The Plant Breeder Serves North Dakota Agriculture

By H. L. WALSTER, Director

OUR plant breeding operations have reached several high peaks in the last five years—we have builded on work that reaches back a much longer time—to work at our own Station and to the work of plant breeders in Canada and Australia and to material brought from European countries and South American countries. The plant breeders—in fact all plant scientists—must be internationally minded as they search for genes or fight disease and insect pests.

The tables which follow summarize the distributions of cereals, flax, and corn made in the last five years and there is a brief outline history of some earlier distributions. Special attention is called to Tables I-A and I-B, The Wheat Variety Survey of North Dakota. This shows more completely than words can tell how the plant breeders in North Dakota and in our neighboring states of South Dakota and Minnesota and the Dominion of Canada have completely changed the variety picture.

Tables I-A and 1-B Wheat Variety Survey of North Dakota
Seeded acreage of 1944 as percent of total wheat of all kinds.

Survey by B. U. Kienholz, Federal Agricultural Statistician, B.A.E. in cooperation with the Bureau of Plant Industry, Soils, and Agr. Engineering, U.S.D.A.

Table I-A The Twenty-Five Year Trend in Varieties of Hard Wheat

Varieties	Date of Introduction	1944	1939	1934	1929	1924	1919
		%	%	%	%	%	%
The Older Hard Wheats		Percent of total wheat acreages					
Red Fife	1885[1]	.....	.....	0.1	0.2	1.6	5.8
Haynes Bluestem	1891[2]	.....	.....	0.1	0.2	0.6	3.0
Preston (or Velvet Chaff)	1895[3]	.....	0.1	0.9	1.4	2.7	8.4
Marquis	1908[4]	0.1	3.0	39.4	52.6	52.9	47.0
The First New Hard Wheats							
Reward	1928[5]	0.9	1.2	1.2	.....	.....	.....
Ceres	1926[6]	3.0	20.3	34.0	3.0	.....	.....
The Newer Hard Wheats							
Renown	1935[7]	4.8	0.6	.....	.....	.....	.....
Regent	1939[8]	9.6	.....	.....	.....	.....	.....
Rival	1939[9]	25.8	.....	.....	.....	.....	.....
Pilot	1939[10]	6.7	.....	.....	.....	.....	.....
Thatcher	1934[11]	26.6	41.6	.....	.....	.....	.....
The Most Recent New Hard Wheats							
Mida	1944[12]	0.2	.....	.....	.....	.....	.....
Miscellaneous Hard Wheats							
Other Hard Wheats		1.5	2.3	2.3	3.9	10.4	1.2

[1]Date of introduction of Power Fife—Fife imported into Canada in 1850.
[2]Dakota (N.D. 316) A pure line selection from the original Haynes Bluestem was introduced in 1898 by the North Dakota Station.
[3]Introduced into the United States in 1895—cross made in 1888 in Canada.
[4]Introduced in Canada in 1908, into N. Dak about 1913, first cross made in 1892, first plantings of Marquis selections in 1904.

[5]Introduced in Canada in 1928. Cross made in 1912.
[6]Introduced in 1926, cross between Kota and Marquis made in 1918.
[7]Renown was introduced in Canada in 1935 to 1937. First tested in N. Dak. in 1934. Renown is a selection from the cross Reward x H-44-24.
[8]Regent was introduced in Canada in 1939, a few fields also grown in N. Dak.
[9]Rival, introduced by North Dakota Station in 1939.
[10]Pilot, developed by Bureau of Plant Industry, U.S.D.A. in cooperation with North Dakota Station was first introduced in North Dakota in 1939. A selection from a cross between Ceres and Hope.
[11]Thatcher, introduced by Minnesota Station in 1934.
[12]Mida, introduced by North Dakota Station in 1944.

Table I-B The Twenty-Five Year Trend In Varieties of Durum Wheats

Varieties	Percent of total wheat acreages 1944	1939	1934	1929	1924	1919
Older Varieties						
Kubanka	1.4	5.0	6.9	6.9	5.3	0.3
Mindum	5.2	8.2	4.0	3.0	....	....
Red Durum	1.7	4.1	1.7	4.3	2.7	0.4
Unidentified Varieties						
Durum (variety not named)	8.8	13.5	8.9	23.3	22.5	28.7
Other Varieties	0.1	0.1	0.2	1.2	1.3	0.2
The Newest Varieties						
Carleton	Less than 0.1	....	....	....	....	....
Stewart	0.1	....	....	....	....	....

