefficients							
Trait	Yield	Test weight	Flowering	Ripening	Plant height	Shattering	Winter survival
Test weight	0.76**	1.00					
Flowering	-0.72**	-0.56**	1.00				
Ripening	-0.35**	-0.11	0.77**	1.00			
Plant height	-0.43**	-0.27**	0.22*	0.16	1.00		
Shattering	0.12	0.29**	0.16	0.56**	-0.52**	1.00	
Winter survival	-0.11	-0.14	0.20*	0.11	0.09	-0.07	1.00

** Significant at the 1% level.

* Significant at the 5% level.

Table 62. Two-year means and analyses for agronomic traits of 14 cultivars grown in the international winter wheat performance trials in Japan in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of protein	Date of		Plant height cm	Shattering %	Winter survival %
					Flowering	Ripening			
					days from Jan. 1	days from Jan. 1			
Tamwheat 102 (TX62A4793-7)	38.1	77.7	15.6	2.81	156	193	91	5	99
Hokuei	37.2	77.4	14.9	2.81	159	198	108	16	100
Vakka	32.9	70.1	15.5	2.79	164	200	116	9	100
Blueboy	31.2	72.3	16.0	2.84	160	199	106	11	100
Sava	31.1	76.3	16.2	2.79	156	192	81	16	94
Backa	29.4	74.5	18.3	2.73	157	194	82	5	97
Atlas	28.9	76.7	19.9	2.70	161	198	109	9	97
Bezostaya 1	28.1	76.4	17.1	2.71	160	197	97	6	99
Probstdorfer Extrem	27.3	74.7	16.1	2.72	162	202	106	4	98
C.I.15074	25.8	76.6	18.3	2.77	160	197	104	6	98
Jyva	21.9	66.1	15.7	2.78	165	202	111	15	100
Centurk	20.0	74.7	18.2	2.68	160	199	92	12	98
Strampelli	18.8	77.0	16.0	2.80	158	195	81	7	92
Starke	13.8	57.5	17.5	2.77	172	207	114	12	99
Mean	27.5	73.4	16.8	2.77	160.6	198.0	99.8	9.5	98.3
Standard error of a treatment mean	3.3	1.8	--	--	0.8	1.2	3.9	3.5	1.5
Coefficient of variation (%)	20.4	2.6	--	--	0.7	1.0	5.2	120.2	1.9

^a One rep. only in one or more years.

Table 62. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Morioka, Japan in 1971 and 1972, concluded.

Analysis of Variance									
Source of variation	d.f.	Mean Squares							
		Yield	Test weight	Flowering	Ripening	Plant height	Shattering	Winter survival	
Total	111								
Years (Y)	1	4046.4**	283.2**	580.6**	82.3*	8610.0**	375.6	64.5	
Reps/years	6	135.4	7.0	5.5	18.3	102.4	200.8	7.1	
Cultivars	13	384.5**	250.9**	145.0**	128.7**	1230.3**	147.7	43.3	
C x Y	13	84.5**	27.1 **	5.0**	11.4**	122.0**	95.8	18.8**	
Error	78	31.4	3.7	1.1	3.7	26.8	128.9	3.6	

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height	Shattering
Test weight	0.30**	1.00				
Flowering	-0.12	-0.84**	1.00			
Ripening	-0.27**	-0.73**	0.81**	1.00		
Plant height	0.39**	-0.47**	0.67**	0.54**	1.00	
Shattering	0.02	-0.20*	0.18	0.15	0.12	1.00
Winter survival	0.19*	-0.24*	0.31**	0.32**	0.47**	0.08

** Significant at the 1% level.

* Significant at the 5% level.

Table 63. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Suwon, Korea in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %	Winter survival %
					Flowering days from Jan. 1	Ripening			
Bezostaya 1	42.6	75.2	14.7	2.90	144	181	97	8	95
Sava	39.3	70.0	14.5	3.01	142	177	82	0	96
Centurk	38.1	74.7	14.2	2.99	143	177	105	36	95
Blueboy	36.2	66.3	11.9	3.20	145	180	101	14	95
Tamwheat 102 (TX62A4793-7)	36.0	68.4	14.5	2.99	141	176	88	32	94
Probstdorfer Extrem	35.8	73.3	13.6	2.78	146	182	112	31	93
Backa	35.0	70.6	--	--	141	178	84	1	84
Atlas 66	33.8	71.4	17.5	2.77	145	180	110	45	89
Strampelli	33.4	69.7	14.2	3.07	141	175	87	24	75
Vakka	33.2	62.4	13.5	3.07	148	181	113	4	95
C.I.15074	32.1	74.7	14.7	2.93	144	179	107	30	95
Hokuei	31.5	70.9	13.9	2.99	145	182	97	76	94
Jyva	22.3	61.7	14.0	3.04	148	186	117	13	95
Starke	15.3	60.7	16.8	3.00	151	187	113	4	93
Mean	33.2	69.3	--	--	144.5	180.0	100.8	22.6	92.0
Standard error of a treatment mean	4.6	2.4	--	--	1.6	1.0	3.7	16.3	2.6
Coefficient of variation (%)	17.2	3.5	--	--	0.5	0.7	3.5	71.2	4.0

^a One rep. only in one or more years.

Table 63. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Suwon, Korea in 1971 and 1972, concluded.

Analysis of Variance								
Source of variation	d.f.	Mean Squares						
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging	Winter survival
Total	111							
Years (Y)	1	2155.1**	3031.6**	52.9	315.6**	8126.0**	24485.1**	2555.6**
Reps/years	6	148.9	4.5	0.7	11.9	18.2	309.0	29.6
Cultivars	13	382.2	189.0**	78.6*	95.8**	1123.5**	3607.3	264.4**
C Y	13	166.6**	46.7**	20.1**	7.3**	108.4**	2121.5**	52.7**
Error	78	32.5	5.8	0.5	1.6	12.7	259.9	13.6

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Test weight	0.58**	1.00				
Flowering	-0.44**	-0.48**	1.00			
Ripening	-0.56**	-0.56**	0.83**	1.00		
Plant height	0.10	0.28**	0.46**	0.25**	1.00	
Lodging	0.05	0.38**	-0.13	-0.25**	0.22*	1.00
Winter survival	0.30**	0.39**	0.15	0.05	0.55**	0.28**

** Significant at the 1% level.

* Significant at the 5% level.

