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Results of the Third High Protein-High Lysine Wheat Observation Nursery Grown in 1977

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SUMMARY

Spring Wheat

The spring wheat observation nursery consisted of 165 experimental lines which, together with four check varieties repeated five times, gave a total of 185 entries. The nursery was distributed to 19 locations in 15 countries in the fall of 1976. Fifteen locations were in the Northern Hemisphere and 4 nurseries were grown in South America.

Data for grain protein, lysine (% of protein), and adjusted lysine (% of protein) from eight sites are reported Agronomic data, when provided by cooperators, also are reported.

Protein values ranged from 21.2 to 13.1%, with an overall mean of 17.1% when averaged over five sites. Protein values for the check varieties averaged 18.9, 18.5, 15.6, and 14.1% for Nap Hal, Atlas 66, INIA 66, and CI 13449, respectively.

Lysine (% of protein) ranged from 2.6 to 3.2% and averaged 2.9% while adjusted lysine values ranged from 2.8 to 3.4% and averaged 3.1%. Nap Hal/Atl66//NS11-35 and Nap Hal/Atl66//Tr535 were among populations with consistently high protein and lysine values. These populations also were productive in a replicated nursery at Yuma, Arizona.

The Nap Hal/CI 13449 population was the most productive at Yuma, Arizona, with entries ranging in yield from 65.6 q/ha to 42.7 q/ha and averaging 51.2 q/ha. The nursery averaged 36.6 q/ha overall. Check variety yields were 42.6, 40.6, 26.8, and 13.8 q/ha for CI 13449, INIA 66, Nap Hal, and Atlas 66, respectively.

Winter Wheat

The winter wheat observation nursery consisted of 176 experimental lines along with four check varieties which were repeated five times to make a total of 196 entries. The nursery was distributed to 31 sites in 21 countries in the fall of 1976. Twenty-three sites were located in the Northern Hemisphere while 8 sites were in the Southern Hemisphere.

Data for grain protein, lysine (% of protein) and adjusted lysine (% of protein) from 13 sites are reported. Since most of the cooperators provided agronomic data, means over locations were computed for yield, plant height, and date of flowering in addition to the grain quality data.

Averaged over seven sites the nursery entries ranged in protein values from 17.6 to 12.7%. The overall mean was 15.5%. Lancota, Bezostaya 1, CI 13449, and Centurk averaged 15.3, 15.0, 13.4, and 13.3% protein, respectively. (Favorit/5/Cirpiz/4/Jang Kwang//Atl 66/Cmn/3/Velvet, NE 7060), (Sava//Purdue 4930/NB 69655), (ID 0033/Purdue 4930//Moldova), and (Rannaya/Lovrin 13) were among the

populations showing excellent combinations of elevated protein and lysine levels in conjunction with good productivity.

Yield means ranged from 44.1 to 23.8 q/ha. The overall nursery mean was 34.9 q/ha. Lancota, Centurk, Bezostaya 1, and CI 13449 had mean yields of 38.2, 37.1, 34.1, and 27.6 q/ha, respectively. Lancota was the tallest entry in the nursery, while CI 13449 was the shortest. Lancota had the best combination of protein, lysine, and yield among the checks. (Lancota/F9-67) and (Centurk/3/Atl 66/Cmn/2/TX 2607-6) were highly productive populations averaging 42.6 and 42.0 q/ha, respectively.

Results of the Third High Protein-High Lysine Wheat Observation Nursery Grown in 1977

S. L. Kuhr, V. A. Johnson, P. J. Mattern, and K. D. Wilhelmi[1]

This is the third report of results from a high protein-high lysine (HP-HL) wheat observation nursery organized in 1974 by the Nebraska Agricultural Experiment Station and the Science and Education Administration, U.S. Department of Agriculture, under a contract with the Agency for International Development, U.S. Department of State. Primary objectives of this nursery are to:

1. Systematically provide breeders and cooperators with improved germ plasm for elevated levels of grain protein and/or lysine.
2. Test the degree of expression of the high protein and high lysine traits in a diverse array of environments.
3. Test the interactions of agronomic characteristics with the grain quality traits.

Advanced experimental lines distributed to breeders and cooperators in the 3rd HP-HL nursery were selected from numerous hybrid combinations of both spring and winter types. All exhibited elevated protein and/or lysine in nursery trials in Nebraska or Arizona.

In the breeding nursery at Lincoln, Nebraska, entries were evaluated for winter hardiness and growth habit. Both winter and spring genotypes were increased and evaluated at Yuma, Arizona.

PROCEDURES

Nursery seed for planting was provided to each cooperator in 10-gram amounts of each entry. Each cooperator was encouraged to manage the nursery in a manner consistent with local variety testing procedures.

A list of pedigrees of entries was distributed to each cooperator along with the seed for planting. Field books were provided to

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cooperators to facilitate the recording of agronomic data in a uniform manner. Cooperators were requested to return to the University of Nebraska a 10-gram seed sample from each harvested plot. Protein and lysine analyses were completed at the University of Nebraska Wheat Quality Laboratory.

The HP-HL nursery was grown in many different environments and climatic conditions. It was anticipated that not all entries would perform well at all locations. Each cooperator was encouraged to identify and harvest seed from the agronomically best lines at his location and to utilize these lines in crosses and for further local evaluation.

Experimental Lines

The experimental lines comprising the third HP-HL observation nursery resulted from hybrid combinations of relatively diverse germ plasm. Since genes for high protein and/or lysine in wheat are present both in spring and winter growth-habit types, numerous spring x winter crosses were made to accumulate these genes in lines of each growth habit type. All lines were classified for growth habit at Lincoln, Nebraska, and were assigned either to the spring wheat or winter wheat sections of the nursery. Experimental lines selected for inclusion in this nursery possess elevated levels of grain protein, lysine/protein, or combinations of both traits based on preliminary laboratory evaluation at Lincoln, Nebraska. Some selection pressure was applied as well for yield potential, short straw, and improved head types.

The spring wheat section consisted of 165 experimental lines, identified in Table 1. Four check varieties were included five times each, so that the nursery contained a total of 185 entries. Nap Hal and INIA 66 are spring wheats, while Atlas 66 and CI 13449 are winter wheats. Nap Hal, although not generally productive, consistently produces grain with elevated levels of protein and lysine. Atlas 66 has high grain protein, with average lysine levels. INIA 66 has average protein and lysine levels, but is highly productive. Consequently, it serves as a reference for yield comparisons. CI 13449 generally produces grain with a high ratio of lysine to overall protein.

The winter wheat section of the HP-HL nursery consisted of 176 experimental lines listed in Table 2. Four check varieties were repeated five times each, so that the nursery had 196 entries. As in the spring section, CI 13449 was used as a high lysine check. Lancota was included because of its elevated grain protein. Centurk was chosen since it is winterhardy and has high yield potential. Bezostaya 1 has excellent yield potential and broad adaptation.

Table 1. Pedigrees of the entries in the third high protein-high lysine spring wheat observation nursery grown in 1977.

Entry	Pedigree	Source
1	Nap Hal	73Y4001
2	Atlas 66	P.S.
3	INIA 66	76Y61203
4	CI 13449	14413
5	F226-68/Lancota//Nap Hal/Lancer	21227
6	"	21230
7	"	21258
8	"	21274
9	"	21281
10	Atl 66/Nap Hal//Dwf Bez /Lancota	21307
11	"	21311
12	"	21396
13	"	21401
14	"	21481
15	"	21496
16	"	21497
17	"	21529
18	"	21531
19	"	21562
20	"	21577
21	"	21582
22	"	21626
23	"	21692
24	"	21750
25	"	21772
26	"	21776
27	"	21784
28	Atl 66/Nap Hal//NE 701134/Centurk	21846
29	"	22004
30	"	22008
31	"	22096
32	"	22114
33	Atl 66/Nap Hal//F226-68/Centurk	22212
34	"	22239
35	"	22242
36	Atl 66/Nap Hal//NE 701152/Aurora	22901
37	"	22918
38	"	23134
39	Atl 66/Nap Hal//Skorospelka 35/NE 701137	23435
40	"	23446
41	"	23473
42	"	23477
43	Atl 66/Nap Hal//Skorospelka 35/NE 701137	76Y23482
44	"	23597
45	"	23600
46	"	23609
47	"	23622
48	"	23638
49	"	23711
50	"	23724
51	Nap Hal	73Y4001

Table 1. Continued.

Entry	Pedigree	Source
52	Atlas 66	P S.
53	INIA 66	76Y51203
54	CI 13449	14413
55	Atl 66/Nap Hal//Skorospelka 35/NE 701137	23742
56	"	23744
57	"	23782
58	"	23882
59	"	23887
60	"	23902
61	Atl 66/Nap Hal//Rousalka/NE 701134	24012
62	"	24081
63	"	24087
64	"	24167
65	"	24245
66	Atl 66/Nap Hal//Nord Desprez 2	24311
67	"	24322
68	"	24365
69	"	24467
70	Atl 66/Nap Hal//NE 701136/Blueboy	24760
71	Atl 66/Nap Hal//Bezostaya 1	24902
72	"	24911
73	"	25049
74	"	25081
75	"	25185
76	"	25213
77	"	25255
78	"	25316
79	"	25564
80	"	25572
81	"	25666
82	"	25672
83	Atl 66/Nap Hal//Rannaya/NE 701136	25865
84	"	25925
85	"	25935
86	"	25978
87	Atl66/Nap Hal//Rannaya/NE 701136	76Y26017
88	Nap Hal/Atl 66//NB 68510/Hyslop	26369
89	"	26373
90	Nap Hal/Atl 66//NS 11-35	26580
91	"	26583
92	"	26585
93	"	26687
94	"	26691
95	"	26697
96	Nap Hal/Atl 66//Lovrin 12	26852
97	"	26872
98	Nap Hal/Atl 66//Rannaya/Lovrin 12	27305
99	Nap Hal/Atl 66//Aurora	27519
100	Nap Hal	73Y4001
101	Atlas 66	P.S
102	INIA 66	76Y51203

Table 1. Continued.

Entry	Pedigree	Source
103	CI 13449	14413
104	Nap Hal/Atl 66//TR535	27703
105	"	27704
106	"	27707
107	"	27751
108	"	27756
109	"	27773
110	"	27798
111	"	27839
112	"	27923
113	NB 68570/Excelsior//Atl 66/Nap Hal	28053
114	"	28155
115	Atl 66/Nap Hal//NE 701139/Dwf. Bez.	28564
116	Atl 66/Nap Hal//TX 62A2522-1-4	28947
117	"	28955
118	"	28996
119	"	29200
120	Atl 66/Nap Hal//Carifen 12	29962
121	Atl 66/Nap Hal//Centurk	30080
122	"	30152
123	"	30170
124	"	30172
125	Nap Hal/Atl 66/4/Likafen/3/Atl 66/Cmn/2/Hume	30219
126	Nap Hal/Atl 66//Blueboy II	30392
127	"	30408
128	"	30413
129	"	30494
130	"	30526
131	"	30537
132	Nap Hal/Atl 66//NE 701134/Aurora	76Y30575
133	"	30653
134	"	30695
135	"	30697
136	Nap Hal/Atl 66//Gage/Lancer, (NE 68427)	30856
137	Nap Hal/Atl 66//Sort 12-13	30888
138	"	30897
139	"	30929
140	"	30962
141	"	31002
142	"	31007
143	"	31031
144	"	31045
145	Nap Hal/Atl 66//F266-68/Lancota	31214
146	Nap Hal/Atl 66//F22-70	31377
147	"	31393
148	"	31403
149	"	31453
150	"	31477
151	Nap Hal	73Y4001
152	Atlas 66	P S.
153	INIA 66	76Y51203
154	CI 13449	14413

Table 1. Concluded.

Entry	Pedigree	Source
155	Nap Hal/Atl 66//F22-70	76Y31495
156	"	31581
157	"	31619
158	Nap Hal/Atl 66//Centurk	31659
159	"	31672
160	Nap Hal/PI 221506	31787
161	"	31815
162	Ciano F67/22A(CI 5484)	32117
163	NB 69430/2/NB 68713/PI 176217	32685
164	Nap Hal/CI 13449	51004
165	"	51043
166	"	51048
167	"	51050
168	"	51055
169	"	51058
170	Nap Hal/Atlas 66	51037
171	Nap Hal/CR 8156	51059
172	"	51084
173	"	51085
174	Nap Hal/Pitic 62	51107
175	Nap Hal/C.B. 113	51087
176	CNO-7 Cerros/No. 66-Tiba	76Y51111
177	(Cal/CC-8156/CNO"S") Cal-Sar	51113
178	"	51114
179	Tob-Turpin/No 66	51118
180	"	51119
181	CNO-7 Cerros/CNO-Pj 62//Tob-Cfn-Bb	51129
182	Nap Hal	73Y4001
183	Atlas 66	P S.
184	INIA 66	76Y51203
185	CI 13449	14413

Table 2. Pedigrees of the entries in the third high protein-high lysine winter wheat observation nursery grown in 1977.

Entry	Pedigree	Source
1	Bezostaya 1	72Y
2	CI 13449	76Y12413
3	Centurk	12411
4	Lancota	12412
5	Atl 66/Cmn//?	12062
6	"	12063
7	Jinkwang//Atl 66/Cmn	12397
8	"	12398
9	Jang Kwang//Atl 66/Cmn, (NB 66574)	12013
10	"	12014
11	"	12082
12	Fert. F_3 3367 (3547)/CI 13857//Atl 66/Cmn	76L9112
13	CI 13449/3/Atl 66/Cmn/2/Wrr	76Y12006
14	CI 13447/3/Lcr/2/Atl 66/Cmn	12019
15	Atl 66/Cmn//NB 69655	76L9105
16	"	76Y10705
17	Nap Hal/CI 13449	12034
18	Favorit/5/Cirpiz/4/Jang Kwang/2/Atl 66/Cmn/3/ Velvet, NE 7060	12319
19	"	12320
20	"	12322
21	"	12369
22	"	12372
23	"	12376
24	"	12380
25	"	12381
26	"	12382
27	"	12384
28	Timwin/NB 68646	12035
29	Ctk/3/Aiv/CI 13857/2/Sel. 14-53	12042
30	NB 68437/NB Rest. 3954	76L10617
31	"	10618
32	NB 68437/3/Atl 66/Cmn/2/NB 69689	12048
33	NB 69633/4/Suwon 85/3/Atl 66/Cmn/2/Hume	9009
34	"	9010
35	"	9071
36	NB 69633/4/Atl 66/Cmn/2/Wrr/3/NB 69655	9073
37	Backa//Suwon 85/Purd. 4930A6-28-2-1	76Y12349
38	"	12350
39	Backa/4/NB 69566/3/Fert F_3 3524/2/Tmp./CI 12406	12334
40	Sava//Purd. 4930A6-28-2-1/NB 69655	12387
41	"	12388
42	Sava//Purd. 4930A6-28-2-1/NB 69655	76Y10463
43	Atl 66/Cmn//Nebr. Rest. 3547	76L9059
44	NB 69566/4/Suwon 85/3/Atl 66/Cmn/2/Hume	9067
45	"	9324
46	"	76Y10638
47	"	10639
48	"	10636
49	Zg 5994-66/3/Aiv/CI 13857/2/Fert F_3 3547/CI 13857	12357
50	Zg 5994-66/3/Atl 66/Cmn/2/NB 69655	12327
51	Bezostaya 1	72Y40

Table 2. Continued.

Entry	Pedigree	Source
52	CI 13449	76Y12413
53	Centurk	12411
54	Lancota	12412
55	Zg 5994-66/3/Atl 66/Cmn/2/NB 69655	12328
56	Strampelli/3/Aiv/CI 13857/2/Fert. F_3 3547/CI 13857	12364
57	NE 701152/Kavkaz	76L10521
58	NE 701134/MV 69-30	76Y6113
59	NB 69559/NS 10-96	5042
60	NB 68513/NS 974	12129
61	Dwf. Bez /4/Hokuei/3/Lcr/2/Atl 66/Cmn	5086
62	NB 68570//Zlatna dolina/NB 69655	76L6719
63	Tx 1682/3/NB 68437/2/NB 66573/CI 13449	9253
64	Excelsior/4/NS 322/2*Sut Sel. 65600/3/NB 69566	6737
65	"	76Y6739
66	NE 70654/Blueboy	5094
67	"	5098
68	"	5114
69	Nrn 16/CI 12500/2/Bsn/3/Bez. 4/NB 69595	5133
70	"	76L5141
71	"	5142
72	"	76Y5145
73	Rannaya 12/Bezostaya 4	12260
74	"	12261
75	"	12262
76	Dwf. Bez./3/CI 13447/2/Atl 66/Cmn	76L5158
77	NS 984-1/Centurk	6197
78	Likafen/4/Tx 2607-6/3/NB 66575/2/Nebr. Rest. 3527/Bez. 1	76Y12272
79	Lancota/F9-67	76L5176
80	"	76Y5193
81	Tx 1682/3/NB 69566/2/Yumasak/Timwin	6765
82	"	6787
83	NB 68437/Bezostaya 1	76L9224
84	"	76Y10186
85	Bez.1//Nord. Desprez/2*Sel. 101Cor. 63—130—66—5	76Y12273
86	NE 701136/Centurk	12140
87	MV 69-05/4/Cmn/Ot/2/Atl 66/Cmn/3/NB 68437	12142
88	"	12143
89	NB 6719/3/NB 69565/2/Suwon 85/NB 6824819	6900
90	Zg 4505-68/4/NB 66490/2/Bez/Argelato/3/NB 69565	6924
91	"	6931
92	"	76L6952
93	"	76Y6954
94	NE 701154/Skorospelka	12159
95	NE 701136/NS 622	76L5284
96	"	76Y5285
97	"	5309
98	Homestead/4/Bez. 4/3/Atl 66/Cmn/2/Wrr	5326
99	NE 701154/Jubileinaia	12160
100	Homestead/NB 69566//Libellula	6974
101	Bezostaya 1	72Y40
102	CI 13449	76Y12413
103	Centurk	12411

Table 2. Continued.

Entry	Pedigree	Source
104	Lancota	12412
105	Sanja/NE 70654	6346
106	Favorit/3/Atl 66/Cmn/2/Hume/4/NB 68510	5383
107	NE 701139/Blueboy	5423
108	"	5430
109	Atl 66/Nebr Rest. 3547	5448
110	NB 68513/Libellula	6374
111	Bez. 1/3/Strampelli/2/NB 6824625/NB 69655	6995
112	ID 0032/4/Homestead/3/Atl 66/Cmn/2/Wrr	5457
113	"	76L5468
114	NB 69559/Dacia	76Y12162
115	Tx 1682/NE 70654	6390
116	NB 65671/ID 0033//NS 11-35	11010
117	Bez. 1/3/Sava/2/Purd. 4930A6-28-2-1/NB 69655	12286
118	Backa/2/NB 6824819/NB 69652/3/ID 0032	11036
119	391-56-D1/Tmp/2/Atl 66/Cmn/3/Fert F_2/Cmn/Ky 58/ Nth/(C-T-M-H)2/4/NE 70654	5538
120	Bez 1//ID 0032/NB 681068	11083
121	Rannaya/NE 701136	10200
122	NB 69559/NE 701134	12168
123	"	12169
124	Rannaya/F369-65	6427
125	"	6435
126	"	6440
127	Excelsior/3/Atl 66/Cmn/2/Tx 2607-6	12171
128	Excelsior/3/Atl 66/Cmn/2/Tx 2607-6	76Y12172
129	"	12174
130	"	76L11104
131	"	76Y10092
132	NE 701134/Blueboy	76L5616
133	Ctk/3/Atl 66/Cmn/2/Tx 2607-6	76Y12297
134	"	12300
135	"	12305
136	NB 68570/Bolal	76L9237
137	Nap Hal/CI 13449	76Y12031
138	"	11136
139	Cmn/Ot/5/Atl 66/2/Cmn/6/391-56-D1-8/3/Tmp/9/ Zlatna dolina/8/Atl 66/Cmn/4/Fert. F_3 3547/7/ CI 13857	5729
140	Sturdy/3/NS 310/2/NB 69566/NB 69655	11166
141	ID 0033/Purd. 4930A6-28-2-1//Moldova	12311
142	"	5782
143	"	5790
144	"	5799
145	NB 69565/2/NB 65671/NB 69655/3/Homestead	11192
146	SS/CI 12500/2/Rch/Pn/3/Cnn/4/SS/CI 12500/Pn/ Cnn/5/Nebr. Rest. 3899/6/NE 701154	5841
147	Aurora/NB 69566	76L9239
148	"	10216
149	Bezostaya 1/Hyslop	76Y10113
150	NS 974/NB 69565	6504
151	Bezostaya 1	72Y40

Table 2. Concluded.

Entry	Pedigree	Source
152	CI 13449	76Y12413
153	Centurk	12411
154	Lancota	12412
155	NS 974/NB 69565	76L6506
156	"	6510
157	NB 68513/Dwarf Bezostaya	76Y12243
158	NE 701136/Zg 976-69	76L9183
159	NB 68510/Hyslop	76Y5921
160	Cmn/Ot/2/Atl 66/Cmn/3/391-56-D1-8/Tmp/4/Clarion /5/Atl 66/Cmn/2/Hume	5929
161	"	11228
162	"	11242
163	"	11243
164	Hyslop/NE 701136	12244
165	NS 9841/NE 701136	12245
166	Moldova/2/NB 6824819/NB 69655/3/NS 974	11259
167	"	5981
168	"	11266
169	NE 701134/F226-68	76Y12246
170	NB 68570/Rousalka	6026
171	NB 69457/NS 10-96	6033
172	NB 66403/5/NB 69581/4/NB 69565/3/Jing Kwang /2/Atl 66/Cmn	12314
173	"	12315
174	"	12316
175	Rannaya/Lovrin 13	12199
176	"	12205
177	"	76L6542
178	"	76Y6547
179	"	6557
180	NE 701136/NS 622/2/Tx 1682/NE 70654	76L11286
181	Nap Hal/Lancer/2/NB 68513/Moldova	76Y11410
182	SD 69110//Tx 1682/NE 70654	76L11504
183	Nap Hal/Lancer/2/NB 68510/Sava	76Y11612
184	Nap Hal/Lancer/2/NB 69559/Centurk	76L11644
185	Nap Hal/Trader/2/Frontiera/Jang Kwang	76Y11663
186	CO 692413/Kavkaz	11694
187	"	11704
188	SD 69110/Likafen	11709
189	SD 69107//Dwf. Bez /NE 701134	11721
190	"	76L11722
191	?//Rousalka/NE 701154	11732
192	"	76Y11739
193	Bezostaya 1	72Y40
194	CI 13449	76Y12413
195	Centurk	12411
196	Lancota	12412

Nursery Sites

The spring wheat nursery was distributed to 19 sites in 15 countries (Table 3). Ten-gram wheat samples for quality analyses were received from eight sites. The nursery grown at Tres Arroyos, Argentina was actually grown in 1978 since the seed for planting was requested much later than for the other nurseries. Field data only, collected at Tres Arroyos, is included in this report since the seed samples were returned one year after seed from the other nurseries was analyzed.

The winter wheat nursery was distributed to 31 sites in 21 countries (Table 4). Twenty-three sites were located in the Northern Hemisphere, and 8 sites were in the Southern Hemisphere. Quality analyses were performed on seed samples returned from 13 locations. Agronomic data were received from 17 sites. Ten sites harvested all 196 entries. The data from Tres Arroyos, Argentina was not included in the yield means computed over locations.

DATA SUMMARIZATION AND STATISTICAL TREATMENT

The University of Nebraska Wheat Quality Laboratory performed whole grain quality analyses as follows:

Table 3. Nursery sites and cooperators of the third high protein-high lysine spring wheat observation nursery in 1977.[a]

Country	Station	Cooperator(s)
Afghanistan	Kabul	U N F.A.O. Officer
Afghanistan	Jalalabad	U.N. F.A.O. Officer
Algeria	Algiers	Directeur de Recherche
Argentina	Tres Arroyos[2]	Ing. Hector L. Carbajo and Liliana D. Gomi
Brazil	Passo Fundo	Drs. A. C Baier and Cantidio N. A. de Sousa
Brazil	Pelotas	Mr. Milton B. Rocha
Chile	Santiago	Dr Ignacio Ramirez
Egypt	Cairo	Dr. J P. Srivastava
India	Ludhiana	Drs. M V. Rao and K S. Gill
Iran	Ahwaz	Dr H. Kaveh and Mr. M Dad-Ayin
Iraq	Sulaimaniya	Drs M. Aziz, A I Alaka, and Y. Y. Klaimi
Italy	Bologna	Dr. Mauro-Buonfigholi
Italy	Rieti	Dr. G. Zitelli
Jordan	Amman	Mr. Zulkifl Ghosheh and Dr. H. Gharaybeh
Pakistan	Islamabad	Dr. M. Tahir
Spain	Alcala de Henares	Ing. E. Sanchez-Monge
Syria	Aleppo	Dr. J. P. Srivastava and Mary Muhtar
USA	Arizona	Drs. V. A. Johnson and K. D Wilhelmi
USA	California	Dr Cal Qualset

[a]Seed was distributed to 19 sites in 15 countries
[b] Seed was distributed late, and was planted in 1978

Table 4. Nursery sites and cooperators of the third high protein-high lysine winter wheat observation nursery in 1977.[a]

Country	Station	Cooperator(s)
Afghanistan	Kabul	U.N F.A.O. Officer
Afghanistan	Herat	Dr. Sayed A. R. Pakdil, M. Nasim, and the U N F.A O. Officer
Argentina	Balcarce	Ing. R. Bedogni
Argentina	Bordenave	Ing. S. Garbini and Juan R. Lopez
Argentina	Tres Arroyos[b]	Ing Hector L. Carbajo
Brazil	Passo Fundo	Drs A C Baier and Cantidio N. A. de Sousa
Chile	Temuco	Dr. Juan Acevedo
Ecuador	Quito	Drs Mario L. Hidalgo, E. Ampuero, and Art Klatt
France	Orgerus[b]	Mr. J. P. Hardouin and C. C. Benoist
Hungary	Martonvasar	Dr. L. Balla
India	Shalimar	Dr M. V Rao
India	Simla	Dr. M. K. Upadhyay
Iran	Hamadan	Dr. H. Kaveh
Iran	Karaj	Dr. H. Kaveh
Iraq	Sulaimaniya	Drs. M. Aziz, A I. Alaka, and Y. Y. Klaimi
Italy	Bologna[b]	Dr Mauro Buonfiglioli
Jordan	Amman	Dr. Zulkifl Ghosheh, N Katkhuda, S Tahat, I. Jaber, and M. H. A. Aziz
Korea	Suwon	Drs Chang H. Cho and H. O. Choi
Lebanon	Beirut	Dr. A. Alameddine
Mexico	Toluca	CIMMYT Bread-Wheat Staff
Nepal	Kathmandu	Mr A. N. Bhattarai
Peru	Lima	Dr. M. Romero
South Africa	Bethlehem	Mr. T. C. Nel, I. B. J. Smit, K. W Pakendorf, and C M. French
Spain	Logrono	Dr. P. de la Hera
Turkey	Ankara	Drs Basri Devecioglu and J M. Prescott
Turkey	Erzurum	Drs. F. Tosun and C. Koycu
Turkey	Eskisehir	Dr. Turhan Atay
USA	Arizona	Drs. V. A. Johnson and K D. Wilhelmi
USA	Nebraska	Drs V. A Johnson and K. D. Wilhelmi
USA	Oklahoma	Drs E. L. Smith and O. G. Merkle
USA	Oregon	Drs. W. Kronstad, W. L McCuistion, and F. Cholick

[a]Seed was distributed to 31 sites in 21 countries
[b]Seed was distributed late, and was planted in 1978

Protein: Measured by the Kjeldahl method and reported on a dry weight moisture basis. Unit of measurement = percent.

Lysine/Protein: Measured on a Beckman 120C amino acid analyzer. Unit of measurement = percent (% of protein).

Adjusted Lysine/Protein: Lysine/protein values adjusted to population mean protein levels using regression procedures. Unit of measurement = percent.

Yield of Grain: Reported by most cooperators as grams per plot. Values for the winter wheat nursery were converted to quintals per hectare (q/ha) for more meaningful comparisons among sites.

Date of Flowering or Heading: Unit of measurement = days from January 1, 1977.

Plant Height: Unit of measurement = centimeters.

Disease and other agronomic data collected by cooperators are reported in individual site tables together with protein and lysine data.

Individual site values and rankings for protein and lysine for entries in the third HP-HL spring wheat nursery appear in Tables 5-15. Simple correlation coefficients between the grain quality traits also are shown. Data for the check cultivars from each site were subjected to analyses of variance procedures whenever possible. This was done to obtain an estimate of experimental error. Several sites had too many missing observations to utilize these analyses. Least significant differences (L.S.D.) or standard deviations, coefficients of variation (C.V.), and means of the check varieties are shown in the tables.

Table 16 contains the means and rankings of protein and lysine of the 185 entries in the spring wheat nursery, averaged over five sites. Yield data from the replicated nursery at Yuma, Arizona, also are included. An analysis of variance over entries and locations was not possible, since so many entries were missing at various locations. Means, standard deviations, and C. V's are shown for the check varieties and over all entries.

Individual site values and rankings of protein and lysine for the entries in the third HP-HL winter wheat nursery are shown in Tables 17-35. Treatment of the data for the winter wheats was the same as for the spring wheats. Since many of the sites returned all 196 entries, an analysis of variance over locations was possible. Table 36 contains the means and rankings of protein and lysine, and yield averaged over seven and nine sites, respectively. In addition, plant height and flowering means are shown as averaged over 13 and 11 sites, respectively.

Seven locations provided seed samples and agronomic data for all 196 nursery entries. The data summarization from these sites is shown in Table 37.

RESULTS AND DISCUSSION

Spring Wheat

Mean protein and lysine values for spring wheat entries averaged over five locations are reported in Table 15. Protein values ranged from 21.2 to 13.1%, with an overall average of 17.1%. Protein means of the check varieties were 18.9, 18.5, 15.6, and 14.1% for Nap Hal, Atlas 66, INIA 66, and CI 13449, respectively. Only 12 of the experimental lines exceeded the protein mean of Nap Hal.

Lysine (% of protein) ranged from 2.6 to 3.2% and averaged 2.9%. The adjusted lysine values ranged from 2.8 to 3.4% and averaged 3.1%. CI 13449 had the highest lysine values among the check varieties, but it also had the lowest protein value.

Nap Hal had high protein and high lysine values, but had relatively low productivity in the replicated Arizona nursery. Atlas 66 also with high protein values did not have high lysine, or good productivity. The check varieties averaged 42.6, 40.6 26.8, and 13.8 q/ha for CI 13449, INIA 66, Nap Hal, and Atlas 66, respectively, at Yuma, Arizona.

The Nap Hal/CI 13449 population was the most productive at Yuma, Arizona, with entries ranging in yield from 65.6 to 42.7 q/ha, and averaging 51.2 q/ha. The overall nursery mean was 36.6 q/ha.

Excellent combinations of protein, lysine, and yield potential are shown in the populations below.

Pedigree	Entry no	Protein %	Lysine/ protein %	Adjusted lysine/protein %	Yield[a] q/ha
Nap Hal/Atl 66//NS 11-35	90	18 2	2 8	3.1	38.7
	91	17 2	2.9	3.2	40.1
	92	17 8	3.0	3.2	35 3
	93	19 0	3.0	3.2	32 8
	94	19 4	2 8	3.1	31 9
	95	16.3	3 1	3.3	44.4
Nap Hal/Atl 66//TR 535	104	17.9	3.0	3.3	35.4
	105	17.6	3.1	3.3	42.8
	106	17.7	3.0	3.2	36 8
	107	15.9	3.1	3 3	35 1
	108	16.5	3.0	3 3	39 0
	109	16.6	3.0	3 3	45 5
	110	17.2	3.0	3 2	40.1
	111	18.0	3 2	3.4	37.1
	112	17.1	2 9	3.2	49 3
Nap Hal/CI 13449	164	16.5	3 0	3.2	49.6
	165	16.3	3.0	3.2	50.2
	166	14.2	3.1	3.2	65 6
	167	14.6	3.1	3.3	47.7
	168	15.4	3.1	3.2	42.7
	169	14.6	3.2	3.3	51.4

[a]From a replicated nursery at Yuma, Arizona

The selections from these populations exhibited relatively consistent performance. All of the entries in each population are listed as opposed to a selected few.

Comparisons among these and other population means and check varieties are made in the tabulation that follows.

Pedigree	Protein %	Lysine/ protein %	Adjusted lysine/ protein %	Yield[a] q/ha
Nap Hal/Atl 66//Sort 12-13 ($\bar{x}$ of 8 lines)	18.7	2.8	3.0	35.4
Atl 66/Nap Hal//Skorospelka 35/ NE 701137 ($\bar{x}$ of 18 lines)	18.3	2.8	3.0	33.0
Nap Hal/Atl 66//Lovrin 12 ($\bar{x}$ of 2 lines)	18 2	2.9	3.1	40.4
Nap Hal/Atl 66//NS 11-35 ($\bar{x}$ of 6 lines)	18.0	2.9	3.2	37.2
Nap Hal/Atl 66//TR 535 ($\bar{x}$ of 9 lines)	17.2	3.0	3.3	40.1
Nap Hal/CI 13449 ($\bar{x}$ of 6 lines)	15.3	3.1	3.2	51.2
Check varieties				
Nap Hal	18 9	3.0	3.2	26.8
Atlas 66	18.5	2.7	2.9	13 8
INIA 66	15.6	2.8	3.0	40.6
CI 13449	14.1	3 2	3 3	42.6

[a]From a replicated nursery at Yuma, Arizona

The six experimental populations compare favorably with the check varieties. The Nap Hal/Atl 66//Lovrin 12 and Nap Hal/Atl 66/ /TR 535 lines were essentially as productive as INIA 66 at Yuma. Along with their good productivity, these populations had higher grain protein and higher lysine values than INIA 66.

The latter population equaled CI 13449 (the high lysine check) in adjusted lysine with 3.3%. The Nap Hal/Atl 66//Sort 12-13 population had a slightly higher protein mean than Atlas 66 and had an advantage in lysine and yield as well.

Winter Wheat

Mean protein and lysine values for winter wheat entries averaged over locations are reported in Tables 36 and 37. Table 36 lists the means by decreasing protein values. Table 37 contains the entry means of agronomic and quality data from seven sites having no missing data. Correlation coefficients among the traits also are shown.

Averaged over seven sites, the nursery entries ranged in protein from 17.6 to 12.7%, with an overall mean of 15.5%. Lancota, Bezostaya 1, CI 13449, and Centurk averaged 15.3, 15.0, 13.4, and 13.3% protein, respectively. The nursery range for lysine (% of protein) was

from 2.7 to 3.1% and from 2.8 to 3.3% for adjusted lysine.

Yield means averaged over nine sites ranged from 44.1 to 23.8 q/ha. The overall nursery mean was 34.9 q/ha. Lancota, Centurk, Bezostaya 1, and CI 13449 had yield means of 38.2, 37.1, 34.1, and 27.6 q/ha, respectively. Lancota had the best combination of protein, lysine, and yield among the check varieties. (Lancota/F9-67) and (Centurk/3/Atl 66/Cmn/2/Tx 2607-6) were two of the most productive populations in the nursery, averaging 42.6 and 42.0 q/ha, respectively.

High protein frequently is associated with depressed grain yield. Also, increases in the grain protein content of wheat normally are associated with depression of lysine per unit protein. Consequently, all of these factors must be considered in selecting the best germ plasm for hybridizing.

Sixty-nine entries exceeded the highest protein value of Lancota (15.8%). Many of these entries also possessed good levels of lysine and yield. Favorit/5/Cirpiz/4/Jang Kwang/2/Atl 66/Cmn/3/Velvet, (NE 7060) proved to be a stable population with desirable quality and agronomic traits. This population performed well in the 2nd HP-HL nursery in 1976, and repeated that performance in 1977. Mean values for the 10 entries of this population taken from Table 37 are shown below.

Pedigree	Entry no.	Protein %	Lysine/ protein %	Adjusted lysine/protein %	Yield q/ha	Plant height cm
Favorit/5/Cirpiz/4/Jang Kwang/2/ Atl 66/Cmn/3/Velvet, NE 7060	18	16 3	2.9	3.1	43.0	98
	19	16.8	2 8	3 1	39 3	99
	20	16.5	2 9	3.2	37.7	96
	21	16.9	2 8	3.0	35.7	98
	22	16.7	2.9	3.1	37.8	98
	23	16 6	2.9	3 1	39.9	98
	24	16.5	2 9	3 1	37 9	100
	25	16.5	2.8	3.1	34.0	98
	26	16.5	2 8	3.0	36.7	97
	27	16.2	2.8	3.1	39.6	98
NE 7060 ($\bar{x}$ of 10 lines)		16.6	2.9	3 1	38.2	98
Lancota		15 2	2.8	3 0	42.2	114
Bezostaya 1		14.7	2.8	3.0	37.8	99
CI 13449		13.3	3 2	3.2	30 1	83
Centurk		13.4	3.0	3.1	41.3	106

NE 7060 has good lysine, considering its high protein. It was competitive with Bezostaya 1 in yield and had shorter straw than Lancota and Centurk. Lancota proved to be the tallest entry in the nursery. CI 13449, on the other hand, was as short or shorter than any of the lines tested.

Other populations containing lines with promising combinations of protein, lysine, and yield from Table 37, follow.

Pedigree	Entry no	Protein %	Lysine/ protein %	Adjusted lysine/protein %	Yield q/ha	Plant height cm
Sava//Purdue 4930/NB 69655	40	16.4	2.9	3.2	41.0	106
	41	16 3	2.9	3.2	38.9	105
	42	16.5	2.9	3.2	39.2	106
ID 0033/Purdue 4930//Moldova	141	16.0	2.9	3.1	44.2	96
	142	15.6	2.9	3 1	42.9	99
	143	15.6	3.0	3 3	40.3	85
	144	16.1	3.0	3.2	37.5	87
NB 66403/5/NB 69581/4/NB 69565/3/ Jing Kwang/2/ Atl 66/Cmn	172	16.9	2.8	3.0	37 5	99
	174	16.9	2.9	3.1	37 6	99
Rannaya/Lovrin 13	175	15.9	2.8	3.0	36.4	99
	176	15 7	2 9	3.1	38.0	99
	177	15 5	2 8	3 0	41.8	97
	178	15 5	2 8	3.0	41.0	98
	179	15.6	2.9	3.1	37 7	92
Sava//Purdue 4930/NB 69655	$\bar{x}$	16.3	2.9	3.2	39 7	106
ID 0033/Purdue 4930//Moldova	$\bar{x}$	15.8	3.0	3 2	41.2	92
NB 66403/5/NB 69581/4/NB 69565/3/ Jing Kwang/2/ Atl 66/Cmn	$\bar{x}$	16 9	2.9	3.0	37.6	99
Rannaya/Lovrin 13	$\bar{x}$	15.6	2.8	3.0	39 0	97
Lancota		15.2	2.8	3.0	42.2	114
Bezostaya 1		14.7	2.8	3.0	37.8	99
CI 13449		13.3	3.2	3.2	30 1	83
Centurk		13.4	3.0	3.1	41.3	106

ID 0033/Purdue 4930//Moldova equaled Centurk in yield and lysine content. It averaged 2.4 percentage points higher protein and was 14 centimeters shorter in plant height than Centurk.

Averaged over 11 sites (Table 36), entry 5 was the earliest to flower at 177 days from January 1, 1977. The latest varieties needed 195 days from January 1 to reach the flowering stage. The average nursery flowering date was 185 days from January 1.

Other data provided by cooperators such as maturity, winter survival, and disease readings are reported in the individual location tables.

Table 5. Protein and lysine values and ranking together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Jalalabad, Afghanistan in 1977

Entry no.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g	Plant height cm	Lodging %	Days to Heading from Jan 1	Days to Ripening from Jan 1	Percent stand
Nap Hal	14.7	107	2.8	163	3.0	167	520	118	50	99	132	95
INIA 66	17.9	16	3.0	100	3.3	70	600	107	0	84	122	90
CI 13449	12 7	172	3 3	20	3.4	38	95	95	95	105	137	95
5	14 8	102	2.9	130	3.1	143	450	110	60	84	123	95
6	14 5	119	3.0	100	3 2	108	240	103	60	100	123	90
7	13 1	166	3.2	42	3 3	70	420	107	30	85	130	95
8	16 0	60	2.8	163	3 0	167	220	124	30	83	124	80
9	14 6	115	2.9	130	3.1	143	350	115	20	86	124	80
10	14 6	115	3 2	42	3 4	38	400	115	90	85	124	90
11	15 0	98	2.9	130	3 1	143	300	122	98	76	121	90
12	14.7	107	2.9	130	3.1	143	340	113	85	74	118	95
13	14.4	124	2 9	130	3.1	143	400	120	50	70	118	95
14	14.3	128	3 0	100	3.2	108	420	112	0	60	116	90
15	19.0	4	3.1	70	3.4	38	250	130	85	60	129	90
16	13 1	166	3 1	70	3.2	108	320	120	85	83	129	95
17	15 0	98	2 8	163	3.0	167	420	105	98	83	121	90
18	15.6	80	2 8	163	3.0	167	300	110	90	84	123	95
19	14 6	115	3.0	100	3 2	108	300	113	90	77	124	95
20	17.9	16	2.7	173	3.0	167	440	110	70	84	126	95
21	15 4	86	3.0	100	3 2	108	400	120	0	101	134	90
22	14.7	107	2.9	130	3 1	143	425	110	0	82	123	85
23	16 6	47	2.8	163	3 1	143	300	113	0	76	123	90
24	16.1	56	2.9	130	3 2	108	295	110	0	80	123	90
25	17.3	29	2.7	173	3 0	167	300	115	50	81	125	85
26	17.1	31	2.7	173	3 0	167	320	117	98	81	123	85
27	17.5	27	2.9	130	3.2	108	210	107	98	79	124	90
28	14.8	102	2.9	130	3.1	143	200	128	98	86	129	75
29	18.9	5	2.5	177	2.8	177	120	127	97	99	131	90
30	19.0	4	2.6	176	2.9	175	150	117	96	101	132	90
31	17 4	28	2 8	163	3 1	143	220	113	94	101	131	85
32	16.0	60	2 8	163	3.1	143	235	110	100	101	132	90
33	15 2	91	2 9	130	3.1	143	310	118	100	85	126	90
34	15.9	65	2.9	130	3.1	143	350	105	100	85	123	95
35	15 3	89	2 9	130	3.1	143	285	98	100	86	122	85
36	18 1	11	2.9	130	3.2	108	90	118	97	102	132	95
37	17.0	34	3 0	100	3.2	108	190	100	95	99	127	90
38	18 5	6	2 8	163	3.1	143	280	114	98	82	123	90
39	17.9	16	2.8	163	3.0	167	110	115	98	97	131	90
40	17 0	34	3 1	70	3 3	70	150	110	97	86	124	85
41	16 9	38	2.8	163	3 1	143	400	112	50	82	122	95
42	15 9	65	2 8	163	3 1	143	200	113	30	82	122	90
43	18 2	10	2.8	163	3 0	167	300	120	60	81	122	90
44	18.2	10	2.8	163	3.1	143	250	115	75	85	123	90
45	18 3	8	2.7	173	2 9	175	320	118	50	85	124	85
46	18 3	8	2.7	173	3 0	167	190	120	85	98	125	85
47	16 5	49	2.8	163	3 0	167	450	114	50	80	122	85
48	16.9	38	2.9	130	3.2	108	220	114	60	97	128	85
49	17.7	20	2.7	173	2.9	175	300	118	80	86	123	80
50	17.5	27	2 8	163	3 1	143	120	123	70	94	130	90
Nap Hal	16.6	47	3.3	20	3.6	10	200	133	85	102	130	90
INIA 66	14.2	135	2.9	130	3.1	143	700	105	0	74	122	85
CI 13449	13.4	155	3 4	12	3.6	10	150	85	0	v. late	135	85
55	15.8	74	3 0	100	3 2	108	390	103	0	81	122	85
56	15.9	65	3 0	100	3.3	70	350	109	0	81	122	85
57	16.2	54	2 8	163	3.0	167	450	123	50	80	124	85
59	16.7	44	2 8	163	3.1	143	300	105	60	80	125	85
60	17.6	23	2 8	163	3.0	167	620	118	0	76	126	85
61	15.4	86	2.6	176	2 8	177	450	90	0	87	131	90
62	11.9	177	3.3	20	3.3	70	390	93	0	86	123	85
63	12 3	175	3 6	1	3.6	10	400	93	0	83	123	85

Table 5 Protein and lysine values and ranking together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Jalalabad, Afghanistan in 1977. (Continued)

Entry no.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g	Plant height cm	Lodging %	Days to Heading from Jan. 1	Days to Ripening from Jan. 1	Percent stand
64	14 3	128	3.2	42	3.4	38	410	112	0	82	123	90
65	12 9	170	3.2	42	3.3	70	320	112	0	81	123	80
66	15 8	74	2 8	163	3.0	167	310	112	0	87	123	95
67	13.1	166	3 3	20	3 4	38	150	120	0	100	134	95
68	15.0	98	3 1	70	3.3	70	300	90	0	81	122	95
69	13.4	155	3.0	100	3.1	143	540	120	30	81	123	90
70	13.1	166	3.1	70	3.2	108	220	124	20	79	88	85
72	12 7	172	3.2	42	3 2	108	400	124	30	81	120	95
73	12 9	170	3 1	70	3 2	108	250	120	30	94	123	85
74	14 0	143	2 9	130	3 1	143	350	95	50	85	122	95
75	15.3	89	2.9	130	3.2	108	345	113	60	85	122	95
76	14.0	143	3.1	70	3.3	70	240	115	70	84	123	85
77	15 5	83	2 9	130	3 1	143	220	115	80	86	123	80
78	13 6	152	3 1	70	3.3	70	400	110	80	83	122	90
79	13 3	159	3.0	100	3.1	143	250	117	30	87	124	80
81	12.9	170	3.2	42	3.3	70	490	107	0	78	119	90
82	12.9	170	3.2	42	3 3	70	350	103	0	79	120	85
83	12.2	176	3 5	3	3 6	10	250	115	75	85	123	70
84	13.6	152	3 4	12	3.5	17	260	103	85	85	124	75
85	13 9	146	3.4	12	3.6	10	300	105	90	87	124	75
86	14 8	102	3.2	42	3 4	38	210	105	95	83	125	80
87	14 0	143	3.2	42	3.3	70	150	110	95	86	125	75
88	16.1	56	3 0	100	3 3	70	160	103	97	87	125	80
89	14.9	99	3 0	100	3.2	108	190	107	90	99	125	70
90	15 7	77	3 1	70	3.4	38	250	107	80	86	125	85
91	14 6	115	3.1	70	3 3	70	450	115	40	83	120	85
92	15 7	77	3 2	42	3 6	17	280	110	80	87	130	85
93	17.7	20	3 0	100	3.3	70	250	105	90	100	129	80
94	17.0	34	2.8	163	3.1	143	300	93	80	100	125	80
95	14.2	135	3.2	42	3.4	38	360	100	75	86	124	90
96	15 2	91	2.8	163	3.0	167	200	110	80	86	122	85
97	13 6	152	2 9	130	3.1	143	380	105	30	86	122	85
98	14.0	143	3 0	100	3.2	108	325	110	30	85	123	80
99	15.8	74	3.0	100	3.2	108	240	104	75	101	124	70
Nap Hal	16 9	38	3.0	100	3 2	108	370	128	50	104	134	70
Atlas 66	20.5	1	2 7	173	2 9	175	---	---	--	---	---	--
INIA 66	14 6	115	2 8	163	3 0	167	620	95	0	74	122	85
CI 13449	14 1	137	3.0	100	3 2	108	240	80	50	v late	v late	85
104	16.9	38	3.1	70	3 4	38	270	85	0	99	130	90
105	16 0	60	3.1	70	3 3	70	170	85	0	98	129	85
106	15 8	74	2.9	130	3.2	108	270	85	0	97	127	85
107	14.5	119	3.0	100	3 2	108	350	95	0	95	132	85
108	14.7	107	2.9	130	3 1	143	440	97	0	97	131	90
109	13.3	159	3.2	42	3 4	38	400	100	0	94	130	90
110	12.3	175	3 2	42	3.2	108	450	110	0	97	129	95
111	14.2	135	3 2	42	3.4	38	200	75	0	97	129	85
112	12 3	175	3.3	20	3.3	70	416	100	0	97	128	90
113	14 4	124	3.0	100	3 2	108	350	105	0	80	121	85
114	15 1	93	3.0	100	3 2	108	460	115	0	80	121	85
115	14 0	143	3.2	42	3.3	70	240	75	0	100	135	80
116	15.9	65	3.1	70	3.4	38	430	95	0	102	135	85
117	14 1	137	3.1	70	3 3	70	400	97	0	97	135	90
118	13 9	146	3.1	70	3.2	108	415	98	0	97	135	90
119	13 8	148	3.1	70	3.3	70	370	97	0	97	135	85
120	13.7	149	3 0	100	3 2	108	400	96	0	98	135	85
121	14.3	128	2.9	130	3 1	143	510	115	0	86	123	85
122	14 4	124	3.0	100	3 2	108	380	124	70	86	122	90
123	16.4	52	2.9	130	3.2	108	300	125	80	96	127	85
124	15 8	74	2.8	163	3.0	167	250	120	90	86	127	90
125	17.9	16	2.8	163	3.1	143	215	95	90	99	136	80

Table 5. Protein and lysine values and ranking together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Jalalabad, Afghanistan in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height	Lodging	Days to Heading	Days to Ripening	Percent stand
	%	rank	%	rank	%	rank	g	cm	%	from Jan. 1		
126	13.8	148	3.1	70	3.3	70	320	105	50	86	127	80
127	15.0	98	3.0	100	3.2	108	280	120	50	94	127	85
128	13.3	159	3.3	20	3.4	38	390	105	60	83	127	80
129	14.4	124	3.2	42	3.4	38	270	110	70	94	125	85
130	14.3	128	3.0	100	3.2	108	360	115	75	80	124	80
131	13.9	146	3.2	42	3.3	70	280	125	55	86	124	80
132	16.2	54	3.0	100	3.2	108	400	104	85	84	122	85
133	15.1	93	3.1	70	3.3	70	300	107	75	85	123	80
134	16.8	41	3.2	42	3.4	38	400	104	65	85	123	85
135	17.1	31	3.0	100	3.3	70	230	124	80	81	130	85
136	14.5	119	3.3	20	3.5	17	380	141	75	102	132	80
137	17.6	23	3.1	70	3.4	38	330	95	80	101	131	85
138	15.8	74	3.0	100	3.2	108	360	90	30	94	131	80
139	15.9	65	2.8	163	3.0	167	400	105	20	86	127	90
140	17.5	27	2.9	130	3.2	108	370	110	0	84	125	85
141	17.7	20	2.6	176	2.9	175	460	123	0	80	122	95
142	16.5	49	2.9	130	3.2	108	200	110	30	100	129	80
143	16.0	60	2.8	163	3.1	143	400	108	10	87	124	85
144	15.3	89	2.9	130	3.1	143	380	109	5	94	124	85
145	15.5	83	3.0	100	3.3	70	210	133	90	95	130	80
146	18.0	12	2.7	173	2.9	175	250	110	85	84	128	85
147	17.6	23	2.7	173	2.9	175	420	100	0	81	128	80
148	14.2	135	2.8	163	3.0	167	320	100	50	81	130	80
149	17.8	17	2.8	163	3.0	167	425	105	0	76	128	75
150	19.1	2	2.7	173	2.9	175	260	107	85	85	128	75
Atlas 66	14.6	115	2.8	163	3.0	167	---	---	--	--	---	--
INIA 66	13.2	162	3.1	70	3.2	108	560	100	0	74	121	90
CI 13449	17.5	27	3.1	70	3.3	70	170	80	60	v. late	v. late	90
155	16.4	52	2.9	130	3.1	143	450	103	0	83	123	85
156	16.6	47	3.0	100	3.3	70	390	105	20	83	123	80
157	15.8	74	3.2	42	3.4	38	320	103	50	81	123	90
158	15.8	74	3.4	12	3.6	10	290	133	80	94	125	85
159	14.6	115	3.1	70	3.3	70	220	103	85	87	127	80
160	13.3	159	3.5	3	3.6	10	500	104	90	82	129	80
161	16.4	52	3.1	70	3.3	70	510	115	40	80	129	90
162	13.4	155	3.4	12	3.6	10	300	110	70	80	129	90
163	15.6	80	3.1	70	3.4	38	290	132	60	100	136	85
164	15.8	74	3.2	42	3.5	17	200	100	40	102	136	90
165	14.2	135	3.4	12	3.6	10	310	105	40	103	136	90
166	15.0	98	2.8	163	3.0	167	250	110	30	103	136	90
167	14.7	107	3.2	42	3.4	38	265	105	35	103	136	90
168	15.7	77	3.4	12	3.7	1	275	100	0	103	136	90
169	13.2	162	3.4	12	3.5	17	360	128	0	103	136	90
171	14.0	143	3.1	70	3.3	70	230	95	25	86	124	80
172	15.6	80	3.0	100	3.2	108	330	100	25	99	125	85
173	14.2	135	3.2	42	3.4	38	400	100	75	101	129	80
174	14.4	124	3.3	20	3.5	17	260	85	80	85	123	90
175	14.6	115	3.1	70	3.3	70	355	95	0	85	123	95
177	16.7	44	2.8	163	3.1	143	410	90	0	77	121	80
178	16.7	44	2.8	163	3.0	167	600	85	0	77	121	85
179	14.5	119	2.9	130	3.1	143	500	90	80	83	122	80
180	16.8	41	2.9	130	3.2	108	370	85	80	74	120	85
181	15.4	86	2.9	130	3.1	143	300	85	35	78	120	85
Nap Hal	16.8	41	3.1	70	3.4	38	410	120	30	102	128	80
INIA 66	15.5	83	2.8	163	3.0	167	400	90	0	71	120	90
CI 13449	13.2	162	3.4	12	3.5	17	300	85	0	107	v. late	90
186	14.2	135	3.1	70	3.3	70	600	85	0	76	121	95

Table 5 Protein and lysine values and ranking together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Jalalabad, Afghanistan in 1977 (Concluded)

Entry no.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g	Plant height cm	Lodging %	Days to Heading from Jan. 1	Days to Ripening from Jan. 1	Percent stand
Mean	15 4		3.0		3 2		328.1	107.6	46.1	88 1	126 1	86.2
Standard deviation	1.7		0.2		0.2		111.7	12.4	37.4	9.5	5.7	5.7
Coefficient of variation (%)	10.9		6.8		5 7		34.0	11 5	81.2	10.8	4.5	6.6
Means of the check varieties												
Atlas 66	17.6		2.8		3.0		---	---	---	---	---	---
CI 13449	14 2		3.2		3.4		196	86	36	107	139	89
INIA 66	15.1		2.9		3.1		580	99	0	81	122	88
Nap Hal	16.3		3 1		3.3		375	125	54	102	131	84
Check means	15 8		3.0		3 2		383 7	103.3	30 0	96 7	130.7	87

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	- 44**	.20**	.94**
Lysine/protein	-.64**	-.04	
Lysine	.78**		

** Significant at the .01 level.

Table 6. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Tres Arroyos, Argentina in 1978.[a]

Entry no.	Yield	Days to flower	Plant height	Septoria	Stripe rust	
	g	from Jan 1	cm	0-9	sev. %	resp.
Nap Hal	150	319	95	4	0	
INIA 66	265	296	80	5	T	
CI 13449	350	324	80	6	T	
5	210	304	85	6	20	MR
6	145	304	85	6	20	MR
7	300	319	95	6	50	MS
8	30	304	85	4	50	MS
9	45	304	85	4	30	MR
10	185	307	85	4	50	MS
11	255	307	85	4	50	MS
12	230	299	90	4	60	MS
13	270	299	95	4	60	MS
14	185	299	90	4	80	MS
15	230	319	95	5	60	MS
16	160	319	90	4	70	MS
17	260	304	90	5	80	MS
18	240	307	95	4	70	MS
19	225	299	95	4	70	MS
20	360	310	95	4	60	MS
21	200	324	100	4	60	MS
22	270	304	95	3	100	MS
23	170	304	95	3	100	MS
24	210	307	95	3	100	MS
25	290	310	95	4	70	MS
26	250	310	95	4	70	MS
27	160	304	100	3	50	MR
28	190	319	100	3	50	MR
29	270	317	100	3	50	MR
30	265	317	100	3	50	MR
31	190	317	100	3	50	MR
32	180	314	100	4	100	MS
33	250	304	100	3	40	MR
34	130	304	100	4	70	MS
35	210	304	105	4	70	MS
36	135	324	100	4	70	MS
37	210	310	100	3	40	MR
38	280	307	95	5	100	MS
39	200	324	105	4	60	MS
40	175	314	100	3	40	MR
41	150	304	100	5	100	MS
42	165	304	100	5	100	MS
43	170	304	100	5	100	MS
44	210	304	100	5	100	MS
45	140	304	110	4	80	MS
46	225	310	100	3	30	MR
47	250	304	100	3	30	MR
48	335	317	100	5	60	MS
49	210	304	100	4	50	MR
50	300	317	100	3	50	MR
Nap Hal	145	317	110	3	60	MS
INIA 66	420	296	90	5	50	MS
CI 13449	275	296	85	5	60	MS
55	225	304	90	5	100	MS
56	220	304	90	5	100	MS
57	95	310	95	5	100	MS
58	280	304	100	4	30	MR
59	230	304	105	4	40	MR
60	285	304	105	4	60	MS
61	145	317	75	5	70	MS
62	90	304	80	5	80	MS

Table 6. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Tres Arroyos, Argentina in 1978 2/ (Continued).

