

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
Bureau of Plant Industry, Soils, and Agricultural Engineering
Division of Cereal Crops and Diseases

WHEATS FROM WORLD COLLECTION RESISTANT TO RUSTS

By

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The wheat project of the Division of Cereal Crops and Diseases, in cooperation with the Division of Plant Exploration and Introduction, has for many years maintained viable seed of wheats obtained from all parts of the world. This World Collection at present totals about 13,000 entries. With the advent of hybridization as the major method for breeding varieties resistant to diseases, insects, and other adverse environmental factors, the need for a germ plasm bank from which to select genes to fortify adapted plant types became more important. In early work on hybridization in wheat, parental lines were selected primarily from the varieties that were available locally.

Increased knowledge of physiologic specialization in the organisms causing diseases and in certain insects which attack wheat has made it possible to develop more precise procedures for locating desirable parental types. Tests now are often conducted in the greenhouse where inoculum of individual races of an organism is used, as well as in the field using natural inoculum, sometimes supplemented with inoculum of specific races. These advances have given impetus to the program to locate and evaluate genes for resistance to diseases and insects and for physiologic and agronomic characters in wheat.

As time and facilities have permitted, segments of the world collection have been tested in cooperation with experiment stations in the States and in foreign countries. For example, many of the spring varieties newly introduced from foreign countries have been screened in the disease garden at University Farm, St. Paul, Minn., since about 1930. Cartwright and Shands^{3/} published results of testing some 3,000 wheats from the World Collection for reaction to hessian fly and to leaf and stem rusts during the years 1939 to 1943. McFadden^{4/} published results of testing 1,639 wheats from the collection in Texas during the years 1937 to 1940.

^{1/} Division of Cereal Crops and Diseases, United States Department of Agriculture, Beltsville, Md.

^{2/} Rockefeller Foundation, Londres 45, Mexico D. F., Mexico.

^{3/} Cartwright, W. B., and Shands, R. G. Wheat Varieties Resistant to Hessian Fly and Their Reactions to Stem and Leaf Rust. U. S. Dept. Agr. Tech. Bul. 877, 6 pp. 1944.

^{4/} McFadden, E. S. New Sources of Resistance to Stem Rust and Leaf Rust in Foreign Varieties of Common Wheat. U. S. Dept. Agr. Cir. 814, 16 pp. 1949.

The wheat improvement project of the Rockefeller Foundation, in cooperation with the Ministry of Agriculture, in Mexico has actively participated in this project since 1947 and has screened more than half of the World Collection of Wheats^{5/} for resistance to stem and leaf rusts. Cooperation in South America in the evaluation of the available germ plasm in wheat was first established in 1948 in cooperation with the Office of Foreign Agricultural Relations and the Ministry of Agriculture in Ecuador. A uniform group of varieties was grown in several South American countries in 1951^{6/}.

Since data from these tests is of interest to all cooperators each cooperator has been asked to send a copy of the data obtained for including in a master file, parts of which may be summarized and processed. Individual stations are free to publish data from their tests as they see fit.

Many strains have been located as a result of this large-scale screening which are proving very valuable as parents in breeding for disease and insect resistance, and for desirable agronomic characters such as earliness, short plants, resistance to lodging and resistance to shattering.

During recent years a special nursery has been developed in which wheats with the most usable resistance to stem rust and leaf rust, available from the World Collection, have been included. This nursery has been grown at several locations each year. The list of varieties is revised annually to include the most promising types. As more extensive tests show some varieties to be inferior, they are dropped and new varieties are included as they show resistance in preliminary tests. In the 1950 nursery, 67 varieties were included and the data were mimeographed for distribution^{7/}. Since this nursery is grown from spring seeding or in areas where the winters are so mild that varieties with true winter habit do not head normally, only varieties with spring or spring intermediate habit are included. This limitation on the material that could be included has not been serious thus far as practically all original sources of resistance to the rusts have been found in varieties with a spring habit of growth.

The nursery for 1951 consisted of 139 varieties grown at 11 locations. The plantings at some locations were incomplete as they were seeded before the revised list of varieties was completed. No rust data were acquired from the nursery grown at Lafayette, Ind. In addition to the field data, seedling reaction to race 15B of stem rust was recorded in greenhouse tests at Winnipeg, Manitoba, St. Paul, Minn., and Beltsville, Md., during the winter of 1950-51.

