

RESULTS OF THE FIRST INTERNATIONAL
BARLEY OBSERVATION NURSERY (IBON),
1973-1974

RESULTADOS DEL PRIMER ENSAYO
INTERNACIONAL DE OBSERVACION DE
CEBADA (IBON), 1973-1974

RESULTATS DE LA PREMIERE PEPINIERE
INTERNATIONALE D'OBSERVATION D'ORGE
(IBON), 1973-1974



RESULTS OF THE FIRST INTERNATIONAL BARLEY

OBSERVATION NURSERY (IBON)

1973 - 1974

INTRODUCTION

The first IBON prepared and distributed by CIMMYT was intended firstly, to distribute germ plasm among interested barley breeders in the world and secondly, to obtain information about the reaction of the lines included with respect to different diseases, and to use this information as the basis for incorporating disease resistance in the program. Although the nursery was not designed to measure yields, in some cases the cooperator made a visual evaluation of the agronomic type and these data are reported herein.

MATERIALS AND METHODS

This observation nursery contained selected lines from varietal collections obtained from individual research workers in different parts of the world. The original material gathered was grown at two locations in México differing in environmental conditions.

The first site is situated in the central part of Mexico with a latitude of 19°31'N, longitude of 98°50'W and an altitude of 2249 meters above sea level. For the most part it is rainfed but possesses temperature and humidity conditions which provide an excellent environment for the development of several diseases.

The second location, situated at Cd. Obregón, Sonora, México, has an altitude of 40 meters above sea level, is situated at 27°29'N latitude and 109°55'W longitude. Here the crop is exclusively irrigated and the conditions of temperature, humidity and day length are completely different. Except for some late attacks of leaf rust and light epidemics of barley yellow dwarf virus, for the most part, diseases are minimal. This location, however, offers an environment where the agronomic characters are expressed to a maximum and the yield potential of the lines can be easily assessed.

Under these two sets of conditions more than 4,000 lines and varieties were evaluated for different characters. This evaluation served as the basis for selecting the material which was assembled to make up the 1st IBON. Since this material was intended to be distributed in temperate zones, all the light sensitive and semi-winter types were discarded. Some commercial varieties were included as standard checks as a guide for the evaluation of the different characters.

A total of 381 entries were included in the 1st IBON, and these were distributed to 25 places around the world. Each envelope contained three grams of seed to be seeded in a single, two meter row.

Each location was assigned a number, as tabulated in table 2. The percentage of return data was acceptable. A number of places reported only light epidemics of some diseases so these are not included in the present report. In some instances, agronomic characters of potentially good yielding entries were reported and this information is provided.

RESULTS AND DISCUSSION

Table 1 shows that there is a differential disease reaction among the lines and differences in virulence of the pathogen may also be observed. In the case of the reaction to powdery mildew for example, it is clear that differences in host reaction, reflect differences in host specificity. The fact that many of the lines tested at El Batán, México were resistant to this disease indicates that the race(s) present in that area carry genes with less virulence, since the same varieties were also susceptible in certain other testing sites. In general, the European barley lines and varieties carry a high degree of resistance to powdery mildew. However, they are susceptible to Rhynchosporium secalis.

This is easy to understand, since they may have been selected in areas where powdery mildew is serious problem, and the virulence of the pathogen is constantly shifting, making it necessary to continuously incorporate new genes for resistance. On the other hand, little or no resistance to Rhynchosporium secalis has been detected in these lines, probably due to the fact that they have been bred in an area relatively free of this disease.

None of the lines tested was universally resistant to all the diseases and a low percentage of them showed resistance to more than two diseases.

Table No.1. Resistance to diseases at different locations of lines of the 1st International Barley Observation Nursery, 1973-74.

Entry No	Variety or Cross	LEAF RUST Puccinia hordei.	STRIPE RUST Puccinia striiformis.	SCALD Rhynchosporium secalis.	P.MILDEW Erysiphe graminis.	SPOT Blotch Helminthosporium sativum.	Selected lines at location.
1	Apan	10					
4	Promesa			2			
7	Comun	10		2,9			
8	Gizeh 118	8		9	1,5		
9	Pro-tolI x Cer2-TII	10					4
10	Orge de prphete			2,9			
11	Athenais		3				7
12	Beecher						7,7
14	Jordan 1	10			5		
17	A-16					10	
18	BUSS	10			5	10	
19	Clipper				8		1
27	Athenais						7
28	Egypt 20		13				
30	EMIR	10			8		7
31	Kristina			2	8		7
32	P 10507			2			
33	P 12440				8		
35	P 21656	10			5		
36	P 21657				5		
37	P 22209	10		9	5		
38	P 22397		3		1		
39	P 22606				1		
40	APIZACO				1		
41	P 22672				5,8,10		
42	P 102256				5		
43	P 102321				1		
44	P 102352				1		
45	P 22436	10			1,8		
46	P 102733			2	5		
48	P 103176	10			1		
50	P 71386				8		
52	P 71321			9	8		
53	Ahor 1507/70			9	8		
54	Ahor 1506/70			9	8		
55	Ahor 1469/70				8		
56	Ahor 1783/70			9			
57	Ahor 2570/70			9	8		
58	Ahor 2879/70		3	9	8		
59	Ahor 3285/70			9			
61	Ahor 3537/70				1,5		
62	Ahor 3593/70			9			
63	Ahor 4443/70			9	1,8		
64	Ahor 155/70				1,5,8	4	
65	Ahor 346/70			9			