Entry no.	Yield	Days to flower	Plant height	Septoria	Stripe rust	
	g	from Jan. 1	cm	0-9	sev. %	resp
63	50	304	70	4	80	MS
64	165	304	100	5	80	MS
65	125	304	75	4	80	MS
66	210	310	100	4	80	MS
67	---	324	70	4	100	MS
68	175	307	95	5	80	MS
69	200	317	95	5	70	MS
70	170	304	95	4	80	MS
71	195	307	95	4	50	MR
72	240	304	100	4	80	MS
73	230	314	100	4	50	MR
74	220	310	100	4	50	MR
75	300	310	100	4	50	MR
76	370	310	100	4	50	MR
77	125	310	100	4	60	MS
78	250	310	90	5	100	MS
79	210	314	95	5	100	MS
80	190	310	95	5	70	MS
81	20	310	90	5	100	MS
82	115	310	95	5	100	MS
83	290	307	90	5	100	MS
84	325	304	85	5	100	MS
85	220	310	85	5	100	MS
86	390	304	85	5	100	MS
87	270	307	85	5	100	MS
88	190	310	90	4	30	MR
89	385	310	85	4	30	MR
90	150	310	90	5	90	MS
91	160	307	90	5	90	MS
92	220	310	90	5	90	MS
93	155	310	90	5	90	MS
94	155	310	90	5	100	MS
95	140	310	90	5	100	MS
96	235	310	90	5	100	MS
97	240	310	85	3	30	MR
98	60	307	85	4	50	MR
99	100	310	90	4	70	MS
100	80	319	90	4	70	MS
105	250	319	70	5	80	MS
106	220	314	70	5	70	MS
107	120	317	65	5	80	MS
108	210	317	80	5	80	MS
109	130	317	75	5	80	MS
110	175	314	80	5	80	MS
111	160	307	70	5	80	MS
112	380	307	85	5	90	MS
113	135	324	85	5	100	MS
114	190	319	100	5	100	MS
115	130	317	65	5	70	MS
116	150	317	75	5	90	MS
117	195	319	75	5	90	MS
118	115	319	70	4	60	MS
119	110	310	70	4	80	MS
120	260	310	80	4	70	MS
121	190	314	90	4	40	MR
122	180	310	95	4	50	MR
123	150	317	100	4	30	MR
124	250	314	100	4	70	MS
125	105	310	90	4	30	MR
126	75	310	90	4	T	

Table 6. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Tres Arroyos, Argentina in 1978 a/ (Concluded).

Entry no.	Yield	Days to flower	Plant height	Septoria	Stripe rust	
					sev.	resp.
	g	from Jan 1	cm	0-9	%	
127	150	314	95	4	T	
128	120	307	85	5	T	
129	255	307	90	5	50	MR
130	180	307	90	5	80	MS
131	135	310	100	5	90	MS
132	220	310	80	5	100	MS
133	145	310	80	5	50	MR
134	150	319	80	5	50	MR
135	340	310	110	4	T	
136	220	310	100	4	T	
137	350	307	75	4	50	MR
138	375	307	85	5	80	MS
139	260	307	90	5	30	MR
140	250	314	85	5	40	MR
141	180	307	95	5	80	MS
142	210	314	80	5	60	MS
143	300	307	80	5	50	MR
144	175	307	80	5	80	MS
145	190	304	90	5	70	MS
146	190	304	70	5	70	MS
147	170	299	70	5	80	MS
148	265	307	85	5	80	MS
149	130	319	90	5	60	MS
150	290	317	90	5	50	MR
Nap Hal	130	296	95	5	30	MR
INIA 66	130	304	75	5	60	MS
CI 13449	355	307	80	5	70	MS
155	220	304	90	5	70	MS
156	240	314	90	5	80	MS
157	205	314	95	5	80	MS
158	145	304	95	5	40	MR
159	159	304	100	4	60	MS
160	420	319	90	4	60	MS
161	375	319	90	5	4	
162	335	319	90	4	50	MR
163	330	319	90	4	50	MR
164	270	319	85	4	70	MS
165	160	319	85	4	80	MS
166	315	319	85	4	80	MS
167	200	319	85	4	80	MS
168	140	319	85	4	90	MS
169	125	317	80	4	70	MS
170	250	307	100	4	40	MR
171	170	317	80	5	60	MS
172	320	310	80	5	60	MS
173	390	314	80	4	30	MR
174	310	296	75	4	30	MR
175	295	296	75	5	50	MS
176	110	296	75	5	60	MS
177	190	304	75	4	T	
178	255	314	75	4	40	MR
179	230	299	75	5	30	MR
180	270	319	70	4	0	
181	175	296	70	6	T	
Nap Hal	210	296	90	5	40	MR
INIA-66	205	304	80	5	50	MS
CI 13449	455	317	80	4	40	MR
Mean	212 7	309 8	89.1			
Standard deviation	81 3	6 8	10 0			
Coefficient of variation (%)	38 2	2 2	11 2			

a/ The nursery was received too late to plant in 1977, but was grown the following year

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977.

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B Y.D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	g/ha	cm	sev. %	resp	sev. %	resp.	%
Nap Hal	20.1	64	3.0	33	3 3	21	4	31.7	85	0		30	S	15
Atlas 66	19.8	79	2.7	143	2.9	158	4	5.0	95	0		T	S	10
INIA 66	15.4	172	2.7	143	3.0	124	2	51.7	80	T	R	T	S	20
CI 13449	15.4	172	3.3	3	3.5	3	6	4.2	65	10	S	10	S	5
5	15.9	166	3.0	33	3.3	21	4	22.5	90	T	R	10	S	5
6	18.3	119	2.9	62	3.2	44	4	23.3	90	T	R	T	S	15
7	17.1	146	3.0	33	3.2	44	3	22.5	85	20	S	20	S	10
8	20.6	39	2.5	181	2.8	177	3	26.7	95	T	R	10	S	5
9	20.7	36	2.4	182	2.6	182	3	25.8	85	T	R	40	S	5
10	19.9	77	2.6	170	2.9	158	4	24.2	80	T	R	40	S	15
11	19.4	90	2.5	181	2.8	177	4	26.7	85	0		20	S	25
12	18.7	110	2.5	181	2.7	181	4	13.3	90	0		20	S	30
13	18.4	118	2.5	181	2.8	177	3	18.3	95	T	S	10	S	30
14	17.7	134	2 6	170	2.8	177	3	24.2	80	T	R	T	S	40
15	20.9	34	2.7	143	2.9	158	4	12 5	80	30	S	10	S	40
16	19.9	77	2.7	143	2.9	158	3	10.8	80	5	S	5	S	10
17	19.8	79	2.5	181	2.8	177	4	21.7	70	5	R	5	S	10
18	17.0	149	2.7	143	2.9	158	4	10.0	60	5	S	5	S	10
19	18.2	124	2.7	143	2.9	158	4	20.0	80	T	MS	10	S	10
20	16.7	152	2.8	105	3.0	124	4	20 8	70	T	R	30	S	5
21	17.0	149	2.7	143	3.0	124	3	5.0	75	0		T	S	20
22	15.7	168	2.9	62	3.1	80	3	20.8	85	5	MS	40	S	20
23	17.1	146	2.7	143	3.0	124	3	23.3	80	10	MS	T	S	30
24	19.0	104	2.8	105	3.1	80	4	10.8	80	60	S	20	S	20
25	19.6	87	2.7	143	2 9	158	4	26 1	80	T	R	5	S	10
26	20.3	54	2.6	170	2.9	158	4	30.0	85	0		T	S	15
27	19.3	96	2.7	143	3.0	124	4	21.7	80	0		5	S	5
28	18.2	124	2.8	105	3.0	124	3	30.0	90	0		5	S	5
29	18.9	107	2.8	105	3.1	80	4	30.8	85	0		5	S	5
30	20.0	69	2 6	170	2.9	158	4	30.8	80	0		T	S	5
31	20.1	64	2 6	170	2.8	177	4	25.0	90	T	R	5	S	10
32	18.0	126	2 6	170	2.9	158	4	21.7	80	50	S	5	S	20
33	18 2	124	2 7	143	2.9	158	4	30.8	90	0		20	S	40
34	18.4	118	2.6	170	2.9	158	3	39.2	85	T	MR	5	S	20
35	16.6	154	2.7	143	3.0	124	3	37.5	85	20	MS	20	S	15
36	14.9	177	2.9	62	3.1	80	3	20 8	90	10	MS	5	S	20
37	14 1	181	3 0	33	3.1	80	4	30.0	75	0		10	S	5
38	14.8	178	2.9	62	3.1	80	4	20.0	80	T	MR	20	S	5
39	16.2	160	2.8	105	3.1	80	4	20.0	75	0		10	S	5
40	18.9	107	2.8	105	3.0	124	4	11.7	75	0		T	S	5

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B.Y.D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	q/ha	cm	sev. %	resp.	sev. %	resp	%
41	19.0	104	2.7	143	3.0	124	4	22.5	80	T	MR	20	S	5
42	19.7	83	2.7	143	2.9	158	4	23.3	90	T	MR	10	S	5
43	20.4	46	2.7	143	3.0	124	4	20.8	85	T	MS	5	S	10
44	21.0	29	2.6	170	2.9	158	4	22.5	85	T	MR	T	S	20
45	20.4	46	2.7	143	3.0	124	4	30 8	90	5	MR	0		20
46	23.0	5	2 8	105	3.0	124	4	9.2	90	0		T	S	5
47	18.8	108	2.8	105	3.1	80	4	35.8	100	T	R	40	S	20
48	18.6	114	2.8	105	3.0	124	4	27.5	80	T	R	10	S	5
49	18.9	107	2.6	170	2.8	177	4	30.8	90	T	MS	20	S	10
50	20.5	41	3 0	33	3.2	44	4	34.2	80	T	MS	40	S	5
Nap Hal	20.9	34	2.6	170	2.8	177	4	26.7	95	T	R	10	S	20
Atlas 66	20.2	59	2.6	170	2.9	158	4	5.0	--	0		10	S	5
INIA 66	16.1	162	3.2	5	3.4	7	3	48.3	85	T	R	T	S	30
CI 13449	15.2	175	3.3	3	3.6	1	5	5.0	--	T	R	T	S	5
55	17.8	129	2.8	105	3.0	124	3	28.3	100	40	S	10	S	5
56	17.3	139	3.0	33	3.2	44	3	30.8	100	40	S	10	S	5
57	17.5	138	2.9	62	3.2	44	3	27.5	105	T	MR	5	S	10
58	16.6	154	3.0	33	3.3	21	3	35.0	90	0		10	S	20
59	19.9	77	2.5	181	2.7	181	3	37.5	85	T	R	5	S	10
60	20.2	59	2 6	170	2.9	158	3	24.2	90	T	MS	20	S	5
61	20.2	59	2.9	62	3.1	80	4	15.8	95	5	MR	0		10
62	16.9	150	3.0	33	3.3	21	4	23.3	75	10	MS	10	S	20
63	17.1	146	3.0	33	3.3	21	4	20.0	75	20	MR	10	S	20
64	17.6	135	2.8	105	3.1	80	4	37.5	85	10	MS	20	S	20
65	18.4	118	2.8	105	3.1	80	4	20.0	90	5	MR	5	S	20
66	19.1	100	3.0	33	3.2	44	5	22.5	85	0		T	S	20
67	18.6	114	2.8	105	3.0	124	3	10.4	50	70	S	30	S	5
68	17.2	141	2.9	62	3.2	44	4	28.3	85	0		T	S	5
69	20.6	39	2.8	105	3.0	124	4	25.0	75	0		5	S	2
70	23.0	5	2.7	143	2.9	158	4	13.3	75	0		10	S	10
71	21.5	16	2.5	181	2.8	177	4	22.5	75	0		5	S	20
72	22.2	6	2.5	181	2.7	181	4	20.0	80	0		5	S	20
74	21.3	20	2.5	181	2.7	181	4	15.0	65	T	R	20	S	20
75	21.4	18	2.6	170	2.9	158	4	10.8	70	0		10	S	10
76	21.2	23	2.5	181	2.8	177	4	11.7	75	0		5	S	20
77	21.2	23	2.6	170	2.9	158	4	15.8	75	0		10	S	10
78	18.6	114	2.7	143	3.0	124	4	27.5	85	5	MS	30	S	30
79	20.1	64	2.7	143	2.9	158	4	20.8	65	0		20	S	10
80	20.3	54	2 7	143	3.0	124	4	16.7	70	T	MR	20	S	5
81	19.2	97	2 6	170	2.9	158	4	18.3	85	T	MS	10	S	20

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977 (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B.Y.D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	q/ha	cm	sev. %	resp.	sev. %	resp.	%
82	20.0	69	2.8	105	3.0	124	4	24.2	80	0		5	S	30
83	20.1	64	2 8	105	3.0	124	4	21 7	80	T	MR	5	S	30
84	19 6	87	2.9	62	3.1	80	4	25.8	80	0		T	S	20
85	20.1	64	2.7	143	3.0	124	4	20.0	75	0		T	S	20
86	19.9	77	2.8	105	3.0	124	4	22.5	70	0		5	S	20
87	19.7	83	2.7	143	3.0	124	4	25.0	80	T	MR	5	S	20
88	20.9	34	2.8	105	3.1	80	4	13.3	80	0		5	S	20
89	20.8	35	2.6	170	2.8	177	4	19.2	80	0		20	S	20
90	21.5	16	2.6	170	2.9	158	4	12.5	80	5	MR	T	S	20
91	21 8	10	2 5	181	2.8	177	4	13.3	80	0		10	S	30
92	21.0	29	2.9	62	3.1	80	5	13.3	70	30	S	20	S	40
93	21.6	13	2.7	143	2.9	158	5	9.2	65	5	S	20	S	30
94	20.5	41	2.7	143	3.0	124	5	12.5	75	T	R	10	S	10
95	17.7	134	2.8	105	3.0	124	4	23.3	80	10	S	5	S	20
96	20.0	69	2 7	143	3 0	124	4	20.0	80	0		40	S	20
97	20.3	54	2.6	170	2.8	177	4	28.3	85	0		5	S	20
98	19.3	96	2 8	105	3.0	124	4	21.7	85	0		10	S	30
99	17 7	134	2.8	105	3.0	124	3	20.0	80	20	S	30	S	30
Nap Hal	20.9	34	2.8	105	3.0	124	4	19.2	75	0		20	S	10
INIA 66	15.6	169	3.0	33	3 2	44	4	24.2	70	0		T	S	30
CI 13449	13.3	182	3.3	3	3.5	3	5	5.8	--	0		5	S	5
104	19.7	83	2 9	62	3.2	44	5	12.5	55	0		T	S	30
105	17.5	138	3 0	33	3.2	44	4	12.5	55	0		T	S	10
106	18 6	114	3.0	33	3.2	44	4	14.2	50	0		T	S	10
107	15.8	167	2.9	62	3.1	80	4	24.2	65	0		10	S	10
108	16.8	151	2.9	62	3.1	80	4	28.3	70	0		10	S	10
109	17.9	127	2.9	62	3.2	44	4	24.2	65	0		5	S	5
110	19.6	87	2.9	62	3.2	44	4	24.2	70	T	MR	5	S	10
111	20 4	46	3.1	12	3.3	21	5	21.7	55	T	MS	T	S	20
112	19.3	96	2.8	105	3.1	80	4	35 0	75	T	R	T	S	10
113	19 9	77	2.9	62	3.1	80	4	25.0	85	5	MS	5	S	5
114	19.7	83	2.8	105	3.0	124	4	16.7	80	5	MS	T	S	30
115	15.9	166	2.9	62	3.2	44	4	29.2	50	T	MR	5	S	20
116	18.2	124	2.8	105	3.1	80	4	15.8	60	30	S	5	S	20
117	19.6	87	2.7	143	3 0	124	4	12.5	50	5	R	T	S	10
118	19 0	104	2.9	62	3.1	80	4	7.5	50	5	S	10	S	10
119	19.0	104	2 9	62	3.1	80	4	10.0	55	50	S	T	S	10
120	20.3	54	2 9	62	3.2	44	6	5.8	--	5	S	T	S	5
121	20.3	54	2 8	105	3 0	124	4	21.7	70	T	R	10	S	40
122	19.1	100	2.7	143	2.9	158	4	17.5	75	0		10	S	30

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B.Y D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	g/ha	cm	sev. %	resp.	sev. %	resp.	%
123	20.3	54	2.8	105	3.1	80	4	20.0	80	T	R	5	S	30
124	19.9	77	2.7	143	3.0	124	4	16.7	85	0		5	S	40
125	24.4	1	2.6	170	2.8	177	4	14 2	75	0		T	S	30
126	20.6	39	2.8	105	3.1	80	4	17.5	80	0		T	S	40
127	23.4	2	2.7	143	2.9	158	4	6.7	75	0		T	S	40
128	20.3	54	2.7	143	2.9	158	4	20.0	75	0		20	S	20
129	21.1	25	2.8	105	3.0	124	4	7.5	75	0		20	S	20
130	21.8	10	2.7	143	2.9	158	4	23.3	95	T	R	5	S	30
131	21.3	20	2.6	170	2.8	177	4	15.0	90	T	R	20	S	40
132	21.0	29	2.6	170	2.8	177	4	20.0	80	30	S	10	S	20
133	20 2	59	2.8	105	3.0	124	4	15.0	70	15	S	20	S	20
134	21 6	13	2.7	143	2.9	158	4	10.8	60	T	MS	20	S	20
135	21.2	23	2.8	105	3.0	124	4	12.5	80	T	MS	40	S	5
136	20.3	54	3.0	33	3.2	44	4	20.0	80	0		5	S	20
137	21.5	16	2.9	62	3.1	80	4	12.5	60	0		0		10
138	21 1	25	2.9	62	3.2	44	4	15.8	65	0		0		10
139	19.3	96	2.6	170	2.9	158	4	32.5	85	0		20	S	30
140	21.0	29	2.7	143	2.9	158	4	13.3	75	0		5	S	30
141	19.9	77	2.7	143	3.0	124	4	26.7	90	0		5	S	30
142	19.9	77	2.8	105	3.1	80	4	12 5	75	0		10	S	10
143	16.1	162	2.9	62	3.2	44	4	36.7	80	5	S	20	S	5
144	17.5	138	2.8	105	3.1	80	4	20 8	70	0		20	S	5
145	16.4	158	3.0	33	3.3	21	4	29.2	80	0		10	S	20
146	18.5	115	2.8	105	3.1	80	4	15.0	70	15	S	40	S	5
147	20 0	69	2.9	62	3.1	80	4	17.5	80	0		5	S	10
148	20 4	46	2.8	105	3.1	80	4	31.7	95	0		20	S	20
149	20.0	69	2.6	170	2.8	177	4	33.3	90	20	S	50	S	30
150	20.9	34	3.1	12	3.3	21	4	19 2	90	0		40	S	20
Nap Hal	19.3	96	3.0	33	3.3	21	4	29.2	95	0		5	S	10
INIA 66	15.4	172	2.8	105	3.0	124	3	41.7	80	T	S	0		10
CI 13449	17.8	129	3.1	12	3.4	7	5	3.3	--	0		5	S	5
155	22 1	7	2.7	143	2.9	158	4	23 3	80	T	S	20	S	30
156	20.2	59	2.6	170	2.8	177	3	30.1	90	15	S	5	S	30
157	20.4	46	2.7	143	2.9	158	3	31.7	100	0		20	S	30
158	21.6	13	2.6	170	2.8	177	4	29.2	100	30	S	0	S	40
159	23.0	5	2.8	105	3.0	124	3	27.5	95	5	S	T	S	40
160	16.3	159	2.7	143	3.0	124	3	31.7	90	T	S	T	S	20
161	17 1	146	2.6	170	2.9	158	3	33.3	90	20	S	T	S	40
162	16.0	164	2.9	62	3.1	80	3	25.0	75	T	S	0		10
163	14.6	180	3.1	12	3.3	21	3	34.2	80	5	S	10	S	5

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977. (Continued).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B.Y.D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	g/ha	cm	sev. %	resp.	sev. %	resp.	%
164	17.7	134	3 0	33	3.3	21	4	25.0	70	15	S	20	S	20
165	18.2	124	3.0	33	3.3	21	4	17.5	60	40	S	5	S	30
166	16.5	155	2.8	105	3.0	124	6	6 7	70	5	S	10	S	5
167	14.6	180	3.0	33	3 2	44	6	13 3	75	10	S	10	S	5
168	16 0	164	2.8	105	3.0	124	6	8.3	65	50	S	20	S	5
169	15.2	175	3.0	33	3.2	44	5	15.0	70	80	S	10	S	5
170	19.4	90	2.9	62	3.2	44	5	16.7	80	0		30	S	5
171	15.2	175	3.2	5	3.4	7	4	27.5	75	50	S	40	S	20
172	15.0	176	3.1	12	3.3	21	4	28 3	75	20	S	T	S	10
173	17.0	149	2 9	62	3.1	80	4	25 8	75	0		40	S	10
174	17.1	146	3.1	12	3.3	21	4	31.7	75	5	S	5	S	20
175	18.1	125	2.9	62	3.2	44	4	23.3	70	15	S	10	S	20
176	17.7	134	2.8	105	3.1	80	3	31 7	75	0		T	S	20
177	19.4	90	2.8	105	3.0	124	3	30 0	75	0		0		20
178	19.1	100	2.9	62	3.1	80	3	21.7	70	0		T	S	30
179	18.7	110	2 8	105	3.1	80	3	23.3	75	0		0		30
180	19.3	96	2.7	143	3.0	124	3	27.5	75	0		T	S	50
181	17.2	141	2.9	62	3.1	80	3	33 3	70	0		T	S	30
Nap Hal	22.0	8	3.0	33	3.2	44	4	26.7	85	5	S	5	S	20
Atlas 66	21.4	18	2 6	170	2.9	158	4	3.3	90	0		0		5
INIA 66	16.4	158	2.8	105	3.1	80	3	35 8	75	0		T	S	30
CI 13449	16.4	158	3.1	12	3.4	7	5	9 2	--	0		10	S	5
Mean	19 0		2.8		3.0		3.9	18.7	78.7	6.1		7.3		17.4
Standard deviation	2.1		0.2		0.2		---	38 4	10.9	---		---		----
Coefficient of variation (%)	11.0		6.2		5.7		---	205.4	13 8	---		---		----

Table 7. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Santiago, Chile in 1977 (Concluded).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Yield	Plant height	Rust				B.Y.D.V.
										Stripe		Stem		
	%	rank	%	rank	%	rank	1-9	q/ha	cm	sev. %	resp.	sev. %	resp.	%
Means of the check varieties														
Atlas 66	20.5		2.6		2.9			4.3	92					
CI 13449	15.6		3.2		3.5			5.5	65					
INIA 66	15.8		2.9		3.1			40.3	78					
Nap Hal	20.6		2.9		3.1			26.7	87					
Check means	17.9		2.9		3.2			19.2	80 5					
L.S.D. (.05) of the check means	1.1		0.2		0.2			----	----					
Coefficient of variation (%)	4.4		5.9		5.5			----	----					

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.54**	- 01	.96**
Lysine/protein	-.54**	.00	
Protein	.83**		

** Significant at the .01 level

Table 8. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ludhiana, India in 1977.

Entry no.	Plant height	Stripe rust	
	cm	sev. %	resp.
Nap Hal	82	30	S
Atlas 66	--	--	-
INIA 66	83	30	S
CI 13449	60	70	S
5	91	T	S
6	93	0	
7	84	50	S
8	80	0	
9	79	0	
10	88	60	S
11	85	50	S
12	100	50	S
13	90	40	S
14	77	60	S
15	84	30	S
16	86	40	S
17	74	60	S
18	82	80	S
19	87	60	S
20	85	80	S
21	94	60	S
22	102	50	S
23	79	50	S
24	84	50	S
25	93	40	S
26	85	50	S
27	87	50	S
28	85	0	
29	85	40	S
30	85	30	S
31	88	30	S
32	80	40	S
33	88	0	
34	86	0	
35	77	0	
36	90	80	S
37	70	70	S
38	90	80	S
39	95	70	S
40	96	40	S
41	84	90	S
42	92	85	S
43	94	80	S
44	91	90	S
45	95	90	S
46	100	0	
47	87	50	S
48	83	60	S
49	85	80	S
50	80	50	S

Table 8. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ludhiana, India in 1977. (Continued).

Entry no.	Plant height cm	Stripe rust sev. %	Stripe rust resp.
Nap Hal	83	30	S
Atlas 66	83	0	
INIA 66	75	30	S
CI 13449	70	50	S
55	84	50	S
56	90	50	S
57	99	70	S
58	90	80	S
59	80	70	S
60	95	30	S
61	60	0	
62	78	0	
63	79	0	
64	91	10	S
65	89	0	
66	100	40	S
67	74	90	S
68	104	30	S
69	94	50	S
70	125	50	S
71	100	30	S
72	100	80	S
73	85	70	S
74	100	15	S
75	96	50	S
76	97	30	S
77	78	80	S
78	83	60	S
79	85	20	S
80	77	30	S
81	96	40	S
82	90	40	S
83	84	0	
84	76	0	
85	80	0	
86	81	T	S
87	80	T	S
88	90	30	S
89	92	30	S
90	89	30	S
91	99	25	S
92	89	40	S
93	70	40	S
94	64	50	S
95	95	30	S
96	84	60	S
97	84	0	
98	98	30	S
99	86	40	S
Nap Hal	99	2	S

Table 8. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ludhiana, India in 1977. (Continued).

Entry no.	Plant height cm	Stripe rust sev. %	Stripe rust resp.
Atlas 66	79	0	
INIA 66	80	T	S
CI 13449	60	40	S
104	71	30	S
105	65	0	
106	68	10	S
107	67	40	S
108	82	60	S
109	83	0	
110	69	50	S
111	50	T	S
112	64	10	S
113	82	15	S
114	89	40	S
115	49	15	S
116	63	5	S
117	68	80	S
118	58	80	S
119	61	90	S
120	64	60	S
121	98	40	S
122	95	20	S
123	102	15	S
124	120	20	S
125	82	50	S
126	83	30	S
127	90	0	
128	79	60	S
129	100	60	S
130	115	50	S
131	119	40	S
132	86	40	S
133	89	60	S
134	94	25	S
135	78	25	S
136	75	60	S
137	62	0	
138	65	0	
139	60	15	S
140	86	0	
141	87	10	S
142	79	40	S
143	66	40	S
144	67	30	S
145	76	5	S
146	79	30	S
147	77	40	S
148	87	5	S
149	93	5	S
150	98	30	S

Table 8. Agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ludhiana, India in 1977. (Concluded).

Entry no.	Plant height	Stripe rust	
	cm	sev. %	resp.
Nap Hal	89	40	S
INIA 66	79	40	S
CI 13449	65	30	S
155	87	50	S
156	85	70	S
157	89	40	S
158	100	20	S
159	90	60	S
160	92	70	S
161	97	5	S
162	69	0	
163	68	30	S
164	70	40	S
165	80	30	S
166	74	70	S
167	62	50	S
168	75	30	S
169	72	40	S
170	72	15	S
171	83	50	S
172	94	90	S
173	87	80	S
174	89	70	S
175	90	50	S
176	84	0	
177	82	0	
178	77	0	
179	74	0	
180	77	0	
181	68	0	
Nap Hal	85	10	S
Atlas 66	80	0	
INIA 66	75	0	
CI 13449	71	40	S
Mean	83.5	35.9	
Standard deviation	12.3	26.9	
Coefficient of variation (%)	14.8	74.9	

Table 9. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ahwaz, Iran in 1977.

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
INIA 66	10.5	140	3.3	46	3.1	126
5	11.8	118	3.4	25	3.4	29
6	12.0	111	3.3	46	3.3	53
7	12.4	97	3.3	46	3.4	29
9	10.7	137	3.3	46	3.1	126
10	10.7	137	3.3	46	3.2	96
11	11.4	123	3.2	80	3.2	96
12	12.7	85	3.1	104	3.2	96
13	11.8	118	3.2	80	3.2	96
14	12.2	106	3.1	104	3.1	126
15	13.5	62	3.3	46	3.5	10
17	14.3	35	3.1	104	3.3	53
18	12.2	106	3.2	80	3.2	96
20	14.6	30	2.9	141	3.1	126
22	11.8	118	3.2	80	3.2	96
23	14.0	39	3.0	129	3.2	96
24	15.0	22	2.9	141	3.1	126
25	13.7	49	3.1	104	3.3	53
27	15.6	12	2.8	154	3.0	151
28	13.8	46	3.0	129	3.2	96
29	15.6	12	2.8	154	3.0	151
30	16.6	1	2.8	154	3.0	151
31	14.7	27	2.9	141	3.1	126
32	15.8	8	2.5	156	2.7	156
33	13.3	65	3.1	104	3.2	96
35	13.8	46	3.0	129	3.1	126
37	13.4	63	3.0	129	3.1	126
38	11.3	125	3.5	12	3.4	29
39	16.2	4	3.1	104	3.4	29
40	12.3	103	3.3	46	3.4	29
41	13.1	72	3.0	129	3.2	96
42	13.6	53	3.0	129	3.2	96
43	15.7	10	3.3	46	3.6	2
44	13.9	43	3.1	104	3.2	96
45	14.5	32	2.8	154	3.0	151
46	15.3	18	2.8	154	3.0	151
47	14.0	39	3.1	104	3.2	96
49	13.0	75	2.9	141	3.0	151
50	15.2	19	3.3	46	3.5	10
Nap Hal	12.6	87	3.4	25	3.4	29
INIA 66	10.2	144	3.2	80	3.0	151
55	14.8	24	3.0	129	3.2	96
56	15.0	22	3.0	129	3.2	96
57	13.3	65	3.2	80	3.4	29
58	12.4	97	3.1	104	3.2	96
59	13.2	69	3.2	80	3.4	29
61	12.8	84	3.4	25	3.5	10
62	9.2	154	3.8	1	3.4	29
63	9.7	150	3.4	25	3.1	126
64	10.9	131	3.5	12	3.4	29

Table 9. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ahwaz, Iran in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
65	10.8	135	3.4	25	3.3	53
66	13.7	49	3.1	104	3.2	96
67	11.9	113	3.4	25	3.4	29
68	11.9	113	3.2	80	3.2	96
69	12.3	103	3.5	12	3.5	10
70	12.3	103	3.3	46	3.3	53
71	10.9	131	3.2	80	3.1	126
72	10.8	135	3.2	80	3.1	126
73	13.7	49	2.9	141	3.1	126
74	15.4	16	2.9	141	3.1	126
75	11.1	126	3.2	80	3.1	126
76	9.7	150	3.3	46	3.0	151
77	10.5	140	3.5	12	3.4	29
78	9.4	153	3.3	46	3.0	151
79	11.0	128	3.1	104	3.0	151
80	11.0	128	3.2	80	3.1	126
81	9.7	150	3.2	80	2.9	155
82	9.5	152	3.7	3	3.3	53
83	9.0	156	3.7	3	3.2	96
84	9.7	150	3.6	5	3.3	53
86	10.0	145	3.6	5	3.3	53
87	9.5	152	3.5	12	3.2	96
88	11.8	118	3.0	129	3.0	151
90	11.3	125	3.2	80	3.1	126
93	11.8	118	3.1	104	3.1	126
94	13.0	75	3.1	104	3.2	96
95	10.4	141	3.2	80	3.0	151
96	10.8	135	3.3	46	3.2	96
97	11.7	119	3.0	129	3.0	151
98	12.5	91	3.0	129	3.1	126
99	10.5	140	3.3	46	3.1	126
Nap Hal	12.2	106	3.5	12	3.5	10
INIA 66	9.7	150	3.2	80	2.9	155
CI 13449	10.9	131	3.4	25	3.3	53
104	14.9	23	3.2	80	3.4	29
105	14.4	33	3.3	46	3.5	10
106	13.5	62	3.2	80	3.3	53
107	13.9	43	3.2	80	3.3	53
108	14.1	37	3.1	104	3.3	53
109	12.6	87	3.2	80	3.3	53
110	13.6	53	3.1	104	3.3	53
111	13.5	62	3.1	104	3.2	96
112	11.6	122	3.3	46	3.3	53
113	12.5	91	3.2	80	3.2	96
114	13.2	69	3.0	129	3.2	96
115	12.9	79	3.2	80	3.2	96
116	15.8	8	2.8	154	3.0	151
117	15.5	15	2.7	155	3.0	151
118	15.5	15	3.0	129	3.3	53
119	15.5	15	3.0	129	3.3	53

Table 9. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ahwaz, Iran in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
120	15.7	10	2.9	141	3.1	126
121	12.4	97	3.2	80	3.2	96
122	13.9	43	3.0	129	3.1	126
123	14.3	35	3.0	129	3.2	96
125	13.5	62	3.3	46	3.4	29
126	13.1	72	3.0	129	3.1	126
127	16.1	5	3.0	129	3.2	96
128	12.4	97	3.1	104	3.2	96
129	11.6	122	3.1	104	3.0	151
130	12.8	84	3.2	80	3.2	96
131	12.8	84	3.0	129	3.1	126
132	12.9	79	3.4	25	3.5	10
133	12.4	97	3.2	80	3.3	53
134	14.7	27	3.0	129	3.2	96
135	16.2	4	2.8	154	3.0	151
136	13.9	43	2.8	154	3.0	151
137	16.4	2	2.8	154	3.0	151
138	14.6	30	2.9	141	3.1	126
139	13.5	62	3.2	80	3.3	53
140	14.5	32	3.0	129	3.2	96
142	14.6	30	3.4	25	3.6	2
143	13.5	62	2.9	141	3.0	151
144	13.8	46	2.9	141	3.0	151
145	14.7	27	2.8	154	3.0	151
146	12.4	97	3.2	80	3.3	53
147	12.1	108	3.2	80	3.2	96
148	13.2	69	3.1	104	3.2	96
150	13.5	62	3.0	129	3.1	126
Nap Hal	13.6	53	3.3	46	3.4	29
INIA 66	10.2	144	3.2	80	3.0	151
155	12.9	79	3.1	104	3.2	96
156	12.3	103	3.0	129	3.1	126
157	12.9	79	3.1	104	3.2	96
158	13.6	53	3.2	80	3.3	53
160	12.8	84	3.1	104	3.2	96
161	13.0	75	2.9	141	3.0	151
162	12.5	91	3.0	129	3.1	126
163	12.0	111	3.2	80	3.2	96
164	12.8	84	3.4	25	3.4	29
166	12.1	108	3.2	80	3.2	96
167	12.3	103	3.4	25	3.4	29
168	13.1	72	3.4	25	3.5	10
170	15.0	22	3.2	80	3.4	29
171	11.6	122	3.3	46	3.2	96
172	13.5	62	3.2	80	3.3	53
173	15.3	18	2.9	141	3.2	96
174	12.0	111	3.4	25	3.4	29
175	16.0	6	2.8	154	3.1	126
176	14.1	37	3.1	104	3.3	53
177	13.5	62	2.8	154	3.0	151

Table 9. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Ahwaz, Iran in 1977. (Concluded).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
178	13.2	69	2.8	154	2.9	155
179	10.3	142	3.3	46	3.1	126
180	12.5	91	3.1	104	3.2	96
181	12.3	103	3.0	129	3.1	126
INIA 66	9.1	155	3.3	46	2.9	155
CI 13449	10.8	135	3.5	12	3.3	53
Mean	12.8		3.1		3.2	
Standard deviation	1.8		0.2		0.2	
Coefficient of variation (%)	13.9		6.9		5.0	
Means of the check varieties						
CI 13449	10.9		3.5		3.3	
INIA 66	9.9		3.2		3.0	
Nap Hal	12.8		3.4		3.4	
Check means	11.2		3.4		3.2	

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	.03	.49**	.64**
Lysine/protein	-.69**	-.27**	
Lysine	.87**		

** Significant at the .01 level.

Table 10. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Bologna, Italy in 1977.

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Plant height	Days to flowering
	%	rank	%	rank	%	rank	1-9	cm	from Jan 1
INIA 66	16.0	149	2 7	155	2.9	163	3	84	143
CI 13449	12 5	179	---	---	---	---	4	54	147
5	17.3	115	2.6	167	2 9	163	3	68	150
6	16.2	143	3 0	60	3 3	50	4	60	150
7	18.0	101	2.9	100	3 1	116	4	76	150
8	19.2	54	2.6	167	2 8	173	4	78	144
9	19.2	54	2.8	132	3.1	116	4	74	143
10	18 8	65	2.5	175	2 8	173	4	74	146
11	16 1	147	2.8	132	3 1	116	4	70	147
12	16 5	135	2.7	155	3.0	146	4	74	146
13	21 2	17	2.5	175	2.7	175	4	68	143
14	18 2	91	2.7	155	3.0	146	4	59	145
15	18.3	83	2.8	132	3.0	146	4	68	150
16	18 3	83	2.9	100	3 2	78	4	76	151
17	21.0	18	2.6	167	2 8	173	4	63	149
18	15.4	163	3.0	60	3.2	78	4	60	151
19	20 0	36	2.7	155	3.0	146	4	72	141
20	19.3	49	2.9	100	3 2	78	4	76	143
21	15.4	163	3 2	18	3.4	25	3	80	150
22	17.8	105	2 9	100	3 2	78	4	75	145
23	20.6	22	2 6	167	2 9	163	4	65	142
24	17.3	115	3 0	60	3.3	50	4	63	144
25	16.9	125	2 8	132	3 1	116	4	66	144
26	17 1	122	2.8	132	3.1	116	4	78	145
27	19.2	54	2.8	132	3 1	116	4	80	143
28	16 4	137	2.8	132	3.1	116	4	80	147
29	21.4	15	2.8	132	3.1	116	4	80	147
30	20 5	23	2.7	155	2.9	163	5	83	147
31	20 1	33	2.6	167	2.9	163	5	66	151
32	15.5	160	2 8	132	3.0	146	4	88	147
33	16 8	128	2.9	100	3.2	78	3	84	147
34	18 1	95	2.7	155	3.0	146	4	75	146
35	16.7	131	2.9	100	3.1	116	4	77	143
36	18.6	69	3.1	34	3.3	50	4	63	150
37	18.4	78	2.9	100	3.2	78	4	62	150
38	16 3	139	3.2	18	3.5	13	4	60	150
39	19.3	49	3.0	60	3 3	50	4	70	149
40	22.4	7	2.7	155	2.9	163	3	52	150
41	17.5	110	2 9	100	3 2	78	4	70	145
42	18.0	101	2 8	132	3 1	116	4	68	146
43	13.6	178	3 5	1	3 6	5	4	65	143
44	18.2	91	3 0	60	3 2	78	4	70	146
45	19.4	45	2.7	155	3.0	146	4	68	144
46	23.2	4	2.8	132	3 0	146	4	54	149
47	20.9	19	2.6	167	2 9	163	4	64	144
48	18 0	101	3.1	34	3.4	25	4	65	148
49	18 1	95	2.8	132	3 0	146	4	75	142
50	16.1	147	3 1	34	3.3	50	4	73	147
Nap Hal	18 4	78	3.0	60	3.3	50	4	56	145
INIA 66	17 6	108	2.6	167	2.9	163	4	55	142
CI 13449	17.9	103	2.7	155	3.0	146	5	63	150
55	18 3	83	2.9	100	3.2	78	4	62	144
56	18.2	91	2.9	100	3.1	116	4	62	141
57	17 5	110	3 1	34	3 3	50	4	76	144
58	16.2	143	2.8	132	3.0	146	4	76	142
59	18.2	91	2.7	155	3.0	146	4	83	142
60	16.7	131	2.7	155	2 9	163	4	87	142
61	17.2	120	2 9	100	3 2	78	4	63	147
62	15.4	163	3 2	18	3 4	25	4	68	144
63	15 0	170	3 1	34	3 3	50	4	62	143

Table 10 Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Bologna, Italy in 1977. (Continued).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade 1-9	Plant height cm	Days to flowering from Jan 1
	%	rank	%	rank	%	rank			
64	17 6	108	3.0	60	3.3	50	3	68	143
65	18 2	91	2.7	155	3.0	146	3	70	144
66	19 3	49	2.8	132	3.1	116	4	72	149
67	15 0	170	3.0	60	3.3	50	4	60	147
68	18.4	78	2.7	155	3.0	146	4	62	145
69	18.5	73	3 0	60	3.3	50	4	68	148
70	19.6	43	2.6	167	2.9	163	4	60	147
71	18 3	83	2 7	155	2.9	163	4	72	146
72	20 2	30	2.8	132	3.0	146	4	73	145
73	19 2	54	3 0	60	3.2	78	5	58	150
74	18 9	61	2.9	100	3.2	78	4	68	147
75	18 5	73	2 9	100	3.1	116	4	80	148
76	18 2	91	2.6	167	2.9	163	4	84	147
77	18 0	101	2.9	100	3.2	78	4	85	148
78	20 3	27	2.8	132	3.1	116	4	64	144
79	18 0	101	3.0	60	3 3	50	4	70	147
80	19 9	39	2.8	132	3.1	116	4	70	150
81	17 6	108	2.9	100	3.1	116	4	75	144
82	19 9	39	2.9	100	3.1	116	4	73	146
83	18 1	95	3 1	34	3.3	50	4	58	147
84	18 9	61	2.9	100	3.1	116	4	60	147
85	17.9	103	2.7	155	3.0	146	4	56	145
86	17 4	112	3.1	34	3.3	50	4	58	145
87	15 6	158	3 2	18	3.4	25	4	70	143
88	16 8	128	3.1	34	3.4	25	4	80	145
89	18 4	78	2.9	100	3.1	116	4	54	147
90	20 1	33	3.0	60	3.3	50	4	63	146
91	17 2	120	3.0	60	3.3	50	4	80	142
92	20.2	30	2.9	100	3.2	78	4	60	145
93	21.4	15	2.9	100	3.1	116	4	54	147
94	21.3	16	3.0	60	3.2	78	4	61	147
95	16 3	139	3 0	60	3 2	78	4	82	144
96	18 4	78	2.9	100	3.1	116	4	76	146
97	21 4	15	2.6	167	2.8	173	4	76	145
98	16.6	133	2.7	155	2.9	163	4	88	143
99	17 2	120	2.9	100	3.2	78	4	80	145
Nap Hal	22.1	8	3.0	60	3.3	50	4	70	146
INIA 66	15.6	158	2.8	132	3.0	146	3	64	142
CI 13449	13.6	178	---	---	---	---	4	50	150
104	16 5	135	3.2	18	3.5	13	5	50	144
105	18.2	91	3.1	34	3.4	25	5	60	145
106	16.9	125	3.1	34	3.3	50	5	60	145
107	14.0	176	3.3	9	3.5	13	4	60	145
108	15.0	170	3.4	3	3 7	1	4	70	146
109	15.7	155	3.1	34	3.4	25	4	75	146
110	15.6	158	3.3	9	3.5	13	4	64	146
111	18 6	69	3.3	9	3.6	5	4	54	146
112	16.6	133	3 1	34	3 4	25	4	62	145
113	19 6	43	2 8	132	3 0	146	4	68	147
114	17 2	120	2 9	100	3.1	116	4	63	147
115	16 4	137	2 9	100	3 2	78	4	35	147
116	14.6	173	3.3	9	3 5	13	4	65	147
117	15 1	167	2.9	100	3.1	116	4	55	147
118	15 2	165	2 9	100	3 1	116	4	60	147
119	15 7	155	3 0	60	3 3	50	4	60	147
120	14 4	174	2 9	100	3 1	116	4	64	150
121	14 7	172	2 9	100	3 1	116	3	91	143
122	15.3	164	2 9	100	3.1	116	4	76	145
123	18 3	83	2 7	155	3 0	146	4	90	146
124	16 1	147	2 9	100	3 2	78	4	104	146

Table 10. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Bologna, Italy in 1977. (Continued).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade	Plant height	Days to flowering
	%	rank	%	rank	%	rank	1-9	cm	from Jan. 1
125	20 1	33	2.8	132	3.0	146	4	86	146
126	15 5	160	2.9	100	3.1	116	4	64	146
127	16 0	149	3.1	34	3.4	25	4	100	150
128	14 7	172	3 2	18	3 4	25	4	84	144
129	14 3	175	3.1	34	3 3	50	4	104	150
130	17 1	122	3.0	60	3 2	78	4	96	144
131	15.7	155	3 2	18	3 4	25	4	105	145
132	16.7	131	2.9	100	3.1	116	4	85	143
133	16.2	143	3 0	60	3.2	78	4	75	147
134	18.1	95	2.8	132	3.1	116	4	84	146
135	18 9	61	2 8	132	3.1	116	4	86	150
136	16 2	143	3.3	9	3.5	13	4	85	147
137	20.6	22	2.9	100	3.2	78	4	58	150
138	22 5	6	2.9	100	3 1	116	4	48	150
139	20 6	22	2.5	175	2 8	173	4	56	147
140	19 8	40	2.8	132	3 1	116	4	62	146
141	21.8	11	2 8	132	3 0	146	4	68	146
142	20.0	36	2.9	100	3 2	78	4	52	150
143	22.0	9	2 7	155	2 9	163	4	50	148
144	22.5	6	2 7	155	2.9	163	4	50	148
145	18.6	69	2 8	132	3.0	146	4	75	150
146	18 8	65	3 1	34	3.4	25	4	52	147
147	18 9	61	2.9	100	3.2	78	4	65	144
148	19.4	45	3 0	60	3.2	78	4	73	146
149	19.0	56	2.9	100	3.2	78	4	72	142
150	23 3	3	2.9	100	3 1	116	4	58	145
Nap Hal	24 0	2	---	---	---	---	4	54	150
INIA 66	17 8	105	2 7	155	3.0	146	4	60	142
CI 13449	16 1	147	3.2	18	3 5	13	4	52	150
155	20 2	30	2.8	132	3 0	146	4	70	144
156	18.5	73	3 1	34	3 3	50	4	70	146
157	18.7	66	3 0	60	3.2	78	4	65	144
158	18.8	65	2 6	167	2 9	163	4	66	145
159	19.0	56	3 0	60	3 3	50	4	38	146
160	15 1	167	2 8	132	3.0	146	3	68	143
161	18 9	61	2.4	176	2.6	176	3	70	142
162	15.7	155	2 9	100	3.1	116	4	40	150
163	19 2	54	2.8	132	3.1	116	4	58	148
164	21.7	12	2.9	100	3 1	116	4	68	148
165	19 6	43	2 7	155	3 0	146	4	63	146
166	15.9	150	3 2	18	3 5	13	4	50	150
167	17.4	112	3 4	3	3.6	5	4	48	150
168	20.3	27	3 0	60	3.3	50	6	53	148
170	25 3	1	2 8	132	3.0	146	5	55	150
171	18 0	101	3 0	60	3.2	78	4	54	144
172	16 9	125	3.0	60	3.3	50	4	48	145
173	20.0	36	2 7	155	2.9	163	4	52	147
174	15 7	155	3.3	9	3.6	5	4	50	147
175	19.9	39	2 8	132	3.0	146	5	38	148
176	20 3	27	2.5	175	2.8	173	4	56	144
177	18 2	91	2.5	175	2.8	173	3	60	142
178	18.8	65	2.5	175	2.8	173	3	52	142
179	19 3	49	2.8	132	3 0	146	4	55	142
180	20 4	24	2.5	175	2 8	173	3	54	142
181	16.8	128	2.7	155	3 0	146	3	50	142
Nap Hal	17.2	120	2.8	132	3 1	116	4	60	150
Atlas 66	21.9	10	2 5	175	2.7	175	4	60	150
INIA 66	17.3	115	2 6	167	2.8	173	3	54	142
CI 13449	18.5	73	3 0	60	3.3	50	4	38	150

Table 10. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Bologna, Italy in 1977. (Concluded)

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Seed grade 1-9	Plant height cm	Days to flowering from Jan 1
	%	rank	%	rank	%	rank			
Mean	18 1		2.9		3.1		4.0	66.6	146 1
Standard deviation	2.2		0 2		0 2		---	12.9	2 6
Coefficient of variation (%)	12.1		7 1		6 5		---	19 4	1.8
Means of the check varieties									
Atlas 66	21.9		2 5		2.7			----	---
CI 13449	15.7		3 0		3 3			51	150
INIA 66	16 9		2.7		2 9			63	142
Nap Hal	20 4		2.9		3 2			60	148
Check means	18.7		2.8		3.0			58.0	146.7

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.47**	.13	.97**
Lysine/protein	-.48**	.12	
Lysine	.81		

** Significant at the .01 level.

Table 11. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Amman, Jordan in 1977.

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height	Days to Heading	Days to Ripening
	%	rank	%	rank	%	rank	g	cm	from Jan. 1	
Nap Hal	13 9	116	3.3	51	3 4	77	60	45	135	175
INIA 66	15 2	58	2 7	137	2.9	137	40	30	112	156
5	15 0	70	2 8	134	3 0	135	10	40	121	164
6	14 2	105	3 0	117	3.2	122	10	45	120	163
7	15.8	35	2.8	134	3.1	131	30	45	135	178
8	17 8	2	2 7	137	2 9	137	30	50	120	164
9	16.1	26	2.8	134	3 1	131	30	50	121	165
10	15.3	52	3.1	100	3.3	106	20	45	124	167
11	16 2	21	3 1	100	3 3	106	20	40	128	171
13	15 5	42	3 1	100	3 3	106	30	45	131	174
14	15.0	70	3.0	117	3 3	106	20	40	127	170
16	13 7	119	3 3	51	3 5	45	20	40	136	178
17	15 5	42	2 9	124	3 2	122	30	50	123	166
18	13 0	133	3.3	51	3.4	77	30	55	123	165
19	14 0	113	3.1	100	3 3	106	20	45	121	164
20	15.0	70	3.1	100	3.3	106	40	55	123	166
22	14.1	109	3.2	71	3 4	77	40	55	115	159
23	14 0	113	3.3	51	3 4	77	30	50	122	165
24	14 6	92	3.1	100	3 3	106	10	40	124	167
25	15.4	51	3.1	100	3 4	77	50	55	123	166
26	14 9	79	3.1	100	3 3	106	20	40	122	165
27	14 5	95	3.4	23	3 6	18	20	40	124	168
28	13.9	116	3.3	51	3.5	45	20	45	135	178
29	13 0	133	3.4	23	3 5	45	30	40	138	179
30	14 4	97	3.3	51	3 5	45	30	45	135	178
31	14 2	106	3.3	51	3 5	45	30	40	137	179
32	14.7	87	3.2	71	3 4	77	30	45	126	168
33	13 1	131	2.9	124	3 0	135	20	40	124	168
34	14.9	79	3.4	23	3 6	18	30	45	123	166
35	14 2	106	3.3	51	3 5	45	20	40	123	166
36	16 1	26	3 2	71	3.5	45	30	45	120	165
37	13.7	119	3.4	23	3 6	18	20	40	134	176
38	14.3	100	3.5	10	3 7	5	20	40	123	165
39	16.0	31	2.8	134	3 1	131	30	45	136	176
40	17 0	6	3.0	117	3 3	106	40	55	127	169
41	16.6	11	3 1	100	3.3	106	10	40	125	167
42	17.9	1	3 0	117	3.2	122	20	40	123	165
43	14 0	113	3.4	23	3.5	45	70	60	128	170
44	14.9	79	3.0	117	3 2	122	40	50	124	166
45	16 2	21	2.8	134	3 1	131	40	50	126	168
46	16.5	15	2 8	134	3.1	131	30	40	123	165
47	13.9	116	3.2	71	3.3	106	50	50	138	178
48	15.4	51	2 8	134	3.1	131	20	40	126	168
49	14.9	79	3.0	117	3.2	122	10	35	141	178
50	15.8	35	3 4	23	3 6	18	20	35	137	176
Atlas 66	16.5	15	2.7	137	3 0	135	20	40	112	154
55	15.9	32	3 1	100	3 3	106	10	35	122	164
56	16.2	21	3.1	100	3.4	77	20	40	127	169
57	15 1	62	3.3	51	3 5	45	20	40	135	175
58	16.1	26	2 9	124	3.2	122	30	40	116	158
59	15.7	38	3 0	117	3.2	122	20	45	116	158
60	14.5	95	3 2	71	3.4	77	70	55	115	156
61	15.0	70	3 5	10	3.7	5	20	50	127	169
62	14.3	100	3 2	71	3 4	77	30	40	124	166
63	14.5	95	3 3	51	3 4	77	40	45	123	165
64	15.0	70	3 1	100	3.3	106	20	45	123	165
65	14.9	79	3 1	100	3.4	77	20	40	126	168
66	17.3	4	3 1	100	3 3	106	30	55	125	167
67	14.6	92	3 2	71	3.4	77	20	40	138	178
68	16 8	8	3 3	51	3.6	18	50	55	123	165

Table 11 Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Amman, Jordan in 1977. (Continued)

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height	Days to	
									Heading	Ripening
	%	rank	%	rank	%	rank	g	cm	from Jan. 1	
69	15.2	58	2.9	124	3.1	131	50	60	136	177
70	17.7	3	3.1	100	3.4	77	20	40	124	166
71	15.0	70	3.3	51	3.5	45	20	40	124	166
72	16.0	31	3.0	117	3.3	106	20	40	126	168
73	16.0	31	---	---	---	---	20	50	128	170
74	16.0	31	3.0	117	3.2	122	10	40	127	169
75	16.6	11	3.1	100	3.4	77	50	60	132	172
76	15.4	51	3.1	100	3.4	77	30	50	123	165
77	15.1	62	3.2	71	3.4	77	30	50	132	172
78	14.2	106	3.3	51	3.5	45	40	40	122	164
79	14.0	113	3.2	71	3.4	77	30	40	127	169
81	14.2	106	3.3	51	3.5	45	50	40	122	163
82	15.5	42	3.1	100	3.3	106	30	45	123	164
83	14.7	87	3.2	71	3.4	77	20	45	127	164
84	14.7	87	3.2	71	3.4	77	20	40	128	170
85	15.2	58	3.3	51	3.5	45	20	40	124	165
86	14.6	92	3.2	71	3.4	77	30	50	123	164
88	15.7	38	3.2	71	3.4	77	20	40	135	176
89	14.8	83	3.3	51	3.5	45	20	45	133	174
90	15.4	51	3.1	100	3.3	106	20	45	132	173
91	13.4	127	3.3	51	3.4	77	10	35	122	163
92	14.8	83	3.1	100	3.4	77	10	40	126	167
93	16.2	21	3.0	117	3.3	106	20	35	123	165
94	16.6	11	3.0	117	3.2	122	20	35	123	165
95	13.6	124	3.1	100	3.3	106	30	40	121	163
96	14.9	79	3.4	23	3.6	18	20	45	128	169
97	14.8	83	3.2	71	3.4	77	30	45	127	169
98	15.1	62	3.2	71	3.4	77	30	50	122	164
99	15.0	70	3.1	100	3.3	106	70	55	123	165
Nap Hal	15.8	35	3.4	23	3.6	18	30	40	141	178
Atlas 66	16.4	16	2.8	134	3.1	131	10	35	115	157
CI 13449	11.2	138	3.5	10	3.5	45	20	40	141	178
104	17.0	6	3.1	100	3.3	106	20	45	127	169
105	16.5	15	3.0	117	3.3	106	20	40	135	177
106	16.0	31	3.2	71	3.5	45	30	45	128	170
107	14.1	109	3.2	71	3.4	77	40	45	128	170
108	14.6	92	3.1	100	3.3	106	50	50	137	177
109	14.2	106	3.3	51	3.5	45	110	60	138	178
110	13.2	129	3.5	10	3.6	18	80	55	137	176
111	14.9	79	3.3	51	3.5	45	20	50	135	174
112	14.8	83	3.3	51	3.5	45	20	55	135	174
113	15.4	51	3.2	71	3.5	45	20	50	134	173
114	14.1	109	3.4	23	3.6	18	10	40	124	166
115	12.6	134	3.5	10	3.6	18	40	50	135	174
116	13.6	124	3.3	51	3.5	45	10	50	117	159
117	14.6	92	3.1	100	3.3	106	20	40	138	178
118	13.6	124	3.5	10	3.6	18	20	40	138	178
119	14.7	87	3.3	51	3.5	45	20	35	135	176
120	14.3	100	3.1	100	3.3	106	30	35	137	177
121	12.2	136	3.3	51	3.4	77	60	40	128	170
122	13.6	124	3.4	23	3.5	45	10	40	137	173
123	13.1	131	3.3	51	3.4	77	20	45	134	174
124	13.4	127	3.5	10	3.7	5	10	45	133	143
139	13.7	119	3.1	100	3.3	106	20	40	135	175
140	16.8	8	3.0	117	3.2	122	30	50	125	165
142	15.2	58	2.9	124	3.2	122	30	45	128	168
144	15.6	39	2.9	124	3.2	122	10	35	127	167
146	15.4	51	3.0	117	3.3	106	10	40	124	164
147	15.4	51	3.2	71	3.4	77	20	45	125	165
148	15.2	58	3.4	23	3.6	18	20	50	125	165

Table 11. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Amman, Jordan in 1977. (Concluded)

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height	Days to Heading	Days to Ripening
	%	rank	%	rank	%	rank	g	cm	from Jan 1	
149	16.1	26	3 1	100	3 3	106	10	40	121	161
150	16.1	26	3 0	117	3 2	122	40	45	126	166
160	15.2	58	3 3	51	3.5	45	30	50	128	168
161	14.9	79	2 9	124	3 2	122	40	55	125	165
162	13.2	129	3 3	51	3 4	77	40	60	141	178
163	11.2	138	3 5	10	3 4	77	20	60	140	178
164	14.9	79	3 1	100	3 3	106	40	60	138	177
169	12.4	135	3 8	1	3.9	1	20	60	142	178
170	15.4	51	3 4	23	3.6	18	10	50	144	179
171	13 6	124	3 3	51	3.5	45	30	55	123	163
173	13.5	125	3 4	23	3 5	45	50	60	138	177
176	14.4	97	3 3	51	3.5	45	20	50	124	164
177	15 1	62	3 0	117	3.2	122	30	45	123	163
178	16.5	15	2.8	134	3.0	135	20	45	123	164
179	15 4	51	3 2	71	3 4	77	20	50	121	161
180	15.7	38	3 0	117	3 2	122	30	55	121	161
181	15.0	70	3 6	2	3.8	2	30	55	116	156
INIA 66	16 3	17	2 8	134	3 1	131	20	60	114	155
Mean	15 0		3 2		3.4		27.8	45 5	127.5	168.5
Standard deviation	1.2		0 2		0.2		15.3	7.0	7.1	6 5
Coefficient of variation (%)	8 1		6.5		5.2		55.1	15 4	5 6	3 9

Means of the check varieties

Atlas 66	16 5	2.8	3.1
CI 13449	11 2	3.5	3.5
INIA 66	15 8	2 8	3.0
Nap Hal	14 9	3 4	3 5
Check means	14 6	3.1	3.3

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.44**	.40**	.95**
Lysine/protein	-.61**	.21*	
Lysine	.63**		

** Significant at the .01 level
* Significant at the .05 level.

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977.

