Information Bulletin No. 30

REPORT OF THE SEVENTH INTERNATIONAL DURUM SCREENING NURSERY (IDSN), 1975-1976

INFORME DEL SEPTIMO ENSAYO INTERNACIONAL DE SELECCION DE TRIGOS CRISTALINOS (IDSN), 1975-1976

RAPPORT DE LA SEPTIEME PEPINIERE INTERNATIONALE DE SELECTION DE BLES DURS (IDSN), 1975-1976

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40 Apartado Postal 6-641 México 6, D. F., México

ABSTRACT, COMPENDIO, CONDENSE

English Section

REPORT OF THE SEVENTH INTERNATIONAL DURUM SCREENING NURSERY

(IDSN) 1975-1976

ABSTRACT

This report summarizes results from the 7th IDSN during the 1975-1976 crop season. Information was obtained from 39 locations in 32 countries. Lines with a broad resistance spectrum to the rusts and powdery mildew were identified. Information on the other diseases reported here was insufficient for differential analysis, but direct readings from a single location can give at least a general idea of the reaction of the entries. Yield data helped to identify widely adapted, high yielding durum wheat lines.

Among the high yielding crosses, major contributions seemed to come from Mexicali 75 and Gaviota "S". The pasta making properties of the entries and their protein content were analysed to calculate grain quality. The number of lines with pasta-making quality comparable to United States or Italian standards was considerably higher than in the previous screening nursery; indicating that a better quality level is now being reached by Mexican semidwarf durums.

Only about one-half of the cooperators are reporting results; thus considerably more information could be made available if this percentage could be boosted. CIMMYT urges cooperators to return their completed data books, quickly.

CIMMYT makes extensive use of exotic germplasm in its durum program. During the last two years, more than 500 new accessions from 13 different geographic areas have been added to our collection, these are being carefully evaluated to determine their genetic value. CIMMYT makes thousands of combinations made each year, to transfer valuable traits (disease resistance, earliness, adaptation to rainfed conditions, cold tolerance, and desirable quality characteristics) from these new germplasm sources to the better plant type, high-yielding, semidwarf durums that are the backbone of the program.

Although the use of exotic germplasm of T. durum, or related subspecies, sometimes appears to erode the yield base, several outstanding lines have come from crosses with these materials. For example, Jori C69, Cocorit 71, and Mexicali 75 each had one parent that was relatively new to the program. The other parents represented the superior yield background against which the newly introduced genes could show their contributions /2.

It is hoped that a continuation of the present strategy will provide increasing genetic variability for this nursery, thus increasing the chances of selecting even more widely adapted and more efficient types for major durum wheat growing areas.

Data compiled and summarized by M. Alcalá and D. Leihner. CIMMYT.

INFORME DEL SEPTIMO ENSAYO INTERNACIONAL DE SELECCION DE TRIGOS CRISTALINOS

(IDSN) 1975-76

COMPENDIO

Este informe resume los resultados del 7o. IDSN durante el ciclo de cultivo 1975-1976. Se obtuvo información de 39 localidades en 33 países. Se identificaron líneas con un amplio espectro de resistencia a las royas y al mildiú polvoriento. La información reportada aquí sobre las enfermedades fue insuficiente para realizar un análisis diferencial, pero las lecturas directas de una sola localidad puede por lo menos dar una idea de la reacción de las entradas. Los datos de rendimiento ayudaron a identificar líneas de trigo duro con amplia adaptación y alto rendimiento.

Entre las cruzas de alto rendimiento, las principales contribuciones parecen provenir de Mexicali 75 y Gaviota "S". Las propiedades para la elaboración de pastas de las entradas y su contenido de proteína fueron analizadas para determinar su calidad de grano. El número de líneas con calidad para elaboración de pastas comparable a los estándares de Italia o los EUA fue considerado mayor que en el ensayo de selección anterior, lo cual indica que los trigos duros semienanos mexicanos están alcanzando un mejor nivel de calidad.

Sólo alrededor de la mitad de los cooperadores están reportando resultados de manera que se podría disponer de mucho más información si este porcentaje se aumentara. El CIMMYT solicita con urgencia que todos los cooperadores retornen los datos con rapidez.

El CIMMYT utiliza extensivamente germoplasma exótico en su programa de trigos duros. Durante los dos últimos años más de 500 materiales de 13 áreas geográfica diferentes se han añadido a nuestra colección. Estos materiales se están evaluando cuidadosamente para determinar su valor genético. Cada año el CIMMYT efectúa miles de combinaciones a fin de transferir atributos valiosos (resistencia a enfermedades, precocidad, adaptación a condiciones de temporal, tolerancia al frío y características de calidad) de estas nuevas fuentes de germoplasma a los trigos duros semienanos y de mejor tipo de planta y alto rendimiento, que son el armazón del programa.

Aunque el uso de germoplasma exótico de T. durum, o de subespacies relacionadas, parece a veces erosionar la base de rendimiento, varias líneas sobresalientes han provenido de cruzas con estos materiales. Por ejemplo, Jori C69, Cocorit 71 y Mexicali 75 tuvieron en cada caso un progenitor relativamente nuevo en el programa. Los otros progenitores representaron el fondo genético de rendimiento superior contra el cual los genes recientemente introducidos pudieron mostrar sus contribuciones 2/.

Se espera que una contribución de la actual estrategia suministre una creciente variabilidad genética para este ensayo, de manera que sean mayores las oportunidades de seleccionar tipos aún más ampliamente adaptados y más eficientes para las principales regiones productoras de trigos duros.

Datos compilados y resumidos por M. Alcalá y D. Leihner.
Programa de Trigo, CIMMYT.

RAPPORT DE LA 7ème PEPINIERE INTERNATIONALE DE SELECTION DE BLE DUR (IASN) 1975-1976.

RESUME

Le rapport résume les résultats de la 7ème IASN durant la campagne agricole 1975-1976. L'information provient de 39 localités de 33 différents pays. Les lignées à grande résistance à la rouille et à l'oidium ont été identifiées. L'information reportée sur les autres maladies était insuffisante pour réaliser une analyse différentielle, mais la lecture des données sur une seule localité peut du moins fournir une idée générale sur les réactions enregistrées. Les données sur le rendement ont beaucoup aidé à identifier les lignées à haut rendement et à large adaptation.

Parmi les croisements à haut rendement, une meilleure contribution semble provenir de MEXICALI 75 et GAVIOTA "S". Les propriétés plastiques de la pâte enregistrées et le taux de protéine ont été analysées pour déterminer la qualité du grain. Le nombre de lignées, dont la qualité plastique de la pâte est comparable à celle des normes de l'Italie ou des U.S.A. a été considérablement plus élevé par rapport aux pépinière de sélection précedente, indiquant ainsi qu'une qualité d'un niveau supérieur est maintenant obtenue par les blés durs mexicains semi-nains.

Environ la moitié seulement des collaborateurs a fait parvenir les résultats; beaucoup plus d'information pourrait être disponible si ce pourcentage pouvait être augmenté. Le CIMMYT demande aux collaborateurs de faire parvenir les livres de données dûment remplis dans le plus bref délai.

Le CIMMYT utilise amplement le germoplasme exotique dans son programme de blé dur. Durant les deux dernières années plus de 500 matériels provenant de 13 différentes régions géographiques sont venus s'ajouter à notre collection. Ces matériels sont attentivement étudiés pour déterminer leur valeur génétique. Le CIMMYT effectue chaque année des milliers de combinaisons afin de transmettre des caractéristiques intéressantes (résistance aux maladies, précocité, adaptation aux régions sèches, tolerance au froid et caractéristiques de qualité desirées) provenant de cette source de nouveaux germoplasmes à des blés durs semi-nains d'un meilleur type de plant et d'haut rendement qui sont le noyau du programme.

Bien que l'utilisation de germoplasme exotique de blé dur, ou des sous espèces font parfois chutter le rendement, plusieurs lignées supérieures proviennent du croisement de ces matériels. Par exemple JORI C69, COCORIT 71 et MEXICALI 75: Chacun avait un parent qui était relativement nouveau au programme, les autres parents représentaient un fond génétique de rendement supérieur contre lequel les gènes recemment introduits pouvaient montrer leur contributions. 2/

On espère que la strategie actuellement poursuivie fournira un accroissement de variabilité génétique pour cette pepinière, de manière à accroître les chances de selectionner des types de plants plus efficients el d'une plus large adaptation pour les principales régions productrices de blé dur.

Données recueillies et resumées par M. Alcalá et A. Leihner
Programme de Blé, CIMMYT.

REPORT OF THE SEVENTH INTERNATIONAL DURUM SCREENING NURSERY

(IDSN) 1975-76

INTRODUCTION

This report shows how new, semidwarf durum germplasm performs in a screening nursery grown at 39 locations on five continents. It is the seventh nursery in a series designed to: (1) distribute high yielding durum germplasm to national programs in major durum areas, and (2) screen material for disease resistance and wide adaptation. The summarized information provides guidelines for all cooperators in discarding poorly adapted and susceptible lines, and in making further use of lines showing outstanding disease resistance and agronomic traits.

The usefulness of these nurseries (the frequency with which national durum improvement programs can choose lines and use them --with or without further local breeding work-- in commercial production) is probably highly dependent on the amount and range of genetic variability contained within the collection, since soils, climates, and diseases vary markedly from area to area. The 7th IDSN, tested several new materials, including tetraploid wheats of durum, as well as other subspecies; and, in one case, another genus (Agropyron elongatum), which showed promising performance in disease resistance, agronomic traits, and yield.

MATERIALS AND METHODS

The 7th IDSN included 289 entries, with one bread wheat check variety (Zaragoza 75), and three durum checks (Jori C69, Cocorit 71, and Mexicali 75). In addition, two triticale check varieties (Beagle and Bacum) were included in the nursery for the first time. The remaining 275 entries were advanced breeding lines from CIMMYT's crossing block, observation lines, segregating populations, and yield trials. The check varieties were included as every 20th entry; thus, the performance of the advanced lines and the checks can be compared for disease reactions, yield, maturity and other well known traits of the checks. Table 1 lists variety names, cross numbers, and pedigrees of the materials included in the 7th IDSN.

Seed was produced under optimal agronomic treatment in Sonora, North-West Mexico. The nurseries were planted in non-replicated plots, usually two rows, 2.5m long.