Table 64. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Wageningen, the Netherlands in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of protein	Date of		Plant height cm	Lodging %	Shattering %	Winter survival %	Frost damage 0-9
					Flowering days from Jan. 1	Ripening					
Sava	49.0	77.8	12.7	3.18	152	189	94	0	8	86	2
Strampelli	44.7	76.2	11.7	3.31	150	191	102	0	16	69	4
Starke	40.8	80.0	11.4	3.22	167	203	131	0	5	90	2
Blueboy	40.8	76.7	10.6	3.38	156	191	120	0	15	87	3
Backa	40.4	80.2	13.7	3.06	153	194	97	18	11	84	3
Probstdorfer Extrem	40.4	83.8	11.8	3.06	151	193	136	8	6	83	3
Bezostaya 1	40.3	81.5	11.4	2.68	155	194	106	0	6	83	3
Hokuei	35.5	78.2	11.9	3.15	157	194	117	15	6	82	3
Centurk	32.9	79.7	12.0	3.20	157	193	116	52	10	85	2
Vakka	32.8	79.0	12.4	3.09	161	196	129	32	16	83	3
Jyva	32.7	79.1	12.2	3.13	162	196	128	33	8	84	3
Atlas 66	32.0	81.5	14.0	2.98	155	192	121	64	14	83	3
Tamwheat 102 (TX62A4793-7)	31.3	75.6	11.8	3.30	154	189	100	18	10	83	3
C.I.15074	22.5	81.8	13.7	3.01	158	192	112	53	9	88	2
Mean	36.9	79.3	12.2	3.13	156.2	193.3	114.9	20.8	10.0	83.6	2.8
Standard error of a treatment mean	2.1	0.5	--	--	2.2	2.2	3.3	9.9	3.9	4.4	0.6
Coefficient of variation (%)	10.6	2.0	--	--	3.7	1.8	4.4	86.3	37.6	5.8	36.5

^a One rep. only in one or more years.

Table 64. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Wageningen, the Netherlands in 1971 and 1972, concluded.

Analysis of Variance										
Source of variation	d.f.	Mean Squares								
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging	Shattering	Winter survival	Frost damage
Total	111									
Years (Y)	1	32.6	247.8**	3465.4**	45563.2**	787.6**	10318.1**	243.1	472.3	15.8*
Reps/years	6	22.6	1.7	40.6	4.5*	115.5	1059.8	25.2	48.7	0.6
Cultivars	13	364.1**	43.5**	168.2**	103.2*	1473.5**	4006.3**	125.2	177.1	2.7
C x Y	13	34.4*	1.8	40.0	38.7**	84.5**	790.7**	123.9**	157.4**	3.2**
Error	78	15.3	2.5	33.6	12.6	25.8	320.8	14.0	23.2	1.1

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height	Lodging	Shattering	Winter survival
Test weight	-0.04	1.00						
Flowering	-0.18	-0.27**	1.00					
Ripening	-0.07	-0.44**	0.67**	1.00				
Plant height	-0.23*	0.20*	0.35**	0.27**	1.00			
Lodging	-0.60**	-0.02	0.25**	0.31**	0.20*	1.00		
Shattering	-0.06	-0.30**	0.12	0.18*	-0.04	0.21*	1.00	
Winter survival	-0.29**	0.25**	0.03	-0.20*	0.11	0.12	-0.44**	1.00
Frost damage	0.27**	0.07	-0.31**	-0.32**	-0.14	-0.28**	0.22*	-0.69**

** Significant at the 1% level.

* Significant at the 5% level.

Table 65. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Fundulea, Romania in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Frost damage 0-9
					Flowering days from Jan. 1	Ripening		
Sava	38.3	74.9	14.8	2.96	141	175	87	4
Bezostaya 1	38.0	77.8	14.3	3.03	143	179	97	2
Probstdorfer Extrem	37.1	76.9	14.6	2.93	146	181	120	2
Centurk	36.2	75.4	15.0	3.09	142	174	106	2
Tamwheat 102 (TX62A4793-7)	33.9	70.3	14.0	3.14	142	174	89	2
Blueboy	32.6	69.1	13.3	3.20	145	179	101	2
C.I.15074	31.9	77.1	16.8	2.88	144	177	115	1
Hokuei	30.4	73.6	14.0	2.98	145	180	96	2
Backa	29.6	72.9	15.5	2.88	143	179	81	6
Atlas 66	23.2	73.5	19.1	2.79	147	181	120	5
Vakka	20.1	65.5	15.4	3.04	152	183	105	2
Strampelli	17.6	--	15.6	2.90	144	179	78	6
Jyva	16.9	64.9	16.1	2.96	152	186	106	2
Starke	11.0	65.3	15.4	2.96	158	189	111	3
Mean	28.3	72.1	15.3	2.98	145.8	179.5	100.7	2.7
Standard error of a treatment mean	7.7	--	--	--	2.0	1.8	4.0	0.6
Coefficient of variation (%)	11.1	--	--	--	1.2	1.4	3.0	19.0

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Analysis of Variance

Source of variation	d.f.	Mean Squares				
		Yield	Flowering	Ripening	Plant height	Frost damage
Total	111					
Years (Y)	1	1519.3	75.6	96.6	228.6	472.3**
Reps/years	6	19.3	0.0	0.0	18.9	0.3
Cultivars (C)	13	640.2	195.0**	146.5**	1480.4**	21.0**
C x Y	13	473.6**	31.0**	27.3**	127.2**	3.1**
Error	78	10.0	0.0	0.0	8.9	0.3

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Flowering	Ripening	Plant height
Flowering	-0.72**	1.00		
Ripening	-0.72**	0.89**	1.00	
Plant height	0.06	0.35**	0.29**	1.00
Frost damage	-0.00	-0.15	-0.10	-0.37**

* Significant at the 5% level.

Table 66. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Svalof, Sweden in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %	Winter survival %
					Flowering days from Jan. 1	Ripening			
Starke	68.2	78.2	11.8	3.19	178	227	108	13	94
Jyva	64.2	76.2	12.6	3.11	170	221	101	23	96
Vakka	64.1	76.2	12.6	3.14	168	217	94	42	95
Centurk	60.7	80.1	13.4	3.00	163	214	90	12	89
Probstdorfer Extrem	57.1	81.8	13.6	2.89	166	217	99	40	86
Bezostaya 1	53.2	80.3	13.1	3.03	163	218	82	6	87
Hokuei	50.6	80.3	12.9	2.93	164	220	89	43	89
Blueboy	49.6	76.1	12.9	3.11	165	219	92	16	83
C.I.15074	39.8	77.9	18.6	2.75	161	214	93	13	96
Tamwheat 102 (TX62A4793-7)	35.9	75.4	14.8	2.97	160	213	73	8	78
Sava	31.4	76.1	15.4	2.99	162	220	66	0	54
Atlas 66	25.1	76.8	16.6	2.78	164	225	86	19	37
Backa	20.5	37.1	--	--	165	216	68	0	40
Strampelli	--	--	--	--	--	--	--	--	--
Mean	50.0	78.0	14.0	2.99	165.3	218.6	89.3	19.6	82.5
Standard error of a treatment mean	9.5	1.1	--	--	1.1	2.2	2.0	8.2	11.7
Coefficient of variation (%)	10.9	0.7	--	--	0.2	0.3	3.3	36.8	5.7

^a One rep. only in one or more years.

Table 66. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Svalof, Sweden in 1971 and 1972, concluded.