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan. 1		sev. %	sev. %	sev %	0-9
Nap Hal	19.1	53	3.2	7	3.5	6	426	148	188	1	10	0	3
Atlas 66	21.6	6	2.7	150	3.0	138	107	---	190	tr	0	0	1
INIA 66	17.3	115	2.8	107	3.1	86	2257	127	188	30	0	0	7
CI 13449	14.7	169	3.1	22	3.3	24	1350	157	196	0	60	0	7
5	17.6	101	2.9	62	3.1	86	2389	136	192	40	0	0	0
6	16.2	146	2.8	107	3.0	138	2177	136	188	60	0	0	0
7	12.9	182	3.1	22	3.2	45	2797	146	196	70	0	0	0
8	17.1	123	2.6	174	2.9	166	1805	137	186	10	0	0	3
9	17.7	96	2.8	107	3.0	138	2248	136	190	10	0	0	3
10	16.2	146	2.8	107	3.1	86	2248	143	188	50	30	0	3
11	16.2	146	2.6	174	2.9	166	1759	143	190	50	0	0	5
12	17.5	106	2.8	107	3.0	138	2434	134	186	1	1	0	5
13	17.4	110	2.7	150	3.0	138	1688	134	188	1	tr	0	1
14	16.4	141	2.7	150	3.0	138	1901	134	188	60	0	0	7
15	13.8	178	3.0	38	3.1	86	2665	146	190	90	1	0	3
16	14.1	175	2.8	107	3.0	138	3092	146	186	80	0	0	3
17	15.3	160	2.8	107	3.1	86	1777	141	188	30	40	0	5
18	14.9	165	2.7	150	2.9	166	995	148	196	80	0	0	0
19	14.9	165	2.9	62	3.1	86	2239	133	188	70	tr	0	0
20	17.5	106	2.8	107	3.0	138	1564	139	196	1	60	0	0
21	13.3	181	3.0	38	3.1	86	1635	155	192	30	30	0	0
22	14.3	173	2.9	62	3.1	86	2665	135	188	40	40	0	5
23	16.7	137	2.9	62	3.1	86	2097	131	190	80	0	30	0
24	14.8	168	2.8	107	3.0	138	2239	137	186	80	0	0	3
25	17.6	101	2.7	150	3.0	138	1724	144	194	30	40	0	0
26	17.5	106	2.7	150	2.9	166	2203	143	192	10	tr	0	0
27	18.1	82	2.7	150	3.0	138	2186	136	188	tr	40	0	0
28	17.3	115	2.6	174	2.9	166	1119	139	194	0	30	0	3
29	16.8	132	2.7	150	3.0	138	2861	143	196	30	60	0	0
30	16.1	148	2.6	174	2.8	181	1706	143	188	tr	50	0	0
31	15.8	154	2.7	150	2.9	166	1457	143	186	40	20	0	3
32	16.6	140	2.8	107	3.0	138	1102	138	188	90	0	0	0
33	16.8	132	2.6	174	2.8	181	3270	137	188	0	tr	0	7
34	18.7	68	2.7	150	3.0	138	1279	138	186	10	tr	0	5
35	16.3	143	2.8	107	3.0	138	2328	138	186	70	0	0	7
36	17.2	120	2.8	107	3.0	138	1617	148	188	80	10	0	3
37	17.4	110	2.8	107	3.1	86	1510	145	194	60	60	0	7
38	17.8	91	3.1	22	3.3	24	1315	138	188	60	10	0	7
39	21.2	12	2.6	174	2.9	166	1955	143	186	80	50	0	0
40	21.5	9	2.8	107	3.0	138	853	152	188	30	0	0	0

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan 1		sev. %	sev. %	sev %	0-9
41	20 0	33	2.7	150	3.0	138	1386	138	184	80	40	0	7
42	20 4	26	2.6	174	2.9	166	1333	138	188	80	10	0	0
43	21.0	13	2.6	174	2.9	166	959	136	194	80	0	0	0
44	19.2	49	2.8	107	3.0	138	1741	138	188	90	10	0	0
45	20 0	33	2.7	150	2.9	166	2470	138	186	80	10	0	3
46	20 5	23	2.6	174	2.9	166	906	150	194	30	0	0	3
47	21 2	12	2.6	174	2 8	181	1528	136	188	10	40	0	3
48	19 2	49	2.7	150	3 0	138	2221	143	186	70	30	0	5
49	19.9	37	2.7	150	2 9	166	2168	136	188	70	50	0	0
50	20.6	20	2.6	174	2 9	166	1173	146	184	70	70	0	3
Nap Hal	19.2	49	2.8	107	3.1	86	995	143	188	30	50	0	7
INIA 66	18.4	77	2.8	107	3.1	86	1866	127	188	50	0	0	7
CI 13449	14.4	171	2.9	62	3.0	138	1066	157	192	1	80	0	7
55	21.9	4	2.5	182	2.7	182	764	136	186	80	80	0	5
56	21.7	5	2.5	182	2 8	181	1155	136	186	80	40	0	7
57	18.8	66	2.8	107	3.0	138	1688	136	196	70	40	0	7
58	20.9	15	2.6	174	2.8	181	1244	135	194	1	30	0	3
59	22.0	3	2.5	182	2.8	181	1244	136	194	1	30	0	1
60	19.9	37	2.6	174	2 9	166	1866	134	196	30	70	0	7
61	18.6	73	2.7	150	3.0	138	1386	143	188	10	10	0	9
62	15.6	156	2.9	62	3.2	45	2399	136	184	60	0	0	7
63	17.0	125	2.8	107	3.1	86	1706	138	184	50	10	0	7
64	19.0	57	2 7	150	3.0	138	1812	136	182	30	0	0	5
65	19.8	38	2.7	150	3.0	138	1315	137	186	60	0	0	7
66	19.5	40	2.7	150	3.0	138	746	145	190	60	tr	0	1
67	16.1	148	2.9	62	3.1	86	1812	143	184	90	0	0	0
68	18 9	62	2 7	150	3.0	138	2186	137	182	80	0	0	0
69	18.0	88	2.8	107	3.1	86	2186	139	184	80	0	0	1
70	20.3	28	2.6	174	2.9	166	800	141	186	1	30	0	7
71	18.9	62	2.6	174	2.9	166	2346	138	188	0	1	0	1
72	18 3	79	2.7	150	3.0	138	2008	136	188	1	0	0	5
73	19.0	57	2.7	150	2.9	166	657	158	186	40	1	0	0
74	18.4	77	2.7	150	2.9	166	1475	143	186	0	1	0	3
75	19.7	39	2.6	174	2.9	166	2043	145	188	10	1	10	3
76	18.6	73	2.7	150	2.9	166	1866	143	194	60	1	0	3
77	18.9	62	3 0	38	3.2	45	1404	145	196	70	80	0	0
78	15.2	161	2 9	62	3.1	86	1102	138	188	90	0	0	0
79	15.8	154	3.0	38	3.2	45	2417	139	194	80	0	0	0
80	16.0	152	2.9	62	3.1	86	1812	143	192	80	1	0	0

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan. 1		sev. %	sev %	sev %	0-9
81	17.5	106	2.9	62	3.2	45	2132	136	188	80	50	0	5
82	17.4	110	3.0	38	3.2	45	1830	139	184	70	0	0	5
83	18.5	75	2.8	107	3.0	138	1244	138	186	0	0	0	9
84	16.7	137	2.9	62	3.1	86	1919	139	184	0	0	0	7
85	16.6	140	2.8	107	3.1	86	1475	138	184	0	0	0	5
86	17.3	115	2.8	107	3.0	138	2719	134	186	0	0	0	5
87	17.2	120	2.7	150	3.0	138	2488	134	188	1	0	0	3
88	18.7	68	2.6	174	2.9	166	1594	137	194	50	70	0	1
89	16.0	152	2.7	150	3.0	138	2808	135	186	60	70	0	1
90	16.7	137	2.8	107	3.1	86	3092	133	184	70	70	0	3
91	16.8	132	2.8	107	3.1	86	1617	134	186	60	70	0	3
92	16.7	137	2.9	62	3.1	86	2879	135	188	80	30	0	3
93	19.4	43	3.0	38	3.2	45	2310	134	194	70	30	10	7
94	19.9	37	3.0	38	3.3	24	1699	135	196	70	30	1	1
95	16.6	140	3.2	7	3.5	6	2417	134	188	80	50	3	5
96	18.3	79	3.0	38	3.2	45	2896	137	186	10	70	0	5
97	19.4	43	2.9	62	3.2	45	2417	136	184	0	0	0	0
98	20.0	33	2.6	174	2.9	166	2021	134	186	0	50	0	7
99	17.6	101	2.7	150	3.0	138	2132	141	186	80	30	0	7
Nap Hal	20.5	23	2.9	62	3.2	45	1955	141	188	40	10	0	1
INIA 66	17.7	96	2.5	182	2.8	181	1955	127	186	10	tr	0	7
CI 13449	14.6	170	3.2	7	3.4	11	1599	157	196	0	80	0	7
104	21.5	9	3.0	38	3.2	45	1119	137	188	40	tr	0	3
105	21.4	10	3.1	22	3.3	24	1635	139	186	40	1	0	3
106	21.5	9	2.8	107	3.0	138	2089	139	188	70	50	1	1
107	18.8	66	2.8	107	3.1	86	2407	139	196	40	10	0	5
108	19.0	57	2.8	107	3.1	86	2443	137	194	70	tr	0	3
109	19.1	53	2.8	107	3.1	86	2000	137	196	10	0	0	9
110	19.0	57	2.8	107	3.1	86	2797	137	194	50	1	0	3
111	19.2	49	3.0	38	3.3	24	1699	137	188	50	50	30	3
112	18.6	73	2.7	150	3.0	138	2159	136	184	50	tr	0	1
113	18.5	75	2.9	62	3.2	45	2566	138	182	1	0	0	5
114	16.7	137	2.8	107	3.1	86	4319	139	184	60	50	30	3
115	13.7	179	3.0	38	3.2	45	2407	140	188	80	10	0	5
116	17.7	96	3.1	22	3.4	11	2407	143	188	80	tr	0	3
117	17.5	106	3.1	22	3.4	11	2000	140	186	80	10	0	9
118	17.2	120	3.1	22	3.4	11	2000	140	184	90	10	0	7
119	16.9	128	3.1	22	3.3	24	2301	141	188	90	0	0	7
120	16.9	128	3.1	22	3.4	11	2665	150	196	70	10	0	5

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977 (Continued).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan. 1		sev. %	sev %	sev %	0-9
121	17.3	115	3.2	7	3.5	6	3274	137	188	70	10	0	9
122	17.6	101	2.8	107	3.1	86	2124	138	194	30	10	30	3
123	19.1	53	2 7	150	3 0	138	2938	136	188	0	10	1	3
124	18.1	82	2.7	150	3.0	138	3115	139	190	1	30	0	5
125	23.2	1	2.7	150	2.9	166	885	141	196	0	80	0	5
126	18.0	88	2 8	107	3 1	86	2761	138	194	1	1	0	7
127	18.8	66	2.8	107	3.1	86	3186	150	192	tr	10	0	7
128	16.8	132	2.8	107	3.0	138	2991	136	194	0	80	0	7
129	16.0	152	2.9	62	3.1	86	3505	144	196	1	60	0	7
130	19.3	44	2.7	150	3.0	138	2832	134	188	tr	40	0	9
131	17.3	115	2.9	62	3.2	45	3487	140	186	0	1	0	7
132	17.4	110	3.0	38	3.2	45	1841	139	184	80	40	0	9
133	14.8	168	3.3	1	3.5	6	2443	138	186	80	1	0	9
134	18.2	80	3.2	7	3.5	6	2478	138	188	80	40	10	3
135	16.3	143	2.8	107	3 1	86	2212	145	196	80	10	0	3
136	14.8	168	2.9	62	3.1	86	3186	142	194	1	80	0	7
137	18.9	62	2.8	107	3.1	86	2124	147	190	1	1	0	1
138	17.1	123	3.1	22	3.3	24	1876	147	196	tr	0	0	0
139	17.6	101	3.0	38	3.3	24	2407	138	194	50	0	0	5
140	19.2	49	2 9	62	3.2	45	1540	139	194	10	10	0	7
141	20.9	15	2.5	182	2 8	181	2566	140	188	tr	60	0	3
142	20.4	26	2.6	174	2.9	166	1239	158	190	30	40	0	5
143	18.6	73	2.6	174	2.8	181	2726	139	196	80	10	0	7
144	18.6	73	2.7	150	3 0	138	1381	145	194	80	10	0	7
145	17.7	96	2 7	150	3.0	138	3310	143	188	30	0	0	5
146	20.2	30	2.8	107	3.1	86	1982	139	186	80	1	0	3
147	20.2	30	2.6	174	2.8	181	1947	137	188	30	80	0	9
148	17.7	96	2.7	150	3.0	138	2956	136	184	80	0	0	5
149	18.0	88	2.5	182	2.8	181	2726	132	188	60	80	0	7
150	19.9	37	2.8	107	3 0	138	1664	141	186	60	tr	0	3
Nap Hal	19.1	53	2.8	107	3.0	138	2549	143	190	10	40	0	5
Atlas 66	20.8	18	2.6	174	2.8	181	177	161	190	tr	0	0	3
INIA 66	17.1	123	2.7	150	2.9	166	2832	127	188	50	10	0	7
CI 13449	16.0	152	2.8	107	3 1	86	1805	157	190	0	60	0	7
155	20.8	18	2.8	107	3.0	138	2071	137	188	70	0	0	7
156	19.4	43	2.8	107	3.1	86	1540	139	196	50	10	0	3
157	18.0	88	2.9	62	3.2	45	920	136	188	0	0	0	3
158	17.9	90	2.7	150	3 0	138	2035	139	196	80	0	0	7
159	18.9	62	2.5	182	2 8	181	1327	137	188	30	80	0	5
160	15.6	156	2 9	62	3 1	86	2053	136	196	0	40	0	5

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan. 1		sev. %	sev. %	sev. %	0-9
161	17.9	90	2 7	150	3.0	138	1434	135	194	tr	tr	0	9
162	17.2	120	2.8	107	3.1	86	2867	143	192	0	0	0	7
163	14.1	175	3.1	22	3 2	45	2478	143	195	80	1	0	5
164	15.0	162	2 9	62	3.1	86	2867	144	188	tr	60	0	7
165	15.4	158	2 9	62	3.1	86	2513	141	186	80	60	0	7
166	14.0	177	3.0	38	3.2	45	3186	150	196	0	80	0	9
167	14.9	165	2.7	150	2.9	166	2779	151	188	tr	80	0	5
168	15.3	160	2.9	62	3.2	45	2035	157	196	90	10	0	0
169	14 0	177	3.1	22	3.3	24	1681	156	188	90	0	90	9
170	17.2	120	3.0	38	3.3	24	2106	157	186	tr	80	30	3
171	18 8	66	2 8	107	3.0	138	2177	135	188	0	80	70	7
172	14 3	173	3.1	22	3.3	24	2867	139	186	80	10	70	7
173	17 0	125	2.7	150	3.0	138	3168	141	184	0	10	50	5
174	15.5	157	3.2	7	3.5	6	2212	146	186	80	60	50	5
175	16 9	128	3.0	38	3.2	45	2266	148	188	40	40	70	7
176	18.0	88	2.7	150	3 0	138	3062	129	186	30	0	0	5
177	20 4	26	2.6	174	2.9	166	2177	129	188	40	0	0	3
178	20.8	18	2.5	182	2.8	181	2620	130	196	50	0	0	3
179	20.3	28	2.7	150	3.0	138	319	132	194	tr	0	0	3
180	22.5	2	2.6	174	2 8	181	281	132	192	0	0	0	7
181	20.6	20	2.7	150	2.9	166	1540	132	194	30	0	0	3
Nap Hal	20.5	23	3.1	22	3.3	24	1894	141	196	30	40	0	3
INIA 66	18.0	88	2.7	150	3 0	138	2974	129	186	50	0	0	7
CI 13449	13.3	181	3.1	22	3.3	24	1965	127	190	0	80	0	5
Mean	17.9		2 8		3.1		2015.8	139 9	189.4	40.6	22.6	3.2	4.2
Standard deviation	2.1		0 2		0 2		716.8	6 6	4.0	33.1	----	---	---
Coefficient of variation (%)	11.7		6 2		5 4		35.6	4.7	2.1	81.5	----	---	---

Table 12. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Alcala de Henares (Madrid), Spain in 1977. (Concluded).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Days to		Rust			Mildew
								Heading	Ripening	Stripe	Leaf	Stem	
	%	rank	%	rank	%	rank	kg/ha	from Jan. 1		sev %	sev. %	sev. %	0-9
Means of the check varieties													
Atlas 66	21.2		2.7		2.9		142	161	190	1	0	0	2
CI 13449	14.6		3.0		3.2		1557	157	193	0	72	0	7
INIA 66	17.7		2.7		3.0		2377	127	188	38	2	0	7
Nap Hal	19.7		3.0		3.2		1564	143	188	22	32	0	4
Check means	17.8		2.9		3.1		1410.0	147.0	189.8	15.3	26.5	0	5.0
L.S.D. (.05) of the check means	1.0		0.2		0 2		---	---	---	---	---	-	---
Coefficient of variation (%)	3.9		4.7		4.2		---	---	---	---	---	-	---

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.39**	.12	.95**
Lysine/protein	-.48**	.03	
Lysine	.86		

** Significant at the .01 level

Table 13. Agronomic data for entries in the third high protein-high lysine spring wheat observation nursery grown at Aleppo, Syria in 1977.

Entry no	Days to head (from Jan. 1)	Days to maturity (from Jan. 1)	Rust: Stripe sev. %	Rust: Stripe resp	Rust: Leaf sev. %	Rust: Leaf resp	Plant height cm	Grain score: Color[a]	Grain score: Size[b]
Nap Hal	179	205	10	S			80	LR	2S
Atlas 66	---	---	--	-			--	--	--
INIA 66	150	190					75	LR	2M
CI 13449	178	210	t	S	10	S	70	AA	2S
5	154	190					85	LR	2M
6	153	188					85	LR	3M
7	174	207	25	S			100	LR	2S
8	160	188	30	S			85	LR	2M
9	158	192	30	S			80	LR	2M
10	158	194	30	S			80	LR	2S
11	175	195	30	S			85	LR	2S
12	158	190	t	S			80	LR	2S
13	153	196					95	LR	1S
14	159	189	25	S			75	LR	3S
15	175	205	35	S			85	LR	2S
16	178	203	35	S	10	S	85	LR	2S
17	155	186					75	LR	2M
18	159	186			t	S	75	LR	2S
19	---	---	--	-			--	--	--
20	---	---	--	-			--	--	--
21	177	203	t	S			80	LR	2S
22	159	184	25	S			95	LR	2S
23	161	182	t	S			95	LR	2M
24	155	182	t	VS			75	LR	2S
25	154	190	t	VS			85	LR	3S
26	155	190	t	S			90	LR	2M
27	153	186					85	LR	2M
28	159	186	t	S			95	RR	2S
29	175	200	25	S			100	LR	2S
30	176	201	30	S			95	LR	3S
31	176	202	30	S			85	LR	2S
32	154	182	30	S			100	LR	2S
33	155	192	t	S			110	LR	2S
34	152	182					85	LR	2S
35	154	182					80	LR	2S
36	178	203	35	S			95	LR	2S
37	154	189			t	S	65	LR	3S
38	154	185	20	S			95	LR	2S
39	175	201	35	S			80	LR	3S
40	159	197					85	LR	2S
41	157	181	35	S			80	LR	2S
42	153	181	35	S			90	LR	3S
43	155	183	35	S			80	LR	2S
44	162	182	t	S	25	S	75	LR	2S
45	173	185					80	LR	2S
46	164	192					100	LR	2S
47	152	182					100	LR	2S
48	159	185	25	S	t	S	85	LR	2S
49	165	185	30	S			80	LR	2S
50	175	201	t	S	10	S	95	RR	3S

Table 13 Agronomic data for entries in the third high protein-high lysine spring wheat observation nursery grown at Aleppo, Syria in 1977 (Continued).

Entry no	Days to head (from Jan. 1)	Days to maturity (from Jan. 1)	Rust: Stripe sev. %	Rust: Stripe resp.	Rust: Leaf sev. %	Rust: Leaf resp.	Plant height cm	Grain score: Color[a]	Grain score: Size[b]
Nap Hal	177	200	t	VS			100	LR	2S
Atlas 66	---	---	--	-			--	--	--
INIA 66	150	182					70	LR	2M
CI 13449	---	210	t	VS	20	S	70	AA	2S
55	164	185	35	S			85	LR	2S
56	161	183	30	S			65	LR	2S
57	160	190	30	S			90	LR	3S
58	158	193	t	S			75	LR	2M
59	153	186	t	S			70	LR	2S
60	150	185	t	VS			90	LR	2M
61	172	208	t	S	25	S	65	LR	3M
62	161	182	30	S			70	LR	2S
63	162	180	30	S			65	LR	2M
64	152	183	t	VS			75	LR	2S
65	158	182	t	VS			65	LR	2M
66	174	186					70	LR	3S
67	---	186	40	S			60	LR	3S
68	162	181					85	WW	2S
69	162	198	30	S			90	LR	2S
70	160	189	35	S			70	LR	2S
71	160	193					90	LR	2M
72	157	193					90	LR	2L
73	155	197					65	LR	2M
74	157	195					90	LR	2M
75	158	199	t	S	t	S	80	LR	2S
76	159	198					90	LR	2S
77	160	200	35	S	t	S	80	LR	2S
78	164	196			t	S	75	LR	2M
79	165	198					85	LR	2M
80	165	194	t	S			75	AA	2M
81	159	193			25	S	65	LR	2M
82	173	192			20	S	50	LR	3S
83	157	194					55	LR	3M
84	172	197					45	LR	2S
85	173	197					50	LR	3S
86	165	195	20	S			60	LR	3S
87	152	185	5	S			50	LR	2S
88	158	203			25	S	75	LR	2S
89	160	203			25	S	70	LR	3S
90	164	200	20	S	10	S	60	LR	3S
91	159	197			20	S	80	LR	3S
92	160	199	t	S	t	S	90	LR	3S
93	159	199	t	S			55	LR	3S
94	153	197	t	VS	15	S	65	LR	2S
95	159	200	2	S			75	LR	3S
96	153	193	t	S	25	S	80	LR	3S
97	158	203					85	LR	2M
98	159	192					80	LR	3M
99	161	205	t	VS			90	LR	2S
100	180	200	25	S			95	LR	3S

Table 13 Agronomic data for entries in the third high protein-high lysine spring wheat observation nursery grown at Aleppo, Syria in 1977. (Continued).

Entry no	Days to head (from Jan 1)	Days to maturity (from Jan 1)	Rust: Stripe sev %	Rust: Stripe resp.	Rust: Leaf sev. %	Rust: Leaf resp	Plant height cm	Grain score: Color[a]	Grain score: Size[b]
Nap Hal	---	---	--	-			--	--	--
Atlas 66	150	186					70	LR	2M
INIA 66	165	212	t	VS	30	S	60	--	--
CI 13449	174	195	30	S			60	LR	3S
105	165	198	25	S			70	LR	3S
106	175	193	30	S			75	LR	3M
107	174	193	35	S			70	LR	2S
108	165	199	35	S			75	LR	2S
109	165	187	35	S			85	LR	2S
110	165	185	35	S			90	AR	2M
111	166	187	35	S			60	LR	3S
112	160	186	35	S			85	LR	3S
113	160	180	35	S			85	LR	3M
114	176	182	35	S			100	LR	2M
115	180	193	40	S			50	LR	3S
116	180	197	35	S			60	LR	3S
117	180	195	35	S			60	LR	2S
118	182	196	40	S			65	LR	3S
119	182	195	40	S			50	LR	3S
120	177	198					75	LR	2S
121	155	182					100	LR	2S
122	159	182	t	VS			95	LR	2M
123	159	189					105	LR	2M
124	158	193					105	LR	2M
125	176	198	t	S	10	S	90	LR	3M
126	158	196					75	LR	2M
127	176	198					85	LR	2M
128	158	193					80	LR	2M
129	174	195					75	LR	2M
130	159	193					95	LR	2M
131	158	199					95	LR	2M
132	159	186	5	S	t	S	80	LR	2M
133	153	187	t	S	t	S	85	LR	2M
134	155	196	t	S			75	LR	2M
135	179	202	10	S			90	LR	3M
136	176	205	10	S	59	S	105	LR	3M
137	175	206					70	LR	2S
138	174	202					75	LR	2M
139	159	205	t	S			75	LR	2S
140	159	200	t	S	25	S	90	LR	2S
141	155	190			t	S	90	LR	2M
142	175	203			30	S	75	LR	3M
143	174	200					70	LR	3S
144	155	195			10	S	70	LR	3M
145	176	205					95	LR	2S
146	155	186	t	VS			70	RR	3M
147	152	187	30	S			75	RR	3M
148	154	205	15	S			90	RR	2S
149	157	185	20	S			80	LR	2M
150	159	198	t	S			60	LR	3M

Table 13. Agronomic data for entries in the third high protein-high lysine spring wheat observation nursery grown at Aleppo, Syria in 1977. (Concluded).

Entry no.	Days to head (from Jan 1)	Days to maturity (from Jan 1)	Rust: Stripe sev. %	Rust: Stripe resp	Rust: Leaf sev. %	Rust: Leaf resp	Plant height cm	Grain score: Color[a/]	Grain score: Size[b/]
Nap Hal	---	200					95	LR	3S
Atlas 66	---	---					--	--	--
INIA 66	148	184					70	LR	2M
CI 13449	---	---					--	--	--
155	150	182	30	S			60	RR	2M
156	159	194	30	S			65	LR	2S
157	157	196	30	S			65	LR	3M
158	179	202	30	S			70	LR	2M
159	173	199	t	S	5	S	65	RR	2S
160	158	197	10	S	25	S	90	LR	2L
161	162	195	t	VS			95	LR	2M
162	182	200	35	S			70	LR	2S
163	179	202	35	S			60	LR	2S
164	180	205	t	VS	t	S	65	WW	3S
165	180	200	35	S			65	LR	3S
166	---	199	40	S			70	AA	3S
167	---	200	40	S			75	AA	3S
168	---	200	40	S			60	LR	3S
169	---	200	40	S			55	AA	3S
170	---	202	25	S			75	LR	2S
171	157	205			30	S	50	RR	3S
172	---	207	t	S			50	--	--
173	186	206			t	S	65	LR	2S
174	152	196	30	S			75	LR	2S
175	180	270	30	S			75	LR	3S
176	158	197					65	RR	2M
177	148	197					60	RR	2M
178	149	195					65	LR	2M
179	149	194	25	S			80	AA	2L
180	147	192	5	S			75	AA	2L
181	160	194					60	AA	2M
Nap Hal	---	198	t	S	t	S	95	LR	2S
Atlas 66	---	---					--	--	--
INIA 66	148	185					65	LR	2L
CI 13449	---	220		VS	10	S	65	--	--
Mean	163.1	194.4					77 7		
Standard deviation	9.8	9.7					13 6		
Coefficient of variation (%)	6 0	5.0					17 5		

a/ AA = amber
RR = red
WW = white
LR = light red

b/ S = small
M = medium
L = large

1 = well filled
3 = poorly filled

Table 14. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Yuma, Arizona in 1977

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height
	%	rank	%	rank	%	rank	g/ha	cm
Nap Hal	20.4	32	2 7	155	3.0	133	24.8	116
Atlas 66	20 4	32	2.5	185	2.8	183	18.1	117
INIA 66	16 8	163	2.6	177	2.8	183	37.4	74
CI 13449	14.5	184	2.9	63	3.1	92	39.6	89
5	18.2	120	2.6	177	2.9	168	30.5	101
6	18 3	115	2.7	155	2 9	168	25.5	104
7	17.1	153	2 7	155	3.0	133	34.1	118
8	19.9	48	2.5	185	2 8	183	33.6	104
9	19 1	77	2.6	177	2 9	168	40.1	104
10	18.7	91	2.8	106	3.0	133	41.4	103
11	18 1	123	2.7	155	3 0	133	43.4	104
12	18 5	101	2.7	155	3.0	133	36 2	98
13	18 4	108	2.6	177	2 9	168	29.4	91
14	18 0	125	2.7	155	3 0	133	29 4	85
15	17.5	141	2.9	63	3 2	49	32 6	115
16	16 6	170	2.9	63	3 2	49	48 0	116
17	17.9	130	2.8	106	3.0	133	41.6	93
18	16 8	163	2.6	177	2.9	168	36.5	110
19	17.1	153	2.9	63	3 1	92	35.7	92
20	19 7	55	2 7	155	2 9	168	30.8	90
21	15.7	179	2.9	63	3.1	92	39.7	121
22	17.4	144	2.9	63	3.2	49	44.5	94
23	19.1	77	2.7	155	3.0	133	29.3	89
24	19 2	74	2.8	106	3.1	92	39.6	100
25	19 3	72	2.7	155	2 9	168	37.5	103
26	18 4	108	2 8	106	3 1	92	44.0	105
27	18.3	115	2 7	155	3.0	133	34.6	95
28	16.6	170	2 7	155	3 0	133	23.6	110
29	18 6	96	2.6	177	2.9	168	34.1	125
30	19.0	79	2 5	185	2 7	185	32.7	124
31	16 8	163	2 7	155	3.0	133	39 9	116
32	17 9	130	2.6	177	2.9	168	42.1	126
33	17 2	150	2 8	106	3.1	92	32.6	123
34	19.4	66	2 7	155	3.0	133	34.3	95
35	17.1	153	2.8	106	3.0	133	37.4	98
36	19.3	72	2 8	106	3.0	133	34.2	123
37	18.6	96	2.9	63	3.2	49	37.0	106
38	18 4	108	3 0	27	3 2	49	38.6	108
39	22.2	1	2 6	177	2.8	183	36.6	119
40	21.4	3	2 7	155	2.9	168	37.1	114
41	21.1	10	2 6	177	2.9	168	30.9	96
42	20 5	25	2.7	155	2.9	168	32.0	95
43	20 7	18	2 7	155	3.0	133	30 0	107
44	21.1	10	2 7	155	2.9	168	34 7	98
45	21.2	6	2 7	155	2.9	168	31 8	87
46	21.0	11	2.6	177	2.9	168	36 8	121
47	19.5	63	2 9	63	3.2	49	32.3	100
48	19.7	55	2 7	155	3.0	133	37.5	111
49.	20.7	18	2 6	177	2.9	168	33 8	101
50	19 4	66	2 8	106	3.1	92	28 9	117
Nap Hal	20.3	37	2 9	63	3.2	49	27.9	121
Atlas 66	20.3	37	2 7	155	2.9	168	13.1	119
INIA 66	16.6	170	2.7	155	3.0	133	45.4	79
CI 13449	15.1	181	3 0	27	3.2	49	42.4	92
55	20 1	41	2 7	155	3.0	133	31.7	82
56	20 4	32	2 7	155	2.9	168	28 6	83
57	21 4	3	2.6	177	2.8	183	36 3	109
58	19.8	51	2.8	106	3.1	92	31.6	85
59	20 9	14	2.6	177	2.8	183	29.4	86
60	20 6	20	2.6	177	2 8	183	35.2	113

Table 14 Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Yuma, Arizona in 1977 (Continued).

Entry no	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height
	%	rank	%	rank	%	rank	q/ha	cm
61	18 8	89	2.8	106	3 1	92	33 9	85
62	15.8	178	3.1	11	3 3	20	50 8	89
63	16.2	175	3.0	27	3 3	20	44 2	89
64	17.6	137	2 9	63	3 2	49	38.9	93
65	18.2	120	2.8	106	3 0	133	34 7	97
66	21.3	5	2.8	106	3 0	133	37 2	114
67	18.3	115	2.8	106	3 0	133	42 5	93
68	19.5	63	2.9	63	3 1	92	30 4	105
69	20 4	32	2.8	106	3 0	133	31.0	114
70	20.5	25	2.5	185	2.8	183	36 2	115
71	20 5	25	2.7	155	2 9	168	34 4	107
72	20 4	32	2.7	155	2.9	168	39 7	104
73	19 3	72	2.7	155	3 0	133	35 6	98
74	20 2	39	2.7	155	2 9	168	36 9	101
75	20 8	16	2.7	155	2 9	168	30 3	106
76	19 0	79	2 8	106	3.0	133	35 9	107
77	20 5	25	2.9	63	3.1	92	33.4	103
78	17 9	130	2 8	106	3.1	92	35.3	100
79	18 3	115	2 8	106	3.1	92	43.0	106
80	18 3	115	2 8	106	3.1.	92	42.0	113
81	18 4	108	2 9	63	3 2	49	38.7	93
82	18.6	96	2 8	106	3.1	92	39.9	95
83	18 1	123	2 9	63	3.1	92	34.6	90
84	17.3	145	3 0	27	3.2	49	43.6	94
85	17.4	144	2.9	63	3.2	49	48.0	93
86	17.5	141	3.0	27	3.3	20	38.8	84
87	16.4	172	3 0	27	3 2	49	33.5	89
88	19.1	77	2 8	106	3 0	133	35.1	106
89	17.8	134	2 8	106	3 0	133	47 8	100
90	19.6	58	2.9	63	3 1	92	38.7	97
91	18.2	120	3.0	27	3 2	49	40 1	100
92	18.8	89	3.0	27	3.3	20	35.3	111
93	20.2	39	2.8	106	3 1	92	32 8	105
94	21.3	5	2.9	63	3.2	49	31 9	99
95	18.8	89	3.0	27	3 3	20	44 4	102
96	18 8	89	2.9	63	3.2	49	46 8	102
97	17 9	130	2.8	106	3.1	92	34 0	98
98	18 9	82	2.9	63	3 1	92	40 9	107
99	19 3	72	2.9	63	3.2	49	27 2	105
Nap Hal	20 4	32	3.0	27	3.2	49	25 5	118
Atlas 66	20 3	37	2.8	106	3.1	92	11 9	116
INIA 66	16 3	174	3 0	27	3.3	20	39 3	78
CI 13449	14 8	183	3 2	3	3.4	4	42 2	94
104	20 0	44	2.9	63	3.2	49	35.4	88
105	18.5	101	3 2	3	3.4	4	42.8	92
106	18 8	89	3 1	11	3 3	20	36 8	90
107	17.8	134	3 1	11	3.4	4	35.1	94
108	18 4	108	3 0	27	3 3	20	39 0	100
109	18.3	115	3 0	27	3 3	20	45.5	104
110	18.8	89	2.9	63	3 2	49	40.1	106
111	18.7	91	3.2	3	3 5	1	37.1	87
112	17.2	150	3.0	27	3 3	20	49.3	102
113	20 0	44	2.8	106	3 1	92	36.2	104
114	18.9	82	2.9	63	3 2	49	31.7	109
115	16.7	165	2.7	155	3 0	133	40.6	85
116	17.9	130	2.8	106	3 1	92	48.3	97
117	18 6	96	2.8	106	3 1	92	50.0	98
118	18 4	108	2.7	155	3 0	133	46.3	100
119	18.4	108	2.8	106	3 0	133	47.8	98
120	18.3	115	2.8	106	3.1	92	40.5	97

Table 14. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Yuma, Arizona in 1977 (Continued)

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height
	%	rank	%	rank	%	rank	q/ha	cm
121	16 3	174	2 9	63	3 2	49	44 3	111
122	17.5	141	2 8	106	3 1	92	41.9	118
123	17.4	144	2 9	63	3.1	92	41.0	126
124	17 6	137	2 8	106	3 1	92	34.1	128
125	21.1	10	2.6	177	2 8	183	29.2	118
126	16.6	170	3 1	11	3 3	20	40.9	106
127	18 0	125	2.9	63	3.2	49	37.2	117
128	17 0	155	2 8	106	3 1	92	34.9	103
129	16 9	160	2 9	63	3 2	49	51.6	116
130	18 2	120	2 8	106	3 1	92	37.1	111
131	17 0	155	2 9	63	3 1	92	42.5	115
132	19.7	55	2.7	155	2 9	168	41.0	101
133	18 6	96	2 7	155	3 0	133	39.0	101
134	19 6	58	2 8	106	3 0	133	24.7	109
135	19 8	51	2.7	155	2 9	168	31.9	125
136	16 9	160	2 8	106	3 1	92	44.0	130
137	20 4	32	2.5	185	2 8	183	33.2	91
138	19 2	74	2 6	177	2.9	168	46.5	102
139	19 3	72	2 5	185	2 8	183	36 2	98
140	20 6	20	2 6	177	2 9	168	29.7	105
141	20 9	14	2 6	177	2 8	183	28 5	101
142	21 1	10	2 7	155	2 9	168	32.7	109
143	20 5	25	2.7	155	2 9	168	38.7	98
144	19 5	63	2.7	155	3 0	133	37.6	104
145	17 5	141	2 8	106	3 1	92	37.1	112
146	20.3	37	2.6	177	2 8	183	37.8	96
147	20.9	14	2.7	155	3.0	133	27.5	81
148	19 6	58	2 9	63	3 1	92	31.7	102
149	20 0	44	2.7	155	3 0	133	17.9	78
150	20.1	41	2.7	155	2.9	168	28.7	102
Nap Hal	19.8	51	2.9	63	3 1	92	26 4	120
Atlas 66	19.9	48	2.6	177	2.9	168	12.2	116
INIA 66	16.6	170	2.7	155	2 9	168	39 3	78
CI 13449	14.1	185	3.1	11	3 3	20	46.7	92
155	20.8	16	2.7	155	2.9	168	31.1	88
156	20.3	37	2.5	185	2.8	183	39.3	92
157	19.9	48	2 8	106	3.0	133	27 4	92
158	19.3	72	2.7	155	3.0	133	35.8	119
159	19.5	63	2.9	63	3.2	49	32.1	107
160	16.5	171	2.7	155	3 0	133	59 9	105
161	18.8	89	2.5	185	2.7	185	45 7	103
162	17.8	134	2.7	155	3 0	133	39 0	104
163	16.9	160	2.8	106	3.1	92	50 2	118
164	17.2	150	2.9	63	3.2	49	49.6	102
165	17 8	134	2.8	106	3.1	92	50 2	100
166	15 4	180	3.0	27	3.2	49	65 6	111
167	15 8	178	3.1	11	3.3	20	47.7	105
168	16.0	176	3.1	11	3.3	20	42 8	101
169	17 6	137	2 9	63	3.2	49	51 4	100
170	19 5	63	2.8	106	3.1	92	32 6	112
171	17 2	150	2.9	63	3.2	49	37.8	88
172	16 9	160	2.9	63	3.1	92	44.1	101
173	18.5	101	2 7	155	3 0	133	39.8	104
174	17 2	150	3 0	27	3 3	20	35.4	98
175	18 1	123	2.7	155	3 0	133	39.0	96
176	18.2	120	2 6	177	2.9	168	33.3	73
177	18.5	101	2 7	155	3 0	133	34 6	79
178	18.9	82	2 6	177	2 8	183	25.0	74
179	18.5	101	2.8	106	3 1	92	33.2	84
180	19.7	55	2.7	155	2 9	168	31.6	78

Table 14. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine spring wheat observation nursery grown at Yuma, Arizona in 1977. (Concluded).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein		Yield	Plant height
	%	rank	%	rank	%	rank	q/ha	cm
181	16.9	160	2 9	63	3.1	92	30 8	72
Nap Hal	19.9	48	2 8	106	3.1	92	26 9	114
Atlas 66	19.4	66	2.7	155	2.9	168	16 8	119
INIA 66	16 7	165	2 8	106	3.1	92	36.9	77
CI 13449	14.8	183	3 1	11	3.3	20	42 1	97
Mean	18.6		2 8		3.1		36 6	101.7
Standard deviation	1.6		0.2		0.2		7.7	12.4
Coefficient of variation (%)	8.5		5 5		5.1		21 1	12.2
Means of the check varieties								
Atlas 66	20.1		2.7		2.9		14.4	117
CI 13449	14.7		3.1		3.3		42.6	93
INIA 66	16 6		2.8		3 0		39.7	77
Nap Hal	20.2		2.9		3.1		26 3	118
Check means	17 9		2.8		3.1		30.8	101.3
L.S D.$_{(.05)}$ of the check means	0.4		0.1		0.1		--	---
Coefficient of variation (%)	1.6		1.9		2.3		--	---

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.53**	.09	.95**
Lysine/protein	-.52**	.11	
Lysine	.78**		

** Significant at the 01 level.

Table 15. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Davis California, USA, in 1977.

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
Nap Hal	14.0	11	3.1	139	3.3	51
Atlas 66	13.2	29	2.9	176	3.1	143
INIA 66	10.8	137	3.1	139	3.0	168
CI 13449	11.3	117	3.2	104	3.2	93
5	11.5	110	3.1	139	3.1	143
6	10.8	137	3.1	139	2.9	181
7	11.2	121	3.3	67	3.3	51
8	12.6	57	3.0	166	3.1	143
9	11.6	106	3.1	139	3.1	143
10	11.2	121	3.2	104	3.1	143
11	10.3	164	3.4	39	3.2	93
12	11.3	117	3.3	67	3.2	93
13	12.5	63	2.8	183	2.9	181
14	10.7	142	3.0	166	2.8	185
15	9.6	181	3.5	21	3.1	143
16	9.6	181	3.3	67	3.0	168
17	9.8	175	3.2	104	2.9	181
18	10.2	167	3.3	67	3.0	168
19	9.9	172	3.3	67	3.1	143
20	12.1	82	3.1	139	3.1	143
21	9.4	183	3.4	39	3.1	143
22	9.8	175	3.4	39	3.1	143
23	10.4	156	3.3	67	3.1	143
24	10.4	156	3.4	39	3.2	93
25	10.9	131	3.2	104	3.1	143
26	10.2	167	3.4	39	3.2	93
27	10.5	152	3.2	104	3.0	168
28	10.6	145	3.2	104	3.0	168
29	10.3	164	3.3	67	3.1	143
30	10.5	152	3.3	67	3.1	143
31	10.2	167	3.5	21	3.2	93
32	10.8	137	3.3	67	3.1	143
33	9.8	175	3.4	39	3.1	143
34	10.4	156	3.2	104	3.0	168
35	9.9	172	3.3	67	3.0	168
36	10.3	164	3.4	39	3.2	93
37	9.6	181	3.5	21	3.2	93
38	10.3	164	3.6	8	3.4	19
39	12.2	77	3.1	139	3.2	93
40	12.0	88	3.2	104	3.2	93
41	12.6	57	3.0	166	3.1	143
42	12.2	77	3.2	104	3.3	51
43	14.7	6	3.0	166	3.2	93
44	12.8	47	3.2	104	3.3	51
45	13.1	36	2.9	176	3.0	168
46	12.2	77	3.1	139	3.1	143
47	12.7	52	3.0	166	3.0	168
48	12.7	52	3.1	139	3.2	93
49	11.5	110	3.1	139	3.0	168
50	12.4	65	3.1	139	3.2	93
Nap Hal	11.6	106	3.4	39	3.4	19
Atlas 66	13.1	36	3.0	166	3.1	143
INIA 66	10.3	164	3.3	67	3.1	143
CI 13449	9.4	183	3.6	8	3.2	93
55	13.4	26	3.1	139	3.3	51
56	12.5	63	3.2	104	3.3	51
57	13.8	16	3.0	166	3.1	143
58	12.6	57	3.1	139	3.2	93
59	13.0	41	3.2	104	3.3	51
60	13.5	23	3.2	104	3.4	19

Table 15. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Davis, California, USA, in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
61	11.2	121	3.4	39	3.3	51
62	9.6	181	3.8	1	3.5	7
63	10.4	156	3.7	3	3.5	7
64	11.9	93	3.3	67	3.3	51
65	12.0	88	3.5	21	3.5	7
66	12.1	82	3.3	67	3.4	19
67	10.6	145	3.4	39	3.3	51
68	11.4	112	3.3	67	3.2	93
69	13.0	41	3.2	104	3.3	51
70	12.1	82	3.0	166	3.0	168
71	12.2	77	2.9	176	2.9	181
72	11.3	117	3.0	166	2.9	181
73	11.7	102	3.0	166	3.0	168
74	11.7	102	2.9	176	2.9	181
75	11.9	93	3.0	166	3.0	168
76	11.2	121	3.0	166	2.9	181
77	11.7	102	3.1	139	3.0	168
78	12.0	88	3.1	139	3.1	143
79	11.1	127	3.0	166	2.9	181
80	11.7	102	3.0	166	2.9	181
81	10.7	142	3.2	104	3.0	168
82	10.5	152	3.2	104	3.1	143
83	10.5	152	3.5	21	3.3	51
84	11.1	127	3.2	104	3.2	93
85	11.0	129	3.1	139	3.0	168
86	12.3	69	3.5	21	3.5	7
87	11.1	127	3.6	8	3.5	7
88	12.8	47	3.0	166	3.1	143
89	12.5	63	3.3	67	3.3	51
90	13.2	29	2.8	183	3.0	168
91	11.9	93	3.4	39	3.4	19
92	12.1	82	3.2	104	3.2	93
93	12.5	63	3.4	39	3.5	7
94	13.9	13	2.6	185	2.8	185
95	11.9	93	3.3	67	3.3	51
96	13.1	36	3.1	139	3.2	93
97	13.9	13	3.0	166	3.1	143
98	11.7	102	3.1	139	3.0	168
99	13.5	23	3.0	166	3.1	143
Nap Hal	16.6	2	3.0	166	3.2	93
Atlas 66	15.8	4	2.6	185	2.8	185
INIA 66	12.3	69	2.8	183	2.8	185
CI 13449	9.2	185	3.5	21	3.1	143
104	12.0	88	3.2	104	3.2	93
105	12.2	77	3.3	67	3.4	19
106	12.7	52	3.2	104	3.3	51
107	12.9	45	3.2	104	3.3	51
108	13.3	27	3.0	166	3.2	93
109	12.2	77	3.3	67	3.4	19
110	13.1	36	3.1	139	3.2	93
111	13.1	36	3.2	104	3.4	19
112	13.8	16	3.0	166	3.2	93
113	12.7	52	3.0	166	3.1	143
114	12.4	65	3.1	139	3.1	143
115	11.3	117	3.1	139	3.0	168
116	10.8	137	3.2	104	3.1	143
117	11.6	106	3.2	104	3.1	143
118	10.6	145	3.3	67	3.2	93
119	10.8	137	3.5	21	3.4	19
120	12.2	77	3.3	67	3.3	51

Table 15. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown at Davis, California, USA, in 1977. (Continued).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
121	10.0	169	3.4	39	3.1	143
122	11.6	106	3.2	104	3.1	143
123	13.6	20	3.1	139	3.2	93
124	11.7	102	3.1	139	3.1	143
125	17.4	1	2.8	183	3.1	143
126	11.0	129	3.3	67	3.2	93
127	11.9	93	3.2	104	3.2	93
128	10.9	131	3.3	67	3.1	143
129	9.9	172	3.4	39	3.1	143
130	12.3	69	3.1	139	3.2	93
131	11.4	112	3.2	104	3.2	93
132	12.0	88	3.3	67	3.3	51
133	11.1	127	3.2	104	3.1	143
134	13.4	26	3.2	104	3.3	51
135	13.4	26	2.9	176	3.0	168
136	10.8	137	3.3	67	3.2	93
137	14.9	5	2.8	183	3.0	168
138	14.0	11	2.9	176	3.0	168
139	13.8	16	2.8	183	2.9	181
140	12.1	82	3.1	139	3.1	143
141	12.3	69	2.9	176	2.9	181
142	15.8	4	2.9	176	3.2	93
143	12.6	57	3.1	139	3.1	143
144	14.0	11	2.8	183	3.0	168
145	12.2	77	3.1	139	3.1	143
146	13.0	41	3.1	139	3.2	93
147	12.6	57	3.3	67	3.3	51
148	12.9	45	3.0	166	3.1	143
149	12.0	88	3.2	104	3.2	93
150	14.4	7	3.0	166	3.1	143
Nap Hal	13.0	41	3.2	104	3.3	51
Atlas 66	13.7	18	3.0	166	3.1	143
INIA 66	10.7	142	3.3	67	3.1	143
CI 13449	10.0	169	3.4	39	3.2	93
155	12.9	45	3.3	67	3.4	19
156	13.5	23	2.9	176	3.0	168
157	12.9	45	3.1	139	3.2	93
158	13.0	41	3.1	139	3.2	93
159	13.1	36	3.2	104	3.3	51
160	10.5	152	3.1	139	2.9	181
161	11.1	127	3.0	166	2.9	181
162	11.7	102	3.2	104	3.2	93
163	11.1	127	3.5	21	3.4	19
164	10.7	142	3.4	39	3.3	51
165	10.3	164	3.5	21	3.3	51
166	9.3	184	3.7	3	3.3	51
167	10.3	164	3.5	21	3.3	51
168	9.6	181	3.5	21	3.2	93
169	11.5	110	3.6	8	3.5	7
170	12.5	63	3.2	104	3.3	51
171	10.5	152	3.4	39	3.3	51
172	10.5	152	3.4	39	3.3	51
173	12.5	63	3.1	139	3.1	143
174	9.7	176	3.6	8	3.3	51
175	11.7	102	3.2	104	3.2	93
176	10.3	164	3.3	67	3.1	143
177	11.8	94	3.2	104	3.2	93
178	12.7	52	3.0	166	3.1	143
179	11.3	117	3.1	139	3.0	168
180	13.1	36	3.2	104	3.3	51

Table 15. Protein and lysine values and rankings for the entries in the third high protein-high lysine spring wheat observation nursery grown in Davis, California, USA, in 1977. (Concluded).

Entry no.	Protein		Lysine/protein		Adjusted lysine/protein	
	%	rank	%	rank	%	rank
181	13.6	20	3.0	166	3.2	93
Nap Hal	14.1	8	3.1	139	3.3	51
Atlas 66	13.7	18	2.9	176	3.1	143
INIA 66	11.5	110	3.1	139	3.1	143
CI 13449	10.7	142	3.5	21	3.4	19
Mean	11.9		3.2		3.2	
Standard deviation	1.4		0.2		0.2	
Coefficient of variation (%)	12.1		6.5		4.9	
Means of the check varieties						
Atlas 66	13.9		2.9		3.0	
CI 13449	10.1		3.4		3.2	
INIA 66	11.1		3.1		3.0	
Nap Hal	13.9		3.2		3.3	
Check means	12.3		3.2		3.1	
L.S.D. (.05) of the check means	1.4		0.2		0.1	
Coefficient of variation (%)	8.0		3.8		2.1	

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.02	.50**	.67**
Lysine/protein	-.70**	-.23**	
Lysine	.84**		

** Significant at the .01 level.

Table 16. Mean values and rankings of quality data averaged over five sites together with yield values and rankings from Yuma, Arizona, for the entries in the third high protein-high lysine spring wheat observation nursery grown in 1977.