A brief description of the 1st to 7th IDSN is given below:

IDSN	Seed production	Year grown	No. of entries	No. of sets prepared	No. of reports received
1	Y 1968-69	1969-70	38	20	2
2	Y 1969-70	1970-71	232	35	19
3	Y 1970-71	1971-72	256	40	17
4	Y 1971-72	1972-73	223	55	24
5	Y 1972-73	1973-74	165	75	38
6	Y 1973-74	1974-75	242	75	36
7	Y 1974-75	1975-76	289	80	39

DATA SUMMARY

The data summary includes names of cooperators, station identification, elevation, date of planting, and moisture received, as well as observations reported. Variables include stem rust, leaf rust, stripe rust, powdery mildew, Septoria tritici, Septoria nodorum, Fusarium roseum (head scab), Puccinia glumarum (stripe rust in the glumes), Helminthosporium sativum, resistance to Hessian fly, grain yield, days to flowering and maturity, lodging resistance, shattering, plant height, protein percentage, pigmentation, and pasta color and aspect.

Where data were incomplete for any character, or not sufficiently differential, brackets were entered for the character and report in the "Location Table" (Table 2).

The "Selection Tables" (Tables 3 and 4) list the durum lines showing resistance to a disease, high yield, etc. at certain locations. For example, entry No. 2 was leaf rust resistant at three locations. Therefore, it is listed with three location numbers (23, 34, 38) in the leaf rust column. However, none of the six reports on powdery mildew indicated that entry No. 2 was resistant, thus no location number is listed for this entry in the powdery mildew column. Only two locations reported data for Septoria tritici, Fusarium roseum (head scab), stripe rust in the glumes, Helminthosporium sativum, and shattering, which precluded a selective location analysis. For these traits, direct readings were entered in the "selection tables", using data from the location where readings were at a better differential level. However, lines which showed low readings of these diseases at

2 both locations, were listed separately in the "results and discussion" section.

Average yields were not calculated due to the great variability in locations and the non-replicated plot design. Cut-off points were determined for each location and character: these selection criteria are listed in the "Criteria Table" (Table 5).

RESULTS AND DISCUSSION

RUST RESISTANCE

Data on rust infection were reported from 20 locations. Stem rust was a problem in North and East Africa, Middle East, and Brazil. Severe infection was reported from Algeria, Turkey, and Yemen A.R. Leaf rust was the most widespread disease. It was reported from North and East Africa, many Middle East countries, Central and South America, and Europe. The strongest epidemic occurred in the Mediterranean basin, in Yemen A.R. and Eastern Europe. Stripe rust occurred in some coastal areas around the Mediterranean sea and in East Africa, but principally in South and Central America. From the differential analysis of rust resistant lines over all reporting locations, a few lines with fair resistance to the three rusts were identified.

RESISTANCE TO THREE RUSTS

The following three entries in the 7th IDSN showed acceptable resistance to stem, leaf, and stripe rust:

Entry No.	Variety or cross
0130	Mexi "S"-Kiwi "S"
0210	Gta-6517 x Fg "S"
0252	D67-3-Rabi "S" x Cr "S"

RESISTANCE TO STEM RUST

Entries showing resistance to stem rust in at least five of the seven reporting locations were:

Entry No.	Variety or cross
0079	Mexi "S" x Chap-21563
0128	Gs "S"-x S15-Cr "S"
0130	Mexi "S" - Kiwi "S"
0153	Jo "S"-Cr "S" x Lds/Ptl "S"
0159	/21563 x P66/270 (21563/61-130 x Lds)_7 Cit 71
0201	Bacum (triticale check)
0210	Gta-6517 x Fg "S"
0248	Gta "S" -Fg "S"
0276	Pg "S" x Jo "S"-Cr "S"
0288	ZB x Mohmoudi-M'rari /(Ld 357_E-Tc^2xGll "S" T. turg) Br "S"7
0289	ZB x Mohmoudi-M'rari /(Ld 357_E-Tc^2xGll "S" T. turg) Br "S"7

Stem rust resistance in these crosses seems to have as a common source the U.S. cultivars 61-130 x Lds, Leeds, Wells, Lakota or Langdon, which make up part of the parentage in all lines (with the exception of Bacum (Triticale check) and entries 288 and 289, where M'rari appears to be the source of resistance (6)).

RESISTANCE TO LEAF RUST

Entries resistant to leaf rust at eight or more of the fourteen reporting locations were"

Entry No.	Variety or cross
18	BD 2030
27	Cit "S"-Plc "S"
68	Geier "S"-Mexi "S"
99	Gdo VZ 471-Br "S" x Pg "S"
109	Fg "S"-Dommel "S"
133	Gdo VZ 471-Br "S" x Pg "S"
241	21563-AA "S" x Fg "S"
247	Gta "S" - Fg "S"
248	Gta "S" - Fg "S"
252	D67-3-Rabi "S" x Cr "S"
279	D67-3-Fg "S" x Cr "S"-Gdo VZ 394

Leaf rust resistance sources in these lines seem to be of different origin, although the contribution of a single source is not readily recognized. Tremez Molle; Stweart 63 and Tehuacan are probably the main sources of resistance in Mexican semidwarf durums. Senator Capelli may be another source, being present in the Giorgio-and Gerardo lines (GVZ-lines) and in such semidward durums as Rabi "S".

Two of the above listed crosses were shown to be resistant to leaf rust in the previous screening nursery /3. Crosses 21563-AA "S" x Fg "S" and Gta "S" - Fg "S".

STRIPE RUST RESISTANCE

Stripe rust data from eleven locations helped to identify these entries as resistant in eight locations or more:

Entry No.	Variety or cross
88	Parana 66/270 /Gs "S" (D. Buck x TM-Tc^2/Lak)/ Rabi x Gs "S" - Cr "S"/Jo "S" - Cr "S"
98	/Cr "S" (21563/61-130 x Lds)/ Ruff Rolette-Magh "S"
112	Ruff-Gta "S"
118	/Gs "S" (D. Buck x TM$_E$-Tc^2/Lak)/ Gta "S"
126	Ptl "S" (ZB Lak x 60-120/Gll "S")
158	Cfn 5-Fg "S" x Ptl "S"
166	Pg "S"-Cit "S"/Cr "S"-Gs "S" x Parana 66/270
167	Plc "S"-Cr "S" x Mca "S"/D 67-3-Cit 71
170	Gdo VZ 471-Br "S" x Pg "S"
172	Gs "S" x S15-Cr "S"
177	Cr "S" - Gs "S" (ZB Lak x 60-120/Gll "S")
254	Jo "S" - Cr "S"
269	/D67-2 (ZB Lak x 60-120/Gll "S")/ Cr "S"
282	Wls-65150 x Fg "S"
283	Wls-65150 x Fg "S"
284	Wls-65150 x Fg "S"

Frequently appearing stripe rust resistant parents in these lines are Tehuacan 60, Parana 66/270, Petrel "S", Flamingo "S", Jori C69, and Crane "S", (all belonging to the group of Mexican germplasm). In general, conditions in Mexico seem to allow a more efficient selection for stripe rust resistance than for resistance to the other rusts in durums. Therefore, Mexican semidwarfs can be expected to make a valuable contribution in stripe rust resistance, whereas different resistance sources are needed to transfer stem and leaf rust resistance.

FOLIAR DISEASE RESISTANCE

Little information on foliar diseases was obtained in the 7th IDSN. Although six locations reported powdery mildew, only two provided differential readings for Septoria tritici and Helminthosporium sativum. Powdery mildew was an important disease in humid areas of North Africa and Europe. S. tritici data were provided from Latin America, but only one of the two reporting locations (Brazil) can be regarded as representative. H. sativum is not a problem in traditional durum areas, but has importance where durums have been recently introduced (in near-tropical environments of Brazil and West Africa, for example).

POWDERY MILDEW RESISTANCE

Lines showing low powdery mildew (Erysiphe graminis) ratings in four of the six reporting locations were:

Entry No.	Variety or cross
80	Beagle (triticale check)
114	Ruff-Gta "S"
180	Beagle (triticale check)
201	Bacum (triticale check)
243	Gta "S" x 2156-AA "S"
280	Bacum (triticale check)

The Gta "S" x 21563-AA "S" cross showed powdery mildew resistance in two consecutive international trials /3. Besides the entries shown above, a number of lines had low powdery mildew ratings in three locations. These are: Entry No. 9, 40, 82, 97, 100, 130, 132, 133, 134, 144, 155, 163, 166, 233, 241, 244, 260, 269.

Again resistance in these crosses appears to have come mainly from US germplasm /3 but in some lines came from Italian parents. The powdery mildew resistance of the triticale checks was outstanding.

SEPTORIA TOLERANCE

Only two sets provided selective data on septoria tolerance, hence there was no differential analysis. Nevertheless, with a number of lines, coincidence of low infection level was observed at both locations. These lines were: Entry No. 36, 40, 42, 45, 63, 117, 157, 159, 212, 216, 283.

HELMINTHOSPORIUM TOLERANCE

H. sativum had the same basis of comparative analysis as did S. tritici. Lines with low infection levels at both reporting locations were: Entry No. 45, 250, 271.

RESISTANCE TO STRIPE RUST IN THE SPIKE

The following entries were free of P. glumarum at both (above) reporting locations: Entry No. 10, 12, 14, 16, 17, 22, 29, 34, 36, 37, 43, 46, 48, 50, 55, 57, 67, 70, 86, 88, 98, 99, 100, 101, 102, 103, 106, 108, 112, 113, 114, 115, 118, 121, 123, 125, 126, 127, 128, 131, 132, 133, 138, 139, 141, 147, 149, 153, 156, 158, 162, 165, 174, 177, 178, 179, 181, 182, 187, 193, 195, 200, 201, 203, 207, 213, 216, 218, 222, 223, 225, 229, 231, 242, 246, 254, 255, 266, 268, 269, 270, 271, 280, 282, 283.

HEAD SCAB RESISTANCE

The below listed entries had low head scab ratings at both (above) reporting locations: Entry No. 2, 4, 9, 87, 102, 103, 105, 134, 138, 152, 156, 157, 158, 182, 183, 191, 197, 199, 216, 222, 225, 226, 227, 257, 265, 279.

YIELD AND AGRONOMIC TRAITS

The 7th IDSN, provided data on grain yield, duration of the growth cycle, lodging, plant height, and shattering.

GRAIN YIELD

High yields from at least six locations was reported for:

Entry No.	Variety or cross
40,140	Zaragoza 75 Bread wheat check
46	Plc "S" - Ruff "S" x Gta "S" - Rolette
57	Gta "S" - Mexi "S"
58	Gta "S" - Mexi "S"
59	Ruff "S" - Mexi "S"
68	Geier "S" - Mexi "S"
75	Mexi "S" x Chap "S" - 21563
78	Mexi "S" x Chap "S" - 21563
80,180	Beagle Triticale Check
114	Ruff "S" - Gta "S"
123	Ibis "S" - Gta "S"
155	Cr "S" - Gs "S" x Marte "S"/T11 "S"
201,280	Bacum triticale check
247	Gta "S" - Fg "S"
257	Erpel "S"
277	Gaviota "S"
279	D 67-3-Fg "S" x Cr "S"-Gdo VZ 394

Among the above listed entries, outstanding contributions apparently have come from two lines: Mexicali 75 and Gaviota "S". Of 17 high-yielding entries, 14 are durums. Within these 14 durums Mexicali 75 makes up part of the cross in six lines. Mexicali 75 (its cross is: Gerardo VZ 469 (21563/60-130 x Leeds) was released as a variety in Mexico during 1975. It is a moderately tillered semidwarf with semi-erect leaves and good grain quality. Its superior yielding ability was demonstrated in many consecutive yield trials in Mexico, where it is presently grown as a high yielding commercial variety. At the international level, Mexicali 75 was one of the two top yielders in the Sixth International Durum Yield Nursery (IDWYN), and indications are strong that it will be top yielder in the 7th IDYN, as well (4,5).

