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8-1-1923

Varieties of Corn for South Dakota

A.N. Hume

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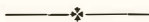
Hume, A.N., "Varieties of Corn for South Dakota" (1923). *Bulletins*. Paper 204.
http://openprairie.sdstate.edu/agexperimentsta_bulletins/204

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VARIETIES OF CORN FOR SOUTH DAKOTA

By

A. N. HUME



Agronomy Department

AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE COLLEGE OF
AGRICULTURE AND MECHANIC ARTS

Brookings, South Dakota

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VARIETIES OF CORN FOR SOUTH DAKOTA

By

The Department of Agronomy

Written by
A. N. Hume

If one should attempt to even mention all the "varieties" of corn that have been or are produced in this state, one would apparently need to close the list with the words "other varieties too numerous to mention." The number of possible varieties is indeed great enough to become confusing. However, within a long term of years, several varieties have been developed that are very well known and that may serve as standards for judging other varieties. They may also become bases for breeding plot systems.

Variety Tests of Corn at Brookings

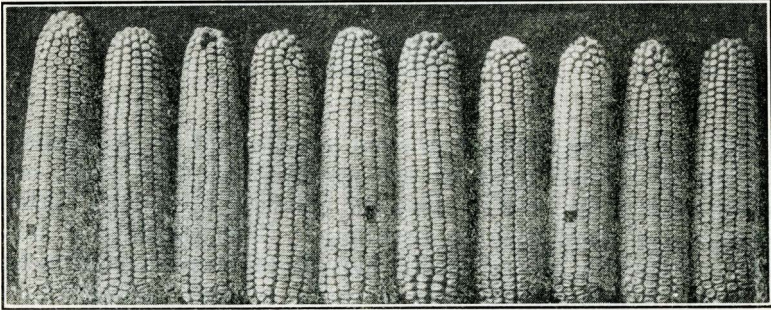
Minnesota 13 has long been one of the commonest varieties of corn in the area represented by Brookings, due partly to its success under widespread conditions, but also due to its position in early Experiment Station tests. Certain of these tests may be abstracted from South Dakota Bulletin No. 181, as follows:

Comparative Yields of Several Well Known Corn Varieties
at Brookings

Name of Variety	Yield in Bu. per Acre for Given Yr.			Average
	1914	1915	1916	
Minnesota 13	54.7	63.0	68.0	61.9
Silver King (Wis. 7)...	75.5	45.0	61.5	60.6
Dakota White	79.5	40.5	51.0	57.0
Golden Glow	62.5	48.0	57.0	55.8
Northwestern Dent	53.2	44.3	63.0	53.5
Brown County Dent	39.0	32.3	35.3	35.5

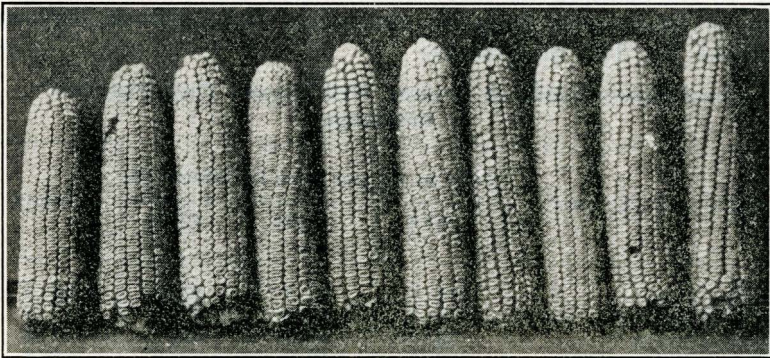
Minnesota 13 was recorded as South Dakota 86, and under whatever name or number the variety has been found suitable for the conditions of a great area of the northern

half of the state. This is further emphasized by the fact that Minnesota 13 also yielded well at Highmore. The following table compares it with two other varieties at that place that were also very well adapted:



Minnesota No. 13

Minnesota No. 13 was introduced into our state at Brookings as South Dakota No. 86. As originally introduced, it is a medium early yellow dent variety adapted to the east central counties of South Dakota. Ears, seven to eight inches, length; six to eight and one-half inches, circumference. Kernels, medium length, with dimple indentation. Cob, red. The sample shown in the photograph was picked from the seed stocks of Fred Rilling, Brookings, crop of 1922, and consists of typical ears.