Entry no.	Protein	Lysine/protein		Adjusted lysine/protein		Yield[a/]	
	%	%	rank	%	rank	q/ha	rank
125	21.2	2.7	178	2.9	175	29.2	163
Nap Hal	20.1	2.9	65	3.2	40	25.5	175
46	20.0	2.8	156	3.0	157	36.8	91
150	19.7	2.9	88	3.1	100	28.7	165
142	19.4	2.8	156	3.1	112	32.7	133
94	19.4	2.8	125	3.1	88	31.9	142
155	19.4	2.9	111	3.0	124	31.1	149
137	19.3	2.8	156	3.0	124	33.2	131
40	19.2	2.8	125	3.0	144	37.1	87
141	19.2	2.7	178	2.9	180	28.5	167
70	19.1	2.7	181	2.9	180	36.2	97
Atlas 66	19.1	2.7	182	2.9	180	16.8	182
Nap Hal	19.0	3.0	50	3.2	41	26.4	173
93	19.0	3.0	55	3.2	52	32.8	132
180	19.0	2.7	170	3.0	163	31.6	146
45	18.8	2.7	170	3.0	163	31.5	148
59	18.8	2.7	178	2.9	175	29.4	161
138	18.8	2.9	99	3.1	88	46.5	18
170	18.8	2.9	65	3.2	40	32.6	135
Atlas 66	18.8	2.7	178	3.0	165	18.1	180
Nap Hal	18.7	3.0	55	3.2	35	26.9	172
159	18.7	2.9	99	3.1	74	32.1	139
47	18.6	2.8	156	3.0	144	32.3	138
97	18.6	2.8	156	3.0	144	34.0	123
140	18.5	2.8	136	3.0	124	29.7	158
147	18.5	2.9	99	3.1	100	27.5	169
72	18.5	2.7	170	2.9	180	39.7	59
44	18.5	2.9	111	3.1	112	34.7	112
75	18.5	2.8	160	3.0	163	30.3	156
144	18.4	2.7	170	3.0	144	37.6	77
Nap Hal	18.4	3.0	42	3.3	15	24.8	177
156	18.4	2.8	156	3.0	144	39.3	64
55	18.3	2.8	143	3.0	124	31.7	145
71	18.3	2.7	181	2.9	183	34.4	117
66	18.3	2.9	74	3.1	67	37.2	83
39	18.2	2.8	136	3.1	112	36.6	93
90	18.2	2.8	136	3.1	100	38.7	73
60	18.2	2.7	170	3.0	157	35.2	108
134	18.2	2.9	65	3.2	52	24.7	178
42	18.2	2.8	143	3.0	134	32.0	140
146	18.2	2.9	99	3.1	74	37.8	76
113	18.1	2.9	99	3.1	88	36.2	99
Atlas 66	18.1	2.7	171	2.9	168	12.2	184
139	18.1	2.7	181	2.9	167	36.2	98
158	18.1	2.7	170	3.0	157	35.8	101
69	18.1	2.9	74	3.1	67	30.9	150
74	18.1	2.7	170	2.9	175	36.9	89
43	18.1	2.9	88	3.1	67	30.0	157
Nap Hal	18.1	2.9	65	3.2	52	27.9	168
77	18.1	2.9	88	3.1	100	33 4	128
178	18.1	2.7	178	2.9	175	25.0	176
Atlas 66	18.1	2.7	178	3.0	165	11.9	185
41	18.0	2.8	156	3.0	124	30.9	151
56	18.0	2.9	111	3.1	112	28.5	166
111	18.0	3.2	6	3.4	1	37.1	86
148	18.0	2.9	99	3.1	88	31.7	143
157	18.0	2.9	88	3.1	88	27.4	170
143	18.0	2.8	143	3.0	157	38.7	72
104	17.9	3.0	29	3.3	19	35.4	104
135	17.9	2.8	143	3.0	134	31.9	141

Table 16. Mean values and rankings of quality data averaged over five sites together with yield values and rankings from Yuma, Arizona, for the entries in the third high protein-high lysine spring wheat observation nursery grown in 1977. (Continued).

Entry no.	Protein	Lysine/protein		Adjusted lysine/protein		Yield[a/]	
	%	%	rank	%	rank	q/ha	rank
8	17.9	2.6	184	2.9	183	33.6	126
Atlas 66	17.9	2.8	157	3.0	158	13.1	183
49	17.8	2.8	160	2.9	175	33.8	125
50	17.8	2.9	74	3.1	67	28.9	164
57	17.8	2.9	99	3.1	100	36.3	95
149	17.8	2.8	156	3 0	144	17.9	181
92	17.8	3.0	49	3.2	40	35.3	107
123	17.7	2.8	125	3.1	100	41.0	46
130	17.7	2.9	111	3.1	100	37.1	84
96	17.7	2.9	74	3.1	67	46.8	16
106	17.7	3.0	29	3.2	30	36.8	92
9	17.7	2.7	170	2.9	167	40.4	51
88	17.7	2.9	111	3.1	88	35.1	110
177	17.7	2.8	160	3.0	157	34.6	116
48	17.6	2.9	99	3.1	74	37.5	78
76	17.6	2.7	172	2.9	180	35.9	100
127	17.6	2.9	65	3.2	52	37.2	82
179	17.6	2.8	125	3.0	124	33.2	130
13	17.6	2.6	185	2.9	184	29.4	159
105	17.6	3.1	10	3.3	6	42.8	33
132	17.4	2.9	88	3.1	112	41.0	45
65	17.3	2.9	88	3.1	74	34.7	113
73	17.3	2.9	112	3.0	125	35.6	103
98	17.3	2.8	136	3.0	157	40.9	47
82	17.3	2.9	65	3.1	88	39.9	55
80	17.2	2.8	125	3.0	124	42.0	41
30	17.2	2.7	170	2.9	183	32.7	134
58	17.2	2.9	111	3.1	100	31.6	147
110	17.2	3.0	42	3.2	22	40.1	52
29	17.2	2.8	125	3.0	124	34.1	121
61	17.2	2.9	65	3.1	67	33.9	124
91	17.2	2.9	65	3.2	52	40.1	53
89	17.1	2.9	111	3.0	124	47.8	13
112	17.1	2.9	74	3.2	35	49.3	10
27	17.1	2.8	136	3.0	134	34.6	115
68	17.1	2.9	88	3.1	88	30.4	155
20	17.1	2.9	111	3.0	124	30.8	152
83	17.1	3.0	35	3.1	67	34.6	114
99	17.1	2.9	111	3.1	88	27.2	171
181	17.0	2.8	125	3.1	112	30.8	153
173	17.0	2.8	136	3.0	134	39.8	57
34	17.0	2.8	156	3.0	157	34.3	118
114	17.0	2.9	88	3.1	88	31.7	144
10	17.0	2.8	156	3 0	157	41.3	44
175	16.9	2.9	74	3.1	74	39.0	67
176	16.9	2.8	156	3.0	157	33.3	129
86	16.9	3.0	29	3.2	30	38.8	70
25	16.9	2.8	136	3.0	144	37.5	79
78	16.8	2.9	111	3.1	100	35.3	106
23	16.8	2.8	125	3.0	134	29.3	162
17	16.8	2.8	156	2.9	175	41.6	43
161	16.8	2.6	184	2.8	185	45.7	20
64	16.7	2.9	65	3.2	40	38.9	69
84	16.7	3.0	49	3.1	67	43.6	30
26	16.7	2.9	111	3.0	124	44.0	29
81	16.7	2.9	88	3.1	100	38.7	71
124	16.7	2.8	125	3.1	100	34.1	122
79	16.7	2.9	88	3.1	100	43.0	32
109	16.6	3.0	35	3.3	13	45.5	21
31	16.6	2.8	136	3.0	163	39.9	56

Table 16. Mean values and rankings of quality data averaged over five sites together with yield values and rankings from Yuma, Arizona, for the entries in the third high protein-high lysine spring wheat observation nursery grown in 1977. (Continued).

Entry no.	Protein	Lysine/protein		Adjusted lysine/protein		Yield[a/]	
	%	%	rank	%	rank	q/ha	rank
85	16.6	2.8	125	3.1	112	40.0	54
131	16.5	3.0	55	3.1	67	42.5	36
12	16.5	2.8	143	3.0	157	36.2	96
108	16.5	3.0	35	3.3	13	39.0	66
117	16.5	2.9	65	3.1	67	50.0	8
145	16.5	2.9	99	3.1	88	37.1	85
164	16.5	3.0	35	3.2	35	49.6	9
120	16.4	3.0	42	3.2	30	40.5	50
126	16.3	3.0	49	3.2	52	40.9	48
95	16.3	3.1	22	3.3	19	44.4	24
165	16.3	3.0	49	3.2	52	50.2	6
122	16.2	2.9	99	3.1	112	41.9	42
14	16.2	2.7	170	2.9	175	29.4	160
133	16.2	3.0	42	3.2	52	39.0	65
119	16.2	3.1	22	3.2	30	47.8	14
24	16.1	3.0	55	3.1	67	39.6	61
5	16.1	2.8	125	3.1	112	30.5	154
118	16.1	3.0	49	3.2	52	46.3	19
36	16.1	3.0	42	3.1	74	34.2	119
11	16.0	2.8	143	3.0	144	43.4	31
15	16.0	3.0	49	3.1	112	32.5	137
19	16.0	2.9	88	3.0	124	35.7	102
87	16.0	3.0	29	3.2	30	33.5	127
INIA 66	16.0	2.8	143	3.0	134	36.9	90
6	16.0	2.9	88	3.1	112	25.5	174
171	15.9	3.1	22	3.2	30	37.8	75
128	15.9	3.0	55	3.1	88	34.9	111
107	15.9	3.1	22	3.3	13	35.1	109
116	15.8	3.0	29	3.2	22	48.3	11
28	15.8	2.8	136	3.0	144	23.6	179
INIA 66	15.8	2.9	74	3.1	88	45.4	22
136	15.8	3.1	22	3.2	30	44.0	28
32	15.8	2.8	136	3.0	157	42.1	39
33	15.8	2.9	99	3.0	134	32.6	136
67	15.7	3.0	49	3.1	67	42.5	35
121	15.7	3.0	29	3.2	40	44.3	25
16	15.7	2.9	74	3.1	112	47.9	12
162	15.7	2.9	88	3.1	88	39.0	68
129	15.6	3.0	35	3.1	67	51.6	3
37	15.6	3.0	35	3.2	52	37.0	88
38	15.5	3.2	6	3.3	10	38.5	74
INIA 66	15.5	2.8	125	3.0	157	39.3	63
INIA 66	15.5	2.8	136	3.0	134	39.3	62
168	15.4	3.1	22	3.2	35	42.7	34
35	15.3	2.9	88	3.0	134	37.4	80
INIA 66	15.3	2.8	156	3.0	163	37.4	81
7	15.3	3.0	42	3.2	52	34.1	120
163	15.2	3.1	22	3.2	30	50.2	7
63	15.1	3.1	13	3.3	10	44.2	26
174	15.0	3.2	2	3.4	2	35.4	105
22	15.0	3.0	42	3.1	67	44.5	23
18	14.9	2.9	111	3.0	157	36.5	94
115	14.8	2.9	74	3.1	74	40.6	49
CI 13449	14.8	3.1	13	3.3	10	46.7	17
160	14.8	2.8	125	3.0	144	59.9	2
CI 13449	14.7	3.2	6	3.3	6	42.1	40
172	14.7	3.1	15	3.3	19	44.1	27
62	14.7	3.2	3	3.3	6	50.8	5
167	14.6	3.1	10	3.3	19	47.7	15
169	14.6	3.2	7	3.3	10	51.4	4

Table 16. Mean values and rankings of quality data averaged over five sites together with yield values and rankings from Yuma, Arizona, for the entries in the third high protein-high lysine spring wheat observation nursery grown in 1977. (Concluded).

Entry no.	Protein	Lysine/protein		Adjusted lysine/protein		Yield[a/]	
	%	%	rank	%	rank	q/ha	rank
CI 13449	14.4	3.1	15	3.2	35	42.4	37
166	14.2	3.1	10	3.2	22	65.6	1
21	14.2	3.0	29	3.1	67	39.7	58
CI 13449	13.7	3.1	11	3.3	15	39.6	60
CI 13449	13.1	3.3	1	3.4	3	42.2	38
Mean	17.1	2.9		3.1		36.6	
L.S.D. $_{(.05)}$ of the means	1.8	0.2		0.2		9.2	
Coefficient of variation (%)	8.5	5.1		4.6		18.0	
			Means of the check varieties				
	N						
Atlas 66	16	18.5	2.7	2.9		13.8	
CI 13449	25	14.1	3.2	3.3		42.6	
INIA 66	25	15.6	2.8	3.0		40.6	
Nap Hal	24	18.9	3.0	3.2		26.8	
Check means		16.8	2.9	3.1		30.7	
Standard deviation of the check means		2.1	0.2	0.2		11.8	
Coefficient of variation (%)		12.4	6.5	4.9		38.4	

a/ Yield data is from the replicated nursery at Yuma, Arizona.

Table 17. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Herat, Afghanistan in 1977.

Entry No.	Yield q/ha	Yield rank	Plant height cm	Winter survival (%)
Bezostaya 1	29.3	183	80	90
CI 13449	29.1	184	75	98
Centurk	37.8	127	90	95
Lancota	37.1	142	100	95
5	25.4	193	85	92
6	30.1	180	85	95
7	37.4	134	90	99
8	29.3	183	85	98
9	34.0	165	85	95
10	51.8	14	100	90
11	37.8	127	95	94
12	31.8	177	100	60
13	56.6	3	90	90
14	37.9	124	90	85
15	36.9	144	95	60
16	37.3	139	95	95
17	27.9	187	75	98
18	37.4	134	100	96
19	37.9	124	100	98
20	53.6	12	100	97
21	39.1	110	95	95
22	39.5	108	95	97
23	37.3	139	90	95
24	38.1	121	95	97
25	45.0	54	90	96
26	55.9	6	90	97
27	39.8	104	85	98
28	36.6	146	90	99
29	50.5	20	85	99
30	43.9	65	95	99
31	32.5	174	105	99
32	51.0	17	105	98
33	37.3	139	100	96
34	39.9	102	100	95
35	34.5	162	105	98
36	48.5	28	100	99
37	33.5	166	90	95
38	45.6	50	85	94
39	45.4	52	95	94
40	43.5	70	95	95
41	33.3	169	95	96
42	40.4	97	100	96
43	39.0	111	110	92
44	36.5	147	100	96
45	40.6	95	100	96
46	36.3	151	95	96
47	49.8	23	100	98
48	42.0	79	95	98
49	27.1	189	85	99
50	51.5	15	85	99
Bezostaya 1	33.0	170	75	70
CI 13449	36.4	148	65	95
Centurk	40.9	94	85	93
Lancota	35.5	155	100	95
55	42.0	79	95	91
56	43.3	72	95	98
57	33.3	169	100	97
58	46.0	49	105	98
59	47.6	31	100	95
60	52.5	13	90	98

Table 17. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Herat, Afghanistan in 1977. Continued.

Entry No.	Yield q/ha	Yield rank	Plant height cm	Winter survival (%)
61	44.9	55	95	98
62	46.3	47	90	98
63	43.9	65	105	98
64	36.6	146	90	94
65	41.3	86	85	98
66	54.6	10	105	98
67	47.4	36	95	96
68	47.5	35	110	95
69	41.1	88	80	80
70	55.9	6	75	85
71	55.3	8	100	65
72	51.3	16	75	96
73	40.0	101	80	90
74	41.6	82	85	92
75	54.9	9	90	95
76	46.9	42	100	98
77	46.3	47	90	98
78	49.5	25	95	99
79	42.4	75	100	96
80	55.5	7	90	97
81	44.4	58	85	99
82	47.3	39	90	96
83	42.3	76	110	98
84	48.0	30	95	99
85	50.4	21	95	99
86	56.0	4	105	100
87	37.6	128	100	98
88	44.8	56	105	99
89	44.0	63	100	99
90	38.8	117	105	99
91	30.4	179	110	99
92	36.0	153	110	99
93	40.3	99	105	99
94	34.1	164	100	98
95	46.5	44	105	98
96	33.4	167	95	97
97	54.3	11	115	98
98	56.8	2	100	97
99	47.0	40	95	99
100	41.0	91	95	97
Bezostaya 1	40.3	99	75	90
CI 13449	38.5	119	70	98
Centurk	39.4	109	90	98
Lancota	44.6	57	100	96
105	43.6	69	95	97
106	32.5	174	85	96
107	45.5	51	85	96
108	43.4	71	75	98
109	43.8	68	90	95
110	32.5	174	95	97
111	28.0	186	90	98
112	36.1	152	85	98
113	31.8	177	95	95
114	25.3	194	75	93
115	37.0	143	90	95
116	30.9	178	80	90
117	34.4	163	85	90
118	25.6	191	68	93
119	40.5	96	85	96
120	27.0	190	85	95

Table 17. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Herat, Afghanistan in 1977. Continued.

Entry No.	Yield q/ha	Yield rank	Plant height cm	Winter survival (%)
121	41.6	82	80	98
122	35.1	157	85	95
123	39.6	106	90	95
124	27.1	189	80	95
125	44.1	61	85	98
126	49.4	26	75	98
127	47.3	39	70	97
128	47.5	35	75	96
129	38.8	117	95	98
130	41.1	88	85	98
131	44.0	63	85	99
132	46.3	47	80	95
133	41.9	80	90	98
134	46.9	42	90	98
135	38.5	119	95	95
136	23.0	195	85	90
137	35.0	159	90	95
138	37.4	134	95	95
139	34.5	162	90	90
140	43.8	68	90	98
141	41.3	86	100	99
142	42.5	73	95	98
143	41.3	86	90	96
144	37.3	139	90	98
145	46.0	49	95	98
146	41.0	91	90	98
147	35.4	156	90	95
148	38.3	120	85	96
149	44.1	61	85	98
150	32.1	175	80	98
Bezostaya 1	25.4	193	75	96
CI 13449	37.3	139	70	95
Centurk	40.9	94	75	95
Lancota	39.8	104	95	99
155	28.8	185	88	98
156	35.9	154	85	96
157	37.1	142	80	92
158	32.8	171	90	95
159	38.0	122	90	97
160	40.0	101	95	98
161	37.4	134	85	96
162	38.8	117	90	96
163	36.3	151	95	95
164	50.1	22	95	96
165	43.8	68	90	97
166	38.8	117	90	94
167	40.9	94	100	93
168	35.0	159	95	95
169	34.5	162	90	95
170	38.8	117	90	90
171	39.5	108	95	92
172	21.3	196	90	90
173	42.4	75	90	95
174	36.3	151	85	96
175	48.8	27	85	96
176	37.1	142	90	96
177	44.1	61	85	96
178	48.4	29	85	95
179	49.6	24	88	98
180	47.5	35	90	98

Table 17. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Herat, Afghanistan in 1977. Concluded.

Entry No.	Yield q/ha	Yield rank	Plant height cm	Winter survival (%)
181	47.3	39	90	99
182	47.5	35	95	99
183	41.0	91	105	100
184	37.5	130	90	99
185	42.0	79	85	98
186	50.6	19	80	100
187	45.0	54	95	99
188	50.6	19	85	100
189	37.5	130	70	99
190	29.9	181	90	95
191	41.4	83	95	96
192	39.6	106	85	96
Bezostaya 1	37.8	127	80	95
CI 13449	38.8	117	70	99
Centurk	46.5	44	75	99
Lancota	65.1	1	95	98
Mean	40.7		91	95.5
Standard deviation	7.4		9.3	5.5
Coefficient of variation (%)	18.3		10.3	5.7
Means of the check varieties				
Bezostaya 1	33.1		77	88
CI 13449	36.0		70	97
Centurk	41.1		83	96
Lancota	44.4		98	97
Check means	38.7		82	94.5
L.S.D. (.05) of the check means	7.7		6	-
Coefficient of variation (%)	14.4		4 9	-

Table 18. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Balcarce, Argentina in 1977.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Stem rust Sev.(%)	Septoria (0-9)
Bezostaya 1	90	302	40	8
CI 13449	80	310	100	8
Centurk	95	300	100	8
Lancota	100	304	100	5
5	90	295	10	8
6	105	295	T	8
7	90	309	60	6
8	95	309	70	8
9	90	302	60	8
10	95	302	80	8
11	100	305	40	8
12	100	305	40	4
13	95	306	30	8
14	90	311	30	6
15	95	302	70	8
16	95	293	30	8
17	80	305	60	8
18	95	300	20	8
19	90	301	20	8
20	90	301	10	8
21	90	300	10	8
22	90	300	-	8
23	95	300	30	8
24	90	300	70	4
25	95	300	10	7
26	85	300	10	7
27	85	301	10	7
28	85	301	10	8
29	90	294	70	8
30	100	303	10	8
31	95	304	70	8
32	100	301	10	8
33	95	301	80	8
34	95	302	80	8
35	95	301	10	8
36	90	299	20	8
37	90	306	60	8
38	85	300	100	8
39	95	301	100	8
40	100	299	100	8
41	100	298	100	8
42	95	298	20	8
43	85	305	30	6
44	90	297	-	8
45	90	297	-	8
46	95	291	10	8
47	90	293	10	8
48	90	303	10	8
49	85	297	10	8
50	90	297	100	8
Bezostaya 1	90	302	30	8
CI 13449	90	310	100	8
Centurk	95	300	100	8
Lancota	95	304	100	8
55	95	299	80	8
56	90	299	20	8
57	85	299	60	8
58	95	295	60	8
59	95	306	40	8
60	90	300	10	8

Table 18 Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Balcarce, Argentina in 1977. Continued.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Stem rust Sev.(%)	Septoria (0-9)
61	100	298	80	8
62	80	303	10	8
63	95	303	100	8
64	90	293	70	8
65	95	291	70	8
66	100	304	70	8
67	100	306	60	8
68	110	308	60	8
69	90	290	80	8
70	80	293	100	8
71	95	304	30	8
72	85	293	100	8
73	90	295	100	8
74	95	295	70	8
75	90	296	75	8
76	90	302	80	8
77	90	300	60	8
78	100	305	10	8
79	80	299	-	8
80	85	299	10	8
81	85	306	-	6
82	85	303	10	8
83	90	305	100	7
84	85	298	20	8
85	90	298	30	8
86	90	302	100	8
87	90	297	10	8
88	90	297	70	8
89	85	300	-	8
90	90	300	-	8
91	100	300	20	8
92	100	300	10	8
93	95	300	20	8
94	85	297	80	8
95	95	305	20	8
96	85	298	80	8
97	90	305	80	8
98	90	306	-	6
99	90	299	40	8
100	90	297	10	8
Bezostaya 1	90	302	100	8
CI 13449	80	310	100	8
Centurk	95	300	100	8
Lancota	100	304	30	6
105	90	302	20	6
106	85	298	40	8
107	90	299	10	8
108	80	297	80	8
109	90	297	60	8
110	85	304	40	8
111	80	306	100	8
112	75	297	100	8
113	80	297	40	8
114	80	303	40	8
115	80	303	40	8
116	60	299	-	8
117	65	299	-	8
118	60	301	-	8
119	80	305	-	8
120	90	299	40	8

Table 18. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Balcarce, Argentina in 1977. Continued.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Stem rust Sev.(%)	Septoria (0-9)
121	85	297	-	8
122	95	305	80	8
123	85	305	80	8
124	85	294	40	8
125	90	294	80	8
126	85	294	40	8
127	90	290	20	8
128	80	290	10	8
129	95	301	30	6
130	105	297	20	8
131	90	297	60	8
132	100	295	20	8
133	90	305	80	8
134	90	299	60	8
135	85	303	60	8
136	100	293	10	8
137	80	305	100	8
138	85	299	40	8
139	85	294	40	8
140	90	294	70	8
141	95	294	80	8
142	95	306	80	8
143	90	294	100	8
144	80	295	100	6
145	95	305	20	8
146	85	310	40	8
147	90	299	40	8
148	95	299	40	8
149	80	302	100	8
150	95	291	100	8
Bezostaya 1	80	302	100	8
CI 13449	80	310	100	8
Centurk	90	300	100	8
Lancota	100	304	100	8
155	95	299	80	8
156	95	298	10	8
157	80	300	100	8
158	100	305	60	8
159	95	305	100	8
160	95	304	100	8
161	85	294	100	8
162	95	294	100	8
163	95	311	20	8
164	95	305	100	8
165	90	295	80	8
166	90	295	60	8
167	95	295	70	8
168	100	295	70	8
169	95	292	90	8
170	85	303	70	8
171	95	293	60	8
172	90	298	20	8
173	90	298	20	8
174	95	298	30	8
175	85	299	90	8
176	90	299	40	7
177	90	298	60	8
178	95	293	60	8
179	90	292	70	8
180	90	271	90	8

Table 18. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Balcarce, Argentina in 1977. Concluded.

Entry No.	Plant height cm	Days to flowering from Jan.1	Stem rust Sev.(%)	Septoria (0-9)
181	95	305	90	8
182	100	303	70	8
183	95	303	90	8
184	95	303	30	8
185	90	291	40	8
186	90	298	20	8
187	95	298	10	8
188	90	303	90	8
189	85	294	90	8
190	95	298	30	8
191	95	298	100	8
192	85	294	30	8
Bezostaya 1	90	302	70	8
CI 13449	80	310	100	8
Centurk	95	300	100	8
Lancota	100	304	100	8
Mean	90	300	57.1	7.8
Standard deviation	7.0	5.1	-	-
Coefficient of variation (%)	7.8	1.7	-	-
		Means of the check varieties		
Bezostaya 1	88	302		
CI 13449	82	310		
Centurk	94	300		
Lancota	99	304		
Check means	91	304		
L.S.D. (.05) of the check means	5	-		
Coefficient of variation(%)	3.8	-		

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust: Leaf Sev. %	Rust: Leaf Resp	Rust: Stem Sev. %
Bezostaya 1	14.9	58	3.0	126	3.2	110	32.3	42	74.3	85	302	20	MS	20
CI 13449	10.3	195	3.5	10	3.3	61	21.0	173	63.4	80	313	60	S	70
Centurk	10.1	196	3.6	4	3.3	61	30.0	72	75.0	105	301	T	R	20
Lancota	12.4	161	3.1	90	3.1	153	26.3	126	76.4	110	308	5	R-MS	20
5	13.1	133	3.4	19	3.5	16	32.3	42	73.2	85	291	60	S	10
6	12.4	161	3.2	58	3.3	61	31.0	58	75.2	85	291	30	S	10
7	14.2	88	3.1	90	3.3	61	27.3	110	74.8	85	309	5	MR	40
8	15.2	52	3.2	58	3.4	32	30.7	62	76.4	90	309	5	R	20
9	14.8	64	3.2	58	3.4	32	34.7	18	73.2	90	303	10	MR	20
10	12.2	168	3.2	58	3.3	61	34.7	18	71.9	105	302	5	R	20
11	16.1	31	2.8	189	3.1	153	31.7	46	71.0	100	306	10	MR-R	10
12	15.6	40	2.9	166	3.1	153	28.0	99	73.7	105	304	20	S	5
13	16.6	19	2.8	189	3.0	184	30.0	72	64.2	90	305	10	MR	5
14	17.9	2	2.8	189	3.0	184	21.7	170	66.5	90	312	10	S	5
15	14.8	64	2.9	166	3.1	153	33.7	25	74.6	100	302	5	R	20
16	17.0	12	2.9	166	3.2	110	32.3	42	74.6	95	292	60	S	5
17	14.5	76	3.2	58	3.4	32	13.7	193	61.1	75	304	70	S	30
18	17.0	12	3.0	126	3.2	110	28.0	99	70.5	90	298	10	S	10
19	17.1	7	3.1	90	3.4	32	22.0	165	71.2	85	298	30	S	20
20	16.4	25	3.0	126	3.3	61	26.7	123	70.1	85	298	20	S	5
21	17.0	12	3.2	58	3.4	32	23.0	158	72.3	85	298	30	S	30
22	17.1	7	3.0	126	3.3	61	24.7	145	68.7	95	298	30	S	10
23	16.8	13	3.0	126	3.2	110	27.3	110	71.9	90	298	30	S	10
24	16.6	19	3.0	126	3.2	110	30.3	64	70.1	90	298	30	S	10
25	16.7	15	2.7	195	3.0	184	28.0	99	71.7	90	298	40	S	10
26	16.5	22	2.8	189	3.1	153	30.7	62	73.0	85	298	20	S	5
27	15.8	38	2.9	166	3.2	110	30.0	72	73.9	95	298	30	S	10
28	13.7	106	3.2	58	3.3	61	35.0	14	70.3	85	301	0	-	5
29	12.8	148	3.0	126	3.1	153	37.7	6	74.3	105	293	0	-	20
30	14.2	88	2.8	189	3.0	184	29.0	89	77.5	105	303	50	S	10
31	14.2	88	2.9	166	3.1	153	26.7	123	74.8	100	304	40	S	20
32	13.8	100	2.9	166	3.1	153	33.4	29	73.0	105	297	80	S	10
33	11.9	178	3.2	58	3.2	110	33.4	29	71.4	100	297	30	S	10
34	12.5	156	3.2	58	3.3	61	34.4	22	72.3	100	297	30	S	20
35	12.5	156	3.3	31	3.4	32	31.3	52	72.3	100	297	30	S	10
36	14.7	66	3.0	126	3.2	110	31.0	58	71.0	105	297	30	S	20
37	16.5	22	2.8	189	3.1	153	22.0	165	70.1	100	306	50	S	50
38	14.8	64	3.1	90	3.3	61	25.3	139	71.2	80	297	50	S	30
39	14.5	76	3.0	126	3.1	153	29.0	89	73.9	95	296	60	S	30
40	16.1	31	2.9	166	3.2	110	39.4	4	72.3	100	294	60	S	10

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust Leaf Sev %	Rust Leaf Resp	Rust Stem Sev. %
41	14.9	58	3.0	126	3.2	110	33.0	30	73.2	95	295	90	S	20
42	13.9	97	3.3	31	3.5	16	32.3	42	71.0	105	294	80	S	30
43	13.5	115	2.7	195	2.8	195	30.7	62	73.0	110	303	40	S	20
44	11.5	187	3.2	58	3.1	153	29.3	85	73.7	95	293	40	S	10
45	12.3	163	3.3	31	3.4	32	27.0	113	72.1	90	293	60	S	10
46	12.0	177	3.2	58	3.2	110	26.0	133	72.5	90	292	70	S	5
47	11.6	184	3.5	10	3.4	32	26.0	133	74.1	105	293	70	S	5
48	13.0	140	3.1	90	3.2	110	26.7	123	72.8	90	291	80	S	5
49	13.4	118	3.3	31	3.5	16	20.0	184	66.9	85	291	80	S	20
50	13.3	120	3.1	90	3.2	110	26.3	126	69.6	80	297	0	-	20
Bezostaya 1	13.0	140	2.9	166	3.0	184	27.7	103	73.7	95	301	40	MS	20
CI 13449	10.5	193	3.5	10	3.3	61	13.7	193	-	75	305	60	S	70
Centurk	11.2	188	3.3	31	3.2	110	34.7	18	75.0	105	302	T	R	30
Lancota	12.5	156	3.0	126	3.0	184	31.3	52	76.4	115	307	5	R	30
55	13.7	106	3.1	90	3.2	110	31.0	58	71.0	100	295	20	S-MS	5
56	12.4	161	3.2	58	3.2	110	18.3	186	71.0	85	290	-	-	5
57	13.1	133	3.0	126	3.1	153	23.3	154	72.3	100	294	50	S	5
58	13.0	140	2.8	189	2.9	194	32.0	43	75.5	105	296	60	S	30
59	13.5	115	2.8	189	3.0	184	22.3	162	72.8	105	310	70	S	20
60	14.6	71	2.9	166	3.1	153	29.3	85	74.6	100	295	70	S	20
61	13.1	133	2.8	189	2.9	194	29.3	85	73.2	100	293	60	S	10
62	13.1	133	3.3	31	3.4	32	35.7	12	70.1	85	296	0	-	20
63	12.0	177	2.9	166	3.0	184	27.3	110	74.8	105	303	70	S	10
64	15.4	47	3.2	58	3.5	16	26.3	126	69.6	95	292	70	S	30
65	13.8	100	2.9	166	3.1	153	23.3	154	73.9	85	289	60	S	30
66	12.1	171	3.3	31	3.3	61	35.4	13	73.7	115	303	40	S	40
67	12.5	156	3.1	90	3.1	153	27.7	103	75.9	95	309	5	R	40
68	12.4	161	3.1	90	3.2	110	26.7	123	70.5	100	312	5	MR	40
69	13.6	110	3.1	90	3.3	61	26.0	133	68.7	85	290	70	S	10
70	14.4	80	3.4	19	3.6	8	29.0	89	66.9	80	292	80	S	10
71	11.6	184	3.1	90	3.1	153	29.3	85	74.3	100	306	60	S	10
72	13.2	124	3.2	58	3.3	61	20.0	184	70.8	80	291	70	S	10
73	15.8	38	3.0	126	3.3	61	20.3	179	66.9	90	292	70	S	10
74	12.1	171	3.0	126	3.0	184	29.3	85	66.5	95	292	60	S	20
75	13.6	110	2.9	166	3.0	184	31.0	58	70.5	95	292	40	S	30
76	13.2	124	3.1	90	3.2	110	24.3	147	73.9	100	302	20	S	30
77	14.4	80	3.2	58	3.4	32	23.0	158	72.3	85	295	40	S	20
78	14.6	71	3.0	126	3.2	110	26.0	133	74.6	100	307	30	MS	10
79	13.5	115	2.8	189	2.9	194	32.3	42	72.3	95	295	20	S	10
80	15.0	56	3.0	126	3.2	110	45.0	1	71.4	90	299	20	S	10

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust Leaf Sev. %	Rust Leaf Resp	Rust Stem Sev. %
81	15.0	56	2.9	166	3.1	153	34.7	18	76.4	85	312	50	S	T
82	13.2	124	3.1	90	3.2	110	26.7	123	72.1	90	303	60	S	5
83	12.7	150	2.9	166	3.0	184	26.7	123	76.1	105	307	70	S	10
84	12.3	163	3.2	58	3.2	110	31.0	58	73.2	95	297	70	S	10
85	12.2	168	3.2	58	3.2	110	29.3	85	67.2	100	297	30	S	5
86	11.8	181	3.3	31	3.2	110	32.3	42	75.0	100	302	0	-	10
87	14.0	94	3.4	19	3.6	8	16.0	189	-	90	293	-	-	5
88	12.5	156	3.2	58	3.3	61	31.3	52	71.9	95	293	30	S	10
89	12.2	168	3.0	126	3.0	184	29.3	85	76.1	105	297	0	-	10
90	13.0	140	2.8	189	2.9	194	15.0	190	-	100	294	20	S	10
91	13.1	133	3.0	126	3.1	153	28.7	93	73.4	100	291	40	S	T
92	13.1	133	3.0	126	3.2	110	13.3	195	-	95	292	50	S	5
93	12.9	143	2.9	166	3.0	184	32.7	34	72.8	100	291	50	S	5
94	13.0	140	2.8	189	2.9	194	26.7	123	72.3	100	293	50	S	10
95	12.0	177	3.4	19	3.4	32	29.7	74	75.2	105	304	70	S	10
96	12.6	151	3.3	31	3.3	61	22.7	161	65.6	90	296	30	S	5
97	11.8	181	3.1	90	3.1	153	27.3	110	76.8	110	308	0	-	30
98	12.8	148	3.1	90	3.2	110	28.3	96	76.4	95	311	T	R	10
99	11.8	181	2.9	166	2.9	194	31.3	52	73.2	100	299	50	S	20
100	13.6	110	3.2	58	3.4	32	27.0	113	67.2	100	295	T	R	5
Bezostaya 1	13.5	115	2.8	189	2.9	194	24.7	145	73.0	95	301	20	MS-MR	10
CI 13449	10.5	193	3.6	4	3.5	16	13.7	193	-	85	316	60	S	80
Centurk	11.5	187	3.0	126	3.0	184	29.7	74	74.6	105	302	10	MS	10
Lancota	12.9	143	2.8	189	2.9	194	30.0	72	76.4	120	309	T	R	20
105	12.9	143	2.9	166	3.0	184	36.4	9	75.9	110	302	T	R	10
106	12.7	150	3.2	58	3.3	61	25.7	137	72.5	95	295	60	S	10
107	12.4	161	3.3	31	3.3	61	29.0	89	65.6	90	300	60	S	30
108	11.5	187	3.2	58	3.2	110	26.7	123	68.3	90	297	10	MR	30
109	12.1	171	3.2	58	3.2	110	27.7	103	71.0	100	293	-	-	20
110	10.3	195	3.4	19	3.2	110	17.3	188	74.1	110	304	60	S	30
111	11.1	189	3.1	90	3.0	184	20.7	175	74.6	105	311	30	S	30
112	10.8	190	3.5	10	3.4	32	21.7	170	69.4	105	297	70	S	30
113	12.2	168	3.1	90	3.1	153	21.3	172	73.9	105	297	40	S	10
114	12.0	177	3.1	90	3.1	153	22.7	161	74.1	100	303	5	R	10
115	12.8	148	2.9	166	3.0	184	26.0	133	73.7	105	303	80	S	10
116	13.2	124	3.2	58	3.3	61	21.3	172	71.0	90	297	60	S	5
117	13.1	133	3.0	126	3.2	110	25.7	137	71.9	90	297	30	S	5
118	13.7	106	3.0	126	3.1	153	21.7	170	75.5	85	300	10	MS	20
119	13.6	110	2.9	166	3.0	184	26.7	123	71.9	95	306	0	0	T
120	14.5	76	2.8	189	3.0	184	36.0	10	71.9	105	301	80	S	5

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust Leaf Sev. %	Rust Leaf Resp	Rust Stem Sev. %
121	15.1	53	2.9	166	3.1	153	39.7	3	69.2	95	297	40	S	5
122	12.0	177	3.0	126	3.0	184	31.7	46	77.7	115	305	20	MS-MR	10
123	12.0	177	3.0	126	3.0	184	29.3	85	77.3	115	302	30	MS	10
124	14.8	64	3.1	90	3.3	61	20.3	179	68.7	95	294	5	MR	10
125	15.4	47	3.3	31	3.6	8	20.3	179	61.1	100	294	0	0	10
126	13.7	106	3.1	90	3.2	110	20.0	184	69.2	85	294	5	MS	10
127	14.1	92	3.0	126	3.1	153	27.3	110	72.3	90	290	0	0	10
128	14.1	92	2.9	166	3.0	184	24.7	145	71.0	90	289	0	0	5
129	13.9	97	2.9	166	3.1	153	31.7	46	76.4	95	302	0	0	10
130	13.1	133	3.1	90	3.2	110	28.7	93	76.4	105	296	40	S	10
131	13.5	115	3.1	90	3.2	110	37.7	6	77.3	95	299	T	R	20
132	12.2	168	3.1	90	3.2	110	32.7	34	75.0	105	297	50	S	10
133	13.1	133	3.1	90	3.2	110	32.3	42	74.6	100	306	0	0	10
134	13.4	118	3.0	126	3.1	153	41.0	2	75.9	90	297	0	0	5
135	14.5	76	2.9	166	3.1	153	34.3	22	73.7	95	304	0	0	5
136	14.1	92	2.9	166	3.1	153	24.7	145	73.2	100	294	-	-	-
137	14.2	88	3.4	19	3.5	16	12.7	196	-	85	309	80	S	10
138	15.4	47	3.0	126	3.2	110	23.0	158	71.9	95	300	0	0	5
139	17.1	7	3.3	31	3.5	16	21.7	170	62.9	85	295	0	0	5
140	18.0	1	3.4	19	3.7	5	21.7	170	60.2	80	294	0	0	10
141	14.5	76	3.1	90	3.3	61	32.7	34	73.0	85	292	80	S	20
142	15.3	50	2.9	166	3.1	153	36.7	7	74.3	100	306	30	S	30
143	16.1	31	3.7	2	4.0	1	20.0	184	62.2	85	292	10	S	5
144	17.0	12	3.5	10	3.8	3	23.0	158	56.4	90	293	20	S	5
145	14.1	92	3.0	126	3.2	110	33.4	29	75.9	105	302	70	S	5
146	15.2	52	2.8	189	3.0	184	23.7	152	75.0	85	311	20	S	10
147	12.8	148	3.2	58	3.3	61	24.7	145	77.3	100	300	10	MS	10
148	12.8	148	3.2	58	3.3	61	31.3	52	72.8	100	295	80	S	20
149	13.0	140	3.4	19	3.5	16	26.7	123	71.4	95	302	70	S	10
150	13.3	120	3.1	90	3.2	110	26.0	133	72.1	90	287	70	S	20
Bezostaya I	13.0	140	3.1	90	3.2	110	23.7	152	73.2	100	299	30	S	5
CI 13449	10.6	191	3.4	19	3.3	61	20.7	175	64.7	85	315	70	S	50
Centurk	11.7	182	3.2	58	3.2	110	29.3	85	75.5	105	302	60	S	30
Lancota	13.4	118	2.9	166	3.0	184	30.7	62	77.3	110	311	5	R	5
155	14.8	64	3.0	126	3.2	110	27.7	103	71.7	90	297	T	R	5
156	14.2	88	2.9	166	3.1	153	19.0	185	73.0	90	294	70	S	5
157	15.8	38	2.8	189	3.0	184	23.7	152	73.0	90	300	20	S	20
158	14.2	88	2.9	166	3.1	153	28.3	96	75.2	105	305	60	S	5
159	14.6	71	3.0	126	3.2	110	27.3	110	69.4	95	309	70	S	20
160	15.6	40	2.9	166	3.2	110	33.7	25	71.4	110	309	70	S	10

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust Leaf Sev. %	Rust Leaf Resp	Rust Stem Sev. %
161	15.3	50	2.9	166	3.1	153	34.0	23	69.2	80	295	0	0	10
162	14.3	81	2.8	189	3.0	184	28.3	96	72.3	90	294	0	0	5
163	15.4	47	2.7	195	2.9	194	25.7	137	74.1	95	316	0	0	5
164	13.7	106	3.0	126	3.1	153	28.7	93	70.5	100	310	20	S	20
165	15.5	41	2.9	166	3.1	153	34.4	22	70.1	100	295	40	S	10
166	15.9	35	2.8	189	3.1	153	30.0	72	72.3	85	293	20	S	5
167	15.3	50	2.8	189	3.1	153	30.0	72	72.3	100	297	10	MS-S	5
168	15.4	47	2.7	195	3.0	184	29.3	85	72.8	105	294	10	S	T
169	14.4	80	2.9	166	3.1	153	32.3	42	73.9	95	291	30	S	5
170	15.9	35	2.7	195	3.0	184	22.7	161	70.8	95	304	20	S	10
171	16.2	27	3.1	90	3.4	32	20.3	179	68.1	90	294	-	-	5
172	17.2	4	3.0	126	3.3	61	24.7	145	66.5	90	297	20	S	T
173	17.0	12	-	-	-	-	25.7	137	66.5	95	297	10	MS	T
174	17.5	3	3.7	2	3.9	2	23.7	152	64.4	95	297	10	S	T
175	16.6	19	2.9	166	3.1	153	31.0	58	64.8	100	296	30	S	0
176	16.3	26	3.1	90	3.3	61	32.7	34	69.4	100	296	20	MS	0
177	16.4	25	2.9	166	3.1	153	25.3	139	70.1	95	296	10	MS	0
178	16.1	31	3.0	126	3.2	110	34.4	22	68.7	95	297	10	MR-MS	0
179	16.6	19	3.5	10	3.7	5	18.0	187	53.9	86	295	20	S	0
180	15.4	47	2.9	166	3.1	153	35.7	12	71.9	100	302	10	MS	0
181	16.0	32	3.1	90	3.4	32	28.7	93	72.3	105	306	5	R	20
182	15.9	35	2.9	166	3.2	110	30.0	72	75.2	105	302	40	S	5
183	16.5	22	3.0	126	3.2	110	22.0	165	66.9	95	305	40	S	5
184	16.4	25	2.8	189	3.0	184	24.3	147	75.5	110	308	60	S	T
185	14.8	64	2.9	166	3.1	153	23.7	152	66.5	90	288	-	-	0
186	15.0	56	2.9	166	3.2	110	20.0	184	71.7	85	297	30	S	0
187	14.7	66	2.8	189	3.0	184	36.4	9	73.2	90	297	40	S	5
188	13.7	106	3.0	126	3.2	110	33.4	29	70.5	90	303	0	0	T
189	13.8	100	3.1	90	3.3	61	27.0	113	73.7	90	294	T	R	5
190	14.2	88	2.9	166	3.1	153	30.3	64	76.4	100	295	0	0	5
191	14.4	80	3.0	126	3.2	110	31.3	52	72.3	95	296	30	S	T
192	14.6	71	3.1	90	3.3	61	29.3	85	72.3	85	295	20	S	5
Bezostaya 1	14.6	71	2.8	189	3.0	184	27.3	110	73.2	95	301	10	MS	10
CI 13449	14.0	94	3.2	58	3.4	32	13.3	195	-	80	317	70	S	40
Centurk	13.9	97	2.9	166	3.1	153	26.0	133	75.9	105	302	5	R	10
Lancota	16.7	15	2.7	195	2.9	194	30.0	72	71.4	105	311	5	MR	T
Mean	14.0		3.1		3.2		27.7		71.9	96	299	33.5		13.7
Standard deviation	1.7		0.2		0.2		5.6		3.8	8.6	6.3	-		-
Coefficient of variation (%)	12.4		6.8		5.9		20.3		5.3	9.0	2.1	-		-

Table 19. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bordenave, Argentina in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height cm	Days to flowering from Jan. 1	Rust: Leaf Sev. Resp %	Rust: Stem Sev. %
							Means of the check varieties						
Bezostaya 1	13.8		2.9		3.1		27.1		73.5	94	301		
CI 13449	11.2		3.4		3.4		16.5		64.1	81	313		
Centurk	11.7		3.2		3.2		29.9		75.2	105	302		
Lancota	13.6		2.9		3.0		29.7		75.6	112	309		
Check means	12.6		3.1		3.1		25.8		72.1	98	306		
L.S.D. (.05) of the check means	1.1		0.2		0.1		4.6		-	6	3		
Coefficient of variation (%)	6.6		4.2		3.3		12.8		-	4.3	0.8		

Correlation Coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	-.10	-.17*	-.09	-.20**	-.05	.23**
Plant height	-.26**	-.41**	-.25**	-.41**	.33**	
Yield	.01	-.15*	-.29**	-.29**		
Adjusted lysine/protein	.15*	.64**	.84**			
Lysine/protein	-.34**	.20**				
Lysine	.84**					

** Significant at the .01 level.
* Significant at the .05 level.

Table 20. Agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Tres Arroyos, Argentina in 1978.[2/]

Entry No.	Yield (g)	Days to flowering from Jan. 1	Plant height (cm)	Septoria Sev(1-9)	Entry No.	Yield (g)	Days to flowering from Jan. 1	Plant height (cm)	Septoria Sev(1-9)
Bezostaya 1	300	314	100	4	Bezostaya 1	260	317	95	3
CI 13449	450	327	90	4	CI 13449	330	327	90	5
Centurk	390	314	100	3	Centurk	370	314	100	5
Lancota	600	320	105	5	Lancota	460	320	115	5
5	200	305	95	4	55	170	307	100	5
6	320	305	85	3	56	250	299	90	5
7	360	320	105	4	57	290	312	105	3
8	410	320	100	3	58	350	307	105	3
9	330	314	90	2	59	400	320	100	5
10	520	314	100	3	60	440	307	100	5
11	500	320	105	4	61	110	312	90	5
12	80	320	110	3	62	250	307	90	5
13	660	320	95	4	63	380	314	95	6
14	260	327	85	4	64	240	299	90	6
15	390	314	95	5	65	230	299	90	5
16	420	305	100	3	66	470	317	105	4
17	270	317	80	2	67	340	324	100	4
18	600	312	95	5	68	330	320	105	5
19	500	312	85	5	69	290	327	85	3
20	500	312	100	5	70	310	305	80	4
21	360	312	95	3	71	610	320	105	4
22	300	312	90	3	72	350	299	80	5
23	400	312	100	3	73	350	305	90	4
24	490	312	95	3	74	390	305	95	4
25	350	312	90	3	75	360	305	100	5
26	400	312	100	3	76	220	320	95	3
27	370	312	100	3	77	550	307	90	5
28	250	317	100	3	78	870	317	100	5
29	530	305	100	4	79	490	305	90	3
30	260	317	100	3	80	470	307	90	5
31	350	317	105	5	81	430	317	95	5
32	370	312	80	5	82	460	307	100	5
33	180	314	85	5	83	500	317	95	4
34	170	314	100	5	84	460	307	100	4
35	150	314	90	5	85	400	307	100	3
36	210	314	80	5	86	270	317	100	4
37	430	317	90	5	87	180	305	100	5
38	250	307	90	5	88	350	305	100	4
39	280	307	95	5	89	450	317	110	4
40	340	307	95	5	90	330	305	105	4
41	300	307	100	4	91	180	299	105	5
42	340	307	90	3	92	240	305	100	4
43	210	307	115	5	93	250	307	105	4
44	250	305	110	4	94	450	310	100	4
45	350	305	85	4	95	380	317	110	4
46	280	299	90	4	96	200	307	95	5
47	380	299	100	5	97	550	317	115	4
48	290	299	90	5	98	510	322	95	5
49	110	305	90	4	99	330	307	100	3
50	360	312	85	4	100	200	307	115	3

Table 20. Agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Tres Arroyos, Argentina in 1978.[a/] Concluded.

Entry No	Yield (g)	Days to flowering from Jan. 1	Plant height (cm)	Septoria Sev(1-9)	Entry No	Yield (g)	Days to flowering from Jan. 1	Plant height (cm)	Septoria Sev(1-9)
Bezostaya 1	310	317	105	3	Bezostaya 1	350	314	95	4
CI 13449	300	327	90	4	CI 13449	500	327	90	4
Centurk	410	314	115	4	Centurk	240	314	105	4
Lancota	500	320	105	3	Lancota	580	317	120	5
105	300	317	110	4	155	390	310	110	4
106	220	307	95	3	156	450	305	115	3
107	350	317	90	3	157	400	307	95	2
108	350	307	110	3	158	310	317	105	5
109	150	305	105	5	159	330	317	90	5
110	300	317	105	4	160	280	317	105	3
111	480	324	95	3	161	370	307	95	3
112	380	307	95	5	162	300	312	105	3
113	330	307	95	4	163	420	324	105	4
114	520	317	95	4	164	300	324	100	4
115	500	314	100	3	165	400	307	100	4
116	230	307	90	4	166	470	314	95	3
117	330	307	90	5	167	400	312	110	4
118	380	317	85	5	168	310	307	105	3
119	390	317	90	5	169	300	299	105	4
120	460	310	110	5	170	400	317	100	4
121	200	307	95	5	171	320	307	105	3
122	340	317	110	4	172	350	307	95	4
123	450	324	100	4	173	500	310	95	3
124	220	307	95	3	174	450	310	100	4
125	400	307	100	3	175	250	310	100	4
126	380	307	105	3	176	200	310	100	3
127	500	310	95	3	177	270	310	100	3
128	340	307	90	4	178	570	310	105	3
129	460	310	100	5	179	330	310	110	3
130	250	307	115	5	180	280	310	100	4
131	470	310	90	4	181	230	314	105	5
132	320	314	105	4	182	300	314	115	5
133	480	317	90	5	183	250	317	105	5
134	500	317	90	5	184	180	322	120	5
135	500	324	85	5	185	270	299	90	4
136	250	307	100	4	186	400	310	90	5
137	280	317	85	5	187	330	314	95	4
138	190	310	100	5	188	600	317	95	5
129	200	307	95	4	189	570	307	95	4
140	210	307	90	3	190	280	307	120	5
141	370	307	100	3	191	210	314	90	5
142	650	317	110	4	192	470	307	80	3
143	310	307	95	4	Bezostaya 1	370	314	85	3
144	300	307	90	4	CI 13449	500	327	90	5
145	330	317	100	5	Centurk	270	314	105	5
146	560	324	95	5	Lancota	400	322	115	4
147	200	317	90	5					
148	270	314	85	5	Buck Naposta	374	311	100	4
149	410	317	90	4	Buck Nemuncura	611	315	105	4
150	280	299	95	4					
					Mean	358.0	312.1	97.9	4.1
					Standard deviation	120.8	6.6	8.5	0.8
					Coefficient of variation (%)	33.7	2.1	8.7	20.7

a/ Seed was mailed to Tres Arroyos later than the other Southern hemisphere sites, and was planted one year later.