In recent yield trials conducted under optimal agronomy in North West Mexico, combinations with Mexicali 75, such as Mexi "S" x Chap-21563 and Mexi "S"-Gta "S" have not only shown a higher yield potential than Mexicali 75, but were also better in quality (1).

Gaviota "S" is a parent in seven of the 14 high yielding durum crosses listed above (entries No. 46, 57, 58, 114, 123, 247, 257), and has shown high yield and wide adaptability on its own (entry No. 277). It appears twice in direct combination with Mexicali 75. Gaviota "S" has a strong contribution from an exotic background, namely the related tetraploid subspecies T. turgidum spp. polonicum: The Gaviota "S" cross is Cr "S" (T. pol. 185309 x T. pol_E-Tc^2/Gll "S").

In addition to the 14 durum lines, the bread wheat check enty "Zaragoza 75" and the triticale checks "Beagle" and "Bacum" showed a high yielding ability in a wide range of different environments. The high frequency of locations where triticales yielded well was particularly impressive.

EARLINESS

The check variety "Mexicali 75" again was among the earliest maturing entries. Several other lines showed similar earliness:

Entry No.	Variety or cross
17	(Gll "S"/Br 180-LK x 62-220) Gta "S"
31	Ruff-Fg "S"
56	Gta "S" - Mexi "S"
57	Gta "S" - Plc "S"
127	Ptl "S" - Plc "S"
176	Cit "S" - Mca "S" /Pg "S" (Gll "S"/Lds x 56-1)/
269	/D67-2 (ZB Lak x 60-120/Gll "S")/ Cr "S"
270	Plc "S" - Ruff x Gta "S" - D 6715

LODGING RESISTANCE

Entry No.	Variety or cross
40	Zaragoza 75 Bread wheat check
135	Yemen - Cr "S" x Plc/Geier "S"
137	Yemen - Cr "S" x Plc/Geier "S"
186	D 67.3 x Gta "S"
205	Cr "S" - USA - S - 02299
286	Chap - Cr "S" x Plc "S"

As in the previous screening nursery /3, Yemen-Cr "S" x Plc "S" crosses showed good lodging resistance, as did Crane "S" in other combinations. The bread wheat check "Zaragoza 75" also was lodging resistant.

SHATTERING

Only two locations reported shattering data, thus no differential analysis was made for this trait. Entries that coincided with low shattering readings at both locations, are listed below:
Entry No. 7, 8, 10, 30, 115, 156, 191, 198, 199, 228, 229, 232, 234, 236, 251, 264, 282, 283.

GRAIN QUALITY

The CIMMYT quality laboratory provided the only quality data available for the 7th IDSN. CIMMYT's analyses are primarily for assessing the pasta-making properties of the materials. Pigmentation, macaroni color and aspect, and protein concentration of all entries was determined, thus taking into account both the nutritional aspect and grain appearance (high protein concentration in the grain is generally associated with low or zero yellow berry percentages).

PIGMENTATION

A carotinoid pigment concentration of 6 ppm or more was shown by:
Entry No. 36, 47, 49, 52, 62, 63, 75, 76, 78, 81, 82, 83, 93, 119, 121, 122, 213, 214, 234, 235, 236, 259, 275.

MACARONI COLOR AND ASPECT

The best macaroni color and aspect ratings (for explanation of scale see Table 4) were shown by:
Entry No. 26, 36, 63, 73, 75, 76, 77, 81, 84, 98, 103, 113, 119, 121, 142, 206, 213, 216, 275, 282.

PROTEIN CONCENTRATION

Entries with 13% protein, or more, were:
Entry No. 1, 6, 19, 22, 36.

REFERENCES

1. Durum Wheat Annual Report for 1976. CIMMYT, Internal wheat program communication. Unpublished, January 1977.
2. Kingma, Gerbrand, Personal Communication, July 1976.
3. Report of the Sixth International Durum Screening Nursery (IDSN) 1974-75. CIMMYT Information Bulletin 26, Mexico 1976.
4. Results of the Sixth International Durum Yield Nursery (IDYN) 1971-75. CIMMYT Information Bulletin 28, Mexico 1976.
5. Results of the Seventh International Durum Yield Nursery (IDYN) 1975-76. CIMMYT Information Bulletin being prepared, Mexico 1977.
6. Varughese, George. Personal Communication, September 1976.

Table 1. Entries of the 7th International Durum Screening Nursery 1975-76, with Variety or Cross and Pedigree.

Entry No.	Variety or Cross	Pedigree
1	Jori C 69	
2	Leeds Mut.	
3	Gerardo VZ 578	
4	Gerardo VZ 579	
5	Int. - 4793	
6	BD 117 x D117 Biskri Bouteille - D117	D62-33-6-2
7	D67-2-12A-7A-0A	
8	INRAT 69 x BD-1708-BD1419 x BD1705	D6811-6A-2A
9	CP x ST 464 - CPT 8	A-3470-4P-4P-2P-0Y
10	USA IV A S-893	
11	Pinguino "S"	D-28984-44Y-300M-500Y-0M
12	Ruff	D-27572-20M-3Y-3M-1Y-0M
13	Ibis	D-31708-11M-1Y-0M-0Y
14	Gaviota	D-31725-3M-500B-0Y
15	Mexicali "S"	CM-470-1M-2Y-0M
16	Mexicali 75	
17	(Gll "S"/Br180-LK x 62-220) Gta "S"	CM-9771-1M-0Y
18	BD 2030	
19	D-56-27A	PI-306577
20	Mexicali 75 (Check)	
21	PI-306656	
22	T.A. 73-74 D. Coll-01-1Y	
23	T.A. 73-74 D. Coll. 05	
24	T.A. 73-74 D. Coll. 024	
25	T.A. Dwarf Durum - 2	
26	Ente "S"	CM-32-7M-1Y-0M
27	Cit "S" - Plc "S"	CM-3327-50Y-4M-3Y-0M
28	Gs "S" - AA "S" x gr "S"	CM-3334-18Y-7M-0Y
29	Gs "S" - Fg "S"	CM-9682-70M-3Y-1M-0Y
30	Fg "S" - gr "S"	CM-9841-37M-1Y-2M-0Y
31	Ruff - Fg "S"	CM-9880-25M-1Y-1M-1Y
32	Gta "S" - Fg "S"	CM-10145-15M-1Y-0M
33	Gta "S" - Fg "S"	CM-10145-15M-1M-3Y
34	Rabi "S" - Fg "S"	CM-10162-76M-0Y-3Y
35	Cit "S" - AA "S" x Fg "S"	CM-10352-C-1M-0Y-2Y
36	By_E-Tac x Tc^4(Gld 115xTM_E-Tc^2/Z.B.-W.)	27582-10M-6D-4D-1D-0M
37	Ralle "S"- Ptl "S"	CM-17109-9M-1Y-501B
38	INRAT 69-Gr "S" x Bo "S") Rabi "S"	CD-1465-C-502Y
39	Plover	CD-2756-501M-0Y-3B
40	Mengavi-8156 = Zaragoza 75	
41	Plover	CD-2756-501M-0Y-6B
42	Erpel "S"	CD-1247-C-1Y
43	Cr "S" - Gs "S"	CM-224-1M-1Y-1M-0Y-5Y
44	Erpel "S"	CD-1247-C-1Y
45	Gta "S" - Rolette x Fg "S"	CM-17728-4M-4Y-1Y
46	Plc "S" - Ruff x Gta "S" - Rolette	CM-17904-B-3M-1Y-1Y
47	Pg "S" x Chap-21563	CM-13113-4M-1Y-2Y
48	Ibis "S"	D-28941-9Y-3M-500Y-0Y-502B
49	Ibis "S"	D-28941-9Y-3M-500Y-0Y-504B
50	Gta "S" - Ptl "S"	CM-18606-7Y-0Y
51	Chap-21563 x Gs "S" - Cr "S"	CD-366-1Y-0Y
52	Chap-21563 x Gs "S" - Cr "S"	CD-366-11Y-0Y
53	S15-Cr "S" - Geier "S"	CD-523-3Y-0Y
54	Cr "S" - Parana 66/270	CD-745-6Y-0Y
55	Cr "S" - Parana 66/270	CD-745-7Y-0Y
56	Gta "S" - Mexi "S"	CD-771-8Y-0Y
57	Gta "S" - Mexi "S"	CD-771-1Y-0Y
58	Gta "S" - Mexi "S"	CD-771-17Y-0Y
59	Ruff - Mexi "S"	CD-775-1Y-0Y
60	Cocorit 71	
61	Gdo VZ 469-AA "S" x Maghrebi "S"	CD-846-1Y-0Y
62	Gdo VZ 469-AA "S" x Maghrebi "S"	CD-846-5Y-0Y
63	Gdo VZ 469-AA "S" x Maghrebi "S"	CD-846-6Y-0Y
64	USA IV A-893 x Cit "S"	CD-285-9Y-0Y
65	Gs "S" - Ibis "S"	CD-1747-37Y-0Y
66	Gs "S" - Mexi "S"	CD-1754-21Y
67	Geier "S" - Mexi "S"	CD-1760-1Y-0Y
68	Geier "S" - Mexi "S"	CD-1760-9Y-0Y
69	[Cr "S" (21563/61-130 x Lds)] Mexi "S"	CD-1877-6Y-0Y
70	[Cr "S" (21563/61-130 x Lds)] Mexi "S"	CD-1877-7Y-0Y
71	Plc "S" - Cr "S" x Mexi "S"	CD-1883-3Y-0Y
72	Plc "S" - Cr "S" x Mexi "S"	CD-1883-7Y-0Y
73	Ralle "S" - Gs "S"	CD-1885-7Y-0Y
74	Mexi "S" x Chap-21563	CD-1894-1Y-0Y
75	Mexi "S" x Chap-21563	CD-1894-3Y-0Y
76	Mexi "S" x Chap - 21563	CD-1894-6Y-0Y
77	Mexi "S" x Chap - 21563	CD-1894-11Y-0Y
78	Mexi "S" x Chap - 21563	CD-1894-15Y-0Y
79	Mexi "S" x Chap - 21563	CD-1894-18Y-0Y
80	Beagle	
81	Mexi "S" x Chap - 21563	CD-1894-27Y-0Y
82	Mexi "S" - Fg "S"	CD-1895-12Y-0Y
83	Mexi "S" - Gta "S"	CD-1896-1Y-0Y
84	Mexi "S" - Gta "S"	CD-1896-6Y-0Y
85	Mexi "S" - Gta "S"	CD-1896-12Y-0Y
86	Erpel "S"	CD-1247-A-2Y-0Y
87	Lds x Cit "S" - Mexi "S"	CD-1253-A-3Y-0Y
88	{Parana 66/270 Gs"S"(D. Buck x TM_E-Tc^2/Lak)} Rabi x Gs "S"-Cr"S"/Jo"S"-Cr"S"	CD-1276-A-1Y
89	[Parana 66/270 (T.dur.ram.-Gll "S" x F3Tun/Cr "S")] Plc "S"	CD-1277-C-8Y-0Y
90	(Gll "S"-Lds x RL 3601/Ruff) Gs"S"-Cr"S"	CD-1302-G-1Y-0Y
91	[Cit "S"(ZB Lak x 60-120/Gll"S"] Kif"S"	CD-1306-D-4Y-0Y
92	[Cit "S"(ZB Lak x 60-120/Gll"S"] Kif"S"	CD-1306-H-4Y-0Y
93	D21564-C17855 x Mexi "S"	CD-1331-B-7Y-0Y
94	Cit 71-Can 01775 x Mexi "S"	CD-1517-C-3Y-0Y
95	Cit 71-Can 01982 x Gta "S"/Rabi "S"	CD-1609-1-1Y-0Y
96	Roussia-BD1419 x Ibis/Mexi "S"	CD-2546-E-1Y-0Y
97	{[Cr"S"(21563/61-130 x Lds)]Ruff}Rolette-Magh "S"	CD-2892-A-3Y
98	{[Cr"S"(21563/61-130 x Lds)]Ruff}Rolette-Magh "S"	CD-2892-H-1Y
99	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-11Y-2Y-0Y
100	Yemen-Cr "S" x Plc "S"/ Geier "S"	CM-17142-1Y-4Y-0Y
101	Jori C 69	
102	Bo "S" - Gta "S"	CM-18484-1Y-2Y-0Y
103	Bo "S" - Gta "S"	CM-18484-2Y-3Y-0Y
104	Bo "S" - Gta "S"	CM-18484-9Y-3Y-0Y
105	Garza "S" - Rabi "S"	CM-18488-1Y-2Y-0Y
106	Gs "S" - Ruff	CM-18492-11Y-3Y
107	Gs "S" - Rabi "S"	CM-18493-11Y-1Y
108	Fg "S" - Dommel "S"	CM-18548-7Y-5Y-0Y
109	Fg "S" - Dommel "S"	CM-18548-1Y-1Y-0Y
110	Fg "S" - Rabi "S"	CM-18552-14Y-1Y-0Y
111	Fg "S" - Rabi "S"	CM-18552-14Y-3Y-0Y
112	Ruff - Gta "S"	CM-18555-6Y-1Y-0Y
113	Ruff - Gta "S"	CM-18555-7Y-1Y-0Y
114	Ruff - Gta "S"	CM-18555-11Y-2Y-0Y
115	Cit 71 - Gta "S"	CM-18565-1Y-1Y-0Y
116	Cit 71 - Gta "S"	CM-18565-10Y-1Y-0Y
117	Cit 71 - Gta "S"	CM-18565-10Y-2Y-0Y
118	[Gs"S"(D. Buck x TM_E-Tc^2/Lak)] Gta "S"	CM-18570-7Y-2Y-0Y
119	Ibis - Gta "S"	CM-18577-11Y-6Y-0Y
120	Mexicali 75	
121	Ibis - Gta "S"	CM-18577-11Y-7Y-0Y
122	Ibis - Gta "S"	CM-18577-11Y-8Y-0Y
123	Ibis - Gta "S"	CM-18577-11Y-9Y-0Y
124	Gta "S"(ZB Lak x 60-120/Gll "S")	CM-18604-2Y-3Y-0Y
125	S15-Cr "S" x T. dic-Gll "S"/Plc "S"	CM-18616-5Y-2Y-0Y

