

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU AND
BUREAU OF AGRICULTURAL ECONOMICS

In Cooperation with the

Iowa Weather and Crop Bureau

Annual Report for 1924

Reprinted from the Twenty-fifth Annual Iowa
Year Book of Agriculture

CHARLES D. REED, M. Sc. Agr.

Published by
THE STATE OF IOWA
Des Moines

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Iowa Weather and Crop Bureau

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Des Moines, Iowa

CHARLES D. REED, M. A., Wm.

THE STATE OF IOWA
DES MOINES

The Iowa Weather and Crop Bureau was established by an act of the Iowa Legislature in 1907. It is a part of the Iowa Department of Agriculture and is under the general supervision of the State Board of Agriculture. The Bureau is organized into two main divisions, the Weather Division and the Crop Division. The Weather Division is headed by the State Climatologist and the Crop Division is headed by the State Crop Commissioner. The Bureau is supported by the State of Iowa and the United States Department of Agriculture.

LETTER OF TRANSMITTAL

HON. JOHN HAMMILL, *Governor*.

Sir: I have the honor to submit herewith the thirty-fifth annual report of the Iowa Weather and Crop Bureau for the year 1924.

MARK G. THORNBURG,

Secretary of Agriculture.

Des Moines, Iowa, January 15, 1925.

HISTORICAL

The Iowa Weather and Crop Service was established by an Act passed by the Twenty-third General Assembly, and approved by the Governor April 25, 1890. On July 1, 1923, it became a bureau of the State Department of Agriculture by act of the 40th General Assembly.

The object of the Service is to co-operate with Government Bureaus in collecting crop statistics and meteorological data, and more widely disseminate weather forecasts and storms and frost warnings for the producers and shippers of perishable products, and to promote general knowledge of meteorological science and the climatology of the State.

In accordance with the Act, on the recommendation of the directors of the State Agricultural Society, J. R. Sage was duly commissioned as director by Governor Boies on June 3, 1890, and General Greeley, then Chief Signal Officer, U. S. Army detailed Dr. George M. Chappel to serve as assistant director of the State Service. Mr. J. R. Sage resigned as director December 31, 1907, and Dr. George M. Chappel was commissioned on January 1, 1908, as director, and served in that capacity until March 31, 1918, when he resigned and was succeeded by Charles D. Reed. Toward the close of the year, 1919, co-operation in estimating acreage and production of crops was begun with the U. S. Bureau of Markets and Crop Estimates now known as the U. S. Bureau of Agricultural Economics, of which Mr. Leslie M. Carl is Agricultural Statistician for Iowa.

OFFICE FORCE DECEMBER 31, 1924

Charles D. Reed, M. Sc. Agr., Meteorologist and Director.
J. Earl Cook, Statistician.
Wilma Bishop, Stenographer and Clerk.
C. T. Roseland, Clerk.

CO-OPERATING ORGANIZATIONS

U. S. Weather Bureau

Fred L. Disterdick, Assistant Meteorologist.
Arthur H. Christensen, Observer.
Warren J. Rice, Ass't Observer.
Ralph M. Aldrich, Minor Observer.

U. S. Bureau of Agricultural Economics Division of Crop and Livestock Estimates

Leslie M. Carl, Agricultural Statistician for Iowa.
Mabel E. Atwood, Clerk.
Mildred L. Switzer, Clerk.

ANNUAL REPORT, 1924

For convenient reference and comparison with past and future years, this report contains the summaries of the weekly, monthly, and annual bulletins of the Iowa Weather and Crop Bureau in co-operation with the U. S. Weather Bureau and the United States Bureau of Agricultural Economics for the year 1924.

The regular meteorological, climatological, and crop statistical work was maintained efficiently except that the funds for extra clerk hire are insufficient to properly check up and conduct correspondence in connection with the agricultural statistics collected by assessors. The annual statistics of about 212,000 farms, heretofore tabulated but not extensively checked up in county auditors' offices, are now tabulated and checked in this office, so far as about \$1,000 will reach in extra clerk hire, or about \$10 per county. More money could be very wisely spent in this, if available. Only \$7,500 was available for all salaries, extra clerks, traveling, office supplies, adding machine rentals and equipment, mailing, etc. Not less than \$10,000 should be appropriated. All Government and State crop statistics, including, pay of assessors, printing, postage, stationery, etc., in the State of Iowa cost less than 50c per farm.

By careful office methods, the date of mailing the 1923 assessors' statistics was reduced another 30 days to June 15, which is about the earliest possible, with the present appropriation, and under the present law that gives the assessor till April 15 to turn in his book.

Careful study of each individual township and close checking and careful supervision of assessors' work brought the 1923 acreage in farms up to 378,565 more acres than shown by the Government census in 1920.

Publications were distributed as follows: Monthly Climatological Data, about 15,000 copies; Weekly Weather-Crop Bulletin, about 18,000; Daily Weather Forecast Cards, to about 1,000 addresses. Of the bulletin, "Iowa Monthly Crop Report," about 6,000 copies were distributed each month. Five hundred copies of the Monthly Climatological Data are distributed each month through the United States Department of Agriculture, Weather Bureau, to scientific institutions and libraries in this and foreign countries. In co-operation with the U. S. Bureau of Agricultural Economics, about 6,000 mimeographed copies of special monthly crop bulletins were issued to the press, and about

6,600 mimeographed bulletins giving feed quotations twice each month at several markets were distributed mostly to farmers and feeders.

Radio is rapidly displacing all other forms of weather forecast distribution. About 30 daily telegrams were discontinued during the year. The radio-casting at the close of the year 1924 is as shown in the accompanying table. This ready means of reaching the farmers will stimulate forecasters to give more attention to harvest and haying forecasts.

WEATHER FORECASTS AND SUMMERS BY RADIO

Call Letters	Name and City	Wave Length (Meters)	Frequency (Kc.)	Power (Watts)	WEATHER FORECASTS (Central Time)	Weekly Weather and Crop Summary, Wednesday in Crop Season
KFNP	Hobby Field, Shenandoah, Iowa.	296	1,130	500	Iowa, Missouri, Nebraska, Kansas, 12:45 p. m., except Sunday; Iowa, Missouri and Nebraska 9:50 a. m., except Sunday and Tuesday; special warnings 2:00 p. m., and 6:00 p. m.	United States and Iowa, 6:00 p. m.
WOAW	Washington of the World, Omaha, Neb.	298	870	1,000	Nebraska, Iowa, Missouri, Minnesota, South Dakota and Kansas during unusual conditions exist.	U. S. and Iowa 9:45 a. m., and 12:00 noon.
WEAU	DeWittsden Bros. Co., Sioux City, Iowa.	275	1,000	300	Sioux City, Iowa, Nebraska, Minnesota and South Dakota - all-day forecast, Radio 300 miles, November 1 to April 1, 10:00 a. m., 11:50 a. m., 12:00 noon, 1:00 p. m., 1:30 p. m., 2:00 p. m., and special warnings 2:50 p. m., except Sunday and holidays.	Iowa 11:00 a. m., 1:00 p. m., and 5:00 p. m.; U. S. Summary Thurs. day, same hours.
WIO	Bankers Life Co., Des Moines, Iowa.	299	270	500	Des Moines and Iowa, and "Weather Conditions" 9:45 a. m., 11:00 noon, special warnings 2:00 p. m., and 4:00 p. m., except Sunday and holidays.	U. S. and Iowa 9:45 a. m., and 12:00 noon.
WOC	Palmer School, Davenport, Iowa.	48	650	5,000	Davenport and Iowa and Illinois, and "Weather Conditions" and river forecasts 1:00 p. m., except Sunday; Iowa and Illinois 9:00 p. m., except Sunday; special warnings sent as flashes.	United States, Iowa and Illinois 9:00 p. m.
WOL	Iowa State College, Ames, Iowa.	270	1,311	500	Iowa, except Sunday and holidays 9:30 a. m., 12:45 p. m., Iowa, Nebraska, Minnesota, South Dakota and Wisconsin 9:30 p. m., except Sunday.	United States, and Iowa 9:30 a. m., 12:45 p. m., and 9:30 p. m.
WIAK	Provers Journal, Stockman, Omaha, Neb.	278	1,060	250	Omaha, Nebraska and Iowa 10:30 a. m., and 1:35 p. m., Summary of rainfall last 24 hours, except Sunday and holidays.	

Barometer (reduced to sea level). The average pressure of the atmosphere for the year was 30.94 inches. The highest pressure was 31.96 inches at Keokuk on December 20. The lowest pressure was 28.79 inches at Des Moines on March 29. The range for the State was 2.27 inches.

Temperature. The mean temperature for the State was 46.4° or 1.5° below normal. The highest annual mean was 59.5° at Keokuk, Lee County. The lowest annual mean was 42.2° at Decorah, Winneshiek county. The highest temperature reported was 100° at Monroe, Jasper county, on August 3; at Columbus Junction, in Louisa county, on August 21 and other dates; at Inwood, in Lyon county, on August 25 and at Glenwood, in Mills county, on August 30. The lowest temperature reported was -36° at Washta, in Cherokee county, on January 5. The range for the State was 136°.

Precipitation. The average amount of rainfall and melted snow for the year was 31.39 inches, or 0.83 inch less than normal, and 1.89 inches more than the average for 1923. The greatest amount at any station was 43.85 inches, at Burlington, Des Moines county, and the least amount was 19.41 inches, at Inwood, in Lyon county. The greatest monthly precipitation was 14.92 inches, in Cass county, near Cumberland, in June. The least monthly amount was a "trace" at Harlan, Shelby county; Little Sioux, Harrison county; Logan, Harrison county, and Rockwell City, in Calhoun county, in November. The greatest amount in any 24 consecutive hours was 5.80 inches, at Washington, Washington county, July 24. Measurable precipitation occurred on an average of 93 days, 6 days more than in 1923 and 8 days more than normal.

Snowfall. The average amount of snowfall was 37.2 inches or 6.5 inches more than normal. The greatest amount reported from any station was 58.5 inches at Sioux Center, Sioux county, and the least amount was 13.9 inches at Bonaparte, Van Buren county. The greatest monthly snowfall was 28.1 inches at Oskaloosa, Mahaska county, in February.

Wind. The prevailing direction of the wind was from the northwest. The highest velocity reported was 59 miles per hour from the east at Sioux City, Woodbury county, on July 15.

Sunshine and Cloudiness. The average number of clear days was 177; partly cloudy, 97; cloudy, 92; as against 175 clear, 95 partly cloudy and 95 cloudy days in 1923. The average percentage of the possible amount of sunshine was 59, the same as the normal.

CLIMATOLOGY OF THE YEAR 1924

The year, 1924, with a mean temperature of 46.4° was 1.6° below normal. January, May, September, and December were notably cold, while October was unusually warm. New records for cold were established at many stations on December 28. Precipitation averaged 31.39 inches, which is 0.83 inch below normal. Snow, 37.2 inches, is 6.5 inches above normal. There were many damaging wind squalls, hailstorms, and glaze storms.

The dry, cool spring, the rainy June and cool summer, with frost a week earlier than usual, gave Iowa the poorest corn crop

since 1901, averaging only 28 bushels per acre, of unusually poor quality. Only one-third of the crop matured without frost damage. Small grain was excellent in yield and quality at harvest time, but was seriously damaged by wind and rain in shock. Hay turned out much better than expected. Potatoes and sugar beets were excellent. The honey yield was good.

SYNOPSIS BY MONTHS

Wintry weather prevailed in **January**, 1924, with the lowest temperatures on the 5th that have been experienced in the last 12 years. Barometer readings were unusually high on that date. Streams that had remained open generally through December froze over early in January. The ice was thick enough to cut by the end of the first week. Most of the precipitation fell on the 9th-10th, as moderately heavy rain in the central and eastern sections of the State, and as heavy, drifted snow in the northern division where traffic was delayed. Winter wheat and grasses were generally protected by snow cover during the periods of severe temperature.

February was warm but generally disagreeable. Precipitation was above normal. A glaze storm 3d-4th greatly damaged poles and wires, and another on the 16th, though less destructive to poles and wires, caused much damage to automobiles by skidding and much injury to falling pedestrians. Frost began leaving the ground toward the close of the month, making dirt roads nearly impassable.

Precipitation was frequent and generally above normal in **March**, cloudiness was excessive, and temperatures averaged below normal. In a storm on the 28th-30th barometer readings were unusually low, rain turned to ice and then to snow, and wires and trees were damaged. During this storm there was a copious deposit of brown dust evidently transported from some distant region. Practically no field work was accomplished. The weather was too cold for young pigs and lambs. Roads were in the worst condition in years.

April began with zero temperature, the lowest of record in the northwest part of the State, but warmer weather followed. The monthly range of temperature was 98°. Precipitation was less than half the normal. Conditions were favorable for outdoor work, except a heavy snow on the 11th in a belt from east to west north of the center of the State. Lack of moisture de-

layed germination of oats, and the starting of grass and winter wheat. Roads improved. Fruit bloomed earlier than usual.

May was dry and cold, except high temperatures on the 5th exceeding 90° at many stations. Frosts occurred in every week in nearly all portions of the State. The greatest damage occurred on the 11th and 24th. The two months of deficient rainfall became serious. This with the low temperature delayed germination of corn, which came up very unevenly, and much was replanted. The condition June 1 was nearly the worst of record. Oats, spring wheat, barley, alfalfa, grasses, and truck crops made little progress.

June continued generally cool, except a warm period 11th-19th. Frequent copious rains relieved the drouth, but made corn cultivation nearly impossible. Many fields were overtaken by weeds, and thousands of acres washed or drowned out. Small grains and grasses improved greatly. Destructive floods occurred in the west-central portion of the State, 23-24th, and in the east-central portion on the 28th. Unusually destructive wind squalls were frequent, the most widespread being on the 14th and 28th. On the latter date most of the State was covered and the damage in Des Moines was \$1,000,000.

July also was cool with only an occasional day above normal. Only two Julys have been cooler. Though the rainfall averaged nearly normal it was poorly distributed as to time and area, resulting in both flood and drouth. At Washington, Iowa, 5.80 inches of rain fell in 7 hours on the 24th, damaging crops, livestock, railroads, and highways. There was much damage from wind squalls and hail. Conditions were unfavorable for harvesting small grains and hay. Corn improved considerably, particularly in the southern portion of the State where it had been in the poorest condition.

August averaged just normal in temperature. Rains were frequent and heavy, and caused many local floods, the worst being at Cedar Rapids. Railroads were seriously damaged and thousands of acres of corn and small grain in shock were ruined. Numerous damaging wind squalls and hail occurred. Tornadoes occurred near Granger and Colfax. Corn made rather good progress during the month, but was still in need of a month of favorable weather to mature.

September was unusually and persistently cool with some frost on the 9th, and killing frost 28th-30th, though corn escaped on the highlands. About one-third of the corn was in the milk or

dough stage, and the bulk of the crop was seriously damaged. Winter wheat seeding was generally delayed in awaiting the Hessian fly free date.

October was an ideal example of an "Indian summer." It was next to the warmest October of record, with abundant sunshine and low relative humidity. Corn dried rapidly so that instead of the sour soft corn expected, it shriveled up on the cob. That on the highlands made a wonderful improvement and advancement toward maturity. Deficient precipitation interfered with plowing and seeding winter wheat, and caused a shortage in the water supply in some sections. A tornado occurred at Waterloo on the 30th. Sugar beets were harvested under favorable conditions, and an excellent potato crop was dug. A good crop of apples was picked.

November was generally dry and moderately warm, which helped to dry and save the unusually poor corn crop. Much of the crop was hogged or grazed down. The water shortage became serious over much of the State. Winter wheat showed all stages, from just seeded the first week in November, to rank growth.

December was cold with more than the usual amount of rain, sleet, and snow. Toward the close of the month the weather was the coldest, culminating in the lowest December temperatures of record at several stations on the 28th. A temperature of -32° occurred at Ottumwa. One of the most damaging glaze storms extended from southwest to northeast over the State, 3d-5th. Trees, poles, and wires were borne down by the thousands by the load of ice. Poles and wires alone were damaged \$750,000. Not much outdoor work was possible. Some corn was still in the fields.

MONTHLY SUMMARIES

JANUARY

Wintry weather prevailed in January. The month was the coldest since January, 1918, and many places reported the lowest temperatures since January, 1912. The cold wave at the close of December continued unbroken till the 7th. This was the coldest period of the month and the lowest temperature occurred over all portions of the State on the 5th. A welcome relief of the extremely cold weather set in on the 7th and continued over the eastern portion of the State till the 11th. During the rest of the month temperature fluctuations were frequent, but the warm periods were of very short duration until 27th; when the warmest period of the month set in that continued into February. At the be-

gining of the month there was little ice and some streams had not frozen over, but the continued cold weather caused ice to form rapidly so that by the end of the first week it was thick enough to cut over all portions of the State and the harvest begun in some localities during the mild weather that followed. By the end of the month the harvest had been completed, though the work was hampered somewhat by cold weather.

The precipitation averaged below the normal, though a large number of stations reported material excesses due to a storm on the 9th-10th, attended by moderately heavy rains in the central and eastern portions. Most of the precipitation in the northern division was snow and several stations reported more than 10 inches. The snow was generally light and dry and even with only moderate winds it drifted badly, especially over northern sections during the storm on the 9th-10th and over the eastern portion during the storm of the 15th. Traffic over these sections was interfered with to a great extent and over much of the north-central, northeast, and east-central sections travel was impossible much of the time. Deep drifts blocked the roads and in some sections made detours through fields necessary. Sleighing was possible over the northern and portions of the central division during almost the entire month. About half of the State was snow covered the entire month and the rest of the State an average of about 20 days, though a small area in the south-west, where the snowfall was light, the cover remained only 10 days. The warm period that set in on the 27th melted the snow rapidly, so that at the end of the month the southern division and much of the central was bare, though many deep drifts remained in protected places and on south slopes. Three sleet and ice storms damaged trees and wires very little, but there was considerable damage to automobiles by skidding. Streets and sidewalks over much of the State were slippery much of the time. The rise in temperature at the end of the month was accompanied by unusually dense fogs and on the morning of the 28th a remarkable deposit of frost occurred over a large portion of the State that looked like a fall of snow. Stone and brick buildings were generally covered.

The weather was too cold for outdoor operations and only such work as was absolutely necessary was performed. Winter wheat was protected generally by an ample snow cover during the most severe weather and it probably escaped with very little damage.

Temperature. The mean temperature for the State, as shown by the records of 97 stations, was 13.9, or 4.0° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 9.6°, or 5.0° lower than the normal; Central, 14.1°, or 4.1° lower than the normal; Southern, 17.9°, or 3.0° lower than the normal. The highest monthly mean was 21.6°, at Keokuk, and the lowest was 7.2°, at Katherville. The highest temperature reported was 59°, at Keokuk, on the 8th, and the lowest was -36°, at Waabta, on the 5th. The temperature range for the State was 95°.

Precipitation. The average precipitation for the State, as shown by the records of 100 stations, was 0.89 inch, or 0.16 inch less than the

normal. By divisions, the averages were as follows: Northern, 0.75 inch, or 0.69 inch less than the normal; Central, 0.87 inch, or 0.24 inch less than the normal; Southern, 1.05 inches, or 0.14 inch less than the normal. The greatest amount, 2.47 inches, occurred at Waverly, and the least, 0.06 inch, occurred at Storm Lake. The greatest amount in any 24 hours, 1.62 inches, occurred at Humboldt, on the 10th.

Snowfall. The average snowfall for the State was 5.5 inches, or 1.4 inches less than the normal. The greatest amount, 13.2 inches, occurred at Charles City, and the least, 0.4 inch, at Cumberland.

Miscellaneous Phenomena. Aurora: 29th, 30th, 31st. Fog: 2d, 3d, 7th, 8th, 9th, 24th, 26th, 28th, 29th, 31st. Halos (lunar and solar): 3d, 4th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 25th. Sleet: 8th, 10th, 24th.

Rivers. Low stages prevailed on the Mississippi and the river was frozen the entire month, and low and nearly stationary stages prevailed on all interior rivers. On the Missouri River there was a rising tendency with the highest stages at the end of the month.

PRESSURE RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)			Wind			Sun- shine						
	Mean	Highest	Date	Lowest	Date	Mean		Total movement	Average hourly velocity	Maximum		Per cent of possible Departure from normal					
						7 a. m. 7 p. m.	Lowest			Miles	Frost						
Charles City.....	30.19	30.97	5	29.69	10	92	78	88	65	16	4,901	6.7	21	0 W.	25	66 + 19	
Davenport.....	30.21	30.59	5	29.47	10	85	72	79	36	20	5,745	7.1	17	0 W.	25	48 + 6	
Des Moines.....	30.39	31.04	5	29.55	10	87	75	78	45	5	5,000	7.5	27	0 W.	25	66 + 17	
Dubuque.....	30.21	30.86	5	29.60	19	80	69	72	45	1	4,914	6.6	26	0 W.	25	50 + 7	
Keokuk.....	30.25	31.05	5	29.51	10	76	62	67	32	5	6,684	8.1	30	0 W.	21	58 + 7	
Sioux City.....	30.22	31.04	5	29.67	15	82	66	73	50	25	5,564	11.4	27	0 W.	10	67 + 12	
Omaha, Neb.....	30.27	31.05	5	29.68	9	82	69	73	36	16	6,249	8.4	36	0 W.	10	64 + 9	
Means and extremes.....	30.31	31.05	5	29.47	10	83	70	76	.....	.....	8.1	.....	.....	.....	.....	0 + 10
Normals and records.....	30.14	31.04	5	29.52	78	82	72	72	.....	.....	8.7	.....	.....	.....	.....	64 + 36
		531.06	1905	128.71	1900

†Sioux City. *Omaha. †Dubuque. †Local mean time. †And other dates.