Table 21. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at Temuco, Chile in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
Bezostaya 1	13.8	108	2.9	140	3.0	153
CI 13449	10.8	194	3.6	2	3.5	15
Centurk	12.0	186	3.3	33	3.3	60
Lancota	13.8	108	2.9	140	3.1	121
5	14.5	62	2.9	140	3.1	121
6	13.9	98	3.1	66	3.3	60
7	15.6	24	2.9	140	3.2	82
8	14.0	90	3.3	33	3.4	38
9	13.7	115	3.4	18	3.5	15
10	11.7	191	3.4	18	3.4	38
11	15.3	31	3.1	66	3.4	38
12	11.8	190	3.4	18	3.4	38
13	11.8	190	3.3	33	3.3	60
14	12.5	172	3.5	6	3.6	6
15	12.1	183	3.4	18	3.4	38
16	15.4	29	3.0	88	3.2	82
17	13.8	108	3.3	33	3.4	38
18	15.2	35	2.9	140	3.1	121
19	14.9	45	2.9	140	3.1	121
20	15.2	35	2.9	140	3.1	121
21	14.7	54	2.9	140	3.1	121
22	14.3	71	2.9	140	3.0	153
23	15.6	24	2.9	140	3.1	121
24	15.5	26	2.9	140	3.2	82
25	14.8	52	2.8	169	3.0	153
26	14.9	45	2.9	140	3.1	121
27	16.0	11	2.8	169	3.1	121
28	15.8	15	3.1	66	3.3	60
29	13.0	157	3.0	88	3.1	121
30	14.6	57	3.0	88	3.2	82
31	14.1	86	2.9	140	3.1	121
32	15.0	39	3.2	47	3.4	38
33	14.0	90	3.4	18	3.6	6
34	14.3	71	3.5	6	3.7	2
35	13.2	142	3.3	33	3.4	38
36	13.4	130	3.3	33	3.4	38
37	14.8	52	3.1	66	3.4	38
38	13.9	98	3.2	47	3.3	60
39	13.9	98	3.1	66	3.3	60
40	16.7	5	3.3	33	3.6	6
41	15.6	24	3.2	47	3.4	38
42	14.4	65	2.9	140	3.1	121
43	13.0	157	3.5	6	3.6	6
45	12.9	164	3.1	66	3.2	82
46	16.1	9	3.3	33	3.5	15
47	14.5	62	3.2	47	3.4	38
48	15.9	12	3.3	33	3.5	15
49	14.1	86	3.2	47	3.3	60
50	14.2	79	2.9	140	3.0	153
Bezostaya 1	14.1	86	2.9	140	3.1	121
CI 13449	11.2	193	3.2	47	3.1	121
Centurk	13.1	150	3.0	88	3.1	121
Lancota	14.1	86	2.6	193	2.8	192
55	14.5	62	3.0	88	3.2	82
56	17.4	3	2.9	140	3.1	121
57	13.8	108	2.8	169	2.9	178
58	15.5	26	2.6	193	2.8	192
59	12.6	171	2.9	140	2.9	178
60	15.7	18	2.8	169	3.1	121

Table 21. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at Temuco, Chile in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
61	13.6	118	2.7	186	2.8	192
62	14.2	79	2.9	140	3.1	121
63	14.2	79	3.1	66	3.3	60
64	14.6	57	2.7	186	2.9	178
65	16.0	11	2.9	140	3.2	82
66	12.9	164	2.9	140	3.0	153
67	13.5	126	3.7	1	3.9	1
68	12.9	164	3.0	88	3.1	121
69	15.6	24	3.0	88	3.2	82
70	14.8	52	3.1	66	3.3	60
71	13.5	126	3.0	88	3.1	121
72	15.8	15	2.9	140	3.1	121
73	14.4	65	2.7	186	2.9	178
74	14.9	45	2.7	186	2.9	178
75	15.7	18	2.8	169	3.0	153
76	11.6	192	3.4	18	3.4	38
77	13.0	157	2.9	140	3.0	153
78	13.8	108	2.9	140	3.1	121
79	13.9	98	2.9	140	3.1	121
80	15.0	39	2.8	169	3.0	153
81	14.9	45	2.9	140	3.1	121
82	13.7	115	2.8	169	3.0	153
83	12.4	175	2.7	186	2.7	194
84	14.3	71	2.9	140	3.1	121
85	13.7	115	2.8	169	2.9	178
86	12.0	186	2.8	169	2.9	178
87	14.2	79	3.0	88	3.2	82
88	15.2	35	2.7	186	2.9	178
89	13.1	150	2.8	169	2.9	178
90	14.3	71	2.9	140	3.1	121
91	14.8	52	3.0	88	3.2	82
92	14.4	65	3.1	66	3.3	60
93	13.9	98	2.9	140	3.1	121
94	12.9	164	2.9	140	3.0	153
95	13.5	126	2.9	140	3.0	153
96	15.3	31	2.9	140	3.2	82
97	11.8	190	2.8	169	2.8	192
98	12.4	175	2.9	140	2.9	178
99	13.3	136	2.9	140	3.0	153
100	14.1	86	2.7	186	2.9	178
Bezostaya 1	13.7	115	2.8	169	3.0	153
CI 13449	13.1	150	3.0	88	3.1	121
Centurk	12.1	183	3.2	47	3.2	82
Lancota	14.2	79	2.8	169	2.9	178
105	13.2	142	2.9	140	3.0	153
106	13.3	136	2.9	140	3.0	153
107	13.0	157	3.0	88	3.1	121
108	13.0	157	2.9	140	3.0	153
109	16.1	9	2.8	169	3.1	121
110	13.5	126	2.9	140	3.0	153
111	14.3	71	2.8	169	3.0	153
112	12.4	175	2.8	169	2.8	192
113	14.1	86	3.3	33	3.5	15
114	13.0	157	2.8	169	2.9	178
115	14.1	86	2.7	186	2.8	192
116	13.5	126	2.8	169	3.0	153
117	15.6	24	2.6	193	2.8	192
118	13.7	115	2.9	140	3.1	121
119	12.7	167	2.9	140	2.9	178
120	12.7	167	2.7	186	2.8	192

Table 21. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at Temuco, Chile in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
121	12.7	167	2.7	186	2.8	192
122	13.2	142	3.1	66	3.2	82
123	14.6	57	2.7	186	2.9	178
124	16.3	7	2.6	193	2.8	192
125	14.8	52	2.5	194	2.7	194
126	14.0	90	2.6	193	2.8	192
127	14.3	71	2.8	169	3.0	153
128	13.9	98	2.8	169	2.9	178
129	13.3	136	2.8	169	2.9	178
130	12.6	171	2.7	186	2.8	192
131	13.8	108	2.9	140	3.0	153
132	12.6	171	2.8	169	2.9	178
133	12.9	164	2.8	169	2.9	178
134	14.2	79	2.7	186	2.8	192
135	13.2	142	2.9	140	3.0	153
136	13.1	150	3.2	47	3.3	60
137	13.0	157	3.2	47	3.3	60
138	13.5	126	2.8	169	2.9	178
139	15.4	29	2.8	169	3.0	153
140	13.8	108	2.9	140	3.1	121
141	14.8	52	3.0	88	3.2	82
142	13.7	115	3.0	88	3.1	121
143	15.8	15	3.1	66	3.4	38
144	13.3	136	3.1	66	3.2	82
145	14.9	45	3.2	47	3.4	38
146	14.5	62	3.2	47	3.4	38
147	12.3	177	3.3	33	3.3	60
148	15.0	39	3.0	88	3.2	82
149	14.8	52	3.1	66	3.3	60
150	14.0	90	3.1	66	3.3	60
151	12.3	177	2.8	169	2.9	178
152	12.0	186	3.4	18	3.4	38
153	12.2	179	3.2	47	3.3	60
154	14.5	62	2.9	140	3.1	121
155	13.9	98	3.0	88	3.2	82
156	13.1	150	3.2	47	3.3	60
157	13.3	136	3.0	88	3.2	82
158	13.2	142	3.4	18	3.5	15
159	13.3	136	3.4	18	3.5	15
160	13.1	150	3.3	33	3.4	38
161	13.6	118	3.3	33	3.4	38
162	13.9	98	3.4	18	3.5	15
163	15.2	35	2.9	140	3.1	121
164	13.2	142	3.3	33	3.4	38
165	16.5	6	2.6	193	2.8	192
166	14.2	79	3.2	47	3.4	38
167	13.4	130	2.9	140	3.0	153
168	13.1	150	2.9	140	3.0	153
169	13.5	126	3.0	88	3.1	121
170	13.4	130	3.0	88	3.1	121
171	13.5	126	2.9	140	3.0	153
172	18.4	1	2.8	169	3.0	153
173	15.1	36	3.0	88	3.2	82
174	17.9	2	2.7	186	3.0	153
175	15.7	18	2.7	186	2.9	178
176	15.4	29	2.6	193	2.9	178
177	13.8	108	2.9	140	3.1	121
178	12.9	164	2.8	169	2.9	178
179	13.1	150	2.8	169	3.0	153
180	15.6	24	2.9	140	3.1	121

Table 21. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at Temuco, Chile in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
181	13.8	108	3.0	88	3.2	82
182	12.6	171	3.1	66	3.2	82
183	14.2	79	3.1	66	3.3	60
185	16.8	4	2.7	186	3.0	153
186	13 6	118	2 9	140	3.0	153
187	14.7	54	2.7	186	2.9	178
188	12.1	183	3.3	33	3.3	60
189	13.7	115	3.1	66	3 3	60
190	13.8	108	3.1	66	3 3	60
191	12.2	179	3.4	18	3.4	38
192	11.8	190	3.4	18	3.4	38
Bezostaya 1	14.9	45	3.0	88	3.2	82
CI 13449	12.1	183	3.5	6	3.5	15
Centurk	13.4	130	3.1	66	3.3	60
Lancota	12.9	164	2.9	140	3.0	153
Mean	14.0		3.0		3.1	
Standard deviation	1.3		0.2		0.2	
Coefficient of variation (%)	9.1		7.8		7.0	
Means of the check varieties						
Bezostaya 1	13.8		2.9		3.0	
CI 13449	11.8		3.3		3.3	
Centurk	12 6		3.2		3.2	
Lancota	13.9		2 8		3.0	
Check means	13 0		3 1		3.1	
L.S.D. (.05) of the check means	1.1		0.2		0.2	
Coefficient of variation (%)	6.4		4.1		3.6	

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.07	.69**	.94**
Lysine/protein	-.35**	.45**	
Lysine	.66**		

** Significant at the .01 level.

Table 22. Stripe rust reactions for the entries in the third high protein-high lysine winter wheat observation nursery grown at Quito, Ecuador in 1977.

Entry	Stripe rust[a/] Sev(%)	Resp.	Entry	Stripe rust[a/] Sev(%)	Resp.	Entry	Stripe rust[a/] Sev(%)	Resp.
Bezostaya 1	20	S	61	40	S	121	80	S
CI 13449	40	S	62	60	S	122	60	S
Centurk	10	MS	63	60	S	123	20	S
Lancota	40	S	64	60	S	124	10	MS
5	10	MS	65	40	S	125	40	S
6	30	S	66	60	S	126	20	S
7	60	S	67	60	S	127	60	S
8	40	S	68	5	MS	128	40	S
9	80	S	69	40	S	129	60	S
10	20	S	70	20	S	130	10	S
11	60	S	71	10	S	131	40	S
12	40	S	72	60	S	132	40	S
13	40	S	73	40	S	133	40	S
14	100	S	74	40	S	134	40	S
15	20	MS	75	40	S	135	40	S
16	60	S	76	60	S	136	40	S
17	20	S	77	20	S	137	80	S
18	30	S	78	80	S	138	5	MS
19	20	MS	79	80	S	139	20	S
20	40	S	80	60	S	140	5	MR
21	20	S	81	40	S	141	60	S
22	10	MS	82	40	S	142	40	S
23	40	S	83	5	MS	143	60	S
24	10	S	84	40	S	144	60	S
25	30	S	85	10	S	145	40	S
26	20	S	86	80	S	146	80	S
27	20	S	87	5	MS	147	10	S
28	80	S	88	20	S	148	20	S
29	10	MS	89	30	S	149	20	S
30	40	S	90	80	S	150	40	S
31	40	S	91	80	S	151	10	S
32	20	S	92	80	S	152	60	S
33	30	S	93	60	S	153	5	MS
34	10	S	94	40	S	154	20	S
35	20	S	95	80	S	155	T	MS
36	60	S	96	60	S	156	80	S
37	60	S	97	60	S	157	40	S
38	60	S	98	80	S	158	60	S
39	60	S	99	30	S	159	80	S
40	60	S	100	10	MS	160	20	S
41	80	S	Bezostaya 1	10	MS	161	40	S
42	60	S	CI 13449	30	S	162	5	MS
43	40	S	Centurk	30	S	163	10	S
44	60	S	Lancota	60	S	164	80	S
45	60	S	105	80	S	165	40	S
46	60	S	106	5	MS	166	5	MS
47	60	S	107	T	MS	167	10	MS
48	60	S	108	10	MS	168	5	MS
49	80	S	109	80	S	169	40	S
50	20	S	110	40	S	170	20	S
Bezostaya 1	10	S	111	30	S	171	10	S
CI 13449	40	S	112	60	S	172	30	S
Centurk	10	S	113	80	S	173	20	S
Lancota	40	S	114	5	MR	174	30	S
55	80	S	115	30	S	175	T	MS
56	80	S	116	30	S	176	0	
57	T	S	117	20	S	177	T	R
58	5	S	118	30	S	178	T	R
59	20	S	119	60	S	179	30	S
60	20	S	120	5	MS	180	20	S

Table 22. Stripe rust reactions for the entries in the third high protein-high lysine winter wheat observation nursery grown at Quito, Ecuador in 1977. Concluded.

Entry	Stripe rust[a/] Sev(%)	Stripe rust[a/] Resp.	Entry	Stripe rust[a/] Sev(%)	Stripe rust[a/] Resp.
181	80	S	191	20	S
182	60	S	192	20	S
183	60	S	Bezostaya 1	30	S
184	40	S	CI 13449	80	S
185	60	S	Centurk	20	S
186	10	S	Lancota	40	S
187	T	R			
188	10	S			
189	10	S			
190	20	S			

[a/] Seedling reactions. Most of the entries did not head at this location.

Table 23. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Martonvasar, Hungary in 1977.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Rust severity Leaf (0-9)	Rust severity Stem (0-9)
Bezostaya 1	88	144	3	4
CI 13449	75	152	9	8
Centurk	96	145	3	4
Lancota	86	154	4	5
5	86	143	4	5
6	88	143	4	5
7	90	154	0	7
8	89	152	6	7
9	86	144	1	9
10	93	144	1	9
11	88	148	1	9
12	97	146	0	5
13	90	146	0	5
14	90	152	4	2
15	93	144	4	3
16	95	147	4	3
17	80	145	0	7
18	93	142	6	3
19	90	142	0	4
20	96	142	0	4
21	90	142	0	3
22	95	142	0	4
23	96	142	0	4
24	92	142	0	7
25	93	142	0	6
26	93	142	0	6
27	98	142	0	6
28	85	146	0	3
29	93	143	0	5
30	94	145	0	1
31	104	143	0	6
32	105	143	0	3
33	96	143	0	1
34	88	143	0	1
35	101	143	0	1
36	105	143	0	0
37	88	143	0	1
38	85	145	0	1
29	97	145	0	2
40	91	143	0	2
41	90	143	0	7
42	96	143	0	6
43	105	145	0	6
44	98	143	0	5
45	86	144	0	4
46	88	144	0	5
47	94	144	0	5
48	80	144	0	5
49	80	144	0	3
50	83	144	0	2
Bezostaya 1	95	143	0	5
CI 13449	73	152	0	8
Centurk	100	146	0	2
Lancota	98	154	0	4
55	100	143	0	4
56	90	143	0	4
57	105	143	2	8
58	98	143	6	9
59	97	144	8	5
60	89	144	9	7

Table 23. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Martonvasar, Hungary in 1977. Continued.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Rust severity Leaf (0-9)	Rust severity Stem (0-9)
61	96	143	9	4
62	75	143	5	5
63	94	143	4	5
64	90	144	0	9
65	92	144	6	9
66	110	144	0	9
67	103	155	3	5
68	110	154	3	5
69	80	144	0	7
70	75	143	4	7
71	105	144	9	5
72	80	143	7	7
73	90	142	0	5
74	87	142	5	6
75	85	142	5	5
76	100	143	8	7
77	76	143	1	4
78	81	145	7	5
79	94	143	3	6
80	84	143	1	6
81	76	146	4	6
82	82	145	6	1
83	92	143	0	4
84	98	143	5	4
85	100	143	6	4
86	94	143	8	4
87	90	143	2	4
88	82	143	8	5
89	108	145	0	7
90	108	144	3	3
91	108	145	2	3
92	95	146	5	5
93	100	144	2	4
94	96	144	3	8
95	98	144	4	8
96	75	144	4	5
97	106	147	6	8
98	95	143	4	8
99	100	143	2	4
100	75	143	0	4
Bezostaya 1	88	144	5	6
CI 13449	78	154	5	5
Centurk	102	143	9	8
Lancota	104	143	0	3
105	100	142	9	7
106	92	143	2	5
107	88	144	0	5
108	85	145	4	5
109	105	144	0	5
110	102	144	0	5
111	99	147	3	4
112	98	144	3	6
113	109	143	0	5
114	95	143	4	4
115	100	144	0	4
116	88	144	0	4
117	96	142	0	5
118	70	153	5	4
119	92	144	0	4
120	99	144	7	5

Table 23. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery-grown at Martonvasar, Hungary in 1977. Continued.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Rust severity Leaf (0-9)	Rust severity Stem (0-9)
121	98	144	3	4
122	88	144	0	4
123	100	144	0	5
124	83	142	0	4
125	90	142	4	4
126	86	142	0	5
127	92	142	0	4
128	78	142	0	4
129	90	142	0	4
130	105	143	0	3
131	88	142	0	5
132	100	144	2	6
133	86	144	0	4
134	84	144	0	5
135	80	145	4	5
136	96	144	0	4
137	75	145	9	8
138	87	145	0	3
139	78	142	0	6
140	78	142	0	3
141	82	142	0	8
142	85	146	7	8
143	84	143	0	5
144	80	142	2	5
145	98	142	6	2
146	83	147	3	3
147	98	143	8	5
148	90	143	0	5
149	88	143	8	6
150	93	142	9	6
Bezostaya 1	86	143	4	5
CI 13449	70	152	0	7
Centurk	100	144	0	3
Lancota	94	144	5	6
155	93	142	3	5
156	90	142	0	5
157	92	144	5	5
158	95	144	0	5
159	95	145	8	7
160	100	145	0	8
161	80	145	6	9
162	90	143	6	5
163	83	150	0	4
164	92	148	3	6
165	96	146	4	5
166	85	142	3	5
167	95	142	3	6
168	95	142	5	7
169	90	143	5	8
170	91	146	6	9
171	86	143	5	8
172	90	144	8	4
173	85	143	3	4
174	93	144	4	7
175	95	144	0	4
176	93	144	9	2
177	90	144	0	2
178	95	144	8	2
179	84	144	6	7
180	90	144	0	1

Table 23. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Martonvasar, Hungary in 1977. Concluded.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Rust severity Leaf (0-9)	Rust severity Stem (0-9)
181	89	145	2	4
182	110	143	3	2
183	100	146	0	5
184	96	145	0	6
185	76	144	0	6
186	75	145	8	2
187	80	145	9	4
188	80	146	3	6
189	74	145	0	6
190	93	145	0	5
191	95	145	0	8
192	76	145	0	7
Bezostaya 1	91	144	8	5
CI 13449	73	152	0	8
Centurk	95	145	0	2
Lancota	96	154	5	7
Mean	91	144	2.6	5.0
Standard deviation	8.7	2.8	-	-
Coefficient of variation (%)	9.6	1.9	-	-
	Means of the check varieties			
Bezostaya 1	90	144		
CI 13449	74	152		
Centurk	99	145		
Lancota	96	150		
Check means	89	148		
L.S.D. (.05) of the check means	5	4		
Coefficient of variation (%)	4.1	2.0		

Table 24. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Karaj, Iran in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
Bezostaya 1	10.7	194	3.0	58	2.9	175	42	137	95
CI 13449	10.3	196	3.1	20	2.9	175	52	55	85
Centurk	12.7	167	3.0	58	3.1	78	76	6	110
Lancota	13.0	155	2.9	103	3.0	129	83	5	105
5	13.4	136	2.9	103	3.1	78	54	40	95
6	12.9	160	3.0	58	3.1	78	52	55	95
7	12.2	176	3.0	58	3.0	129	55	37	90
8	13.5	129	3.0	58	3.1	78	45	104	95
9	13.6	124	2.7	179	2.9	175	99	2	100
10	14.4	86	2.9	103	3.1	78	45	104	100
11	11.8	185	3.1	20	3.1	78	42	137	95
12	11.2	191	3.0	58	2.9	175	33	188	100
13	11.1	193	3.0	58	2.9	175	70	8	95
14	12.4	172	3.0	58	3.0	129	65	11	90
15	12.7	167	3.0	58	3.0	129	17	196	90
16	16.7	6	2.9	103	3.1	78	55	37	100
17	12.2	176	3.0	58	3.1	78	42	137	85
18	12.7	167	3.1	20	3.2	23	74	7	90
19	15.4	37	2.7	179	3.0	129	50	70	90
20	15.5	32	2.8	144	3.1	78	44	114	85
21	15.9	19	2.6	192	2.8	191	43	128	85
22	14.7	67	2.8	144	3.0	129	44	114	85
23	14.5	75	2.8	144	3.0	129	45	104	90
24	15.4	37	2.7	179	3.0	129	44	114	95
25	15.6	26	2.9	103	3.1	78	35	180	90
26	15.1	47	2.8	144	3.0	129	42	137	85
27	14.1	102	2.9	103	3.0	129	41	148	85
28	10.4	195	3.1	20	2.9	175	27	195	85
29	13.7	118	2.9	103	3.1	78	52	55	90
30	15.2	43	2.8	144	3.0	129	34	185	90
31	16.9	3	2.5	196	2.7	196	29	193	85
32	15.9	19	2.6	192	2.8	191	61	18	85
33	13.3	140	2.9	103	3.0	129	46	92	100
34	13.0	155	3.0	58	3.1	78	35	180	85
35	12.4	172	3.0	58	3.0	129	43	128	85
36	12.4	172	2.8	144	2.9	175	52	55	90
37	14.3	91	2.8	144	3.0	129	36	174	90
38	14.9	57	2.8	144	3.0	129	37	171	85
39	14.8	62	2.9	103	3.1	78	43	128	90
40	16.2	11	2.9	103	3.1	78	53	45	90
41	15.5	32	2.9	103	3.2	23	40	157	95
42	16.8	4	2.8	144	3.1	78	50	70	95
43	16.0	16	2.6	192	2.8	191	33	188	95
44	15.2	43	2.7	179	2.9	175	35	180	90
45	14.9	57	2.7	179	2.9	175	37	171	95
46	16.2	11	2.7	179	2.9	175	38	165	85
47	15.5	32	2.8	144	3.0	129	30	192	90
48	17.0	2	2.7	179	3.0	129	36	174	90
49	15.6	26	2.8	144	3.1	78	45	104	85
50	13.6	124	2.8	144	2.9	175	44	114	85
Bezostaya 1	13.3	140	2.8	144	2.9	175	41	148	85
CI 13449	12.1	180	3.5	1	3.5	1	50	70	75
Centurk	11.1	193	3.1	20	3.0	129	41	148	90
Lancota	12.9	160	2.8	144	2.9	175	44	114	100
55	14.8	62	2.8	144	3.0	129	40	157	95
56	14.4	86	2.8	144	3.0	129	43	128	95
57	14.1	102	2.7	179	2.9	175	43	128	90
58	15.5	32	2.6	192	2.9	175	43	128	100
59	13.2	144	2.9	103	3.1	78	33	188	95
60	15.1	47	2.7	179	2.9	175	56	31	95

Table 24. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Karaj, Iran in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
61	13.5	129	2.7	179	2.8	191	42	137	90
62	14.0	106	2.7	179	2.9	175	52	55	85
63	14.5	75	2.9	103	3.1	78	44	114	90
64	15.6	26	2.9	103	3.1	78	46	92	85
65	14.7	67	2.9	103	3.1	78	37	171	80
66	13.8	111	3.0	58	3.1	78	47	88	95
67	13.5	129	3.0	58	3.2	23	45	104	95
68	13.0	155	3.0	58	3.1	78	50	70	95
69	12.8	163	2.7	179	2.8	191	40	157	85
70	13.7	118	2.7	179	2.8	191	46	92	80
71	13.1	150	2.9	103	3.0	129	55	37	100
72	12.9	160	2.6	192	2.7	196	52	55	80
73	13.1	150	2.7	179	2.8	191	48	81	85
74	14.1	102	2.7	179	2.9	175	58	25	95
75	15.0	50	2.7	179	2.9	175	43	128	95
76	11.9	183	3.0	58	3.0	129	62	14	100
77	13.5	129	3.1	20	3.2	23	88	4	85
78	11.8	185	2.9	103	2.9	175	89	159	100
79	14.4	86	2.9	103	3.0	129	104	1	100
80	11.7	187	3.0	58	3.0	129	65	11	100
81	12.0	182	3.2	9	3.2	23	90	3	80
82	12.2	176	3.0	58	3.1	78	61	18	90
83	13.2	144	3.0	58	3.1	78	48	81	95
84	12.9	160	3.0	58	3.1	78	51	62	95
85	13.3	140	3.0	58	3.1	78	43	128	95
86	13.6	124	3.1	20	3.2	23	61	18	95
87	14.5	75	2.8	144	3.0	129	44	114	95
88	14.7	67	2.8	144	3.0	129	47	88	95
89	13.0	155	3.0	58	3.1	78	35	180	105
90	14.3	91	2.8	144	2.9	175	45	104	110
91	15.2	43	2.7	179	3.0	129	44	114	100
92	16.1	13	2.5	196	2.7	196	42	137	100
93	15.9	19	2.6	192	2.8	191	43	128	100
94	14.9	57	2.8	144	3.0	129	50	70	105
95	13.8	111	3.0	58	3.1	78	51	62	105
96	13.1	150	3.0	58	3.1	78	55	37	90
97	13.2	144	2.9	103	3.1	78	49	75	105
98	12.5	168	2.8	144	2.9	175	47	88	95
99	13.4	136	2.8	144	2.9	175	46	92	85
100	13.4	136	2.8	144	2.9	175	47	88	100
Berostaya 1	12.7	167	2.8	144	2.8	191	39	159	90
CI 13449	14.0	106	2.9	103	3.1	78	52	55	75
Centurk	13.4	136	2.9	103	3.0	129	55	37	95
Lancota	15.4	37	2.7	179	2.9	175	58	25	95
105	14.2	98	2.8	144	3.0	129	45	104	95
106	16.0	16	2.7	179	2.9	175	56	31	90
107	13.7	118	2.9	103	3.0	129	55	37	90
108	12.8	163	3.1	20	3.2	23	67	9	90
109	14.3	91	2.8	144	3.0	129	38	165	105
110	14.6	68	2.9	103	3.1	78	43	128	100
111	15.8	20	2.6	192	2.9	175	60	19	105
112	14.9	57	2.9	103	3.1	78	49	75	100
113	16.2	11	2.5	196	2.8	191	49	75	115
114	16.7	6	2.6	192	2.9	175	47	88	110
115	16.5	7	2.5	196	2.7	196	58	25	110
116	14.4	86	2.7	179	2.9	175	35	180	95
117	14.5	75	2.7	179	2.9	175	58	25	95
118	14.4	86	2.8	144	2.9	175	34	185	80
119	13.1	150	2.7	179	2.8	191	58	25	105
120	13.6	124	2.6	192	2.7	196	45	104	105

Table 24. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Karaj, Iran in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g/ha	Yield rank	Plant height cm
121	13.3	140	2.9	103	3.0	129	54	40	95
122	14.4	86	2.7	179	2.9	175	49	75	110
123	14.2	98	2.7	179	2.9	175	52	55	105
124	15.1	47	2.8	144	3.0	129	51	62	90
125	15.3	38	2.7	179	2.9	175	52	55	100
126	12.4	172	3.0	58	3.1	78	51	62	100
127	13.1	150	2.8	144	2.9	175	57	28	95
128	13.9	108	2.7	179	2.8	191	47	88	90
129	14.2	98	2.7	179	2.9	175	62	14	100
130	14.0	106	2.9	103	3.1	78	42	137	105
131	13.9	108	2.8	144	3.0	129	57	28	95
132	13.6	124	2.6	192	2.8	191	37	171	105
133	12.1	180	3.0	58	3.0	129	61	18	100
134	11.5	189	3.1	20	3.1	78	50	70	90
135	12.2	176	3.2	9	3.2	23	57	28	90
136	13.7	118	2.7	179	2.9	175	40	157	105
137	12.1	180	3.2	9	3.2	23	53	45	85
138	14.2	98	2.7	179	2.9	175	45	104	95
139	14.3	91	2.9	103	3.1	78	43	128	90
140	14.8	62	2.6	192	2.8	191	41	148	90
141	14.4	86	2.8	144	3.0	129	58	25	95
142	11.5	189	3.0	58	3.0	129	40	157	95
143	13.7	118	2.8	144	3.0	129	53	45	85
144	13.4	136	2.9	103	3.1	78	41	148	85
145	13.8	111	2.9	103	3.1	78	56	31	100
146	14.3	91	2.8	144	3.0	129	45	104	85
147	12.8	163	2.8	144	2.9	175	35	180	90
148	13.2	144	2.9	103	3.0	129	47	88	95
149	13.4	136	2.9	103	3.0	129	53	45	95
150	16.1	13	2.8	144	3.0	129	45	104	90
Bezostaya 1	12.9	160	2.8	144	2.9	175	51	62	95
CI 13449	11.2	191	3.3	3	3.2	23	41	148	75
Centurk	12.0	182	3.0	58	3.0	129	44	114	95
Lancota	15.7	22	2.7	179	2.9	175	54	40	95
155	15.4	37	2.7	179	2.9	175	50	70	80
156	13.7	118	2.7	179	2.9	175	48	81	85
157	14.2	98	2.7	179	2.9	175	41	148	85
158	15.0	50	2.9	103	3.1	78	38	165	95
159	14.7	67	2.9	103	3.1	78	40	157	90
160	14.5	75	2.8	144	3.0	129	48	81	100
161	14.8	62	2.6	192	2.8	191	37	171	80
162	15.2	43	2.9	103	3.1	78	44	114	90
163	14.2	98	3.2	9	3.4	2	41	148	90
164	11.7	187	3.2	9	3.2	23	48	81	90
165	14.4	86	3.0	58	3.2	23	48	81	90
166	14.0	106	3.0	58	3.1	78	43	128	90
167	15.7	22	3.0	58	3.2	23	45	104	95
168	15.5	32	2.8	144	3.0	129	53	45	105
169	15.0	50	2.9	103	3.1	78	51	62	85
170	14.4	86	2.8	144	2.9	175	42	137	85
171	13.7	118	3.0	58	3.1	78	34	185	85
172	14.9	57	3.0	58	3.2	23	43	128	90
173	15.1	47	2.9	103	3.1	78	40	157	85
174	15.4	37	2.8	144	3.0	129	40	157	95
175	14.2	98	2.9	103	3.1	78	41	148	90
176	14.9	57	2.9	103	3.1	78	38	165	85
177	14.5	75	3.0	58	3.1	78	50	70	80
178	15.6	26	2.7	179	3.0	129	43	128	85
179	14.8	62	2.9	103	3.1	78	41	148	85
180	13.6	124	3.1	20	3.3	7	42	137	90

Table 24. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Karaj, Iran in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
181	14.4	86	3.0	58	3.2	23	38	165	95
182	16.0	16	2.9	103	3.2	23	36	174	95
183	14.5	75	3.1	20	3.3	7	32	190	100
184	17.6	1	3.0	58	3.3	7	38	165	100
185	16.3	8	2.6	192	2.8	191	64	12	95
186	14.7	67	2.9	103	3.1	78	32	190	75
187	15.5	32	2.7	179	2.9	175	37	171	85
188	14.1	102	3.0	58	3.1	78	51	62	80
189	13.1	150	3.2	9	3.3	7	30	192	85
190	13.4	136	3.0	58	3.1	78	34	185	90
191	14.9	57	2.9	103	3.1	78	28	194	80
192	14.4	86	2.9	103	3.1	78	40	157	75
Bezostaya 1	13.0	155	2.9	103	3.0	129	34	185	85
CI 13449	12.1	180	3.3	3	3.3	7	52	55	80
Centurk	13.5	129	2.9	103	3.0	129	41	148	95
Lancota	15.2	43	2.8	144	3.0	129	49	75	95
Mean	14.0		2.9		3.0		47.2		92
Standard deviation	1.4		0.2		0.1		11.6		7.7
Coefficient of variation (%)	9.9		5.8		4.5		24.6		8.4
Means of the check varieties									
Bezostaya 1	12.5		2.9		2.9		41.4		90
CI 13449	11.9		3.2		3.2		49.4		78
Centurk	12.5		3.0		3.0		51.4		97
Lancota	14.4		2.8		2.9		57.6		98
Check means	12.9		3.0		3.0		50.0		91
L.S.D. (.05) of the check means	1.3		0.2		0.2		N.S.		5
Coefficient of variation (%)	7.5		4.2		4.1		18.6		4.0

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield
Plant height	.09	-.04	-.24**	-.19**	.21**
Yield	-.16*	-.15*	.09	.02	
Adjusted Lysine/protein	-.13	.45**	.83**		
Lysine/protein	-.60**	-.03			
Lysine	.81**				

** Significant at the .01 level.
* Significant at the .05 level.

Table 25. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Sulaimaniya, Iraq in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to Flowering from Jan. 1	Days to Ripening from Jan. 1
Bezostaya 1	16.9	109	2.5	195	2.8	195	53.4	2	100	123	160
CI 13449	16.4	152	3.1	32	3.3	53	18.9	185	85	138	169
Centurk	15.3	188	3.1	32	3.3	53	38.8	48	110	127	161
Lancota	16.7	125	3.0	75	3.2	101	38.8	48	125	131	169
5	17.7	55	2.9	133	3.2	101	35.4	71	100	123	159
6	16.5	141	3.0	75	3.3	53	46.5	12	100	123	159
7	16.8	118	3.0	75	3.3	53	30.4	122	100	133	168
8	19.1	8	3.1	32	3.3	53	32.0	104	100	133	168
9	18.1	29	3.0	75	3.3	53	31.8	105	100	128	162
10	15.1	191	3.1	32	3.3	53	50.0	3	120	127	162
11	18.8	13	3.1	32	3.4	14	29.0	136	110	131	165
12	16.2	161	3.0	75	3.3	53	23.9	169	130	130	164
13	16.5	141	3.1	32	3.4	14	29.4	133	95	131	165
14	18.4	20	3.1	32	3.3	53	18.7	186	95	138	169
15	14.5	195	3.0	75	3.2	101	34.2	83	105	128	161
16	16.9	109	2.8	173	3.0	185	39.2	42	115	122	158
17	18.7	14	3.2	7	3.5	3	14.5	193	85	128	161
18	17.2	82	2.7	187	3.0	185	42.7	23	115	127	161
19	17.1	88	2.9	133	3.2	101	42.1	27	110	127	161
20	17.2	82	2.9	133	3.2	101	40.2	34	110	127	161
21	17.7	55	2.9	133	3.2	101	37.3	53	110	127	161
22	17.6	62	3.0	75	3.3	53	34.4	77	110	127	161
23	17.7	55	3.1	32	3.3	53	40.1	35	110	127	161
24	17.3	73	3.0	75	3.2	101	34.3	79	110	127	161
25	17.5	65	2.9	133	3.2	101	29.5	130	110	127	161
26	17.4	67	3.0	75	3.2	101	36.4	62	110	127	161
27	17.2	82	3.1	32	3.3	53	34.4	77	110	125	159
28	17.8	44	3.1	32	3.3	53	28.4	140	95	125	158
29	16.4	152	3.1	32	3.3	53	42.0	28	110	123	158
30	18.8	13	2.9	133	3.1	164	22.3	178	125	127	160
31	18.8	13	2.7	187	3.0	185	27.7	146	125	129	163
32	18.4	20	2.8	173	3.1	164	32.1	103	130	124	159
33	16.0	169	2.9	133	3.2	101	42.2	26	125	124	159
34	15.9	175	3.0	75	3.2	101	29.1	135	120	125	160
35	15.9	175	3.0	75	3.2	101	41.6	29	125	125	160
36	17.0	99	3.1	32	3.3	53	33.6	90	125	126	161
37	19.9	2	3.2	7	3.4	14	22.5	177	95	129	163
38	17.6	62	3.0	75	3.3	53	35.3	72	95	123	157
39	16.9	109	3.0	75	3.2	101	33.1	95	115	123	158
40	18.2	25	3.2	7	3.4	14	39.4	40	115	123	157
41	18.0	35	3.0	75	3.3	53	37.2	55	110	123	158
42	18.4	20	3.0	75	3.2	101	32.3	100	110	123	158
43	18.0	35	2.7	187	3.0	185	27.5	147	125	128	163
44	17.1	88	2.8	173	3.1	164	37.2	56	120	123	158
45	16.6	133	3.2	7	3.4	14	31.4	110	115	119	155
46	17.7	55	2.8	173	3.1	164	36.9	59	110	118	155
47	17.3	73	2.7	187	2.9	193	44.1	19	110	123	157
48	17.7	55	2.8	173	3.1	164	35.5	68	100	118	155
49	17.3	73	3.0	75	3.2	101	30.8	119	90	121	155
50	16.4	152	2.9	133	3.1	164	37.2	55	95	125	159
Bezostaya 1	16.6	133	2.9	133	3.2	101	34.1	84	110	125	159
CI 13449	18.1	29	3.2	7	3.5	3	9.3	196	85	134	166
Centurk	16.2	161	2.9	133	3.2	101	38.7	49	120	127	161
Lancota	17.1	88	2.8	173	3.1	164	34.4	75	130	131	164
55	17.7	55	2.8	173	3.1	164	29.5	130	115	123	156
56	16.5	141	2.8	173	3.1	164	56.0	1	105	121	155
57	16.8	118	2.9	133	3.1	164	32.2	102	120	123	156
58	17.9	39	2.9	133	3.2	101	27.7	146	115	123	156
59	16.9	109	2.8	173	3.1	164	29.8	127	120	131	164
60	18.1	29	3.0	75	3.2	101	31.3	112	115	121	159

Table 25. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Sulaimaniya, Iraq in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to Flowering from Jan. 1	Days to Ripening from Jan. 1
61	16.8	118	3.0	75	3.3	53	29.4	133	110	123	155
62	16.5	141	2.9	133	3.2	101	45.6	14	90	123	155
63	16.4	152	2.9	133	3.1	164	31.4	110	115	123	156
64	18.5	16	2.6	193	2.9	193	35.2	73	100	123	155
65	18.2	25	2.7	187	3.0	185	43.3	21	95	118	155
66	17.7	55	2.8	173	3.1	164	31.7	106	115	127	156
67	18.2	25	3.0	75	3.3	53	15.7	191	100	132	165
68	17.5	65	2.9	133	3.2	101	23.9	169	100	133	167
69	17.2	82	2.8	173	3.0	185	21.0	183	85	117	155
70	18.0	35	2.8	173	3.1	164	30.1	125	85	118	155
71	19.0	10	2.9	133	3.1	164	21.5	182	115	129	162
72	19.6	4	2.8	173	3.1	164	27.8	144	85	118	156
73	20.2	1	2.8	173	3.0	185	22.7	175	85	123	157
74	19.1	8	2.9	133	3.1	164	28.6	138	95	123	157
75	19.0	10	2.8	173	3.1	164	31.0	116	90	121	155
76	16.9	109	2.9	133	3.1	164	18.7	187	85	127	162
77	15.8	180	3.0	75	3.2	101	43.4	20	90	123	159
78	14.9	193	3.0	75	3.3	53	33.4	91	110	127	161
79	15.9	175	3.0	75	3.2	101	33.6	90	100	120	158
80	17.0	99	2.9	133	3.2	101	31.3	112	95	123	158
81	16.2	161	2.9	133	3.1	164	23.4	171	85	131	164
82	16.7	125	2.8	173	3.1	164	29.4	133	95	128	160
83	16.3	153	2.9	133	3.1	164	26.1	157	105	130	164
84	16.9	109	2.9	133	3.2	101	22.6	176	100	123	158
85	15.3	188	3.1	32	3.4	14	27.4	149	100	123	157
86	15.2	190	3.1	32	3.4	14	27.3	150	120	128	162
87	15.3	188	3.0	75	3.2	101	31.2	114	105	120	155
88	16.7	125	3.0	75	3.3	53	47.3	8	120	119	155
89	.	.	.	.	.	.	27.3	151	110	123	157
90	16.9	109	2.8	173	3.1	164	30.1	124	120	118	156
91	16.2	161	3.1	32	3.3	53	36.3	63	110	118	155
92	16.6	133	2.8	173	3.1	164	28.1	142	115	118	155
93	17.2	82	2.9	133	3.2	101	31.0	116	115	120	155
94	15.8	180	3.0	75	3.2	101	40.0	36	115	118	156
95	15.6	181	3.0	75	3.2	101	27.8	144	130	129	161
96	16.4	152	3.0	75	3.3	53	22.1	179	105	118	155
97	15.5	183	3.0	75	3.2	101	44.6	16	130	131	164
98	16.9	109	2.9	133	3.2	101	31.3	113	120	131	164
99	16.4	152	2.8	173	3.1	164	38.2	50	105	125	159
100	17.0	99	2.8	173	3.1	164	29.9	126	110	123	159
Bezostaya 1	17.2	82	2.7	187	3.0	185	21.9	180	105	123	158
CI 13449	17.2	82	3.0	75	3.3	53	15.1	192	80	136	169
Centurk	17.3	73	2.9	133	3.1	164	24.1	167	100	127	160
Lancota	17.8	44	2.8	173	3.1	164	26.4	155	120	129	162
105	16.5	141	3.0	75	3.3	53	44.4	17	110	127	161
106	17.7	55	2.9	133	3.2	101	26.5	154	110	121	155
107	15.8	180	3.1	32	3.4	14	24.3	166	95	127	161
108	16.2	161	3.0	75	3.3	53	33.7	88	100	125	156
109	17.3	73	2.9	133	3.1	164	29.5	130	115	118	156
110	16.9	109	3.0	75	3.2	101	28.7	137	120	128	162
111	16.7	125	2.9	133	3.2	101	24.9	163	110	132	165
112	15.5	183	3.1	32	3.3	53	32.2	102	115	123	158
113	15.4	185	2.8	173	3.1	164	32.7	98	130	123	158
114	16.8	118	3.0	75	3.3	53	36.7	61	120	129	163
115	17.0	99	2.8	173	3.0	185	39.8	37	130	127	161
116	17.9	39	2.8	173	3.1	164	27.4	149	105	125	156
117	16.5	141	2.9	133	3.1	164	47.2	11	110	123	155
118	17.8	44	2.9	133	3.1	164	17.9	190	90	127	162
119	16.6	133	2.9	133	3.1	164	26.5	154	110	128	159
120	17.1	88	2.8	173	3.1	164	32.7	98	120	123	155

Table 25. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Sulaimaniya, Iraq in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to Flowering from Jan. 1	Days to Ripening from Jan. 1
121	17.0	99	2.8	173	3.1	164	44.3	18	110	123	156
122	16.6	133	2.9	133	3.1	164	26.0	159	135	123	157
123	17.0	99	2.8	173	3.1	164	31.5	108	130	129	160
124	17.1	88	2.9	133	3.1	164	35.6	67	95	119	155
125	16.5	141	2.9	133	3.1	164	47.2	11	115	119	155
126	16.0	169	2.8	173	3.1	164	50.0	4	105	119	155
127	17.4	67	2.8	173	3.1	164	41.0	30	110	113	156
128	16.9	109	2.9	133	3.2	101	39.5	39	105	113	156
129	17.6	62	3.2	7	3.5	3	32.4	99	105	124	155
130	16.2	161	2.8	173	3.1	164	29.1	135	125	120	156
131	17.8	44	2.9	133	3.1	164	39.8	38	110	123	156
132	15.9	175	2.5	195	2.8	195	32.8	96	125	125	160
133	16.1	164	2.9	133	3.1	164	35.8	65	105	129	161
134	15.2	190	3.1	32	3.3	53	48.5	5	100	123	157
135	16.2	161	2.9	133	3.1	164	39.0	43	95	129	162
136	16.6	133	2.6	193	2.9	193	20.0	184	115	119	156
137	16.8	118	3.1	32	3.4	14	21.6	181	95	132	164
138	16.4	152	2.6	193	2.9	193	38.0	51	105	123	155
139	17.3	73	2.9	133	3.1	164	30.8	119	100	123	155
140	18.0	35	2.8	173	3.0	185	26.0	159	100	121	155
141	18.0	35	2.6	193	2.9	193	36.7	61	105	119	156
142	18.0	35	3.0	75	3.3	53	33.1	95	105	129	161
143	17.2	82	2.9	133	3.2	101	34.6	74	85	120	155
144	17.9	39	2.7	187	3.0	185	31.6	107	90	120	155
145	17.2	82	2.6	193	2.9	193	34.0	85	115	127	159
146	17.6	62	2.9	133	3.2	101	24.7	164	95	132	164
147	16.6	133	2.8	173	3.1	164	30.4	122	110	123	156
148	17.0	99	2.8	173	3.0	185	30.3	123	110	123	155
149	17.0	99	2.9	133	3.1	164	39.3	41	105	128	160
150	17.6	62	2.8	173	3.1	164	35.4	69	115	118	155
Bezostaya 1	16.0	169	2.7	187	3.0	185	37.1	57	110	125	158
CI 13449	16.4	152	3.2	7	3.4	14	13.9	194	85	135	168
Centurk	15.8	180	2.8	173	3.0	185	28.5	139	115	128	161
Lancota	16.8	118	2.7	187	3.0	185	34.0	86	135	130	161
155	16.1	164	2.8	173	3.0	185	42.5	24	115	123	155
156	14.5	195	2.7	187	2.9	193	47.3	8	120	120	155
157	17.9	39	2.7	187	3.0	185	22.7	175	90	125	157
158	17.0	99	2.9	133	3.2	101	23.7	170	115	127	159
159	17.7	55	3.0	75	3.3	53	23.3	173	95	127	162
160	16.7	125	2.9	133	3.1	164	30.9	117	115	128	161
161	17.6	62	2.6	193	2.9	193	35.4	71	85	123	155
162	16.0	169	2.7	187	3.0	185	26.1	156	110	119	155
163	16.8	118	3.0	75	3.2	101	25.7	160	110	130	164
164	15.0	192	3.1	32	3.3	53	40.4	33	105	132	165
165	19.7	3	2.8	173	3.0	185	47.8	6	100	123	160
166	18.1	29	2.7	187	3.0	185	42.4	25	100	123	156
167	17.8	44	2.7	187	3.0	185	30.6	120	115	125	155
168	16.6	133	2.8	173	3.1	164	41.0	31	120	120	162
169	17.0	99	2.9	133	3.1	164	42.8	22	105	122	162
170	17.6	62	3.1	32	3.4	14	28.2	141	105	128	165
171	16.1	164	3.0	75	3.2	101	47.2	9	115	121	155
172	17.7	55	2.9	133	3.1	164	39.0	45	120	127	159
173	16.8	118	2.9	133	3.2	101	46.0	13	115	127	159
174	16.4	152	3.1	32	3.3	53	39.0	46	115	127	159
175	16.4	152	3.1	32	3.3	53	34.3	79	110	125	158
176	15.9	175	3.0	75	3.2	101	34.2	82	110	125	157
177	16.7	125	2.8	173	3.1	164	44.7	15	110	123	156
178	16.4	152	3.0	75	3.2	101	35.7	66	100	126	159
179	17.7	55	2.9	133	3.1	164	36.2	64	95	125	158
180	18.2	25	2.9	133	3.1	164	33.2	93	105	127	160

Table 25. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Sulaimaniya, Iraq in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to Flowering from Jan. 1	Days to Ripening from Jan. 1
181	19.4	6	2.9	133	3.1	164	25.4	161	115	128	161
182	18.3	21	3.0	75	3.3	53	18.5	189	115	128	159
183	18.5	16	3.1	32	3.3	53	23.3	173	105	128	160
184	19.4	6	3.1	32	3.3	53	18.6	188	95	132	167
185	17.5	65	2.9	133	3.2	101	34.2	82	95	113	155
186	17.1	88	3.0	75	3.2	101	39.2	43	90	125	156
187	17.0	99	3.0	75	3.3	53	26.9	152	100	125	156
188	15.4	185	2.9	133	3.2	101	36.9	59	100	129	161
189	15.8	180	2.9	133	3.1	164	34.2	82	100	120	156
190	15.9	175	2.8	173	3.1	164	25.1	162	115	126	160
191	16.2	161	2.9	133	3.1	164	24.7	165	105	123	155
192	16.0	169	2.9	133	3.1	164	33.8	87	90	120	156
Bezostaya 1	16.7	125	2.9	133	3.2	101	33.4	92	100	123	156
CI 13449	16.5	141	3.0	75	3.3	53	13.1	195	85	135	169
Centurk	16.8	118	2.9	133	3.2	101	40.7	32	115	127	161
Lancota	18.4	20	2.9	133	3.1	164	37.6	52	120	128	167
Mean	17.0		2.9		3.2		32.7		107	125	159.2
Standard deviation	1.0		0.1		0.1		8 2		11.9	4.5	3.7
Coefficient of variation (%)	6.1		4.8		4.2		25.1		11.1	3.6	2.3
Means of the check varieties											
Bezostaya 1	16.7		2.7		3.0		36.0		105	124	158
CI 13449	16.9		3.1		3.4		14.1		84	136	168
Centurk	16.3		2.9		3.2		34.1		112	127	161
Lancota	17.4		2.8		3.1		34.2		126	130	165
Check means	16.8		2.9		3.2		29.6		107	129	163
L.S.D. (.05) of the check means	0.8		0.2		0.2		7.7		6	2	-
Coefficient of variation (%)	3.3		4.6		3.6		18.8		3.9	0.9	-

Correlation Coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	.04	.24**	.33**	.33**	-.37**	-.02
Plant height	-.22**	-.30**	-.15*	-.16*	.26**	
Yield	-.29**	-.38**	-.19**	-.22**		
Adjusted lysine/protein	-.06	.56**	.94**			
Lysine/protein	-.09	.54**				
Lysine	.78**					

** Significant at the .01 level.
* Significant at the .05 level.

Table 26. Protein and lysine values and rankings together with agronomic data for the third high protein-high lysine winter wheat observation nursery grown at Amman, Jordan in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1
Bezostaya 1	22.5	88	2.6	187	2.8	192	15.0	13	145
CI 13449	.	.	.	.	.	.	1.7	196	145
Centurk	22.7	76	3.0	28	3.2	39	1.7	196	145
Lancota	22.0	119	2.7	150	3.0	127	1.7	196	145
5	26.2	1	2.8	110	3.0	127	1.7	196	142
6	24.4	6	2.6	187	2.8	192	1.7	196	142
7	24.0	13	2.9	62	3.1	81	1.7	196	140
8	24.2	9	3.0	28	3.2	39	8.3	80	141
9	23.5	25	2.7	150	2.9	166	8.3	80	143
10	22.2	107	2.7	150	3.0	127	6.7	120	142
11	23.9	15	2.9	62	3.1	81	8.3	80	145
12	24.0	13	2.7	150	2.9	166	1.7	196	146
13	23.0	53	2.6	187	2.8	192	6.7	120	147
14	23.3	35	2.7	150	2.9	166	6.7	120	146
15	23.4	30	2.7	150	2.9	166	10.0	57	145
16	24.1	10	2.6	187	2.9	166	16.7	8	139
17	22.7	76	3.1	7	3.4	2	2.3	167	139
18	20.9	173	2.6	187	2.9	166	21.7	1	138
19	20.5	181	2.8	110	3.1	81	11.7	39	138
20	21.7	136	2.7	150	3.0	127	18.3	4	138
21	21.9	120	2.8	110	3.0	127	15.0	13	138
22	21.8	130	2.7	150	3.0	127	15.0	13	138
23	22.7	76	2.6	187	2.8	192	11.7	39	138
24	22.7	76	3.1	7	3.3	9	10.0	57	138
25	22.7	76	3.1	7	3.3	9	8.3	80	143
26	22.5	88	2.6	187	2.8	192	3.3	166	143
27	22.3	103	2.8	110	3.0	127	6.7	120	143
28	23.1	46	3.0	28	3.2	39	5.0	144	144
29	21.4	145	2.9	62	3.2	39	5.0	144	145
30	23.5	25	2.9	62	3.1	81	3.3	166	145
31	21.3	156	2.6	187	2.8	192	6.7	120	145
32	23.2	38	2.8	110	3.0	127	6.7	120	145
33	21.7	136	2.9	62	3.1	81	6.7	120	143
34	22.1	116	3.0	28	3.2	39	5.0	144	143
35	22.3	103	3.1	7	3.4	2	6.7	120	138
36	22.0	119	2.8	110	3.0	127	1.7	196	138
37	23.0	53	2.8	110	3.1	81	5.0	144	147
38	21.1	163	2.8	110	3.1	81	3.3	166	147
39	19.6	190	2.9	62	3.2	39	8.3	80	145
40	21.0	167	3.0	28	3.3	9	11.7	39	145
41	22.1	116	3.0	28	3.3	9	11.7	39	144
42	23.4	30	2.9	62	3.1	81	8.3	80	144
43	23.5	25	3.0	28	3.2	39	6.7	120	142
44	22.1	116	2.9	62	3.1	81	5.0	144	142
45	21.6	139	3.0	28	3.2	39	1.7	196	141
46	21.3	156	2.8	110	3.1	81	11.7	39	144
47	20.4	184	2.8	110	3.1	81	5.0	144	143
48	21.3	156	2.9	62	3.1	81	10.0	57	142
49	21.1	163	2.9	62	3.1	81	13.3	22	141
50	20.5	181	3.0	28	3.2	39	6.7	120	142
Bezostaya 1	21.7	136	2.7	150	2.9	166	5.0	144	142
CI 13449		.	.	.	.	.	1.7	196	142
Centurk	21.3	156	2.9	62	3.1	81	1.7	196	138
Lancota	20.7	176	3.0	28	3.2	39	1.7	196	138
55	19.5	191	2.9	62	3.2	39	1.7	196	138
56	21.8	130	2.9	62	3.1	81	8.3	80	138
57	22.4	94	2.8	110	3.1	81	1.7	196	138
58	21.3	156	2.7	150	3.0	127	5.0	144	138
59	22.3	103	2.8	110	3.0	127	1.7	196	143
60	22.1	116	2.7	150	2.9	166	3.3	166	143

Table 26. Protein and lysine values and rankings together with agronomic data for the third high protein-high lysine winter wheat observation nursery grown at Amman, Jordan in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1
61	20.4	184	2.6	187	2.9	166	3.3	166	143
62	19.3	193	2.8	110	3.1	81	11.7	39	138
63	21.0	167	2.6	187	2.8	192	3.3	166	138
64	20.4	184	2.6	187	2.8	192	15.0	13	138
65	21.0	167	2.7	150	3.0	127	3.3	166	138
66	22.5	88	2.6	187	2.9	166	1.7	196	145
67	21.8	130	2.6	187	2.9	166	5.0	144	145
68	22.3	103	2.8	110	3.0	127	1.7	196	145
69	22.3	103	2.7	150	2.9	166	6.7	120	138
70	21.2	157	2.7	150	2.9	166	5.0	144	138
71	21.1	163	2.7	150	2.9	166	10.0	57	138
72	20.2	187	2.5	193	2.7	194	10.0	57	138
73	21.1	163	2.6	187	2.8	192	11.7	39	138
74	22.7	76	2.8	110	3.1	81	11.7	39	138
75	22.4	94	2.6	187	2.8	192	13.3	22	138
76	23.0	53	2.7	150	2.9	166	6.7	120	147
77	22.1	116	2.6	187	2.8	192	13.3	22	147
78	22.8	65	2.6	187	2.8	192	3.3	166	147
79	20.9	173	2.4	194	2.7	194	10.0	57	146
80	21.8	130	2.5	193	2.8	192	6.7	120	143
81	19.8	189	2.6	187	2.8	192	10.0	57	145
82	18.6	194	2.7	150	2.9	166	16.7	8	145
83	20.5	181	2.5	193	2.8	192	16.7	8	145
84	21.1	163	2.6	187	2.9	166	8.3	80	145
85	21.5	142	2.6	187	2.8	192	16.7	8	145
86	22.2	107	2.8	110	3.0	127	6.7	120	145
87	21.3	156	2.8	110	3.1	81	13.3	22	145
88	20.9	173	2.7	150	3.0	127	20.0	3	145
89	22.3	103	2.9	62	3.1	81	8.3	80	145
90	23.1	46	2.9	62	3.1	81	11.7	39	145
91	21.6	139	3.1	7	3.3	9	6.7	120	147
92	20.8	174	2.8	110	3.0	127	5.0	144	147
93	21.7	136	3.0	28	3.2	39	11.7	39	147
94	19.4	192	3.1	7	3.3	9	11.7	39	147
95	21.6	139	2.9	62	3.2	39	8.3	80	147
96	23.0	53	2.9	62	3.1	81	10.0	57	147
97	21.4	145	2.9	62	3.2	39	5.0	144	147
98	23.4	30	2.8	110	3.0	127	5.0	144	147
99	24.4	6	2.7	150	3.0	127	8.3	80	147
100	24.4	6	2.6	187	2.9	166	20.0	3	147
Bezostaya 1	21.7	136	2.7	150	3.0	127	13.3	22	147
CI 13449	21.4	145	3.0	28	3.2	39	1.7	196	149
Centurk	22.9	57	2.9	62	3.1	81	3.3	166	149
Lancota	21.8	130	2.7	150	3.0	127	10.0	57	149
105	23.1	46	2.8	110	3.1	81	8.3	80	149
106	22.8	65	2.8	110	3.0	127	6.7	120	149
107	23.3	35	2.8	110	3.0	127	11.7	39	149
108	24.0	13	3.0	28	3.2	39	11.7	39	149
109	21.3	156	3.0	28	3.2	39	15.0	13	142
110	23.4	30	2.8	110	3.0	127	13.3	22	142
111	22.8	65	2.8	110	3.0	127	10.0	57	142
112	20.6	177	3.0	28	3.2	39	8.3	80	142
113	20.9	173	2.7	150	3.0	127	13.3	22	142
114	21.3	156	3.0	28	3.2	39	5.0	144	142
115	23.3	35	2.8	110	3.0	127	3.3	166	142
116	22.5	88	3.0	28	3.2	39	3.3	166	142
117	22.5	88	2.8	110	3.1	81	3.3	166	143
118	22.1	116	2.9	62	3.2	39	1.7	196	143
119	23.3	35	2.7	150	2.9	166	8.3	80	143
120	21.7	136	2.6	187	2.8	192	6.7	120	143

Table 26. Protein and lysine values and rankings together with agronomic data for the third high protein-high lysine winter wheat observation nursery grown at Amman, Jordan in 1977. Continued.