Table II Cereal and Flax Introductions of the last five years.

Varietal Name	Breeder	Date of Introduction	First Release Bushels	Number of farmers
Hard Wheat				
Rival	Dr. L. R. Waldron	1939	670	134
Pilot	J. A. Clark of USDA in coop. with N.D. Station	1939	1,150	230
Vesta	Dr. L. R. Waldron	1942		
Mida	Dr. L. R. Waldron	1944	15,315	803
Durum				
Carleton	G. S. Smith, USDA in coop. with N.D. Station	1943	395 (6000 bu. distributed from this increase in 1944)	40
Stewart	G. S. Smith, USDA in coop. with N.D. Station	1943	1,160 (18,000 bu. distributed from this increase in 1944)	61
	The total redistribution of Carleton and Stewart in 1944 reached 338 growers, mostly in the durum area.			
Barley				
Tregal	T. E. Stoa	1943	(7500 bu. increase distributed in 1944)	14
Flax				
Victory (B5585)	Dr. H. L. Bolley	1941	16 bu. in 1943	7
B 5128	Dr. H. L. Bolley	1941	27.5 bu. in 1943	7
Koto	USDA, (Mandan) in coop. with N.D. Station	1943	169 bu. in 1943	41
Renew	USDA, (Mandan) in coop. with N.D. Station	1943	45 bu. in 1943	12

The 1943 increases of the above 4 varieties of flax were distributed as follows in 1944: Victory to 16 growers, B 5128 to 49 growers, Renew to 62 growers, and Koto to 86 growers. One grower who received one peck of Victory in 1941, increased it considerably in both 1941 and 1942 so that lot of seed became a considerable source of Victory in 1943 and 1944.

Table III Earlier distributions of Cereals and Flax Varieties produced by the North Dakota Agricultural Experiment Station

Variety	Breeder	Date of Introduction
Oats		
Rainbow	Selected by T. E. Stoa from "Green Russian"	1929 and 1930
Flax		
Bison	Dr. H. L. Bolley	1912 to 1925
Buda	Dr. H. L. Bolley	*1906 to 1921
Linota	T. E. Stoa	*1916 to 1925
Walsh	H. D. Long**	1931
Bolley Golden	Dr. H. L. Bolley	*1924 to 1932
Smoky Golden	Dr. H. L. Bolley	1939
Viking	O. A. Heggeness	*1926 to 1932

*The first date represents the date of either the first cross or first selection, the last date the date of general introduction.
**Not now connected with the Station. Mr. Long is a former employee of the Botany Department.

Table IV Corn Single Crosses used for production of Hybrid Seed Corn distributed in 1943 and 1944

	1944		1943	
Nodak Hybrids	Number of growers	Number of acres	Number of growers	Number of acres
201 (82 day)	14	200	3	37
202 (82 day)	4	158½	4	61
203 (80 day)	3	82	1	20
204 (83 day)	1	20	1	10
301 (84 day)	3	98	....	....
302 (N. Dak. produced Wis. 279) 85 - 90 day	5	280	3	150½
401 (86 day)	4	90	....	....
402 (87 day)	1	5	....	....
501 (N. Dak. produced Wis. 355) 95 day	4	250	4	120

All of the Nodak hybrids are yellow dents. Earliness has been stressed. The 1943 planting of single crosses produced about 12,000 pounds of shelled hybrid seed corn, and the 1944 planting will produce a little over 1,000,000 pounds of shelled seed corn, or enough to plant nearly 150,000 acres with hybrid seed corn in 1945.

BACTERIAL BLIGHT of Austrian Field Peas

In a series of tests conducted by W. E. Brentzel, Plant Pathologist, using various seed disinfectants both mercury containing, and the newer non-mercury compounds, it did not appear that the emergence of Austrian field peas infected with bacterial blight was improved. Blight developed in all rows, whether the seed was treated or not.