Alta

Alta is a variety of yellow dent corn adapted to the central and northern and western counties. It is a contribution from Highmore substation, selected from Minnesota No. 13 (S. D. No. 86). It has also produced good yields at Eureka substation. The sample illustrated is merely a selection of ears from crib corn, which are the only ones available at present; fairly representative, however.

Comparative Yields of Three Varieties Adapted to Highmore Conditions

(Abstracted from Bulletin 181.)

Name of Variety	Yield in Bu. per Acre in Given Year					Average
	1912	1913	1914	1915	1916	
Minnesota 13	18.6	4.2	6.0	49.9	28.3	21.4
Ardmore Yellow	21.9	8.6	8.8	37.5	30.3	21.4
Martin's White Dent..	25.9	.5	6.2	43.8	29.3	21.1

Minnesota 13 as such is not only generally well adapted for central South Dakota conditions but a strain selected from it at the Highmore substation, namely, **Alta**, has been widely employed for locations in the central and northern part of the state. At the present writing only comparatively recent yields are put down of some varieties that are similar to one another and presumably comparable.

Comparative Yields of Several Varieties at Highmore, Including Alta Corn

Yield in Bushels of Ear Corn per Acre for Given Year							
Name of Variety	1917	1918	1919	1920	1921	1922	Average
Golden Glow, S. D. 375	9.5	33.0	23.9	55.4	3.6	35.53	26.82
Northwestern Dent,							
S. D. 971	17.5	36.4	28.6	38.9	6.6	31.66	26.61
Alta, S. D. 1095.....	15.8	31.47	23.6	33.6	3.3	39.64	24.57
Silver King, S. D. 371	5.6	29.9	20.8	53.1	2.9	31.42	23.96
White Cap, S. D. 369.	10.4	27.9	25.2	38.4	2.7	37.14	23.62

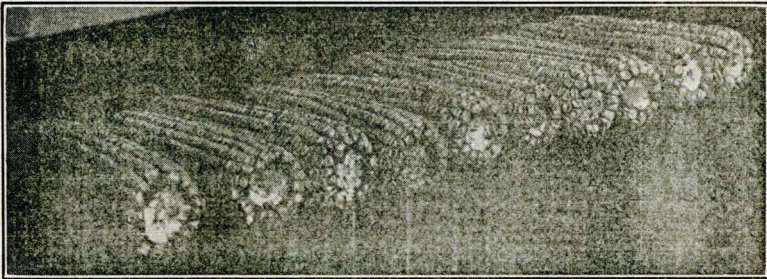
It is evident from the foregoing that Alta averaged lower according to the figures given than either Golden Glow or Northwestern Dent. The higher yield for the former is evidently due to an extra number of bushels produced in 1920. Northwestern Dent is also ahead of Alta in yield according to present figures, and there is no discounting it as a most excellent variety for the conditions given. However, it is not a variety of standard color. If a yellow, or a white variety is required in Highmore area, Alta or Silver King (Wis. 7) are likely to be satisfactory as a basis for production.

Such a statement is in accord with variety tests at Eureka substation, as may be noted from the following:

Yields in Bushels of Ear Corn per Acre, from Some Well Known Varieties at Eureka Substation

Name of Variety	Yield in Bu. per Acre in Given Year					Average
	1922	1921	1920	1919	1918	
Northwestern Dent,						
S. D. 971	38.9	21.0	26.6	5.8	23.07	
Alta, S. D. 1095.....	40.2	23.7	22.1	3.1	22.27	
Eureka, S. D. 86.....	33.3	19.3	23.17	10.8	21.65	
Rainbow, S. D. 973....	44.3	17.0	15.7	1.8	19.7	
Brown County Dent,						
S. D. 373	39.7	17.2	14.0	6.4	18.87	
White Cap, S. D. 369..	29.5	16.8	21.4	5.8	18.37	