Entry no.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1
121	22.7	76	2 7	150	2 9	166	8.1	81	145
122	22.7	76	2.7	150	2.9	166	1.7	196	144
123	22.7	76	2.7	150	2.9	166	6.7	120	145
124	23.1	46	2.8	110	3.0	127	10.0	57	145
125	22.9	57	2.6	187	2.8	192	13.3	22	147
126	23.2	38	2.7	150	2.9	166	11.7	39	146
127	22.6	79	2.9	62	3.1	81	13.3	22	142
128	22.1	116	2.8	110	3.0	127	8.3	80	141
129	22.7	76	2.8	110	3.0	127	10 0	57	140
130	21.5	142	2.7	150	3.0	127	5 0	144	139
131	22 4	94	2.8	110	3 0	127	11.7	39	141
132	22.4	94	2.7	150	2.9	166	3.3	166	141
133	24.6	3	2.6	187	2.9	166	6.7	120	142
134	21.8	130	2.9	62	3 2	39	6.7	120	144
135	22.2	107	2.8	110	3 1	81	6.7	120	145
136	20.0	188	2.6	187	2.9	166	8.3	80	145
137	20.2	187	2.9	62	3.2	39	3.3	166	143
138	20 9	173	2.8	110	3.0	127	5 0	144	143
139	20.7	176	2.8	110	3.0	127	11.7	39	140
140	20.2	187	2.8	110	3.0	127	6.7	120	145
141	20.5	181	2.8	110	3.1	81	8 3	80	145
142	21.8	130	2.8	110	3.0	127	3.3	166	145
143	22.0	119	3.1	7	3.3	9	10.0	57	145
144	22.8	65	2.7	150	3 0	127	6.7	120	145
145	21.0	167	2.8	110	3.0	127	10.0	57	141
146	22.8	65	2.6	187	2.8	192	1.7	196	141
147	21.3	156	2.8	110	3.0	127	3.3	166	141
148	21.8	130	2.6	187	2.9	166	6 7	120	145
149	23.6	18	2.6	187	2.8	192	6.7	120	145
150	23.0	53	2.6	187	2.9	166	5.0	144	146
Bezostaya 1	22.8	65	2.5	193	2.8	192	5.0	144	146
CI 13449	23.0	53	2.7	150	3.0	127	3.3	166	146
Centurk	23.1	46	2.6	187	2.8	192	5.0	144	142
Lancota	22.1	116	2.5	193	2 8	192	1.7	196	142
155	24.3	8	2.8	110	3.1	81	5.0	144	142
156	23.1	46	2.8	110	3.1	81	8.3	80	141
157	22.8	65	2.7	150	3.0	127	3.3	166	142
158	22.3	103	2.8	110	3.1	81	5.0	144	144
159	22 2	107	3.0	28	3.2	39	1.7	196	144
160	22.6	79	2.7	150	2.9	166	3.3	166	144
161	20 9	173	2.8	110	3.1	81	1.7	196	145
162	21.1	163	2.6	187	2.9	166	11.7	39	145
163	22.9	57	2.7	150	2.9	166	1.7	196	145
164	23.9	15	2.7	150	2.9	166	6.7	120	145
165	22.4	94	2.7	150	2.9	166	10.0	57	138
166	23.5	25	2.7	150	3.0	127	6.7	120	140
167	22.5	88	2.9	62	3.1	81	6.7	120	141
168	23.1	46	2.8	110	3 0	127	8.3	80	144
169	21.5	142	2.9	62	3.1	81	8.3	80	143
170	23.6	18	2.9	62	3.1	81	1.7	196	141
171	23.2	38	2 8	110	3.1	81	10.0	57	142
172	22.5	88	2.8	110	3.1	81	8.3	80	141
173	22.5	88	2.8	110	3.0	127	8.3	80	145
174	22.9	57	2.9	62	3.1	81	6.7	120	145
175	22 4	94	2.7	150	3.0	127	10.0	57	144
176	22.3	103	2.9	62	3.1	81	6.7	120	144
177	23.4	30	2.6	187	2.8	192	6.7	120	140
178	23.5	25	2.6	187	2.9	166	8.3	80	141
179	23.5	25	2.6	187	2.9	166	10.0	57	145
180	25.3	2	3.0	28	3.2	39	5.0	144	146

Table 26. Protein and lysine values and rankings together with agronomic data for the third high protein-high lysine winter wheat observation nursery grown at Amman, Jordan in 1977. Concluded.

Entry No	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1
181	23 0	53	2.9	62	3.1	81	5.0	144	142
182	22 6	79	2 6	187	2.9	166	1.7	196	141
183	24.3	8	2.9	62	3.2	39	3.3	166	146
184	22.8	65	2.9	62	3.1	81	1.7	196	146
185	22.7	76	3.0	28	3.2	39	6.7	120	147
186	23.1	46	2.6	187	2.9	166	6.7	120	145
187	23.6	18	2.5	193	2.8	192	6.7	120	145
188	23.5	25	2.7	150	2.9	166	6.7	120	138
189	21.8	130	2.8	110	3.0	127	3.3	166	139
190	22.1	116	2.7	150	2.9	166	3.3	166	140
191	22.5	88	3.0	28	3 2	39	6.7	120	141
192	21.3	156	2.9	62	3.1	81	5.0	144	143
Bezostaya 1	21.3	156	2.9	62	3.2	39	6.7	120	141
CI 13449	21.8	130	2.9	62	3.2	39	1 7	196	142
Centurk	23.3	35	2.8	110	3.0	127	6.7	120	144
Lancota	22.3	103	2.6	187	2.8	192	6.7	120	145
Mean	22.2		2.8		3.0		7.3		143
Standard deviation	1.2		0.1		0.1		4.3		3.0
Coefficient of variation (%)	5.3		5.4		4.8		58.7		2.1
Means of the check varieties									
Bezostaya 1	22 0		2.7		2.9		9.0		144
CI 13449	22.1		2.9		3.1		2.0		145
Centurk	22.7		2.8		3.0		3.7		144
Lancota	21.8		2.7		3.0		4.3		144
Check means	22.1		2.8		3.0		4.8		144
L.S.D. (.05) of the the check means	N.S.		N.S.		N.S.		4.5		3
Coefficient of variation (%)	2.4		4.8		4.8		67.7		1.3

Correlation Coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield
Flowering	.17*	.14	.01	.02	-.02
Yield	- 17*	-.22**	-.15*	-.13	
Adjusted lysine/protein	-.08	.63**	.95**		
Lysine/protein	- 03	.67**			
Lysine	.71**				

**Significant at the .01 level.
*Significant at the .05 level.

Table 27. Protein and lysine values and rankings for entries in the third high protein-high lysine winter wheat observation nursery grown at Suwon, Korea in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
Bezostaya 1	12.8	148	3.1	46	3.1	93
CI 13449	12.5	164	3.4	3	3.5	2
Centurk	12.5	164	3.3	7	3.4	6
Lancota	14.1	74	3.0	76	3.2	59
5	14.9	31	2.9	111	3.2	59
6	14.8	38	3.0	76	3.2	59
7	14.3	63	3.1	46	3.3	21
8	16.6	3	2.8	151	3.1	93
9	15.3	17	3.0	76	3.2	59
10	12.2	174	3.2	21	3.3	21
11	14.8	38	3.0	76	3.2	59
12	12.5	164	3.2	21	3.2	59
13	11.8	188	3.2	21	3.2	59
14	12.9	142	3.2	21	3.3	21
15	12.7	152	3.1	46	3.2	59
16	16.4	5	3.0	76	3.3	21
17	13.5	110	3.3	7	3.5	2
18	14.3	63	3.0	76	3.2	59
19	14.3	63	3.0	76	3.2	59
20	14.5	54	2.8	151	3.0	127
21	13.0	135	3.1	46	3.2	59
22	14.6	49	2.9	111	3.1	93
23	14.1	74	2.8	151	3.0	127
24	14.9	31	2.9	111	3.1	93
25	15.4	15	2.7	179	3.0	127
26	14.8	38	3.0	76	3.2	59
27	14.7	44	3.0	76	3.2	59
28	12.1	178	3.3	7	3.3	21
29	12.1	178	3.4	3	3.4	6
30	14.3	63	3.0	76	3.2	59
31	15.1	23	2.9	111	3.1	93
32	15.0	27	3.0	76	3.2	59
33	13.2	124	3.1	46	3.2	59
34	12.1	178	3.2	21	3.2	59
35	12.5	164	3.1	46	3.2	59
36	13.3	117	3.1	46	3.2	59
37	16.4	5	2.8	151	3.1	93
38	15.4	15	2.7	179	3.0	127
39	15.0	27	2.8	151	3.0	127
40	14.1	74	3.1	46	3.2	59
41	13.8	89	3.1	46	3.2	59
42	13.7	95	3.2	21	3.3	21
43	14.7	44	2.8	151	3.0	127
44	13.9	85	2.9	111	3.1	93
45	13.6	101	3.1	46	3.2	59
46	13.9	85	3.0	76	3.2	59
47	14.0	77	2.9	111	3.1	93
48	14.5	54	3.1	46	3.3	21
49	15.1	23	2.9	111	3.1	93
50	13.0	135	3.1	46	3.2	59
Bezostaya 1	13.7	95	3.0	76	3.2	59
CI 13449	13.9	85	3.2	21	3.3	21
Centurk	11.6	190	3.2	21	3.2	59
Lancota	13.6	101	3.0	76	3.1	93
55	15.5	13	2.9	111	3.1	93
56	14.8	38	3.0	76	3.2	59
57	13.7	95	2.9	111	3.0	127
58	14.2	68	2.7	179	2.9	162
59	12.2	174	3.2	21	3.2	59
60	15.3	17	3.1	46	3.4	6

Table 27. Protein and lysine values and rankings for entries in the third high protein-high lysine winter wheat observation nursery grown at Suwon, Korea in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
61	13.1	128	3.1	46	3.2	59
62	12.4	166	2.9	111	3.0	127
63	14.7	44	2.7	179	2.9	162
64	14.1	74	2.8	151	3.0	127
65	16.0	9	2.7	179	3.0	127
66	14.9	31	3.0	76	3.2	59
67	13.8	89	2.8	151	3.0	127
68	12.5	164	3.1	46	3.2	59
69	13.6	101	2.7	179	2.8	189
70	13.0	135	3.0	76	3.1	93
71	13.2	124	2.8	151	2.9	162
72	13.5	110	2.8	151	2.9	162
73	16.0	9	2.6	193	2.9	162
74	14.3	63	2.6	193	2.8	189
75	14.8	38	2.6	193	2.8	189
76	11.0	194	3.0	76	2.9	162
77	13.5	110	2.6	193	2.8	189
78	12.0	181	2.9	111	2.9	162
79	12.6	157	2.7	179	2.8	189
80	12.3	170	2.8	151	2.8	189
81	11.8	188	2.8	151	2.8	189
82	11.7	189	3.1	46	3.0	127
83	12.5	164	2.7	179	2.7	195
84	12.9	142	2.6	193	2.7	195
85	13.0	135	2.6	193	2.7	195
86	12.9	142	2.7	179	2.8	189
87	14.7	44	2.7	179	2.9	162
88	15.7	11	2.9	111	3.1	93
89	13.8	89	3.0	76	3.1	93
90	16.0	9	2.8	151	3.1	93
91	14.2	68	2.7	179	2.8	189
92	15.0	27	2.8	151	3.0	127
93	15.2	19	2.9	111	3.1	93
94	14.6	49	2.9	111	3.1	93
95	15.0	27	2.9	111	3.1	93
96	17.1	1	2.9	111	3.1	93
97	12.7	152	2.9	111	3.0	127
98	12.8	148	2.8	151	2.9	162
99	13.2	124	2.7	179	2.9	162
100	12.7	152	2.8	151	2.8	189
Bezostaya 1	13.1	128	2.8	151	2.9	162
CI 13449	12.6	157	3.1	46	3.2	59
Centurk	12.2	174	2.9	111	2.9	162
Lancota	13.0	135	2.8	151	2.9	162
105	15.1	23	2.7	179	2.9	162
106	13.0	135	3.0	76	3.1	93
107	13.1	128	2.8	151	2.9	162
108	13.6	101	2.7	179	2.9	162
109	14.6	49	2.8	151	3.0	127
110	13.2	124	2.8	151	2.9	162
111	14.8	38	2.6	193	2.9	162
112	12.8	148	2.8	151	2.8	189
113	13.2	124	2.7	179	2.8	189
114	14.0	77	2.5	195	2.7	195
115	13.9	85	2.6	193	2.8	189
116	13.3	117	2.7	179	2.9	162
117	13.3	117	2.9	111	3.0	127
118	14.3	63	2.6	193	2.8	189
119	12.3	170	3.2	21	3.3	21
120	12.0	181	2.9	111	2.9	162

Table 27. Protein and lysine values and rankings for entries in the third high protein-high lysine winter wheat observation nursery grown at Suwon, Korea in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
121	11.4	191	2.8	151	2.8	189
122	11.3	192	3.0	76	3.0	127
123	12.1	178	3.1	46	3.1	93
124	13.9	85	2.7	179	2.8	189
125	13.8	89	2.8	151	2.9	162
126	12.6	157	2.8	151	2.8	189
127	14.5	54	2.7	179	2.9	162
128	14.6	49	2.7	179	2.9	162
129	14.5	54	2.8	151	3.0	127
130	12.9	142	3.0	76	3.1	93
131	14.1	74	2.7	179	2.8	189
133	12.3	170	3.3	7	3.3	21
134	13.4	112	2.8	151	3.0	127
135	13.5	110	2.9	111	3.1	93
136	14.3	63	2.6	193	2.8	189
137	14.5	54	2.9	111	3.1	93
138	15.7	11	2.7	179	2.9	162
139	16.6	3	2.6	193	2.9	162
140	16.3	6	2.9	111	3.1	93
141	13.6	101	3.1	46	3.2	59
142	13.2	124	3.2	21	3.3	21
143	13.5	110	2.9	111	3.1	93
144	12.7	152	3.1	46	3.2	59
145	13.2	124	3.0	76	3.1	93
146	13.5	110	3.0	76	3.1	93
147	14.1	74	2.8	151	2.9	162
148	14.2	68	2.7	179	2.9	162
149	13.7	95	2.8	151	3.0	127
150	12.9	142	2.9	111	3.0	127
Bezostaya 1	13.5	110	2.7	179	2.8	189
CI 13449	13.7	95	2.8	151	3.0	127
Centurk	11.9	183	3.2	21	3.2	59
Lancota	11.8	188	2.8	151	2.8	189
155	12.6	157	2.8	151	2.9	162
156	12.2	174	2.9	111	2.9	162
157	11.8	188	3.0	76	3.0	127
158	12.4	166	2.9	111	3.0	127
159	12.9	142	3.0	76	3.1	93
160	12.0	181	3.0	76	3.0	127
161	13.3	117	2.8	151	3.0	127
162	13.6	101	2.7	179	2.9	162
163	11.8	188	3.4	3	3.3	21
164	10.9	195	3.2	21	3.0	127
165	13.5	110	3.1	46	3.2	59
166	14.4	56	2.8	151	3.0	127
167	13.9	85	3.0	76	3.2	59
168	14.7	44	2.8	151	3.0	127
169	13.5	110	2.9	111	3.0	127
170	13.3	117	2.9	111	3.0	127
171	14.2	68	2.9	111	3.1	93
172	13.9	85	2.9	111	3.1	93
173	14.9	31	3.1	46	3.3	21
174	15.1	23	3.1	46	3.3	21
175	14.0	77	3.1	46	3.3	21
176	14.4	56	3.2	21	3.4	6
177	13.7	95	2.9	111	3.1	93
178	14.6	49	2.5	195	2.7	195
179	15.2	19	2.6	193	2.8	189
180	13.4	112	2.7	179	2.8	189

Table 27. Protein and lysine values and rankings for entries in the third high protein-high lysine winter wheat observation nursery grown at Suwon, Korea in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
181	12.5	164	3.0	76	3.1	93
182	14.2	68	2.8	151	3.0	127
183	12.6	157	3.1	46	3.2	59
184	14.8	38	2.6	193	2.8	189
185	15.5	13	2.7	179	2.9	162
186	13.9	85	2.7	179	2.9	162
187	14.7	44	2.6	193	2.8	189
188	12.8	148	2.9	111	3.0	127
189	13.1	128	2.8	151	2.9	162
190	12.9	142	2.9	111	3.0	127
191	12.8	148	3.0	76	3.1	93
192	13.0	135	2.8	151	2.9	162
Bezostaya 1	12.8	148	2.8	151	2.9	162
CI 13449	12.3	170	2.8	151	2.8	189
Centurk	11.2	193	2.9	111	2.8	189
Lancota	11.9	183	2.7	179	2.7	195
Mean	13.7		2.9		3.0	
Standard deviation	1.2		0.2		0.2	
Coefficient of variation (%)	8.9		6.6		5.8	
Means of the check varieties						
Bezostaya 1	13.2		2.9		3.0	
CI 13449	13.0		3.1		3.2	
Centurk	11.9		3.1		3.1	
Lancota	12.9		2.9		2.9	
Check means	12.7		3.0		3.0	
L.S.D. (.05) of the check means	0.9		0.2		0.2	
Coefficient of variation (%)	5.1		3.7		3.8	

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	.06	.71**	.88**
Lysine/protein	-.36**	.36**	
Lysine	.73**		

** Significant at the .01 level.

Table 28. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Toluca, Mexico in 1977.

Entry No.	Plant height cm	Days to flowering from Jan.1	Stripe rust Sev. %	Stripe rust Resp.	Entry No.	Plant height cm	Days to flowering from Jan. 1	Stripe rust Sev. %	Stripe rust Resp
Bezostaya 1	90	186	5	MS-MR	41	100	175	40	S
CI 13449	80	186	50	MS-MR	42	105	176	70	S
Centurk	95	173	10	R	43	95	180	40	MS
Lancota	105	171	10	R	44	90	168	40	MS-MR
5	80	166	20	S	45	100	174	40	S-MS
6	70	180	40	S	46	85	167	30	MS
7*[a]	105	185	20	S	47	95	168	10	MS-MR
8	105	191	30	MS-S	48	95	167	50	MS-S
9	100	177	10	MR	49	90	167	50	MS-S
10	95	177	30	MR-MS	50*	90	178	20	MR-MS
11	105	175	50	MS-S	Bezostaya 1	100	187	10	MR
12	100	197	50	S-MS	CI 13449	95	185	50	MS
13	100	192	40	MS	Centurk	110	176	20	MR
14	100	190	60	S-MS	Lancota	115	177	20	MS-MR
15*	105	170	20	MS-MR	55	95	175	20	MR-MS
16	95	166	50	MS-S	56	95	161	50	S-MS
17	95	168	30	MS	57*	100	180	10	R
18*	95	186	20	R	58	80	170	20	MS
19	95	188	10	R	59	100	177	18	MS-MR
20*	100	185	10	R	60	100	176	20	S-MS
21*	90	185	10	MR	61	100	176	20	MR
22	95	186	10	R	62	80	162	20	MS-MR
23	90	188	10	MS	63	90	169	30	MR
24	90	186	T	MS-MR	64	70	167	40	MS-MR
25*	95	185	30	MS	65	75	167	40	S-MS
26	90	187	10	MR	66	100	171	5	MR
27*	90	180	20	R	67*	105	178	10	MR-R
28*	95	184	30	MS	68	110	188	10	R
29	90	171	10	R	69	75	161	20	MS-S
30	90	187	70	S	70	70	173	40	S
31	105	184	10	MR-MS	71	105	178	20	MS
32	90	174	40	MS-S	72	70	164	10	R
33	95	180	60	MS-S	73	70	173	10	MS-S
34	70	192	30	MS	74	75	175	10	R
35	85	185	40	S	75	85	172	30	S-MS
36	95	176	70	S-MS	76	100	192	50	S
37*	90	180	30	S	77	80	177	20	MS
38	105	190	40	MS	78	110	177	70	S
39	95	175	60	MS	79	100	178	30	MS-MR
40	95	175	60	S	80	90	177	60	MS-S

[a] Entries marked with an asterisk were harvested. They represent the best entries at this location.

Table 28. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Toluca, Mexico in 1977. Continued.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Stripe rust Sev. %	Stripe rust Resp.	Entry No.	Plant height cm	Days to flowering from Jan. 1	Stripe rust Sev. %	Stripe rust Resp.
81	80	176	10	MR	121	95	174	10	MS
82	85	168	40	S-MS	122	105	169	20	MR-MS
83	100	190	20	MS	123	100	167	20	MS-MR
84*[a/]	100	185	40	MS-S	124	65	174	T	MS
85	90	185	10	R	125*	80	174	T	MR
86	100	175	30	MS-MR	126	75	168	5	MR-R
87	85	169	10	R	127	85	167	10	R
88	85	175	10	R	128	80	164	30	MR
89	95	177	20	MR-R	129	85	167	20	MS-MR
90	90	169	20	MR	130	105	177	10	R
91	95	164	60	S	131	80	164	10	MR
92	80	167	18	MS-S	132*	100	177	10	MR-R
93	80	168	20	MS	133	75	174	20	MS
94	80	176	20	MS	134	90	165	10	MR
95	80	175	50	MS	135	90	175	20	MR-MS
96	80	170	30	S-MS	136	105	177	50	MS-S
97	100	170	40	S	137	90	177	50	MS-S
98	90	187	30	MS-MR	138	105	178	10	R
99	90	188	20	MR-MS	139	75	174	T	R
100	90	177	10	MR	140	100	164	5	R
Bezostaya 1	95	188	5	MS	141	105	174	20	MS-MR
CI 13449	90	185	20	R-MR	142*	110	177	10	R
Centurk	110	175	60	MS-S	143	100	177	30	MS-MR
Lancota	115	175	10	MS-MR	144*	100	187	10	MR-MS
105	90	170	10	MR	145	95	164	20	MS
106	85	171	5	MR	146	100	189	40	MS
107	80	168	10	R	147	110	190	10	MR
108	80	166	5	R	148	105	171	30	MS
109	90	168	80	S	149	100	185	10	MR-MS
110	100	170	40	MS-MR	150	90	169	10	MS
111	90	180	10	MR	Bezostaya 1	90	178	5	R-MR
112	100	185	20	MS-MR	CI 13449	85	187	20	MR
113	85	180	70	S	Centurk	105	175	60	MR-S
114	80	170	T	R	Lancota	105	176	5	MR-MS
115	90	174	30	MS	155*	95	176	5	R
116	95	174	30	MS-MR	156	85	173	40	MS
117*	95	178	10	MS-MR	157*	90	177	10	MR
118*	95	187	20	S	158	85	176	40	MS
119	105	174	-	-	159	90	187	20	S-MS
120	105	178	10	R	160	100	170	30	MS

[a/] Entries marked with an asterisk were harvested. They represent the best entries at this location.

Table 28. Agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Toluca, Mexico in 1977. Concluded.

Entry No.	Plant height cm	Days to flowering from Jan. 1	Stripe rust Sev. %	Stripe rust Resp.	Entry No.	Plant height cm	Days to flowering from Jan. 1	Stripe rust Sev. %	Stripe rust Resp.
161	75	178	30	MS	181	95	175	40	S
162	80	174	20	MS	182	90	164	40	MS
163	105	191	10	MR	183	90	180	80	S
164	95	180	30	S-MS	184	100	191	80	S
165	95	170	10	MR	185	75	165	60	R-S
166*[a]	95	180	10	R	186	75	180	20	MS
167	90	178	10	MS	187	85	177	T	R
168*	100	178	10	MR	188	80	174	T	R
169	75	161	18	MR-MS	189	95	168	5	MR
170*	85	176	5	R	190	105	177	20	MS-MR
171	90	180	T	R	191	100	185	10	R
172	90	187	5	R	192	95	170	10	MS
173	95	188	10	MR	Bezostaya 1	100	188	12	MS
174*	95	187	T	R	CI 13449	90	185	50	MR-MS
175*	100	178	T	R	Centurk	110	174	10	MR
176	95	184	10	R	Lancota	120	176	20	MS-MR
177	80	182	10	MS					
178	85	178	T	R					
179	80	185	20	S					
180	80	169	T	MR					
Mean	92	177	24.2						
Standard deviation	10.4	7.8	18.9						
Coefficient of variation (%)	11.2	4.4	77.6						

Means of the check varieties

Bezostaya 1	95	185
CI 13449	88	186
Centurk	106	175
Lancota	112	175
Check means	100	180
L.S.D. (.05) of the check means	3	4
Coefficient of variation (%)	2.5	1.5

[a] Entries marked with an asterisk were harvested. They represent the best entries at this location.

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan.	Septoria (0-9)	Stem rust Sev (%)	Stem rust Resp
Bezostaya 1	11.7	161	2.8	177	2.8	191	28.8	153	79.5	106	293	1	10	S
CI 13449	9.3	195	3.1	70	2.8	191	31.4	114	70.7	90	305	1	50	S
Centurk	9.8	190	3.2	48	2.9	175	30.6	129	79.4	118	291	0	40	S
Lancota	12.5	117	3.0	110	3.1	90	40.8	12	79.2	124	296	0	40	S
5	13.5	52	3.2	48	3.3	25	32.3	99	80.0	104	288	0	10	S
6	13.0	75	3.0	110	3.1	90	36.1	51	79.8	105	287	0	10	S
7	12.9	88	3.3	26	3.4	12	37.7	32	78.9	101	302	2	30	S
8	14.3	21	3.0	110	3.1	90	32.4	98	77.5	104	301	1	50	S
9	13.9	32	3.0	110	3.2	48	30.6	129	77.0	106	294	1	40	S
10	10.4	185	3.2	48	3.0	142	38.0	30	77.0	113	292	0	50	S
11	12.7	101	3.4	10	3.5	1	43.0	6	76.5	112	297	1	50	S
12	13.0	75	3.0	110	3.1	90	23.5	190	77.0	120	291	0	20	S
13	10.9	180	2.9	149	2.8	191	44.5	4	75.2	95	300	1	10	S
14	12.0	147	3.3	26	3.3	25	39.3	18	75.3	94	306	1	30	S
15	11.0	178	3.2	48	3.1	90	33.5	81	81.0	120	293	0	30	S
16	14.9	10	2.9	149	3.1	90	33.2	86	80.1	115	286	0	20	S
17	11.0	178	3.4	10	3.3	25	37.3	37	74.3	86	293	1	80	S
18	14.1	28	2.7	190	2.9	175	32.0	106	80.0	103	291	0	T	S
19	14.4	18	3.0	110	3.1	90	40.3	14	80.5	101	291	0	T	S
20	13.2	64	3.0	110	3.2	48	38.4	24	80.1	101	291	1	T	S
21	13.2	64	3.0	110	3.1	90	30.9	125	78.9	101	292	0	T	S
22	13.4	56	2.9	149	3.0	142	34.5	66	79.8	101	291	0	0	
23	13.2	64	2.8	177	2.9	175	36.3	49	80.3	101	290	0	T	S
24	13.0	75	3.0	110	3.1	90	35.3	56	80.5	101	293	0	2	S
25	12.7	101	3.0	110	3.0	142	26.0	184	80.0	101	293	0	5	S
26	13.1	68	2.9	149	3.0	142	34.0	72	80.3	101	292	0	5	S
27	13.3	59	2.9	149	3.0	142	29.6	142	79.8	101	293	0	10	S
28	11.3	173	3.0	110	2.9	175	32.0	107	78.8	94	295	0	0	
29	10.1	188	3.3	26	3.1	90	38.0	28	79.8	111	291	0	70	S
30	12.0	147	3.1	70	3.1	90	28.0	167	79.5	112	298	0	60	S
31	13.4	56	2.7	190	2.9	175	30.4	133	77.2	115	297	0	5	S
32	12.3	131	2.9	149	2.9	175	33.8	76	80.3	128	290	0	30	S
33	9.6	192	3.3	26	3.0	142	32.4	98	80.1	117	290	0	70	S
34	9.6	192	3.3	26	3.0	142	30.1	136	80.5	117	291	0	90	S
35	10.4	185	3.2	48	3.1	90	30.5	131	80.5	117	290	0	90	S
36	10.9	180	2.8	177	2.7	195	34.7	65	78.8	124	294	0	90	S
37	12.4	127	3.4	10	3.4	12	24.2	187	76.5	102	301	0	90	S
38	11.3	173	3.4	10	3.3	25	23.4	191	80.5	100	295	0	99	S
39	10.6	183	3.3	26	3.1	90	36.7	43	80.0	115	290	1	80	S
40	12.3	131	3.3	26	3.4	12	34.0	72	79.3	114	288	2	40	S

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan. 1	Septoria (0-9)	Stem rust Sev (%)	Stem rust Resp
41	12.9	88	3.3	26	3.4	12	28.2	162	78.5	111	284	-	50	S
42	13.1	68	3.2	48	3.3	25	33.2	86	80.0	111	284	1	60	S
43	12.6	109	3.2	48	3.3	25	29.0	151	78.6	123	293	0	20	S
44	12.2	137	3.3	26	3.3	25	27.8	171	78.9	112	284	-	20	S
45	11.9	152	3.4	10	3.4	12	31.0	121	79.5	110	287	-	70	S
46	13.1	68	3.1	70	3.2	48	23.2	193	80.0	104	282	-	60	S
47	12.4	127	3.0	110	3.0	142	29.5	143	79.8	113	289	-	20	S
48	13.2	64	3.1	70	3.2	48	28.3	160	80.0	97	282	-	20	S
49	13.4	56	3.0	110	3.1	90	29.3	146	79.5	97	284	1	50	S
50	11.5	168	3.1	70	3.1	90	33.9	75	79.3	103	290	0	30	S
Bezostaya 1	12.2	137	2.9	149	2.9	175	26.6	181	81.3	104	295	1	30	S
CI 13449	8.8	196	3.1	70	2.6	196	27.9	169	65.3	90	306	1	99	S
Centurk	9.5	193	3.5	1	3.1	90	32.3	100	78.6	116	294	-	50S	20MS
Lancota	11.7	161	3.0	110	3.0	142	31.4	114	78.0	128	298	0	30	S
55	12.9	88	2.9	149	3.0	142	36.4	48	78.0	114	289	0	70	S
56	12.2	137	2.7	190	2.7	195	23.9	189	76.8	103	279	1	e	
57	11.1	176	3.2	48	3.1	90	26.7	179	78.3	110	289	1	70	S
58	12.6	109	3.0	110	3.0	142	31.9	109	80.8	112	279	0	20	S
59	11.4	171	3.1	70	3.0	142	33.9	75	77.9	114	299	1	10	S
60	12.4	127	3.0	110	3.1	90	27.8	171	79.8	113	289	0	T	S
61	11.5	168	3.1	70	3.0	142	25.5	186	79.9	113	289	1	10	S
62	12.1	140	3.1	70	3.1	90	36.5	47	80.8	95	285	1	5	S
63	12.1	140	3.4	10	3.4	12	28.2	162	76.5	115	293	2	20MR	10S
64	11.9	152	2.7	190	2.7	195	28.1	166	79.5	105	284	0	30	S
65	12.9	88	2.8	177	2.9	175	26.9	177	79.8	103	279	0	30	S
66	12.2	137	3.2	48	3.2	48	30.4	133	77.9	125	295	0	20	S
67	12.0	147	3.0	110	3.0	142	39.1	19	79.0	106	299	0	10	S
68	12.0	147	2.9	149	2.9	175	21.8	195	75.0	105	305	1	5	S
69	11.7	161	3.2	48	3.1	90	37.4	36	78.0	93	278	1	20	S
70	11.6	163	3.1	70	3.0	142	30.9	124	78.0	89	293	0	5	S
71	11.8	157	2.9	149	2.9	175	31.3	115	78.5	90	300	0	10	S
72	12.6	109	2.8	177	2.9	175	38.1	27	79.8	87	287	1	0	
73	13.8	37	2.7	190	2.9	175	27.2	174	80.3	93	289	1	10	S
74	12.9	88	2.6	195	2.7	195	29.3	146	80.8	104	288	1	40	S
75	14.0	31	2.7	190	2.9	175	33.2	87	80.3	103	288	2	60	S
76	11.1	176	3.0	110	2.9	175	28.0	168	79.5	107	298	2	50	S
77	11.1	176	2.9	149	2.8	191	29.1	149	79.0	97	284	1	10	S
78	11.5	168	3.0	110	2.9	175	29.9	140	79.0	114	302	1	30	S
79	11.9	152	2.9	149	2.9	175	36.7	44	79.0	113	290	0	60	S
80	12.4	127	2.8	177	2.8	191	36.8	41	77.8	108	291	0	99	S

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan. 1	Septoria (0-9)	Stem rust Sev (%)	Stem rust Resp
81	13.4	56	2.8	177	3.0	142	28.5	159	78.9	98	303	2	0	
82	12.4	127	3.1	70	3.1	90	35.8	53	77.8	100	292	2	30	S
83	12.7	101	2.8	177	2.9	175	26.5	182	80.0	117	304	0	30	S
84	12.9	88	2.7	190	2.8	191	33.5	82	78.3	113	293	0	50	S
85	12.7	101	2.8	177	2.8	191	40.0	16	80.3	114	291	0	30	S
86	12.6	109	2.9	149	3.0	142	38.6	22	78.8	121	288	0	60	S
87	14.4	18	2.6	195	2.8	191	33.1	88	79.8	102	290	5	10	S
88	15.5	5	2.5	196	2.8	191	33.7	78	79.5	107	289	1	30	S
89	14.6	14	2.7	190	2.9	175	33.7	77	79.0	114	294	0	10	S
90	15.5	5	2.6	195	2.8	191	31.7	110	79.0	105	286	0	30	S
91	15.3	7	2.8	177	3.0	142	27.5	172	77.2	108	277	0	30	S
92	15.3	7	2.8	177	3.0	142	25.8	185	78.5	109	277	0	30	S
93	14.6	14	2.7	190	2.9	175	32.9	93	75.0	107	279	1	20	S
94	12.9	88	2.8	177	2.9	175	31.9	109	79.3	109	287	1	10	S
95	12.5	117	3.0	110	3.1	90	29.1	150	79.0	115	296	0	60	S
96	11.5	168	3.1	70	3.1	90	34.7	65	76.8	90	288	3	99	S
97	12.5	117	3.0	110	3.1	90	38.3	26	79.5	105	297	1	99	S
98	12.8	93	2.9	149	3.0	142	30.3	135	78.5	105	301	1	10	S
99	12.7	101	2.9	149	2.9	175	31.1	119	76.3	102	294	1	90	S
100	13.0	75	2.9	149	3.0	142	28.2	163	78.2	105	291	2	80	S
Bezostaya 1	12.9	88	2.8	177	2.9	175	35.5	55	80.4	104	295	1	5	S
CI 13449	9.4	194	3.3	26	2.9	175	28.1	166	64.4	88	305	0	99	S
Centurk	10.1	188	3.3	26	3.0	142	28.6	157	78.6	108	293	0	70	S
Lancota	13.1	68	2.9	149	3.0	142	37.6	35	79.0	112	297	0	60	S
105	14.3	21	3.0	110	3.2	48	33.9	75	78.8	102	290	1	70	S
106	13.7	40	2.9	149	3.0	142	35.1	60	79.0	100	289	4	10	S
107	12.8	93	3.1	70	3.2	48	27.2	175	74.5	100	291	3	20	S
108	12.4	127	3.2	48	3.3	25	29.9	140	76.4	97	287	3	50	S
109	14.0	31	3.0	110	3.2	48	41.9	9	77.5	111	279	0	90	S
110	12.5	117	3.2	48	3.2	48	31.2	118	77.5	113	293	1	99	S
111	14.4	18	2.9	149	3.1	90	35.0	62	79.5	111	299	2	5	S
112	11.8	157	3.1	70	3.1	90	33.1	90	77.2	112	292	0	80	S
113	13.7	40	2.9	149	3.1	90	33.0	91	79.9	120	290	1	90	S
114	13.8	37	3.0	110	3.2	48	31.2	116	79.0	105	294	1	20S	30MR
115	15.0	8	2.8	177	3.0	142	36.8	42	78.3	116	291	3	10	MS
116	14.2	26	2.8	177	3.0	142	31.1	120	78.0	104	291	1	60	S
117	13.5	52	3.0	110	3.2	48	26.6	180	78.9	108	293	0	90	S
118	13.6	47	2.7	190	2.8	191	34.8	63	78.9	103	295	0	50	S
119	12.2	137	3.0	110	3.0	142	38.3	26	75.4	109	297	2	20	MR
120	12.5	117	2.9	149	2.9	175	33.1	90	77.5	119	294	1	40	S

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield Rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan. 1	Septoria (0-9)	Stem rust Sev (%)	Stem rust Resp
121	12.1	140	3.0	110	3.0	142	38.9	20	78.9	110	290	1	10	S
122	12.0	147	2.9	149	3.0	142	37.7	34	79.5	125	295	1	20S	30MR
123	12.3	131	3.1	70	3.1	90	32.1	103	80.0	122	296	1	20	S
124	13.0	75	2.9	149.	3.0	142	27.4	173	80.3	89	286	1	40	S
125	12.9	88	2.9	149	3.0	142	29.6	142	80.4	103	280	0	60	S
126	12.8	93	2.9	149	3.0	142	32.1	103	80.8	95	280	1	30	S
127	12.7	101	2.8	177	2.9	175	32.7	94	77.5	101	281	1	50	S
128	13.6	47	2.8	177	2.9	175	33.6	80	77.8	98	281	1	20	S
129	13.5	52	2.9	149	3.0	142	35.1	60	81.0	103	289	1	30	S
130	12.9	88	2.9	149	3.0	142	28.5	159	77.9	115	285	0	40	S
131	13.8	37	2.9	149	3.1	90	43.6	5	81.1	104	289	0	40	S
132	13.6	47	2.7	190	2.9	175	35.9	52	79.1	115	289	1	0	
133	12.5	117	3.2	48	3.3	25	38.8	21	78.3	107	295	0	70	S
134	12.0	147	3.0	110	3.0	142	44.5	4	81.1	106	290	0	80	S
135	12.8	93	3.0	110	3.1	90	40.5	13	79.5	97	295	0	90	S
136	12.4	127	2.8	177	2.8	191	26.3	183	81.5	117	284	0	50	S
137	10.8	181	3.3	26	3.1	90	38.4	23	70.6	106	296	2	99	S
138	13.0	75	2.9	149	3.0	142	37.9	31	78.5	91	290	1	30	S
139	13.7	40	2.9	149	3.0	142	28.8	152	78.3	92	289	1	40	S
140	14.7	12	3.0	110	3.2	48	32.6	95	77.6	103	286	1	40	S
141	14.2	26	3.0	110	3.2	48	42.7	7	79.4	105	278	1	99	S
142	14.2	26	3.2	48	3.3	25	42.0	8	77.6	106	296	0	40	S
143	13.5	52	3.2	48	3.4	12	32.0	106	76.5	87	290	2	60	S
144	13.6	47	3.2	48	3.4	12	34.1	70	77.1	93	290	1	20	S
145	12.7	101	3.0	110	3.0	142	35.2	57	78.6	113	291	0	30	S
146	13.6	47	3.2	48	3.3	25	38.0	30	77.1	94	301	2	10	S
147	13.0	75	2.8	177	2.9	175	37.7	34	82.5	115	293	0	10	S
148	12.9	88	3.0	110	3.1	90	30.9	124	80.9	116	289	0	50	S
149	12.9	88	3.1	70	3.2	48	46.9	1	80.5	106	294	0	10	S
150	14.2	26	2.9	149	3.0	142	35.0	62	75.9	103	278	0	70	S
Bezostaya 1	13.6	47	2.8	177	3.0	142	36.6	45	78.3	105	293	1	5	S
CI 13449	9.8	190	3.1	70	2.8	191	30.0	138	64.5	120	306	1	99	S
Centurk	10.7	182	3.4	10	3.2	48	30.3	135	77.6	116	293	0	60	S
Lancota	13.5	52	2.8	177	3.0	142	41.0	11	77.6	120	296	1	30	S
155	12.5	117	3.1	70	3.2	48	28.7	155	78.6	105	289	0	20	S
156	11.4	171	3.1	70	3.1	90	31.5	112	79.0	102	278	0	5	MS
157	13.3	59	3.0	110	3.2	48	31.5	112	77.0	104	294	1	10	MR-S
158	11.9	152	3.2	48	3.2	48	23.1	194	78.0	118	297	0	10	S
159	12.5	117	3.4	10	3.4	12	36.9	40	75.5	98	300	0	20	S
160	12.4	127	3.3	26	3.4	12	35.5	54	75.4	118	298	0	99	S

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan. 1	Septoria (0-9)	Stem rust Sev (%)	Stem rust Resp
161	13.3	59	3.1	70	3.3	25	31.1	118	78.5	89	289	1	80	S
162	12.6	109	3.0	110	3.0	142	32.9	92	77.9	99	288	0	0	
163	14.0	31	2.7	190	2.9	175	26.9	177	78.0	108	308	0	T	S
164	11.6	163	3.2	48	3.1	90	45.6	2	72.8	109	303	0	10	S
165	14.7	12	2.6	195	2.8	191	32.4	96	76.0	100	288	1	20	MR
166	14.3	21	2.7	190	2.9	175	33.3	84	78.1	100	286	0	10	S
167	14.4	18	2.8	177	3.0	142	39.5	17	78.0	110	288	0	0	
168	14.2	26	2.8	177	2.9	175	30.5	131	78.8	110	282	0	0	
169	12.7	101	2.9	149	3.0	142	32.0	106	78.5	102	277	1	0	
170	12.6	109	2.9	149	3.0	142	33.3	84	77.1	101	291	0	20	S
171	14.1	28	2.8	177	3.0	142	29.2	147	79.1	108	288	0	0	
172	15.7	3	2.8	177	3.0	142	33.6	79	77.2	98	291	0	T	S
173	15.9	2	2.8	177	3.0	142	28.1	166	77.5	99	291	0	T	S
174	16.0	1	2.6	195	2.9	175	30.7	127	77.3	98	291	0	T	MR
175	13.8	37	2.8	177	3.0	142	29.3	144	78.5	100	291	1	0	
176	12.9	88	3.0	110	3.1	90	34.4	67	77.9	100	290	0	0	
177	12.2	137	2.9	149	2.9	175	36.2	50	77.4	99	289	0	5	R
178	11.8	157	2.9	149	2.8	191	34.3	68	77.0	102	289	0	0	
179	12.4	127	2.8	177	2.8	191	28.6	157	76.5	96	290	0	T	MS
180	12.6	109	3.0	110	3.1	90	26.8	178	78.5	103	294	0	0	
181	11.7	161	3.3	26	3.3	25	36.5	46	76.1	112	294	0	50	S
182	13.8	37	2.9	149	3.1	90	23.9	188	79.7	115	291	1	5	S
183	11.9	152	3.4	10	3.4	12	29.2	148	73.1	112	298	1	10	S
184	14.9	10	2.9	149	3.2	48	18.6	196	-	107	307	0	70	S
185	12.0	147	3.2	48	3.2	48	35.1	60	75.6	93	282	7	60	S
186	12.4	127	3.0	110	3.0	142	30.7	127	77.6	98	293	1	0	
187	13.2	64	2.9	149	3.0	142	30.0	137	78.0	104	290	0	0	
188	12.3	131	3.1	70	3.2	48	41.1	10	77.4	101	290	0	30	S
189	11.5	168	3.3	26	3.2	48	34.1	70	77.3	95	290	0	40	S
190	11.8	157	3.2	48	3.2	48	32.2	101	78.0	120	289	3	50	S
191	11.8	157	3.1	70	3.1	90	30.9	124	78.1	115	290	0	10	S
192	12.6	109	3.0	110	3.1	90	37.2	38	77.4	97	289	0	10	S
Bezostaya 1	12.8	93	2.9	149	3.0	142	37.0	39	81.1	104	293	1	10	S
CI 13449	10.2	186	3.3	26	3.1	90	23.2	193	62.2	90	306	0	99	S
Centurk	11.4	171	3.2	48	3.1	90	28.7	154	78.9	117	293	0	40	S
Lancota	13.6	47	3.0	110	3.1	90	40.2	15	77.4	123	296	0	30	S
Mean	12.7		3.0		3.0		32.7		78.2	106	291	0.6	36.4	
Standard deviation	1.3		0.2		0.2		4.9		2.7	9.1	6.4	-	-	
Coefficient of variation (%)	10.4		6.7		5.5		15.1		3.5	8.5	2.2	-	-	

Table 29. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Bethlehem, South Africa in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g/ha	Yield rank	Test weight kg/hl	Plant height (cm)	Days to flowering from Jan.1	Septoria (0-9)	Stem rust Sev (%)	Stem rust Reap
Means of the check varieties														
Bezostaya 1	12.6		2.8		2.9		32.9		80.1	105	294			
CI 13449	9.5		3.2		2.8		28.1		65.4	96	306			
Centurk	10.3		3.3		3.1		30.1		78.6	115	293			
Lancota	12.9		2.9		3.0		38.2		78.2	121	297			
Check means	11.3		3.1		3.0		32.3		75.6	109	297			
L.S.D. (.05) of the check means	0.5		0.1		0.2		5.0		-	10	1			
Coefficient of variation (%)	3.1		3.4		3.6		11.2		-	6.8	0.2			

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	-.29**	-.17*	.22**	.05	.00	.07
Plant height	-.09	-.08	.05	.02	.01	
Yield	.04	.09	.03	.09		
Adjusted lysine/protein	.03	.66**	.74**			
Lysine/protein	-.60**	.05				
Lysine	.76**					

** Significant at the .01 level.
* Significant at the .05 level.

Table 30. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at Ankara, Turkey in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
Bezostaya 1	17.3	149	2.8	66	3.1	48
CI 13449	15.8	185	2.9	26	3.1	48
Centurk	15.6	189	2.8	66	3.0	93
Lancota	19.0	76	2.7	119	2.9	145
5	17.6	139	2.8	66	3.1	48
6	17.2	153	2.8	66	3.0	93
7	20.5	32	2.7	119	2.9	145
8	22.4	3	2.7	119	3.0	93
9	19.9	46	2.8	66	3.0	93
10	14.2	196	3.2	1	3.4	1
11	20.4	34	2.6	160	2.8	178
12	19.8	49	2.7	119	2.9	145
13	18.0	120	2.9	26	3.2	17
14	21.5	13	2.6	160	2.8	178
15	17.7	134	2.5	190	2.7	193
16	19.9	46	2.7	119	2.9	145
17	17.3	149	3.0	10	3.3	7
18	19.8	49	2.9	26	3.1	48
19	18.9	78	2.8	66	3.1	48
20	20.1	40	2.8	66	3.1	48
21	19.9	46	2.7	119	3.0	93
22	18.7	88	3.0	10	3.3	7
23	19.2	67	2.7	119	3.0	93
24	18.3	103	2.9	26	3.2	17
25	17.3	149	2.8	66	3.0	93
26	17.0	161	2.9	26	3.2	17
27	17.8	128	2.9	26	3.1	48
28	20.0	43	2.7	119	3.0	93
29	17.1	157	2.7	119	2.9	145
30	18.5	94	2.5	190	2.7	193
31	17.5	140	2.6	160	2.9	145
32	18.1	114	2.6	160	2.8	178
33	16.3	179	2.7	119	3.0	93
34	16.4	178	2.7	119	2.9	145
35	16.7	170	2.8	66	3.1	48
36	17.3	149	2.8	66	3.0	93
37	21.1	25	2.7	119	3.0	93
38	20.3	38	2.6	160	2.9	145
39	19.5	59	2.8	66	3.0	93
40	21.4	15	2.7	119	2.9	145
41	20.0	43	2.7	119	3.0	93
42	20.8	28	2.5	190	2.7	193
43	18.3	103	2.5	190	2.8	178
44	18.8	84	2.5	190	2.8	178
45	17.1	157	2.8	66	3.1	48
46	18.8	84	2.7	119	3.0	93
47	15.5	190	2.8	66	3.1	48
48	18.1	114	2.8	66	3.1	48
49	18.4	98	2.7	119	3.0	93
50	20.1	40	2.6	160	2.9	145
Bezostaya 1	18.8	84	2.7	119	2.9	145
CI 13449	18.7	88	3.0	10	3.2	17
Centurk	15.8	185	2.8	66	3.0	93
Lancota	18.0	120	2.7	119	2.9	145
55	19.5	59	2.7	119	3.0	93
56	15.2	192	2.9	26	3.1	48
57	18.3	103	2.7	119	3.0	93
58	19.0	76	2.6	160	2.9	145
59	21.4	15	2.6	160	2.8	178
60	20.4	34	2.6	160	2.9	145
61	19.0	76	2.6	160	2.8	178
62	16.8	167	2.8	66	3.1	48
63	16.0	182	2.8	66	3.0	93
64	15.6	189	2.7	119	3.0	93
65	16.9	164	2.7	119	3.0	93
66	18.0	120	2.7	119	2.9	145
67	22.3	4	2.6	160	2.9	145
68	19.5	59	2.5	190	2.8	178
69	16.7	170	2.6	160	2.8	178
70	17.0	161	2.5	190	2.8	178
71	20.3	38	2.5	190	2.8	178
72	15.7	186	2.8	66	3.0	93
73	18.0	120	2.8	66	3.1	48
74	19.4	63	2.7	119	2.9	145
75	17.6	139	2.8	66	3.1	48
76	22.2	5	2.6	160	2.8	178
77	17.2	153	2.8	66	3.0	93
78	17.9	124	2.8	66	3.1	48
79	16.4	178	2.7	119	2.9	145
80	17.8	128	2.8	66	3.1	48

Table 30. Protein and lysine values and rankings for the entries in the third high protein-high lysine winter wheat observation nursery grown at *Ankara, Turkey in 1977. Continued.*

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
81	18.4	98	2.7	119	3.0	93
82	17.9	124	2.6	160	2.9	145
83	21.1	25	2.7	119	2.9	145
84	19.5	59	2.7	119	2.9	145
85	18.7	88	2.8	66	3.0	93
86	19.1	70	2.7	119	3.0	93
87	18.0	120	2.6	160	2.8	178
88	18.1	114	2.6	160	2.9	145
89	18.8	84	2.6	160	2.8	178
90	19.0	76	2.5	190	2.8	178
91	18.8	84	2.7	119	2.9	145
92	18.2	110	2.5	190	2.8	178
93	20.6	31	2.6	160	2.8	178
94	17.2	153	2.7	119	3.0	93
95	18.8	84	2.5	190	2.7	193
96	17.6	139	3.0	10	3.3	7
97	22.6	1	2.4	195	2.7	193
98	19.1	70	2.6	160	2.8	178
99	21.2	22	2.5	190	2.8	178
100	18.5	94	2.7	119	2.9	145
Bezostaya 1	20.7	30	2.7	119	2.9	145
CI 13449	19.3	64	2.7	119	2.9	145
Centurk	16.9	164	2.7	119	3.0	93
Lancota	19.4	63	3.0	10	3.2	17
105	21.2	22	2.9	26	3.1	48
106	17.7	134	2.6	160	2.8	178
107	18.4	98	2.7	119	3.0	93
108	17.8	128	2.8	66	3.1	48
109	15.1	193	2.9	26	3.1	48
110	17.1	157	2.8	66	3.1	48
111	22.0	7	2.8	66	3.1	48
112	17.8	128	2.8	66	3.0	93
113	17.7	134	2.8	66	3.0	93
114	17.7	134	2.8	66	3.1	48
115	21.6	12	2.9	26	3.2	17
116	18.5	94	2.9	26	3.2	17
117	18.6	91	2.5	190	2.7	193
118	21.3	18	2.7	119	3.0	93
119	17.4	145	2.6	160	2.9	145
120	21.9	9	2.7	119	2.9	145
121	19.4	63	2.5	190	2.8	178
122	17.4	145	2.6	160	2.9	145
123	18.6	91	2.6	160	2.9	145
124	19.0	76	2.7	119	3.0	93
125	19.7	50	2.7	119	3.0	93
126	19.6	54	2.8	66	3.0	93
127	19.5	59	2.8	66	3.1	48
128	19.6	54	2.7	119	3.0	93
129	19.6	54	2.6	160	2.9	145
130	19.6	54	2.5	190	2.8	178
131	19.2	67	2.9	26	3.1	48
132	19.1	70	2.7	119	3.0	93
133	16.7	170	3.0	10	3.3	7
134	16.8	167	3.0	10	3.3	7
135	18.1	114	2.9	26	3.1	48
136	17.9	124	2.4	195	2.7	193
137	17.2	153	2.9	26	3.2	17
138	21.7	10	2.5	190	2.7	193
139	21.3	18	2.6	160	2.9	145
140	20.0	43	2.6	160	2.9	145
141	20.7	30	2.7	119	2.9	145
142	21.2	22	2.7	119	2.9	145
143	22.1	6	2.6	160	2.9	145
144	20.9	27	2.7	119	2.9	145
145	17.4	145	2.8	66	3.0	93
146	21.3	18	2.5	190	2.8	178
147	21.9	9	2.4	195	2.6	196
148	22.5	2	2.4	195	2.6	196
149	21.1	25	2.6	160	2.9	145
150	19.4	63	2.5	190	2.7	193
Bezostaya 1	20.3	38	2.3	196	2.6	196
CI 13449	17.4	145	2.8	66	3.1	48
Centurk	16.5	175	2.9	26	3.2	27
Lancota	17.6	139	2.5	190	2.8	178
155	17.4	145	2.6	160	2.8	178
156	16.6	173	2.7	119	2.9	145
157	21.2	22	2.5	190	2.7	193
158	18.2	110	2.8	66	3.1	48
159	14.8	195	2.9	26	3.1	48
160	18.0	120	2.5	190	2.8	178

Table 30. Protein and lysine values and rankings for the entires in the third high protein-high lysine winter wheat observation nursery grown at Ankara, Turkey in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank
160	16.9	164	2.7	119	3.0	93	181	18.2	110	2.6	160	2.9	145
161	20.3	38	2.7	119	2.9	145	182	17.9	124	2.6	160	2.9	145
163	18.4	98	2.5	190	2.8	178	183	19.2	67	2.8	66	3.0	93
164	18.9	78	2.7	119	3.0	93	184	21.6	12	2.5	190	2.7	193
165	18.2	110	2.6	160	2.9	145	185	17.0	161	2.4	195	2.7	193
166	17.7	134	2.6	160	2.8	178	186	17.1	157	2.6	160	2.9	145
167	18.6	91	2.5	190	2.8	178	187	18.2	110	2.5	190	2.8	178
168	16.5	175	2.8	66	3.1	48	188	15.3	191	2.8	66	3.0	93
169	15.8	185	2.5	190	2.7	193	189	15.6	189	2.8	66	3.1	48
170	17.7	134	2.6	160	2.9	145	190	16.4	178	2.7	119	2.9	145
171	17.0	161	2.7	119	3.0	93	191	16.2	181	3.0	10	3.3	7
172	19.0	76	2.6	160	2.9	145	192	16.2	181	2.7	119	2.9	145
173	17.6	139	2.6	160	2.9	145							
174	18.7	88	2.5	190	2.7	193	Bezostaya 1	16.6	173	2.6	160	2.9	145
175	20.9	27	2.7	119	3.0	93	CI 13449	16.8	167	3.0	10	3.2	17
176	19.8	49	2.8	66	3.0	93	Centurk	14.9	194	2.6	160	2.8	178
177	18.2	110	2.5	190	2.8	178	Lancota	16.6	173	2.5	190	2.8	178
178	18.3	103	2.6	160	2.9	145							
179	18.2	110	2.6	160	2.9	145							
180	18.3	103	2.5	190	2.7	193							
Mean	18.6		2.7		2.9								
Standard deviation	1.8		0.1		0.2								
Coefficient of variation (%)	9.6		5.5		5.2								
					Means of the check varieties								
Bezostaya 1	18.7		2.6		2.9								
CI 13449	17.6		2.9		3.1								
Centurk	15.9		2.8		3.0								
Lancota	18.1		2.7		2.9								
Check means	17.6		2.7		3.0								
L.S.D. (.05) of the check means	1.2		N.S.		N.S.								
Coefficient of variation (%)	5.1		6.1		5.7								