66	Ahor 353/70			9	8	4
67	Ahor 1376/70			9		
68	Ahor 1456/70				5	
69	Ahor 3100/70			9	8	
70	Ahor 3100/70				1,8	
71	Ahor 3806/70				8	
72	Ahor 4066/70				5,8	
73	30255 Hornisse				5,8	
74	Legia				5,8	4
75	Masurica				8	
76	Midas				5,8	
77	Berac				8	
78	30291-Hosta			9	8	
79	3002-Union	10		9	8	
80	Promesa			2		
81	Piri				5,8	4
82	Dembi-Dallo				1	
83	Japan O			9	1	
85	Gryf			9		
86	Lubusky				8	
87	Britta	10				
88	Sobieszynsky			9	5,8	
90	Tanekaze 105				5,8	
91	Rod 586		3	2,9		
92	Orkisz Tybetanski			9		10
94	7238 Cebada de 6 ordens 9592			8		
95	4541	10		2,9	5,8	
96	OB.9521		3	9	5,8	
97	Fort		3		5	
98	M.E.H. Ab-4			9		7
99	O.B.9521 x Guorikt			9	8	
107	(OB 13-13 x VM 69-1292)x()B-95-21 x 2-33) 1				5,8	
109	OB 13-13			9	8	
110	OB 66-23 x Hiproly			9		
111	(Minn 65-68 x Z-21)SS 2151				5	
112	H 541				8	10
115	Louh 1			9		
116	U.M.Evans 4098					10
117	U.M.Evans 4113			2		
120	CM 67				8	
124	Minn.959	10			5	
125	WI-2197		3			
127	Jordan 1		3		5	
128	Noyep		3			10
130	Ceresia			9	8	
131	Bamba	10			1	
132	C-63			2,9	8	
133	Emir					7
135	Avt-K1 (Avt/Tol I-B2 x VT)	10				
136	Avt-Local D8	10				
137	Lypher	10				
139	Bathim 9				8	
141	Bathim 10					10
142	Pro-Tol I x Cer2-Tol I			9		10

Entry No	Variety or Cross	LEAF RUST Puccinia hordei.	STRIPE RUST Puccinia striiformis.	SCALD Rhynchosporium secalis.	P.MILDEW Erysiphe graminis.	SPOT Helminthosporium sativum.	BLOTCH	Selected lines at location.
143	WI 2137/2	10	3				10	
146	WI-2198				1,8			
149	OB 154-1						10	
150	XKD-14						10	
152	Conquest			9				
153	Br 6401-43-Hiproly			9				
155	CI-3909-2				8			
156	CI-3909-2			9				
157	CI-3917-1				8		10	
158	CI-7773						10	
159	CI-7350				8		10	
162	Dickson-Conquest						10	
165	Jotun-BT 804						10	
168	Jotun-Galt		3					
169	Jotun-York						10	
170	Godiva-Conquest			2,9				
171	Godiva-Conquest			2				
172	S.6620 Centenial 11549							4
173	S.6620 Centenial 11976				8			
174	Godiva 46	10		9	8			
175	Baku			9			10	
176	Luther-Sel 1255-6=Sel-1094-67							
178	Burk ² -Hiproly			9	8			
179	IB 65						10	
180	APIZACO						10	
182	10876-1						10	
185	10941-1						10	
186	10985-1						10	
189	11012-2						10	
190	11014-1						10	
191	11016-2						10	
192	HP 69/1			9	5			
193	HP 87/3				5			
194	HP 99/1	10			5			
195	HP 99/2	10			5			
196	HP 104/3		3		5,8			
197	HP 116/1	10			5,8		10	
198	HP 119/1	10			5,8		10	
199	HP 119/2				5,8			
200	Hor-1677-AB 6PH 677		3		8			
204	Promesa			2,9				
205	CM 67			10				
206	Bussell			10				
207	Hor 1504-EP 79C PA 678			9,10	8			
208	AC 1093 Midas (Miln"S")				1,8			
209	AC-2116	10		2	5,8			
210	Dijon-3-5-2				5,8			
211	Dijon-8-4-7				5,8			7
212	GB-18				1,5,8			7
215	Emir			10				
216	Salka							7