Table 1. Continuation.

Entry No.	Variety or Cross	Pedigree
126	Ptl"S"(ZB Lak x 60-120/G11"S")	CM-18661-16Y-1Y-0Y
127	Ptl "S" - Plc "S"	CM-18664-1Y-4Y-0Y
128	Gs "S" x S15 - Cr "S"	CM-18694-22Y-1Y-0Y
129	Adler "S" - Mexi "S"	CM-19639-A-1Y-3Y-0Y
130	Mexi "S" - Kiwi "S"	CD-537-2M-1Y-0Y
131	G11 "S"^{2} - T. dic. Vernum x G11 "S"/AA "S"	CD-819-3M-1Y-0Y
132	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-34Y-2Y-3Y-0Y
133	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-34Y-4Y-2Y-0Y
134	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-34Y-4Y-3Y-0Y
135	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-8M-1Y-2Y-0Y
136	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-8M-3Y-1Y-0Y
137	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-8M-4Y-2Y-0Y
138	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-10M-4Y-1Y-0Y
139	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-10M-4Y-2Y-0Y
140	Mengavi-8156 = Zaragoza 75	
141	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-10M-11Y-2Y-0Y
142	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-10M-19Y-1Y-0Y
143	Yemen - Cr "S" x Plc / Geier "S"	CM-17142-10M-19Y-2Y-0Y
144	Cr "S" - Plc "S" x gr "S"	CM-17188-1M-2Y-2Y-0Y
145	Cr "S" - Plc "S" x gr "S"	CM-17188-4M-1Y-1Y-0Y
146	(21563/LK$_g$-LD390 x Ch67) Fg "S"	CM-17263-2M-6Y-2Y-0Y
147	Cormorant "S"	CM-17264-23M-1Y-1Y-0Y
148	Cormorant "S"	CM-17264-23M-1Y-5Y-0Y
149	Cormorant "S"	CM-17264-23M-1Y-6Y-0Y
150	Cormorant "S"	CM-17264-23M-1Y-9Y-0Y
151	(21563/LK$_g$-LD390 x Ch67) Cr "S"	CM-17266-4M-1Y-8Y-0Y
152	Lds Mut. - Ptl "S"	CM-17583-20M-1Y-1Y-0Y
153	Jo "S" - Cr "S" x Lds/Ptl "S"	CM-17681-D-7M-1Y-1Y-0Y
154	Rabi "S" - PI 94587-1 x Cit 71	CM-17731-A-5M-2Y-1Y-0Y
155	Cr "S" - Gs "S" x Marte "S" / Tllo "S"	CM-17746-A-1M-2Y-1Y-0Y
156	Cr "S" - Gs "S" x Marte "S" / Tllo "S"	CM-17746-A-1M-2Y-2Y-0Y
157	Gdo 571-Fg "S" x Plc "S"	CM-17760-A-3M-1Y-1Y-0Y
158	Cfn 5-Fg "S" x Ptl "S"	CM-17780-A-7M-1Y-1Y-0Y
159	[21563 x P66/270 (21563/61-130xLds)] Cit 71	CM-17888-J-6M-3Y-1Y-0Y
160	Cocorit 71	
161	Plc "S" - Ruff x Gta "S" - D6517	GM-17904-A-7M-1Y-1Y-0Y
162	[Cit 71 (ZB x LK/Lds)] Ruff-Gs "S"	CM-17955-C-1M-3Y-1Y-0Y
163	[Cit 71 (ZB x LK/Lds)] Ruff-Gs "S"	CM-17955-F-1M-1Y-2Y-0Y
164	[Cit 71 (ZB x LK/Lds)] Ruff-Gs "S"	CM-17955-J-5M-7Y-1Y-0Y
165	Pg"S"-Cit"S"/Cr"S"-Gs"S"xParana 66/270	CM-17989-B-8M-3Y-1Y-0Y
166	Pg"S"-Cit"S"/Cr"S"-Gs"S"xParana 66/270	CM-17989-B-8M-3Y-2Y-0Y
167	Plc "S"-Cr "S" x Mca "S"/D67-3-Cit 71	CM-18004-B-6M-1Y-2Y-0Y
168	Plc "S"-Cr "S" x Mca "S"/D67-3-Cit 71	CM-18004-B-6M-3Y-1Y-0Y
169	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-11Y-2M-1Y-0Y
170	Gdo VZ 471-Br "S" x Pg "S"	CM-13919-11Y-2M-2Y-0Y
171	Lds. Mut. - Gta "S"	CM-18362-20Y-1M-2Y-0Y
172	Gs "S" x S15 - Cr "S"	CM-18694-9Y-1M-2Y-0Y
173	Gs "S" x S15 - Cr "S"	CM-18694-26Y-1M-1Y-0Y
174	Gs "S" x S15 - Cr "S"	CM-18694-26Y-1M-3Y-0Y
175	Cit "S"-Mca"S" [Pg"S"(G11"S"/Ldsx56-1)]	CM-14562-J-500Y-1M-3Y-1Y-0Y
176	Cit "S"-Mca"S" [Pg"S"(G11"S"/Ldsx56-1)]	CM-14562-J-500Y-1M-3Y-2Y-0Y
177	Cr "S"-Gs "S"(ZB-Lak x 60-120/G11 "S")	CM-13437-21Y-1M-3Y-2Y
178	Plc "S" - Cr "S" x Rabi "S"	CM-13447-8Y-1M-1Y-3Y-0Y
179	Plc "S" - Cr "S" x Gta "S"	CM-13461-20Y-1M-1Y-2Y-0Y
180	Beagle	
181	Kingfisher "S"	CM-14662-A-10Y-1M-1Y-1Y-0Y
182	Kingfisher "S"	CM-14662-D-14Y-3M-1Y-1Y-0Y
183	Lds Mut-Gta "S"	CM-18362-1Y-1Y-0Y
184	Ag. Elong x Tac-0Y	
185	D67.3 x Gta "S"	CM-19314-69-10B-1Y-0Y
186	D67.3 x Gta "S"	CM-19314-69-10B-2Y-0Y
187	gr "S" - Gta "S"	D-21-1B-1Y-0Y
188	Lds Mut - Fg x Gta "S"	64-1B-1Y-0Y
189	Lds Mut - Fg x Gta "S"	64-1B-2Y-0Y
190	Rabi-31810	CM-10172-44M-0Y
191	Gta "S" x 6517-Plc "S"	CM-17727-A-1M-0Y
192	Jo "S" - Cr "S" x Gs "S" - AA "S"	CM-9902-5M-0Y
193	P66/253-Fg "S" x Pg "S" - Gt "S"	CM-18040-A-2M-0Y
194	Cr "S" - Gs "S" x Marte "S"	CM-13435-12Y-0M
195	(BYg^2-Tc/ZB-W) BYg-Tc^2	CM-113-1MK-0MCH
196	Cormorant "S"	CM-2999-49Y-4M-3Y-0M
197	Rabi "S" - Fg "S"	CM-10162-76M-4Y-0M
198	Cr "S" - Gs "S"	CM-224-1M-1Y-2M-0Y
199	Gta "S" x 21563-AA "S"	CM-10143-24M-1Y-1M-0Y
200	Cr "S" - 21564	CM-194-8M-1Y-3M-0Y
201	Bacum	
202	Plc "S" - Cr "S"(G11"S"/Lds x 56-1)	CM-17043-1Y-0Y
203	Ruff x Jo-Cr	CM-18537-1Y-0Y
204	Ruff - Ptl "S"	CM-18556-1Y-0Y
205	Cr "S" - USA-S-02299	CM-18882-2Y-0Y
206	Yemen-Cr "S" x Plc "S" / Geier "S"	CM-17142-8M-3Y-0Y
207	Yemen-Cr "S" x Plc "S" / Geier "S"	CM-17142-8M-19Y-0Y
208	Cr "S" - Plc "S" x gr "S"	CM-17188-4M-2Y-0Y
209	Pg "S" x Jo "S" - Cr "S"	CM-13102-10M-4Y-0Y
210	Gta-6517 x Fg "S"	CM-17728-C-4M-4Y-0Y
211	Cr "S" - D21564 x Hercules/Pg "S"	CM-17747-C-3M-2Y-0Y
212	(BYg-Tc x ZB-W/CP-St464 x Cr "S")Plc"S"	CM-17800-E-6M-2Y-0Y
213	Plc "S" - Ruff x Gta "S" - D6715	CM-17904-D-3M-1Y-0Y
214	Cit"S"-Mca"S"(Pg"S"/G11"S"xLds-56-1)	CM-14562-J-500Y-1M-3Y-0Y
215	Chap-21563 x Cr "S"	CM-12857-10Y-2M-1Y-0Y
216	Chap-21563 x Cr "S"	CM-12857-10Y-3M-3Y-0Y
217	Chap-21563 x Cr "S"	CM-12857-10Y-3M-4Y-0Y
218	Jo "S" - Cr "S" x Marte "S"	CM-12969-2Y-1M-1Y-0Y
219	Jo "S" - Cr "S" x Marte "S"	CM-12969-2Y-1M-3Y-0Y
220	Jori C-69	
221	Pg "S" x Chap-21563	CM-13113-2Y-1M-2Y-0Y
222	Cr "S" - Gs "S" x Pg "S"	CM-13434-5Y-1M-1Y-0Y
223	Cr "S" - Gs "S" x Pg "S"	CM-13434-5Y-1M-4Y-0Y
224	Cr "S" - Gs "S" x Pg "S"	CM-13434-14Y-3M-1Y-0Y
225	Plc "S" - Cr "S" x Rabi "S"	CM-13447-8Y-3M-1Y-0Y
226	Gs "S"-Cr "S"/D21563-AA "S" x Cit "S"	CM-14432-C-1Y-3M-1Y-0Y
227	Gs "S"-Cr "S"/D21563-AA "S" x Cit "S"	CM-14432-C-1Y-3M-2Y-0Y
228	Gs "S"-Cr "S"/D21563-AA "S" x Cit "S"	CM-14432-C-1Y-4M-2Y-0Y
229	Geier "S" x 21563 - Gs "S"/Gs"S"-Cit "S"	CM-14448-C-1Y-1M-2Y-0Y
230	Geier "S" - Gs "S" x Fg "S" - Cr "S"	CM-14461-B-1Y-9M-1Y-0Y
231	Maghrebi "S"-Gs "S"-AA"S"/Gta"S"-Cit "S"	CM-14472-B-8Y-1M-2Y-0Y
232	(Maghrebi"S"-Gs"S" x AA"S"/Rabi"S")21563-AA"S"	CM-14473-B-3M-2Y-0Y
233	Pg"S"-Cit"S"/Cr"S"-Jo"S" x Cr"S"	CM-14511-J-2Y-1M-2Y-0Y
234	Mca"S" x 21563-AA"S"/Pg"S"-Fg"S"	CM-14646-C-1Y-1M-1Y-0Y
235	Mca"S" x 21563-AA"S"/Pg"S"-Fg"S"	CM-14646-C-1Y-1M-2Y-0Y
236	Mca"S" x 21563-AA"S"/Pg"S"-Fg"S"	CM-14646-C-1Y-1M-3Y-0Y
237	Kingfisher "S"	CM-14662-A-10Y-1M-3Y-0Y
238	Kingfisher "S"	CM-14662-D-14Y-3M-3Y-0Y
239	21563-AA"S" x Fg"S"	CM-9799-126M-1M-3Y-0Y
240	Cocorit 71	
241	21563-AA "S" x Fg "S"	CM-9799-126M-1M-4Y-0Y
242	21563-AA "S" x Fg "S"	CM-9799-126M-1M-5Y-0Y
243	Gta"S" x 21563-AA"S"	CM-10143-6M-3Y-1M-2Y-0Y
244	Gta"S" x 21563-AA"S"	CM-10143-19M-2Y-1M-1Y-0Y
245	21563-AA"S" x Fg"S"	CM-9799-197M-2Y-4M-1Y-0Y
246	Ruff-Fg"S"	CM-9880-25M-1Y-1M-1Y-0Y
247	Gta"S"-Fg"S"	CM-10145-15M-1Y-1M-3Y-0Y
248	Gta"S"-Fg"S"	CM-10145-52M-4Y-1M-1Y-0Y
249	Gta"S"-Fg"S"	CM-10145-15M-1Y-1M-0Y
250	Cormorant "S"	CM-2999-49Y-4M-3Y-0M
251	Rabi-31810	CM-10172-37M-0Y
252	D67-3-Rabi"S" x Cr"S"	CM-17975-F-1M-1Y-1M-1Y-0Y
253	21563/61-130 x Lds	D-26844-18Y-4M-0Y
254	Jo"S" - Cr"S"	D-27591-5M-3Y-1M-0Y
255	Cr"S"(21563/61-130 x Leeds)	CM-225-21M-1Y-0M-0Y