Correlation coefficients

	Protein	Lysine	Lysine/protein
Adjusted lysine/protein	-.35**	.21**	.95**
Lysine/protein	-.35**	.21**	
Lysine	.83**		

** Significant at the .01 level

Table 31. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Erzurum, Turkey in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
Bezostaya 1	14.4	177	2.6	189	2.8	191	37.5	160	100	178
CI 13449	13.3	192	3.1	21	3.2	47	41.8	128	87	181
Centurk	13.7	189	2.6	189	2.8	191	51.8	52	102	178
Lancota	16 2	93	2.6	189	2.8	191	48.8	76	114	178
5	17.2	46	2.7	158	3.0	136	50.0	72	105	126
6	17.2	46	2.6	189	2.9	178	59.6	15	112	178
7	16.0	110	2.7	158	3.0	136	49.5	73	108	178
8	18.1	13	2.7	158	3.0	136	57.6	23	104	178
9	19.0	1	2 6	189	2 9	178	40.4	139	99	178
10	12.8	194	2.7	158	2.7	196	51.0	59	108	178
11	17.2	46	2.7	158	3.0	136	39.3	150	101	178
12	14.9	164	2.8	122	3.0	136	40.4	139	104	178
13	14.4	177	2.8	122	3.0	136	47.6	89	90	179
14	14.0	184	2.9	75	3.0	136	54.5	35	89	180
15	14.3	180	2.8	122	2.9	178	48.0	83	104	178
16	17.7	29	2.8	122	3.1	91	32.6	179	112	176
17	14.7	167	3.1	21	3.3	22	36.9	161	88	176
18	18.0	17	3.0	41	3.3	22	48.2	78	89	178
19	17.8	25	2.7	158	2.9	178	44.4	106	101	178
20	18.1	13	2.7	158	3.0	136	38.5	155	86	178
21	18.7	6	2.6	189	2.9	178	42.9	116	103	178
22	18.2	10	2.7	158	2.9	178	50.8	60	96	178
23	18.1	13	2 7	158	2.9	178	50.0	72	97	178
24	18.2	10	2.6	189	2.9	178	47.1	95	101	178
25	18.0	17	2.6	189	2.9	178	41.3	131	98	178
26	18.7	6	2.6	189	2.9	178	43 3	115	97	178
27	18.0	17	2.6	189	2.9	178	59.6	15	96	178
28	14.3	180	2.9	75	3.1	91	43.8	113	95	179
29	15.3	148	2.8	122	3.1	91	53.9	40	97	178
30	16.8	61	2.6	189	2.9	178	43.8	113	101	178
31	17.0	54	2.6	189	2.9	178	30.0	185	96	178
32	17.0	54	2.6	189	2.9	178	51.8	52	109	176
33	15.0	158	2.9	75	3.1	91	41.9	125	113	178
34	15.3	148	3.0	41	3.2	47	51.0	59	110	178
35	15.0	158	2.8	122	3.1	91	50.0	72	112	178
36	15.4	142	2.9	75	3.2	47	54.3	38	112	178
37	17.1	49	2.7	158	3.0	136	35.5	171	92	178
38	14.2	183	2.9	75	3.0	136	40.0	143	93	177
39	15.6	132	2.5	195	2.8	191	42.0	123	107	178
40	17.2	46	2.6	189	2.8	191	45.4	104	104	177
41	17.7	29	2.7	158	3.0	136	48.0	83	109	177
42	17.9	20	2.6	189	2.9	178	45.5	103	97	177
43	15.7	128	2.8	122	3.0	136	26.9	191	102	177
44	17.4	36	2 7	158	2.9	178	31.3	182	110	177
45	17.3	38	2 8	122	3.1	91	35.5	171	106	176
46	16.9	58	2 8	122	3.1	91	35.9	167	102	176
47	16.0	110	2 8	122	3.1	91	37.5	160	99	176
48	17.4	36	2.7	158	2.9	178	34.1	175	95	178
49	16.3	86	2.7	158	2.9	178	28.8	188	86	177
50	15.8	117	2.9	75	3.1	91	38.5	155	91	178
Bezostaya 1	15.4	142	2.9	75	3.1	91	43.8	113	93	178
CI 13449	13.1	193	3 3	2	3.4	9	38 5	155	83	180
Centurk	14.5	173	3.0	41	3.2	47	50.3	62	96	178
Lancota	16.3	86	2.8	122	3.0	136	40.0	143	99	179
55	17.2	46	3.0	41	3.2	47	36.3	165	90	178
56	14.5	173	2.9	75	3.1	91	27.9	190	90	176
57	16.1	100	2.9	75	3.1	91	42.5	118	101	178
58	17.3	38	2.6	189	2.9	178	40 4	139	96	178
59	16.2	93	2.9	75	3.1	91	27.9	190	98	178
60	18.4	8	2.8	122	3.0	136	50.0	72	104	177

Table 31. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Erzurum, Turkey in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
61	16.3	86	2.6	189	2.9	178	51.4	55	98	177
62	15.7	128	3.0	41	3.2	47	41.9	125	92	178
63	16.5	77	2.8	122	3.0	136	42.4	120	96	178
64	18.4	8	2.7	158	2.9	178	48.8	76	93	178
65	18.7	6	2 7	158	2.9	178	34.6	172	87	178
66	17.2	46	2.8	122	3.0	136	47.9	85	102	178
67	15.8	117	2.9	75	3.1	91	60.4	10	96	180
68	15 4	142	2.9	75	3 1	91	61.9	7	100	180
69	16.5	77	2.8	122	3.0	136	34.1	175	77	178
70	17.1	49	2.6	189	2.9	178	32.9	177	82	178
71	15.7	128	2.6	189	2.9	178	63.5	6	103	178
72	16.5	77	2.8	122	3.0	136	39.4	147	76	177
73	17.4	36	2.8	122	3.1	91	51.4	55	90	176
74	17.4	36	2.7	158	3.0	136	55.3	33	100	177
75	17.8	25	2.7	158	2.9	178	50.0	72	98	176
76	16.0	110	2.7	158	2.9	178	60 9	8	102	179
77	16.0	110	2.7	158	2.9	178	51.9	50	92	178
78	15.8	117	2.7	158	2.9	178	55.3	33	102	178
79	15.5	134	2 8	122	3.0	136	46.6	99	89	178
80	15.6	132	2.7	158	3.0	136	66.9	3	101	180
81	16 0	110	3.2	5	3.4	9	48.6	77	88	180
82	16.7	65	3.0	41	3.3	22	41.4	130	81	178
83	16.0	110	3.0	41	3.2	47	32.8	178	97	178
84	16.2	93	3.0	41	3 2	47	67.8	1	96	179
85	16.1	100	3.1	21	3.4	9	54.8	34	98	178
86	15.8	117	3.1	21	3.3	22	67.1	2	104	177
87	16.6	69	2.9	75	3.2	47	39.4	147	87	177
88	17.7	29	2.9	75	3.2	47	43 8	113	99	176
89	17.0	54	3.0	41	3.2	47	38.9	151	103	176
90	18.7	6	2.9	75	3.1	91	21.3	194	105	178
91	17.7	29	2.8	122	3.1	91	46.6	99	105	176
92	17.9	20	2.8	122	3.0	136	30.3	183	103	176
93	18.7	6	2.8	122	3.1	91	40.4	139	106	178
94	17.0	54	2.8	122	3.1	91	38.5	155	101	178
95	15.8	117	2.9	75	3.1	91	45.1	105	97	178
96	16.0	110	2.8	122	3.0	136	47.5	92	79	178
97	15.9	111	2.8	122	3.1	91	54.4	36	95	179
98	16.0	110	2.8	122	3.0	136	57.3	25	89	179
99	15.7	128	2.8	122	3.0	136	56.3	28	95	178
100	16.7	65	2.9	75	3 1	91	47.6	89	88	178
Bezostaya 1	15.7	128	2.7	158	3.0	136	47.9	85	90	177
CI 13449	13.7	189	3.1	21	3 3	22	59.6	15	77	181
Centurk	13.8	186	2.9	75	3.1	91	58.0	20	88	176
Lancota	15.4	142	2.9	75	3.1	91	51.0	59	107	178
105	16.1	100	2.8	122	3.0	136	47.1	95	88	176
106	15.0	158	2.9	75	3.1	91	50.0	72	100	178
107	14.4	177	3.2	5	3.4	9	59.1	18	93	180
108	14.9	164	3.0	41	3.2	47	55.3	33	90	178
109	15.3	148	3.0	41	3.2	47	40.0	143	95	176
110	15.4	142	3.0	41	3.2	47	37 6	156	93	178
111	14.9	164	2.9	75	3.1	91	20.4	195	104	180
112	13.4	191	3.3	2	3.4	9	65.9	4	103	178
113	15.3	148	3.1	21	3.3	22	16.3	196	109	178
114	15.7	128	3.1	21	3.3	22	53.8	41	100	176
115	16 7	65	2 8	122	3.1	91	42.8	117	99	176
116	16 6	69	3 0	41	3.3	22	41.8	128	86	178
117	15.6	132	3.1	21	3.4	9	44.1	107	90	178
118	17.0	54	3.0	41	3.3	22	42.4	120	91	178
119	15.1	151	2.9	75	3 1	91	57.6	23	90	179
120	15.5	134	3.0	41	3.2	47	39.3	150	96	178

Table 31. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Erzurum, Turkey in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
121	15.8	117	2.9	75	3.1	91	52.9	45	95	178
122	16.8	61	2.9	75	3.2	47	48.0	83	97	178
123	16.9	58	2.9	75	3.1	91	40.0	143	95	179
124	17.4	36	2.8	122	3.1	91	32.3	180	85	178
125	16.4	80	2.7	158	2.9	178	47.6	89	93	178
126	15.7	128	3.0	41	3.2	47	52.9	45	82	178
127	16.3	86	3.0	41	3.2	47	47.1	95	88	177
128	15.7	128	3.0	41	3.2	47	54.3	38	88	177
129	17.8	25	2.9	75	3.2	47	30.0	185	85	178
130	16.5	77	2.9	75	3.1	91	43.8	113	97	176
131	16.3	86	2.8	122	3.1	91	40.4	139	88	176
132	15.1	151	2.8	122	3.0	136	41.4	130	110	180
133	14.5	173	2.8	122	3.0	136	50.0	72	97	178
134	15.4	142	2.8	122	3.1	91	57.3	25	93	178
135	15.7	128	3.1	21	3.3	22	59.1	18	82	180
136	14.6	169	2.8	122	3.0	136	39.3	150	105	178
137	14.7	167	3.1	21	3.3	22	26.8	193	89	180
138	18.0	17	2.8	122	3.1	91	35.5	171	93	180
139	16.5	77	2.9	75	3.1	91	37.5	160	82	178
140	17.8	25	2.7	158	3.0	136	40.4	139	93	178
141	17.2	46	3.1	21	3.4	9	50.5	61	88	177
142	16.5	77	2.9	75	3.2	47	56.8	26	84	178
143	16.1	100	3.1	21	3.4	9	51.0	59	74	178
144	17.1	49	3.1	21	3.4	9	57.6	23	79	178
145	16.6	69	2.9	75	3.2	47	41.8	128	86	176
146	14.4	177	3.0	41	3.2	47	55.3	33	77	179
147	16.3	86	2.6	189	2.9	178	31.3	182	85	178
148	16.9	58	2.8	122	3.0	136	39.5	145	94	176
149	16.1	100	2.8	122	3.1	91	60.0	11	85	177
150	17.9	20	2.7	158	3.0	136	42.0	123	80	178
Bezostaya 1	16.2	93	2.6	189	2.9	178	48.0	83	89	177
CI 13449	14.3	180	3.1	21	3.2	47	52.0	49	82	181
Centurk	13.6	190	2.9	75	3.1	91	45.5	103	91	178
Lancota	15.4	142	2.6	189	2.8	191	52.5	47	102	177
155	15.0	158	2.8	122	3.0	136	49.0	74	87	178
156	14.9	164	3.0	41	3.2	47	52.9	45	77	177
157	16.2	93	2.5	195	2.8	191	40.4	139	80	178
158	15.3	148	2.7	158	2.9	178	40.9	132	89	175
159	16.0	110	2.9	75	3.1	91	29.4	187	84	177
160	16.7	65	2.8	122	3.0	136	37.5	160	81	175
161	17.4	36	2.4	196	2.7	196	35.9	167	77	178
162	16.8	61	2.7	158	2.9	178	36.3	165	81	177
163	16.2	93	2.7	158	2.9	178	39.6	144	82	180
164	14.5	173	2.9	75	3.1	91	56.3	28	76	178
165	15.3	148	2.7	158	3.0	136	52.1	48	72	177
166	15.7	128	2.7	158	3.0	136	47.8	86	86	177
167	16.5	77	2.8	122	3.1	91	52.5	47	89	175
168	16.4	80	2.6	189	2.8	191	45.5	103	96	177
169	16.4	80	2.7	158	2.9	178	33.0	176	88	176
170	16.1	100	2.7	158	3.0	136	48.0	83	87	178
171	16.2	93	2.8	122	3.0	136	35.5	171	90	176
172	17.5	30	2.5	195	2.7	196	50.0	72	99	178
173	17.8	25	2.5	195	2.7	196	53.9	40	101	177
174	17.2	46	2.5	195	2.7	196	50.0	72	95	177
175	16.9	58	2.6	189	2.9	178	36.8	162	92	178
176	16.1	100	2.8	122	3.0	136	47.5	92	96	178
177	15.6	132	2.6	189	2.8	191	47.5	92	97	177
178	15.7	128	2.6	189	2.9	178	45.6	100	99	177
179	15.4	142	2.6	189	2.9	178	51.4	55	88	177
180	15.0	158	2.8	122	3.0	136	50.0	72	93	175

Table 31. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Erzurum, Turkey in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
181	16.5	77	2.5	195	2.8	191	43.5	114	93	176
182	16.6	69	2.7	158	3.0	136	26.8	193	106	176
183	14.2	183	2.8	122	3.0	136	46.6	99	102	177
184	14.9	164	2.8	122	3.0	136	34.1	175	105	176
185	16.0	110	2.6	189	2.9	178	29.5	186	91	176
186	14.6	169	2.9	73	3.1	91	65.0	5	97	178
187	14.2	183	3.1	21	3.3	22	46.6	99	94	178
188	13.7	189	3.2	5	3.3	22	60.4	10	96	179
189	15.0	158	2.7	158	2.9	178	59.6	15	98	177
190	14.9	164	2.6	189	2.8	191	36.5	163	102	177
191	15.1	151	2.6	189	2.8	191	42.1	121	99	176
192	13.9	185	2.8	122	3.0	136	59.1	18	94	178
Bezostaya 1	14.7	167	2.6	189	2.8	191	58.0	20	103	178
CI 13449	12.2	195	3.1	21	3.1	91	55.5	29	80	182
Centurk	12.1	196	2.8	122	2.9	178	52.9	45	100	178
Lancota	15.0	158	2.7	158	2.9	178	43.8	113	115	179
Mean	16.1		2.8		3.0		45.5		95	177
Standard deviation	1.3		0.2		0.2		9.6		9.0	3.9
Coefficient of variation (%)	8.4		6.1		5.3		21.1		9.5	2.2
Means of the check varieties										
Bezostaya 1	15.3		2.7		2.9		47.0		95	178
CI 13449	13.3		3.1		3.2		49.5		82	181
Centurk	13.5		2.8		3.0		51.7		95	178
Lancota	15.7		2.7		2.9		47.2		107	178
Check means	14.5		2.8		3.0		48.8		95	179
L.S.D. (.05) of the check mean	0.8		0.1		0.1		N.S.		5	1
Coefficient of variation (%)	3.9		2.8		2.4		11.5		4.0	0.4

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	-.14*	-.07	.13	.08	.03	-.11
Plant height	.08	-.09	-.23**	-.24**	.01	
Yield	-.26**	-.18**	.11	.09		
Adjusted lysine/protein	-.20**	.49**	.94**			
Lysine/protein	-.40**	.31**				
Lysine	.73**					

** Significant at the .01 level
* Significant at the .05 level

Table 32. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Yuma, Arizona, USA in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
Bezostaya 1	17.1	76	2 6	175	2.9	162	35.3	193	115
CI 13449	15.2	185	3.1	5	3.4	2	34.2	194	91
Centurk	15.4	177	3 0	15	3 2	23	50.4	74	123
Lancota	16.4	135	2.8	81	3.0	113	44.6	141	134
5	17.6	45	2 9	37	3.1	58	45.4	132	121
6	16.7	106	3.0	15	3 2	23	52.7	44	127
7	16.7	106	2.8	81	3.1	58	51.3	61	119
8	17.9	33	2.9	37	3.1	58	44.2	147	117
9	18.5	4	2.8	81	3.1	58	44 0	149	119
10	14.1	196	3.1	5	3.3	8	63.7	3	131
11	16.6	116	2.8	81	3.0	113	39.3	177	114
12	16.4	135	2.9	37	3.2	23	31 1	195	127
13	15.6	169	3.0	15	3.2	23	46 6	121	113
14	16.3	142	2.9	37	3.1	58	38.8	179	104
15	15.5	173	2 9	37	3.1	58	50.6	72	122
16	18 7	2	2 8	81	3.0	113	43.0	157	123
17	16.2	147	3.1	5	3.3	8	29.2	196	90
18	18.3	9	2.9	37	3.1	58	45.5	131	122
19	18.3	9	2.8	81	3.1	58	41.6	166	121
20	18.0	27	3.1	5	3.3	8	47.2	113	120
21	18.2	13	2.7	135	3.0	113	41.2	170	120
22	18.3	9	3.0	15	3.3	8	45.7	130	122
23	18.1	19	2.9	37	3.2	23	44 5	142	120
24	18.0	27	2.9	37	3.1	58	44.2	148	123
25	17.8	37	2.9	37	3.2	23	42.9	158	122
26	17 6	45	2.9	37	3.1	58	44 3	145	120
27	18 1	19	2.8	81	3.1	58	46.9	117	123
28	15.7	165	2.9	37	3.1	58	38 0	184	97
29	15.1	188	2 9	37	3.1	58	50 8	69	119
30	17 0	83	2 6	175	2.9	162	37 0	188	131
31	17.4	57	2.7	135	3.0	113	38.6	180	134
32	17.3	61	2.7	135	3.0	113	46.2	125	136
33	15.8	161	2.7	135	3 0	113	45.2	135	135
34	15.4	177	3.0	15	3.2	23	49.3	85	131
35	15.6	169	2.9	37	3.2	23	49.1	89	133
36	16.5	125	2.8	81	3.0	113	47.3	108	137
37	18.5	4	2.7	135	3.0	113	42.7	162	116
38	17.5	52	2.8	81	3.1	58	48.1	102	115
39	16.3	142	2.7	135	3.0	113	47.6	105	125
40	18 1	19	2.8	81	3.1	58	51.3	58	128
41	18.0	27	2 8	81	3.1	58	48.8	95	127
42	18.5	4	2 8	81	3.1	58	44.4	144	132
43	18.1	19	2 6	175	2.9	162	47 7	104	139
44	16.8	96	2.6	175	2.9	162	49.8	81	132
45	17.6	45	2.7	135	2.9	162	40.1	174	125
46	17.4	57	2.6	175	2.9	162	50 3	75	117
47	17.4	57	2.6	175	2 9	162	49.2	86	123
48	18.0	27	2.7	135	2.9	162	48.4	99	116
49	17.4	57	2.6	175	2.9	162	47.4	107	105
50	16.3	142	2.6	175	2.8	186	49.6	84	113
Bezostaya 1	16.6	116	2.7	135	3.0	113	47.3	110	125
CI 13449	14.7	194	3.1	5	3.3	8	42.7	161	92
Centurk	15.4	177	2 8	81	3.0	113	52.9	42	127
Lancota	16.5	125	2.5	192	2.7	194	47.6	106	141
55	16.9	89	2.8	81	3.0	113	42.9	159	130
56	17.1	76	2.7	135	3.0	113	53 8	32	110
57	17.6	45	2 6	175	2.8	186	41 1	171	131
58	17.9	33	2.6	175	2.9	162	43.3	153	123
59	17.0	83	2.6	175	2 9	162	46 5	123	133
60	17.8	37	2.7	135	2.9	162	43 0	156	125

Table 32. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Yuma, Arizona, USA in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
61	17.9	33	2.5	192	2.7	194	37.3	185	128
62	15.7	165	2.7	135	3.0	113	54.2	28	108
63	15.8	161	2.8	81	3.0	113	51.0	65	135
64	19.0	1	2.4	196	2.7	194	43.2	154	119
65	18.1	19	2.6	175	2.9	162	37.1	186	125
66	16.7	106	2.7	135	3.0	113	44.9	139	130
67	15.4	177	2.8	81	3.0	113	50.7	71	113
68	15.5	173	2.8	81	3.0	113	52.0	53	120
69	16.4	135	2.6	175	2.9	162	54.0	30	102
70	16.6	116	2.5	192	2.7	194	52.6	47	102
71	16.7	106	2.7	135	3.0	113	52.4	49	127
72	16.2	147	2.7	135	3.0	113	49.9	80	99
73	17.8	37	2.7	135	3.0	113	48.4	98	111
74	17.2	68	2.6	175	2.9	162	53.2	36	116
75	17.6	45	2.6	175	2.8	186	51.0	64	120
76	16.0	156	2.6	175	2.8	186	35.7	191	112
77	15.4	177	2.8	81	3.1	58	55.5	20	110
78	15.7	165	2.7	135	2.9	162	48.6	96	120
79	16.8	96	2.6	175	2.8	186	49.2	88	126
80	16.5	125	2.8	81	3.0	113	52.3	51	116
81	15.3	182	2.8	81	3.1	58	48.4	97	93
82	15.5	173	2.7	135	3.0	113	52.6	46	107
83	16.3	142	2.9	37	3.1	58	45.0	138	128
84	16.8	96	2.6	175	2.8	186	53.5	34	118
85	15.6	169	2.8	81	3.0	113	46.0	126	119
86	16.0	156	2.9	37	3.2	23	59.6	7	121
87	17.2	68	2.6	175	2.9	162	52.1	52	115
88	17.5	52	2.5	192	2.8	186	51.1	63	125
89	16.6	116	2.9	37	3.2	23	40.3	173	121
90	18.2	13	2.6	175	2.9	162	46.9	116	123
91	17.7	41	2.7	135	3.0	113	35.5	192	122
92	17.6	45	2.9	37	3.1	58	37.0	187	127
93	18.2	13	2.6	175	2.9	162	39.3	178	117
94	17.5	52	2.7	135	3.0	113	36.6	189	127
95	17.2	68	2.8	81	3.0	113	55.1	23	133
96	16.8	96	2.9	37	3.2	23	38.0	183	117
97	16.5	125	2.8	81	3.1	58	54.9	25	128
98	16.4	135	2.8	81	3.1	58	59.2	9	116
99	16.4	135	2.8	81	3.1	58	52.6	48	122
100	16.6	116	3.0	15	3.3	8	50.8	68	121
Bezostaya 1	16.8	96	2.7	135	3.0	113	51.3	60	121
CI 13449	15.6	169	3.0	15	3.3	8	41.2	168	96
Centurk	15.1	188	2.8	81	3.0	113	56.5	17	127
Lencota	16.1	151	2.7	135	2.9	162	45.7	129	139
105	17.2	68	2.7	135	3.0	113	54.0	29	125
106	17.3	61	2.9	37	3.2	23	50.1	77	113
107	15.3	182	3.1	5	3.3	8	60.7	4	112
108	15.0	190	3.2	2	3.4	2	58.7	12	105
109	18.2	13	2.7	135	3.0	113	47.3	111	129
110	15.9	159	2.8	81	3.0	113	43.3	152	125
111	17.7	41	2.9	37	3.2	23	39.7	176	126
112	16.5	125	2.9	37	3.2	23	55.7	19	123
113	18.0	27	2.8	81	3.0	113	49.0	91	136
114	17.1	76	2.8	81	3.0	113	53.4	35	125
115	17.1	76	2.6	175	2.8	186	53.0	41	136
116	16.8	96	2.6	175	2.9	162	53.2	38	117
117	17.0	83	2.8	81	3.0	113	51.9	56	125
118	17.1	76	2.7	135	3.0	113	42.0	165	101
119	16.4	135	2.7	135	2.9	162	58.6	13	118
120	17.2	68	2.7	135	2.9	162	42.0	164	127

Table 32. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Yuma, Arizona, USA in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
121	16.6	116	2.7	135	3.0	113	45.8	128	120
122	16.0	156	2.8	81	3.1	58	46 3	124	135
123	17 0	83	2.7	135	3.0	113	46.5	122	127
124	17.5	52	2.7	135	3.0	113	43.6	151	108
125	17.5	52	2.5	192	2 8	186	50.2	76	123
126	16.7	106	2.7	135	3.0	113	50.5	73	117
127	16.7	106	3.3	1	3.5	1	59.2	10	115
128	16.4	135	2.6	175	2.9	162	58.0	16	115
129	16.5	125	2.8	81	3.0	113	54.6	26	114
130	16.1	151	2.8	81	3.1	58	47.3	109	135
131									
131	16.2	147	2.8	81	3 0	113	53.1	39	112
132	16.1	151	2.9	37	3.1	58	48.4	100	130
133	14.7	194	2.9	37	3.1	58	56.1	18	112
134	14.8	191	2.8	81	3.0	113	68.0	1	114
135	15.2	185	2.7	135	2.9	162	60.0	6	101
136	16 5	125	2.7	135	2.9	162	42.8	160	131
137	16.0	156	2.9	37	3.2	23	45.9	127	97
138	16.8	96	2.6	175	2.9	162	55.1	22	118
139	17.2	68	2 7	135	2.9	162	55.0	24	106
140	18.5	4	2.6	175	2.8	186	45.0	137	102
141	17 5	52	2.8	81	3.0	113	51.3	59	108
142	16.8	96	2.8	81	3.1	58	59.6	8	113
143	17.2	68	2 8	81	3 1	58	58.6	14	96
144	17.7	41	2 8	81	3.0	113	49.0	92	97
145	16.3	142	2.7	135	3.0	113	60.5	5	128
146	16.4	135	2.9	37	3.1	58	43.2	155	100
147	16.7	106	2.8	81	3.0	113	46.8	118	124
148	16.6	116	2.7	135	2.9	162	52.6	45	124
149	16 3	142	2.9	37	3.1	58	48.3	101	115
150	18.0	27	2.7	135	3.0	113	55.1	21	126
Bezostaya 1	17.0	83	2 8	81	3.1	58	48.9	93	118
CI 13449	15.3	182	3.0	15	3.2	23	41.2	169	95
Centurk	15.1	188	2.9	37	3.1	58	53.8	31	129
Lancota	16.5	125	2.7	135	2.9	162	52.4	50	137
155	16.9	89	2.8	81	3.0	113	50.0	78	125
156	15.8	161	2.7	135	3.0	113	54.4	27	121
157	16.6	116	2.7	135	3.0	113	39.7	175	113
158	16.0	156	2.9	37	3.1	58	53.7	33	132
159	15.7	165	3.0	15	3.2	23	44.6	140	116
160	17.5	52	2.8	81	3.1	58	50.7	70	128
161	17 3	61	2.7	135	3.0	113	50 8	67	114
162	17.0	83	2.7	135	2.9	162	49.1	90	122
163	17.1	76	2.8	81	3.1	58	44.3	146	124
164	14.7	194	3.0	15	3 2	23	64.5	2	116
165	16.5	125	2.8	81	3.1	58	58.2	15	114
166	18.3	9	2.7	135	2.9	162	53.0	40	122
167	17.9	33	2.8	81	3.1	58	51.4	57	123
168	17.1	76	2.7	135	3.0	113	49.6	83	126
169	16.2	147	2.7	135	3.0	113	52.9	43	110
170	17.0	83	2.6	175	2.9	162	51.2	62	119
171	17.8	37	2.7	135	2.9	162	42.5	163	128
172	18.1	19	2.8	81	3.1	58	44.4	143	121
173	18.1	19	2 8	81	3.1	58	43.9	150	117
174	18.1	19	2.8	81	3.0	113	47.1	114	118
175	17.2	68	2.8	81	3.1	58	47.7	103	117
176	17.3	61	2.9	37	3.1	58	53.2	37	118
177	16.7	106	2.8	81	3.0	113	49.9	79	113
178	16.7	106	2.8	81	3.1	58	59.0	11	120
179	17.0	83	2 8	81	3.1	58	51.9	54	113
180	16.1	151	3.0	15	3 2	23	49.7	82	124

Table 32. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Yuma, Arizona, USA in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm
181	16.7	106	3.0	15	3.3	8	46 8	119	126
182	18.0	27	2 8	81	3 1	58	41 1	172	128
183	16.9	89	3.0	15	3 2	23	48.9	94	128
184	18.3	9	2 7	135	3.0	113	36.5	190	134
185	16.9	89	2.7	135	2.9	162	49.2	87	106
186	16.7	106	2.7	135	2.9	162	50.9	66	110
187	17.2	68	2.8	81	3.1	58	47.0	115	117
188	15.4	177	2.8	81	3.1	58	47.2	112	111
189	16.6	116	2.7	135	3.0	113	46.6	120	109
190	17.9	33	2.5	192	2.8	186	38.5	181	132
191	16 8	96	2.6	175	2.9	162	38.5	182	124
192	15.7	165	2.8	81	3.0	113	45.3	133	106
Bezostaya 1	16.5	125	2.6	175	2.8	186	45.2	136	118
CI 13449	14.8	191	3.0	15	3.2	23	41.5	167	94
Centurk	15.2	185	2.9	37	3.1	58	51.9	55	125
Lancota	16 4	135	2.8	81	3.0	113	45.3	134	135
Mean	16.8		2.8		3.0		48.1		120
Standard deviation	1.0		0.1		0.1		9.3		11.7
Coefficient of variation (%)	5.8		5.2		4.6		19.3		9.8
Means of the check varieties									
Bezostaya 1	16.8		2.7		3.0		45.6		120
CI 13449	15.1		3.0		3 3		40.2		94
Centurk	15.2		2.9		3.1		53.1		127
Lancota	16.4		2.7		2.9		47.1		138
Check means	15.9		2.8		3.1		46.5		120
L.S.D. (.05) of the check means	0.3		0.1		0.1		3.8		3
Coefficient of variation (%)	1.6		3.3		3.4		5.9		1.7

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield
Plant height	.24**	.06	-.20**	-.20**	-.01
Yield	-.33**	-.28**	.07	.04	
Adjusted lysine/protein	-.30**	.53**	.94**		
Lysine/protein	-.39**	.45**			
Lysine	.63**				

** Significant at the .01 level.

Table 33. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Lincoln, Nebraska, USA in 1977

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
Bezostaya 1	17.4	160	2.5	190	2.7	190	30.3	78	68	134
CI 13449	17.6	147	3.0	7	3.2	14	9.3	186	71	144
Centurk	15.2	190	2.8	81	3 1	55	50.5	3	75	133
Lancota	18.7	77	2.6	178	2.9	175	30.3	78	92	139
5	21.9	1	2.6	178	2.9	175	17.6	176	76	141
6	20 7	6	2.8	81	3.0	128	33 5	55	81	137
7	18.0	125	2.7	146	2.9	175	29.9	83	75	133
8	18.2	111	2.8	81	3.1	55	30.8	75	78	133
9	21.2	4	2.7	146	2.9	175	23.6	148	68	136
10	15.2	190	2.9	27	3.1	55	52.2	2	74	134
11	19.6	31	2.7	146	3.0	128	28.5	101	77	139
12	18.2	111	2.7	146	3.0	128	39.4	26	78	136
13	16.6	178	2 9	27	3.1	55	27.6	112	76	140
14	17.4	160	2.7	146	3.0	128	37.1	37	72	141
15	15.9	186	2.9	27	3.1	55	42.4	16	73	133
16	20 0	13	2.7	146	3.0	128	31.6	69	82	129
17	–	–	–	–	–	–	–	–	75	138
18	19.7	24	2.7	146	2.9	175	32 4	61	75	133
19	18.4	98	2.8	81	3.0	128	31.5	70	72	133
20	19.9	15	2.7	146	2.9	175	26.8	120	71	135
21	19.8	18	2.8	81	3.1	55	26.7	124	75	135
22	19.6	31	2.8	81	3.0	128	24.1	141	78	135
23	19.2	49	2.8	81	3.1	55	28.0	107	77	134
24	19.6	31	2.8	81	3.1	55	26.9	117	80	133
25	19.6	31	2.7	146	3.0	128	25.2	136	78	133
26	19.7	24	2.7	146	2.9	175	21.8	155	73	133
27	19.8	18	2.7	146	2 9	175	28 1	105	73	134
28	18.6	80	2.8	81	3.0	128	21.0	162	62	137
29	17.5	152	2 8	81	3 0	128	26 0	132	73	136
30	17.4	160	2.6	178	2.9	175	38.0	34	79	135
31	18.5	89	2.5	190	2.8	187	26.5	126	75	136
32	18.0	125	2.7	146	2.9	175	39.2	28	82	130
33	16.0	184	2.8	81	3.1	55	28.4	102	74	130
34	16.7	175	2.8	81	3.0	128	23.2	149	71	133
35	16.1	183	2.9	27	3.1	55	26.8	120	72	131
36	19.2	49	2.6	178	2.9	175	29.1	93	83	133
37	19.6	31	2.8	81	3.0	128	20.2	165	73	134
38	17.9	131	2.8	81	3.0	128	31.1	72	75	130
39	17.8	136	2.7	146	3 0	128	35.4	44	80	130
40	18.9	67	2.7	146	3 0	128	26.5	126	75	130
41	19 4	40	2.9	27	3.1	55	19.5	170	70	134
42	19.7	24	2.9	27	3.1	55	26 4	129	75	132
43	19.5	36	2.7	146	2.9	175	29.5	87	84	135
44	18.0	125	3.2	2	3.4	3	26.4	129	80	132
45	18.0	125	2.8	81	3.0	128	21.8	155	82	129
46	17.7	144	2.8	81	3.0	128	33.0	58	82	129
47	17.3	164	2.7	146	3.0	128	29.3	90	77	129
48	18.5	89	2.6	178	2.9	175	25.6	134	78	129
49	18.0	125	2.7	146	3.0	128	21.1	160	75	130
50	17.4	160	2.6	178	2.9	175	27.9	108	71	133
Bezostaya 1	17.7	144	2.7	146	3 0	128	34 3	50	76	134
CI 13449	–	–	–	–	–	–	–	–	69	141
Centurk	16.7	175	2.9	27	3.1	55	35.0	47	76	135
Lancota	18.7	77	2 6	178	2.9	175	44.7	14	83	136
55	17.8	136	2.8	81	3.1	55	30.3	78	77	133
56	.		.	.	.	.	.	.	67	134
57	18.3	103	2.8	81	3.0	128	23.8	144	72	134
58	18.0	125	2.5	190	2.8	187	35.3	45	87	133
59	17.5	152	2.8	81	3.0	128	45.1	12	83	135
60	20.1	11	2.7	146	3.0	128	28.7	100	80	133

Table 33. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Lincoln, Nebraska, USA in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
61	.	.	.	.	.	.	28.7	100	74	138
62	17.0	170	2.8	81	3.1	55	39.3	27	68	130
63	17.2	168	2.8	81	3.0	128	37.1	37	76	137
64	19.7	24	2.5	190	2.8	187	18.6	171	73	133
65	18.8	72	2.7	146	3.0	128	18.2	174	71	129
66	19.0	59	2.7	146	3.0	128	33.8	53	92	137
67	17.9	131	2.7	146	3.0	128	45 2	11	81	139
68	18.9	67	2.8	81	3.1	55	31.9	67	86	135
69	19.2	49	2.6	178	2.9	175	19.7	168	69	130
70	17.6	147	2.6	178	2.9	175	26.7	124	70	130
71	18.4	98	2.7	146	3.0	128	53.6	1	90	136
72	18.3	103	2.5	190	2.7	190	28.3	104	69	129
73	19.3	43	2.6	178	2.9	175	29.3	90	70	131
74	17.8	136	2.5	190	2.8	187	36.3	42	77	130
75	17.9	131	2.6	178	2.9	175	33.8	53	76	130
76	16.5	180	2.8	81	3.0	128	28.0	107	80	137
77	16.5	180	2.8	81	3.0	128	23.7	147	66	134
78	17.4	160	2.9	27	3.2	14	48.7	7	83	137
79	17.2	168	2.7	146	3.0	128	28.9	97	83	129
80	16.9	171	2.8	81	3.0	128	32.0	66	70	133
81	17.8	136	2 8	81	3.1	55	29.2	91	70	138
82	18.0	125	2.8	81	3.0	128	26.7	124	72	136
83	17.1	169	2.7	146	3 0	128	42.0	18	76	137
84	18.4	98	2.7	146	3.0	128	21.4	158	70	137
85	17.2	168	2.8	81	3.1	55	24.4	139	76	135
86	17.7	144	2.7	146	3.0	128	23.0	151	74	131
87	16.6	178	2 9	27	3.2	14	49.8	5	80	133
88	17.4	160	2 8	81	3.1	55	28.3	104	80	129
89	17.4	160	2 7	146	3.0	128	48.7	7	85	129
90	19.0	59	2.7	146	2.9	175	21.7	156	85	133
91	18.4	98	2.6	178	2.9	175	23.8	144	85	133
92	20.2	10	2.6	178	2.9	175	11.7	183	80	134
93	18.5	89	2.7	146	3.0	128	23.7	147	73	130
94	19.5	36	2.8	81	3.1	55	38.2	32	72	136
95	18.4	98	2.7	146	3.0	128	37.4	35	76	129
96	20.0	13	2.7	146	2.9	175	11.2	184	73	133
97	19.2	49	2.8	81	3.1	55	47.1	9	67	137
98	18.2	111	2 8	81	3.0	128	21.0	162	82	138
99	16.7	175	2.9	27	3.2	14	41.0	23	62	133
100	18.8	72	2.6	178	2.8	187	26.8	120	74	133
Bezostaya 1	18.3	103	2.8	81	3.1	55	25.8	133	80	135
CI 13449	18.8	72	3 2	2	3.5	1	6.1	190	76	135
Centurk	15.8	188	2.7	146	3.0	128	41.7	19	70	136
Lancota	18.6	80	2.6	178	2.9	175	31.0	74	76	138
105	19.8	18	2.9	27	3.1	55	2.7	191	85	143
106	17.8	136	2.9	27	3.2	14	38.4	31	62	131
107	17.6	147	3.0	7	3.3	4	42.0	18	75	134
108	18.3	103	3.0	7	3.2	14	18.2	174	70	135
109	19.9	15	2.9	27	3.2	14	26.9	117	70	130
110	18.1	114	2.7	146	3.0	128	37.0	39	76	134
111	19.0	59	2.8	81	3.1	55	26.9	117	86	136
112	18.8	72	2 9	27	3.1	55	39.0	29	87	130
113	19.5	36	2.8	81	3.0	128	19.5	170	88	136
114	18.9	67	2.7	146	3.0	128	32.3	64	84	136
115	18.8	72	2.8	81	3.1	55	36.3	42	75	134
116	18.5	89	2.7	146	3.0	128	16.6	179	77	135
117	18.3	103	2.7	146	3.0	128	34.3	50	62	130
118	19.3	43	2.8	81	3 1	55	32.3	64	72	131
119	18.5	89	2.9	27	3.1	55	26.2	130	75	136
120	17.5	152	2 8	81	3.1	55	33.0	58	81	135

Table 33. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Lincoln, Nebraska, USA in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
121	17.7	144	2.8	81	3.1	55	20.9	163	76	133
122	17.7	144	2.8	81	3.1	55	31.0	74	80	135
123	17.3	164	2.7	146	3.0	128	35.0	47	80	136
124	19.0	59	2.7	146	2.9	175	8.7	187	70	136
125	18.9	67	2.6	178	2.8	187	20.2	165	70	132
126	17.9	131	2.6	178	2.9	175	31.6	69	70	131
127	19.5	36	2.6	178	2.9	175	26.7	124	75	130
128	18.9	67	2.8	81	3.0	128	26.0	132	75	130
129	19.5	36	2.7	146	3.0	128	22.5	152	75	136
130	17.4	160	2.7	146	3.0	128	30.0	81	84	133
131	19.2	49	2.7	146	3.0	128	27.7	109	77	136
132	18.7	77	2.7	146	2.9	175	21.3	159	79	135
133	18.4	98	2.7	146	3.0	128	28.9	97	74	132
134	16.4	182	2.9	27	3.1	55	45.0	13	77	153
135	16.7	175	2.9	27	3.1	55	41.3	21	73	136
136	17.9	131	2.7	146	3.0	128	19.8	167	72	133
137	.	.	.	.	.	.	.	.	87	141
138	18.4	98	2.8	81	3.0	128	32.6	59	79	131
139	18.0	125	2.6	178	2.9	175	29.9	83	75	131
140	20.2	10	2.6	178	2.9	175	29.3	90	69	133
141	21.6	2	2.7	146	3.0	128	17.0	177	78	133
142	21.2	4	2.5	190	2.8	187	16.6	179	84	139
143	17.7	144	2.8	81	3.1	55	32.2	65	71	130
144	19.1	53	2.8	81	3.1	55	26.9	117	76	130
145	18.2	111	2.7	146	2.9	175	28.9	97	81	137
146	18.1	114	2.7	146	3.0	128	41.2	22	74	137
147	17.3	164	2.6	178	2.9	175	32.3	64	80	134
148	18.9	67	2.8	81	3.0	128	21.5	157	76	134
149	18.4	98	2.9	27	3.2	14	18.2	174	75	139
150	19.6	31	2.8	81	3.0	128	24.2	140	72	129
Bezostaya 1	18.2	111	2.7	146	3.0	128	33.0	58	83	134
CI 13449	18.2	111	3.1	3	3.4	3	9.4	185	75	147
Centurk	15.8	188	3.0	7	3.2	14	41.6	20	80	131
Lancota	18.5	89	2.6	178	2.9	175	36.1	43	82	130
155	16.4	182	2.9	27	3.1	55	38.1	33	72	135
156	17.2	168	2.8	81	3.1	55	29.6	85	72	135
157	18.7	77	2.7	146	3.0	128	18.0	175	74	137
158	18.5	89	2.8	81	3.0	128	50.1	4	82	136
159	18.2	111	2.9	27	3.2	14	25.2	136	78	139
160	17.7	144	2.7	146	3.0	128	36.3	42	75	134
161	18.1	114	2.7	146	2.9	175	30.0	81	75	133
162	18.0	125	2.7	146	2.9	175	27.6	112	81	133
163	18.4	98	2.8	81	3.1	55	37.0	39	81	139
164	18.6	80	2.8	81	3.0	128	16.2	181	81	141
165	19.2	49	2.6	178	2.9	175	38.6	30	78	134
166	18.9	67	2.7	146	3.0	128	22.3	153	78	133
167	20.5	7	2.7	146	3.0	128	14.1	182	77	131
168	18.0	125	2.8	81	3.1	55	27.6	112	84	133
169	17.7	144	2.7	146	3.0	128	27.5	113	82	135
170	19.6	31	2.6	178	2.9	175	29.6	85	73	131
171	18.0	125	2.8	81	3.1	55	39.6	25	70	135
172	19.7	24	2.7	146	3.0	128	23.7	147	73	135
173	20.2	10	2.7	146	3.0	128	24.5	138	73	135
174	19.7	24	2.6	178	2.8	187	28.8	98	74	135
175	19.0	59	2.7	146	3.0	128	23.0	151	76	136
176	19.1	53	2.7	146	3.0	128	24.0	142	76	136
177	19.1	53	2.6	178	2.9	175	20.1	166	70	136
178	19.4	40	2.5	190	2.8	187	26.4	129	73	133
179	17.5	152	2.6	178	2.9	175	30.2	79	70	136
180	19.4	40	2.7	146	3.0	128	29.1	93	77	137

Table 33. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Lincoln, Nebraska, USA in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield g/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
181	19.0	59	2.5	190	2.7	190	28.9	97	75	138
182	19.3	43	2.6	178	2.9	175	33.7	54	80	136
183	18.7	77	2.7	146	3.0	128	16.2	181	83	137
184	20.7	6	2.5	190	2.8	187	44.4	15	79	137
185	.	.	.	.	.	.	.	.	75	139
186	18.9	67	2.5	190	2.8	187	32.4	61	72	133
187	18.5	89	2.6	178	2.9	175	34.1	51	70	136
188	19.4	40	2.6	178	2.9	175	7.8	189	69	141
189	16.6	178	2.6	178	2.9	175	45.9	10	70	130
190	18.5	89	2.7	146	2.9	175	31.4	71	75	131
191	17.3	164	2.6	178	2.9	175	34.5	48	80	130
192	17.5	152	2.7	146	2.9	175	40.4	24	74	130
Bezostaya 1	17.9	131	2.7	146	2.9	175	29.5	87	80	136
CI 13449	18.2	111	2.8	81	3.1	55	8.1	188	76	147
Centurk	15.9	186	2.8	81	3.0	128	47.1	9	80	136
Lancota	19.1	53	2.5	190	2.8	187	25.0	137	90	141
Mean	18.4		2.7		3.0		29.3		76	134
Standard deviation	1.2		0.1		0.1		9.3		5.6	3.7
Coefficient of variation (%)	6.4		4.6		4.0		31.6		7.3	2.7
Means of the check varieties										
Bezostaya 1	17.9		2.7		2.9		30.6		77	135
CI 13449	18.2		3.0		3.3		8.2		73	143
Centurk	15.9		2.8		3.1		43.2		76	134
Lancota	18.7		2.6		2.9		33.4		85	137
Check means	17.6		2.8		3.0		29.9		78	137
L S.D. (.05) of the check mean	0.5		0.1		0.1		4.8		7	5
Coefficient of variation (%)	2.2		3.9		3.4		11.6		6.4	2.5

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	06	.16*	.16*	.15*	-.16*	.12
Plant height	.08	.04	-.05	-.02	.11	
Yield	-.46**	-.44**	-.01	.02		
Adjusted lysine/protein	-.28**	.37**	.92**			
Lysine/protein	-.30**	.35**				
Lysine	.77**					

** Significant at the .01 level.
* Significant at the .05 level.

Table 34. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Stillwater, Oklahoma, USA, in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)
Bezostaya 1	14.5	183	2.8	70	3.0	101	37.7	39	82	108	0
CI 13449	14.7	175	2.7	131	2.9	149	15.1	191	64	121	0
Centurk	13.8	190	3.0	8	3.1	42	50.6	1	96	112	0
Lancota	15.9	125	2.7	131	3.0	101	39.8	20	96	115	20
5	17.0	54	2.7	131	3.0	101	38.2	34	84	105	0
6	16.6	75	2.6	172	2.8	188	39.8	20	80	105	0
7	17.1	46	2.8	70	3.0	101	37.1	51	88	117	0
8	18 1	7	2.5	193	2.8	188	35.0	81	88	116	0
9	18.3	6	2.6	172	2.8	188	34.4	86	92	110	0
10	13.5	193	2.8	70	3.0	101	36.6	58	92	112	0
11	15.8	131	2.7	131	2.9	149	42.5	11	94	114	20
12	14.1	188	2.7	131	2.8	188	25.3	164	100	114	80
13	13.1	195	3.1	5	3.2	12	26.4	158	86	116	20
14	14.6	178	2.8	70	3.0	101	39.3	27	78	119	0
15	13.4	194	2.8	70	2.9	149	33.9	96	87	111	40
16	17.8	15	2.8	70	3.1	42	35.0	81	86	104	0
17	16.3	92	2.9	29	3.2	12	10.8	194	74	113	0
18	16.9	58	2 6	172	2.8	188	30.7	123	80	108	0
19	17.4	30	2.7	131	3.0	101	34.4	86	82	108	0
20	17.4	30	2 8	70	3 1	42	29.0	139	84	109	0
21	17.8	15	2 7	131	2.9	149	31 7	109	80	108	0
22	17.5	27	2.7	131	3.0	101	30.7	123	78	108	0
23	17.5	27	2.7	131	3.0	101	36.0	65	80	108	0
24	17.3	36	2.8	70	3.0	101	30.1	130	80	108	0
25	17.5	27	2.7	131	3.0	101	35.5	72	78	108	0
26	17.3	36	2.7	131	3.0	101	26.4	158	80	108	0
27	17.2	40	2.7	131	3 0	101	35.5	72	78	108	20
28	14.6	178	2.9	29	3.1	42	36.0	65	80	112	90
29	14.4	184	2.8	70	3 0	101	38.7	30	84	106	80
30	16 0	118	2.7	131	3.0	101	27.4	147	98	112	30
31	17 2	40	2.6	172	2.8	188	30.1	130	94	112	50
32	16.5	79	2.6	172	2.9	149	33.4	98	98	107	60
33	14 0	189	2.7	131	2.9	149	38.2	34	90	108	40
34	13.7	191	2.8	70	3.0	101	26.4	158	86	108	20
35	14.1	188	2.9	29	3.1	42	39.3	27	88	108	20
36	16.3	92	2.7	131	2.9	149	22.6	176	92	108	20
37	18.0	8	2.7	131	2.9	149	33 4	98	84	113	0
38	17.3	36	2.8	70	3.0	101	37.1	51	88	107	0
39	15.9	125	2.7	131	2.9	149	39.3	27	96	108	0
40	16.8	65	2.9	29	3.1	42	24.2	170	88	106	0
41	17.0	54	2.9	29	3.2	12	37.1	51	88	106	0
42	16.8	65	2.9	29	3.1	42	36.6	58	90	106	0
43	17.6	19	2.6	172	2.9	149	28 0	146	96	114	30
44	17.0	54	2.8	70	3.1	42	29.1	139	86	105	20
45	17.5	27	2 7	131	2.9	149	36.0	65	88	105	20
46	17.0	54	2.7	131	3.0	101	29.6	136	98	104	20
47	16.9	58	2.7	131	3.0	101	32.8	103	84	105	0
48	17.5	27	2.6	172	2.8	188	22.6	176	82	104	0
49	17.9	10	2.7	131	3.0	101	26.4	158	84	103	0
50	15.7	135	2.6	172	2.8	188	43.0	10	82	107	0
Bezostaya 1	15.1	164	2 8	70	3.0	101	37.1	51	86	111	0
CI 13449	14.8	171	3.1	5	3.3	4	11.8	193	62	122	0
Centurk	14.2	185	2.9	29	3.1	42	44.1	3	90	113	30
Lancota	16.7	69	2.7	131	3 0	101	42.0	13	94	115	30
55	18.3	6	2.7	131	3.0	101	28.5	144	86	108	0
56	16.4	84	2.6	172	2.9	149	22.6	176	74	102	0
57	14 8	171	2.8	70	3.0	101	39.8	20	88	106	0
58	17.5	27	2.7	131	2.9	149	28.5	144	90	105	0
59	15.1	164	2.7	131	2 9	149	33.9	96	98	114	20
60	17.5	27	2.7	131	2.9	149	33.9	96	78	105	0

Table 34. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Stillwater, Oklahoma, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)
61	16.3	92	2.6	172	2.8	188	24.7	167	78	108	20
62	16.1	112	2.7	131	3.0	101	37.1	51	76	106	20
63	15.1	164	2.8	70	3.0	101	28.5	144	88	111	20
64	17.8	15	2.5	193	2.7	194	34.4	86	68	105	0
65	16.8	65	2.8	70	3.0	101	19.9	184	68	105	0
66	16.0	118	2.7	131	3.0	101	38.2	34	98	115	0
67	15.8	131	2.7	131	3.0	101	30.1	130	84	115	20
68	16.1	112	2.5	193	2.8	188	37.7	39	86	118	0
69	15.7	135	2.5	193	2.8	188	18.8	187	56	105	0
70	16.0	118	2.6	172	2.9	149	30.7	123	66	106	0
71	15.7	135	2.6	172	2.8	188	36.0	65	78	115	0
72	15.4	147	2.7	131	2.9	149	36.0	65	64	105	20
73	16.5	79	2.6	172	2.8	188	30.7	123	64	106	0
74	17.4	30	2.5	193	2.7	194	33.9	96	68	107	0
75	17.2	40	2.5	193	2.8	188	32.3	105	68	106	0
76	14.9	167	2.6	172	2.8	188	33.9	96	66	111	20
77	16.2	105	2.6	172	2.8	188	26.4	158	70	109	20
78	15.9	125	2.6	172	2.9	149	30.1	130	80	115	0
79	16.3	92	2.8	70	3.1	42	30.1	130	70	107	0
80	17.1	46	2.7	131	2.9	149	22.1	178	68	109	0
81	15.6	140	2.9	29	3.2	12	21.0	182	70	115	60
82	17.0	54	2.7	131	3.0	101	26.4	158	72	112	20
83	16.2	105	2.6	172	2.8	188	25.3	164	84	115	30
84	16.6	75	2.7	131	3.0	101	35.0	81	86	109	0
85	16.3	92	2.8	70	3.1	42	25.8	161	78	109	0
86	15.5	143	2.8	70	3.0	101	43.0	10	86	109	0
87	17.1	46	2.6	172	2.9	149	18.3	188	62	106	0
88	17.1	46	2.6	172	2.8	188	35.0	81	69	105	0
89	15.6	140	2.8	70	3.0	101	24.7	167	76	110	20
90	16.9	58	2.6	172	2.8	188	17.8	189	72	107	40
91	17.7	17	2.6	172	2.8	188	26.9	150	76	105	30
92	18.7	3	2.6	172	2.9	149	21.0	182	80	102	0
93	18.6	4	2.5	193	2.8	188	22.5	176	84	104	0
94	17.6	19	2.7	131	2.9	149	33.9	96	80	105	20
95	17.8	15	2.6	172	2.8	188	37.1	51	96	109	20
96	16.2	105	2.7	131	3.0	101	31.7	109	72	103	0
97	17.1	46	2.6	172	2.9	149	42.0	13	90	111	0
98	16.6	75	2.8	70	3.0	101	19.4	185	72	116	0
99	15.6	140	2.8	70	3.1	42	43.0	10	78	107	0
100	17.1	46	2.8	70	3.1	42	23.1	172	82	107	0
Bezostaya 1	14.9	167	2.9	29	3.1	42	24.2	170	76	111	0
CI 13449	14.8	171	3.1	5	3.3	4	7.5	196	68	124	0
Centurk	14.1	188	3.0	8	3.2	12	30.1	130	86	113	40
Lancota	16.2	105	2.8	70	3.1	42	43.0	10	88	115	30
105	16.1	112	2.9	29	3.1	42	24.2	170	72	112	0
106	16.4	84	2.9	29	3.1	42	26.4	158	72	109	0
107	15.6	140	3.0	8	3.2	12	37.7	39	88	109	20
108	15.2	160	3.1	5	3.3	4	43.0	10	76	107	0
109	16.7	69	2.9	29	3.1	42	21.5	179	74	107	0
110	16.1	112	2.8	70	3.0	101	26.9	150	86	111	20
111	17.3	36	2.7	131	3.0	101	21.0	182	88	118	0
112	15.6	140	2.8	70	3.1	42	31.2	113	84	109	30
113	17.0	54	2.6	172	2.9	149	29.6	136	92	108	0
114	16.2	105	2.6	172	2.8	188	25.3	164	86	113	0
115	16.8	65	2.5	193	2.8	188	28.5	144	100	109	40
116	17.9	10	2.5	193	2.8	188	20.4	183	74	109	20
117	16.0	118	2.6	172	2.8	188	36.6	58	74	106	0
118	19.0	2	2.4	196	2.7	194	18.8	187	74	109	0
119	15.2	160	2.7	131	2.9	149	34.4	86	90	111	20
120	15.1	164	2.5	193	2.7	194	29.1	139	74	110	0

