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PRESENT STATUS OF WHEAT IMPROVEMENT PROGRAM FOR  
MEXICO.

There are at present four varieties of wheat being increased by the Secretaría de Agricultura for distribution to farmers. These varieties are the following:

- a) Rocamex #211 (Selection out of Trigo Supreme x (Hope x Mediterraneum)
- b) " 209 (Selection out of Fronteira x (Hope x Mediterraneum)
- c) " 321 (Selection out of Kenya (Blanco)
- d) " 324 (Selection out of Kenya (Rojo)

These varieties were developed by the Oficina de Estudios Especiales from direct introductions and reselections. In the early stages of the Wheat Improvement Program a large number of wheats from many countries of the world were introduced and tested at different locations in México in comparison with the native varieties. Rocamex #209 and 211 were derived from material obtained from Dr. McFadden at Texas. The two Kenya lines were originally collected by an Australian investigator in Kenya Colony, Africa and taken to Australia. Seed was later sent to Canada and the U. S., and from the United States it was sent to México. None of the four varieties are being grown commercially in other countries and for that reason it has been necessary to multiply all of the seed here in México.

VARIETIES OF WHEAT WHICH ARE BEING INCREASED  
FOR DISTRIBUTION

Attached is a description of the six varieties of wheat which have shown most promise during the experimental program which has been conducted jointly by the Secretaría de Agricultura y Ganadería and the Oficina de Estudios Especiales during the last three years. A general description of each of these varieties is included. Although 6 varieties were increased last year, plans are being made to continue increasing only 3 of them. The seed of the remaining 3 varieties, however, will be distributed in those areas where they seem best adapted. The new varieties have been tested under wide range of conditions and there is considerable information on their adaptability. All of them yield well but the wheats introduced from Texas have a tendency to have weak glumes and therefore, they must be distributed only in those areas where they are recommended.

Rocamex #211 (Selection Out of Trigo Supreme x (41-116‡))

- 1.- This variety is one of the new introductions most widely adapted, and it is also one of the best yielders.
- 2.- It is resistant to Puccinia graminis tritici (Chahuixtle del tallo)
- 3.- It is resistant to Puccinia triticina (Chahuixtle de la hoja)
- 4.- It is resistant to Puccinia glumarum (Chahuixtle amarillo)
- 5.- This variety has strong straw and is resistant to lodging, under most conditions.
- 6.- It is a red grained variety of satisfactory quality.
- 7.- It has the same maturity as the variety "Querétaro", being about 7 to 10 days later than Mentana, when grown from Autumn plantings.
- 8.- This variety possesses weak necks, and therefore is not recommended for the Valle del Yaqui or La Laguna.

This wheat is probably the best of the new varieties which have been introduced. The variety is not only well adapted for winter plantings, but grows well when planted under summer (temporal) conditions in the high valleys of central México and also in the Bajío. There are 30 tons of this seed being stored for fall plantings. Approximately 200 hectares of this variety are being grown this summer in the Bajío and mesa Central. This crop should produce 500 tons of seed wheat.

‡(41-116) was a cross of Hope x Mediterranium.

Rocamex #324 (Selection out of Kenya (Rojo))

- 1.- This is a very good yielding variety in both Sonora and in the Bajío.
- 2.- Resistant to *Puccinia graminis tritici*.
- 3.- Susceptible to *Puccinia glumarum*.
- 4.- Susceptible to *Puccinia triticina*.
- 5.- Has good straw.
- 6.- This is a red grained variety which is as good as or better than Aguilera in quality.
- 7.- Kenya RF 324 matures about 10 - 12 days later than Mentana or 18 days later than Aguilera
- 8.- This wheat possesses strong glumes and is well suited to combine harvesting.