Table 1. Continuation.

Entry No.	Variety or Cross	Pedigree
256	Ato "S" x AA "S" - Plc "S"	CM-1859-12Y-0M
257	Erpel "S"	CD-1247-D-2Y-0M
258	{Gab125 [Gs"S"(D.Buck x TM_E-Tc^2/LK)] 21563-AA"S"	CD-1446-C-4Y-0M
259	Lds x Cr "S" x Mat luz/Cr "S"	CD-2654-B-1Y-0M
260	Mengavi-8156= Zaragoza 75	
261	Cr"S"-F_3 Tun x AA"S"/Fg"S"	CM-10200-9BK-1BK-2Y
262	Rabi "S" - 31810	CM-10172-37M-0Y-4Y
263	Gdo VZ 469-Plc "S"	CM-373-3M-2Y-1M-0Y-2Y
264	Rabi "S" - Fg "S"	CM-10162-76M-0Y-1Y
265	Rabi "S" - Fg "S"	CM-10162-76M-0Y-2Y
266	Rabi "S" - Fg "S"	CM-10162-76M-0Y-4Y
267	Gs"S" - Cr "S" x Ruff/Stk "S"	CD-1314-D-6Y-0M
268	Flamingo "S"	D-27582-8M-13Y-2M-0Y-1Y
269	[D67-2(ZB Lak x 60-120/G11"S")]Cr"S"	CM-17835-B-2M-6Y-0M
270	Plc "S" - Ruff x Gta "S" - D6715	CM-17904-B-3M-1Y-0M
271	21563-AA "S" x Fg "S"	CM-9799-126M-1M-5Y-0M
272	Ruff - Fg "S"	CM-9880-37M-3Y-3M-1Y-0M
273	Gta "S" x 21563-AA "S"	CM-10143-6M-3Y-1M-2Y-0M
274	Avetoro "S"	D-32864-7Y-2M-2Y-4M-0Y
275	Gediz "S"	D-27534-1M-1Y-1M-0Y
276	Pg "S" x Jo "S" - Cr "S"	CM-13102-10M-1Y-0M
277	Gaviota "S"	D-31725-3M-12Y-2M-0Y
278	Giorgio VZ 394-Cit "S"	(6-2B-1Y-0B)
279	D67-3-Fg "S" x Cr "S" - Gdo VZ 394	CM-19901-B-1YD (10-1B-1Y-0B)
280	Bacum	
281	Leeds Mut x Fg "S" - Gta "S"	CM-19803-A-1YD (64-1B-1Y-0B)
282	Wls-65150 x Fg "S"	CM-19385-1YD (35-1B-1Y-0B)
283	Wls-65150 x Fg "S"	CM-19385-1YD (35-2B-1Y-0B)
284	Wls-65150 x Fg "S"	CM-19385-1YD (35-4B-1Y-0B)
285	Chap-Cr "S" x Plc "S"	CM-19561 (42-1B-1Y-0B)
286	Chap-Cr "S" x Plc "S"	CM-19561-1YD (42-1B-2Y-0B)
287	ZB x Mohmoudi-M'rari [($Ld357_E$-Tc^2 x G11"S"/ T. turg) Br "S"]	CM-19561-5YD (47-2B-1Y-0B)
288	ZB x Mohmoudi-M'rari [($Ld357_E$-Tc^2 x G11"S"/ T. turg) Br "S"]	CM-19561-5YD (47-4B-1Y-0B)
289	ZB x Mohmoudi-M'rari [($Ld357_E$-Tc^2 x G11"S"/ T. turg) Br "S"]	CM-19561-5YD (47-4B-2Y-0B)

- - - - - - - - - - - - - - - - - - - -

Table 2. Cooperating Stations Planting data, and Types of Differential Data supplied by Cooperating Scientists for the 7th IDSN, 1975-76.