^{5/} Borlaug, N. E., Boyles, B. B., Lowther, C. V., and Ward, D. J. Reaction of Wheat Varieties to Stem and Leaf Rust in the United States and Mexico in 1950-51. U. S. Dept. Agr., Bur. Plant Indus., Soils, and Agr. Engin. Div. Cereal Crops and Dis., 24 pp. January 1952. (Processed.)

^{6/} Rodenhiser, H. A., Christensen, J. J., and Tervet, I. W. Summary Report on the Reaction of Wheat, Oats, and Barley to Cereal Rusts in Five South American Countries in 1950-51. U. S. Dept. Agr., Bur. Plant Indus., Soils, and Agr. Engin. Div. Cereal Crops and Dis., 28 pp. 1951. (Processed.)

^{7/} Ward, D. J. Rust Reactions of Selected Spring Wheats. U. S. Dept. Agr., Bur. Plant Indus., Soils, and Agr. Engin. Div. Cereal Crops and Dis., 4 pp. 1950. (Processed.)

The stations where the nurseries were grown and the cooperators are as follows:

<u>Location</u>	<u>Cooperator</u>
Winnipeg, Manitoba, Canada	R. F. Peterson, T. Johnson
St. Paul, Minn.	E. R. Ausemus, E. C. Stakman
Langdon, N. Dak.	R. M. Heermann
Madison, Wis.	R. G. Shands
Blacksburg, Va.	C. W. Roane, T. M. Starling
Cainesville, Fla.	R. W. Earhart, D. D. Morey
Chapingo, Mexico	N. E. Borlaug, A. Campos T.
Mexe, Hidalgo, Mexico	N. E. Borlaug, A. Campos T.
Bogotá, Colombia	J. A. Rupert
Duitama, Colombia	J. A. Rupert
Seltsville, Md.	C. V. Lowther

At Winnipeg, Manitoba, inoculum of race 15B was put into the nursery to supplement natural inoculum. In the nursery at St. Paul, Minn., natural inoculum was supplemented by several races including 15B. At Chapingo, Mexico, inoculum of stem rust races 15B, 17, 19, 38, 58, and 59 was put into the nursery. Natural inoculum was abundant at most other locations and no artificial inoculation was employed. The nursery at Mexe, Hidalgo, was in a valley where Supremo, which is resistant to all races of stem rust prevalent in North America except 15B, was the predominant variety. The build up of stem rust was so severe that many fields of Supremo with a potential yield of 40 bushels per acre were so badly damaged that they were not harvested. The inoculum in the Mexe nursery, therefore, may be assumed to have been largely race 15B. In this valley, the few fields of Kentana were free of stem rust.

The results from all locations on reaction to stem rust, leaf rust, and stripe rust are presented in Table 1. Mildew reaction at Madison, Wis., and heading and agronomic notes at a few locations are also recorded in Table 1. An asterisk in the right-hand column indicates a good agronomic plant type at the nurseries in Mexico.

It will be noted that several varieties which were susceptible to race 15B in the seedling stage were highly resistant under severe epidemics of 15B in the field such as occurred at Mexe, Hidalgo.

The list of varieties in Table 1 has been revised for the 1952 nursery and additional lines screened from the preliminary tests during the last year or so have been added. Available data on these additional varieties are also included. The 1952 entry numbers indicate those varieties being continued.

Among the varieties extensively tested in 1951, those listed below were resistant to stem rust in all tests in the field.

Variety	Source	P.I. No.
<u>Bread Wheats</u>		
Kenya R.F. 324, C9906, C.I. 12882	Kenya	118896
Kenya 58, C.I. 12471	do.	
Kenya 59.A.31.B.13(L), C9724	do.	117767*
Kenya 117A, C.I. 12568	do.	
Kenya 117.1.5.F(L), C10861	do.	124742*
Kenya 130.A.7.B, C10865	do.	124745*
Kenya 130.B.6.B, C10866, R.F. 321	do.	117775*
Kenya 130.B.8.F, C10862	do.	118901*
Kenya M.B.263.J(L), C9968, Cal. 3098	do.	117526*
Kenya 291.J.1.I.1	do.	177172
Kenya 294.B.2.A.3	do.	177173
Kenya 338.AA.1.A.2	do.	177180
Kenya 338.AC.2.E.2, C.I. 12880	do.	187165*
Kenya 341.O.2.B.1	do.	177163
Kenya 350.AD.9.C.2	do.	177185
Kentana, C.I. 12980	Mexico	
Kenya-Gular 4913	Australia	117641
McMurachy, C.I. 11876	Canada	*
Egypt Na 95, C.I. 12894	Egypt	153780
Red Egyptian R.L..2061, C.I. 12345	do.	*
No. 466-4-M-M-M	S. Africa	159098
----	do.	159101*
----	do.	159102*
No. 43	do.	159106*
<u>Durum Wheats</u>		
Beladi, C.I. 7265-5	Egypt	57662-5
Dickson No. 444	Asia Minor	94568*
Golden Bell-Iumillo-Mindum, R.L. 1714, C.I. 12924	Canada	*
Tremez Molle, C.I. 7067-1	Portugal	56256-1
Tremez Preto, C.I. 7065	do.	56256-3
Tremez Rijo, C.I. 7066	do.	56257
Tremez Rijo, C.I. 7066-1	do.	56257-1
----	Arabia	145720*