Table 34. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Stillwater, Oklahoma, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)
121	14.7	175	2.7	131	2.9	149	35.5	72	72	106	0
122	14.5	183	2.6	172	2.8	188	39.8	20	94	114	20
123	15.3	152	2.6	172	2.9	149	35.0	81	92	115	20
124	16.2	105	2.6	172	2.9	149	29.6	136	76	105	0
125	15.8	131	2.5	193	2.8	188	45.7	2	86	106	0
126	15.2	160	2.5	193	2.8	188	36.6	58	84	107	0
127	16.2	105	2.5	193	2.8	188	32.3	105	78	105	0
128	15.9	125	2.8	70	3.1	42	33.9	96	82	105	0
129	16.4	84	2.7	131	3.0	101	39.3	27	88	110	0
130	15.3	152	2.9	29	3.1	42	30.7	123	92	108	0
131	16.4	84	2.9	29	3.2	12	37.1	51	88	111	0
132	15.3	152	2.9	29	3.1	42	29.6	136	92	108	0
133	14.5	183	2.9	29	3.1	42	39.8	20	86	115	40
134	14.8	171	2.9	29	3.1	42	34.4	86	84	108	0
135	14.7	175	2.9	29	3.1	42	38.7	30	74	115	0
136	14.5	183	2.8	70	3.0	101	35.0	81	102	107	50
137	15.9	125	2.7	131	2.9	149	30.7	123	74	120	0
138	15.2	160	2.8	70	3.0	101	43.6	5	88	109	0
139	15.8	131	2.7	131	3.0	101	40.4	15	78	106	0
140	17.7	17	2.7	131	2.9	149	26.4	158	78	107	0
141	15.9	125	2.6	172	2.8	188	37.7	39	86	105	0
142	16.7	69	2.6	172	2.9	149	31.7	109	89	114	0
143	15.3	152	2.7	131	3.0	101	32.8	103	80	106	0
144	15.8	131	2.7	131	2.9	149	25.8	161	72	106	0
145	16.0	118	2.5	193	2.8	188	36.0	65	90	113	0
146	16.3	92	2.7	131	3.0	101	24.7	167	74	117	0
147	15.4	147	2.4	196	2.6	196	37.1	51	88	109	0
148	16.2	105	2.8	70	3.0	101	8.6	195	86	107	20
149	15.5	143	2.6	172	2.8	188	31.7	109	86	112	20
150	17.3	36	2.5	193	2.8	188	30.7	123	80	104	0
Bezostaya 1	14.7	175	2.4	196	2.6	196	38.2	34	88	112	0
CI 13449	14.5	183	2.8	70	3.0	101	12.4	192	68	123	0
Centurk	12.8	196	2.8	70	2.9	149	33.9	96	96	113	30
Lancota	15.8	131	2.5	193	2.8	188	38.7	30	94	115	20
155	14.6	178	2.7	131	2.9	149	40.4	15	82	106	0
156	15.4	147	2.7	131	3.0	101	30.1	130	70	105	0
157	16.1	112	2.8	70	3.1	42	36.6	58	80	109	0
158	15.2	160	2.8	70	3.0	101	35.5	72	96	112	20
159	16.2	105	2.9	29	3.1	42	28.5	144	86	116	20
160	16.5	79	2.6	172	2.9	149	35.5	72	98	114	0
161	16.7	69	2.6	172	2.9	149	32.8	103	72	105	0
162	16.6	75	2.7	131	2.9	149	22.1	178	82	106	0
163	16.8	65	2.6	172	2.9	149	30.7	123	86	119	0
164	13.6	192	2.6	172	2.7	194	37.7	39	86	115	20
165	16.6	75	2.7	131	3.0	101	37.1	51	82	105	0
166	15.4	147	2.7	131	2.9	149	32.8	103	80	107	0
167	16.2	105	2.7	131	3.0	101	37.1	51	84	107	0
168	15.5	143	2.8	70	3.0	101	31.2	113	94	105	20
169	15.7	135	2.8	70	3.0	101	35.0	81	82	102	0
170	16.2	105	2.7	131	3.0	101	31.2	113	88	114	0
171	16.0	118	2.7	131	3.0	101	30.7	123	84	106	0
172	16.9	58	2.6	172	2.9	149	28.0	146	76	107	0
173	17.2	40	2.6	172	2.9	149	33.9	96	78	107	0
174	17.5	27	2.8	70	3.0	101	32.8	103	78	107	0
175	16.1	112	2.5	193	2.8	188	35.0	81	84	107	0
176	16.6	75	2.7	131	3.0	101	25.8	161	84	107	20
177	16.1	112	2.5	193	2.7	194	39.3	27	82	107	20
178	16.3	92	2.5	193	2.8	188	35.0	81	84	107	0
179	15.2	160	2.5	193	2.8	188	37.1	51	80	107	0
180	16.3	92	2.7	131	2.9	149	33.9	96	94	110	40

Table 34. Protein and lysine values and rankings together with agronomic data for the entries in the third high protein-high lysine winter wheat observation nursery grown at Stillwater, Oklahoma, USA, in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)
181	16.2	105	2.8	70	3.1	42	29.6	136	90	114	20
182	16.8	65	2.6	172	2.9	149	29.6	136	94	109	20
183	17.0	54	2.7	131	3.0	101	30.7	123	96	112	0
184	19.5	1	2.5	193	2.8	188	36.6	58	88	116	20
185	17.8	15	2.6	172	2.9	149	23.1	172	80	103	0
186	15.9	125	2.7	131	2.9	149	36.6	58	72	109	0
187	16.2	105	2.7	131	2.9	149	31.2	113	82	108	0
188	15.3	152	2.8	70	3.0	101	36.0	65	80	113	20
189	17.0	54	2.8	70	3.1	42	35.5	72	84	107	30
190	16.8	65	2.7	131	3.0	101	39.3	27	98	106	20
191	16.4	84	2.8	70	3.0	101	26.9	150	90	107	0
192	16.5	79	2.9	29	3.2	12	39.3	27	84	106	0
Bezostaya 1	15.2	160	2.7	131	2.9	149	37.1	51	80	109	0
CI 13449	15.2	160	3.1	5	3.3	4	16.7	190	66	122	0
Centurk	14.9	167	2.7	131	2.9	149	35.5	72	92	113	20
Lancota	17.3	36	2.9	29	3.1	42	43.6	5	98	115	0
Mean	16.2		2.7		3.0		31.8		83	110	9.7
Standard deviation	1.2		0.1		0.1		7.3		9.0	4.4	16.3
Coefficient of variation (%)	7.3		5.2		4.5		22.9		10.9	4.0	167.4

Means of the check varieties

Bezostaya 1	14.9	2.7	2.9	34.9	82	110
CI 13449	14.8	3.0	3.2	12.7	66	122
Centurk	14.0	2.9	3.0	38.8	92	113
Lancota	16.4	2.7	3.0	41.4	94	115

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	-.31**	-.15*	.23**	.17*	-.12	.11
Plant height	-.07	-.05	.01	.00	.42**	
Yield	-.19**	-.23**	-.08	-.09		
Adjusted lysine/protein	-.19**	.48**	.92**			
Lysine/protein	-.38**	.31**				
Lysine	.75**					

** Significant at the .01 level.
* Significant at the .05 level

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
Bezostaya 1	15.9	123	2.5	190	2.8	179	125	138	0	60	S	6	3
CI 13449	11.7	192	3.2	15	3.1	89	105	152	0	80	S	6	7
Centurk	14.4	167	2.8	110	3.0	120	140	145	0	80	MS	6	0
Lancota	17.4	58	2.5	190	2.8	179	145	143	0	60	MS	7	0
5	18.5	23	2.8	110	3.1	89	135	130	0	60	S	5	5
6	17.9	40	2.8	110	3.1	89	135	132	0	80	S	6	5
7	16.8	85	3.0	42	3.3	24	140	140	0	80	S	5	4
8	17.9	40	2.8	110	3.1	89	135	143	0	80	S	5	5
9	18.4	27	3.0	42	3.3	24	135	138	0	80	S	4	6
10	14.6	162	2.9	73	3.1	89	150	145	0	60	S	5	5
11	16.1	112	2.9	73	3.2	48	150	145	0	80	S	6	3
12	15.9	123	3.0	42	3.2	48	145	139	70	80	S	7	3
13	13.8	177	3.1	21	3.3	24	130	142	0	80	S	5	4
14	12.3	188	3.0	42	3.1	89	125	150	80	80	S	4	5
15	15.2	143	2.8	110	3.0	120	140	145	95	80	S	5	2
16	18.1	31	2.9	73	3.2	48	140	134	0	80	S	6	9
17	18.7	17	2.6	167	2.8	179	120	136	0	60	S	7	9
18	.	.	.	.	.	.	110	142	0	80	S	7	3
19	18.6	21	2.5	190	2.8	179	125	136	30	60	S	7	2
20	18.5	23	2.7	137	2.9	151	120	136	0	80	S	6	9
21	19.6	5	2.6	167	2.8	179	120	136	45	20	MS	7	3
22	19.0	10	2.7	137	2.9	151	125	138	40	10	MS	5	3
23	18.8	13	2.7	137	3.0	120	120	136	70	20	MR	7	3
24	17.0	77	2.8	110	3.0	120	125	136	0	40	M	5	2
25	17.5	53	2.7	137	2.9	151	125	140	55	20	MR	7	4
26	18.0	34	2.3	192	2.6	192	120	136	0	20	MS	8	4
27	17.9	40	2.6	167	2.9	151	120	143	45	20	MS	7	2
28	12.2	190	3.2	15	3.3	24	115	144	0	99	S	5	3
29	14.2	171	2.9	73	3.1	89	135	129	0	80	S	5	3
30	16.8	85	2.7	137	3.0	120	130	136	40	80	S	4	3
31	20.8	1	2.6	167	2.8	179	130	130	95	40	S	8	5
32	16.4	100	2.9	73	3.2	48	145	132	75	80	S	8	9
33	17.5	53	3.2	15	3.5	6	120	143	100	80	S	8	6
34	16.8	85	2.9	73	3.2	48	130	141	100	80	S	5	5
35	15.8	126	3.2	15	3.4	10	120	140	100	80	S	7	7
36	14.7	159	3.0	42	3.2	48	135	144	100	80	S	4	9
37	15.0	150	2.9	73	3.1	89	125	138	0	80	MS	6	5
38	.	.	.	.	.	.	130	132	0	60	S	7	1
39	16.3	104	2.6	167	2.8	179	140	136	0	80	S	6	4
40	16.0	117	2.9	73	3.2	48	140	129	0	80	S	6	4

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
41	16.8	85	3.0	42	3.2	48	130	132	0	80	S	6	5
42	17.2	69	2.7	137	3.0	120	130	139	0	80	S	5	4
43	18.6	21	2.8	110	3.1	89	145	140	40	40	MS	6	1
44	18.2	30	2.8	110	3.1	89	145	132	45	80	S	8	2
45	18.8	13	3.0	42	3.3	24	130	129	0	80	S	7	1
46	17.1	72	2.8	110	3.0	120	125	127	0	80	S	6	1
47	17.4	58	2.9	73	3.1	89	125	129	0	60	S	5	5
48	17.7	46	2.7	137	3.0	120	130	125	0	80	S	5	5
49	14.9	153	2.8	110	3.0	120	120	129	0	80	S	6	3
50	.	.	.	.	.	.	120	133	0	40	MR	8	5
Bezostaya 1	16.1	112	2.6	167	2.8	179	125	136	0	60	M	7	7
CI 13449	13.3	179	2.9	73	3.1	89	115	146	0	40	MR	6	9
Centurk	14.4	167	2.7	137	2.9	151	150	140	0	40	MS	7	2
Lancota	17.2	69	2.5	190	2.7	190	155	140	0	40	MS	7	2
55	17.6	48	2.8	110	3.1	89	140	136	0	60	S	7	3
56	14.8	155	2.9	73	3.1	89	125	125	0	80	S	7	3
57	15.3	139	2.6	167	2.8	179	125	134	0	20	MR	5	5
58	17.8	42	2.7	137	3.0	120	125	132	0	60	S	5	2
59	14.5	163	2.7	137	2.9	151	150	143	0	60	S	4	3
60	18.2	30	2.6	167	2.8	179	140	127	0	60	S	3	3
61	17.1	72	2.4	191	2.6	192	130	132	50	40	S	5	9
62	16.6	93	2.6	167	2.8	179	110	129	0	80	S	5	9
63	17.5	53	2.7	137	2.9	151	135	136	40	80	S	6	3
64	18.6	21	2.5	190	2.8	179	115	127	0	80	S	5	6
65	18.4	27	2.5	190	2.7	190	120	122	0	80	S	6	2
66	15.3	139	2.6	167	2.8	179	135	143	0	80	S	4	4
67	12.2	190	2.7	137	2.7	190	130	148	0	80	S	4	6
68	.	.	.	.	.	.	135	150	50	60	MS	4	4
69	18.0	34	2.5	190	2.8	179	115	125	0	80	S	7	9
70	17.2	69	2.8	110	3.1	89	110	129	0	60	S	6	9
71	14.4	167	2.6	167	2.8	179	150	138	30	60	MS	7	4
72	17.4	58	2.8	110	3.0	120	115	125	0	80	S	5	9
73	17.3	66	2.5	190	2.7	190	125	127	0	40	MR	6	5
74	16.7	91	2.5	190	2.8	179	125	127	0	80	S	6	5
75	17.9	40	2.5	190	2.7	190	125	127	0	80	S	4	4
76	12.7	187	2.8	110	2.9	151	130	140	0	99	S	7	7
77	16.5	96	2.5	190	2.8	179	125	138	40	20	MR	5	2
78	15.0	150	2.7	137	2.9	151	130	145	60	80	X	5	8
79	16.8	85	2.5	190	2.8	179	125	129	0	T	MR	8	4
80	15.8	126	2.6	167	2.8	179	125	136	0	60	S	4	4

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted Lysine/protein %	Adjusted Lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
81	15.8	126	2.7	137	3.0	120	115	142	85	60	S	5	5
82	16.1	112	2.6	167	2.9	151	110	134	80	20	MR	7	7
83	14.1	172	2.8	110	3.0	120	130	140	70	20	MR	3	3
84	15.5	134	2.5	190	2.7	190	115	132	20	80	S	9	9
85	15.1	147	2.8	110	3.0	120	140	136	0	20	MR	7	7
86	13.8	177	2.8	110	2.9	151	140	140	80	60	M	5	5
87	16.5	96	2.5	190	2.7	190	125	127	0	40	MR	8	3
88	19.0	10	2.5	190	2.7	190	130	129	0	60	MS	8	9
89	19.2	8	2.6	167	2.8	179	135	134	95	80	S	5	9
90	18.7	17	2.6	167	2.9	151	140	132	0	80	S	7	5
91	15.2	143	2.9	73	3.1	89	130	129	80	80	S	8	5
92	18.3	28	2.5	190	2.8	179	135	129	30	80	S	5	3
93	17.8	42	2.7	137	3.0	120	135	129	0	80	S	5	6
94	17.1	72	2.6	167	2.9	151	140	129	0	80	S	5	8
95	16.4	100	2.6	167	2.8	179	145	138	60	80	S	7	1
96	15.2	143	2.7	137	2.9	151	120	129	0	80	S	5	4
97	13.1	182	2.5	190	2.7	190	160	140	80	80	S	4	5
98	14.4	167	2.7	137	2.9	151	135	142	0	80	S	5	4
99	15.7	127	2.6	167	2.9	151	135	138	0	80	S	7	1
100	17.3	66	2.6	167	2.9	151	125	132	0	60	S	8	6
Bezostaya 1	15.5	134	2.8	110	3.1	89	125	138	0	80	S	8	3
CI 13449	13.2	181	3.0	42	3.1	89	100	148	0	80	S	6	7
Centurk	14.7	159	3.0	42	3.2	48	135	143	10	40	M	7	2
Lancota	17.0	77	2.7	137	2.9	151	145	143	0	40	MS	6	3
105	15.2	143	2.9	73	3.1	89	135	136	0	80	S	6	3
106	17.0	77	2.8	110	3.1	89	125	132	0	40	MR	8	5
107	15.9	123	2.9	73	3.1	89	125	140	0	10	MR	7	7
108	16.3	104	3.0	42	3.2	48	120	134	0	40	S	6	4
109	17.3	66	3.0	42	3.2	48	130	129	0	80	S	5	4
110	16.3	104	2.8	110	3.1	89	135	132	85	80	S	4	5
111	15.1	147	2.7	137	2.9	151	140	146	0	60	MS	5	4
112	15.4	137	2.9	73	3.1	89	125	132	0	40	M	8	2
113	16.6	93	3.0	42	3.3	24	140	134	0	80	S	5	5
114	16.5	96	2.7	137	3.0	120	135	132	20	80	S	7	3
115	18.8	13	2.5	190	2.8	179	140	136	0	80	S	7	5
116	17.0	77	2.8	110	3.1	89	120	132	0	60	S	8	4
117	17.9	40	2.8	110	3.0	120	130	134	0	80	S	6	5
118	15.4	137	3.0	42	3.2	48	120	132	0	80	S	8	5
119	17.5	53	2.9	73	3.1	89	125	140	90	20	MR	7	4
120	15.6	129	2.6	167	2.9	151	140	143	20	80	S	8	6

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
121	16.9	79	3.2	15	3.4	10	125	132	0	80	S	6	2
122	17.3	66	3.2	15	3.5	6	150	141	0	99	S	7	2
123	18.4	27	2.7	137	3.0	120	160	140	80	40	M	7	2
124	18.7	17	2.7	137	2.9	151	115	129	0	40	M	6	7
125	17.3	66	2.6	167	2.9	151	135	129	30	80	MS	7	6
126	16.7	91	2.9	73	3.2	48	130	129	0	80	MS	7	5
127	17.4	58	2.8	110	3.0	120	135	125	0	60	S	8	7
128	16.2	109	2.6	167	2.9	151	130	127	0	60	MS	8	7
129	17.3	66	2.7	137	3.0	120	130	132	0	60	MS	8	8
130	15.6	129	2.5	190	2.7	190	130	132	60	20	MR	8	5
131	17.7	46	2.7	137	2.9	151	130	132	0	40	S	7	5
132	13.5	178	3.0	42	3.1	89	150	140	0	80	S	6	6
133	13.2	181	2.9	73	3.0	120	125	145	40	20	MR	8	3
134	14.6	162	2.9	73	3.1	89	125	135	0	60	S	7	6
135	15.1	147	2.9	73	3.2	48	120	135	0	10	MR	8	7
136	15.4	137	2.8	110	3.0	120	140	129	0	80	S	7	2
137	13.8	177	3.0	42	3.2	48	130	142	0	80	S	7	5
138	15.5	134	2.8	110	3.1	89	120	144	70	80	S	5	3
139	16.4	100	2.6	167	2.9	151	110	129	0	20	MR	8	3
140	18.0	34	2.8	110	3.1	89	105	129	0	40	M	8	9
141	15.0	150	3.0	42	3.2	48	125	129	0	80	S	4	6
142	14.2	171	3.1	21	3.3	24	135	140	80	40	MR	7	7
143	16.7	91	3.1	21	3.3	24	110	127	0	60	M	7	7
144	17.5	53	2.9	73	3.1	89	105	127	0	60	MS	8	9
145	15.5	134	2.9	73	3.2	48	140	136	0	80	S	7	5
146	14.8	155	3.4	1	3.6	1	125	143	20	60	MS	6	4
147	16.2	109	2.7	137	3.0	120	130	142	40	T	R	3	2
148	18.4	27	2.9	73	3.1	89	120	136	35	40	MS	8	2
149	12.9	185	3.0	42	3.1	89	125	144	0	80	S	7	5
150	14.6	162	2.9	73	3.1	89	125	122	0	99	S	6	4
Bezostaya 1	14.3	169	2.8	110	3.0	120	130	142	0	60	MS	7	7
CI 13449	12.8	186	3.2	15	3.2	48	110	146	0	60	S	7	9
Centurk	12.9	185	3.1	21	3.2	48	140	142	0	20	MR	7	3
Lancota	14.7	159	2.8	110	3.0	120	150	140	0	60	M	6	1
155	15.9	123	2.9	73	3.2	48	140	134	0	80	S	6	4
156	14.3	169	3.0	42	3.2	48	135	129	0	99	S	5	4
157	16.0	117	2.8	110	3.0	120	130	140	0	80	MS	7	7
158	16.9	79	3.0	42	3.3	24	145	142	5	80	S	8	2
159	14.9	153	3.3	3	3.5	6	125	144	0	80	S	8	2
160	14.9	153	3.2	15	3.5	6	135	142	70	99	S	7	1

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
161	17.7	46	3.2	15	3.5	6	115	132	0	80	S	7	3
162	17.7	46	3.2	15	3.4	10	120	127	0	40	M	7	7
163	14.7	159	3.1	21	3.3	24	130	146	0	20	MR	6	7
164	13.0	183	3.2	15	3.3	24	130	143	0	80	S	5	4
165	16.7	91	3.2	15	3.4	10	125	132	0	60	S	7	5
166	16.4	100	2.8	110	3.1	89	120	129	0	60	MS	8	6
167	16.3	104	2.8	110	3.0	120	125	132	0	10	MR	5	7
168	17.4	58	2.6	167	2.9	151	130	127	0	60	MS	5	6
169	16.2	109	2.9	73	3.2	48	120	127	0	80	S	6	4
170	17.3	66	2.9	73	3.1	89	125	138	30	20	MR	7	9
171	16.7	91	2.9	73	3.2	48	125	129	0	80	S	7	3
172	20.0	3	2.6	167	2.9	151	120	136	40	40	M	7	7
173	19.8	4	2.6	167	2.9	151	125	136	20	20	MR	6	7
174	18.6	21	2.5	190	2.8	179	125	138	0	80	S	5	4
175	16.7	91	2.6	167	2.9	151	130	136	30	60	S	7	5
176	17.0	77	2.7	137	2.9	151	130	138	0	60	MS	8	6
177	18.7	17	2.5	190	2.7	190	125	145	0	10	MR	5	7
178	17.6	48	2.5	190	2.8	179	130	146	45	60	MS	5	6
179	16.8	85	2.6	167	2.8	179	115	132	0	80	S	6	4
180	19.4	6	2.6	167	2.8	179	130	142	15	20	MR	7	9
181	19.3	7	2.8	110	3.0	120	135	140	0	40	M	6	9
182	20.7	2	2.7	137	3.0	120	135	141	95	40	MR	6	9
183	15.9	123	3.1	21	3.3	24	130	140	0	40	MS	7	9
184	17.9	40	3.0	42	3.3	24	145	141	70	40	MS	8	4
185	17.3	66	2.5	190	2.8	179	115	122	0	20	MR	4	1
186	16.0	117	2.8	110	3.1	89	115	134	0	20	MR	7	2
187	16.2	109	2.8	110	3.1	89	125	132	0	10	MR	4	3
188	15.9	123	2.9	73	3.1	89	120	145	0	T	MR	5	7
189	16.2	109	2.9	73	3.1	89	120	132	45	40	MS	8	2
190	16.0	117	2.8	110	3.0	120	135	132	80	60	MS	5	2
191	15.5	134	2.9	73	3.1	89	120	133	90	80	S	6	5
192	14.0	173	2.8	110	3.0	120	120	133	0	60	MS	8	7
Bezostaya 1	15.1	147	2.6	167	2.9	151	120	148	0	40	MR	5	6
CI 13449	11.8	191	3.3	3	3.3	24	100	152	0	40	MR	5	7
Centurk	13.8	177	3.0	42	3.2	48	130	144	0	20	MR	4	5
Lancota	16.0	117	2.8	110	3.1	89	140	140	0	60	M	6	6
Mean	16.3		2.8		3.0		129	136	17.7	60.1		6.2	4.8
Standard deviation	1.8		0.2		0.2		10.9	6.5	30.3	24.4		-	-
Coefficient of variation (%)	11.0		7.5		6.5		8.4	4.8	171.0	40.7		-	-

Table 35. Protein and lysine values and rankings together with agronomic data for entries in the third high protein-high lysine winter wheat observation nursery grown at Corvallis, Oregon, USA, in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Plant height cm	Days to flowering from Jan. 1	Lodging (%)	Stripe rust Sev %	Stripe rust Resp	Septoria (1-9)	Mildew (0-9)
							Means of the check varieties						
Bezostaya 1	15.4		2.7		2.9		125	140					
CI 13449	12.6		3.1		3.2		106	149					
Centurk	14.0		2.9		3.1		139	143					
Lancota	16.5		2.7		2.9		147	141					
Check means	14.6		2.8		3.0		129	143					
L.S.D. (.05) of the check means	.8		0.1		0.1		4	4					
Coefficient of variation (%)	4.1		3.7		2.7		2.4	1.9					

Correlation coefficients

	Protein	Lysine	Lysine/protein	Adjusted lysine/protein	Plant height
Flowering	-.43**	-.28**	.27**	.17*	.17*
Plant height	.01	-.01	-.08	-.03	
Adjusted lysine/protein	-.25**	.42**	.94**		
Lysine/protein	-.43**	.24**			
Lysine	.76**				

** Significant at the .01 level.
* Significant at the .05 level.

Table 36. Mean values and rankings of protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery averaged over sites reporting complete data, and listed by decreasing protein values.

Entry No.	Protein %	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1	Plant height cm
Number of sites	7	7		7		9		11	13
184	17.6	2.7	167	3.0	123	27.3	190	191	103
16	17.5	2.8	98	3.1	56	36.0	76	181	104
140	17.4	2.8	128	3.0	87	31.5	156	181	91
21	17.2	2.8	140	3.0	111	33.8	122	185	96
174	17.2	2.8	114	3.0	100	34.0	119	186	97
8	17.1	2.9	76	3.1	56	34.9	101	191	99
93	17.1	2.7	193	2.9	188	32.6	142	181	101
19	17.0	2.8	98	3.1	44	36.0	77	185	97
20	17.0	2.9	55	3.2	13	37.3	51	185	96
172	17.0	2.8	159	3.0	111	32.5	143	186	96
173	17.0	2.3	196	2.6	196	35.8	85	186	96
9	16.9	2.8	114	3.0	87	39.7	24	187	98
40	16.9	2.9	65	3.1	44	38.0	45	183	103
22	16.8	2.9	65	3.1	26	35.5	91	186	97
23	16.8	2.8	128	3.0	100	36.5	64	185	97
37	16.8	2.8	98	3.1	71	28.3	187	189	95
42	16.8	2.9	65	3.1	34	35.9	84	183	103
18	16.7	2.9	55	3.1	44	40.0	21	186	97
24	16.7	2.8	86	3.1	56	34.8	105	185	98
92	16.7	2.7	175	3.0	164	26.5	194	181	102
41	16.6	2.9	46	3.2	13	35.3	92	183	102
60	16.6	2.8	150	3.0	151	36.4	69	183	102
115	16.6	2.7	182	2.9	172	36.1	72	185	106
118	16.6	2.8	159	3.0	151	26.5	192	187	85
139	16.6	2.9	76	3.1	56	33.7	124	182	88
150	16.6	2.7	167	3.0	164	34.0	118	179	95
25	16.5	2.8	128	3.0	100	32.4	144	186	97
26	16.5	2.8	128	3.0	87	35.1	95	186	95
90	16.5	2.7	191	2.9	192	28.7	183	182	104
91	16.5	2.8	159	3.0	137	31.4	157	180	104
144	16.5	3.0	19	3.2	6	34.0	120	183	88
175	16.5	2.7	167	3.0	123	34.9	103	185	97
167	16.4	2.8	150	3.0	87	37.1	54	183	100
182	16.4	2.8	150	3.1	71	28.3	186	185	105
27	16.3	2.8	114	3.0	87	35.9	81	186	95
48	16.3	2.8	114	3.0	111	31.5	155	180	95
138	16.3	2.8	159	3.0	151	35.6	90	186	97
141	16.3	2.9	65	3.1	44	39.9	22	181	97
143	16.3	3.0	19	3.3	2	37.0	56	182	88
176	16.3	2.9	55	3.1	44	34.4	111	186	98
31	16.2	2.7	195	2.9	188	28.0	189	187	105
55	16.2	2.9	76	3.1	71	32.0	149	183	102
64	16.2	2.7	175	2.9	172	34.9	104	180	92
88	16.2	2.7	175	3.0	151	39.3	29	182	99
111	16.2	2.8	86	3.1	71	28.9	181	191	103
157	16.2	2.7	182	3.0	164	30.7	168	186	91
49	16.1	2.8	98	3.1	56	29.8	177	180	90
58	16.1	2.7	187	2.9	183	33.1	132	181	102
73	16.1	2.8	159	3.0	123	33.4	127	181	88
75	16.1	2.7	187	2.9	183	37.7	47	181	94
124	16.1	2.8	128	3.0	87	30.8	166	182	87
125	16.1	2.8	159	3.0	123	38.9	33	181	98
162	16.1	2.8	140	3.0	164	32.1	146	182	95
43	16.0	2.7	182	2.9	177	29.8	176	187	109
65	16.0	2.8	150	3.0	137	29.6	179	178	91
87	16.0	2.8	140	3.0	100	31.7	153	182	94
105	16.0	2.9	76	3.1	71	37.4	49	186	100
129	16.0	2.8	140	3.0	111	37.1	53	184	97
142	16.0	2.9	65	3.1	56	38.4	41	189	100
161	16.0	2.7	182	3.0	151	32.9	138	183	86

Table 36. Mean values and rankings of protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery averaged over sites reporting complete data, and listed by decreasing protein values. Continued.

Entry No.	Protein %	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1	Plant height cm
163	16.0	2.7	167	3.0	137	30.2	171	194	99
46	15.9	2.8	98	3.0	87	32.0	151	179	98
116	15.9	2.8	114	3.1	71	29.4	180	184	92
146	15.9	2.8	86	3.1	71	33.0	134	192	90
148	15.9	2.8	98	3.0	137	31.7	152	183	100
160	15.9	2.8	114	3.1	71	35.0	98	188	104
165	15.9	2.8	159	3.0	111	40.4	14	182	95
166	15.9	2.7	167	3.0	164	36.4	66	182	94
171	15.9	2.8	98	3.1	71	32.1	148	182	97
11	15.8	2.9	65	3.1	71	34.8	107	189	103
32	15.8	2.7	187	2.9	183	38.8	36	184	109
38	15.8	2.9	40	3.1	44	32.8	140	186	94
74	15.8	2.7	191	2.9	194	37.9	46	181	94
120	15.8	2.7	167	2.9	188	32.3	145	186	104
168	15.8	2.7	167	3.0	151	35.9	80	182	105
178	15.8	2.7	175	3.0	164	38.2	44	185	96
185	15.8	2.7	182	2.9	177	34.2	115	179	90
Lancota	15.8	2.8	150	3.0	151	40.1	17	190	110
7	15.7	2.9	40	3.1	34	36.4	67	191	99
30	15.7	2.7	175	2.9	172	29.9	175	188	104
94	15.7	2.8	159	3.0	151	33.7	125	183	101
97	15.7	2.8	128	3.0	111	41.1	9	188	108
113	15.7	2.8	98	3.0	100	30.7	169	184	108
170	15.7	2.7	182	3.0	164	33.0	136	186	95
177	15.7	2.7	167	2.9	183	38.2	43	185	94
179	15.7	2.8	114	3.0	87	36.0	78	184	90
181	15.7	2.9	46	3.1	18	33.4	126	188	101
183	15.7	3.0	23	3.2	13	30.8	165	188	103
5	15.6	2.9	30	3.2	13	35.0	99	177	96
44	15.6	2.8	98	3.0	123	31.2	162	181	104
100	15.6	2.9	46	3.1	34	35.0	100	184	97
114	15.6	2.9	76	3.1	71	33.4	128	186	100
128	15.6	2.8	140	3.0	137	38.5	39	178	91
131	15.6	2.9	55	3.1	34	40.5	13	183	96
147	15.6	2.7	182	2.9	192	31.3	159	187	101
187	15.6	2.8	140	3.0	123	34.1	117	185	94
14	15.5	2.9	46	3.0	100	35.8	87	195	93
45	15.5	2.9	40	3.1	34	31.1	163	181	101
83	15.5	2.8	86	3.0	123	32.1	147	190	102
Lancota	15.5	2.8	98	3.0	111	38.5	40	189	109
106	15.5	2.9	65	3.1	71	34.3	112	183	93
117	15.5	2.8	114	3.0	100	36.4	65	184	94
127	15.5	2.9	55	3.1	56	39.7	25	178	94
149	15.5	2.9	46	3.1	44	39.6	26	188	95
59	15.4	2.8	128	3.0	151	30.7	167	189	107
61	15.4	2.7	187	2.8	195	32.0	150	184	101
89	15.4	2.9	76	3.0	100	31.3	160	185	103
95	15.4	2.9	55	3.0	100	36.6	62	187	106
130	15.4	2.9	76	3.1	71	32.9	137	182	107
Bezostaya 1	15.4	2.7	191	2.9	188	34.9	102	186	96
Lancota	15.4	2.7	193	2.9	192	38.3	42	188	109
39	15.3	2.8	86	3.0	123	36.1	75	184	104
67	15.3	2.9	65	3.0	87	35.7	89	191	100
84	15.3	2.8	86	3.0	123	39.0	32	186	97
99	15.3	2.8	140	3.0	164	39.3	30	186	97
Bezostaya 1	15.3	2.8	150	2.9	172	33.1	131	187	95
121	15.3	2.8	128	3.0	137	40.1	20	184	97
145	15.3	2.8	98	3.0	87	39.2	31	185	103
180	15.3	2.9	76	3.0	87	36.0	79	183	97
50	15.2	2.8	114	3.0	151	36.7	60	184	91

Table 36. Mean values and rankings of protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery averaged over sites reporting complete data, and listed by decreasing protein values. Continued.

Entry No.	Protein %	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1	Plant height cm
70	15.2	2.8	150	3.0	164	34.8	106	181	82
80	15.2	2.8	98	3.0	123	42.4	4	185	94
98	15.2	2.8	98	3.0	123	37.2	52	191	99
123	15.2	2.8	128	3.0	137	34.8	108	187	108
126	15.2	2.9	76	3.0	87	39.3	28	181	91
155	15.2	2.8	114	3.0	123	35.8	86	184	97
169	15.2	2.8	150	3.0	151	35.8	88	179	94
186	15.2	2.8	114	3.0	111	36.8	59	185	87
Lancota	15.1	2.8	98	3.0	137	40.1	18	189	111
6	15.1	2.9	55	3.1	71	38.8	35	183	98
66	15.1	2.9	40	3.1	56	36.9	58	187	109
81	15.1	2.9	34	3.1	18	38.8	37	190	85
109	15.1	2.9	34	3.1	26	33.8	121	180	100
158	15.1	2.9	55	3.1	56	31.2	161	188	104
190	15.1	2.8	128	3.0	137	29.9	174	183	104
191	15.1	2.9	76	3.1	71	30.1	172	184	100
12	15.0	2.9	76	3.0	123	26.5	193	190	108
47	15.0	2.9	55	3.1	56	33.8	123	181	100
57	15.0	2.8	86	3.0	123	31.5	154	183	102
71	15.0	2.8	159	2.9	177	39.4	27	188	105
76	15.0	2.8	128	2.9	183	35.2	93	189	98
79	15.0	2.8	140	2.9	172	42.8	3	183	98
82	15.0	2.9	55	3.1	44	37.5	48	186	89
85	15.0	2.9	34	3.1	44	37.0	55	185	100
132	15.0	2.8	114	3.0	111	34.1	116	185	107
Bezostaya 1	14.9	2.8	114	3.0	151	32.8	139	187	97
Lancota	14.9	2.8	140	2.9	177	34.2	114	189	112
86	14.9	3.0	23	3.1	22	43.5	2	185	104
159	14.9	3.0	15	3.2	11	30.0	173	190	95
36	14.8	2.8	98	3.0	137	36.2	71	185	107
62	14.8	2.9	46	3.1	34	40.1	19	181	87
68	14.8	2.8	114	3.0	137	35.9	83	193	105
69	14.8	2.8	140	3.0	164	31.0	164	178	84
77	14.8	2.9	65	3.0	100	41.9	7	184	89
96	14.8	3.0	23	3.1	18	32.8	141	182	90
136	14.8	2.7	175	2.9	183	28.8	182	182	106
192	14.8	2.9	55	3.1	44	36.5	63	182	90
Bezostaya 1	14.8	2.7	175	2.9	183	35.2	94	188	96
78	14.7	2.8	114	3.0	151	35.0	97	190	102
107	14.7	3.0	10	3.2	7	38.9	34	186	93
119	14.7	2.8	140	2.9	172	38.8	38	188	98
122	14.7	2.8	140	3.0	137	35.0	96	187	109
135	14.7	3.0	26	3.1	26	41.5	8	187	91
189	14.7	2.9	30	3.1	22	34.2	113	181	90
17	14.6	3.1	3	3.3	1	23.8	196	186	85
56	14.6	2.8	98	3.0	123	33.0	135	179	94
63	14.6	2.9	40	3.1	56	33.3	130	185	103
72	14.6	2.8	128	3.0	151	36.1	74	179	82
110	14.6	3.0	19	3.1	26	30.4	170	185	103
156	14.6	2.8	98	3.0	100	36.4	68	181	94
Bezostaya 1	14.4	2.8	128	3.0	164	34.6	109	187	94
112	14.4	3.0	10	3.2	9	37.0	57	184	101
137	14.4	3.1	7	3.2	7	29.7	178	190	91
28	14.3	3.0	26	3.1	71	31.3	158	188	90
188	14.3	3.0	26	3.1	22	40.4	15	187	91
13	14.2	2.9	34	3.0	87	39.8	23	191	96
15	14.2	2.9	65	3.0	151	33.1	133	186	102
108	14.2	3.1	5	3.2	3	41.0	10	184	89
29	14.1	2.9	40	3.1	71	41.0	11	183	99
134	14.1	2.9	30	3.1	34	44.1	1	185	95

Table 36. Mean values and rankings of protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery averaged over sites reporting complete data, and listed by decreasing protein values. Concluded.

Entry No.	Protein %	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Days to flowering from Jan. 1	Plant height cm
164	14.1	2.9	30	3.1	71	42.0	5	191	98
133	14.0	3.0	19	3.1	18	40.3	16	188	96
CI 13449	13.9	3.1	3	3.2	9	28.6	184	195	82
35	13.8	3.0	19	3.1	18	36.2	70	185	103
33	13.7	2.9	40	3.0	100	35.9	82	185	105
34	13.7	3.0	15	3.1	34	33.4	129	187	100
Centurk	13.7	2.9	76	3.0	137	36.7	61	187	103
Centurk	13.6	2.9	30	3.0	87	36.1	73	187	101
CI 13449	13.6	3.1	2	3.2	4	28.4	185	195	82
CI 13449	13.3	3.1	7	3.1	26	28.0	188	195	85
CI 13449	13.2	3.2	1	3.2	4	25.8	195	193	82
Centurk	13.2	3.0	13	3.1	34	34.6	110	186	103
10	13.1	3.0	13	3.1	26	41.9	6	187	106
Centurk	13.1	3.1	9	3.1	44	37.4	50	186	105
Centurk	13.0	3.0	12	3.1	71	40.8	12	186	104
CI 13449	12.7	3.1	7	3.1	44	27.2	191	195	82
Overall means	15.5	2.8		3.0		34.9		185.2	97.6
L.S.D. (.05) of the means	1.2	0.2		0.2		6.4		3.2	5.1
Coefficient of variation (%)	7.3	6.0		5.4		19.8		2.1	6.8
Means of the check varieties									
Lancota	15.3	2.8		3.0		38.2		189	110
Bezostaya 1	15.0	2.8		2.9		34.1		187	96
CI 13449	13.4	3.1		3.2		27.6		195	83
Centurk	13.3	3.0		3.1		37.1		187	103
Check means	14.2	2.9		3.0		34.3		189	98
L.S.D. (.05) of the check means	0.3	0.1		0.1		2.2		1	1
Coefficient of variation (%)	4.6	4.2		3.8		15.2		1.1	4.2

Table 37. Mean values and rankings for protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery, statistically analyzed from seven sites where all 196 entries were harvested in 1977.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
Bezostaya 1	14.3	168	2.8	177	2.9	191	38.1	99	98	201
CI 13449	12.8	196	3.1	8	3.1	43	30.6	186	83	212
Centurk	13.0	195	3.1	11	3.1	61	46.9	5	109	202
Lancota	14.7	147	2.9	89	3.0	128	46.0	6	116	206
5	15.6	69	3.0	37	3.2	16	41.1	49	99	187
6	15.0	115	2.9	58	3.1	61	45.4	10	101	197
7	15.1	107	3.0	37	3.2	21	41.2	47	99	208
8	16.6	12	2.9	58	3.1	43	39.6	72	100	207
9	16.6	12	2.8	114	3.1	76	45.0	12	101	203
10	13.2	190	3.0	22	3.1	61	45.6	9	110	202
11	15.6	75	2.9	45	3.1	27	38.1	100	104	205
12	14.5	164	2.9	69	3.1	101	29.3	193	112	203
13	14.0	175	3.0	37	3.1	88	42.1	32	95	206
14	15.1	110	3.0	29	3.1	61	39.6	70	92	211
15	13.7	182	2.9	45	3.0	114	35.8	133	104	202
16	17.1	2	2.8	114	3.1	76	38.6	93	107	196
17	14.8	135	3.1	4	3.3	1	26.3	196	83	203
18	16.3	27	2.9	103	3.1	88	43.0	25	98	200
19	16.8	8	2.8	114	3.1	61	39.3	77	99	200
20	16.5	17	2.9	69	3.2	16	37.7	108	96	201
21	16.9	4	2.8	141	3.0	114	35.7	135	98	201
22	16.7	9	2.9	89	3.1	43	37.8	106	98	200
23	16.6	15	2.9	103	3.1	88	39.9	65	98	200
24	16.5	17	2.9	103	3.1	88	37.9	104	100	201
25	16.5	17	2.8	141	3.1	101	34.0	158	98	201
26	16.5	19	2.8	141	3.0	114	36.7	123	97	201
27	16.2	33	2.8	114	3.1	88	39.6	71	98	200
28	14.0	178	3.0	18	3.1	61	34.3	151	90	202
29	14.0	178	3.0	29	3.1	43	44.7	15	102	198
30	15.7	63	2.8	162	3.0	154	31.6	182	109	204
31	16.4	23	2.7	195	2.9	191	30.4	187	107	204
32	15.9	52	2.7	186	3.0	178	41.6	40	113	199
33	13.7	184	2.9	45	3.1	101	39.9	66	112	199
34	13.6	185	3.0	13	3.1	27	36.5	125	107	200
35	13.7	183	3.0	18	3.2	21	40.7	56	109	200
36	14.7	145	2.9	89	3.0	128	39.3	75	112	201
37	16.7	10	2.9	69	3.1	43	30.9	184	97	205
38	15.4	90	3.0	29	3.1	27	35.2	141	94	200
39	14.9	121	2.9	89	3.0	128	38.7	91	106	199
40	16.4	23	2.9	45	3.2	21	41.0	52	106	198
41	16.3	29	2.9	45	3.2	12	38.9	84	105	197
42	16.5	20	2.9	45	3.2	16	39.2	78	106	197
43	15.9	48	2.7	183	3.0	178	31.8	178	113	203
44	15.3	96	2.9	89	3.0	114	34.2	156	106	196
45	15.4	83	3.0	29	3.1	27	34.0	159	104	196
46	15.8	59	2.8	114	3.1	101	34.3	152	101	194
47	15.3	98	2.9	89	3.0	114	35.6	136	104	197
48	16.3	31	2.8	141	3.0	141	33.1	166	96	195
49	15.9	50	2.9	89	3.1	61	32.5	176	90	195
50	14.7	149	2.9	103	3.0	154	38.9	83	93	199
Bezostaya 1	14.6	157	2.8	114	3.0	141	36.8	119	100	202
CI 13449	13.2	192	3.3	1	3.3	3	27.7	195	80	209
Centurk	13.2	192	3.1	11	3.1	43	42.0	34	106	203
Lancota	14.8	131	2.8	152	3.0	178	38.7	92	115	206
55	15.9	48	2.9	89	3.1	88	34.9	145	104	199
56	14.8	139	2.8	141	3.0	154	35.1	143	95	194
57	14.8	135	2.9	89	3.0	141	35.5	138	106	198
58	16.0	45	2.7	183	3.0	178	35.3	140	106	196
59	14.8	143	2.8	128	3.0	141	32.5	177	109	206
60	16.3	30	2.8	128	3.0	141	38.8	89	104	197

Table 37. Mean values and rankings for protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery, statistically analyzed from seven sites where all 196 entries were harvested in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
61	15.1	113	2.8	177	2.9	191	34.2	154	103	198
62	14.7	145	2.9	58	3.1	43	43.3	24	90	198
63	14.6	154	2.9	51	3.1	76	36.1	130	106	202
64	16.7	11	2.7	189	2.9	187	37.4	115	95	196
65	16.2	35	2.8	171	3.0	164	31.7	180	92	194
66	15.1	108	2.9	51	3.1	61	39.4	74	112	204
67	14.7	145	2.9	51	3.1	61	38.4	97	99	207
68	14.6	160	2.9	89	3.0	114	39.1	80	101	210
69	14.8	128	2.8	141	3.0	164	33.1	167	83	194
70	15.3	92	2.8	141	3.0	154	36.0	131	84	197
71	14.8	135	2.8	141	3.0	170	41.3	45	102	206
72	15.2	104	2.8	152	3.0	164	37.6	111	82	196
73	16.4	25	2.8	177	3.0	164	35.5	137	88	197
74	15.7	60	2.7	189	2.9	195	41.1	50	96	197
75	16.3	27	2.7	192	2.9	191	38.8	87	96	197
76	14.3	170	2.8	114	3.0	178	37.6	109	96	203
77	14.6	154	2.9	69	3.1	101	45.3	11	90	198
78	14.3	168	2.8	114	3.0	154	37.5	113	104	206
79	14.9	124	2.8	128	3.0	164	47.5	2	99	198
80	15.0	115	2.8	114	3.0	141	45.6	8	97	200
81	14.8	139	3.0	37	3.2	21	42.1	31	86	208
82	14.8	131	2.9	58	3.1	43	39.0	81	91	203
83	14.8	141	2.9	89	3.0	128	32.9	169	104	207
84	14.9	121	2.9	89	3.0	114	42.0	33	100	200
85	14.5	163	3.0	29	3.1	27	38.0	102	101	200
86	14.4	166	3.0	14	3.2	14	47.0	3	107	201
87	15.6	72	2.8	114	3.1	76	33.4	162	94	197
88	16.0	45	2.8	162	3.0	128	41.3	44	102	196
89	14.8	129	2.9	69	3.1	95	32.8	172	105	200
90	16.2	34	2.7	186	2.9	187	29.7	190	105	197
91	16.1	36	2.8	141	3.0	114	35.1	144	103	193
92	16.5	22	2.8	171	3.0	154	28.2	194	104	193
93	16.6	14	2.7	189	3.0	178	34.5	149	104	194
94	15.5	78	2.8	152	3.0	154	36.8	118	105	196
95	15.0	118	3.0	37	3.1	61	39.3	76	112	203
96	14.7	149	3.0	29	3.1	27	36.0	132	92	197
97	14.6	151	2.9	77	3.1	76	44.4	17	109	205
98	14.9	127	2.9	89	3.1	101	39.0	82	99	208
99	14.6	159	2.8	128	3.0	154	42.6	28	98	201
100	15.3	92	2.9	58	3.1	32	36.2	129	101	199
Bezostaya 1	14.8	131	2.8	171	3.0	178	34.9	146	97	201
CI 13449	13.6	187	3.1	2	3.2	6	31.0	183	81	212
Centurk	13.6	186	3.0	29	3.1	101	40.3	63	101	202
Lancota	15.3	100	2.8	152	3.0	154	41.7	39	112	206
105	15.3	95	2.9	89	3.1	76	40.7	55	100	201
106	15.5	77	2.9	58	3.1	43	38.5	95	97	198
107	14.3	170	3.1	8	3.3	5	41.9	36	95	201
108	14.0	176	3.1	6	3.3	3	44.9	13	93	199
109	15.4	86	2.9	51	3.1	43	35.1	142	104	195
110	14.5	162	3.0	18	3.1	32	32.6	174	107	203
111	15.4	86	2.9	103	3.1	88	31.7	181	107	208
112	14.1	174	3.1	10	3.2	9	41.2	46	106	200
113	15.4	88	2.8	128	3.0	114	33.0	168	115	199
114	15.5	81	2.9	77	3.1	76	38.6	94	107	203
115	16.0	42	2.7	192	2.9	191	40.7	57	114	201
116	15.9	55	2.8	152	3.0	114	32.9	170	96	200
117	15.2	106	2.9	89	3.1	76	41.4	42	99	199
118	16.1	38	2.8	162	3.0	164	30.2	188	89	202
119	14.6	157	2.8	128	3.0	170	42.9	26	103	204
120	15.1	112	2.8	177	2.9	187	36.7	122	107	201

Table 37. Mean values and rankings for protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery, statistically analyzed from seven sites where all 196 entries were harvested in 1977. Continued.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
121	14.9	121	2.8	114	3.0	128	44.4	16	100	199
122	14.6	156	2.8	128	3.0	141	39.8	68	116	203
123	15.0	118	2.8	128	3.0	141	38.1	101	112	204
124	15.9	54	2.8	128	3.1	101	34.3	153	91	196
125	15.7	67	2.8	162	3.0	141	41.8	38	103	195
126	14.6	151	2.9	103	3.1	101	41.9	35	95	196
127	15.2	102	2.9	77	3.1	88	42.4	30	97	193
128	15.2	102	2.8	141	3.0	141	41.6	41	95	193
129	15.7	65	2.9	89	3.1	61	40.7	54	99	201
130	14.9	126	2.9	69	3.1	61	35.7	134	111	197
131	15.4	86	2.9	77	3.1	61	44.1	20	99	200
132	14.5	161	2.8	162	3.0	164	36.8	117	112	200
133	13.9	180	3.0	29	3.1	43	44.8	14	101	205
134	13.9	181	3.0	37	3.1	61	49.1	1	97	199
135	14.5	165	3.0	37	3.1	43	47.0	4	91	205
136	14.6	154	2.8	177	2.9	185	32.6	175	111	196
137	14.4	166	3.1	8	3.2	9	32.7	173	90	207
138	15.6	75	2.8	171	3.0	154	39.7	69	98	200
139	16.0	42	2.9	69	3.1	61	36.7	120	91	198
140	17.1	3	2.8	128	3.1	101	33.3	164	92	197
141	16.0	45	2.9	103	3.1	76	44.2	19	96	194
142	15.6	75	2.9	58	3.1	32	42.9	27	99	205
143	15.6	72	3.0	14	3.3	1	40.3	62	85	197
144	16.1	40	3.0	24	3.2	9	37.5	114	87	197
145	15.2	101	2.8	152	3.0	128	42.4	29	105	202
146	15.4	88	2.9	69	3.1	43	36.4	128	87	208
147	14.8	135	2.8	171	3.0	178	34.7	148	102	201
148	15.1	110	2.9	77	3.0	114	34.3	150	104	198
149	14.9	125	2.9	45	3.1	43	43.7	22	98	203
150	16.3	26	2.8	162	3.0	141	38.5	96	98	193
Bezostaya 1	14.8	141	2.7	183	3.0	178	40.5	59	101	201
CI 13449	13.2	192	3.1	4	3.2	21	30.2	189	87	212
Centurk	13.1	194	3.0	22	3.1	88	37.9	105	107	203
Lancota	15.3	98	2.7	192	2.9	191	43.3	23	113	206
155	15.0	115	2.8	114	3.0	128	41.2	48	98	199
156	14.3	172	2.8	128	3.0	128	40.5	60	95	195
157	15.7	61	2.7	183	3.0	154	33.7	161	92	201
158	14.9	121	2.9	69	3.1	76	34.8	147	107	203
159	15.3	92	3.0	18	3.2	12	32.9	171	95	206
160	15.7	65	2.9	89	3.1	61	38.8	86	107	205
161	16.1	41	2.7	192	3.0	178	36.7	121	85	198
162	15.5	80	2.8	162	3.0	170	34.1	157	96	197
163	15.8	58	2.8	141	3.0	114	33.4	163	99	211
164	13.5	189	3.0	22	3.1	61	45.9	7	98	208
165	16.1	37	2.8	162	3.0	128	44.3	18	94	198
166	16.0	45	2.8	177	3.0	164	40.3	61	95	197
167	16.3	31	2.8	152	3.1	88	40.9	53	102	198
168	15.8	57	2.7	183	3.0	170	40.0	64	108	196
169	15.3	92	2.8	128	3.0	128	39.9	67	95	194
170	15.7	67	2.8	162	3.0	128	36.7	124	97	203
171	15.7	61	2.9	89	3.1	76	34.2	155	100	197
172	16.9	6	2.8	152	3.0	114	37.5	112	99	200
173	16.8	7	2.4	196	2.6	196	38.8	88	99	200
174	16.9	5	2.9	69	3.1	43	37.6	110	99	200
175	15.9	52	2.8	152	3.0	114	36.4	127	99	199
176	15.7	63	2.9	58	3.1	43	38.0	103	99	199
177	15.5	82	2.8	162	3.0	178	41.8	37	97	198
178	15.5	79	2.8	162	3.0	154	41.0	51	98	199
179	15.6	72	2.9	103	3.1	88	37.7	107	92	199
180	15.3	96	2.9	58	3.1	61	38.8	90	101	202

Table 37. Mean values and rankings for protein, lysine, and agronomic data for entries in the third high protein-high lysine winter wheat observation nursery, statistically analyzed from seven sites where all 196 entries were harvested in 1977. Concluded.

Entry No.	Protein %	Protein rank	Lysine/protein %	Lysine/protein rank	Adjusted lysine/protein %	Adjusted lysine/protein rank	Yield q/ha	Yield rank	Plant height cm	Days to flowering from Jan. 1
181	15.8	56	2.9	45	3.2	16	35.5	139	105	204
182	16.5	20	2.8	128	3.1	43	29.4	192	108	201
183	15.6	69	3.0	18	3.2	12	33.2	165	105	204
184	17.3	1	2.8	128	3.1	76	29.5	191	106	208
185	15.9	50	2.8	162	3.0	154	37.0	116	93	192
186	15.2	104	2.9	89	3.1	101	39.2	79	90	200
187	15.4	84	2.9	103	3.1	88	36.5	126	96	200
188	14.3	172	3.0	29	3.2	21	43.7	21	94	203
189	14.7	148	3.0	37	3.1	32	38.2	98	94	198
190	15.0	117	2.8	141	3.0	141	33.7	160	108	199
191	15.1	110	2.8	114	3.0	128	31.8	179	101	198
192	14.8	131	2.9	58	3.1	43	40.6	58	90	198
Bezostaya 1	14.8	139	2.8	171	3.0	178	38.9	85	98	201
CI 13449	13.6	188	3.1	2	3.2	6	30.8	185	82	212
Centurk	14.0	178	2.9	69	3.0	114	39.5	73	107	203
Lancota	16.1	38	2.8	128	3.0	141	41.3	43	113	206
Mean	15.3		2.9		3.1		38.0		100	201
L.S.D. (.05) of the means	1.0		0.2		0.2		7.5		6	3
Coefficient of variation (%)	6.5		5.9		5.2		18.9		6.1	1.6
Means of the check varieties										
Bezostaya 1	14.7		2.8		3.0		37.8		99	201
CI 13449	13.3		3.2		3.2		30.1		83	212
Centurk	13.4		3.0		3.1		41.3		106	202
Lancota	15.2		2.8		3.0		42.2		114	206
Check means	14.1		2.9		3.1		37.9		100	205
L.S.D. (.05) of the check means	0.5		0.1		0.1		3.6		3	1
Coefficient of variation (%)	6.9		4.9		4.5		20.5		6.1	1.1

Correlation coefficients

	Protein	Unadjusted lysine/protein	Adjusted lysine/protein	Yield	Plant height
Flowering	-.71**	.44**	.16**	-.19**	.24**
Plant height	.09**	.00	.01	.22**	
Yield	.07*	-.19**	-.15**		
Adjusted lysine/protein	-.06*	.86**			
Unadjusted lysine/protein	-.48**				

* Significant at the .05 level.
** Significant at the .01 level.