	Country	Cooperators	Station Identification N.L.	E.L.	Elev. m	Planting date	Moisture mm	Yield	Days to Head.	Mat.	Rusts SR	LR	YR	P.M.	Septoria tritici	Height	Lodg.	Others
1	Mexico, Sonora	CIMMYT durum Program	27.20	109.54W	40	10 Nov. 75	7 irr.	X	X			X				X		Quality data
2	Mexico, El Batán	CIMMYT durum Program	19.31	98.53W	2249	20 May 75	493	X	X				X			X		
3	Mexico, Río Bravo	CIMMYT pathologist										X						
3a	Mexico, Patzcuaro	CIMMYT pathologist													X			Fusarium roseum (scab)
4	Cameroun, Wassande	Jean Birie-Habas, André Demeya	7.05	14.05		25 Aug. 75	880	X	X	X								Helminthosporium sat.
5	Egypt, Shandaweel	M.M. Sadek, M.M. Gergis et al				27 Nov. 75	5 irr.	X	X	X						X		
7	Ethiopia, Shoa	T. Tesemma and T.W. Marian	8.55	38.58	1860	15 Aug. 75	892	X			X	X						
8	Kenya, Njoro	G. Kingma and R. Mutuura	0.21S	35.56	2164	May 76					X		X					
13	Algeria, Guelma	R. G. Anderson				April 76							X	(X)				
14	Algeria, Oued Smar	G. Varughese				April 76					X	X						
15	Tunisia, Beja	Maamouri, Daaloul	37.00	9.00	150	9 Dec. 75	630	X	X				X	X	(X)	X		
23	Brazil, Paraná	C. da Silva et al	25.06	50.10W	975	22 Jun. 76	530	X	X	X	X	X	X		X	X	X	Scab, H.sat., shat.
24	Chile, Santiago	Programa Cereales INIA	33.27S	70.38W	629	18 Aug. 75	16.3+6 irr.		X		(X)		(X)					
25	Ecuador, Quito	Programa Cereales INIAP	0.22S	78.33W	3058	13 Feb. 76	853	X	X				X			X	X	Stripe rust head
26	Peru, Junín	N. Valencia, C. Llosa et al	12.00S	75.30W	3245	14 Nov. 75							X			X	(X)	Stripe rust head
27	Afghanistan, Kabul	M.S. Jalalyar	34.39	69.21	1803	21 Oct. 75	320+8 irr.		X		(X)	X	X					
33	Pakistan, N.W.F.P.	Cereal Botanist	34.00	68.00	300	15 Nov. 75		X	X		(X)	(X)	(X)			X		(ears per unitarea)
34	Pakistan, Punjab	Cereal Botanist	31.30	73.10	213		47+4 irr.		X	X		X				X		
35	Thailand, Chiang mai	D. Tiyawalee	19.00	99.00	300	20 Dec. 75	5 irr.	X	X	X						X		
36	Cyprus, Athalassa	A. Hadjichristodoulou	35.08	33.24	150	28 Nov. 75	333	X	X							(X)		
38	Iraq, Abu-Ghraib	A. Sh. Jaber				25 Nov. 75	5 irr.	X	X	X		X				X	X	(shattering)
39	Israel, Mivhor	S. Grunberg	31.37	34.47	120	23 Nov. 75	281+1 irr.					X	(X)			X		
40	Israel, Volcani Center	J. Ephrat and Y. Kogan	32.01	34.49	28	5 Dec. 75	426	X	X				X			X	X	
41	Jordan, Amman	M. Duwayri and N. Haddad	32.02	35.52	980	24 Nov. 75	346	X	X	X						X		
44	Libya, Tripoli		32.28	20.53	310	10 Dec. 75	480	X	(X)	(X)						(X)		
46	Syria, Izraa	S. Falouh et al	32.51	36.15	575		283	X	X	X						X		(yield of grain & straw)
47	Turkey, Izmir	P. Solen et al	39.00	29.00	10	10 Nov. 75	750				X	X	X					
48	Turkey, Diyarbakir	A. Ertug Firat, M. Kambertay	37.55	40.12	660	21 Oct. 75			X	X	X	X	(X)			X		
50	Yemen, A.R., Taiz	E. H. Tallat	13.00	42.30	1350	24 Dec. 75	4 irr.		X	X	X	X				X	X	shat.,(spk. length)
53	England, Cambridgeshire	R. S. Gregory	52.10	0.06	17	29 Mar. 76	93	X	X									
55	France,Seine et Marne	Mrs. Leclercq and Conty	48.25	3.00W	53	4 Mar. 76	73		(X)							(X)		
56	Greece, Thessaloniki	E.A. Skorda	40.38	22.57	10	15 Nov. 75	275	X	X	X	(X)	(X)		X		X		(Frost damage, yellow leaves)
59	Poland, Laski	R. Kukietka	50.20	23.51	270	20 Apr. 76	380	X	X	X	(X)	X		X		X	X	Septoria nodorum
60	Spain, Zaragoza	J. Comenge E.	41.41	2.50W	202	11 Dec. 75	260+5 irr.	X	X			(X)		X		X	X	
61	Germany, Freising	K. Oppitz	48.24	11.44	467	18 Mar. 76	265			X				X				
62	Yugoslavia, Macedonia	I. Angelov				22 Oct. 75	300		X	X		X		X	(X)	X		
63	Australia, Tamworth	T. Purss	31.00S	151.00	380	7 May 76	160		X							X		
64	New Zealand, Palmerston	J.M. McEwan	40.23S	175.37	30	8 Oct. 75	338	X	(X)							(X)		(Bushel weight)
66	U.S.A., Indiana	R.L. Gallun																Hessian fly resistance

X - Data reported and included in summary.
(X)- Data not complete or at non-selective levels, not included in summary.

Table 3. Lines in the 7th IDSN (1975-76) selected for disease resistance.

Entry No.	High Yield* in Location	Stem Rust	Leaf Rust	Stripe Rust	Powdery Mildew	Septoria tritici % (Brazil)	Septoria nodorum % (Poland)	Head Scab % (Mexico)	Stripe Rust Glumes % (Ecuador)	Helminthosporium** sativum (0-9)-% (Cameroun)	Hessian*** Fly (U.S.A.)
2	25,38*	48,50	23,34,38	48		5	33	20	2	7-0	
4	7,56	48	7,23,27	25	59,62	10	33	20	0	7-0	
6	7	7,14	27,59	27,48	56	30	56	60	2	9-30	R(9-1)
8	33	48	7,34,38,47,50,59	13,25,40	56	5	44	60	-	7-20	
9	15*,33,60	23,48	1,7,23	25,47,48	56,59,62	5	44	20	-	---	
11	7,15	7,8,23	1,14,27,50,59	13,15,25,27,47,48	56	15	22	40	0	8-70	R
16	1,33*,36	8	1,14,27,59	27,47,48	56,62	10	11	60	0	9-100	
17		8,23	34	2,8,25,26,40,47,48	56,61	5	11	60	0	9-100	
18		7,14,47	1,7,14,23,27,34,47,59	27,48	56	15	11	40	0	6-0	
20	2,36	14,23	34,50	48	56,59	20	11	60	2	8-80	
27	25*,56,60*	7	1,3,14,27,34,38,47,50,59R	26		5	33	60	5	7-0	
30	5,38	7,14,23	1,3,7,34,38,39,59	2,8,13,15,23,26	56	5	11	40	2	8-0	
31	33	7,14,47,48	1,3,14,27,34,47,59	2,13,26,27	56	5	11	60	2	9-80	
32	5,60	7,14,47	1,3,34,48	15,26	56	10	11	60	2	8-0	
36			7,23,34	8,25,26,48	56	5	67	60	0	7-0	
40	1,5,40,41*,60,64*	7,14,50	7,14,23,48	27	56,59,61	3	22	10	20	7-0	
42	1*,33,40,60	7	1,3,7,23	13,25,48	56	5	22	40	0	8-0	
45	1,7,25,36	7,8,48	1,7,27,38,62			3	22	40	10	7-0	
46	1,2,4,5*,36,40*,60	7	7,27,34	8,25,26,27,40,47,48	56,59	10	22	60	0	9-50	
57	2*,5,7,25,36,60		7	13,26	56	20	22	60	0	9-40	
58	2*,4*,5,7,36,60	7	1,7,14,34,38,59	13,25,26,48	56	15	22	40	5	9-100	
59	2,5,7,25,36,41	7	7,38,39,50,59	13,15,48	56	20	44	60	2	9-50	
63	35,36,41*,60	7,50	7,47	47,48	56	0	22	60	5	9-20	
68	1,2,4*,7,36,38		1,3,7,23,27,38,48,59	13,15,25,26,27	56	15	44	40	5	9-30	
73	4*,25*,41	23	7,23,27	26,27	56	5	22	60	5	8-10	R(10-9)
75	1*,7,25,36,38,60,64	7,14,23	1,7,27,38,39	13,27	56	10	22	60	40	8-5	
78	1*,4,7,25,36,46*,64	7,8,14,23		13,25,26,48	56,61	1	11	60	2	9-50	
79	1,7,36,46	7,8,14,47,48	3,7,27,38	13,23,25,26,27,48	56,62	5	11	60	40	9-0	
80	4*,7,23*,25*,35,36,40*,59,60*,64*	48,50	7,27,50	13,15,23,27,40,48	15,56,60,61	10	33	0	0	8-20	R
82	7,25,36,44	48	3,27	13,15,25	56,61,62	20	33	60	20	9-50	
87	5,7,36,59	7,14,47,48	14,27	13,25,26,27		5	33	20	5	9-80	
88	7	7,8,48	1,23,27,39,48	8,13,15,25,26,40,47,48R	59	15	44	40	0	9-50	
97	33	7,48		8,13,23,48	15,56,61	10	44	40	0	9-0	
98	7,33*,53	8,47,48	27	2,8,13,15,25,26,40,47,48	59,	10	44	40	0	9-100	
99	7,36,38,41,56	7,8	1,3,23,34,38,39,48,59	13,40,48	61	10	44	40	0	8-0	
100	1,7,40,60	7	1,27,38,48	23,26,27,48	15,59,60	2	44	40	0	9-5	
102	7,38	8	1,27,38	13,25,26,27,48		2	22	20	0	9-100	
103	7	7,8	3,27,38	8,13,25,26,27,48		10	22	20	0	9-100	
105	1	7,48	3,48	13,23,25		5	22	20	0	8-0	
109	1,4*,7,56		1,3,7,34,38,39,48,59R	13		10	44	40	0	7-0	
112	1,40		3,7,27,34,48	2,8,13,25,26,27,40,48	61	5	33	40	0	9-100	
114	1,7,40,44,56*,59	7,8	27,39,48	2,8,15,25,26,27,48	56,60,61,62	10	22	60	0	9-80	
117	1*,7,23	7	7,27,48	27,48	56	1	22	60	5	9-80	
118		7	7,34,62	2,8,13,15,23,25,26,48	56	10	22	60	0	9-80	
123	1,2,7,23,36,40,46	7	1,34,38	2,8,13,25,26,40,48	56	5	22	60	0	9-70	
126	2,7	7	34,39,47	2,8,13,15,25,26,40,48R	56	15	56	40	0	9-100	
128	38	8,14,23,47,48	7,27,38,39	2,8,26,40,47,48	56	15	56	40	0	8-20	
130	2,7,36	7,8,14,23,47R	1,3,27,39,47,48	13,23,25,26,27,48	56,60,61	5	44	40	2	9-50	
132		8	3,14,23,34	13,15,26,40,48	56,60,61	5	44	40	0	8-20	
133	2,7,15*,23		1,3,7,14,23,48,50,59R	13,26,40,48	56,61,62	5	22	40	0	8-40	
134	7,15*,36,38	48	3,7,34,38,48,59	8,13,23,26,48	56,60,61	10	22	20	5	8-30	
138	7,23,38	7	23,38,50	26,48		5	22	20	0	8-0	
140	4*,7,15	14,48,50	7,14,34,48,50		56,62	--	22	20	20	7-0	
144		8,47,48	7,27	8,13,25,27,40,47,48	56,59,60	20	22	60	0	9-60	R(8-4)
152	2,46		27	8,13,26,27,40,48	61	--	22	20	--	9-100	
153	64*	7,8,14,47,48R	27	26,27,48	56,61	--	22	40	0	8-20	R(8-6)
154	59,64	7,8	1,3,7,34,39,48,50	13,26,48		--	11	40	--	9-80	
155	1,7,33,36,59,64*	7,8,47,48	1,7,14,27,34,38,48	26,27,48	56,60,62	--	44	40	5	9-60	

Table 3. Continued.