COMPARATIVE DATA FOR THE STATE—JANUARY

YEAR	Temperature				Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest	Total	Greatest	Least	Snowfall	With per. in. or more	Clear	Partly cloudy	Cloudy
1890	19.7	+1.8	61	-25	2.63	+0.98	3.46	0.36	—	4	12	8
1891	20.0	+8.1	58	-1	1.75	+0.70	2.56	—	5	16	9	
1892	15.3	-2.6	70	-38	1.99	+0.94	3.13	1.10	6.9	3	12	14
1893	9.3	-8.6	54	-34	0.74	-0.31	3.20	0.13	6.9	6	11	8
1894	19.7	+1.4	59	-27	1.90	+0.94	2.24	0.21	6.9	5	14	11
1895	13.6	-4.3	68	-31	0.85	-0.30	2.65	0.90	2.8	4	15	9
1896	23.4	+5.5	68	-30	0.48	-0.57	2.19	T.	2	20	10	8
1897	17.2	-0.7	69	-39	2.01	+0.96	6.16	0.15	8.2	6	12	12
1898	23.4	+6.7	69	-11	1.60	+0.56	5.22	T.	7.6	9	15	6
1899	19.8	+1.9	68	-34	0.58	-0.77	1.15	T.	1.5	24	7	8
1900	25.6	+7.7	66	-30	0.53	-0.92	2.47	T.	2.2	15	10	8
1901	23.7	+5.8	69	-21	0.74	-0.31	5.34	0.94	6.2	4	14	9
1902	22.4	+4.5	62	-31	0.88	-0.17	5.38	0.19	9.4	4	17	8
1903	23.0	+5.1	60	-12	0.28	-0.77	1.46	T.	2.0	4	17	8
1904	14.9	-3.9	57	-32	1.18	+0.15	3.68	0.02	6.1	6	12	11
1905	11.2	-6.7	56	-36	0.91	-0.14	1.82	0.12	11.1	6	12	11
1906	24.0	+6.7	69	-19	1.52	+0.47	4.71	0.58	11.3	7	6	7
1907	18.8	+0.9	68	-22	1.02	+0.47	5.30	0.10	6.0	7	6	7
1908	24.9	+7.0	60	-18	0.44	-0.61	1.50	0.90	4.6	2	17	8
1909	21.2	+3.3	72	-25	1.66	+0.31	3.74	0.41	7.8	6	9	16
1910	18.1	+0.7	66	-35	1.07	+0.52	3.15	0.55	15.9	6	13	17
1911	20.2	+2.3	66	-35	0.97	-0.68	3.73	0.11	7.9	5	14	14
1912	4.2	-12.7	49	-47	0.53	-0.32	1.90	T.	5.5	5	14	11
1913	20.9	+3.6	62	-25	0.77	-0.28	2.66	0.64	7.2	5	14	9
1914	27.8	+9.9	64	-16	0.84	-0.17	2.34	0.27	5.1	8	13	8
1915	17.5	-0.4	59	-32	1.63	+0.58	3.15	0.10	5.1	5	11	8
1916	17.8	-0.1	62	-34	2.62	+1.37	6.67	0.85	7.2	10	12	6
1917	17.0	-0.9	69	-28	0.83	-0.22	2.07	0.17	7.2	4	17	8
1918	8.0	-6.9	58	-35	1.02	-0.03	2.79	0.50	11.0	7	13	8
1919	26.8	+8.9	64	-22	0.24	-0.81	0.80	T.	—	20	5	4
1920	16.7	-1.2	58	-36	0.42	-0.93	1.05	T.	4.6	4	12	8
1921	28.4	+16.6	62	-9	0.51	-0.54	1.92	0.10	4.1	4	11	7
1922	19.8	+1.9	57	-30	0.80	-0.16	2.30	0.53	3.3	3	20	5
1923	26.7	+8.8	58	-19	0.85	-0.20	1.24	T.	6.5	6	10	13
1924	13.9	-4.9	59	-36	0.89	-0.16	2.47	0.96	5.5	5	17	7

T. Indicates an amount too small to measure, on less than .006 inch precipitation and less than .06 inch snowfall.

FEBRUARY

Despite the fact that February, 1924, was a warm month, the weather for the most part was very disagreeable. The month opened with a brief warm period and the warmest day occurred generally on the 2d. There were no protracted cold spells; the periods of zero weather were of short duration; and at several stations in the east-central and south-east sections the temperature did not reach zero.

The precipitation for the State averaged slightly above normal, though there was a deficiency over about half of the State, the excess being mainly in a strip running from Audubon to Jefferson counties. The outstanding feature of the month was the destructive glaze storm that set in on the evening of the 3d and caused great damage to telephone, telegraph, and electric wires and poles. A storm of considerable energy passed south of the State on the 3d-4th and gave light rain during the early evening and night of the 3d that froze to all exposed objects. The

rain was so light in limited areas that it caused no damage, but over large areas the precipitation was sufficiently heavy to form a heavy coating of ice and by midnight of the 3d most of the wires and objects to the windward were covered with a coating of ice about one-eighth inch in thickness. This was followed by heavy snowfall and high winds and wires and poles went down in nearly all sections of the State except most of the northern division. The Northwestern Bell Telephone Company suffered the greatest damage and inconvenience. In Iowa and Nebraska this company reported 3,800 poles broken down, 54,000 miles of wires out of commission, and a property loss of \$200,000, the greatest damage resulting to the lines running east and west. Rural telephone lines also suffered greatly and although there is no way of estimating the damage it probably amounted to \$100,000. Telegraph companies did not fare so badly. The principal loss consisted of about 250 poles broken off and the inconvenience resulting from numerous breaks in wires. Most of the State was without telephone and telegraph communication for periods ranging from a few hours to nearly a week. Another general glaze storm occurred on the 16th. The ice deposit was heavier and more general than the previous storm, but there were no high winds accompanying and the damage was of a trifling nature. The deposit of ice continued on wires and trees over portions of the southern division until the 24th. The greatest property damages resulting from this storm was to automobiles skidding on paved roads and streets. Many broken limbs resulted to pedestrians and walking was possible only by exercising the greatest care.

The monthly snowfall also was out of the ordinary. Only once in the last 35 years has a greater fall occurred in February. Following the glaze of the 3d a general snow occurred throughout the State accompanied by strong winds that caused the snow to drift badly so that large areas were practically bare and many drifts were reported that were from 10 to 15 feet deep and cuts on highways were completely filled. As a result of these conditions travel throughout the State was almost impossible by automobile. Rail traffic was maintained on the main lines with very little delay, but great trouble and delay was encountered on branch lines. Delivery of rural mail was impossible and automobile bus service had to be suspended part of the time. The snow had generally disappeared by the middle of the month but many drifts still remained and they formed the foundation for immense drifts from the snow that fell from the 18th to the 23d, being the deepest in Warren, Marion, Mahaska, and Wapello counties, where travel over highways had to be temporarily suspended. During the last week of the month frost was fast leaving the ground; dirt roads were in the worst condition possible; travel over them was practically impossible; and the moving of tenant farmers, that occurs this time of the year, was delayed.

Conditions were unfavorable for all outdoor occupations. No plowing was accomplished during the month in any portion of the State and new construction was at a stand still.

Temperature. The mean temperature for the State, as shown by the records of 96 stations, was 25.8°, or 5.3° higher than the normal. By divisions, three tiers of counties to the division, the means were as fol-

lows: Northern, 23.5°, or 6.4° higher than the normal; Central, 26.2°, or 5.5° higher than the normal; Southern, 27.7°, or 4.1° higher than the normal. The highest monthly mean was 30.9°, at Clarinda, and the lowest was 20.8°, at Decorah. The highest temperature reported was 79, at Clarinda, on the 2d, and the lowest was -15°, at Decorah, on the 22d. The temperature range for the State was 85°.

Precipitation. The average precipitation for the State, as shown by the records of 97 stations, was 1.27 inches or 0.12 inch greater than the normal. By divisions, the averages were as follows: Northern, 0.99 inch, or 0.08 inch greater than the normal; Central, 1.21 inches, or 0.01 inch greater than the normal; Southern, 1.62 inches, or 0.27 inch greater than the normal. The greatest amount, 4.00 inches, occurred at Lacona, and the least, 0.30 inch, occurred at Algona. The greatest amount in any 24 consecutive hours, 1.48 inches, occurred at Ottumwa on the 5th.

Snowfall. The average snowfall for the State was 11.2 inches, or 3.8 inches greater than the normal. This amount has been exceeded but once in February, 15.5 inches having occurred in February, 1905. In 1912 the average was the same as the current month. The greatest amount, 28.1 inches, occurred at Oskaloosa, and the least, 3.0 inches, occurred at Algona and Greenfield.

Rivers. Low stages, with but slight fluctuations, prevailed on the Mississippi River, the extremes being but 0.3 foot at Dubuque and 0.8 foot at Davenport. The extremes at Keokuk were over 2.5 feet, due to the influence of the dam. Moderate and nearly stationary stages prevailed on the Missouri River the first part of the month after which a rise occurred that amounted to over 2.5 feet. Low and nearly stationary stages prevailed on the interior rivers except a gradual rise occurred in the lower Des Moines from the 1st to the 15th that amounted to more than 3.0 feet after which there was a gradual fall. All rivers remained frozen throughout the month.

Miscellaneous Phenomena. Birds (migration of): Corydon, robins, 19th; Earlham, wild ducks, 3d, bluebirds, 29th; Oskaloosa, bluebirds, 29th. Fog: 1st, 2d, 3d, 8th, 15th, 25th 26th, 27th. Hail: 16th. Halos (lunar and solar): 3d, 5th, 12th, 15th, 17th, 23d, 28th. Parhelia: 5th. Sleet: 3d, 4th, 9th, 12th, 16th, 17th.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)				Wind				Sunshine				
	Mean	Highest	Date	Lowest	Date	Mean		Lowest	Date	Total movement	Average hourly velocity		Date	Per cent of possible	Departure from normal		
						7 a. m.	12 Noon				Miles	From					
Charles City	30.19	30.66	24	29.53	3	91	75	83	57	14	5,024	7	12	26	ne.	4	4
Davenport	30.16	30.64	25	29.41	3	90	77	82	58	18	6,180	6	9	40	ne.	4	4
Des Moines	30.16	30.66	25	29.34	3	90	73	76	44	29	5,458	7	9	28	n.	4	4
Dubuque	30.19	30.66	24	29.54	3	84	71	72	53	10	5,025	7	9	27	ne.	4	4
Keokuk	30.16	30.66	8	29.34	3	78	65	69	33	29	3,770	5	3	37	nw.	9	9
Sioux City	30.20	30.64	25	29.37	3	82	67	69	40	14	7,631	11	9	41	nw.	9	9
Omaha, Neb.	30.18	30.66	25	29.30	3	81	64	69	29	15	6,779	9	7	44	n.	4	4
Means and extremes	30.18	30.66	18	29.30	3	85	79	74	15	8.6	44	nw.	9	9	9	9	
Normals and records	30.10	21.81	28.1	84	76	9.3	11.2	29	4th	9	9	9	9	9	9	9	
		31.07	1918	28.69	1002	113	1880			\$60	nw.	1917					

§Sioux City. *Davenport. †Des Moines. ‡Local mean time. †And other dates.

COMPARATIVE DATA FOR THE STATE—FEBRUARY.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	26.0	+5.5	67	-24	0.83	-0.32	2.18	0.11					
1891	19.4	-1.1	79	-31	1.16	+0.61	2.41	0.55		3	13	7	8
1892	28.1	+7.6	68	-20	1.20	+0.65	2.18	0.12	5.0	6	6	7	16
1893	16.4	-4.1	60	-28	1.39	+0.24	2.01	0.66	8.1	6	10	8	10
1894	19.7	-0.8	60	-19	0.89	-0.26	2.41	T.	8.4	3	16	8	4
1895	16.4	-4.1	73	-33	0.49	-0.66	1.31	0.92	3.3	4	13	9	6
1896	27.4	+6.9	78	-13	0.71	-0.44	2.46	0.04	5.4	4	12	9	8
1897	24.7	+4.2	61	-24	0.89	-0.26	1.81	0.22	8.0	5	6	10	12
1898	24.2	+3.7	62	-18	1.20	+0.65	3.65	0.10	7.8	5	10	9	9
1899	12.2	-8.3	75	-40	0.89	-0.26	4.32	0.12	7.1	5	11	10	7
1900	14.8	-5.7	60	-27	1.30	+0.15	4.57	0.18	9.9	6	10	8	10
1901	17.5	-3.0	49	-21	1.01	-0.14	3.00	0.12	9.7	4	15	7	6
1902	17.6	-2.9	62	-21	0.73	-0.42	2.39	0.92	2.6	4	13	8	7
1903	19.8	-0.7	56	-21	1.18	+0.03	3.25	0.30	7.9	4	13	7	8
1904	14.8	-5.7	70	-26	0.41	-0.74	1.99	T.	4.5	4	10	9	10
1905	12.8	-7.7	69	-41	1.57	+0.42	2.97	0.44	15.5	7	14	6	8
1906	23.6	+3.1	66	-32	1.29	+0.14	2.91	0.29	6.1	5	14	7	7
1907	26.0	+4.5	65	-31	0.71	-0.44	1.95	0.06	4.6	4	14	6	8
1908	24.3	+3.8	59	-16	1.09	+0.54	3.95	0.23	8.9	6	12	6	11
1909	26.2	+5.7	62	-26	1.54	+0.39	4.72	0.39	7.7	5	11	6	11
1910	17.8	-2.7	58	-21	0.46	-0.69	2.09	T.	4.0	3	14	8	6
1911	27.3	+6.8	71	-13	2.76	+1.61	5.46	0.50	7.0	6	12	6	10
1912	18.1	-2.4	57	-30	1.21	+0.06	3.25	0.04	11.2	5	10	9	10
1913	20.2	-0.3	70	-24	0.82	-0.33	2.39	0.07	7.3	4	14	7	7
1914	16.8	-3.7	59	-29	0.87	-0.28	1.99	0.32	9.2	6	10	9	9
1915	29.1	+8.6	62	-8	2.03	+1.78	5.39	0.43	9.4	9	9	5	11
1916	19.0	-1.5	62	-32	0.55	-0.60	1.38	0.65	6.0	4	14	8	7
1917	15.2	-5.3	68	-37	0.86	-0.79	1.19	T.	3.5	3	14	8	6
1918	23.6	+2.5	70	-36	0.95	-0.29	2.10	0.09	6.0	5	14	7	7
1919	24.9	+4.4	65	-16	2.42	+1.27	4.12	1.32	9.9	8	11	5	12
1920	24.0	+3.5	56	-22	0.56	-0.59	1.75	0.04	4.1	5	9	6	14
1921	31.0	+10.5	76	-5	0.77	-0.38	2.09	T.	6.5	5	13	7	8
1922	23.7	+3.2	70	-20	1.69	+0.44	4.56	0.40	1.3	4	14	7	7
1923	20.1	-0.4	61	-23	0.40	-0.75	1.71	0.60	3.2	3	13	8	7
1924	25.8	+5.3	70	-15	1.27	+0.12	4.60	0.30	11.2	7	15	5	9

T. indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

THE WINTER OF 1923-1924

The mean temperature for the three winter months was 24.4°, which is 3.6° higher than the normal for the State, and 0.8° higher than the mean for 1922-1923. The highest temperature reported was 70°, at Clarinda, on February 2d, and the lowest was -36°, at Washta, on January 5th.

The average monthly precipitation for the State was 0.97 inch, and the average total precipitation was 2.92 inches, or 0.50 inch less than the normal. The average total snowfall was 21.1 inches, or 0.6 inch more than the normal.

The number of days with 0.01 inch or more of precipitation was 16, or 4 more than the winter of 1922-1923. The average number of clear days was 46, partly cloudy 18 and cloudy 27, as compared with 39 clear days, 22 partly cloudy days and 29 cloudy days during the winter of 1922-1923.

MARCH

The usual March characteristics were lacking during almost the entire month and the principal features were the uniformity of temperature, excessive cloudiness, and frequency of precipitation.

The month opened with a moderate warm period that continued for the first five days and this was followed by a remarkable period of uniformly cool weather that continued over practically the entire State till the 24th. From the 25th till the 28th a moderately warm period prevailed, which was followed by three days of cold weather, during which the coldest weather of the month occurred over most of the State, with a cold wave over portions of the eastern and southern sections. While the temperature averaged below normal, there was no severe cold weather, and this March was one of the few in the last 35 years in which the temperature did not reach zero in some section of the State.

The precipitation was above normal, and like the temperature was characterized by unusual uniformity. There were no stations in the northern division, only two in the central, and only small areas in the southeastern and extreme southwestern portions that showed a deficiency in precipitation. The precipitation was distributed throughout the month and an unusual fact is that in some portions of the State precipitation was recorded on every day of the month, but the principal periods occurred on the 3d-4th, 17th, 25th, and the 28th-30th. Most of the precipitation in the northern division was snow and in small areas in this division the ground was snow covered for 25 days while in portions of the east-central and southern divisions the snow cover remained for less than five days. The precipitation that occurred on the 28th-30th, occurred in connection with a disturbance that gave unusually low barometric readings, and at a number of places the lowest readings ever recorded during the month of March. At Des Moines the lowest reading was recorded, 28.79 inches, which is within 0.03 inch of the lowest ever recorded in any month. An unusual circumstance in connection with this storm was the lack of strong winds over practically the entire State; and a maximum velocity of 56 miles per hour, that blew down a number of chimneys and trees at Keokuk, was the only velocity reported that could be

expected under the circumstances. This storm gave rain over the southern and most of the central divisions but over the northern division it began as a cold rain, that turned to sleet and then to snow. The ice coat varied from one-eighth inch to three-fourths inch in diameter on wires and twigs and while the damage to trees was not great due to the absence of strong winds, the overhead wires in most of the northern division were severely damaged. The Northwestern Bell Telephone Company reported property damaged to the extent of \$50,000 and the local lines also were greatly damaged. Complete wire communications were not restored until after about 10 days. The greatest damage occurred in the northeastern portion of the State. An unusual phenomenon in connection with this storm was a copious deposit of brown dust. At Charles City it gave a reddish hue to the snow, at Dubuque there was a moderate deposit of light brown dust of a claylike nature that fell during the early morning of the 29th and again later in the forenoon, which was plainly discernible on flat roofs, automobile tops and windows. At Keokuk the deposit was described as reddish-brown mud and was plainly discernible. At Des Moines the deposit occurred before the morning of the 29th and was general on all streets and flat top buildings, but no trace was noted in the snow that fell later on the 29th or 30th. At Sigourney it looked like spots of rust or clay on all exposed objects.

From an agricultural standpoint the month was unfavorable. Farming operations were practically suspended and the only plowing or seeding reported was in a small area in Wayne county on the 27th. During the last three days of the month the ground was frozen. The cold, wet weather was unfavorable for livestock and many lambs and young pigs died. The main highways of the State that are not paved were said to have never been worse than they were during this month. Graveled roads were almost as bad as the dirt roads and most of the bus lines were forced to cease operations.

Snowfall. The average snowfall for the State was 10.5 inches, or 5.2 inches more than the normal and 0.6 inch more than the combined snowfall for December and January. The greatest amount, 25.0 inches, occurred at Decorah, and the least, 0.9 inch, occurred at Corning.

Miscellaneous Phenomena. Aurora: 30th. Birds (migration of): Boone, blue birds, 2d; robins, 6th; purple finch, 10th; golden winged woodpecker, 22d; snipe, 24th; blackbirds, 25th; phoebe, fox sparrow, 27th; blue heron, king fisher, 29th. Earlham, blackbirds, 23d. Fayette, larks, robins, 25th. Jefferson, robins, 3d. Oskaloosa, robins, 1st; woodpeckers, 22d. Pocahontas, larks 5th, robins, 10th. Rock Rapids, blue birds, 22d, robins, 27th. Dustfall: 29th. Fog: 26th, 28th. Hall: 3d, 4th, 28th, 29th. Halos (lunar and solar): 2d, 7th, 8th, 13th, 14th, 16th, 19th, 20th, 22d, 29th, 30th, 31st. Parhelia: 31st. Sleet: 3d, 4th, 11th, 12th, 17th, 23d, 25th, 28th, 29th, 30th, 31st. Thunderstorms: 3d, 4th, 5th, 25th, 28th, 29th.

Temperature. The mean temperature for the State, as shown by the records of 99 stations, was 31.9°, or 1.4° lower than the normal. By divisions, three tiers of counties to the division, the means were as fol-

lows: Northern, 29.5°, or 1.0° lower than the normal; Central, 32.1°, or 1.5° lower than the normal; Southern, 34.1°, or 1.6° lower than the normal. The highest monthly mean was 36.4°, at Clarinda, and the lowest was 27.2°, at Decorah. The highest temperature reported was 72°, at Clarinda on the 27th, and the lowest was 3°, at Decorah on the 16th. The temperature range for the State was 69°.

Precipitation. The average precipitation for the State, as shown by the records of 98 stations, was 2.65 inches, or 0.88 inch more than the normal. By divisions, the averages were as follows: Northern, 2.71 inches, or 1.18 inches more than the normal; Central, 2.97 inches, or 1.10 inches more than the normal; Southern, 2.26 inches, or 0.34 inch more than the normal. The greatest amount, 4.76 inches, occurred at Fayette, and the least, 1.26 inches, occurred at Centerville. The greatest amount in any 24 consecutive hours, 2.74 inches, occurred at Algona on the 3d.