DISTRIBUTION: Most of the seed available of this variety has been sent to Valle del Yaqui. Because of its susceptibility to "Bunt", all seed of this variety should be treated with "Granosan Nuevo Mejorado" before it is planted. This variety is broadly adapted in México, but its susceptibility to *P. glumarum* when grown in Central México, makes its distribution in that region of questionable value. At present there are about 40 tons of seed in storage, with 30 hectares of summer plantings.

Rocamex 236 (Selection out of Renacimiento x (41-116)

- 1.- Good yielding variety - For North.
- 2.- Resistant to *P. graminis tritici*.
- 3.- Susceptible to *P. triticina*.
- 4.- Susceptible to *Puccinia glumarum*.
- 5.- Good straw.
- 6.- Red grain of satisfactory quality.
- 7.- This is the earliest maturing of the newly introduced varieties, being 4 - 5 days earlier than RF 211, or about 2 - 3 days later than Mentana.
- 8.- This wheat has weak glumes and should only be distributed where there is no combine harvesting. Because this variety is generally less satisfactory than RF 211, it will not be further increased. The seed which was produced was sent to northern Coahuila. This variety does not possess sufficient stem rust resistance for summer plantings.

Rocamex #209 (Selection out of Fronteira x (41-116))

- 1.- A variety which yields very well in the high valleys of México, and in the North, and in the Bajío.
- 2.- Possesses fair resistance to *Puccinia graminis tritici*.
- 3.- Possesses good resistance to *Puccinia glumarum*.
- 4.- It is susceptible to *Puccinia triticina*.
- 5.- Possesses good straw.
- 6.- Has a red grain of satisfactory quality.
- 7.- This is a late maturing variety, which is about 2 to 3 days earlier than Pelón Colorado.
- 8.- This wheat has weak glumes and is susceptible to shattering. It should not be released in the Laguna or El Yaqui.
- 9.- This variety should not be planted during the summer.

Suggested Areas of Distribution:

- 1.- High valleys of states of Mexico, Hidalgo, and Puebla.
- 2.- Northern Coahuila (Exclusive of La Laguna where it cannot be grown satisfactorily because of shattering)
- 3.- The Bajío.

Rocamex #212 (Selection out of Trigo Supreme x (41-116)

- 1.- Good yielding variety.
- 2.- Resistant to *Puccinia graminis tritici*.
- 3.- Resistant to *Puccinia glumarum*.
- 4.- Resistant to *Puccinia triticina*.
- 5.- Possesses good straw - but very tall.
- 6.- A red grain variety of satisfactory quality.
- 7.- This variety is of the same maturity as Querétaro.
- 8.- It possesses weaker glumes than RF 211 and its stem rust resistance is not as good as that of RF 211. For that reason this variety will not be increased farther. The seed which has been increased has or will be distributed in the Mesa Central.

The varieties which are being increased at present are only the first step towards increasing wheat production in México. All of these varieties have very definite limitations and must be replaced by progressively better varieties as they become available from the breeding program. Progress is being made toward that good. Table #1 shows the comparable yields of the best F<sub>6</sub> lines in yield tests in Valle del Yaqui and Chapingo in 1947-1948.

TABLE # 1 -- Average Yields of Best F<sub>6</sub> Lines in Comparison with Yields of Check Varieties When Grown in Cd. Obregón, Sonora, and Chapingo, Mex., 1947-48.

<u>Part I A -- Cd. Obregon - Results</u>			
Cross or Variety	Cross & Sel. #	Ave. Yield in grams (6 mt. Row)	Percentage of yield of Check Variety
Newthatch x Marroqui	II 120 - 3c (1-3c)	530	117
" "	II 120 - 3c - 2c - (3-8c)	507	112
" "	II 120 - 3c (9-11c)	525	116
" "	II 120 - 7c - 6c - 1c	493	109
" "	II 120 - 3 - 5 - (2-4c)	432	96
" "	II 120 - 6c - 10c - (3-6c)	436	97
" "	II 120 - 6c - 9c	437	97½
" "	II 120 - 6 - (8c-12c)	432	96
Mentana x Kenya	II 56 - 8c - 17c (3-5c)	507	112
" "	II 93 - 5c - (11c-14c)	434	96
Newthatch x Marroqui	II 116 - 2c - 5c - (1-3c)	512	113
" "	II 116 - 12c - 14c - (1-3c)	479	105
" "	II 116 - 2c - 4c - (1-5c)	478	105
" "	II 116 - 7c (13-15c)	477	94
Timstein	RF 457	473	104
Aguilera (Regional Variety)	RF 380	451	99½
Marroqui (Check Variety)	RF 366	453	