Entry No.	High Yield* in Location	Stem Rust	Leaf Rust	Stripe Rust	Powdery Mildew	Septoria tritici % (Brazil)	Septoria nodorum % (Poland)	Head Scab % (Mexico)	Stripe Rust Glumes % (Ecuador)	Helminthosporium** sativum (0-9)-% (Cameroun)	Hessian*** Fly (U.S.A.)
156	36	7,8,47	3,7,14,27,39,48	13,26,27,48	56	5	56	20	0	9-40	
157		7,8,14	27	13,26,27,48	60	5	22	20	2	8-0	
158	36		1,7,27,39	2,8,13,25,26,27,40,47,48R	59	5	22	0	0	8-0	
159	7,36,44,56	7,8,14,23,47	27	15,23,48	59,60	5	44	40	10	9-60	
161	36,59	7,8,14	1,27,39,48	48		30	11	60	0	9-100	
163	44	7,8	1,7,39,48	25,26,27,48	56,59,60	15	33	60	0	9-40	
166	7	7,8	1,7,27,34,39,48,50	2,8,13,25,26,27,40,47,48	15,56,62	5	56	60	0	9-0	
167	2,7,64	7,8	27,39	2,8,13,25,26,27,40,48	56,60	10	22	60	0	8-0	
170	7,15,53,60	7	1,3,7,27,34,39,50	8,13,15,25,26,27,40,47,48R	60	15	44	40	0	9-0	
172	36	7	1,27,34,39	2,8,13,15,26,27,40,47,48R	60	10	67	40	0	---	
177	7,25,35*	7,8,14	7,27	2,8,15,25,26,27,40,47,48R	56	20	56	40	0	9-80	
180	1,2,4*,7,35*,36,60*	48,50	7,50	13,15,47,48	15,56,61,62	--	22	20	0	8-10	R
182	2,7,15,35,46		23,48	2,8,13,15,26,47,48	56	20	22	20	0	9-10	
183	35,46	7,8,48	27,47	13,15,26,48	56	10	22	20	0	9-50	
191	7,56*	7,23	59	15,26,48	56,60	10	22	20	10	9-10	
197	7,33	7,14	1,14,23,47,48	13,26,48		5	22	20	2	9-20	
199	7,25,56	7	1,23	23,25,26,48	56	5	22	20	2	9-20	
201	1,15,23*,33*,38,53,60*	8,14,23,48,50R	38,50	13,15,25,26,40,48	56,60,61,62	10	33	0	0	8-50	R
210	7,53	7,8,14,23,47R	1,27,34,38,39,47,48	13,15,25,26,27,48	56	10	22	40	5	7-0	
212	7,40,44*,53,60	7	1,39	8,26,40,47,48	56,60	5	56	40	0	9-80	
216	5,7,59,64		3,39	8,26,48		3	11	20	0	8-0	R(5-4)
221	5,33	23,47,48,50	3,23,27,39,50	13,25,26,40	56	5	44	20	0	8-0	
222	7,23	47,48	1,3,7,14,23,39	13,25,26,48	56	15	22	20	0	8-0	
225	7	7,8	3,38,39,50	13,23,26,40,48	59	5	44	20	0	8-0	
226	7,15,23*,40	23,50	1,3,23,39	13,25,48	56	15	33	20	2	8-0	
227	7,15,23*,25,33		1,3,7,23,39	8,13,25,48	56,61	15	33	20	2	8-0	
233	36,46,60		1,3,7,27,34,48,59	13,23,25,26,27,48	56,60,61	5	22	40	5	8-0	
241	1,5,7	8	1,3,14,23,27,39,48,62R	13,26,27	56,60,61	15	33	60	2	8-0	
243	5,64*	8	3,7,23,27,48	13,23,25,26,27,48	56,60,61,62	15	56	40	5	8-50	
244	5,7,59		3,23,	15.23.25.26.48	56,60,61	15	22	40	5	9-50	
247	2,7,15*,23,38,53*	7,8,23,48	1,3,14,23,27,34,38,39,47,48,50R	13,15,23,25,26,27,48	61	15	33	40	2	8-0	
248	7,23,53*,59*,64	7,8,23,47,48	1,3,14,23,27,34,39,48,59	13,25,26,48	61	10	22	60	2	8-0	
250	15,36,44	48	1,3,7,14,27,34,59	25,26		10	33	40	15	7-0	
252	15,23	8,14,47,48	1,3,7,14,39,47,50,59R	8,13,23,25,26,40,48	56,60	5	22	40	0	9-100	
254	23,36,38,40*		7,27,38	8,13,15,26,27,40,47,48R	56	10	22	40	0	9-50	
257	7,15,33,53*,59*,64	7	48,50	13,15,25,26,48	56,61,62	5	22	20	2	9-10	
260	1,4*,40,59,64*	7,14,48,50	14,34,47,50,62	48		--	22	20	20	7-0	
265	7,23,	7,8,14,48	3,39,50,59	13,15,26		5	56	20	5	8-0	
269	5,33,36,59	7,8,50	1,27,34,39,50,59	8,13,15,26,27,40,47,48R	15,56,61	20	22	60	0	9-100	
271	1,33,46	7,50	1,3,34,39,48,50,59	13,26		5	22	60	0	7-0	
276		7,8,23,47,48,50R		13,48		10	33	40	0	9-10	
277	5,7,23,33,36,59*	7,8	1,50	13,25,26,47,48	56,60	5	22	40	2	9-100	
279	7,23,36,38*,53,64	8,14,48,50	3,7,14,23,27,34,38,59R	13,27,48	56	2	56	20	0	7-0	
280	1,4*,33*,40*,41*	7,8,14,48	47,50	8,13,15,26,40,48	15,56,60,61	--	33	0	0	8-50	R
282			1,7,14,23,50	8,13,23,25,26,40,47,48	56	5	22	40	0	7-0	
283	38		1,7,23,34,38,50	8,13,15,23,25,26,40,47,48R		5	56	40	0	7-0	
284	7		1,7,23,34,59	8,13,23,25,26,40,47,48		5	44	40	0	7-0	
285	64		1,3,34,48	13,23,48	56,59	30	22	40	5	9-50	R
286		8	34,39,48	23	56,59	30	22	40	0	9-50	R(8-2)
287	7,35	8,14,48	1,3,34,39	13,23,25,48		25	22	40	2	9-100	R(6-4)
288	7,35,40,64	7,8,23,48,50	7,27,47	13,27,47,48	59	25	22	40	0	7-0	R(10-2)
289	35,46,64	7,8,14,23,48R	1,7,39	13,23	56,59	25	22	40	5	9-50	R(12-3)

* At the locations marked with an asterisk, this entry was among the five top yielders.

** Combined plant-spike reading according to Saari and Prescott.

*** Lines marked with an R were fully resistant to Hessian Fly biotype B. Figures behind the R indicate that the line showed a differential reaction (No of resistant - susceptible plants in a row). Only lines with more resistant than susceptible plants were selected.

R Lines with outstanding resistance (low average coefficient of infection).

Table 4. Lines in the 7th IDSN (1975-76), selected for high yield, outstanding agronomic traits, and for grain quality.

Entry No.	High Yield* in Location	Early Maturity in Location	Lodging Resistance in Location	Shattering % (Yemen)	Height cm (Jordan)	Protein % (Mexico)	Carotinoids ppm (Mexico)	Macaroni Color & Aspect** (Mexico)
1	5,38*,46*	5,41,62	23,25,38,40,50,59	10	65	13.2	3.4	6 B
6	7	34,48,59	23,59	20	84	13.7	4.5	4 B
7	33,36	5,26,34,48,50	23,25,40,50,59	0	86	12.0	3.0	5 B
8	33	5,48,59	23,25,40	0	70	11.5	2.7	5 R
10		48,59,62	23,25,59	0	70	12.2	4.6	7 B
16	1,33*,36	26,34,38,48,50,59,62	25,59	40	78	11.3	5.1	5 M
17		34,38,41,48,50,59,62	25,59	0	62	12.0	3.4	5 R
19	33	26,34,38,41,62	25,40,50,59	20	90	14.4	2.4	2 R
22	7,33		23,40,59	20	70	13.9	2.8	5 R
25	2,7,44*	38,41	23,40,59	30	75	12.6	3.9	7 B
26	7,25	41	23,25,59,60	0	80	11.4	5.7	8 R
30	5,38		23,59	0	88	12.5	4.0	5 B
31	33	26,34,38,41,48,62	23,25,38,40,59,60	20	105	11.9	3.4	5 B
36		62	25,40,50,59,	0	65	13.3	6.6	8 B
40	1,5,40,41*,60,64*	34,41,62	23,25,38,40,50,59,60	30	85	Bread Wheat Check Variety		
46	1,2,4,5*,38,40*,60	26,34	23,38,40,59	20	84	11.8	5.8	6 R
47	44*		23,25,38,59	0	84	11.7	6.1	4 B
49	7,38		23,38,40,59	0	90	11.4	6.4	7 R
52	4,7,25		23,38,40,59	15	80	10.7	6.6	6 R
56	1,2,7,36	26,34,48,50,56,59,62	23,25,38,40,59	0	75	10.5	3.6	4 R
57	2*,5,7,25,36,60	26,38,48,50,59,62	23,25,38,59	0	86	10.2	5.5	4 M
58	2*,4*,5,7,36,60	4,26,48,62	23,25,38,59	0	85	11.3	5.8	5 B
59	2,5,7,25,36,41		23,25,38,59	0	80	11.4	5.5	6 R
61	7,15,60	26,34,41	23,25,38,59	0	90	12.8	2.8	7 B
62	35,60	4,41,59	23,25,38,59	0	75	10.8	6.0	5 B
63	35,36,41*,60	34,41,46,56,59	23,25,38,59	0	82	11.7	6.3	8 B
68	1,2,4*,7,36,38		25,59	0	85	10.5	4.6	4 M
73	4*,25*,41		38,59,60	0	95	10.8	4.0	8 B
74	7,25,36	50,56,62	25,38,59,60	0	85	9.9	5.8	9 B
75	1*,7,25,36,38,60,64		38,59,60	15	82	10.3	6.3	9 B
76	4,7,36	50	23,25,50,59	15	80	10.2	7.6	9 R
77	1,4,7,25,36		23,25,40,59	0	85	10.1	5.8	8 B
78	1*,4,7,25,36,46*,64	26,48	23,38,59	0	83	10.3	7.6	6 B
80	4*,7,23*,25*,35,36,40*,59,60*,64*	38,41,46,56,62	38,40,50	0	120	Triticale Check Variety		
81	7,33,36,60*		23,25,38,40,50,59	10	85	9.5	6.7	9 R
82	7,25,36,44	4,26,46	23,38,40,50	0	85	10.5	6.6	6 B
83	7,36,64	5,46	23,25,38,40,59	0	75	9.7	6.1	6 R
84	33,36	4,46	23,38,40,59	20	85	10.2	4.9	9 B
93	1,7,46	4,48	23,25,40,59	0	75	9.7	7.8	6 B
98	7,33*,53	48,50	23,25,40,50	0	85	10.6	3.3	8 R
103	7	50,62	23,25,40	20	73	10.5	4.5	8 R
104	2,7,36,56	48,50	23	10	75	10.9	5.1	8 B
113	7,23,36	4,26,46,50	23,25,38,40	20	75	11.4	4.9	8 B
114	1,7,40,44,56*,59	4,5,26,50	23,25,40	5	80	10.9	3.4	5 R
115		4,50	25,38,40,59	0	70	10.2	3.7	5 R
119	2,7	50	23,25,40,50	20	85	10.5	6.4	8 R

