



VIEW OF THE TILLAGE AND ROTATION FIELD

At Dickinson Substation, in 1939, the 33rd year of continuous operation. Right, Pilot wheat on green manure fallow and Gopher Oats on disked corn ground. Results of crop yields on the various tillage methods form the most important phase of this long-time study at Dickinson.

is favorable to small grains retards corn so that it may not yield well. Also a dry spring may delay the germination of corn so that it gets a late start and never produces well. In some seasons, cutworms have been responsible for poor stands and low yields. Occasionally, grasshoppers may eat the silks and foliage and prevent development of the ear. Yet corn is one of the most dependable forage crops and is used on most farms and ranches.

The long periods of drought and low yields like those of 1934 to 1938 show the hazards of any type of farming or ranching in the area. They emphasize the necessity of having strong reserves of feed and

the importance of limiting numbers of livestock so that feed in storage in the granary or on the range will be sufficient to carry through more than one bad year.

Considerable satisfaction may be derived from the fact that yields of wheat, oats, and barley in 1939 were nearly double the long-time average of these crops and were not far below the better crops harvested in the earlier years of the station. This indicates that soils in the area which have been handled carefully still have the inherent capacity to produce high yields of crops when soil moisture and other conditions are favorable.

“BOUNTY” TOMATO¹

PRELIMINARY REPORT AND DESCRIPTION

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“**B**OUNTY” is an early, determinate-vine tomato variety that bears good yields of well-shaped fruits free from dark green overcolor of the stem end.

Bounty has been developed at the North Dakota Agricultural Experiment Station from a cross between the Allred variety, a Station introduction of 1937, and Break-o'-Day, a variety developed

¹ Assistance in the preparation of this material was furnished by personnel of the Works Progress Administration for North Dakota and by personnel of Student Aid and Resident Projects of the National Youth Administration. The co-operation of Charles, Henry and Robert Peterson in growing large populations of Break-o'-Day x Allred trial material is gratefully acknowledged.



“BOUNTY”

by the United States Department of Agriculture. Bounty combines the early-ripening, self-pruning, and uniform color advantages of Allred with good shape and quality of fruit from Break-o'-Day.

This new variety has been developed in the work of Purnell Project No. 26, a station tomato-breeding project organized by Dr. A. F. Yeager, Station horticulturist from 1919 to 1937. The Break-o'-Day x Allred cross was made and the material grown through the second generation under Dr. Yeager's direction. Further selection to the seventh generation, in continuation of the same project at this station, resulted in the promising trial material distributed under the number “N.D. 40” to experiment stations and other cooperators in 1940. Bounty is a further selection from this material.

Pleasing flavor, depth, smoothness, and firmness of fruit contribute to the high culinary quality and promise of this new variety. Seed of Bounty is being distributed to the seed trade.

Bounty Tomato in Standard Yield Trials

To provide information of yielding ability and market quality, Bounty was grown in standard field trials in 1940 with six other varieties in the Station plots at Fargo

and at the Dominion Experimental Station at Morden, Manitoba. Bounty was grown in comparison with the determinate-vine varieties Allred, Bison, Firesteel, and Victor, and with Break-o'-Day and Earliana. Bison and Earliana are commonly grown throughout this region; Firesteel is a promising variety developed by Mr. Clare Barber, Firesteel Gardens, Mitchell, South Dakota; and the other varieties were included because of their relation to Bounty as indicated in Table 1.

Seed of the seven trial varieties was sown April 15, and plants set to the field in seven plots at each location May 30. One 15-plant row of each variety was planted in random position in each plot at Fargo, and rows of six plants each were similarly distributed in the plots at Morden. Plants were spaced 3 by 5 feet at Fargo and 4 by 5 feet at Morden. The growing seasons were respectively 105 and 117 days. Total yields of ripe fruit and calculated acre yields for tomato varieties in these trials are presented in Table 2.

Table 1—TOMATO VARIETIES IN TRIALS WITH "BOUNTY"—1940

Variety	Parentage	Developed by	Available to the public
Bounty.....	Break-o'-Day x Allred.....	North Dakota Agricultural Experiment Station	1941
Victor.....	" " " "	North Dakota Agricultural Experiment Station and Michigan Agricultural Experiment Station	1941
Allstate ¹	" " " "	North Dakota Agricultural Experiment Station, Michigan Agricultural Experiment Station, and The House of Gurney, Inc.	1940
Firesteel.....	Bison x Pritchard.....	Mr. Clare Barber, Firesteel Gardens, Mitchell, So. Dakota	1940
Allred ²	"N.D. 216".....	North Dakota Agricultural Experiment Station	1938
Bison.....	Red River x Cooper's Special.....	North Dakota Agricultural Experiment Station	1931
Break-o'-Day.....	Marglobe x Marvana.....	United States Department of Agriculture	1931
Earliana.....	Stone.....	Johnson and Stokes	1900

¹ This variety, closely similar to Victor in its later development, while not grown in these trials is included in this table to complete the list of recently introduced varieties which may be credited, wholly or in part, to the North Dakota Agricultural Experiment Station Purnell Project No. 26.