Rivers. Low stages prevailed on the Mississippi River with a slight rising tendency till the last week of the month when a sharp rise occurred. The ice at Dubuque remained intact till the 5th, when a limited field opened below the railroad bridge, with more or less movement continuing down stream but there was no movement above the bridge till the 24th, when a general movement set in, and by the 29th the channel was clear of ice. On the Missouri River frequent fluctuations occurred, the rises and falls being quite pronounced, due to ice movements. Ice gorges caused moderate rises on the interior rivers during the first week after which there was a general falling tendency till toward the end of the month when a general rise occurred.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)				Wind				Sunshine		
	Mean	Highest	Date	Lowest	Date	Mean		Total movement	Average hourly velocity	Maximum		Per cent of possible			
						7 a. m.	12 Noon			Miles	From			Date	Departure from normal
Charles City	30.00	30.35	24	28.95	29	70	77	33	17	4,914	6.6	ne.	2	42	-15
Davenport	30.00	30.38	24	28.89	29	74	76	30	27	5,752	7.7	e.	2	37	-12
Des Moines	30.98	30.38	24	28.79	29	74	65	33	25	5,506	7.4	e.	2	27	-12
Dubuque	30.00	30.39	24	28.97	29	74	69	34	27	5,007	6.7	e.	2	22	-12
Keokuk	30.98	30.40	24	28.86	29	76	64	19	25	6,679	9.1	sw.	2	48	-10
Sioux City	30.04	30.45	24	29.02	29	82	67	35	27	7,979	10.7	e.	2	48	-10
Omaha, Neb.	30.02	30.41	24	28.82	29	82	68	38	27	6,971	9.4	nw.	2	55	-12
Means and extremes	30.00	30.45	8	28.79	29	84	66	69	19	---	8.2	---	---	38	-19
Normals and records	30.01	---	28th 1921	28.79	1924	80	67	---	18th 1915	---	9.6	---	18th 1920	57	---

‡Sioux City. *Des Moines. †Local mean time.

COMPARATIVE DATA FOR THE STATE—MARCH.

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snowfall	With prec. of in. or more	Clear	Partly cloudy	Cloudy
1890	28.0	-5.3	75	-24	1.57	-0.20	3.67	0.22	---	10	6	8	17
1891	26.8	-6.5	66	-19	2.60	+0.83	4.58	1.33	---	6	11	8	12
1892	31.9	-1.4	84	-6	2.32	+0.45	4.58	0.57	3.0	8	9	11	11
1893	31.8	-1.5	84	-8	2.14	+0.37	4.40	0.64	4.0	8	9	11	11
1894	41.0	+7.7	84	-5	2.03	+0.26	4.52	0.26	2.7	6	13	10	8
1895	34.4	+1.1	94	-11	0.83	-0.24	2.60	0.22	2.9	4	16	8	7
1896	30.9	-2.4	81	-12	1.10	-0.67	3.99	0.16	5.4	5	12	9	10
1897	32.0	-1.3	72	-22	2.39	+0.62	6.16	0.29	5.5	8	9	8	14
1898	37.5	+4.2	72	-2	1.94	+0.17	6.21	0.33	3.7	6	12	9	10
1899	23.0	-10.3	75	-16	1.62	-0.15	5.90	0.37	8.0	6	7	12	12
1900	30.7	-2.6	81	-13	2.06	+0.29	5.15	0.45	6.6	5	12	9	10
1901	34.2	+0.9	76	-8	2.64	+0.87	5.25	0.70	12.6	7	10	8	13
1902	39.1	+5.8	79	-12	1.45	-0.32	4.33	0.13	1.3	7	9	11	11
1903	38.8	+5.5	82	-6	1.38	-0.39	3.90	0.15	3.9	7	11	7	13
1904	34.8	+1.5	78	-3	2.18	+0.41	4.57	0.50	4.4	7	8	8	15
1905	41.5	+8.2	84	-1	2.04	+0.27	3.70	0.89	4.1	7	8	8	15
1906	27.1	-6.2	65	-14	2.34	+0.57	4.55	0.58	8.9	10	8	7	16
1907	40.6	+7.3	92	-7	1.35	-0.42	5.05	0.23	4.1	6	14	7	10
1908	37.9	+4.6	85	-8	1.58	-0.19	3.74	0.45	1.1	6	13	7	11
1909	32.5	-0.8	71	-15	1.53	-0.24	5.00	0.28	9.8	6	12	10	9
1910	48.9	+15.6	92	-10	0.17	-1.00	1.37	0.00	T.	1	23	6	2
1911	39.4	+6.1	83	-2	0.93	-0.84	4.84	T.	1.9	5	16	9	6
1912	24.9	-8.4	70	-19	2.01	+0.24	5.25	0.60	19.1	7	15	6	10
1913	31.9	-1.4	78	-23	2.48	+0.71	5.88	0.74	5.3	9	11	10	10
1914	34.7	+1.4	78	-5	1.69	-0.08	3.84	0.28	1.8	7	12	8	11
1915	29.3	-4.0	61	-5	0.96	-0.81	2.12	0.17	8.8	5	8	9	14
1916	35.2	+1.9	80	-18	1.57	-0.20	5.80	0.22	2.9	6	11	9	11
1917	34.6	+1.3	85	-12	1.84	+0.07	4.35	0.57	6.2	6	14	8	9
1918	42.9	+9.6	85	-0	0.63	-1.14	2.12	0.03	2.6	3	19	7	5
1919	37.5	+4.2	78	-11	2.33	+0.56	5.40	0.81	1.1	6	15	8	8
1920	38.0	+4.7	80	-21	2.02	+1.25	5.70	0.47	2.4	7	15	7	9
1921	42.8	+9.5	86	-4	1.57	-0.20	6.02	0.17	0.2	7	14	8	9
1922	38.3	+5.6	74	-5	1.97	+0.20	3.73	0.76	3.4	7	12	6	13
1923	29.4	-3.9	78	-22	2.87	+1.10	5.08	0.71	18.5	7	13	9	9
1924	31.9	-1.4	72	-3	2.65	+0.88	4.76	1.26	10.5	8	8	8	15

T. Indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

APRIL

The most noteworthy feature of the weather during April, 1924, was the abnormally low temperatures that occurred on the first day of the month over much of the northern and western portions. Many stations reported the lowest April temperatures of record and three stations reported temperatures below zero, the only time in the history of the State that zero has been reached in April, and the record of 8 degrees below zero at Inwood is 9 degrees lower than the lowest recorded previous to this year. The range of 98 degrees is the greatest ever experienced in April, and is 8 degrees greater than has been recorded heretofore. After the 1st there was an extended warm period, and during the rest of the month temperature fluctuations were frequent with the warm periods predominating, but with sufficient cool weather to prevent the development of fruit buds too rapidly. Frosts were recorded till late in the month at frequent intervals, but vegetation had not advanced to a stage where it was susceptible to very much injury.

Precipitation was less than half the normal for April, and with the exception of April, 1907, when the average for the State was 1.32 inches, was the least ever recorded. Only three stations showed an excess and this was due to locally heavy rains that occurred on the 25th-26th. Hail was reported from a large number of places, but the damage was of no consequence. Lightning struck a planing mill at Dubuque, setting it on fire and causing a loss of about \$50,000.

Conditions were almost ideal for all outdoor occupations, and, except for a short suspension, due to a very heavy snowfall on the 11th, that affected a strip of the State over the southern portion of the northern division, and the northern portion of the central division, farm work was possible throughout the month after the effects of the hard freeze on the 1st had disappeared. Plowing was pushed and the soil was in excellent condition, and at the end of the month practically all small grain had been seeded and most of the corn land was ready for the planter. A little corn was planted in the west-central portion as early as the 22d, but the soil was too dry for planting over nearly all sections.

While the weather was favorable for farm work the lack of moisture prevented the germination of many fields of oats and barley, and while most of the early planting is up to a good stand, some fields show very uneven stands. The lack of moisture was also retarding the growth of winter wheat and grasses, and vegetation generally was showing the need of rain at the end of the month.

Fruit buds were a little in advance of the average, and at the end of the month plums and cherries were in full bloom over the southern and most of the central division. A good many apples of the earlier varieties also were in bloom. Peaches appear to have been severely injured by the severe January weather and grapes to a lesser extent. Bees came through the winter in poor shape, due mainly to the unusually mild weather in December that caused them to deplete their stores.

Roads were in unusually bad condition at the beginning of the month, but improved as the month advanced, and at the end of the month the main highways were in excellent condition generally. The average number of clear days was the greatest ever recorded in any April.

Temperature. The mean temperature for the State, as shown by the records of 103 stations, was 50.5°, or 1.8° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 47.9°, or 1.2° higher than the normal; Central, 50.9°, or 2.0° higher than the normal; Southern, 52.7°, or 2.1° higher than the normal. The highest monthly mean was 55°, at Keokuk, and the lowest was 44.5°, at Northwood. The highest temperature reported was 90°, at Clarinda on the 15th and Mason City on the 23rd, and the lowest was -8° at Inwood on the 1st, the lowest April temperature ever recorded in Iowa. The temperature range for the State was 98°.

Precipitation. The average precipitation for the State, as shown by the records of 104 stations, was 1.38 inches, or 1.48 inches less than the normal. By divisions the averages were as follows: Northern, 1.52 inches, or 1.16 inches less than the normal; Central, 1.35 inches, or 1.51 inches less than the normal; Southern, 1.28 inches, or 1.77 inches less

(than the normal. The greatest amount, 4.53 inches, occurred at Belmond, and the least, 0.38 inch, occurred at Harlan. The greatest amount in any 24 consecutive hours, 3.43 inches, occurred at Belmond on the 25th-26th.

Snowfall. The average snowfall for the State was 1.4 inches, or 0.4 inch less than the normal. Practically no snow fell in the southern four tiers of counties and the principal amounts fell over a strip about two counties wide, running from Sioux and O'Brien southeastward to Jackson and Clinton counties. The greatest amounts reported were 9.0 inches at Webster City and Olin. The snow occurred mostly during the night of the 10th-11th.

Rivers. There were no sudden or marked fluctuations on the Missals, Appi River and the average stages were less than the normal. The lowest stages occurred generally during the first week, after which there was a gradual rising tendency, and the highest stages were at the end of the month. On the Missouri River there was a gradual rise till the month and then a gradual fall till the end of the month to almost the same stages as at the beginning. The average stages were below the normal. On the interior rivers the highest stages occurred during the first week, after which there was a steady fall in all streams. The average stages were considerably below the normal. The first steamer arrived at Dubuque on the 4th and navigation was open the rest of the month.

Miscellaneous Phenomena. Fog: 1st, 5th, 12th. Hail: 5th, 8th, 13th, 15th, 16th, 18th, 19th, 20th, 21st, 24th. Halos (lunar and solar): 3d, 6th, 10th, 12th, 13th, 14th, 18th, 19th, 20th, 21st, 25th, 29th, 30th. Haze: 4th, 7th. Parhelia: 10th. Rainbows: 5th, 10th, 13th, 14th, 18th. Thunderstorms: 5th, 6th, 8th, 11th, 13th, 14th, 15th, 16th, 18th, 19th, 20th, 21st, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)				Wind				Sun- shine		
	Mean	Highest	Date	Lowest	Mean	21° N. to 21° S. W.	Lowest	Date	Average hourly		Maximum				
									Direction	Velocity	Miles	Per cent			
Charles City	29.90	30.36	1	29.38	76	78	53	30	133	0.268	8.7	30	sw	16	47
Davenport	29.92	30.32	1	29.40	76	81	24	29	130	0.185	8.4	30	sw	16	212
Des Moines	29.90	30.33	1	29.34	76	74	49	24	116	0.500	8.3	30	sw	8	71
Dubuque	29.90	30.31	1	29.37	76	74	51	18	148	0.476	9.9	30	sw	16	82
Keokuk	29.90	30.36	1	29.44	76	66	63	26	121	0.450	9.9	30	sw	16	90
Sioux City	29.91	30.28	1	29.21	76	64	62	17	105	0.405	14.1	15	sw	10	71
Omaha, Neb.	29.90	30.37	1	29.21	76	70	64	18	117	0.400	9.9	30	sw	8	80
Means and extremes	29.91			29.21	76	76	50	13		0.9		45	sw	10	6
Normals and records	29.98	30.8	9th	29.09	76	97	55			0.9		25	sw	10	68
	180.7	1932		28.80	1408					110	1000		714	h.	1900

1Dubuque. *Davenport. †Sioux City. ‡Local mean time. †And other dates.

COMPARATIVE DATA FOR THE STATE—APRIL

YEAR	Temperature					Precipitation				Number of Days		
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With pre- vail- ing in. or more	Partly cloudy	Cloudy
1899	51.8	+2.1	88	2	1.80	-1.06	4.46	0.28	.....	6	14	9
1891	50.6	+1.9	88	13	2.13	-0.71	5.06	0.20	.....	8	14	9
1892	45.4	-3.3	88	14	4.75	+1.80	8.28	2.43	.....	9	8	13
1893	45.3	-3.2	96	15	4.21	+1.35	8.51	1.24	6.0	10	8	13
1894	51.7	+2.0	93	12	3.67	+0.11	5.91	0.55	6.2	9	11	8
1895	54.2	+5.3	98	4	2.67	-0.24	5.88	0.28	2.1	3	14	8
1896	54.5	+5.8	94	19	0.55	+2.16	9.67	2.35	4.5	11	13	10
1897	47.9	-0.8	80	19	5.35	+2.49	9.86	2.22	T.	11	9	8
1898	48.1	-0.6	91	14	2.56	-0.39	4.82	0.77	T.	8	13	9
1899	48.9	+0.2	89	1	2.49	-0.46	5.76	0.56	2.0	7	12	11
1900	52.5	+3.5	99	19	2.67	-0.19	6.07	0.43	0.9	6	12	7
1901	49.9	+1.2	92	15	1.79	-1.07	3.47	0.66	2.0	3	14	8
1902	48.2	-0.5	95	9	1.71	-1.15	1.15	0.49	T.	5	14	11
1903	49.8	+1.1	86	17	2.98	+0.12	6.09	0.74	0.8	9	11	9
1904	44.1	-4.6	96	12	3.93	+0.77	8.97	1.32	1.4	7	15	6
1905	47.5	-1.2	90	13	3.03	+0.17	5.49	0.63	1.2	8	12	8
1906	52.5	+5.8	94	23	2.42	-0.44	5.55	0.53	0.8	8	14	9
1907	41.3	-7.1	89	19	1.32	-1.54	3.25	0.24	2.7	6	12	8
1908	50.5	+1.8	91	8	2.24	-0.02	4.59	0.67	0.3	8	14	8
1909	43.8	-4.9	86	14	4.58	+1.72	9.43	0.83	2.1	12	9	12
1910	52.5	+5.8	99	15	1.48	-1.38	5.04	0.19	0.9	7	14	9
1911	46.7	-2.0	86	3	2.69	+0.23	6.04	1.33	3.6	9	11	8
1912	49.9	+1.2	84	20	2.66	-0.29	5.99	0.78	1.1	8	13	8
1913	50.2	+1.5	88	16	3.28	+0.42	7.43	1.12	2.7	9	15	5
1914	48.6	-0.1	88	11	2.32	-0.24	5.03	0.27	0.3	8	19	12
1915	57.2	+4.3	95	18	1.41	-1.43	4.92	0.95	T.	7	15	10
1916	47.1	-1.0	81	21	2.62	-0.24	5.92	1.13	1.1	10	10	9
1917	45.5	-2.2	88	17	4.55	+1.09	7.84	2.06	3.8	11	9	11
1918	48.2	+0.8	99	15	3.48	-0.54	4.30	1.60	3.5	9	13	10
1919	48.4	-0.3	81	20	4.78	+1.92	9.00	1.94	0.7	14	8	14
1920	42.4	-6.3	78	32	4.59	+1.73	7.13	1.93	2.0	12	8	9
1921	52.4	+3.7	88	14	3.51	+0.14	6.69	0.99	2.6	10	12	10
1922	47.9	+1.2	89	21	3.96	+0.20	6.70	1.04	1.0	9	11	9
1923	48.4	-0.3	85	11	2.90	-0.77	4.29	0.47	0.8	8	15	7
1924	50.5	+1.8	90	-8	1.38	-1.48	4.53	0.38	1.4	7	16	8

T. Indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall.

BALL LIGHTNING

By E. G. Larson, Observer,

Weather Bureau, Charles City, Iowa.

Ball lightning is believed to have been observed by Mrs. R. V. Zimmerman near her farm home about ten miles northeast of Charles City, Iowa, at about 9 p. m., March 28, 1924. She describes it as a ball of light, about the size of a hand lantern globe, two or three feet above the ground, which appeared in the southwest and approached slowly to within about 100 feet of her house, remained stationary for about two minutes, and then receded toward the southwest with diminishing brilliancy.

Meteorological conditions at Charles City at 9 p. m., March 28, 1924, were as follows: Cloudy, with rain falling steadily; wind from east at 16 miles per hour; temperature, 32 degrees, stationary from 8 p. m. to 1 a. m.; pressure, sea level, 29.45 inches, falling steadily, center of

storm over southern Iowa next morning with sea level pressure below 29.00 inches; distant lightning flashes observed in southwest at 9:30 p. m. and probably could have been seen earlier.

Following is a copy of Mrs. Zimmerman's written report and replies to questioned submitted:

"On Friday evening, March 28th, about 9 o'clock, I happened to look out of the window, to the southwest, and noticed that the reflection from what I thought to be the electric lights at Charles City seemed brighter than usual, then there seemed to be a fire there. I watched for a little while, thinking that it must be a fire somewhere, and I called my 14-year-old daughter to come and see it; she came and said, 'Yes, it looks like a fire.' She watched for perhaps two minutes, then went away. I remained at the window and watched. The fire seemed to raise and lower, then suddenly it shifted to one side for about one rod and started to come this way. I thought just at first my eyes might be at fault, that because I had been looking for some time it just seemed that way. But as it kept coming closer, I called Mildred again and she exclaimed, 'Why yes' (it had moved quite rapidly at first). And by this time it was almost to our lane and moving slower; it stopped in the road just outside the lane for perhaps 1½ or 2 minutes. It appeared to be a globe of light almost as large as a lantern globe and the reflection from it was sort of a white light which extended maybe 3 rods. It was 2 or 3 feet from the ground. As the men were all at the barn, Mildred and I were thoroughly frightened; Mildred was trembling.

"As quickly as it had come it receded, much to our relief. It went back to where it was at first but was not so bright after this. The men came in the house then and as we watched for a short time longer it would come a little way then go back. We did not watch any longer.

"Afterwards I asked Mildred just how she felt about it, and she shuddered and said that she thought it was something coming to destroy us. It surely was quite an experience for us. We live 2½ miles east and ¼ mile south of Colwell.

"(Signed) MRS. R. V. ZIMMERMAN,

"Bassett, Iowa."

Q. Was it raining at the time you saw the light and did you see any ordinary lightning flashes or hear thunder that evening? A. Yes, it was raining. I had not noticed any lightning flashes but had not been watching so there might have been; neither did I hear thunder until during the night; I was awakened by it and the lightning was quite vivid then. I do not know what time this was but should judge it was between 1 and 2. One of the boys said he had heard distant thunder in the evening before I saw the ball lightning.

Q. Did it remain close to the ground all the time or did it move up in the air and how high? A. It remained about 3 or 4 feet from the ground all the time except when I first saw it, then it seemed to flare up and down much as a fire would, but never very high.

Q. How far away from you was it when it stopped in the road? A. It was 6 or 7 rods from me when it stopped in the road.

Q. How far was it away when you first saw it? A. It seemed to look as far away as Charles City (10 miles) when I first saw it, but I am inclined to believe that it could not have been more than $1\frac{1}{2}$ or 2 miles, considering how slowly it was moving when I could see it plainly, and the short time it took for it to reach the road.

Q. What was the color of the light ball, that is, did it seem white hot or reddish? A. The light as nearly as I can remember looked much like the light of a lantern but the reflection was sort of a white light or like an electric light reflection, quite strong.

Q. What was the nature of the ground over which it appeared, high, firm ground or low and swampy? A. The ground is somewhat rolling. Across the road from here is a plowed field 80 rods wide, and the next a low boggy pasture and corn stubble field 60 rods in width and beyond this just plowed fields and corn stubble.

MAY

May, 1924, was dry and cool. The mean temperature for the State was, with the exception of 1892 and 1907, the lowest of record. The month opened with a moderately warm period during most of the first week, and on the 5th unusually high temperatures occurred over nearly the entire State, exceeding 90° at many stations in the northern and western portions. This warm period was followed by an abrupt change to cooler and during the rest of the month a remarkably uniform cool period prevailed, the only days that showed a slight excess in temperatures were the 16th and 17th. No record breaking low temperatures were reported, but frosts of varying degrees occurred during every week of the month in nearly all portions of the State. The greatest damage occurred on the 11th and 24th. The fact that all vegetation was unusually backward prevented greater damage to crops and the loss was confined mainly to tomatoes and beans, though some corn in the west-central section was nipped to the ground on the 24th. Much vegetation susceptible to frost damage was undoubtedly saved due to the extreme dryness of the air, and moderately strong wind movement, and the development of cloudy conditions during the most critical periods. The damage reported was confined principally to crops on low ground and some unusual conditions relative to frost damage were reported. In some fields alternate plants in the same rows were killed while others showed no effects of frost whatever. Also during the hard freeze on the 24th, tender plants in fields suffered no damage, though ice formed on standing water and plants in cold frames were killed.