It is easy to note from the foregoing that Northwestern Dent has produced the highest average yield, on the basis of the figures given for bushels of ear corn per acre. However, the higher average for said variety depends upon only two years out of four and Alta ranks next, with (Minnesota 13) Eureka S. D. 86 ranking next. Both of these selections just mentioned were made from Minnesota 13, which is not



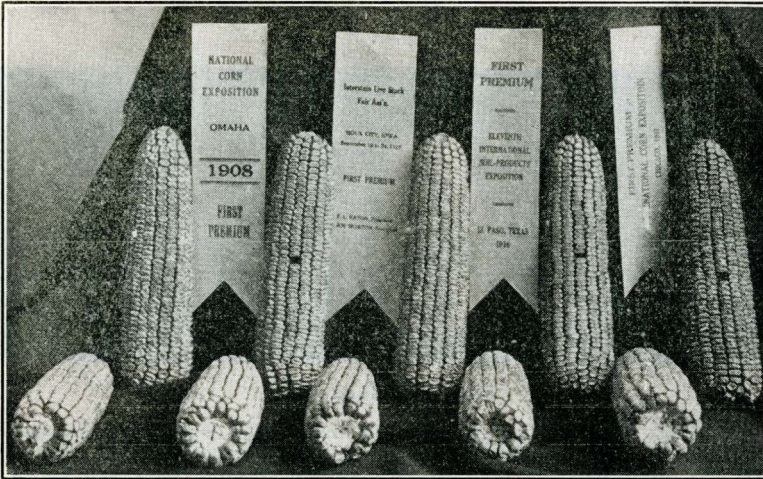
Northwestern Dent

Northwestern Dent has a well deserved reputation for earliness and for hardiness as a variety for later planting when rainfall is limited. Ears are relatively long, slightly tapering. Kernels, dark red with brownish crowns; cobs, white. Kernels are indented so the variety is named accordingly, but it has much appearance of being a dent and flint cross. The shanks are relatively thick, and the kernels relatively shallow, at the butts of the ears. The percentage of corn on the ear is observed to be actually less than that of other dent varieties, corresponding to the percentage in flint corn. Produce Northwestern Dent for a feeder corn north of Codington county, and throughout the western portion.

only a recommendation of the selections themselves but an illustration of how one single yellow variety of corn (Minnesota 13) has become well adapted through a term of years, to a wide section of our state represented by Brookings, Highmore, Eureka. Applying to our own area, as it does, this is a most interesting illustration of how a single "variety" of corn (perhaps by becoming separated into several groups of biotypes) can accommodate itself and take a prominent place over a wide range of conditions.

Wimple's Yellow Dent

While Minnesota 13 and its selections, South Dakota 86 and Alta, are very well adapted to the northern half of the state, a somewhat larger variety is more suitable for the conditions farther south. One of the best known varieties for the area mentioned is Wimple's Yellow Dent, which was developed by Mr. A. J. Wimple of Beresford. No corn breeder in South Dakota has worked more consistently with ear-to-row methods than Mr. Wimple, over a period of 13 years, and by methods of ear selection a much longer time than that.



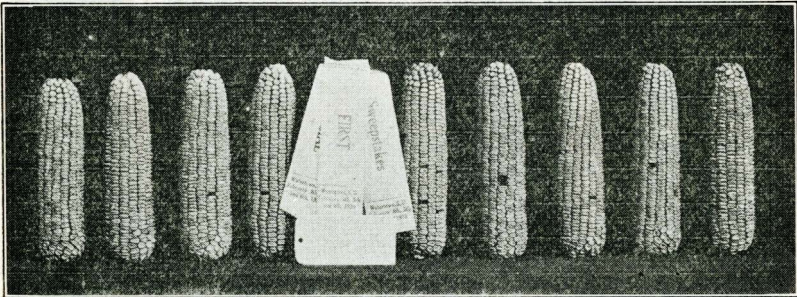
Wimple's Yellow Dent

Wimple's Yellow Dent is in almost universal favor, throughout the southern half of the state. It is slightly earlier than Reid's Yellow Dent and slightly later than Minnesota 13. Ears, 8 to 9 inches, length; 6.5 to 7 inches, circumference; cobs, deep red. Kernels, golden yellow, pinch dented. Percentage of corn, high.