² Developed from a selection, "N.D. 216", found in 1933 in a mixed planting which included material from crosses between Bison, and Bison x Ohio Red selections, and selections having "uniform color" or absence of green overcolor of the stem end.

Table 2—TOMATO VARIETY YIELDS—RANDOMIZED BLOCK TRIALS

North Dakota Agricultural Experiment Station			Dominion Experimental Station* Morden, Manitoba		
Variety	Pounds per plant to Sept. 12 (105 days)	Calculated bushels per acre	Variety	Pounds per plant to Sept. 24 (117 days)	Calculated bushels per acre
	Plants spaced 3 by 5 feet			Plants spaced 4 by 5 feet	
Bounty	12.34	717	Bounty	21.16	922
Firesteel	11.57	672	Earliana	19.32	842
Victor	11.14	647	Victor	18.98	827
Earliana	10.99	638	Bison	14.42	628
Bison	10.26	596	Allred	14.11	615
Allred	10.16	590	Firesteel	13.22	576
Break-o'-Day	7.90	459	Break-o'-Day	9.20	401
Significant difference; odds of 22:1....	1.02 lb.	58 bu.		1.82 lb.	78 bu.
Standard error of a mean yield	3.4 percent			4.1 percent	

* This trial was made by R. M. Adamson, Assistant in Vegetables, at the Dominion Experimental Station, Morden, Manitoba, Canada. Mr. Adamson's work and the data supplied are gratefully acknowledged and appreciation is expressed for the facilities provided by the Dominion Station.

Bounty produced 12.34 pounds of ripe fruit to the plant at Fargo and 21.16 pounds per plant at Morden. The calculated yields were 717 and 922 to the acre, respectively.

In total yield of ripe fruit Bounty averaged 10 percent more than Earliana and Victor, 30 percent more than Firesteel, 35 percent more than Allred and Bison, and 90 percent more than Break-o'-Day.

Bounty averaged 1.6 pounds of fruit per plant more than Earliana, which ranked second, and 1.7 pounds per plant more than Victor,

which ranked third in these trials. This difference, equivalent to 80 bushels to the acre in favor of Bounty, is highly significant, with odds more than 100:1 that it is due to the varieties themselves.

Yield of Graded Fruit

Weights of cracked and misshapen fruits were subtracted from the total yield of each variety in the randomized block trial in the Station plots at Fargo. The yields of graded fruits are recorded in Table 3.

Table 3—YIELDS OF GRADED FRUIT—RANDOMIZED BLOCK TRIAL
North Dakota Agricultural Experiment Station

Variety	Pounds per plant to September 12	Calculated yield bushels per acre
Bounty	9.52	553
Victor	8.46	491
Firesteel	8.36	486
Break-o'-Day	6.66	398
Earliana	5.53	321
Allred	4.84	281
Bison	4.30	250
Significant difference; odds of 22:1	.76 lb.	44 bu.
Standard error of a mean yield		3.9 percent

Bounty produced slightly more than a pound of graded fruit to the plant more than Victor, the next ranking variety in this respect. This difference, of the order of 60 bushels to the acre, is significant, with odds more than 19:1 that it is not due to chance.

In this trial Bounty produced 5.22 pounds more graded fruit and 3.14 pounds less rough and cracked fruit to the plant than Bison, the variety most commonly grown in North Dakota. In terms of graded fruit Bounty produced in excess of 12 percent more than Victor and Firesteel, 35 percent more than Break-o'-Day, 70 percent more than Earliana, 95 percent more than Allred, and 120 percent (or at the rate of 300 bushels to the acre) more than Bison.

Reports from Other States

Bounty (N.D. 40) yielded at the rate of 812 bushels to the acre under seven irrigations at the Panhandle Agricultural Experiment Station* at Goodwell, Oklahoma. This yield was the highest of 18 varieties comparably grown and was approximately 15, 40, and 45 percent more than the respective yields of Allred, Bison, and Break-o'-Day.

Three of the varieties grown in the trials at Fargo and Morden were represented in the tomato variety and strain trials of the Pennsylvania Agricultural Experiment Station.** N. D. 40 [Bounty], Earliana, and Mich. 4137 [Victor] were grown with the following results (abstracted from the Pennsylvania report):

Variety	Total Yield tons per acre	Marketable yield tons per acre	Shape of Fruit		Average weight of marketable fruit oz.
			Intermediate percent	Globe percent	
N. D. 40 [Bounty].....	6.5	5.4	...	100	4.64
Earliana	5.5	4.	40	60	4.16
Mich. 4137 [Victor]....	4.4	3.2	40	60	4.16

*Information by correspondence from Mr. Hugh J. Thomson, Horticulturist.

**Rahn, E. M. "Tomato Variety and Strain Trials, 1940." Paper No. 999, Journal Series of the Pennsylvania Agricultural Experiment Station.