The most detrimental factor in regard to crop development was the extreme dryness. The average precipitation for the State was the least of record. Conditions would not have been so aggravated had the previous month received normal rainfall, but with less than half the normal in April and less than 40% of the normal in May a serious drought developed. The precipitation was uniformly distributed throughout the month, and considering the decided deficiency, occurred on an unusually large number of days. Had the rains occurred less frequently, and had there been an occasional warm day, conditions would have been improved,

out with but few exceptions the showers were light and were sufficient to wet only the surface soil and the moisture was soon absorbed by the dry air. The adverse weather conditions put the corn crop in nearly as bad condition as ever existed in the State on June 1st. Much of the seed lay in the ground and did not germinate; what came up showed a very uneven stand, and much replanting was necessary in all portions of the State. Cutworms were active in portions where the corn was up, and much that had not germinated was being attacked by wireworms, seed corn maggots and billbugs, and in the wetter portions of the State was rotting. A small per cent of the crop had been cultivated once, but there was still much replanting necessary at the end of the month. Other crops also were adversely affected. The hay crop, other than alfalfa, will be almost a total failure in much of the western and southern portions; oats, wheat and barley will be short, and most truck crops had made very little progress. Fruit prospects were generally good, except apples in small areas in the northern division. Strawberries were injured somewhat by frost, but there were sufficient blooms uninjured to insure a good crop with favorable future weather conditions. Bees were able to work only part of the time and probably more honey was consumed than produced.

Temperature. The mean temperature for the State, as shown by the records of 105 stations, was 54.1° , or 6.4° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 51.9° , or 7.1° lower than the normal; Central, 54.5° , or 6.2° lower than the normal; Southern, 56.0° , or 5.7° lower than the normal. The highest monthly mean was 57.5° , at Burlington and Clarinda, and the lowest was 48.8° , at Decorah. The highest temperature recorded was 94° , at Cedar Rapids, Humboldt and Spencer, on the 5th, and the lowest was 26° , at Inwood, on the 24th. The temperature range for the State was 68° .

Snowfall. Snow occurred over the northern and western portions of the State and practically all measurable snowfall occurred in the extreme northwest corner. Only one station in the southern division reported more than a trace and none in the central division. Three stations reported two inches or more, but it melted soon after falling.

Precipitation. The average precipitation for the State, as shown by the records of 107 stations, was 1.71 inches, or 2.86 inches less than the normal. By divisions, the averages were as follows: Northern, 1.98 inches, or 2.50 inches less than the normal; Central, 1.57 inches, or 3.02 inches less than the normal; Southern, 1.58 inches, or 3.06 inches less than the normal. The greatest amount, 3.28 inches, occurred at Nora Springs, and the least, 0.78 inch, occurred at Alton. The greatest amount in 24 consecutive hours, 1.11 inches, occurred at Independence on the 23d.

Miscellaneous Phenomena. Fog: 8th, 11th. Frost: 1st, 2d, 4th, 8th, 10th, 11th, 12th, 20th, 21st, 23d, 24th, 25th, 28th, 29th, 30th. Hail: 10th, 12th, 13th, 14th, 15th, 17th, 20th, 22d. Halos (lunar and solar): 6th, 27th, 28th, 29th, 30th, 31st. Haze: 16th, 17th, 18th, 30th, 31st. Sleet: 13th, 14th, 19th, 20th, 25th. Thunderstorms: 2d, 3d, 5th, 6th, 12th, 13th, 14th, 15th, 17th, 18th, 22d, 23d, 26th.

Rivers. Moderate stages prevailed on both the Mississippi and Missouri rivers. On the Mississippi there was a moderate rise during the second week with a falling tendency till the end of the month, when the lowest stages occurred. On the Missouri the daily changes were slight with a gradual falling tendency till the middle of the month, when the lowest stages occurred, after which there was a gradual rise with the highest stages occurring during the last three days. Unusually low stages prevailed on all interior rivers, with very little fluctuation, but with a gradual falling tendency. The daily changes exceeded 0.1 foot on very few days.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)				Wind				Sun- shine			
	Mean	Highest	Date	Lowest	Mean		Maximum		Total movement	Average hourly velocity	From	To		Date	Per cent of possible hours from normal	
					T. H. H.	L. H. H.	W. H. H.	M. H. H.								
					11 A. M.	11 A. M.	11 A. M.	11 A. M.								
Charles City	29.87	30.20	30	29.40	29.74	48	33	18	4	4,619	6.12	27	sw	3	31	11
Davenport	29.85	30.20	30	29.49	29.74	50	32	21	5	5,198	7.06	23	sw	30	29	10
Des Moines	29.87	30.25	30	29.35	29.71	48	21	23	4	5,412	7.33	42	sw	28	49	10
Dubuque	29.86	30.19	30	29.34	29.74	48	18	4	4	6,050	6.2	26	sw	28	49	10
Keokuk	29.88	30.23	30	29.45	29.71	47	22	22	2	5,734	7.7	26	sw	30	29	10
Sioux City	29.92	30.32	30	29.37	29.72	47	23	22	2	5,911	12.1	31	sw	17	37	11
Omaha, Neb.	29.91	30.26	30	29.35	29.73	46	20	3	3	6,301	9.1	37	sw	23	37	11
Means and extremes	29.88	30.32	30	29.34	29.73	49	23	18	4	7.0		31	sw	11	36	9
Normals and records	29.9	30.5	1910	29.02	1875			34		8.7		34	sw	1894	01	01

*Dubuque. †Omaha. ‡Sioux City. †Local mean time.

COMPARATIVE DATA FOR THE STATE—MAY

YEAR	Temperature				Precipitation			Number of Days				
	Mean	Departure	Highest	Lowest	Total	Greatest	Least	Snowfall	Wet days in, or more	Clear	Partly cloudy	Cloudy
1880	57.7	-2.8	90	30	3.36	-1.01	6.44	1.01	9	10	15	9
1891	58.3	-2.2	94	21	3.18	-1.39	7.10	1.46	8	14	11	8
1892	54.0	-6.7	88	27	8.77	+4.25	15.4	4.85	T	5	9	13
1893	56.6	-3.9	96	35	3.45	-1.12	5.87	1.05	0	13	9	9
1894	61.1	+0.6	96	23	1.87	-2.70	4.77	0.33	0	6	17	10
1895	61.7	+1.2	104	24	3.19	-1.38	5.79	0.84	0	9	11	12
1896	62.5	+2.0	100	34	6.69	+2.12	11.79	3.40	0	12	11	8
1897	58.5	-2.0	96	30	1.92	-2.65	3.90	0.21	0	5	10	10
1898	59.6	-0.9	92	26	4.67	+0.10	7.82	2.23	0	12	9	10
1899	60.2	-0.3	90	27	6.23	+1.96	11.47	3.00	0	13	9	10
1900	62.3	+2.7	98	32	3.31	-1.36	6.96	0.96	0	8	14	10
1901	60.7	+0.2	95	28	2.35	-2.22	4.57	0.72	0	7	16	9
1902	63.8	+3.2	97	25	5.39	+0.82	10.04	0.87	0	13	10	9
1903	61.6	+1.1	91	24	8.55	+3.98	15.45	2.98	0	16	9	10
1904	59.6	-0.9	93	33	3.78	-0.79	8.15	1.50	0	8	13	10
1905	58.2	-2.3	88	28	5.95	+1.84	9.83	2.57	0	14	11	8
1906	60.9	+0.3	95	24	3.54	-1.63	10.72	0.89	0	11	13	9
1907	58.5	-2.0	86	14	3.48	-1.09	7.68	0.71	1.0	10	11	10
1908	59.4	-1.1	93	13	8.34	+3.77	14.23	1.33	0	15	9	11
1909	57.9	-2.6	97	18	4.34	-0.23	7.83	1.86	0.1	9	12	12
1910	55.4	-5.1	18	3.41	-1.16	6.91	1.29	0	30	15	7	9
1911	64.9	+4.4	98	33	3.76	-0.81	8.12	0.7	0	9	16	9
1912	62.7	+2.0	97	29	3.29	-1.34	6.41	0.72	0	10	14	11
1913	60.4	-1.1	102	30	6.24	+1.67	10.25	3.14	0	13	11	8
1914	61.2	+1.7	98	25	3.31	-1.26	6.90	0.30	T	19	14	11
1915	56.1	-4.4	90	35	7.34	+2.77	15.21	3.82	T	14	9	13
1916	59.0	-0.6	94	27	4.08	+0.30	10.44	2.14	T	12	15	10
1917	58.1	-1.4	95	18	3.87	-0.70	7.33	1.09	0.6	10	13	8
1918	61.9	+2.1	98	29	6.87	+2.20	10.97	3.12	0	13	11	7
1919	58.2	-2.3	93	30	3.11	-1.46	7.14	0.73	0	9	13	11
1920	59.4	-1.1	89	29	3.96	-1.21	5.73	0.92	0	8	14	7
1921	61.3	+2.8	99	24	4.23	-0.34	4.13	0.20	0	10	14	7
1922	63.4	+2.9	91	34	3.53	-1.01	8.36	0.47	0	12	13	10
1923	59.6	-0.9	90	28	2.84	-1.73	6.55	1.07	T	10	14	10
1924	54.1	-6.4	94	26	1.71	-2.86	3.28	0.18	0.1	9	13	9

T. indicates an amount too small to measure, or less than .006 inch rainfall and less than .05 inch snowfall.

JUNE

June was cool and wet with many objectionable features such as violent wind squalls, severe thunderstorms, floods and destructive hail storms. The cool weather that prevailed throughout May continued till the 11th, when a moderately warm period set in that continued till the latter part of the third week, after which another cool period set in that continued through the rest of the month, with only an occasional day with the temperature normal or slightly above. The maximum temperature was 90°, or above, over less than one-third of the State, and at most of the stations having this temperature it occurred on but a single day.

There was a decided contrast in precipitation with the preceding month, May, being the driest month of that name in the history of the State's weather, and the current month had the greatest average precipitation of any June of record for the State as a whole. The excess was general throughout the State except over a small area in the north-

west, and another in the northeast portion. The least amount reported from any station was 4.00 inches which is very unusual. The average number of days with .01 inch or more of precipitation, 14, has been equaled only once in the history of the State and never exceeded in June. Measurable precipitation was recorded at some station in the State every day of the month, and thunderstorms occurred on every day of the month except the 6th, 21st, and 30th. During the first week light scattered precipitation occurred frequently over all portions of the State, and on the 8th first general drenching rain of the season occurred. During the rest of the month damaging, locally heavy to excessive rainfall occurred frequently causing destructive floods and great property losses. Owing to the previous dry condition of the soil, the heavy rainfall that occurred during the first half of the month was mostly taken up by the soil and the damage by overflow of the smaller streams was of no great consequence, but from the 13th till the end of the month floods occurred over portions of the central and southern divisions in rapid succession. Most of the overflow followed the heavy rains of the 23d-24th over a large area in the southern and west-central, and in the south-central, southeast, east-central; and in the eastern portion of the central division following the rain of the 28th. Following the heavy rains of the 23d-24th many miles of railroad track were submerged in Carroll, Crawford, Guthrie, Audubon, Shelby, Harrison, Pottawattamie, and Cass counties in the western portion of the State, and in Monroe and Wapello counties in the southern portion. All railroads in the western portion of the State were injured but the C. M. & St. P. Ry. was the greatest sufferer, having about 16 miles of roadbed washed out in a stretch of about 75 miles north of Underwood, Pottawattamie county, to a depth of two to seven feet. The C. B. & Q. Ry. was also hit rather hard in the south-central and southeast portion. For many miles stretches of track from a few hundred to several thousand feet were washed out and bridges damaged. Nearly all roads in the flooded sections were compelled to make long detours and traffic was badly demoralized. Probably the most serious flood conditions followed the rain of the 28th and the C. R. I. & P. Ry. suffered the greatest damage, though there was great damage over a large area in the eastern portion of the State. From Grinnell to a few miles east of Marengo the C. R. I. & P. Ry. had about 10 miles of track and two bridges washed out. The losses from floods to railroad property is estimated at about \$1,200,000. The town of Marengo experienced the worst flood of record and some buildings were submerged to a depth of 10 feet, causing an estimated damage of about \$200,000. Many streams in the State reported the highest water ever experienced and thousands of acres of farm lands were flooded and heavy losses from floods occurred in the vicinity of Wapello, Columbus Junction, and Burlington. The losses from floods to crops and farm property cannot be approximated but it undoubtedly totals several million dollars.

Unusually destructive winds were frequent, the storms of the 14th and 27th-28th being the most severe. On the 14th a large area west of a line running from Osceola county in the northwest to Appanoose county in the south-central were affected. In this storm countless numbers of

trees were up rooted or torn to pieces, farm buildings, windmills and silos were broken down and crops badly damaged. In single counties the damage to farm property amounted to more than \$100,000. The wind storm that swept over the State on the 27th-28th was conceded to be the worst that ever visited the State. The entire State was affected, but a strip approximately 75 miles in width running east and west across the center of the State sustained the greatest damage. Des Moines received the worst damage from wind in its history. Falling trees paralyzed all wire systems and blocked streets, and 1,000 buildings were damaged, street car service was suspended; and for a short period in the early morning all outside communication was shut off. The damage to property in Des Moines was in the neighborhood of \$1,000,000, of which, plate glass amounted to \$48,000 and window glass about half as much. Other communities suffered relatively as much damage as Des Moines so that the damage in the State was great. This storm appeared to be straight blows from the west and at Des Moines four violent gusts were noted, each lasting but a few seconds, but there were strong indications that tornadoic action was present. Plate glass windows were blown outward on all sides of buildings, many being on the east side and well protected, many tops of trees showed a distinct twist and a hickory tree in Waveland Park, torn off about five feet from the ground, showed plainly that it had been twisted. Two steel flag poles in the city parks were bent nearly to the ground, and many standard steel posts supporting overhead wires were bent to an angle of more than 45° over a wide strip.

Frequent and excessive rains interfered with corn cultivation; many fields were overtaken by weeds and grass, and hundreds of acres were washed or drowned out. Small grain and grasses were greatly benefited by the cool, moist weather and all truck crops except tomatoes made excellent progress. One of the best crops of strawberries ever produced in the State was gathered, but the many wind squalls severely injured raspberries and cut the yield in some localities more than 50 per cent. Fruit trees were greatly injured by wind squalls, but the cherry crop was good, though in many cases harvested from fallen trees. Severe hail storms occurred in Keokuk and Scott counties, whole sections being completely haled out. Two deaths were reported from lightning.

Dirt roads were in bad condition at frequent intervals. Hundreds of bridges were washed out in the central and southern division, one township in the western portion of the State reported 75 wooden bridges gone, and long stretches of roads were submerged for short periods.

Temperature. The mean temperature for the State, as shown by the records of 101 stations, was 66.8°, or 2.5° lower than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 65.0°, or 3.0° lower than the normal; Central, 67.6°, or 2.6° lower than the normal; Southern, 68.5°, or 1.7° lower than the normal. The highest monthly mean was 79.4°, at Keokuk and Thurman, and the lowest was 62.6°, at Postville. The highest temperature recorded was 96°, at Columbus Junction, on the 19th, and the

lowest was 35°, at Inwood, on the 6th. The temperature range for the State was 61°.

Precipitation. The average precipitation for the State, as shown by the records of 104 stations, was 8.10 inches, or 3.58 inches greater than the normal. By divisions, the averages were as follows: Northern, 5.38 inches, or 0.77 inch greater than the normal; Central, 9.20 inches, or 4.74 inches greater than the normal; Southern, 9.71 inches, or 5.22 inches greater than the normal. The greatest amount, 14.92 inches, occurred at Cumberland, and the least, 4.00 inches, occurred at Sanborn. The greatest amount in 24 consecutive hours, 5.78 inches, occurred at Washington, on the 28th.

Miscellaneous Phenomena. Aurora: 9th. Fog: 1st, 3d, 12th, 13th, 14th, 27th. Hall: 2d, 3d, 5th, 8th, 12th, 13th, 14th, 15th, 19th, 20th, 22d, 23d, 27th, 28th. Halos: 10th, 20th, 22d. Thunderstorms: All days except 6th, 21st, 30th. Winds, high: 5th, 7th, 12th, 14th, 15th, 17th, 19th, 22d, 23d, 24th, 27th, 28th.

Rivers. Moderate stages prevailed on the Mississippi River with very little fluctuation considering the heavy rainfall. A gradual rise occurred during the last few days of the month. On the Missouri River moderate stages prevailed during the first two weeks, with only slight fluctuations, after which a gradual rise occurred that continued till the middle of the last week and there was a general, though slight, fall in progress at the end of the month. The interior rivers and many small streams in most of the central and southern divisions were subject to sudden changes and flood conditions were experienced in the west-central division, most of the southern division and a large area in the east-central division. A number of places on the Boyer River, Bear Creek and small streams emptying into the Nishnabotna and Iowa Rivers experienced the highest stages ever recorded.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)				Wind				Sun- shine Per cent of Departure from normal	
	Mean	Highest	Date	Lowest	Date	Mean		Total movement	Maximum		Date			
						12 Noon			Average hourly velocity					
						7 A. M.	7 P. M.		Miles	From				
Charles City.....	29.90	30.25	30	29.42	28.81	60	64	1	4.27	5.9	30	se.	38	59
Davenport.....	29.91	30.19	30	29.56	28.81	60	60	2	4.738	5.6	30	n.	13	64
Des Moines.....	29.88	30.29	30	29.52	28.85	60	64	1	4.888	6.6	45	nw.	38	61
Dubuque.....	29.86	30.17	30	29.48	28.80	60	64	1	3.801	5.4	31	n.	14	61
Keokuk.....	29.94	30.24	30	29.27	28.81	60	64	3	6.818	6.7	30	nw.	30	61
Siox City.....	29.96	30.37	30	29.28	19.84	36	36	1	5.790	11.1	61	nw.	14	61
Omaha, Neb.....	29.89	30.35	30	29.21	19.84	70	67	4	5.600	7.8	59	nw.	12	61
Means and extremes	29.90				81	64			7.5		52	nw.	122	59
Normal and records	29.96	10 ³		5 ⁸	79	60	30 ⁴		7.6		58	w.	197	66
	*30.40	1011	129.04	1880			114.1884				58	w.	197	

*Dubuque. †Omaha. ‡Sioux City. ††Local mean time. †††And other dates.

COMPARATIVE DATA FOR THE STATE—JUNE

YEAR	Temperature				Precipitation				Number of Days			
	Mean	Departure ⁺	Highest	Lowest	Total	Departure ⁺	Greatest	Least	With pre. in in. or more	Partly cloudy	Cloudy	
1867	72.7	+3.4	106	34	7.76	+2.34	36.52	1.57	11	12	10	8
1871	69.1	-0.7	90	37	5.39	+0.87	19.86	1.68	11	8	10	12
1882	69.2	-0.1	102	42	5.19	+0.67	14.16	0.67	10	12	11	7
1882	71.2	+1.9	100	40	3.91	+0.01	7.56	1.30	8	15	11	8
1901	73.2	+3.9	104	34	3.67	-1.85	6.20	0.37	10	16	10	1
1895	69.7	+0.4	102	34	4.22	+0.30	9.26	0.98	7	11	11	8
1896	69.1	-0.2	100	40	3.11	-1.41	7.80	0.51	9	15	15	2
1896	69.1	-0.2	100	39	3.83	-0.73	9.28	1.03	10	10	12	8
1898	71.4	+2.1	99	42	4.72	+0.20	12.45	1.00	9	13	10	7
1899	70.7	+1.4	100	42	5.04	+0.32	11.90	1.19	10	12	15	2
1900	69.7	+0.4	102	38	3.98	+0.34	10.23	0.62	8	17	10	8
1901	72.3	+3.0	100	30	3.71	-0.81	7.84	1.05	9	15	11	4
1902	65.2	-4.1	97	32	7.16	+9.64	16.91	1.48	14	8	11	11
1903	64.6	-4.7	96	30	3.86	-1.66	6.04	0.75	11	13	10	11
1903	67.1	-2.2	94	33	3.45	-1.07	8.55	0.44	7	15	19	7
1905	69.9	+0.6	100	36	5.23	+1.01	11.80	1.80	10	13	11	7
1906	67.9	-1.4	99	37	3.92	-0.60	3.57	1.48	8	13	10	9
1907	69.5	-2.8	98	36	3.35	-0.80	9.43	2.07	13	14	9	8
1907	67.1	-2.4	95	34	3.66	+1.34	11.88	1.77	13	15	10	8
1909	69.1	-0.7	96	40	6.41	+1.80	12.30	2.80	13	12	10	8
1910	69.5	+0.2	101	33	3.66	-0.32	5.51	0.65	7	18	7	9
1911	71.7	+3.6	104	36	3.82	+0.30	10.45	0.66	6	20	8	4
1912	66.2	-3.1	101	34	3.74	-1.78	5.71	0.78	7	15	9	6
1913	71.5	+3.2	102	33	3.31	-1.21	8.95	0.74	7	19	8	3
1914	72.2	+3.9	101	40	3.57	+1.05	13.24	1.17	7	19	14	1
1915	65.1	-4.3	91	31	4.10	-0.80	9.04	1.77	11	12	12	6
1916	61.5	-4.8	86	28	3.71	-0.81	2.90	1.43	10	13	11	6
1872	66.6	-2.3	100	29	6.65	+1.12	12.28	3.04	12	13	10	7
1898	70.8	+2.9	103	31	4.50	+0.39	11.55	0.86	11	16	10	4
1899	71.9	+4.0	98	41	6.19	+1.65	12.25	1.92	12	17	12	6
1905	70.7	+1.4	99	40	3.56	-0.96	8.48	1.35	9	16	10	1
1911	71.7	+3.4	100	40	3.70	-0.76	8.85	0.56	9	16	10	4
1923	70.8	+3.82	102	39	4.19	-0.70	7.19	0.98	6	19	8	3
1925	70.9	+1.6	100	40	4.93	+0.41	7.49	0.43	12	14	10	6
1927	66.8	-2.5	96	35	8.10	+3.57	14.92	4.00	11	11	14	5

T. indicates an amount too small to measure, or less than .005 inch rainfall and less than .65 inch snowfall.

⁺See normals effective June 1, 1924. See pages 65 to 70.