* Susceptible at one or more locations in South America. Other varieties have been resistant wherever tested.

1952 Entry No.	Variety	Origin	P.I. No.	Stem Rust		Leaf Rust		Maturity	Remarks
				Chapingo, Mex., Hidalgo	Mexico	Chapingo, Mex., Hidalgo	Mexico		
114	Tronera Nijo	Portugal	185742	20 MR-5	5-15 MR	T R	I	Select	
115	Alfonso	Spain	180082	20 MR	5 MR-R	T MR	VI	• Select	
116	Amoroso	Spain	180093	20 MR	5 MR-R	30 S	VI	• Select	
117	Amoroso	Spain	180093	20 MR	5 MR-R	30 S	VI	• Select	
118	Caravana 1	do.	191654	5 MS	5 R	9-10	I	Select	
119	Caravana 4	do.	191655	5 MR-3	25 S	T R	I	Select	
120	Caravana, Luarca y Mostille	do.	191657	10 MR	20 MS	5 MR	I	Select	
121	Claro fino de Melicote	do.	191076	10 MR	30 S	T R	II	Select	
122	Claro fino de Melicote	do.	191076	10 MR	30 S	T R	II	Select	
123	Ondu Zavilla de pitorola	do.	191175	5 MR	20 S	T R	II	Select	
124	Replonco de Caballinas	do.	191185	15 MR	20 S	T R	II	Select	
125	Rocio de Toledo	do.	191192	5 MR-R	5 R	10 S	II	Select	
126	Rojal de Alionia	do.	191193	10 MR-4	5-5 R	T R	II	Select	
127	Rojal de Alionia	do.	191194	5 MR-R	5-5 R	T R	II	Select	
128	Robiel de Libana	do.	191203	10 MR	10-20 MR-5	5 S	II	Select	
129	Robiel de Libana	do.	191203	10 MR	10-20 MR-5	5 S	II	Select	
130	San Clemente	Rubioja	191361	20 MR	0 MR	0 R	VI	Select	
131	Sarmal Casta	Italy	191373	5 R	40 R	5 R	VI	• Short, solid stem	
132	T. persicus foliginosa	Spain	191395	T R	10 MR	5-5 R	I	Select	
133	Alfonso de la Rambla	Spain	191434	25 S	20 S	5-5 R	I	Select	
134	Alfonso de la Rambla	Spain	191434	25 S	20 S	5-5 R	I	Select	
135	Alfonso de la Rambla	Spain	191434	25 S	20 S	5-5 R	I	Select	
136	Alfonso de la Rambla	Spain	191434	25 S	20 S	5-5 R	I	Select	
137	Camel Abu tipo 103	do.	192100	5 R	T R	20 R	II	Select	
138	Camel Abu tipo 103	do.	192100	10 MR	0-T MR	T R	II	Select	
139	Amral blanco tipo 142	do.	192179	T R	0	0	VI	••• Short, susceptible to rust ret	
140	Tronera de Grados	do.	192461	15 MR-4	30 MR	30 S	VI	••• Short, susceptible to rust ret	
141	Tronera de Grados	do.	192501	5 R	0 S-MR	15 S	VI	••• Short	
142	Barrigon (ajo 31)	Mexico	192589	5 R	0 S-MR	15 S	VI	••• Short	
143	Barrigon (ajo 46)	do.	192589	5 R	0 S-MR	15 S	VI	••• Short	