Entry No.	High Yield* in Location	Early Maturity in Location	Lodging Resistance in Location	Shattering % (Yemen)	Height cm (Jordan)	Protein % (Mexico)	Carotinoids ppm (Mexico)	Macaroni Color & Aspect** (Mexico)
120	7,36,38	4,26,46,48,50,56	25,40	40	85	----	5.5	---
121	1	5,50	23,25,40	40	80	9.8	6.9	8 R
122	38	50	23,25,38,40	40	82	10.1	6.1	7 R
123	1,2,7,23,36,40,46	26,50	23,25,38,40	0	80	10.3	5.2	5 B
127		5,26,38,48,50,62	23,25,38,40,59	5	60	10.4	4.0	5 B
135	7,25,46	62	23,25,38,40,50,59,60	20	65	9.2	4.9	7 B
137	1,7,23,59*		23,25,38,40,50,59,60	40	65	9.5	5.1	7 B
142	7,23,60	50	23,38,40,50,59	0	65	10.1	4.3	8 R
152	2,46	4,50	38,59	30	65	12.5	3.4	6 M
155	1,7,33,36,59,64*	50	38,40	0	85	10.1	3.4	5 M
156	36	50	38,40,50	0	85	10.9	3.3	4 M
176	7,35	5,26,46,48,50,59	23,25,38,40	0	70	9.8	5.8	5 R
180	1,2,4*,7,35*,36,60*	41,48,56,62	25,40,50,59	0	105	Triticale Check Variety		
186	7,25,35	50,62	23,25,38,40,50,59,60	0	70	10.3	2.8	5 B
191	7,56*	50	25,40,50,59	0	80	8.6	4.3	6 R
198	7,35,36,56*,60	34	23,25,40,50	0	85	8.8	4.0	6 B
199	7,25,56		23,25,40	0	75	8.3	4.0	6 B
201	1,15,23*,33*,38,53,60*	46,48	25,40,50,59,60	10	70	Triticale Check Variety		
205	7,36,53	26,50	23,25,38,40,50,59,60	0	65	8.7	4.2	6 R
206	7,25	46	23,25,38,40,59,60	50	60	9.1	4.9	8 R
212	7,40,44*,53,60		23,25,59,60	5	75	9.3	4.3	6 R
213	7,36,40,46,56	26,34,50	23,40,59	20	85	9.3	6.0	8 B
214	46*,59,64	26,34,50	23,25,40,59	20	75	9.6	6.1	5 R
216	5,7,59,64	50,59	23,25,59	30	68	8.3	5.2	9 R
228	23			0	90	7.7	4.0	2 B
229	7,23,36,40,44	50		0	85	8.0	4.0	5 B
232	7,33	41,46,50	25,40	0	70	7.7	4.3	5 B
234	40	50	25,40,59	0	70	8.2	7.8	6 B
235		50	25,40,59	0	80	7.7	7.8	6 B
236	7	50	25,40,59	0	85	8.2	8.4	5 B
247	2,7,15*,23,38,53*		23,25,40,59	40	80	8.7	4.9	6 R
248	7,23,53*,59*,64		38,40,59	20	85	8.4	4.0	4 B
251	7,59		25,40,50,59	0	65	8.9	4.3	5 B
257	7,15,33,53*,59*,64			40	75	8.1	5.1	6 B
259	23,46	26,56,62	25,59	0	75	8.6	7.0	6 B
260	1,4*,40,59,64*		25,40,50,59,60	20	75	Bread Wheat Check Variety		
264	7,23,41,53*	50	25,50	0	80	8.8	3.7	5 R
269	5,33,36,59	26,38,46,48,50,56,59	38,50	0	115	10.4	3.4	6 B
270	36,59	4,26,34,48,50,59	25,50,59	20	95	8.9	5.8	6 B
275	7,44*		25,50	20	85	8.4	6.4	9 R
277	5,7,23,33,36,59*	4,50	25,40,50,59	10	75	7.9	3.4	6 B
279	7,23,36,38*,53,64		23,25,40,50,59	0	60	10.5	3.2	5 B
280	1,4*,33*,40*,41*	4,48,56	25,40,59,60	20	105	Triticale Check Variety		
282		59	25,40,50	0	80	10.4	5.2	8 B
283	38	48	25,40,50	0	65	9.7	5.2	6 B
286		38,50	23,25,38,40,50,59,60	10	55	10.4	3.9	3 B

* At locations marked with an asterisk, the entry was among the five top yielders.

** Macaroni color: scale 1-10, 10 being the most desirable yellow color.

Macaroni aspect: B(bueno)= Smooth, R(regular)= Intermediate, P(pobre)= Rough.

Table 5. Criteria used to select lines in 35 reporting locations of the 7th IDSN, 1974-75.

	Country	Plot yield*	Days to maturity	Stem rust	Leaf rust	Stripe rust	Stripe rust glumes	Powdery Mildew 0-9	Septoria tritici 0-9	Head Scab 0-5	Helminth. sativum (0-9)-%	Lodging %	Shattering %	Protein* %	Caro-tinoids* ppm	Macaroni* Color 1-10	Macaroni* Aspect B,R,P
1	Mexico, Sonora	1400 g			TR									13.0	6.0	8	BR
2	Mexico, El Batan	800 g				TR-5R											
3	Mexico, Rio Bravo				TR												
3a	Mexico, Patzcuaro								0-1	0-1							
4	Cameroun, Wassande	160 g	105								7-0						
5	Egypt, Shandaweel	750 g	143														
7	Ethiopia, Shoa	Good **		0	0												
8	Kenya, Njoro			0-TMS		0-TMR											
13	Algeria, Guelma					0											
14	Algeria, Oued Smar			TR-TMR	0-10MR												
15	Tunisia, Beja	750 g				TR		0-TR									
23	Brazil, Paraná	1800 g		0	0-TR	0			0-3	0-TR	5-0	0	0-2				
25	Ecuador, Quito	125 g				0-TR	0					0					
26	Peru, Junin		175			0	0										
27	Afghanistan, Kabul				0-TMR	0											
33	Pakistan, N.W.F.P.	22 oz															
34	Pakistan, Punjab		146		0												
35	Thailand, Chiang	50 oz															
36	Cyprus, Athalassa	Selected ***															
38	Iraq, Abu-Ghraib	300 g	146		0							0					
39	Israel, Mivhor				TR-15MR												
40	Israel, Volcani Center	1400 g				R-MS						0					
41	Jordan, Amman	335 g	176														
44	Libya, Tripoli	220 g															
46	Syria, Izraa	260 g	159														
47	Turkey, Izmir			0-10MR	0-10R	0											
48	Turkey, Diyarbakir		209	0	0-10MS	0											
50	Yemen, A.R., Taiz		90	20S	10MR							0	0				
53	England, Cambridgeshire	110 g															
56	Greece, Thessaloniki	525 g	187					0									
59	Poland, Laski	4000 kg/ha	115		0-10MR			0-4				0					
60	Spain, Zaragoza	700 g						0-3				10					
61	Germany, Freising							0-1									
62	Yugoslavia, Macedonia		243		R			R									
64	New Zealand, Palmerston	395 g															

* For this trait, entries must have reached the indicated level or more.
For other characteristics, the indicated levels of selection are maximum.

** Yield was classified poor - fair - good.

*** Selections with high yield were indicated without quantifying yield.

RECENTLY NAMED DURUM WHEAT VARIETIES AND LINES

Name	Abbre-viation	Cross	Cross number	Year	Country
Adler "S"	Ad	AA"S"- Karakilcik (T. dur. ram-Gll "S" x F_3-Tun/Cr"S")	- - - - -	1976	México
Dommel "S"	Dom	[(T. pol. 185309 x T. gle-Tc^2/Gll "S") F_3Tun]Jo "S"	D -33674	1976	México
Ente "S"	Ente	BY_E-Tc^5 (21563/61-130 x Leeds)	CM- 32	1976	México
Erpel "S"	Erp	(Hercules-Gta "S" x Rabi "S"/Gs "S"-Cr "S")Jo "S"-Cr "S" x 21563'-AA "S"	CD- 1247	1976	México
Gediz "S"	Gediz	Ld 357_E-Tc^2 x Jo "S"	D-27534	1975	Turkey
Geier "S"	Geier	Gll "S"/ BY_E - Tc x Z. B. -W	D-25624	1976	México
Marte "S"	Mt	T. dur. T. sph. ram. -Gll "S" x Mariza Sadovo/AA"S"	D-33753	1975	México
Mexicali 75 = Stork "S"	Mexi	Gerardo VZ 469 (21563/61-130 x Leeds)	CM- 470	1975	México
Ralle "S"	Rll	(61-130 x Leeds/ Gll "S") Bo "S"	CM- 434	1976	México
Zaragoza 75	Zza	Mengavi-8156	Bread wheat check in 7th IDSN		