Experiment Station tests at Brookings have indicated that Wimple's Yellow Dent produced at that place from seed secured directly from Mr. Wimple at Beresford will be less mature (contain a higher percentage of water) than the smaller varieties. The variety has been produced successfully, however, as far north as Brookings and is almost universally recognized throughout the southern half of the state.

Fulton Yellow Dent

Fulton Yellow Dent is a variety of corn well adapted to an area of South Dakota somewhat farther north than that occupied by Wimple's Yellow Dent. It was selected and named at Fulton in Hanson county, by H. E. Dawes and Henry Thompson. Dawes and Thompson made their original selections from Shabbino corn, which was previously introduced from Wisconsin. Mr. Dawes at Fulton followed an ear-to-row system of breeding corn for several years, the increase field being conducted on the farm of Mr. Thompson. In the meantime, Fulton Yellow Dent has become widely established in the central counties and as far north as Spink county.



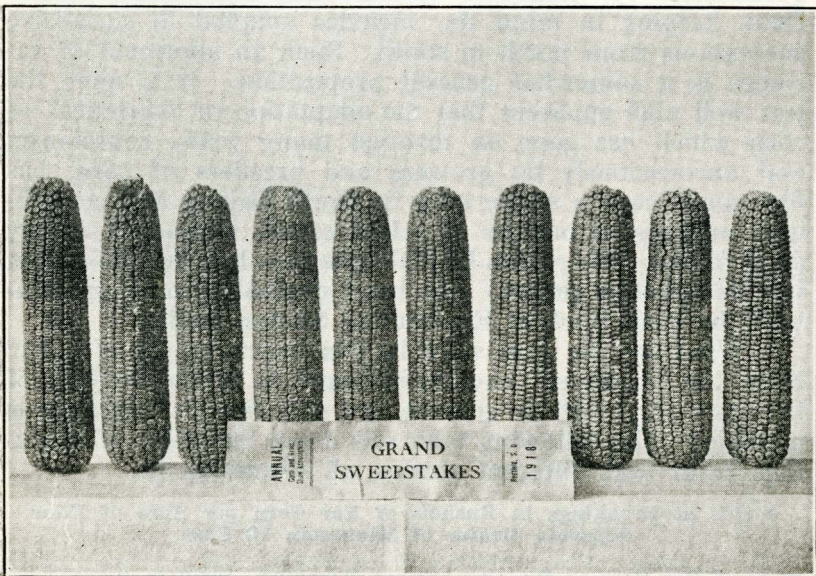
Fulton Yellow Dent

Fulton Yellow Dent is adapted to eastern South Dakota south of the southern line of Spink county and especially between that line and the Southern line of Hanson county. Typical ears are about 8 inches in length by 5 to 6.5 inches in circumference. The ears taper characteristically more rapidly toward the tops. Cobs, deep red. Fourteen to sixteen rows of kernels, medium rough, and with considerable depth.

Above illustration made from first premium, State Corn and Grain Show, Watertown, 1919. Corn of G. W. Preston, Hitchcock.

Reid's Yellow Dent

Reid's Yellow Dent is a variety of corn for southern South Dakota. It is prominently grown in Union county by such winners in the annual State Corn Show as John P. Thompson of Elk Point, and it is regularly produced as far north as Ethan, by H. S. Seitz & Sons, who brought seed of the variety from Illinois, not many years since. The writer has tested out numerous ears of Reid's Yellow Dent, secured from the growers just mentioned, in corn-breeding plots at Brookings, the results indicating that the variety in question became less mature in the ordinary season than other ears in the All Dakota breeding plot. Ethan is near



Reid's Yellow Dent

This variety is adapted to eastern and southern South Dakota south of the southern line of Minnehaha, McCook and Davison counties. Its history dates back to 1846 when Robert Reid brought corn from Brown county, Ohio, to Illinois. It is one of the most widely cultivated varieties in the United States. It has yellow color, with characteristic tinge of the tip kernels, serving to distinguish it from other yellow varieties. Ears are: markedly cylindrical; 8 to 9 inches, length; 6 to 6.5 inches, circumference; cobs, red.