Analysis of Variance

Source of variation	d.f.	Mean Squares						
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging	Winter survival
Total	103							
Years (Y)	1	563.1	235.6**	1204.2**	58.6	6451.8**	1426.0	16801.0
Reps/years	6	51.5	0.2	0.4	0.4	51.5	81.1	90.3
Cultivars	12	1583.1	37.1*	181.1**	141.8*	1068.2**	1701.9*	2678.2
C x Y	12	719.9**	10.3**	9.3**	40.2**	31.2**	534.0**	1092.0**
Error	72	29.6	0.3	0.1	0.3	8.6	51.9	22.4

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Test weight	0.29**	1.00				
Flowering	0.45**	-0.37**	1.00			
Ripening	-0.19	-0.10	0.44**	1.00		
Plant height	0.53**	-0.16	0.81**	0.16	1.00	
Lodging	0.21*	0.02	0.31**	0.02	0.40**	1.00
Winter survival	0.73**	-0.03	0.45**	-0.47**	0.62**	0.22

** Significant at the 1% level.

* Significant at the 5% level.

Table 67. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Zurich, Switzerland in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %
					Flowering days from Jan. 1	Ripening		
Sava	53.4	78.1	13.9	3.07	152	175	81	1
Backa	50.8	77.7	15.8	2.91	152	179	82	3
Probstdorfer Extrem	48.1	80.8	13.6	2.92	158	183	121	39
Starke	46.0	76.0	13.8	3.00	170	184	118	10
Bezostaya 1	45.2	80.4	13.5	2.96	156	182	98	6
Strampelli	44.7	77.0	13.8	3.02	150	176	88	18
Blueboy	44.1	73.7	14.0	3.05	157	178	102	21
Jyva	42.4	74.5	13.9	2.95	166	182	116	56
Centurk	40.7	77.9	14.5	3.00	158	178	103	42
Vakka	39.4	76.9	14.4	2.93	163	180	112	59
Atlas 66	39.3	77.4	16.1	2.78	156	180	109	71
Hokuei	36.0	77.4	13.5	2.96	158	183	96	37
C. I. 15074	25.9	77.8	15.3	3.00	156	181	111	24
Tamwheat 102 (TX62A4793-7)	24.7	72.4	14.3	2.99	152	179	89	4
Mean	41.5	77.0	14.3	2.97	157.3	179.9	101.7	28.1
Standard error of a treatment mean	3.2	1.3	--	--	1.2	2.6	3.1	9.0
Coefficient of variation (%)	15.6	1.6	--	--	1.0	0.9	5.7	54.5

^a One rep. only in one or more years.

Analysis of Variance

Source of Variation	d.f.	Mean Squares					
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Total	111						
Years (Y)	1	5245.7**	548.7**	13332.9**	12201.4**	16514.3**	9937.7**
Reps/years	6	48.9	2.7	3.7	1.1	36.8	222.8
Cultivars (C)	13	546.8**	42.4*	251.1**	55.1	1416.1**	4221.9**
C x Y	13	80.8*	14.1**	11.0**	53.2**	77.3*	646.9**
Error	78	41.9	1.5	2.4	2.9	33.1	233.9

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height
Test weight	0.57**	1.00			
Flowering	-0.50**	-0.60**	1.00		
Ripening	-0.52**	-0.56**	0.91**	1.00	
Plant height	-0.39**	-0.36**	0.81**	0.71**	1.00
Lodging	-0.35**	-0.24*	0.44**	0.37**	0.55**

* Significant at the 5% level.

Table 68. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Ankara, Turkey in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Plant height cm
Bezostaya 1	22.8	79.5	14.6	2.91	90.0
Probstdorfer Extrem	20.4	79.3	15.4	2.77	105.0
Atlas 66	20.0	77.0	18.3	2.77	106.0
C.I.15074	19.6	81.2	15.9	2.89	102.5
Centurk	17.8	79.4	14.4	2.88	90.0
Tamwheat 102 (TX62A4793-7)	17.1	76.7	14.7	2.90	80.0
Blueboy	16.8	74.3	14.6	2.92	87.5
Hokuei	16.8	76.4	14.1	2.87	87.5
Backa	16.0	77.6	15.8	2.87	65.0
Sava	14.3	77.5	15.0	2.92	67.5
Strampelli	13.3	79.1	15.7	2.78	75.0
Jyva	8.7	61.5	17.0	2.91	95.0
Vakka	8.0	64.4	17.0	2.92	95.0
Starke	7.3	60.9	16.1	2.90	102.5
Mean	15.6	74.6	15.6	2.87	89.1
Standard error of a treatment mean	2.9	--	--	--	---
Coefficient of variation (%)	21.8	--	--	--	--

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares Yield
Total	111	
Years (Y)	1	4065.7**
Reps/years	6	9.8
Cultivars (C)	13	185.4*
C x Y	13	65.2**
Error	78	11.7

** Significant at the 1% level.

* Significant at the 5% level.

Table 69. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Eskisehir, Turkey in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %
					Flowering days from Jan. 1	Ripening		
Probstdorfer Extrem	38.6	84.2	13.8	2.89	149	193	113	14
Hokuei	33.6	83.1	12.6	2.99	148	192	92	9
Centurk	32.1	83.3	13.8	2.87	145	188	96	19
Sava	30.9	81.5	13.5	2.96	144	191	74	1
Tamwheat 102 (TX62A4793-7)	28.5	82.3	12.3	3.12	144	188	87	13
Bezostaya 1	28.2	84.0	12.8	3.01	145	191	93	3
Blueboy	28.2	80.0	14.2	2.94	148	192	91	6
Starke	28.2	80.4	13.6	2.92	156	199	96	6
Strampelli	27.0	82.5	12.3	3.01	143	187	82	23
Backa	27.0	82.5	15.1	2.81	144	188	78	0
Vakka	26.6	79.2	12.6	3.05	151	194	96	1
Atlas 66	26.4	80.7	16.8	2.79	148	192	111	25
C.I.15074	25.6	83.8	14.3	3.05	148	187	104	4
Jyva	24.9	79.5	13.3	3.03	152	193	93	0
Mean	29.0	81.9	13.6	2.96	147.5	191.1	93.2	8.8
Standard error of a treatment mean	3.2	0.3	--	--	2.2	1.5	3.7	6.0
Coefficient of variation (%)	12.4	1.0	--	--	2.1	1.8	8.5	146.6

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares					
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Total	111						
Years (Y)	1	296.1	0.7	27.0	631.8**	15486.5**	108.0
Reps/years	6	41.3	9.8**	13.0	15.3	132.6	262.4
Cultivars (C)	13	109.7	23.4**	112.1*	82.5**	969.9**	590.2
C x Y	13	80.5**	0.9	37.6**	17.4	106.7	291.7
Error	78	13.0	0.7	9.3	12.4	63.2	164.4

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height
Test weight	0.33**	1.00			
Flowering	-0.04	-0.32**	1.00		
Ripening	-0.14	-0.19*	0.40**	1.00	
Plant height	0.07	0.14	0.31**	0.43**	1.00
Lodging	0.09	0.03	-0.14	-0.09	0.07

** Significant at the 1% level.

* Significant at the 5% level.