JULY

Persistent low temperature was the chief characteristic of the weather of July. The first half of the month was almost entirely below normal, and during the rest of the month there were numerous fluctuations with only an occasional day above normal. The only period during the month that could be classed as warm occurred during the last week, and at no time during the month did warm periods, such as are common to July, occur. The mean temperature for the state, 70.2° was, with the exception of 1891, when the mean was 68.5°, and 1915 with a mean of 69.5°, the lowest July mean in the history of the State's weather. Temperatures of 90°, or higher, were not recorded in much of the northern half of the State and at many stations where this temperature occurred it was reached on only one day.

The average precipitation for the State was very nearly normal but the distribution was very uneven. Over a large area in the southeast,

east-central, and a limited area to the north and west there was a decided excess, while there was a decided deficiency over most of the western and northern sections, and in the extreme northwest corner and portions of the central, south-central, and west-central sections pastures were drying up and crops generally beginning to need rain badly. Most of the excess was in the first part of the fourth week, when unusually heavy rains occurred. A number of stations reported more than 5.00 inches in 24 hours, and at Washington the heaviest 24-hour rainfall of record occurred, 5.80 inches having fallen in about 7 hours on the 24th. The lower reaches of the Wapsipineon, Cedar, Iowa, and Skunk rivers were flooded as well as many of their tributaries, and the smaller streams emptying in the Mississippi south of Muscatine. The damage from floods embraced many hundred acres of corn and small grain, many highway bridges, railways, and some stock. The C., R. I. & P. Ry. was damaged in practically the same location as in June, but some washouts occurred that were not affected in the June floods. Train service was held up over the damaged section for two days, and the damage was placed at about \$60,000.

Wind and hail storms also were active during the month though less than half of the State was embraced in the affected portion, and practically all the damage was confined to an area north of a line drawn from Plymouth to Des Moines counties. Most of the damage from wind occurred on the 7th, and from the 21st to the 27th. The principal damage occurred from Kossuth county westward, from Marshall and Hardin counties eastward, and in limited areas in Clayton, Iowa, and Henry counties. On the 21st tornadic characteristics were reported though no funnel clouds were reported. Many acres of corn were flattened, small grain that had been harvested was scattered, and unharvested fields were flattened so it became necessary to cut in only one direction. Many wind mills, silos, and farm buildings were blown down or badly damaged, hundreds of telephone and telegraph poles were broken off, and wire service badly demoralized. Excluding local lines, it was necessary to spend over \$40,000 to put telephone lines in condition. Hail storms were very destructive, and the principal ones were embraced in a strip from Plymouth, Lyon, and Emmet counties southeastward to Delaware, Linn, and Johnson counties. Damage to crops from hail exceeded \$1,000,000 and the heaviest damage occurred in Humboldt, Franklin, Hardin, Grundy, and Black Hawk counties. Reports were received from several counties of as many as three whole sections having crops completely ruined by the hail and some stones were of enormous size. In Grundy the hail drifted from a foot to 18 inches deep, and remained on the ground for 48 hours after the storm. Individual farm losses ranged from \$100 to as high as \$3,000. Hundreds of chickens were killed, hogs and cattle were bruised and bleeding, and many roofs were punctured by the hail.

The month was not without redeeming features. While the weather was not favorable for the best development of corn, there was a noticeable improvement in the crop in most of the State, and a decided improvement in the south-central counties. Cool weather crops promised

unusually well, grain harvest progressed under generally favorable conditions; and an excellent crop of hay was harvested. Truck crops, especially cabbage and potatoes, were benefited by the cool weather, but tomatoes made slow progress. Bees were able to work most of the month, and a good honey crop is assured. Roads were good over most of the western and central portions of the State except for short periods, but the frequent rains in the eastern portion kept them in bad condition most of the time, and during the latter part of the month many detours were necessary on account of washouts.

Temperature. The mean temperature of the State, as shown by the records of 101 stations, was 70.2°, or 3.6° lower than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 68.9°, or 3.8° lower than the normal; Central, 70.3°, or 3.7° lower than the normal; Southern, 71.3°, or 3.3° lower than the normal. The highest monthly mean was 73.2°, at Thurman, and the lowest was 66.2°, at Postville. The highest temperature recorded was 99°, at Clinton on the 21st, and the lowest was 41°, at Decorah on the 1st, 2d and 3d and at Postville on the 3d. The temperature range for the State was 58°.

Precipitation. The average precipitation for the State, as shown by the records of 104 stations was 3.67 inches, or 0.17 inch less than the normal. By divisions the means were as follows: Northern, 3.10 inches, or 0.69 inch less than the normal; Central, 3.92 inches, or 0.07 inch more than the normal; Southern, 3.98 inches, or 0.09 inch more than the normal. The greatest amount, 8.90 inches occurred at Olin, and the least, 0.57 inch, occurred at Milford. The greatest amount in 24 consecutive hours, 5.80 inches, occurred at Washington on the 24th.

Miscellaneous Phenomena. Aurora: 26th. Fog: 4th, 7th, 19th, 20th, 30th, 31st. Hail: 1st, 3d, 4th, 7th, 11th, 21st, 23d, 24th, 27th, 28th, 29th. Halos (lunar and solar): 2d, 13th, 18th. Rainbows: 1st, 2d, 20th. Thunderstorms: 1st, 3d, 4th, 6th, 7th, 8th, 9th, 11th, 12th, 13th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 27th, 28th, 29th. Winds (directions): 21st, 24th, 27th, 29th.

Rivers. Gradually falling stages prevailed on the Missouri River though a moderate rise occurred during the first part of the third decade, the extreme stages ranging from 13.9 feet to 10.4 feet at Omaha and from 10.3 feet to 8.4 feet at Sioux City. Gradually falling stages also prevailed on the Mississippi River during the most of the month but a rather sharp rise occurred at Dubuque on the 23d due to a freshet in the Turkey River and at Davenport on the 24th and Keokuk on the 25th due to excessive rainfall that occurred in the lower basins of the Wapsipineon, Cedar, Iowa and Skunk Rivers. Low and nearly stationary stages prevailed on the interior rivers except in the southeast and east central sections where destructive floods occurred in the lower reaches of the rivers and most of their tributaries in the area.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)				Relative Humidity (%)			Wind				Sunshine			
	Mean	Highest	Date	Lowest	Mean			Total movement	Average hourly velocity	Maximum			Direction		
					7 a. m.	12 Noon	7 p. m.			Miles	From	Date			
					7 a. m.	12 Noon	7 p. m.	Lowest	Date	Total movement	Average hourly velocity	Miles	From	Date	Per cent of possible	Days
Charles City	29.96	30.34	12	29.69	71.81	70.59	71	10	3,963	4.9	28	sw	23	67	8
Davenport	29.91	30.31	12	29.71	71.78	70.56	71	10	4,196	5.0	28	sw	21	65	7
Des Moines	29.95	30.25	12	29.65	71.86	70.57	71	10	4,401	5.0	28	sw	16	76	7
Dubuque	29.96	30.31	12	29.65	71.79	70.54	71	10	3,560	4.8	28	sw	21	65	7
Keokuk	29.95	30.28	12	29.74	71.77	70.58	71	11	3,879	5.2	28	sw	24	71	8
Sioux City	29.99	30.27	12	29.62	71.77	70.59	71	10	7,119	9.6	30	se	15	80	10
Omaha, Neb.	29.96	30.34	12	29.67	71.76	70.56	71	10	4,680	6.3	42	sw	11	82	8
Means and extremes	30.00	30.37	12	29.62	71.77	70.57	71	10	6.0		50	se	15	72	2
Normals and records	29.95	30.47	1892	29.37	71.79	71	10	10	6.7		130		14	74	

*Davenport. †Charles City. ‡Des Moines. §Omaha. ||Local mean time. ¶And other dates.

COMPARATIVE DATA FOR THE STATE—JULY

YEAR	Temperature				Precipitation			Number of Days				
	Mean	Departure ^a	Highest	Lowest	Total	Departure ^a	Greatest	Least	Snowfall	With pre. of in. or more		
										Clear	Partly cloudy	Cloudy
1860	75.6	+1.8	119	43	1.06	-1.36	5.90	0.25		5	14	5
1861	68.5	-3.8	99	41	4.22	+0.38	8.29	1.87		2	13	5
1862	73.0	-0.8	104	38	5.29	-1.43	12.86	1.71		9	16	5
1863	75.9	+1.2	102	47	3.33	-0.51	8.83	1.19		19	10	5
1864	78.4	+3.6	109	39	6.53	-2.21	3.50	T		22	8	5
1865	72.1	-1.7	104	35	3.49	-0.44	10.56	0.45		15	12	1
1866	72.6	-0.2	104	42	6.90	-3.00	17.87	1.63		9	14	6
1867	75.6	+1.8	106	42	3.36	-0.38	7.09	1.01		6	18	5
1868	74.4	-0.4	102	47	5.98	-0.86	12.58	0.55		7	19	9
1869	73.1	-0.7	101	38	3.07	-0.77	8.66	0.42		16	10	5
1870	73.4	-0.4	102	37	6.15	-2.31	18.45	1.80		9	16	10
1871	74.2	+0.6	112	46	7.54	-1.50	5.97	0.59		5	21	9
1872	78.1	-0.7	99	41	8.62	+4.83	13.37	6.82		12	14	10
1873	72.9	-0.9	100	49	4.83	+0.90	12.72	0.94		9	17	9
1874	70.8	-3.2	100	38	4.41	+0.57	11.97	1.28		10	16	9
1875	70.6	-3.2	100	49	3.95	-0.80	7.98	0.99		9	14	10
1876	70.9	-2.9	102	43	3.04	-0.80	7.05	0.96		8	15	10
1877	73.7	-0.1	102	41	7.27	+3.43	13.66	3.92		13	16	11
1878	73.6	-0.8	100	42	3.00	-0.15	9.21	0.70		8	16	10
1879	72.3	-1.5	102	40	4.71	+0.30	12.01	1.20		10	12	10
1880	74.5	+0.7	108	43	1.80	-1.98	5.69	0.12		7	19	8
1881	75.5	+1.7	111	38	2.27	-4.37	6.82	0.68		7	18	10
1882	74.9	+0.8	108	38	3.71	-0.13	7.56	1.17		10	17	10
1883	76.1	+2.3	108	45	1.85	-2.02	6.23	T		5	21	8
1884	76.6	+2.8	109	43	3.27	-1.57	6.20	0.44		5	20	8
1885	69.3	-4.3	92	49	8.25	+4.48	15.83	3.68		14	19	12
1886	75.7	+5.9	105	48	7.78	-5.66	6.87	0.10		5	22	7
1887	74.3	+0.5	106	38	3.27	-1.57	6.06	0.22		7	21	8
1888	73.1	-0.7	106	40	3.17	-0.67	8.06	0.76		8	19	8
1889	77.4	+3.6	104	41	2.90	-0.98	7.82	0.59		6	23	8
1890	72.3	-1.5	102	45	4.23	+0.26	7.49	1.11		9	19	9
1891	77.9	+4.1	104	41	2.53	-1.31	7.45	0.42		7	19	9
1892	71.5	-2.3	98	49	6.31	+2.47	11.72	3.15		11	14	12
1893	76.5	+2.7	106	47	7.75	-2.90	15.55	6.20		9	15	9
1894	70.2	-3.6	99	41	3.67	-0.18	8.90	0.57		9	16	11

T. Indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall.

^aNew normals effective June 1, 1921.

AUGUST

August was the warmest month of the season, though the temperature was just normal, and the only month since April with the average temperature up to normal. The three summer months were 2.0° below normal, and since May 1 the average daily deficiency in temperature was 3.1°. The month opened with the temperature slightly below normal but the next four or five days were rather warm, and during this period the warmest day of the month occurred over most of the State. During the rest of the month there were two prolonged periods of cool and warm weather of about equal length. Temperatures of 90 degrees, or higher, were experienced in all sections of the State except a few stations in the northern division. There were no periods of oppressive weather and the warmest days were generally followed by cool nights.

Precipitation was much above normal and the average for the State has been exceeded but three times in August. The greatest excess

occurred in the eastern half of the State. The only extensive area having a deficiency in precipitation was in the southwestern portion, reaching from Pottawattamie to Wayne county. Thunderstorms were unusually active and much damage resulted from damaging winds, severe hail, floods and lightning. Many thunderstorms that set buildings on fire were accompanied by no rain. The greatest damage was due to floods and much of the State from the Iowa river basin eastward experienced destructive overflows following the heavy rains on the 18th. Locally heavy rains were frequent during the month till the 24th. When the heavy rains came on the 18th the soil was generally saturated and soon nearly all streams from the Iowa river eastward were out of banks and much of the adjacent territory was flooded. Cedar Rapids probably experienced the worst flood in its history; portions of the City were covered with as much as ten feet of water; and automobiles parked on streets in the worst flooded sections were entirely submerged. Many of the smaller towns in the flooded sections were partly submerged and in the country districts crops were destroyed, stock drowned, highways rendered impassable, and considerable farm property washed away. Railway traffic was seriously interfered with as there were long stretches of track washed out, bridges damaged, and miles of track submerged. The C. & N. W. Railway and the M. & St. L. Railway experienced the most damage, but all roads in the affected section suffered some damage. Thousands of acres of corn were ruined and much small grain in the shock was washed away and much that was left in the field either rotted or began to sprout. Threshing was greatly delayed, both on account of the wet condition of the grain and the difficulty in moving machines from place to place. Two men were drowned east of Cedar Rapids in attempting to cross a swollen stream and lightning caused the death of a girl at Keokuk. Lightning was also fatal to an unusual number of farm animals.

Destructive hail storms occurred over limited areas, mostly in the northern portion of the State. The most serious damage occurred in Mitchell county on the 4th, Pottawattamie county on the 12th, Worth county on the 17th, Franklin, Hardin, and Lyon counties on the 18th, Emmet county on the 20th, Plymouth county on the 22d, and Hamilton county on the 23d. There were also numerous wind squalls at frequent intervals during the month. The most destructive storm occurred during the early morning of the 8th when much of the State was affected, though the greatest damage seemed to be confined to a strip running across the State in the southern portion of the central division. Pronounced tornadic characteristics were present at Granger and Colfax. A mile north of Granger a farm dwelling was moved from its foundation and brick falling from a chimney killed a woman who had sought safety in the cellar. The roof of the main portion of the house was carried about 2,000 feet and it mowed down corn as it skimmed along the ground. Another house in the same vicinity was unharmed, though trees that surrounded it were destroyed. At Colfax numerous small buildings were destroyed and a large grain elevator moved from its foundation. In other portions of the State many farm buildings were blown down.

hundreds of trees were uprooted or broken off, corn fields leveled and much grain in the shock scattered. Telephone, telegraph, and electric wires were also greatly damaged.

Corn made rather good progress during the last two weeks, but owing to the general unfavorable conditions that prevailed the entire growing season, it was still in need of a month of favorable weather to mature half of the crop.

Temperature. The mean temperature for the State, as shown by the records of 102 stations, was 71.7°, which is the normal for the State. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 69.8°, or 0.5° lower than the normal; Central, 71.7°, or 0.2° lower than the normal; Southern, 73.7°, or 0.7° higher than the normal. The highest monthly mean was 75.9° at Thurman, and the lowest was 66.2° at Postville. The highest temperature recorded was 100° at Columbus Junction on the 21st and 26th, Glenwood on the 30th, and Inwood on the 26th, and the lowest was 40° at Hampton on the 11th and 13th. The temperature range for the State was 60°.

Precipitation. The average precipitation for the State, as shown by the records of 107 stations, was 5.35 inches, or 1.91 inches more than the normal. By divisions, the averages were as follows: Northern, 5.98 inches, or 2.69 inches more than the normal; Central, 5.82 inches, or 2.29 inches more than the normal; Southern, 4.25 inches, or 0.76 inch more than the normal. The greatest amount, 12.38 inches, occurred at Iowa Falls, and the least, 1.90 inches, occurred at Glenwood. The greatest amount in 24 consecutive hours, 5.24 inches, occurred at Iowa Falls on the 18th and 19th.

Miscellaneous Phenomena. Fog: 6th, 19th, 20th, 21st, 25th, 26th. Hail: 4th, 8th, 12th, 17th, 18th, 20th, 21st, 23d, 24th, 31st. Halos (Lunar and Solar): 16th. Rainbows: 12th, 17th, 23d. Thunderstorms: All days of the month except 9th, 11th, 25th, 26th, 27th, 29th. Tornadoes: 8th, 22d. Winds, high: 3d, 5th, 8th, 18th, 19th, 20th, 21st, 23d, 24th, 28th, 30th, 31st.

Rivers. Moderate stages with a falling tendency prevailed on the Missouri River the greater portion of the month. The highest stages occurred during the first part of the second week and the lowest stages on the last day of the month. The daily fluctuations were less than 0.5 foot except on one day. Low stages prevailed on the Mississippi River at the beginning of the month but rather high stages were general after the first week. A sharp rise occurred at Dubuque from the 4th to the 7th and another from the 18th to the 20th which were felt along the entire border of the State. Severe floods occurred in some of the smaller streams in the eastern portion of the State following the heavy rains of the 19th but the larger streams were not flooded except in small areas. In the rest of the State rather high stages for the season prevailed but no flood damage resulted.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, Inches (Sea level)			Relative Humidity (%)		Wind				Sunshine inches from normal						
	Mean	Highest	Date	Mean		Total movement	Average hourly velocity		Maximum Miles		Per cent. of prevailing from normal					
				7 A. M. 12 Noon	5 P. M.		Direction	Direction		Date						
Charles City	29.91	30.22	13	29.61	21	84	59	31	4,226	5.7	26	sw.	15	60	2	
Davenport	29.96	30.19	14	29.75	5	44	67	35	4,478	6.0	34	sw.	8	70	1	
Des Moines	29.99	30.19	10	29.66	8	85	66	23	5,927	6.8	82	sw.	30	8	0	
Dubuque	29.90	30.18	13	29.62	8	82	61	68	4,961	5.4	31	sw.	4	67	0	
Kokwik	29.95	30.78	14	29.76	8	84	59	67	4,277	5.9	34	sw.	5	73	2	
Sioux City	29.90	30.22	13	29.62	10	62	62	39	5,706	10.4	60	sw.	8	74	4	
Omaha, Neb.	29.90	30.21	11	29.64	8	79	58	64	5,085	6.8	44	sw.	8	78	3	
Means and extremes	29.99	30.22	13	29.67	5	80	61	31	6.7				8	70	0	
Normals and records	29.97	30.43	24 ¹⁰	29.60	10 ⁸	82	63	31	6.3			sw.	6 ¹⁰	70		
					1874											

1Sioux City. 2Omaha. 3Des Moines. 4Local mean time. 5And other dates.

COMPARATIVE DATA FOR THE STATE—AUGUST

YEAR	Temperature				Precipitation			Number of Days					
	Mean	Departure*	Highest	Lowest	Total	Departure*	Greatest	Least	Snow fall	Wet, ice, or more	Clear	Partly cloudy	Cloudy
1869	68.4	-2.2	102	36	3.41	-0.03	6.44	1.92		8	15	10	6
1869	69.1	-2.6	106	31	4.24	+0.80	11.07	1.32		8	15	12	6
1867	71.4	-0.2	102	40	2.24	-1.20	4.69	0.65		2	18	9	4
1863	69.4	-2.5	101	30	2.32	-1.12	2.82	0.49		3	19	12	4
1864	74.6	+2.9	108	38	1.58	-1.86	4.55	T		4	21	8	3
1865	71.9	+0.0	102	37	4.43	+0.00	10.63	0.32		7	17	9	4
1866	71.7	+0.2	104	34	3.32	+0.68	12.25	0.80		5	15	11	3
1867	68.9	-2.8	104	35	1.86	-1.59	4.98	0.47		6	15	11	3
1868	71.2	-0.5	103	40	3.44	+0.00	10.55	0.58		6	17	9	3
1869	74.4	+2.7	100	41	3.68	+0.94	10.45	1.12		7	17	10	4
1870	77.4	+5.7	105	44	4.65	+1.21	10.45	1.26		6	18	10	3
1871	73.8	+2.1	106	40	1.29	-2.18	4.46	T		5	19	9	3
1872	69.3	-2.6	96	37	6.38	+3.14	15.67	1.37		11	11	11	7
1873	69.1	-2.6	101	41	6.64	-3.39	17.74	2.55		11	12	10	8
1874	69.1	-2.6	97	35	3.43	-0.01	6.75	0.66		7	17	8	6
1875	74.3	+2.6	104	44	4.65	+0.51	9.47	1.94		9	16	10	5
1876	74.1	+2.4	101	33	3.95	+0.31	10.01	0.92		9	17	9	3
1877	71.1	+0.6	99	37	4.33	+0.80	9.67	1.05		9	17	9	3
1878	70.9	-1.7	101	38	4.77	+1.33	10.55	1.35		9	17	9	3
1879	76.1	+4.4	103	33	1.81	-1.03	8.21	T		8	21	8	3
1880	71.9	+0.2	104	36	3.88	+0.44	11.22	0.72		8	15	10	8
1881	71.7	0.0	107	34	3.22	-0.12	9.47	0.44		9	16	10	3
1882	71.9	+0.7	101	40	3.75	+0.34	7.90	0.80		10	15	10	6
1883	76.6	+4.9	108	40	2.68	-0.79	7.13	0.68		6	17	10	4
1884	73.7	+2.0	103	40	2.19	-1.25	4.90	0.42		7	17	10	4
1885	65.9	-5.8	91	30	2.81	-0.63	9.14	0.27		8	16	8	7
1886	71.0	+2.3	106	33	3.58	-0.56	6.25	0.49		7	14	9	4
1887	66.4	-2.5	105	31	2.29	-1.15	6.35	0.79		7	19	8	4
1888	76.9	+4.3	112	38	3.61	+0.17	8.38	0.54		8	16	10	3
1889	71.5	-0.2	106	38	2.59	-0.85	5.72	0.97		7	19	9	3
1890	69.8	-2.9	96	39	3.35	-0.69	5.27	0.44		7	18	10	3
1891	72.1	+0.4	102	37	5.94	+1.60	9.04	2.30		8	16	11	4
1892	73.8	+2.1	102	43	3.90	-0.38	9.30	0.39		8	19	8	1
1893	70.6	-1.1	105	38	5.42	+1.98	13.14	1.46		12	15	9	1
1894	71.7	0.0	100	40	5.35	+1.91	12.38	1.50		10	16	10	3

T. Indicates an amount too small to measure, or less than .005 inch rainfall and less than .06 inch snowfall.

*New normals effective June 1, 1924.