1952 Entry No.	Variety	Origin	C.I. No.	P.I. No.
Dorm Wheat's Cross at Berkeley, California 1952				
144	Serville	Tunis	3186	36100
146	do.	do.	3190	36475
147	do.	do.	3191	41351
148	do.	do.	3047	
149	do.	do.	4195	
150	do.	do.	4195	
151	do.	do.	5112	
152	do.	do.	7905	50745
153	do.	do.	7531	60741
154	do.	do.	7568	61351
155	do.	do.	8482	67340
156	do.	do.	8521	69103
157	do.	do.	8429	
158	do.	do.		142183
159	do.	do.		164105
160	do.	do.		164116
161	do.	do.		166339
162	do.	do.		167571
163	do.	do.		167571
164	do.	do.		167571
165	do.	do.		167571
166	do.	do.		167571
167	do.	do.		167571
168	do.	do.		167571
169	do.	do.		167571
170	do.	do.		167571
171	do.	do.		167571

1952 Entry No.	Variety	Origin	P.I. No.	Stem Rust		Leaf Rust		Maturity	Remarks			
				Chapingo, Mex., Hidalgo	Mexico	Chapingo, Mex., Hidalgo	Mexico					
192	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
193	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
194	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
195	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
196	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
197	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
198	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
199	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
200	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
201	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
202	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
203	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
204	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
205	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
206	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
207	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
208	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
209	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
210	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
211	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
212	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
213	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
214	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
215	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
216	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
217	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
218	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
219	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
220	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
221	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
222	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
223	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
224	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
225	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
226	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
227	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
228	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
229	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
230	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
231	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
232	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
233	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
234	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
235	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
236	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
237	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
238	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
239	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
240	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
241	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
242	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
243	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
244	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
245	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
246	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
247	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
248	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
249	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
250	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
251	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
252	Portugal	56704-16	15	10 S	0	20 R	5	10-15	1949	1950	1951	1952
253	Port											

1952 Entry No.	Variety	Stem Rust Reaction			Leaf Rust Reaction			Date Entered
		Chapingo, 1949	Yaguajay, 1951	St. Paul, 1949	Chapingo, 1949	St. Paul, 1949	St. Paul, 1949	
216	Turkey 16741	50 S	100 S	60	15 S	60	7	
217	do.	70 S	75 S	60	15-MS	60	15	
218	do.	70 S	75 S	60	20 S	60	10	
219	do.	70 S	75 S	60	20 S	60	10	
220	India 16741	70 S	90 S	60	20 S	60	10	
220	India 168-600	70 S	90 S	60	20 S	60	10	

1952 Entry No.	Variety	Stem Rust Reaction			Leaf Rust Reaction			Date Entered
		Chapingo, 1949	Yaguajay, 1951	St. Paul, 1949	Chapingo, 1949	St. Paul, 1949	St. Paul, 1949	
221	Red Egyptian type	0	0	0	0	0	0	
222	do.	0	0	0	0	0	0	
223	do.	0	0	0	0	0	0	
224	do.	0	0	0	0	0	0	
225	do.	0	0	0	0	0	0	
226	do.	0	0	0	0	0	0	
227	do.	0	0	0	0	0	0	
228	do.	0	0	0	0	0	0	
229	do.	0	0	0	0	0	0	
230	do.	0	0	0	0	0	0	
231	do.	0	0	0	0	0	0	
232	do.	0	0	0	0	0	0	
233	do.	0	0	0	0	0	0	
234	do.	0	0	0	0	0	0	
235	do.	0	0	0	0	0	0	
236	do.	0	0	0	0	0	0	
237	do.	0	0	0	0	0	0	
238	do.	0	0	0	0	0	0	
239	do.	0	0	0	0	0	0	
240	do.	0	0	0	0	0	0	
241	do.	0	0	0	0	0	0	
242	do.	0	0	0	0	0	0	
243	do.	0	0	0	0	0	0	
244	do.	0	0	0	0	0	0	
245	do.	0	0	0	0	0	0	
246	do.	0	0	0	0	0	0	

Broad Wheat from Group of 300 sent to Madison, St. Paul, Minn., and Madison, Wis., Spring 1951