Table 70. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Fort Collins, Colorado, U.S.A. in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of flowering ^b days from Jan. 1	Plant ^a height cm	Winter ^b survival %
Blueboy	72.9	70.9	14.0	2.87	160	97	100
Tamwheat 102 (TX62A4793-7)	67.9	77.4	14.3	3.02	155	93	98
Hokuei	67.4	77.5	14.0	2.96	158	105	100
Probstdorfer Extrem	66.7	79.3	15.1	2.84	161	122	100
Centurk	65.3	77.7	15.6	3.00	159	112	100
Sava	61.6	75.3	14.8	3.03	155	74	90
Bezostaya 1	59.1	78.7	14.4	3.00	159	97	100
C.I.15074	58.9	79.0	17.6	2.88	159	118	100
Starke	57.2	70.1	14.5	2.89	172	119	100
Atlas 66	56.1	75.3	18.4	2.73	162	116	55
Strampelli	55.1	77.8	14.7	2.98	155	83	42
Backa	53.7	75.9	15.8	2.99	159	77	68
Vakka	50.2	72.1	14.7	2.99	166	119	100
Jyva	49.3	70.1	14.8	2.97	168	120	100
Mean	60.1	75.5	15.2	2.94	160.6	103.5	89.5
Standard Error of a treatment mean	5.0	--	--	--	0.6	--	10.0
Coefficient of variation (%)	12.5	--	--	--	0.61	--	6.08

^a One rep. only in one or more years.

^b Three reps. only in both years.

Analysis of Variance

Source of variance	d.f.	Mean Squares			
		Yield ^a	Flowering ^b	Winter survival ^b	
Total	1	1			
Years (Y)	6	4	5432.1**	2541.0**	1219.1
Reps/years	13	13	124.3	5.9	15.5
Cultivars (C)	13	13	405.7	153.2**	2306.2**
C x Y	78	52	198.8**	2.4**	598.5**
Error	111	83	56.1	1.0	29.6

^a Based on four reps.

^b Based on three reps.

Correlation Coefficients

Trait	Yield	Flowering
Flowering	-0.56**	1.00
Winter survival	0.23*	0.03

** Significant at the 1% level.

* Significant at the 5% level.

Table 71. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Lincoln, Nebraska, U.S.A. in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of flowering days from Jan. 1	Plant height cm	Lodging %	Winter survival %
Centurk	41.7	76.1	15.3	2.98	151	103	43	84
Tamwheat 102 (TX62A4793-7)	41.4	69.2	14.7	3.04	149	90	32	84
C.I.15074	41.0	78.0	17.3	2.88	151	111	15	94
Bezostaya 1	39.4	76.2	15.3	2.95	151	93	14	77
Blueboy	37.7	64.5	13.6	3.26	151	100	28	66
Probstdorfer Extrem	37.1	72.9	16.0	2.84	155	111	11	78
Hokuei	29.0	70.0	14.4	3.04	155	99	78	83
Sava	20.7	66.0	17.1	2.94	152	66	6	15
Vakka	18.4	59.1	18.1	2.90	159	100	72	83
Atlas 66	11.7	--	19.6	2.76	156	99	14	3
Jyva	10.6	59.4	18.8	2.94	161	99	56	78
Starke	6.5	58.1	18.4	2.93	165	96	9	79
Backa	1.8	--	--	--	--	--	--	0
Strampelli	0	--	--	--	--	--	--	0
Mean	24.1	68.1	16.6	2.96	154.3	97.0	31.2	58.8
Standard Error of a treatment mean	4.4	--	--	--	--	--	--	7.3
Coefficient of variation (%)	19.3	--	--	--	--	--	--	13.9

^a One rep. only in one or more years.

Analysis of Variance			
Source of variation	d.f.	Mean Squares	
		Yield	Winter survival
Total	111		
Years (Y)	1	870.3*	11623.9**
Reps/years	6	37.6	101.0
Cultivars (C)	13	2014.8**	10588.9**
C x Y	13	153.0**	426.6**
Error	78	21.6	66.9

** Significant at the 1% level

Correlation Coefficients	
Trait	Yield
Winter survival	0.63**

* Significant at the 5% level.

Table 72. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Ithaca, New York, U.S.A. in 1971 and 1972.

Cultivar	Yield ^b q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Winter survival ^b %
Blueboy	42.3	74.3	12.4	3.30	91
Sava	39.7	74.4	14.2	3.03	82
Probstdorfer Extrem	37.1	79.1	13.6	3.00	88
Bezostaya 1	33.9	79.1	12.9	3.11	87
Jyva	32.9	72.4	13.3	3.17	88
Vakka	31.1	71.8	14.1	3.06	90
Backa	30.0	74.8	14.9	2.97	60
Starke	29.8	68.0	15.0	2.99	88
Tamwheat 102 (TX62A4793-7)	29.1	70.5	13.3	2.95	86
C.I.15074	26.8	78.6	14.9	3.04	92
Hokuei	25.6	74.1	13.8	3.00	92
Centurk	24.6	75.4	14.8	3.09	91
Atlas 66	22.2	76.7	17.4	2.86	33
Strampelli	6.2	--	15.2	3.07	23
Mean	29.4	74.6	14.3	3.05	77.7
Standard error of a treatment mean	5.2	--	--	--	10.1
Coefficient of variation (%)	20.2	--	--	--	9.4

^a One rep. only in one or more years.

^b Two reps. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares	
		Yield	Winter Survival
Total	55		
Years (Y)	1	598.0*	2301.5*
Reps/years	2	12.7	146.2
Cultivars (C)	13	308.0*	2054.4**
C x Y	13	106.3**	409.5**
Error	26	35.4	53.2

Correlation Coefficients

Trait	Yield
Winter survival	0.59**

** Significant at the 1% level.

* Significant at the 5% level.

Table 73. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Rowan Co., North Carolina, U.S.A. in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of protein	Date of flowering ^a days from Jan. 1
Tamwheat 102 (TX62A4793-7)	35.6	72.1	13.7	2.94	131
Centurk	31.6	75.0	13.8	2.98	131
Hokuei	30.8	71.7	14.3	2.86	133
Bezostaya 1	29.8	74.0	14.3	2.90	130
Probstdorfer Extrem	29.7	75.6	15.2	2.77	137
Blueboy	28.9	71.6	13.8	2.92	129
Vakka	27.7	68.6	15.5	2.93	140
C. I. 15074	26.1	74.0	16.5	2.82	133
Sava	23.8	71.3	15.0	2.95	129
Jyva	20.3	68.8	15.9	2.81	142
Atlas 66	18.7	70.6	18.7	2.64	133
Backa	16.4	70.9	16.5	2.78	130
Starke	15.0	59.9	17.2	2.82	142
Strampelli	10.3	69.4	15.2	2.92	128
Mean	24.6	71.0	15.4	2.86	133.1
Standard error of a treatment mean	2.8	--	--	--	--
Coefficient of variation (%)	15.3	--	--	--	--

^a One rep. only in one or more years.