The illustration is from the corn of John P. Thompson, sweepstakes sample in the annual Corn and Grain Show, produced at Elk Point in Union county.

the southern line of Davison county and the northern line of Douglas, which line is far enough north for the limit of Reid's Yellow Dent as generally known. It is adapted farther south than Wimple's Yellow Dent, the latter farther south than Fulton Yellow Dent, and the latter in turn farther south than Minnesota 13 (S. D. 86) and Alta.

Further Variety Improvement

One of the main purposes in writing this short bulletin is to name and briefly describe some corn varieties that are outstanding and that may be safely employed in the several sections of South Dakota. These may be named, as Alta, Minnesota 13, Fulton Yellow Dent, Silver King (white) (Wisconsin 7), Wimple's Yellow Dent and Reid's Yellow Dent, keeping in mind the varieties adapted in successive successions from north to south. Such an allotment of varieties is a somewhat general proposition. It is none the less well nigh apparent that the adaptation of "varieties" of corn which has gone on through many years, consciously and unconsciously by growers and breeders of corn, has first made corn a staple crop in South Dakota and contributed millions of bushels of actual cereal, instead of merely good fodder. There can be little question but that this silent yet tremendous process has been promoted very substantially by corn work at Experiment Station fields.

What are the next steps in this improvement of corn? Now that "varieties" have been found to fit the sections of the state very well in general, are still further attainments possible? The following table sets down the yields at Brookings from four different strains, all Minnesota 13:

Yields at Brookings in Bushels of Ear Corn per Acre of Four Separate Strains of Minnesota 13 Corn

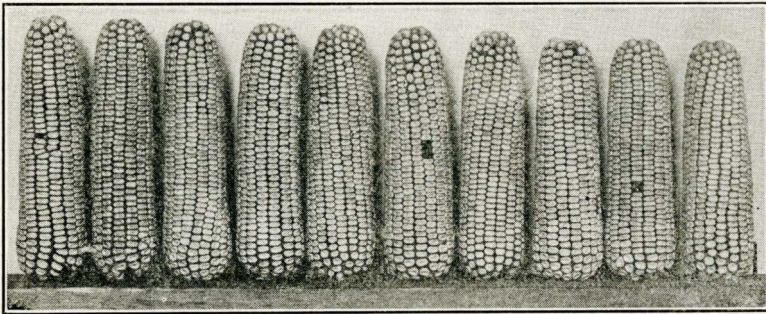
Yield of Ear Corn in Bu. per Acre at Brookings Field in Given Year					
Name of Strain of Minn. 13	1917	1918	1919	1920	Average
Ohio Increase	53.3	59.7	58.4	67.0	59.6
Illinois Increase	50.7	63.8	42.9	71.7	57.2
Brookings S. D. 86.....	61.3	60.3	39.3	30.9	47.9
Alta S. D. 1095	35.2	55.2	34.9	13.6	34.7

The present purpose as already intimated is to suggest some varieties, and not to emphasize particular breeding

systems. The foregoing figures may suggest that corn improvement is still going on, and that it is being influenced by breeding systems at Experiment Stations in South Dakota. Brookings 86 is exceeded in yield by both the Ohio Increase plot and the Illinois Increase plot. The Alta, as would be expected, yielded less apparently because it was selected in another direction. It is encouraging to observe that improvement is still going on.