1952 Entry No.	Variety	Stem Rust Reaction			Leaf Rust Reaction			Date Entered
		Chapingo, 1949	Yaguajay, 1951	St. Paul, 1949	Chapingo, 1949	St. Paul, 1949	St. Paul, 1949	
221	Transvaal, S. Africa	0	0	0	0	0	0	
222	do.	0	0	0	0	0	0	
223	do.	0	0	0	0	0	0	
224	do.	0	0	0	0	0	0	
225	do.	0	0	0	0	0	0	
226	do.	0	0	0	0	0	0	
227	do.	0	0	0	0	0	0	
228	do.	0	0	0	0	0	0	
229	do.	0	0	0	0	0	0	
230	do.	0	0	0	0	0	0	
231	do.	0	0	0	0	0	0	
232	do.	0	0	0	0	0	0	
233	do.	0	0	0	0	0	0	
234	do.	0	0	0	0	0	0	
235	do.	0	0	0	0	0	0	
236	do.	0	0	0	0	0	0	
237	do.	0	0	0	0	0	0	
238	do.	0	0	0	0	0	0	
239	do.	0	0	0	0	0	0	
240	do.	0	0	0	0	0	0	
241	do.	0	0	0	0	0	0	
242	do.	0	0	0	0	0	0	
243	do.	0	0	0	0	0	0	
244	do.	0	0	0	0	0	0	
245	do.	0	0	0	0	0	0	
246	do.	0	0	0	0	0	0	

1952 Entry No.	Variety	Stem Rust Reaction			Leaf Rust Reaction			Date Entered
		Chapingo, 1949	Yaguajay, 1951	St. Paul, 1949	Chapingo, 1949	St. Paul, 1949	St. Paul, 1949	
247	Castelar 40-131, like CA-3-3-1	0	0	0	0	0	0	
248	do.	0	0	0	0	0	0	
249	do.	0	0	0	0	0	0	
250	do.	0	0	0	0	0	0	
251	do.	0	0	0	0	0	0	
252	do.	0	0	0	0	0	0	
253	do.	0	0	0	0	0	0	
254	do.	0	0	0	0	0	0	
255	do.	0	0	0	0	0	0	
256	do.	0	0	0	0	0	0	
257	do.	0	0	0	0	0	0	
258	do.	0	0	0	0	0	0	
259	do.	0	0	0	0	0	0	
260	do.	0	0	0	0	0	0	
261	do.	0	0	0	0	0	0	
262	do.	0	0	0	0	0	0	
263	do.	0	0	0	0	0	0	
264	do.	0	0	0	0	0	0	
265	do.	0	0	0	0	0	0	
266	do.	0	0	0	0	0	0	
267	do.	0	0	0	0	0	0	
268	do.	0	0	0	0	0	0	
269	do.	0	0	0	0	0	0	
270	do.	0	0	0	0	0	0	
271	do.	0	0	0	0	0	0	
272	do.	0	0	0	0	0	0	
273	do.	0	0	0	0	0	0	
274	do.	0	0	0	0	0	0	
275	do.	0	0	0	0	0	0	
276	do.	0	0	0	0	0	0	
277	do.	0	0	0	0	0	0	
278	do.	0	0	0	0	0	0	

Broad Wheat from Group of 2761 sent from Seaton, Ariz., to Maricao, N.Y. 1951

1952 Entry No.	Variety	Stem Rust Reaction			Leaf Rust Reaction			Date Entered
		Chapingo, 1949	Yaguajay, 1951	St. Paul, 1949	Chapingo, 1949	St. Paul, 1949	St. Paul, 1949	
247	Argentine	0	0	0	0	0	0	
248	do.	0	0	0	0	0	0	
249	do.	0	0	0	0	0	0	
250	do.	0	0	0	0	0	0	
251	do.	0	0	0	0	0	0	
252	do.	0	0	0	0	0	0	
253	do.	0	0	0	0	0	0	
254	do.	0	0	0	0	0	0	
255	do.	0	0	0	0	0	0	
256	do.	0	0	0	0	0	0	
257	do.	0	0	0	0	0	0	
258	do.	0	0	0	0	0	0	
259	do.	0	0	0	0	0	0	
260	do.	0	0	0	0	0	0	
261	do.	0	0	0	0	0	0	
262	do.	0	0	0	0	0	0	
263	do.	0	0	0	0	0	0	
264	do.	0	0	0	0	0	0	
265	do.	0	0	0	0	0	0	
266	do.	0	0	0	0	0	0	
267	do.	0	0	0	0	0	0	
268	do.	0	0	0	0	0	0	
269	do.	0	0	0	0	0	0	
270	do.	0	0	0	0	0	0	
271	do.	0	0	0	0	0	0	
272	do.	0	0	0	0	0	0	
273	do.	0	0	0	0	0	0	
274	do.	0	0	0	0	0	0	
275	do.	0	0	0	0	0	0	
276	do.	0	0	0	0	0	0	
277	do.	0	0	0	0	0	0	
278	do.	0	0	0	0	0	0	

Very leaf blight.
 Excellent, preserved.
 Very good plant type.
 Excellent plant type.