Analysis of Variance

Source of Variation	d.f.	Mean Squares Yield
Total	111	
Years (Y)	1	986.5**
Reps/years	6	20.0
Cultivars (C)	13	434.0**
C x Y	13	62.5**
Error	78	14.2

** Significant at the 1% level.

Table 74. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Stillwater, Oklahoma, U.S.A. in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm
					Flowering ^b days from Jan. 1	Ripening ^b	
Centurk	33.3	80.5	15.1	2.95	113	151	76
Blueboy	33.0	75.1	15.5	2.80	112	151	82
Hokuei	32.3	76.2	14.7	2.96	116	154	83
Tamwheat 102 (TX62A4793-7)	31.6	76.0	16.3	2.78	114	151	75
Bezostaya 1	30.8	80.7	14.8	2.91	111	150	70
C.I.15074	30.1	80.3	17.3	2.84	116	153	82
Probstdorfer Extrem	28.6	78.7	16.2	2.80	122	157	90
Vakka	21.9	70.1	17.7	2.85	126	159	80
Sava	21.2	75.3	17.0	2.92	110	149	56
Atlas 66	18.9	73.6	19.7	2.75	117	156	83
Strampelli	15.4	76.2	15.5	2.96	110	152	58
Starke	14.3	71.4	18.7	2.82	137	167	79
Jyva	13.8	71.0	18.3	2.84	128	161	80
Backa	12.2	73.1	18.9	2.75	114	153	59
Mean	24.1	75.6	16.9	2.85	117.5	154.3	75.1
Standard error of a treatment mean	2.9	--	--	--	1.4	1.7	2.8
Coefficient of variation (%)	12.3	--	--	--	0.8	0.8	4.5

^a One rep. only in one or more years.
^b Two reps. only in one or more years.

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Analysis of Variance

Source of variation	d.f.	Mean Squares			
		Yield	Flowering	Ripening	Plant height
Total	55				
Years (Y)	1	20.2	178.6**	7.9	1098.3**
Reps/years	2	18.5	6.0	4.2	9.2
Cultivars (C)	13	260.4**	259.5**	96.4**	445.0**
C x Y	13	34.0**	8.3**	11.9*	32.3*
Error	26	8.8	0.8	1.4	11.4

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Flowering	Ripening
Flowering	-0.36**	1.00	
Ripening	-0.54**	0.93**	1.00
Plant height	0.36**	0.34**	0.27*

* Significant at the 5% level.

Table 75. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Pullman, Washington, U.S.A. in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of protein	Date of ^a flowering days from Jan. 1
Blueboy	58.2	68.6	14.5	2.97	163
Bezostaya 1	49.8	78.9	15.1	2.96	163
Tamwheat 102 (TX62A4793-7)	48.3	76.1	14.8	2.96	160
Probstdorfer Extrem	47.9	78.0	14.9	2.94	165
Hokuei	45.9	75.8	15.0	2.95	164
Backa	45.4	76.0	16.1	2.91	163
C.I.15074	39.8	77.0	15.5	2.92	162
Centurk	37.7	78.1	15.6	2.87	162
Atlas 66	37.6	75.2	17.2	2.86	165
Vakka	37.5	71.3	16.0	2.91	167
Strampelli	36.6	75.4	14.2	2.94	160
Starke	36.0	74.2	15.7	2.83	168
Sava	34.6	71.4	15.4	2.90	162
Jyva	31.4	69.7	16.0	2.96	168
Mean	41.9	74.7	15.4	2.92	163.5
Standard error of a treatment mean	4.3	--	--	--	--
Coefficient of variation (%)	13.2	--	--	--	--

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares Yield
Total	111	
Years (Y)	1	239.3
Reps/years	6	73.2
Cultivars (C)	13	442.0*
C x Y	13	145.6**
Error	78	30.5

** Significant at the 1% level.

* Significant at the 5% level.

Table 76. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Monsheim, West Germany in 1971 and 1972.

Cultivar	Yield q/ha	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm
				Flowering days from Jan. 1	Ripening	
Probstdorfer Extrem	43.9	13.0	3.08	149	198	81
Centurk	42.4	13.7	3.05	146	195	64
Blueboy	41.4	12.6	3.26	146	196	73
Atlas 66	40.2	15.4	2.98	145	197	83
Bezostaya 1	39.9	12.3	3.23	146	198	64
Hokuei	37.3	12.3	3.15	146	198	77
Tamwheat 102 (TX62A4793-7)	36.6	13.2	3.22	142	194	64
Starke	35.2	13.0	3.04	161	204	96
C.I.15074	34.1	15.7	2.97	145	194	71
Sava	33.7	14.1	3.03	141	195	59
Jyva	30.2	13.1	3.08	153	201	91
Vakka	30.0	12.7	3.19	153	198	80
Strampelli	29.8	12.9	3.09	141	194	65
Backa	29.8	14.7	2.97	141	198	63
Mean	36.0	13.5	3.10	146.8	197.1	73.6
Standard error of a treatment mean	3.1	--	--	1.6	1.8	3.3
Coefficient of variation (%)	10.6	--	--	1.3	0.5	5.2

^a One rep. only in one or more years

Analysis of Variance

Source of variation	d.f.	Mean Squares			
		Yield	Flowering	Ripening	Plant height
Total	111				
Years (Y)	1	9.3	2508.0**	1938.9**	745.7*
Reps/years	6	118.3	2.3	4.2	54.1
Cultivars (C)	13	198.8*	267.6**	64.3	1012.6**
C x Y	13	76.5**	20.1**	27.3**	89.8**
Error	78	14.6	3.5	1.0	14.5

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Flowering	Ripening
Flowering	-0.02	1.00	
Ripening	-0.13	0.80**	1.00
Plant height	0.07	0.69**	0.53**

* Significant at the 5% level.

Table 77. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Weihenstephan, West Germany in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %	Winter survival %
					Flowering days from Jan. 1	Ripening			
Sava	78.4	79.1	12.3	3.24	147	216	76	0	86
Starke	74.5	80.6	11.8	3.12	164	227	120	7	92
Centurk	74.0	79.4	11.6	3.25	151	218	102	28	92
Probstdorfer Extrem	72.1	82.3	12.5	3.00	153	222	123	44	93
Backa	67.5	79.7	13.9	2.93	148	219	82	0	84
Strampelli	66.1	78.5	12.2	3.26	145	214	88	17	80
Jyva	65.7	78.1	12.1	3.15	161	225	121	38	91
Blueboy	65.3	76.0	11.5	3.33	152	221	112	26	90
Vakka	64.8	78.2	11.9	3.14	158	225	121	49	94
Bezostaya 1	64.5	81.4	12.7	3.07	152	222	97	19	92
Atlas 66	62.3	81.0	14.3	2.85	150	219	117	39	88
Hokuei	59.0	79.4	13.1	3.07	152	222	108	68	91
Tamwheat 102 (TX62A4793-7)	53.0	75.2	11.9	3.27	148	215	90	6	92
C.I.15074	50.6	81.3	14.1	3.08	152	221	107	8	95
Mean	65.6	79.3	12.5	3.12	152.4	220.2	104.4	24.9	90.3
Standard error of a treatment mean	2.5	1.1	--	--	0.8	1.2	3.4	10.5	0.9
Coefficient of variation (%)	6.8	1.2	--	--	0.3	7.8	3.2	54.7	2.6

^a One rep. only in one or more years.

Table 77. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Experiment at Weihenstephan, West Germany in 1971 and 1972, concluded.