SEPTEMBER

September, 1924, was unusually and persistently cool, the temperature deficiency being the greatest during any month of this year except May, and remarkably uniform, the range for all divisions being only 0.2 degree. The mean temperature, 59.1 degrees was, with the exception of 1896 and 1918, the lowest ever recorded in September. In the State as a whole there was an average of only five days when the temperature was above normal, and at no time was the excess marked. Light frost occurred as early in the month as the 5th, but there was very little damage in only a small area in the northern portion of the State. On the 9th an extensive area was visited by a frost that caused considerable damage to tender vegetation in the north-central and northeastern portions of the State, and considerable local damage resulted to corn in Webster county. From the 9th till the 28th, a few scattered frosts occurred over limited areas, but on the 28th a rather severe frost visited the western

portion of the State, and on the 29th and 30th the rest of the State was covered, though upland corn escaped.

The precipitation, like the temperature, was very uniform, and the range for all divisions was only 0.11 inch. There were no heavy down-pours. This was the only month since May that some part of the State was not visited by destructive floods, and the damage from hail was of no consequence. There was considerable damage from winds in the south-central division on the 11th, principally in Warren, Clarke, Lucas, Decatur, and Wayne counties. At Hartford, Warren county, and Lucas, Lucas county, tornadoic characteristics developed, but in each case the tail of the funnel cloud did not reach the ground except possibly for a very short distance. Strong, straight winds that originated south of Ringgold and Decatur counties swept northeastward to Warren county, damaged farm buildings, scattered straw and hay stacks, leveled corn fields, and blew off a great many apples. From the 21st to the 26th strong winds were general over most of the State that blew down considerable corn and nearly stripped many apple trees, but they were very beneficial in drying corn which had made very slow progress during the month previous.

The greatest damage was due to the frost. When the killing frosts came less than one-half of the crop was out of danger and about one-third of the crop was in the milk or dough stage. As most of the latest corn was on low ground, the damage was rather severe and general, and the only hope of utilizing much of the crop lay in early feeding or filling silos. Some of the late corn that cannot be put into silos will have very little feed value. Truck crops fared better than staple crops. Tomatoes and beans in localities were very little injured while corn fields in the same vicinity were apparently completely killed.

The weather was generally favorable for fall plowing; the soil being in good condition good progress was made. Some winter wheat was seeded but as a rule farmers were waiting for a date when the danger from Hessian fly was past. A rather severe drouth that has prevailed more or less most of the season in Lyon county still continued. Pastures in that county were grazed completely bare; it was necessary to feed all stock; stock water was scarce; wells failed; and the soil was too dry to plow.

Temperature. The mean temperature for the State, as shown by the records of 102 stations, was 59.1°, or 5.2° lower than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 57.5°, or 5.4° lower than normal; Central, 59.3°, or 5.2° lower than the normal; Southern, 60.4°, or 5.2° lower than the normal. The highest monthly mean was 61.8°, at Lamoni and Westcott, and the lowest was 55.0°, at Decorah and Postville. The highest temperature reported was 91°, at Cedar Rapids on the 21st, and the lowest was 25° at Cedar Rapids on the 30th. The monthly range for the State was 66°.

Precipitation. The average precipitation for the State, as shown by the records of 104 stations, was 3.13 inches, or 0.53 inch less than

the normal. By divisions, the averages were as follows: Northern, 3.05 inches, or 0.38 inch less than the normal; Central, 3.19 inches, or 0.50 inch less than the normal; Southern, 3.14 inches, or 0.71 inch less than the normal. The greatest amount, 5.68 inches occurred at Logan, and the least 1.01 inches, occurred at Inwood. The greatest amount in 24 consecutive hours, 3.00 inches, occurred at Estherville on the 21st.

Rivers. Rather high stages prevailed on the Mississippi River at the beginning of the month with gradually falling stages till the beginning of the last week, after which there was another slight rise. The mean stage averaged high for September. On the Missouri there was very little fluctuation, there being a slight fall during the greater portion of the month. Nearly stationary stages prevailed on the interior rivers except there were moderate rises following the heavier rain periods but there were no streams reported out of banks.

Miscellaneous Phenomena. Aurora: 23d, 24th. Fog: 2d, 3d, 10th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 23d, 23d, 30th. Frost: Light, 5th, 9th, 17th, 23d, 30th; heavy, 28th, 29th, 30th; killing, 28th, 29th, 30th. Hail: 7th, 8th, 11th. Parhelia: 9th. Lunar Rainbow: 12th. Thunderstorms: 1st, 7th, 8th, 10th, 11th, 12th, 15th, 16th, 20th, 21st, 26th, 27th. Tornado: 11th.

"A NIGHT MIRAGE"

By Arthur C. Betts, Co-operative Observer, Nora Springs, Iowa

I went out on my evening walk one bright evening in August, 1924. I was in the road that leads to Rock Falls, and it was getting quite dusky. It was then that I had an experience that I shall not soon forget. All the landscape before me began to put on a strange appearance; the woods away to the north drawing closer and closer, and the land-level rising higher and higher. When the woods were a half mile away, they only looked ten rods to me, and the condition was beautiful indeed, and there was the limit for closeness. At a quarter of a mile, they still looked ten rods away; and I saw that Iowa could have night mirages—even though day mirages are rarely observed in this section. When I had gone one mile, I retraced my steps and the wonder phenomenon was behind me, till I came to a lower level near home and the mysterious phenomenon began to recede, and finally vanished away. I often walked that road before and since, and the strange condition has never repeated itself. That was more beautiful than any day mirage I ever saw in the Dakotas, or anywhere in the far west.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, inches (Sea level)				Relative Humidity (%)		Wind				Sun- shine				
	Mean	Highest	Lowest	Date	Mean	Lowest	Total	Average hourly velocity		Direction					
								Per cent of possible	Per cent of normal						
	T. a. m.		P. m.		Date	Total movement	Average hourly velocity	Miles	Foon	Date					
7 A. M.	12 Noon	7 P. M.	12 Noon												
Charles City.....	31.06	30.39	29.46	21.88	57	72	22	29	4,299	6.0	22	sw	21	30	3
Davenport.....	30.97	30.33	29.47	21.87	56	65	17	17	4,815	6.7	33	w	21	26	4
Des Moines.....	31.07	30.39	29.55	21.87	58	61	26	27	4,944	6.5	23	sw	21	26	6
Dubuque.....	30.97	30.32	29.56	21.86	58	60	25	5	4,170	5.8	23	sw	21	27	4
Keokuk.....	31.06	30.35	29.66	21.84	60	70	31	33	4,915	6.8	26	sw	21	27	4
Stux City.....	30.97	30.45	29.50	21.84	50	35	4	8	3,954	11.5	48	w	21	27	4
Omaha, Neb.....	30.65	30.44	29.55	21.82	60	60	24	5	5,331	7.4	31	sw	21	27	5
Means and extremes.....	31.07	30.45	29.40	21.87	56	67	22	7.3			48	w	21	26	1
Normals and records.....	30.92	30.31	29.63	21.83	64	64	28.0	7.2			74	w	21	26	6
	30.62	30.00	29.97	1878			118	1921			72	w	1872		

*Dubuque, †Omaha, ‡Davenport, §Local mean time, ¶And other dates.

COMPARATIVE DATA FOR THE STATE—SEPTEMBER

YEAR	Temperature				Precipitation			Number of Days						
	Mean	Departure	Highest	Lowest	Total	Departure*	Greatest	Least	Snowfall	With ice, in ins. or more	Clear	Partly cloudy	Cloudy	
1880.....	20.3	-5.0	96	23	2.92	-0.89	4.55	1.36			7	12	10	7
1881.....	67.3	+3.0	104	38	1.33	-2.23	2.69	0.13			4	20	7	5
1882.....	64.7	+0.4	99	39	1.53	-2.15	4.15	0.16			4	16	8	6
1883.....	64.7	+0.4	102	38	2.24	-1.22	3.49	0.74			4	20	4	4
1884.....	65.1	+0.8	106	38	2.57	-0.69	5.23	0.67			8	15	5	5
1885.....	66.8	+2.5	103	32	3.03	-0.63	7.43	0.83			5	18	8	4
1886.....	58.5	-5.8	95	21	4.09	+0.43	9.96	1.80			10	11	9	10
1887.....	70.9	+6.6	107	36	2.04	-1.02	8.45	0.60			4	23	9	10
1888.....	65.3	+1.9	99	39	2.69	-0.02	8.45	0.60			7	10	9	10
1889.....	62.5	-1.8	104	15	0.95	-2.73	4.32	T.			4	16	9	7
1890.....	64.4	+0.1	99	35	4.98	+1.22	8.22	2.48			9	15	8	7
1891.....	63.3	-1.9	102	26	4.77	+1.11	12.03	1.71			9	13	9	8
1892.....	59.1	-5.5	88	33	4.35	+0.69	10.41	1.25			9	15	6	9
1893.....	60.8	-3.5	94	38	3.81	+0.15	8.79	1.43			10	14	6	10
1894.....	64.0	-0.5	94	30	2.78	-0.88	8.32	0.69			7	12	8	9
1895.....	65.8	+1.5	96	30	3.81	+0.15	12.18	0.59			8	14	8	8
1896.....	67.2	+2.9	100	27	4.16	+0.50	11.10	0.64			8	16	8	6
1897.....	62.8	-1.5	98	25	2.75	-0.91	6.96	1.28			8	15	9	6
1898.....	67.9	+3.6	98	30	1.26	-2.46	2.46	0.25			3	21	6	3
1899.....	62.4	-1.9	94	30	3.58	-0.38	7.30	1.39			9	14	7	9
1900.....	63.2	-1.1	90	30	3.50	-0.07	7.43	1.18			9	14	7	9
1911.....	65.8	+1.5	103	32	5.12	+1.46	12.78	1.19			10	11	9	10
1912.....	62.1	-2.2	91	32	2.68	+0.32	10.37	0.58			11	12	8	10
1913.....	64.5	+0.2	107	19	3.31	-0.35	7.44	0.45			9	15	8	7
1914.....	64.5	+0.2	99	30	7.88	+4.22	16.24	2.48			10	16	7	7
1915.....	63.7	-0.6	91	30	6.05	+2.37	12.45	2.88			11	11	8	11
1916.....	62.5	-1.8	98	21	3.89	+0.23	9.71	1.45			7	17	8	5
1917.....	62.6	-1.7	97	28	3.90	-0.75	8.66	0.39			7	15	7	7
1918.....	58.6	-5.7	93	20	1.87	-1.79	4.02	0.48			6	18	6	6
1919.....	67.5	+3.2	99	33	5.34	+1.68	11.82	1.49			8	16	6	8
1920.....	66.5	+2.2	98	34	3.50	-0.30	7.31	0.69			8	18	4	8
1921.....	67.3	+3.0	99	31	6.72	+3.06	11.95	1.72			11	14	8	8
1922.....	67.1	+2.8	103	31	2.03	-1.03	4.34	0.31			6	20	6	4
1923.....	64.2	-0.1	92	28	5.79	+2.18	12.14	1.88			11	14	8	8
1924.....	59.1	-5.2	91	32	3.13	-0.32	5.66	1.61			8	10	7	7

T. Indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall.

*New normals effective June 1, 1924.

OCTOBER

October weather was an ideal example of what is popularly known as "Indian summer." The month was characterized by a number of unusual features, the principal one being the high mean temperature. Only in 1900 has a higher mean been recorded in October, and except a few days during the first and fourth weeks the temperature was continuously above normal. At a number of stations the temperature did not reach the freezing point during the entire month, and at a few stations in the western portion of the State a killing frost has not occurred. There were more clear days than in any other October of record, a number of stations reported the highest per cent of sunshine of record for October, and the relative humidity was much lower than the normal. These conditions, with an occasional windy day, were ideal for drying corn. At the beginning of the month all corn contained an excess of moisture

and the prospects were that there would be a great deal of sour and moldy ears. However, the absence of heavy rains permitted the corn to dry steadily and at the end of the month the crop was in a favorable condition relative to moisture, though there is a large amount of chaffy corn that has a greatly reduced feeding value. There was more hogging down than usual, but there had been very little husking started at the end of the month. The high temperatures that prevailed until the beginning of the fourth week caused truck crops, that had not been killed in September, to make unusual growth, and tomatoes were plentiful over much of the southern and eastern portions of the State. One canning factory that was forced to suspend operations in September was able to resume operations and add materially to the pack.

There was a decided deficiency in precipitation, with only two stations reporting excesses. The average was the least for any month of the current year, and only twice in October has the average been lower. The absence of rain over a large portion of the State made the soil too dry to plow and considerable winter wheat sown during the month failed to germinate for lack of moisture. Also stock water was getting low and some wells in the extreme northwest portion had begun to fail.

High winds were experienced on several days, but as a rule they produced more good than harm, as they were beneficial in drying corn, and, while there was considerable blown down, there was very little damaged owing to the prevailing dry conditions. An energetic storm on the 30th was attended by high winds over the entire State, causing only minor damage, but a tornado developed in Black Hawk county. The path of the storm was almost directly through the center of the city of Waterloo from the southwest to northeast, the path with the greatest destruction averaging about 300 feet wide. Property damage estimated at about \$75,000 was reported, consisting of many broken plate-glass windows, merchandise damaged by the accompanying dashing rain, unroofed buildings, broken poles, and trees and wire systems badly demoralized. Severe damage also occurred in Fayette county as a result of straight blows. Many farm buildings were wrecked and the roofs of some buildings were blown several hundred feet. Some live stock were killed in collapsed buildings, and considerable hay was blown away.

Conditions were favorable for all outdoor occupations. Construction of every nature was carried on with practically no interruption. Sugar beets were harvested under favorable conditions; potatoes were generally dug, with the yield mostly good, and some reports of more than 300 bushels to the acre; apples were generally plentiful and the crop was nearly all gathered. Roads were good during nearly the entire month, though some with heavy traffic were somewhat rough from wear.

Temperature. The mean temperature for the State, as shown by the records of 97 stations, was 58.1°, or 6.2° higher than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 56.4°, or 6.1° higher than the normal; Central, 58.3°, or 6.2° higher than the normal; Southern, 59.5°, or 6.1° higher than the normal. The highest monthly mean was 61.4°, at Keokuk

and the lowest was 53.6°, at Estherville. The highest temperature reported was 89°, at Audubon, on the 11th, and the lowest was 21°, at Fayette, on the 22d. The temperature range for the State was 68°.

Precipitation. The average precipitation for the State, as shown by the records of 104 stations, was 0.87 inch, or 1.55 inches less than the normal. By divisions, the averages were as follows: Northern, 0.78 inch, or 1.54 inches less than the normal; Central, 0.76 inch, or 1.72 inches less than the normal; Southern, 1.06 inches, or 1.40 inches less than the normal. The greatest amount, 2.58 inches, occurred at Mt. Pleasant, and the least, 0.03 inch, occurred at Rockwell City. The greatest amount in any 24 consecutive hours, 1.55 inches, occurred at Rock Rapids on the 8th.

Miscellaneous Phenomena. Aurora: 22d, 23d, 28th. Fog: 4th, 7th, 8th, 10th, 13th, 16th, 23d, 24th, 26th, 27th. Frost: 6th, 21st, 22d, 23d, 24th, 27th, 28th. Halos (Lunar and Solar): 10th, 12th, 14th, 24th, 27th, 29th. Thunderstorms: 3d, 6th, 8th, 9th, 10th, 12th, 13th, 15th, 20th, 27th, 28th, 29th, 30th, 31st. Winds (high): 4th, 5th, 8th, 9th, 24th, 26th, 27th, 29th, 30th.

Rivers. A slight rise occurred on the Mississippi River during the first week of the month, with a slow gradual fall till the end of the month. On the Missouri River there was a gradual rise throughout the month except an occasional slight fall. Uniform falling stages prevailed on all interior rivers except a slight rise occurred at the end of the month. The daily fluctuations exceeded 0.1 foot on but a few days.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, inches (Sea level)				Relative Humidity (%)			Wind			Sun- shine Per cent of normal Departure from normal					
	Mean	Highest	Date	Lowest	Date	Mean		Total movement	Average hourly velocity	Maximum						
						7 a. m. to Noon	7 p. m. to 10 p. m.			Miles		Direction				
Charles City.....	30.12	30.35	21	29.48	20	30.84	55.96	25	4,794	6.4	30	sw	30	75	130	
Davenport.....	30.16	30.49	21	29.66	20	30.87	46.58	21	13	4,449	6.0	30	sw	20	70	118
Des Moines.....	30.10	30.58	23	29.47	20	30.80	49.07	26	5,191	7.0	40	sw	30	78	115	
DuBoque.....	30.13	30.58	24	29.56	20	30.83	46.37	19	13,801	5.1	24	se	30	74	119	
Keokuk.....	30.15	30.62	24	29.70	20	30.79	45.56	30	4,572	5.1	35	sw	30	79	118	
Sioux City.....	30.02	30.53	21	29.29	20	30.74	48.55	28	12,802	5.6	45	sw	4	78	116	
Omaha, Neb.....	30.06	30.53	23	29.35	20	30.71	45.69	20	12,404	6.0	30	sw	4	70	114	
Means and extremes.....	30.11	30.62	24	29.25	20	30.79	46.07	25	6.9	6.9	40	sw	4	77	117	
Normals and records.....	30.02	30.81	23	28.95	20	30.81	51.02	25.5	8.1	8.1	50	sw	10	100	120	

*Davenport. †Omaha. ‡Sioux City. †Local mean time. †And other dates.

COMPARATIVE DATA FOR THE STATE—OCTOBER

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure ^a	Highest	Lowest	Total	Departure ^a	Greatest	Least	Snowfall	With ice, 0.1 in. or more	Clear	Partly cloudy	Cloudy
1866	49.2	-2.7	86	16	2.48	+1.06	6.82	1.29	-----	7	11	11	0
1867	50.0	-1.9	82	19	2.77	+0.33	6.53	0.83	-----	4	21	7	0
1869	54.5	+2.6	96	14	1.55	-0.87	2.58	0.09	0.0	4	11	8	0
1869	52.4	+0.5	94	10	1.58	-1.14	4.56	0.02	0.0	4	16	9	0
1868	53.7	+1.8	90	20	2.67	+0.23	3.55	0.63	0.2	19	8	8	0
1868	46.0	-5.5	88	4	0.47	-1.95	1.28	0.09	T.	1	11	8	0
1869	47.9	-4.6	88	12	3.13	+0.71	5.05	1.51	T.	3	18	6	0
1867	56.8	+4.9	97	12	1.14	-1.28	3.30	9.63	0.9	4	17	8	0
1869	47.5	-4.4	88	17	3.56	+1.14	5.75	1.27	3.6	8	7	8	0
1869	56.7	+4.8	95	17	1.78	-0.69	4.64	0.15	0.0	5	17	8	0
1869	59.3	+7.4	100	21	3.91	+1.49	8.00	1.50	0.0	7	16	7	0
1901	54.2	+2.3	88	30	1.98	-0.44	4.23	0.45	T.	6	17	7	0
1867	53.5	+1.6	90	20	2.54	+0.12	6.66	0.58	T.	6	16	8	0
1867	52.2	+0.3	89	18	1.96	-0.47	4.50	0.32	0.0	5	19	8	0
1868	53.1	+1.2	96	16	1.67	-0.73	4.43	0.14	T.	6	15	8	0
1868	49.2	-2.7	86	16	2.49	+0.98	5.26	1.20	1.6	8	16	6	0
1868	50.5	-1.4	87	7	1.96	-0.46	4.25	0.20	0.0	6	14	9	0
1867	50.4	-1.5	85	10	1.50	-0.92	3.71	0.30	0.0	5	20	5	0
1868	51.1	-0.8	89	17	3.38	+0.96	8.83	0.58	2.6	8	16	8	0
1869	49.7	-2.9	87	10	2.22	-0.29	4.70	0.48	T.	4	16	6	0
1869	55.2	+3.3	93	10	0.77	-1.65	1.72	T.	0.1	4	16	6	0
1867	48.7	-3.2	84	14	3.34	+0.92	7.03	0.73	0.5	10	12	3	0
1867	52.2	+0.2	92	16	2.98	+0.56	5.77	1.08	T.	6	21	3	0
1867	49.2	-2.7	86	7	3.03	+0.98	7.29	0.35	1.2	6	14	9	0
1914	55.9	+4.0	88	14	3.23	+0.81	6.64	0.74	T.	9	21	6	0
1915	54.4	+2.5	86	19	1.31	-1.11	3.25	T.	T.	5	19	6	0
1916	50.9	-1.0	91	6	2.09	-0.42	4.38	0.20	2.9	8	16	7	0
1917	42.9	-9.0	83	0	1.41	-1.01	4.00	0.13	2.2	6	19	11	0
1918	55.1	+3.3	92	21	3.64	+1.22	7.56	1.39	0.8	7	12	11	0
1919	59.7	+1.2	89	8	3.02	+0.60	8.65	0.45	T.	10	11	8	0
1920	57.7	+3.8	96	11	2.13	-0.79	4.64	0.48	T.	6	21	8	0
1921	57.9	+3.9	96	14	3.51	+1.94	6.46	0.51	T.	6	17	8	0
1922	56.1	+4.2	96	14	1.81	-0.61	3.93	0.96	T.	5	21	4	0
1923	48.9	-3.4	81	10	1.52	-1.29	3.66	0.29	1.7	4	18	6	0
1924	58.1	+4.2	89	21	0.87	-1.35	2.57	0.13	0.0	4	22	5	0

T. indicates an amount too small to measure, or less than .005 inch rainfall and less than .00 inch snowfall.

^aNew normals effective June 1, 1924.