All Dakota Corn

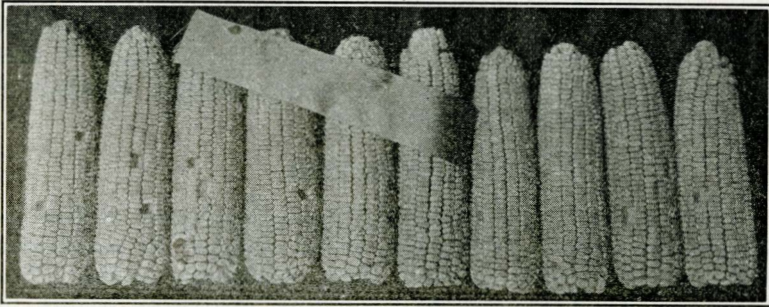
"All Dakota" is a variety of corn developed at Brookings by the writer. It appears to be adapted to conditions of the northern half of the state, maturing earlier than Minnesota 13. Type ears at Brookings are seven inches in length, carrying sixteen rows of kernels. The development of this corn came out of an attempt to devise a corn breeding plot that would utilize all the rules for corn improvement. These latter may be comprised in (1) continuous selection, (2) hybridization, and (3) introduction of new strains. All Dakota corn was selected out of Golden Glow ears furnished the writer by Alfred Wenz, of Bath, in 1916. Since this beginning with ears of Golden Glow, ears of the following varieties have been introduced and assimilated into "All Dakota": Wimple's Yellow Dent, Fulton Yellow



All Dakota

All Dakota corn succeeds in the northern half of the state, north of the southern line of Brookings and Beadle counties. Ears are seven to eight inches in length (at Brookings), yellow, relatively smooth indentation, and considerable depth of kernel. The illustration is that of first and sweepstakes showings at 1922 Little International, State College, from the corn of Donald Warnick, Leola, McPherson county.

Dent, South Dakota 86, Low Protein (Brookings), McElhenney's Yellow, Blackman's Wisconsin 7 (white), Wimple's Flint.



Silver King (Wisconsin 7)

For the central and north central portions of South Dakota. A white corn, ears 7 to 8 inches long, 6 to 6.5 inches in circumference; 14 to 16 rows of kernels; relatively rough indentation. No variety has wider adaptation throughout the state. It is universally favored in the state where white corn is desired. Illustration is district sweepstakes for third district, South Dakota Corn and Grain Show, 1923. The corn of Hugh Nash, Redfield.

BROOKINGS

	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	0.22	0.17	1.06	0.26	1.20	1.07	0.61	0.28	0.02	0.22	0.18	1.47	1.54	0.19	0.07	0.34	0.09	0.40
February	1.00	0.02	0.28	1.89	1.57	0.40	0.52	0.24	0.09	0.40	1.12	0.32	0.47	0.14	0.63	0.24	0.05	1.73
March	0.68	0.58	0.55	1.16	0.37	0.35	0.53	0.26	0.45	0.42	0.18	0.50	1.09	0.44	0.73	1.85	1.49	0.79
April	1.61	1.40	1.67	2.10	1.16	2.34	1.62	3.36	2.24	1.64	2.03	2.95	3.09	1.28	1.90	2.95	1.42	0.42
May	6.14	3.51	2.36	6.46	4.85	0.87	1.90	6.98	3.60	4.16	2.12	3.72	3.08	3.40	3.87	3.84	2.99	1.82
June	6.09	4.83	5.65	6.35	2.29	1.85	3.78	2.09	1.96	6.67	3.28	4.27	3.49	1.85	9.30	7.27	0.85	3.75
July	0.98	1.86	3.77	4.69	2.44	1.68	3.32	2.52	2.99	1.62	3.04	0.40	2.03	3.95	5.60	5.45	3.44	2.81
August	4.54	4.28	1.41	2.37	3.39	2.46	3.81	4.68	1.33	3.16	3.52	2.03	1.20	4.19	1.48	2.15	2.11	1.70
September	2.16	5.13	1.28	3.89	1.67	0.96	3.08	1.61	1.55	3.32	2.68	0.84	2.89	0.72	1.69	1.99	4.25	0.36
October	1.50	3.01	0.96	1.43	1.71	0.38	5.12	0.96	1.18	2.21	1.37	0.45	0.12	1.56	1.14	0.66	0.27	0.81
November	2.45	0.89	0.10	1.30	0.65	0.17	0.23	0.00	0.81	T	0.28	0.03	0.04	1.61	1.35	1.30	0.50	3.08
December	T	0.52	1.12	0.42	1.14	0.10	0.42	0.20	0.09	0.33	0.62	0.36	0.31	1.09	0.10	0.30	0.10	0.20
Total	22.77	26.26	20.21	32.17	22.44	12.63	24.95	23.18	16.31	24.15	20.42	17.34	19.35	20.42	27.86	28.34	17.56	17.87