Analysis of Variance								
Source of variation	d.f.	Mean Squares						
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging	Winter survival
Total	111							
Years (Y)	1	3738.7**	141.1**	3421.1**	2126.3**	8680.3**	3003.6	1612.7**
Reps/years	6	48.3	1.5	0.3	0.0	36.1	1051.0	10.6
Cultivars	13	493.7**	33.0*	226.4**	119.9**	1958.0**	3369.6*	143.6**
C x Y	13	50.7**	9.0**	4.8**	12.1**	91.0**	884.8**	7.0
Error	78	20.0	0.8	0.2	0.0	11.3	185.7	5.5

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Test weight	0.40**	1.00				
Flowering	0.48**	0.37**	1.00			
Ripening	0.46**	0.49**	0.94**	1.00		
Plant height	0.23*	0.37**	0.78**	0.79**	1.00	
Lodging	-0.22*	0.15	-0.02	0.10	0.38**	1.00
Winter survival	0.23*	0.32**	0.74**	0.74**	0.67**	0.04

Table 78. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Novi Sad, Yugoslavia in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %
					Flowering days from Jan. 1	Ripening		
Probstdorfer Extrem	59.9	78.9	14.7	2.84	145	184	120	77
Backa	57.9	78.8	15.1	2.91	139	178	92	40
Sava	57.6	76.2	14.1	3.04	138	177	90	26
Strampelli	53.0	75.4	13.2	3.10	138	176	95	66
Bezostaya 1	51.9	80.3	13.9	2.98	140	179	100	67
Atlas 66	49.2	74.6	16.9	2.79	144	185	112	85
Blueboy	49.1	72.2	13.2	3.10	142	180	104	31
Centurk	47.8	78.0	14.4	2.90	140	179	101	93
Hokuei	43.9	75.0	13.3	3.03	142	182	100	95
Tamwheat 102 (TX62A4793-7)	43.0	73.1	13.7	3.02	140	178	94	48
C. I. 15074	37.7	79.0	16.2	2.85	144	183	107	91
Yakka	34.2	71.6	14.6	2.98	149	187	108	75
Jyva	34.2	69.4	14.6	2.92	150	188	111	53
Starke	29.3	73.4	13.8	2.98	156	195	116	24
Mean	46.3	75.4	14.4	2.96	143.1	182.0	103.5	62.0
Standard error of a treatment mean	3.2	1.4	--	--	1.3	0.9	1.4	12.9
Coefficient of variation (%)	8.2	1.6	--	--	0.4	0.1	3.8	26.6

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares					
		Yield	Test weight	Flowering	Ripening	Plant height	Lodging
Total	111						
Years (Y)	1	2481.6**	1427.9**	2.9	150.9**	0.4	16008.2**
Reps/years	6	11.8	1.4	0.3	0.0	33.9	285.9
Cultivars (C)	13	746.6**	85.1**	215.9**	222.8**	670.0**	5159.1*
C x Y	13	84.2**	15.8**	12.7**	7.2**	16.2	1332.6**
Error	78	14.5	1.4	0.3	0.0	15.7	271.2

** Significant at the 1% level.

Correlation Coefficients

Trait	Yield	Test weight	Flowering	Ripening	Plant height
Flowering	-0.60**	-0.30**	1.00		
Ripening	-0.48**	-0.12	0.95**	1.00	
Plant height	-0.29**	-0.08	0.71**	0.70**	1.00
Lodging	0.04	0.33**	-0.06	0.04	0.12

* Significant at the 5% level

Table 79. Two-year means and analyses for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance nurseries at Zagreb, Yugoslavia in 1971 and 1972.

Cultivar	Yield q/ha	Test ^a weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm	Lodging %
					Flowering days from Jan. 1	Ripening ^a		
Sava	55.2	69.9	11.9	3.22	147	183	87	3
Backa	52.7	72.0	12.2	3.15	146	183	89	4
Bezostaya 1	49.0	69.8	11.3	3.24	148	185	104	16
Strampelli	48.1	72.5	11.6	3.28	144	183	92	19
Centurk	43.7	72.3	12.1	3.21	151	187	104	69
Probstdorfer Extrem	36.1	68.4	12.0	3.10	153	187	120	53
Atlas 66	34.9	70.6	16.0	2.87	152	188	112	82
Tamwheat 102 (TX62A4793-7)	33.2	62.8	12.7	3.19	150	183	94	16
Blueboy	33.2	57.1	11.1	3.43	150	185	106	23
Hokeui	33.2	65.0	10.9	3.30	152	186	103	72
C. I. 15074	28.1	72.8	13.4	3.12	152	187	111	72
Vakka	24.9	58.5	12.7	3.16	157	190	115	52
Starke	21.8	57.3	13.4	3.13	160	194	112	1
Jyva	20.2	58.8	13.7	3.08	157	191	113	42
Mean	36.7	66.3	12.5	3.18	151.1	186.4	104.3	37.4
Standard error of a treatment mean	3.4	--	--	--	--	--	2.7	14.3
Coefficient of variation (%)	15.1	--	--	--	--	--	4.3	58.5

^a One rep. only in one or more years.

Analysis of Variance

Source of variation	d.f.	Mean Squares		
		Yield	Plant height	Lodging
Total	111			
Years (Y)	1	12201.4**	292.5*	13884.0**
Reps/years	6	95.6	8.6	1124.6
Cultivars (C)	13	1031.9**	857.2**	6682.5**
C x Y	13	92.3**	57.8**	1643.7**
Error	78	30.7	20.2	477.5

Correlation Coefficients

Trait	Yield	Plant height
Plant height	-0.33**	1.00
Lodging	-0.42**	0.31**

** Significant at the 1% level.

* Significant at the 5% level.

Table 80. Summary of average "Yield" in quintals per hectare for cultivars grown in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere)

Cultivar	: : Algiers, : Algeria	: : Vienna, : Austria	: : Tolbukhin, : Bulgaria	: : Cambridge, : England	: : Martonvasar, : Hungary	: : Simla, : India	: : Karaj, : Iran	: : Sulaimaniya, : Iraq	: : Rieti, : Italy	: : Morioka, : Japan
Bezostaya 1	42.0	48.2	37.1	42.7	39.8	18.7	47.0	40.5	45.3	28.1
Centurk	39.2	62.8	34.8	30.8	51.1	19.0	54.3	35.4	39.3	20.0
Probstdorfer Extrem	25.4	60.2	32.6	45.0	42.1	16.4	40.7	28.5	39.3	27.3
Sava	37.8	55.9	46.8	51.9	41.5	26.2	49.9	33.7	43.2	31.1
Blueboy	38.0	47.4	30.6	48.5	36.4	29.2	49.2	39.0	40.1	31.2
Tamwheat 102 (Tx52A4793-7)	35.5	38.7	36.0	--	34.8	18.7	59.7	33.9	43.3	38.1
Hokuei	24.1	51.6	21.0	36.4	38.2	15.8	45.6	30.0	30.7	37.2
Backa	38.5	48.4	42.3	42.3	22.8	22.5	44.1	37.0	43.3	29.4
Atlas 66	32.5	46.4	34.5	38.8	36.0	28.8	43.0	23.8	31.2	28.9
Strampelli	47.8	33.8	32.5	--	23.8	35.7	58.3	40.9	48.3	18.8
C.I.15074	28.2	32.8	24.8	18.7	42.6	17.5	44.3	27.6	30.8	25.8
Vakka	14.1	44.2	26.0	46.5	26.9	9.0	31.3	20.7	16.6	32.9
Starke	8.8	40.5	20.2	49.0	26.4	2.1	27.7	13.6	11.9	13.8
Jyva	11.8	35.9	20.5	31.5	22.1	6.7	26.5	16.5	11.2	21.9
Mean	30.3	46.2	31.4	40.2	34.6	19.0	44.4	30.1	33.9	27.5

Table 80. Summary average yield in quintars per hectare for cultivars grown in the International winter wheat performance trials

1972. (Northern Hemisphere), continued.