NOVEMBER

November, 1924, was very similar to November, 1923, both being considerably warmer than the average November, and the average precipitation was the same, being only slightly more than a third of the normal.

The month was free from severe weather and what few cold periods occurred were of short duration. At a few stations in the western and southern portions of the State killing frosts were delayed till the first week of the month, making the growing season at stations as far north as Sioux City, 194 days. Temperature fluctuations were more frequent than usual, with the warm periods the most protracted and the individual warm days showed a greater departure from the normal than the cool days which is the reverse of the usual conditions. Zero weather was reported from only two stations.

The weather was favorable for all outdoor occupations, and corn gathering progressed with practically no interruption so that at the end of

the month husking was completed in sections of the State, and what remained in the fields can easily be taken care of with subsequent normal weather conditions. Deficient rainfall, unusually low humidity, a wind movement considerably above the average, and sunshine in excess of the normal were ideal for drying corn, and while there is a large per cent of low grade chaffy ears there is very little that is damp or moldy and unfit to crib. In many corn fields in the south-central, north-central, north-east, and some other localities, the corn was of such inferior quality that it was not worth gathering and was grazed down by hogs and cattle. Plowing was hindered by dry soil but not much by freezing. All sections of the State were in need of moisture at the close of the month. The lack of rain was becoming serious in some of the drier sections. Wells that had never before failed were dry, stock ponds were lower than they had ever been, and some ponds where ice is harvested for local use are so low that they will freeze solid. Pastures generally were showing the effects of the dry weather that has prevailed for the past two months, and are mostly grazed bare. Winter wheat showed all stages of development. Some early sown fields were so rank that they were being grazed down; others were all the way down the scale to where they were just showing green, and many late sown fields in the drier sections had not started to germinate. Some seeding was done in the first week of November. The harvest of sugar beets was completed, the yield being good with a high sugar content.

No damaging storms occurred, and while the wind movement was much above the average for November, there was no damage worth mentioning. Rail traffic was not interfered with at any time during the month, and highways were in unusually good condition, though the dirt roads were slippery for short periods after the heaviest rains. Building operations progressed with no interruption.

An unusual feature in connection with the precipitation was the occurrence of hail on several dates at a large number of stations. A severe hail storm occurred at Alta on the 11th; later in the day severe hail occurred at Mt. Pleasant and Keokuk, that would have been destructive to crops in the growing season. Stones three-fourths inch in diameter fell at Mt. Pleasant, and as large as walnuts at Keokuk. The damage was mostly to greenhouses and a few window lights.

Temperature. The mean temperature for the State, as shown by the records of 109 stations, was 38.9°, or 2.3° higher than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 36.1°, or 1.7° higher than the normal; Central, 39.2°, or 2.5° higher than the normal; Southern, 41.5, or 2.5 higher than the normal. The highest monthly mean was 43.4°, at Keokuk, and the lowest was 33.5°, at Northwood. The highest temperature reported was 82°, at Belle Plaine, on the 1st, and the lowest was zero at Cedar Rapids and Wellsville on the 29th. The temperature range for the State was 82°.

Precipitation. The average precipitation for the State, as shown by the records of 105 stations, was 0.58 inch, or 0.98 inch less than the

normal. By divisions, the averages were as follows: Northern, 0.56 inch, or 0.96 inch less than the normal; Central, 0.53 inch, or 1.05 inches less than the normal; Southern, 0.66 inch, or 0.91 inch less than the normal. The greatest amount, 1.55 inches, occurred at Washington, and the least, a trace, occurred at Harlan, Little Sioux, Logan and Rockwell City. The greatest amount in any 24 consecutive hours, 1.64 inches occurred at Washington on the 6th.

Miscellaneous Phenomena. Aurora: 13th, 14th, 18th. Fog: 6th, 10th, 11th, 6th, 7th, 11th, 23d, Halos (lunar and solar): 3d, 4th, 7th, 12th, 13th, 14th. Sleet: 6th, 11th, 23d, 27th, 29th, 30th. Thunderstorms: 4th, 6th, 7th, 10th, 11th, 13th, 21st. Winds (strong): 10th, 11th, 21st.

Rivers. Low and nearly stationary stages prevailed on the Mississippi River with the extreme less than half a foot along almost the entire border of the State. The river remained open throughout the month though running ice appeared in the upper reaches on the last of the month. Low and nearly stationary stages also prevailed on all interior rivers, though there was a general slight falling tendency, with the extremes for the month amounting to but a few tenths of a foot. Falling stages were general on the Missouri River with the extremes amounting to about three feet at Sioux City and two feet at Omaha.

Snowfall. The average snowfall for the State was 0.4 inch, or 2.1 inches less than the normal. The heaviest amounts occurred in the northwestern corner, and only four stations outside the northern division reported more than an inch. The ground was snow covered not more than two days at a time at any station and at the end of the month there was no snow anywhere in the State. More than half the State had only traces of snow and a few stations reported none whatever.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, inches (Sea level)				Relative Humidity (%)				Wind				Sunshine From normal
	Mean	Highest	Date	Lowest	Mean		Date	Total movement	Average hourly velocity		From	To	
					7 A. M.	12 Noon			7 P. M.	Lowest				Miles	Miles
Charles City	30.00	30.56	29.43	11.82	61.68	31	30	5,562	7.7	3.8	sw.	21	45 +1
Davenport	30.05	30.54	29.40	11.77	61.96	34	1	5,729	8.0	3.9	sw.	11	54 +1
Iowa Moines	30.05	30.58	29.44	11.78	61.61	28	1	5,949	8.0	3.5	sw.	10	53 +1
Dubuque	30.01	30.54	29.46	11.76	61.67	30	1	5,506	8.0	3.7	sw.	5	47 +1
Keokuk	30.08	30.55	29.54	11.69	62.59	27	9	6,959	9.6	3.4	sw.	21	55 +0
Sioux City	30.07	30.47	29.37	10.73	61.97	27	9	9,182	12.8	3.8	sw.	23	61 +8
Omaha, Neb.	30.08	30.46	29.45	10.76	61.63	14	1	6,320	9.1	4.4	sw.	15	62 +7
Means and extremes	30.01	30.62	29.39	10.76	61.90	19	1	9.0			sw.	35	+3
Normals and records	30.07	30.96	29.59	10.78	61.81	70	6	8.2			sw.	10	52
								116	19.6	5.0	sw.	1919	

*Sioux City. †Davenport. ‡Omaha. †Keokuk. †Lowest mean time.

COMPARATIVE DATA FOR THE STATE—NOVEMBER

YEAR	Temperature			Precipitation			Number of Days						
	Mean	Departure ¹	Highest	Lowest	Total	Departure ¹	Greatest	Least	Snowfall	With pre. .05 in. or more			
										Clear	Partly cloudy	Cloudy	
1896	38.6	-2.0	78	-5	1.46	-0.20	3.55	0.71		5	15	7	7
1901	39.5	-6.1	84	-24	1.70	+0.14	3.64	0.06		10	10	10	15
1902	38.9	-5.3	79	-5	1.10	-0.46	3.05	0.55	1.8	6	13	11	13
1905	34.9	-2.6	68	-13	1.17	-0.39	2.56	-0.55	4.6	4	16	8	8
1908	37.7	-3.9	72	-5	0.92	-0.44	2.47	1	0.4	4	9	11	10
1910	34.5	-2.3	66	-12	1.51	-0.05	3.01	0.45	4.9	6	9	13	13
1915	39.6	-7.0	82	-13	1.83	+0.27	4.51	0.56	2.9	6	9	8	12
1916	34.8	-2.3	81	-19	0.96	-0.90	2.24	T.	1.2	5	13	10	10
1917	32.3	-4.4	78	-17	1.50	-0.06	3.61	0.23	8.5	6	14	15	15
1918	43.9	+7.3	86	8	1.59	+0.86	2.97	0.13	0.5	12	16	11	14
1919	35.3	-0.9	79	-6	1.90	-0.50	3.35	0.15	0.5	6	12	11	11
1920	35.8	-0.8	77	-5	0.96	-0.70	2.30	0.29	2.6	3	15	6	6
1921	41.2	-4.0	79	4	2.13	+0.57	4.19	0.16	1.8	7	9	14	14
1922	34.2	-5.4	76	-6	0.52	-1.04	1.74	T.	1.1	2	9	9	9
1923	31.9	-4.4	68	4	0.15	-1.41	0.50	0.00	0.5	1	20	6	4
1924	38.4	+1.8	79	-12	2.84	+1.28	5.00	0.90	0.6	5	16	8	11
1925	35.4	-1.2	74	-5	2.03	+0.47	3.80	0.25	4.4	8	9	7	7
1926	36.7	+0.1	88	4	1.03	-0.53	2.37	0.65	0.9	4	17	6	7
1927	36.7	+2.7	80	5	1.56	0.00	3.21	0.31	1.4	5	14	7	7
1928	42.4	+5.8	84	-3	5.39	+3.82	1.48	2.97	6.8	10	19	7	13
1929	39.4	+2.2	76	5	0.94	-1.22	1.68	T.	0.7	3	13	8	8
1930	40.1	+2.9	79	1	1.42	-1.14	4.99	0.11	1.6	6	11	8	11
1931	40.1	+3.5	77	6	0.98	-0.58	2.38	0.60	T.	3	15	8	4
1932	44.1	+7.5	78	10	1.18	-0.28	3.49	0.20	0.4	6	11	7	12
1934	41.0	+4.4	80	4	0.22	-1.24	4.86	0.30	1.2	6	11	9	9
1935	40.2	+3.6	83	-5	1.94	+0.38	4.86	0.50	T.	2	19	6	5
1936	37.3	+0.7	80	-8	1.61	+0.55	3.65	0.05	3.6	5	10	6	8
1937	40.7	+4.1	77	8	0.28	-1.28	1.92	T.	1.4	2	14	6	10
1938	39.9	+3.3	76	-12	2.11	+0.55	5.30	0.70	4.4	4	13	5	12
1939	38.2	+3.0	68	-12	1.84	6.22	1.97	0.63	8	11	7	12	
1940	35.4	-1.2	71	-5	2.18	+0.62	4.45	0.73	1.2	8	10	5	15
1941	38.2	+0.9	78	-10	1.40	-0.88	3.28	0.56	0.3	10	10	15	15
1921	33.0	-3.0	70	-5	0.58	-0.98	1.01	T.	1.2	9	11	7	12
1922	42.2	+6.2	81	11	3.54	+1.08	3.28	1.96	0.3	12	16	10	15
1923	40.1	+3.5	72	9	0.58	-0.98	1.84	0.00	1.4	3	16	6	8
1924	38.9	+2.3	82	0	0.58	-0.98	1.55	T.	0.4	4	15	7	8

T. indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall.

¹New normals effective June 1, 1924.

DECEMBER

December was decidedly cold and wet in marked contrast to the previous months, which were warm and dry, and also in decided contrast to the weather of December, 1923, which was the warmest December in the history of the State's weather, while this month ranks among the coldest Decembers of record, being within less than one degree of the record. There were frequent alternations above and below normal during the first half of the month, with the warm periods the most pronounced, making the mean for this period from one and a half to two degrees warmer than the normal. But a protracted cold spell set in about the 16th and during the rest of the month the temperature was continuously below the normal and did not go as high as the freezing point throughout the State, except at a few stations in the extreme southern portion on single days. This cold spell culminated in extremely

low temperatures on the 28th, breaking the record for December at many stations in the southern half of the State.

The precipitation was much above normal and since 1890 there have been but four Decembers with more precipitation. Most of the precipitation occurred during a storm that passed northeastward across the State on the 4th and amounts exceeding an inch occurred at about half the stations in the State in a 24-hour period. Over the northwestern portion of the State the precipitation during this storm was all snow and over about all the State south of a line from Mills to the southern portion of Dubuque county it was practically all rain, but over a wide strip from Mills and Monona northeastward to the northern portions of Dubuque and Winnebago counties there was a mixture of snow, sleet and rain. This conditions produced one of the most destructive winter storms ever experienced in the State, and caused great damage to overhead wires and trees of all kinds. The greatest damage occurred in a strip about two counties wide running from Pottawattamie and Harrison counties northeastward to Delaware and Fayette counties. The rain occurred with the temperature considerably below freezing, and it froze as soon as it struck the ground or exposed objects. Small branches of trees and wires were reported to have been coated with as much as two inches of ice in some townships, and as a result of the added weight there were an unprecedented number of telephone poles broken off and severe damage to fruit and shade trees which amounted to the total destruction of many trees. From as complete a survey as it was possible to make, it is estimated that about 27,000 telephone poles were ruined, over 200,000 miles of single telephone wires were put out of service, and the damage to fruit trees ranged from slight to as high as 42 per cent. It was necessary to place over 1,000 men to the task of repairing damaged telephone systems, and the money loss was over \$750,000. Many rural telephone lines were still badly crippled at the end of the month. In Black Hawk county alone over 5,000 poles were down and several counties reported more than 2,000. The zones of damage are shown on the maps on page 54. Sleet or glaze also occurred at other times later in the month, but in each case it appears that the deposit was too light to cause material damage.

There were no severe wind storms during the month, and as a result there was little drifting of the snow, though some highways were temporarily blocked and trains delayed in the northwest portion, following the snows that occurred on the 4th of the month. Trains were late during the cold spell that prevailed during the last two weeks. The light wind movement tempered the severe cold weather somewhat, but in all the large centers charitable organizations received an unusual number of requests for aid. Outside work was generally suspended and only such work as was necessary was performed on farms, and there was still some corn outstanding. Winter wheat was protected during the most severe weather, but there were reports that stock was not in the best condition though there was a heavy consumption of feed. Ice formed rapidly and the harvest was begun as early as the 20th, and at many places the harvest was complete at the end of the month, the thickness

of ice running from 12 to 16 inches of excellent quality. Roads were fair to good most of the month, though somewhat icy over the north half of the State, and froze over rough over most of the southern half during the first two weeks.

Unusually high barometric readings occurred on the 20th. At Des Moines and Keokuk the sea level reading was the highest ever recorded.

Temperature. The mean temperature for the State, as shown by the records of 102 stations, was 15.4° or 8.7° lower than the normal. By divisions, approximately three tiers of counties to the division, the means were as follows: Northern, 11.9°, or 9.6° lower than the normal; Central, 15.6°, or 8.7° lower than the normal; Southern, 18.8°, or 7.7° lower than the normal. The highest monthly mean was 23.0°, at Keokuk, and the lowest was 8.9°, at Inwood. The highest temperature recorded was 62°, at Keosauqua, on the 12th, and the lowest was -33°, at Washta, on the 28th. The monthly range for the State was 95°.

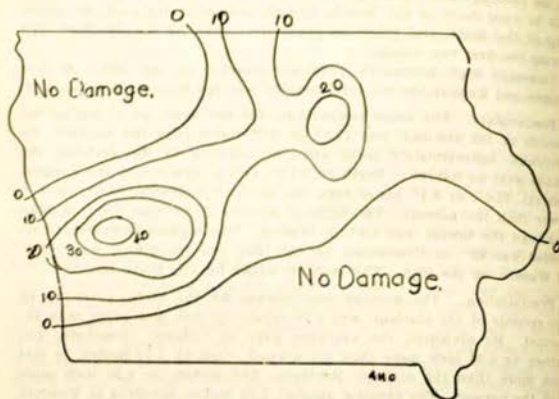
Precipitation. The average precipitation for the State, as shown by the records of 104 stations, was 1.79 inches, or 0.65 inch more than the normal. By divisions, the averages were as follows: Northern, 1.57 inches, or 0.54 inch more than the normal; Central, 1.73 inches, or 0.56 inch more than the normal; Southern, 2.08 inches, or 0.86 inch more than the normal. The greatest amount, 2.93 inches, occurred at Westcott, and the least, 0.90 inch, occurred at Rockwell City. The greatest amount in 24 consecutive hours, 2.60 inches, occurred at Westcott on the 4th.

Miscellaneous Phenomena. Aurora: 22d. Fog: 5th, 6th, 7th, 8th, 15th, 16th, 22d, 27th, 29th, 30th. Glaze: 4th, 5th, 16th, 17th, 18th. Hall: 4th. Halos (lunar and solar): 2d, 6th, 11th, 15th, 17th, 19th, 25th, 27th, 29th, 31st. Parhelia: 19th. Sleet: 3d, 4th, 5th, 6th, 7th, 12th, 13th, 14th, 16th, 17th, 18th, 19th. Thunderstorms: 4th, 7th.

Snowfall. The average snowfall for the State was 8.1 inches, or 1.9 inches greater than normal. The greatest amount 21.0 inches, occurred at Alta, and the least, 1.7 inches, occurred at Fayette. The snowfall was unusually heavy in the northwestern portion, where 12 stations reported more than 15.0 inches. Amounts exceeding 15 inches occurred also in the west-central portion and several stations in the north-central portion reported amounts exceeding 10 inches. The snow remained on the ground over most of the northern portion from the 4th till the end of the month and over the rest of the state the cover obtained from 15 to 25 days, the entire State being covered at the end of the month.

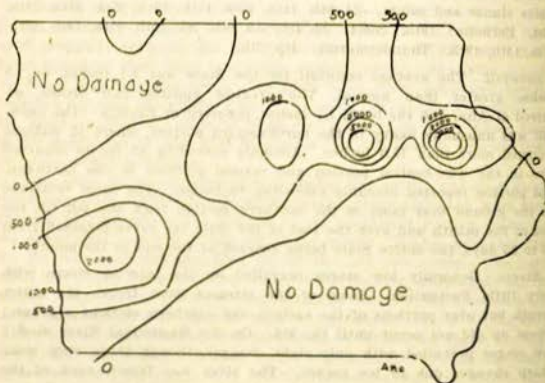
Rivers. Generally low stages prevailed on the interior rivers with very little fluctuation. Some of the streams were frozen the entire month but over portions of the eastern and southern sections a general freeze up did not occur until the 9th. On the Mississippi River most low stages prevailed with only slight changes, though there were some sharp changes due to ice gorges. The river was frozen most of the month. Moderate stages prevailed on the Missouri and the only fluctuations of consequence were due to ice gorges.

DAMAGE BY GLAZE STORM OF DECEMBER 3-5, 1924



Damage to Fruit Trees

The lines show the per cent of fruit trees seriously injured by being broken down by loads of ice deposited on the branches.



Damage to Telephone Poles

The lines show roughly the number of telephone poles per county broken down by the heavy deposit of ice on the wires and poles.

PRESSURE, RELATIVE HUMIDITY, WIND AND SUNSHINE

Stations	Barometric Pressure, inches (Sea level)				Relative Humidity (%)		Wind			Sunshine					
	Mean	Highest	Date	Lowest	Mean		Full measurement	Maximum		Per cent of Daylight					
					A. M. 12 Noon	P. M.		Miles	From		Date	Departure from normal			
Charles City.....	30.22	30.90	20	29.41	12:40	73.82	48	1	5.619	7.6	21	ne.	4	42	0
Davenport.....	30.22	31.02	20	29.49	12:50	72.77	44	2	6.212	8.5	29	se.	4	41	0
Des Moines.....	30.22	31.00	20	29.47	1:00	72.88	47	20	6.234	8.4	25	sw.	7	51	0
Dubuque.....	30.21	30.98	20	29.36	12:30	72.70	42	1	5.298	7.3	17	sw.	13	42	0
Keokuk.....	30.24	31.00	20	29.51	12:59	66.98	27	15	6.560	8.9	30	sw.	8	42	0
Sioux City.....	30.26	31.04	20	29.51	12:59	64.76	42	25	9.513	12.8	42	nw.	8	56	+1
Omaha, Neb.....	30.24	31.02	20	29.00	0:04	66.77	26	113	6.900	9.4	32	n.	26	43	0
Means and extremes.....	30.22	31.00	20	29.36	12:54	69.76	27	15	6.0	8.2	42	sw.	8	44	0
Norma's and records.....	30.12	31.00	1917	29.00	12:54	64.77	12 ^{1/2}	113	8.1	8.56	24 ^{1/2}	nw.	1907	47	0

*Sioux City. †Dubuque. ‡Keokuk. †Local mean time. †And other dates.