COTTONWOOD

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	0.66	T	0.17	0.16	0.03	0.39	0.04	0.45	0.32	0.04	0.27	0.17	0.94
February	0.97	0.15	0.05	0.10	1.18	1.57	0.02	1.50	1.50	0.29	0.54	0.10	0.32
March	0.76	T	3.00	0.43	0.35	0.46	0.04	0.31	0.34	0.71	0.58	0.17	0.00
April	1.06	0.85	3.32	1.15	2.26	2.80	0.81	0.80	2.27	3.57	2.80	0.40	1.25
May	2.54	1.10	1.18	2.95	2.35	6.61	3.87	3.30	2.78	1.29	5.83	2.91	2.87
June	1.30	0.64	0.95	0.59	1.64	4.79	1.83	0.62	1.37	4.97	4.02	0.78	5.43
July	1.11	0.59	2.42	0.81	1.04	4.58	1.80	0.90	2.29	2.05	0.67	3.58	6.48
August	0.48	2.41	3.42	1.84	1.88	2.51	2.22	2.00	3.43	0.20	1.87	1.10	0.72
September	0.82	3.59	1.30	1.15	1.19	2.42	0.18	1.17	1.43	0.25	1.63	0.41	0.16
October	0.32	1.15	0.11	0.76	2.23	0.90	0.57	0.14	0.28	2.03	0.93	0.78	0.92
November	0.53	0.20	T	0.14	0.02	T	0.15	0.39	0.11	0.71	0.36	0.29	2.32
December	3.00	0.42	0.12	0.38	0.84	0.10	0.14	0.50	0.25	0.20	0.18	0.21	0.00
Total	12.65	11.10	16.04	10.46	15.28	27.31	11.67	12.08	16.37	16.31	19.68	10.90	21.41

EUREKA

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	0.10	0.60	0.50	0.25	0.10	0.22	0.90	0.79	0.40	0.14	0.07	0.16	0.44	0.16
February	0.45	1.70	0.73	0.40	0.03	0.05	1.08	0.13	0.20	0.50	1.04	0.08	0.05	0.34
March	0.14	1.23	0.62	1.05	0.09	0.13	0.23	1.78	1.46	0.58	0.52	0.27	1.27	0.30
April	0.50	0.82	2.24	1.29	0.68	2.07	1.83	0.88	2.18	1.98	1.28	1.63	3.74	0.89
May	2.65	0.42	0.94	3.37	1.97	2.20	2.58	3.57	1.30	1.97	3.68	1.82	3.31	3.39
June	3.35	3.80	1.29	1.50	2.91	4.28	4.66	4.16	1.61	0.93	2.29	4.26	0.52	3.38
July	2.21	0.53	0.43	2.19	2.16	1.25	3.38	—	1.04	1.03	4.08	2.49	4.57	1.66
August	1.39	2.60	3.27	3.27	1.53	2.11	2.47	4.62	0.93	1.77	0.77	2.05	4.45	0.45
September	1.25	3.65	1.15	1.43	0.54	0.70	3.74	1.05	0.67	0.36	0.04	3.90	3.29	0.54
October	0.17	0.18	0.61	0.07	1.52	0.87	3.10	0.29	0.06	0.55	1.13	0.36	1.64	0.63
November	0.60	T	0.88	T	0.06	T	0.56	0.14	2.00	0.53	0.12	0.54	0.36	3.90
December	2.40	0.25	0.80	0.11	0.52	0.53	0.36	0.06	0.75	0.20	0.32	0.09	0.24	0.23
Total	15.21	15.78	13.79	14.93	12.11	14.41	24.89	17.47	12.60	10.54	12.62	16.42	23.88	16.47