Cultivar	Swon, Korea	Wageningen, The Netherlands	Fundulea, Romania	Svalof, Sweden	Zurich, Switzerland	Ankara, Turkey	Eskisehir, Turkey	Fort Collins, Colorado, U.S.A.	Lincoln, Nebraska, U.S.A.
Bezostaya 1	42.6	40.3	38.0	53.2	45.2	22.8	28.2	59.1	39.4
Centurk	38.1	32.9	36.2	60.7	40.7	17.8	32.1	65.3	41.7
Probstdorfer Extrem	35.8	40.4	37.1	57.1	48.1	20.4	38.6	66.7	37.1
Sava	39.3	49.0	38.3	31.4	53.4	14.3	30.9	61.6	20.7
Blueboy	36.2	40.8	32.6	49.6	44.1	16.8	28.2	72.9	37.7
Tamwheat 102 (TX62A4793-7)	36.0	31.3	33.9	35.9	24.7	17.1	28.5	67.9	41.4
Hokuei	31.5	35.5	30.4	50.6	36.0	16.8	33.6	67.4	29.0
Backa	35.0	40.4	29.6	20.5	50.8	16.0	27.0	53.7	1.8
Atlas 66	33.8	32.0	23.2	25.1	39.3	20.0	26.4	56.1	11.7
Strampelli	33.4	44.7	17.6	6.8	44.7	13.3	27.0	55.1	0
C.I.15074	32.1	22.5	31.9	39.8	25.9	19.6	25.6	58.9	41.0
Vakka	33.2	32.8	20.1	64.1	39.4	8.0	26.6	50.2	18.4
Starke	15.3	40.8	11.0	68.2	46.0	7.3	28.2	57.2	6.5
Jyva	22.3	32.7	16.9	64.2	42.4	8.7	24.9	49.3	10.6
Mean	33.2	36.9	28.3	44.8	41.5	15.6	29.0	60.1	24.1

Table 80. Summary of average "Yield" in quintals per hectare for cultivars grown in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere), concluded.

Cultivar	Ithaca, New York, U.S.A.	Rowan, Co., North Carolina, U.S.A.	Stillwater, Oklahoma, U.S.A.	Pullman, Washington, U.S.A.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Mean 24 sites
Bezostaya 1	33.9	29.8	30.8	49.8	39.9	64.5	51.9	49.0	42.2
Centurk	24.6	31.6	33.3	37.7	42.4	74.0	47.8	43.7	42.2
Probstdorfer Extrem	37.1	29.7	28.6	47.9	43.9	72.1	59.9	36.1	41.5
Sava	39.7	23.8	21.2	34.6	33.7	78.4	57.6	55.2	41.0
Blueboy	42.3	28.9	33.0	58.2	41.4	65.3	49.1	33.2	40.8
Tamwheat 102 (TX62A4793-7)	29.1	35.6	31.6	48.3	36.6	53.0	43.0	33.2	38.3
Hokuei	25.6	30.8	32.3	45.9	37.3	59.0	43.9	33.2	37.1
Backa	30.0	16.4	12.2	45.4	29.8	67.5	57.9	52.7	36.0
Atlas 66	22.2	18.7	18.9	37.6	40.2	62.3	49.2	34.9	33.6
Strampelli	6.2	10.3	15.4	36.6	29.8	66.1	53.0	48.1	33.6
C.I.15074	26.8	26.1	30.1	39.8	34.1	50.6	37.7	28.1	33.3
Vakka	31.1	27.7	21.9	37.5	30.0	64.8	34.2	24.9	31.1
Starke	29.8	15.0	14.3	36.0	35.2	74.5	29.3	21.8	27.9
Jyva	32.9	20.3	13.8	31.4	30.2	65.7	34.2	20.2	27.3
Mean	29.4	24.6	24.1	41.9	36.0	65.6	46.3	36.7	36.1

Table 81. Summary of yield rankings of cultivars grown in the International Winter Wheat Performance Nurseries in 1971 and 1972 (North Hemisphere).

Cultivar	: Algers, Algeria	: Vienna, Austria	: Tolbukhin, Bulgaria	: Cambridge, England	: Martonvasar, Hungary	: Simla, India	: Karaj, Iran	: Sulaimaniya, Iraq	: Rieti, Italy	: Morioka, Japan
Bezostaya 1	2	6	3	6	5	7	6	2	2	8
Centurk	3	1	5	11	1	6	3	5	7	12
Probstdorfer Extrem	10	2	7	5	3	10	11	9	8	9
Sava	6	3	1	1	4	4	4	7	5	5
Blueboy	5	7	9	3	7	2	5	3	6	4
Tamwheat 102 (TX62A4793-7)	7	11	4	--	9	8	1	6	4	1
Hokuei	11	4	12	9	6	11	7	8	11	2
Backa	4	5	2	7	13	5	9	4	3	6
Atlas 66	8	8	8	8	8	3	10	11	9	7
Strampelli	1	13	6	--	12	1	2	1	1	13
C.I.15074	9	14	11	12	2	9	8	10	10	10
Vakka	12	9	10	4	10	12	12	12	12	3
Starke	14	10	14	2	11	14	13	14	13	14
Jyva	13	12	13	10	14	13	14	13	14	11

Table 81. Summary of "Yield" rankings for cultivars grown in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere), continued.

Cultivar	Swon, Korea	Wageningen, The Netherlands	Fundulea, Romania	Svalof, Sweden	Zurich, Switzerland	Ankara, Turkey	Eskisehir, Turkey	Fort Collins, Colorado, U.S.A.	Lincoln, Nebraska, U.S.A.
Bezostaya 1	1	7	2	6	5	1	6	7	4
Centurk	3	9	4	4	9	5	3	5	1
Probstdorfer Extrem	6	6	3	5	3	2	1	4	6
Sava	2	1	1	11	1	10	4	6	8
Blueboy	4	4	6	8	7	7	7	1	5
Tamwheat 102 (TX62A4793-7)	5	13	5	10	14	6	5	2	2
Hokuei	12	8	8	7	12	8	2	3	7
Backa	7	5	9	13	2	9	10	12	13
Atlas 66	8	12	10	12	11	3	12	10	10
Strampelli	9	2	12	--	6	11	9	11	14
C.I.15074	11	14	7	9	13	4	13	8	3
Vakka	10	10	11	3	10	13	11	13	9
Starke	14	3	14	1	4	14	8	9	12
Jyva	13	11	13	2	8	12	14	14	11

Table 81. Summary of "Yield" rankings for cultivars grown in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere), concluded.