217	Ange	3	9	1,8	
218	P.12437	3		5	
220	Porvenir		10	5	
221	P.13172			1,5	
222	71309 (P 10365-Hiproly)		9	8	
223	71339 (P 102844-Hiproly)			8	
224	MK 307			8	
228	JO 1062		10		
229	Hja a 33		9,10		10
230	Hja L91		10		
233	Hja C 3761		10		
235	Hja C 4109				
243	Hja C 4563		1		7
246	Hja C 4629		10		
247	Hja C 4799		10		
248	Piast		9	5,8	
249	Damazy		9	8	
250	Berac			8	
251	Mazurka			8	
252	Ofir		9	8	10
253	Sultan			8	
254	Asse			8	
255	Herta		9		
256	Maris Canon		9	8	
257	Maris Mink		2	5,8	
259	Midas			8	
261	Maris Dingo			8	
263	HB 551/48/39			8	
264	Multum			8	
266	Hornisse			8	
267	Carina			8	
268	W.W. Tellus			8	
269	70/22004		9	8	
270	70/22026		9	1,8	
271	Acc 566 Himalaya		9,10		
272	70/22071		9,10		
273	70/22074		9		
275	70/22077		9		
276	70/22078		9,10		
277	70/22079		9,10		
278	70/22081		9,10	8	
279	70/22082		10		
280	CM 67		2	1	
281	70/22102		10		
283	70/22198		10		
284	70/22226		10		
285	70/22227		10		
286	70/22228		10		
287	70/22230	10		8	
290	70/22239		9,10		
291	70/22242		9		
292	70/22281		9,10		
293	70/22290		9		
294	70/22292		10		
295	70/22293		9		
296	70/22295		9	8	

Entry No	Variety or Cross	LEAF RUST	STRIPE RUST	SCALD	P.MILDEW	SPOT	BLOTCH	Selected lines at location.
		Puccinia hordei	Puccinia striiformis.	Rhynchosporium secalis.	Erysiphe graminis	Helminthosporium stivum.		
297	70/22296			10				
298	70/22303			10				
309	70/22383			10				
312	70/22389						10	
313	70/22423						10	
317	70/22434						10	
318	70/22435						10	
321	Vantage Semi Naked							
324	Manchuria-CI 2330							
326	Lubuski				8			
327	NB 0102				8			
328	NB 0201			10	8			
329	NB 0301				8			
330	NB 0601	10						
334	N.23 5/180	10			5,8			4
335	G-491				5,8			7
336	Damasy				8			
337	S.57/69				8			
338	G-481	10			8			
339	FB (E) Nyt/72			2				
341	FB/OBS/E/72			2,9				
342	PI-10404-Sel.No.2			9				
343	PI-12785.Sel.No.3			9	8			
344	Hiproly (CI-3947) No.7			9,10			10	
345	Naked Yellow No.8			9			10	
346	Welsh Plant Breeding Station				5,8			
347	Welsh Plant Breeding Station	10			8		10	
348	Welsh Plant Breeding Station	10			8		10	
349	Welsh Plant Breeding Station				8			
350	Olli				1			
351	Gateway						10	
355	Izumi Wase Hadaka			10			10	
356	Shikoka Hadaka 47				1,8		10	
357	Shikoki Hadaka 53			2	8			
358	Kinai 5						10	
359	Zephyr		3		8		10	
361	Julia				5,8		10	
362	SV 70/22085			10	5,8			
363	SV 70/22301			9,10			10	
364	SV 70/22301			9				
365	SV 70/22301			9				
368	N.23 2/179				8			
370	C W X R-1				8			
371	G-411							
372	OC 634	10		2				
374	OC-705				8		10	
375	OC-712				5,8			
377	OC-751			10			10	
378	OD-941			10			10	
379	OC-960				8		10	
380	Porvenir			2				

Table No. 2 Locations where data from the 1st International Barley Observation Nursery were obtained (1st IBON).

Loc No.	COUNTRY	Station Name	Cooperator Name	Latitude	Longitude	Elev mts.	Planting date	Moisture Ave. gms.	Fertility	Days to Maturity	Flowering Date	Puccinia hordei	Puccinia striiformis	Rhynchosporium secalis	Helminthosporium sativum	Erysiphe graminis	Yield in gms.	Others.
<u>AFRICA</u>																		
1	Algeria																	
2	Ethiopia	Hollela	Seme Debela	09°00'N	38°30'E	0622								X				X
<u>ASIA</u>																		
3	India	Delhi	R.H. Singh	28°38'N	77°16'E	0022							X					
6	Pakistan	Agr.Tarnab Peshawar	Abdul Gadim	34° N	72° E	0300	11/24/73											X (Aphids)
<u>MIDDLE EAST</u>																		
4	Iran	Karaj		35°16'N	50°58'E	1300				X								X
5	Cyprus	Kaveh,Nicosia		35°06'N	33°28'E	0153												
7	Turkey	Haymana Farm	Ali Bayraktar	40° N	38° E	1050	10/5/73											
<u>NORTH AMERICA</u>																		
8	México	El Batán	Cimmyt Barley Staff	19°31'N	98°50'W	2249						X						X
<u>SOUTH AMERICA</u>																		
9	Ecuador	Quito	INIAP	00°22'S	78°38'W	3058								X				
10	Peru	Lima		12°05'S	76°57'W	0251						X		X	X			X (BYDV) *

* BYDV = Barley Yellow Dwarf Virus