HIGHMORE

	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
January	T	0.26	0.82	0.11	0.13	0.05	0.13	0.43	1.40	1.12	0.60	0.10	0.27	0.25	0.45
February	0.53	0.34	0.19	0.39	0.11	0.30	0.62	1.28	0.27	0.52	0.25	1.35	0.53	T	0.93
March	0.00	0.13	0.58	2.54	0.27	0.87	0.45	0.37	0.74	1.27	0.45	1.24	1.20	0.49	1.05
April	1.35	0.30	1.40	0.32	1.05	1.27	3.65	2.50	0.89	2.79	2.57	1.96	2.56	1.78	0.93
May	2.68	4.72	0.94	2.31	2.20	4.56	2.23	3.48	4.15	2.04	3.57	6.63	6.04	2.60	2.78
June	5.78	1.69	3.74	0.09	1.31	0.97	4.09	4.87	4.54	2.04	1.59	1.95	7.35	0.55	3.6
July	2.49	1.81	0.85	2.69	1.44	1.79	2.01	5.55	2.10	1.91	5.26	2.65	3.56	3.1	2.85
August	3.53	3.74	0.66	2.52	3.39	1.20	1.16	0.78	4.10	0.68	1.88	0.82	2.47	3.08	0.41
September	0.62	1.70	0.89	3.06	0.71	0.53	1.01	2.36	2.75	2.03	0.62	0.54	1.51	4.79	0.48
October	2.19	1.04	0.24	1.05	0.20	0.61	1.92	1.15	0.58	0.06	0.49	2.16	0.75	1.20	0.19
November	1.39	0.71	0.40	0.35	0.00	0.03	—	0.32	0.13	0.07	1.10	1.80	0.84	0.33	2.83
December	0.31	1.41	0.44	0.44	0.35	0.28	0.25	0.20	0.47	0.27	0.86	0.15	0.20	0.20	0.35
Total	28.87	17.85	9.05	15.87	12.00	12.46	17.52	23.29	22.12	14.80	19.24	21.35	27.08	18.97	17.10

VIVIAN

	1915	1916	1917	1918	1919	1920	1921	1922
January	0.50	1.00	1.35	1.10	—	—	0.19	0.47
February	1.77	0.04	0.18	0.50	0.32	0.58	0.01	0.40
March	1.19	0.29	1.00	0.50	0.66	1.52	0.68	0.75
April	2.62	1.08	2.38	3.92	4.14	4.55	1.53	0.71
May	3.02	3.46	5.20	3.33	3.23	7.51	4.23	2.49
June	4.31	4.49	1.18	1.70	5.01	5.54	1.22	5.85
July	6.76	3.53	1.02	2.07	4.00	3.42	4.34	3.44
August	1.12	3.52	2.01	3.32	0.94	1.86	0.44	3.06
September	3.16	0.90	2.64	0.75	1.70	0.80	3.55	0.27
October	1.12	0.57	0.00	0.82	1.95	2.09	1.68	0.45
November	0.38	0.12	—	0.22	1.91	1.32	0.63	2.32
December	0.03	0.04	0.32	0.90	0.13	0.28	0.28	0.15
Total	25.98	19.04	17.28	19.13	23.99	29.47	18.78	20.66

LIST OF AVAILABLE PUBLICATIONS

Circular No. 1, Nitrogen from the Air.

Annual Reports, 1917, 1918, 1919, 1920.**Bulletins**

106. Sugar Beets in South Dakota.
129. Growing Pedigreed Sugar Beets.
131. Scabies (Mange) in Cattle.
132. Effects of Alkali Water on Dairy Products.
142. Sugar Beets in South Dakota.
143. Roughage for Fattening Lambs.
147. Effect of Alkali Water on Dairy Cows.
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157. Rape Pasture for Pigs in Corn-field.
158. Proso and Kaoliang for Table Use.
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162. First Annual Report of Vivian Experiment and Demonstration Farm.
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199. Sunflower Silage for Steers.
200. Winter Wheat in South Dakota.
201. Some Experiments with Spring Wheat in South Dakota.
202. The Chinch Bug.
203. Pasteurization of Market Milk in the Glass Enamelled Tank and in the Bottle.

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