Part # 2 -- Chapingo - Results- 1947-48

Cross or Variety	Cross & Sel. #	Ave. Yield In Grams (6 Mt. Row)	Percentage of Yield of Check Variety
Newthatch x Marroqui	II 120 - 3c (9c-11c)	408	135
" "	II 120 - 2c - 1c - 1c	340	112
" "	II 120 - 3c - 1c - 1c	340	112
Kenya x Mentana	II 56 - 8c - 17c - 1c	376	125
" "	II 56 - 8c - 17 - (3-5c)	350	116
" "	II 57 - 4c - 1c (5-9c)	302	100
" "	II 56 - 5c - 1c - 1c	311	103
" "	II 56 - 7c - 9c - 1c	343	113
" "	II 57 - 4c - 1c - 1c	347	115
Mentana x Kenya	II 93 - 1c - (2-5c)	364	120
" "	II 35- 6c - 6c - 2c	356	118
" "	II 35- 6c - 6c - (3-8c)	370	122
Newthatch x Marroqui	II 116 - 7c - 14c (1-2c)	327	108
" "	II 116 - 7c - 11c	314	104
" "	II 116 - 1c - 5c - 1c	305	101
" "	II 116 - 12c - 14c (1-3c)	327	108
" "	II 116 - 2c - 5c (1-3c)	311	103
" "	II 116 - 3c - 5c (1-4c)	343	113
" "	II 116 - 2c - 8c - 1c	321	106
" "	II 116 - 3c - 20c - 1c	321	106
" "	II 116 - 8c - 6c	319	106
" "	II 116 - 7c - 11c - (2-4c)	379	125
" "	II 116 - 2c - 7c (2-10c)	371	123
" "	II 116 - 2c - 7c - 1c	349	115
" "	II 116 - 5c - 14c - 1c	342	113
" "	II 116 - 2c - 5c - (1-3c)	340	112
Candeal	252	275	91
Marroqui	366	290	96
Rocamex 211 (Sup. x 41-116) (Check Variety)	RF 211	302	



Approximately 70 of the highest yielding F<sub>5</sub> and F<sub>6</sub> lines are being increased in small plots this summer in the Bajío. All but a very few of these lines will be discarded on the basis of their performance this summer in additional yield tests.

Three crosses stand out as being exceptionally promising. They are Newthatch x Marroqui cross II 116, Newthatch x Marroqui cross II 120, and Kenya x Montana cross II 56. The best F<sub>7</sub> lines of each of these crosses, which are high yielding, early, resistant to lodging, are now being incorporated into a backcross program to improve their resistance to shattering and to leaf rust. A variety from Perú is being used as a source of better glumes, and Rocamex 211 and a Hope x Timstein line are being used as a source of better leaf rust resistance.

The use of improved varieties is only one of several very important changes which must be made to increase the national wheat production. The development of better varieties is only the first step in increasing wheat production in México. However, equally important are the inter-related practices of:

- (a) Better cultural practices including:
  1. Seed bed preparation
  2. Planting with grain drills.
- (b) Better soil management -- use of legumes in a sound rotation plan, and for the present, widespread use of commercial fertilizers.
- (c) Adoption of seed cleaning and treating.

It is now also possible to supplement the winter production of wheat by growing a summer crop in such areas as the Mesa Central and the Bajío. This was not possible until stem rust resistant varieties were made available.

By: DR. NORMAN E. BORLAUG.