Cultivar	Ithaca, New York, U.S.A.	Rowan, Co., North Carolina, U.S.A.	Stillwater, Oklahoma, U.S.A.	Pullman, Washington, U.S.A.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia
Bezostaya 1	4	4	5	2	5	10	5	3
Centurk	12	2	1	8	2	3	8	5
Probstdorfer Extrem	3	5	7	4	1	4	1	6
Sava	2	9	9	13	10	1	3	1
Blueboy	1	6	2	1	3	8	7	9
Tamwheat 102 (TX62A4793-7)	9	1	4	3	7	13	10	8
Hokuei	11	3	3	5	6	12	9	10
Backa	7	12	14	6	14	5	2	2
Atlas 66	13	11	10	9	4	11	6	7
Strampelli	14	14	11	11	13	6	4	4
C.I.15074	10	8	6	7	9	14	11	11
Vakka	6	7	8	10	12	9	12	12
Starke	8	13	12	12	8	2	14	13
Jyva	5	10	13	14	11	7	13	14

Table 82. Summary of agronomic and yield data for 14 cultivars grown for two years in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere).

Cultivar	: Test weight :		: Flowering :		: Ripening :		: Plant height :		: Lodging :		: Winter survival :	
	: kg/hl :	: rank :	: days from Jan. 1 :	: rank :	: days from Jan. 1 :	: rank :	: cm :	: rank :	: % :	: rank :	: % :	: rank :
Number of Sites	9		16		15		16		11		9	
Bezostaya 1	79.7	1	144.5	5	186.9	9	98.0	5	18.0	5	91.2	9
Centurk	78.4	4	144.8	6	185.4	4	103.5	7	45.4	12	92.3	6
Probstdorfer Extrem	79.7	2	148.3	11	189.1	12	116.8	14	36.3	10	91.5	7
Sava	76.8	7	141.5	2	183.3	2	84.0	1	3.4	1	79.0	11
Blueboy	73.5	11	145.5	7	186.5	8	104.6	8	17.7	4	90.0	10
Tamwheat 102 (TX62A4793-7)	75.0	10	142.5	4	183.5	3	92.5	4	19.1	6	91.5	8
Hokuei	76.6	9	146.7	10	188.5	11	101.4	6	47.8	13	92.4	5
Backa	77.5	6	141.9	3	185.5	5	86.0	2	8.9	3	73.0	12
Atlas 66	77.6	5	146.0	8	187.5	10	113.9	13	52.6	14	72.9	13
Strampelli	76.8	8	140.2	1	183.3	1	88.8	3	29.2	7	61.7	14
C.I.15074	79.2	3	146.4	9	186.1	6	109.6	10	39.1	11	95.3	1
Vakka	73.1	12	152.9	12	190.2	13	109.5	9	32.7	9	93.0	2
Jyva	71.9	13	154.4	13	191.5	14	110.3	11	32.3	8	92.8	4
Starke	71.8	14	159.8	14	196.4	7	111.0	12	7.7	2	93.0	3
Mean	76.3		146.8		187.4		102.1		27.9		86.4	
Standard error of a treatment mean	0.8		0.6		0.5		1.3		5.1		4.3	
Coefficient of variation (%)	1.9		1.3		1.0		5.2		56.6		6.0	

Table 82. Summary of agronomic and yield data for 14 cultivars grown for two years in the International Winter Wheat Performance Nurseries in 1971 and 1972. (Northern Hemisphere), concluded.

Cultivar	Shattering		Frost damage		Yield	
	%	rank	0-9	rank	8/ha	% of Bezostaya 1
Number of Sites	5		2		24	
Bezostaya 1	7.2	4	2.5	9	42.2	100.0
Centurk	8.7	7	1.9	2	42.2	100.0
Probstdorfer Extrem	4.0	1	2.4	8	41.5	98.3
Sava	8.8	8	2.9	11	41.0	97.2
Blueboy	7.9	5	2.4	7	40.8	96.7
Tamwheat 102 (TX62A4793-7)	4.2	2	2.3	3	38.3	90.8
Hokuei	6.8	3	2.6	10	37.1	87.9
Backa	9.1	9	3.9	12	36.0	85.3
Atlas 66	9.0	10	4.1	13	33.6	79.6
Strampelli	10.4	12	5.3	14	33.6	79.6
C.I.15074	9.7	11	1.8	1	33.3	78.9
Vakka	10.5	13	2.4	6	31.1	73.7
Jyva	13.1	14	2.3	4	27.3	64.7
Starke	8.2	6	2.3	5	27.9	66.1
Mean	8.4		2.8		36.1	
Standard error of a treatment mean	1.4		0.8		1.8	
Coefficient of variation (%)	80.4		29.4		14.6	

Table 83. Two-year means for agronomic and grain quality traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Bordenave, Argentina in 1971 and 1972.

Cultivar	Yield q/ha	Test weight kg/hl	Protein ^a %	Lysine ^a % of Protein	Date of		Plant height cm
					Flowering days from Jan. 1	Ripening	
Strampelli	35.0	73.4	14.2	2.78	299	346	95
Sava	27.1	72.6	14.5	3.02	308	354	74
Centurk	25.8	79.1	16.6	2.85	311	354	113
Blueboy	23.8	64.6	16.8	2.71	309	354	105
Backa	23.6	76.7	17.4	2.78	310	351	92
Bezostaya 1	21.2	80.0	16.5	2.70	309	353	104
Tamwheat 102 (TX62A4793-7)	20.5	69.4	16.9	2.81	309	353	101
Atlas 66	16.6	73.7	19.9	2.71	313	357	120
C.I.15074	13.4	78.0	18.4	2.79	316	358	114
Probstdorfer Extrem	13.2	76.9	18.1	2.68	320	359	115
Hokuei	11.2	65.9	17.3	2.69	319	357	100
Vakka	5.7	--	20.0	2.81	332	366	97
Jyva	4.4	--	20.2	2.74	333	367	93
Starke	0.9	--	18.7	2.77	334	368	77
Mean	17.3	73.7	17.5	2.77	316	355	101

^a One rep. only in one or more years.

Table 84. Two-year means for agronomic traits of 14 cultivars grown in the International Winter Wheat Performance Nurseries at Pelotas, Brazil in 1971 and 1972.

Cultivar	Yield q/ha	Date of flowering ^a days from Jan. 1	Plant height ^a cm
Centurk	17.4	297	95
Strampelli	17.1	273	80
Sava	10.5	281	77
Atlas 66	9.7	290	100
Blueboy	8.9	278	86
Bezostaya 1	7.4	289	81
Tamwheat 102 (TX62A4793-7)	--	294	78
Backa	--	294	78
C.I.15074	--	300	91
Hokuei	--	304	87
Probstdorfer Extrem	--	311	89
Jyva	--	--	--
Vakka	--	--	--
Starke	--	--	--
Mean	11.8	292	86

^a One rep. only in one or more years.