COMPARATIVE DATA FOR THE STATE—DECEMBER

YEAR	Temperature				Precipitation				Number of Days				
	Mean	Departure*	Highest	Lowest	Total	Departure*	Greatest	Least	Snowfall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1899	39.1	+5.6	72	-13	0.45	-0.69	1.40	0.00	.....	3	17	7	7
1891	32.3	+8.2	72	-14	2.41	+1.27	4.50	1.21	.....	14	14	8	8
1892	18.9	-5.2	68	-29	1.65	+0.51	3.04	0.29	10.9	7	9	14	14
1893	22.0	-2.1	70	-21	1.31	+0.17	2.80	0.46	7.6	10	10	10	10
1894	30.1	+6.0	73	-17	0.95	-0.19	1.75	0.25	1.3	11	11	11	11
1895	25.4	+1.3	63	-16	1.62	+0.49	5.74	0.90	4.1	5	6	6	6
1896	30.8	+6.7	70	-19	0.65	-0.49	1.79	T.	1.6	4	10	10	10
1897	18.0	-6.1	60	-25	1.65	+0.51	3.22	0.61	15.9	11	7	7	7
1898	18.1	-6.0	60	-25	0.48	-0.66	1.70	T.	3.9	3	15	8	8
1899	22.6	-1.5	75	-19	1.61	+0.47	4.28	0.10	4.3	5	6	6	6
1900	20.9	+2.8	63	-10	0.45	-0.60	2.70	T.	2.4	4	13	12	12
1901	20.1	-3.6	64	-31	0.93	-0.21	2.75	0.05	5.4	6	9	10	12
1902	20.5	-4.0	59	-30	2.23	+1.09	5.51	0.67	12.9	8	6	6	6
1903	19.6	-4.5	58	-27	0.41	-0.73	1.96	T.	3.7	4	11	6	11
1904	23.4	-0.7	67	-19	1.44	+0.30	3.68	0.06	12.3	5	12	7	12
1905	27.0	+2.9	62	-11	0.52	-0.62	1.69	T.	4.2	3	19	9	6
1906	25.7	+4.7	65	-9	1.43	+0.29	2.81	0.37	1.4	6	11	7	13
1907	28.8	+4.4	62	-9	1.00	-0.14	2.28	0.05	4.7	5	10	7	14
1908	27.2	+3.1	67	-17	0.57	+0.57	2.07	0.05	3.8	3	15	8	8
1909	15.1	-9.0	60	-20	2.18	+1.04	6.10	0.89	13.7	11	10	6	16
1910	23.4	-0.7	57	-14	0.37	+0.77	1.39	0.01	3.0	7	7	6	6
1911	27.9	+3.8	60	-24	2.57	+1.43	4.43	6.62	12.6	3	13	6	11
1912	29.2	+5.1	64	-13	0.74	-0.40	1.75	0.10	1.1	3	18	8	6
1913	32.0	+7.9	65	-13	1.02	-0.12	4.73	0.00	1.3	4	15	9	11
1914	15.7	-8.4	63	-31	1.30	+0.16	2.24	0.57	11.1	6	9	8	12
1915	25.0	+0.9	56	-10	0.69	-0.45	1.70	T.	4.6	5	5	12	8
1916	18.7	-5.4	67	-25	1.04	-0.12	2.00	0.35	6.7	6	15	8	12
1917	14.5	-9.6	62	-40	0.56	-0.58	1.70	0.14	6.7	6	19	9	14
1918	32.7	+8.6	68	-7	1.30	+0.4	3.30	0.37	5.1	6	9	8	14
1919	15.0	-9.1	52	-36	0.54	-0.60	1.55	0.68	5.8	4	10	8	13
1920	26.4	+2.3	65	-26	1.16	+0.02	2.64	0.26	7.4	5	4	14	12
1921	28.2	+4.1	69	-22	1.02	-0.77	0.97	T.	2.9	4	14	16	11
1922	24.0	-0.1	65	-25	0.37	-0.10	3.72	T.	2.2	3	7	7	8
1923	33.5	+9.4	68	-12	0.76	-0.38	2.22	T.	4.4	4	14	6	11
1924	15.4	-8.7	62	-33	1.79	+0.6	2.93	0.90	8.8	8	12	6	13

T. Indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall.

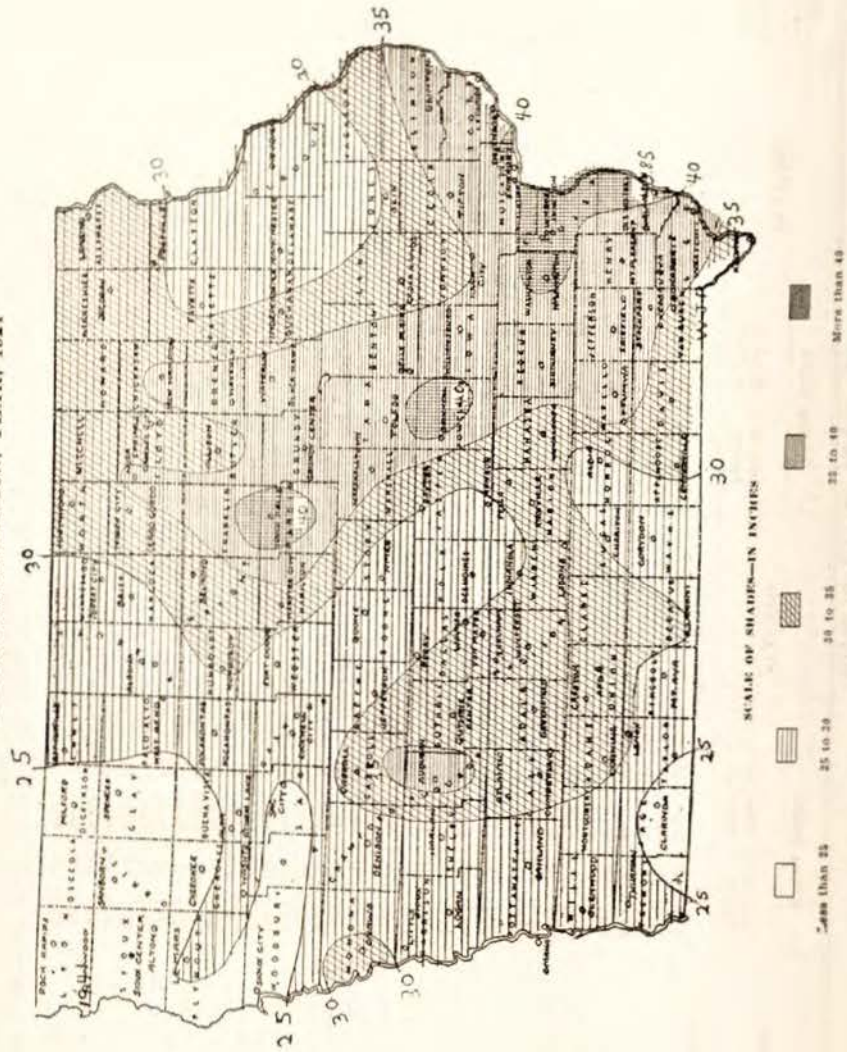
*New normals effective June 1, 1924.

MONTHLY STATE DATA FOR 1924

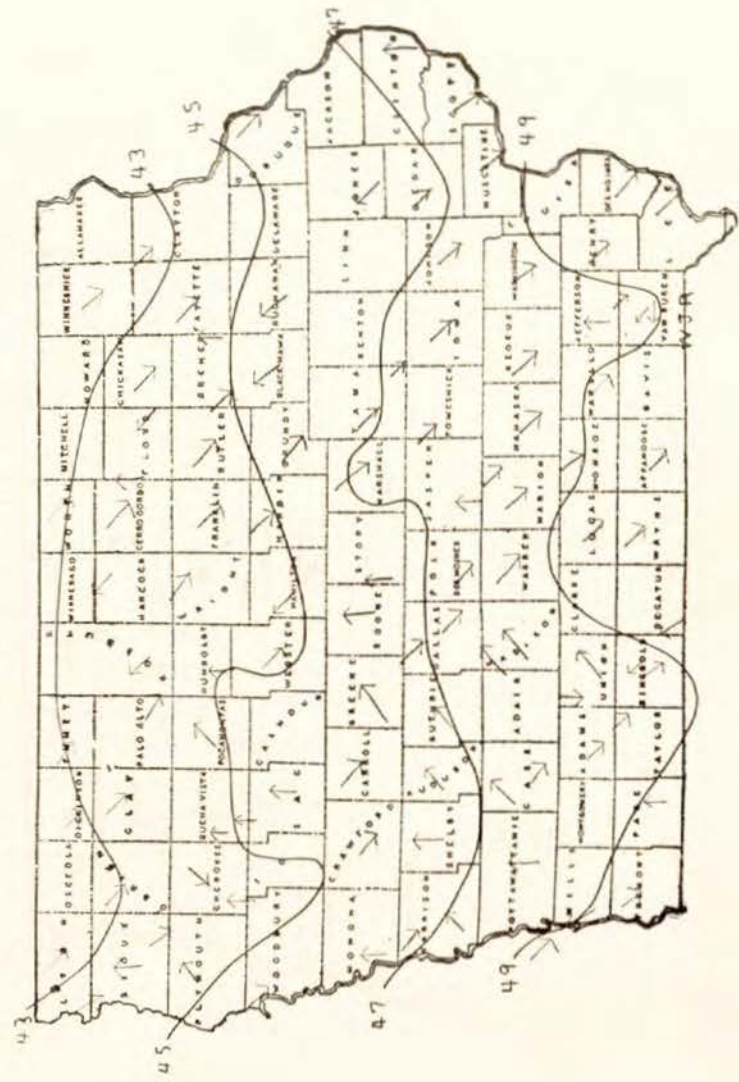
MONTH	Barometric Pressure Inches (Sea level)				Temperature Degrees, F.	Rel. Humidity, Per Cent	Precipitation, Inches				Number of Days Sunshine				Wind								
	Mean	Highest	Lowest	Date			Mean	Departure from normal	Highest	Lowest	Average	Departure from normal	Greatest	Least	Snowfall	With .01 inch or more precipitation	Clear	Partly cloudy	Cloudy	Per cent of the possible amount	Departure from normal	Average hourly velocity	Departure from normal	Prevailing direction
January	30.21	31.05	29.47	10	-4.6	59.53	70.76	-2.32	0.89	-0.19	2.47	0.06	5.2	5	37	7	7	7	69	+10	8.1	-0.6	NW.
February	30.18	30.66	29.30	8	+3.2	15.55	70.74	0.29	1.27	+0.97	4.00	0.30	11.2	7	15	5	8	9	53	-2	8.0	-0.7	NW.
March	30.00	30.45	29.79	29	+2.8	8.84	66.60	+3.19	2.65	+0.90	4.76	1.26	10.5	8	8	15	8	15	38	-19	8.2	-1.4	NW.
April	29.91	30.38	29.21	15	+1.6	8.73	60.52	3.18	1.88	-1.61	4.33	0.38	1.4	7	16	8	6	68	+10	9.4	-6.5	NW.	
May	29.88	30.32	29.34	23	-0.1	26.73	69.51	6.18	1.71	-2.00	3.28	0.75	0.3	9	13	9	5	59	-9	7.9	-6.4	SE.	
June	29.60	30.37	29.28	19	-0.5	35.83	64.64	4.35	8.15	+3.57	11.92	4.60	0	14	11	4	4	72	-2	6.0	-0.7	SE.	
July	30.00	30.37	29.02	11	-3.6	41.77	59.55	1.30	3.67	-0.18	8.90	0.57	0	9	16	11	4	76	0	6.7	+0.4	SE.	
August	29.53	30.24	29.57	3	0.0	40.83	61.67	4.29	5.35	+1.01	12.38	1.91	0	10	16	10	5	62	+7	7.3	+0.1	SE.	
September	30.05	30.45	29.49	21	-5.2	25.85	58.67	3.95	3.13	-0.52	5.68	1.01	0	4	16	7	7	62	+7	6.9	-1.2	E.	
October	30.11	30.62	29.29	24	+6.2	21.79	46.57	4.19	0.87	-1.55	2.58	0.03	0	4	22	5	4	77	+17	6.9	+0.9	NW.	
November	30.05	30.62	29.37	10	+2.3	0.70	50.00	8.19	0.58	-0.58	1.55	T.	6.4	4	15	7	8	53	+3	9.1	+0.9	NW.	
December	30.23	31.06	29.36	12	-8.7	33.84	60.76	0.27	1.79	+0.45	2.93	0.30	8.3	8	12	6	13	44	-3	9.0	+0.9	NW.	
Means and extremes	30.04	31.00	Dec. 20	28.79	Mar. 29	46.4	31.60	64	1	31.39	-0.53	11.92	T.	37.2	53	177	97	92	59	0	7.9	-0.3	NW.
Normals and records	30.02	Jan. 25	31.00	1905	28.69	1902	45.0	32.22	30.1	85	166	192	68	59	8.2	NW.							

§Local mean time. *Normal centra. time. †7 a. m. and 7 p. m. observations only.

TOTAL PRECIPITATION, YEAR, 1924



MEAN ISOTHERMS AND PREVAILING WINDS, YEAR, 1924



TORNADO PATHS IN IOWA DURING THE YEAR 1924
(Numerals refer to descriptive data in accompanying table)



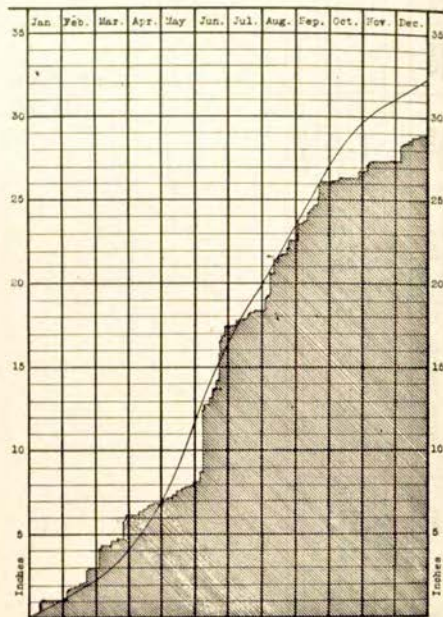
TORNADOES IN IOWA DURING THE YEAR 1924

Storm No.	Nearest Town	Date	Hours, from—	Storm Moved From	Length of Path	Persons Killed	Persons Injured	Estimated Damage
I	Alta	June 28	12:05 a. m.	W. to E.	Short	.....	.....	.....
II	Marshalltown	July 1	11:00 a. m. to 1:00 p. m.	W. to N. E.	10 miles	.....	.....	.....
III	Granger and Colfax	August 8	5:00 a. m.	W. to E.	Long	.....	.....	\$ 150,000.00
IV	Louis	September 11	5:00 p. m.	S. W. to N. E.	1 mile	.....	.....	2,000.00
V	Indianola and Hartford	September 11	8:28 p. m.	S. W. to N. E.	15 miles	.....	.....	2,500.00
Totals					27 miles	.....	.....	\$ 152,500.00

PRECIPITATION

Des Moines, Iowa, 1924

Line bounding shaded area shows accumulated depth in inches 1924
Smooth curve shows normal



Total for 1924, 28.96.

Normal, 32.49.

NEW TEMPERATURE NORMALS

With the June, 1924, issue of Climatological Data, the use of new temperature and precipitation normals began and in the annual summary for the year, 1924, departures from normal have been recomputed for the earlier months of the year.

For cooperative observing stations, temperature records for the ten years ending with 1923 were corrected by comparison with the records at the regular Weather Bureau offices in and near Iowa, running back 42 to 46 years, so that it is believed that as a rule they are within half a degree of what they would have been if records had been available under standard exposure of instruments through all these years. Errors and inconsistencies revealed by charting have been carefully adjusted.

Records for the 5-year period, 1919-1923, were used for Corn and Wheat Region stations at which evening observations for that period only are available. The old normals based on 7 a. m. observations are not at all comparable with the present series of 7 p. m. observations. Departures for these stations, published since about August, 1918, have been faulty.

Temperature normals for each station follow:

TEMPERATURE NORMALS.

Based on 10-year records, 1914-1923, of Co-operative stations, and 5-year records, 1919-1923, of Corn and Wheat Region stations (marked *), and other stations having a short record (marked †); all records reduced to homogeneous 46-year normals.

Northern Division

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Algona	15.4	18.8	31.5	47.6	59.2	68.6	73.0	70.3	63.0	59.5	31.6	21.5	46.2
Allison	15.3	19.3	32.1	47.3	58.7	68.1	72.8	70.5	63.1	59.7	34.3	24.4	46.2
*Alta	16.9	19.7	33.0	47.1	58.6	67.8	72.4	70.5	62.7	56.1	33.9	24.4	46.1
Allon	15.2	18.9	31.9	47.0	58.6	68.4	73.3	70.3	62.8	49.8	33.6	20.8	45.9
Belmond	14.7	18.3	31.7	46.7	58.4	67.6	69.5	68.5	56.6	33.3	20.7	20.7	45.9
Britt	14.2	17.6	30.5	46.2	58.0	67.4	71.3	69.9	62.4	49.7	30.3	20.5	45.1
Charles City	13.7	17.1	30.4	45.8	57.8	66.5	73.3	69.1	61.0	48.6	33.0	20.4	44.7
Cherokee	15.2	17.8	31.3	47.3	58.4	68.0	72.2	68.3	61.6	49.1	34.7	22.2	45.5
*Decorah	19.1	22.2	34.0	48.6	60.3	69.4	74.1	71.7	64.0	51.9	37.0	24.7	48.1
Dubuque	18.1	21.9	34.6	44.9	57.0	66.9	71.9	68.8	61.7	49.1	31.0	20.3	34.8
*Fayette	15.4	19.6	31.3	46.9	58.9	67.3	71.9	69.4	62.8	49.6	34.1	24.4	45.6
*Forest City	14.3	18.6	31.8	46.3	58.7	67.3	71.9	69.2	62.7	49.1	33.5	21.3	45.5
*Hampton	13.9	19.9	32.5	47.9	59.3	69.0	74.3	71.9	64.3	51.9	33.4	22.9	47.0
Humboldt	16.5	20.5	33.2	48.1	60.0	69.3	74.1	71.8	64.8	51.3	33.6	22.6	47.8
Independence	16.9	21.2	34.1	48.7	59.6	68.3	73.0	71.3	63.9	52.1	30.6	23.6	47.4
*Inwood	14.0	17.8	28.7	46.7	57.7	65.7	72.6	70.3	63.1	49.8	33.0	19.4	45.4
Le Mars	17.1	20.9	33.3	47.8	59.6	68.6	73.3	71.9	63.7	51.1	33.0	22.4	47.0
Mason City	14.2	18.1	30.9	46.5	58.0	67.6	72.4	69.6	61.7	49.6	33.5	20.8	45.2
Millford	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampton	14.5	18.7	31.2	47.0	58.3	67.7	72.3	69.8	62.4	50.2	34.1	29.8	45.6
Nora Springs	16.4	20.0	32.7	48.4	59.2	68.7	73.6	71.2	64.4	51.9	36.2	23.1	47.2
Northwood	12.7	16.3	29.2	45.1	57.3	66.7	71.2	68.5	61.0	48.2	32.4	19.7	44.9
Oswein	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pocahontas	16.0	19.7	32.5	47.1	58.8	68.3	72.7	70.6	63.3	50.7	34.7	31.7	46.4
Postville	13.2	18.3	30.6	46.3	57.4	65.7	70.6	67.2	60.8	49.3	34.9	30.9	44.7
Rock Rapids	13.5	17.9	31.5	46.3	58.0	67.9	72.6	69.7	61.7	48.3	32.7	23.7	45.3
*Sanborn	14.6	18.5	31.6	46.5	58.1	67.7	72.8	70.5	62.8	49.4	32.5	19.4	45.4
*Sioux Center	15.1	18.7	31.5	46.5	58.2	67.5	73.0	70.5	63.0	49.8	33.5	30.8	45.7
*Spencer	14.7	18.5	32.4	47.0	58.5	68.5	73.4	70.6	63.5	50.2	33.6	29.7	46.0

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Storm Lake	16.8	20.4	32.6	47.4	59.1	68.5	73.5	71.4	64.0	51.2	33.5	27.5	46.9
Washita	16.6	20.8	32.1	47.5	58.3	66.1	72.1	70.6	62.1	50.1	32.1	27.1	46.6
Waterloo	17.4	20.9	31.4	44.8	60.2	69.4	75.1	71.5	61.1	51.9	34.1	28.1	47.2
Waverly	16.2	20.9	32.0	47.6	58.5	68.2	73.5	70.9	63.4	51.1	33.6	27.5	46.7
West Bend	15.5	19.2	32.0	47.4	59.3	68.4	73.5	70.6	61.4	50.6	34.1	21.1	46.2
Means	15.4	19.1	32.1	47.1	58.5	68.0	72.7	70.3	62.9	50.3	34.4	21.5	46.0

Central Division

Ames	18.1	22.5	35.0	48.8	59.8	69.9	74.0	71.8	64.4	51.7	35.1	23.8	48.8
Auburn	17.5	21.5	33.8	47.6	59.3	68.3	72.7	70.8	62.7	50.8	34.4	28.8	46.3
Baxter	18.4	22.9	35.0	49.0	60.5	69.6	74.2	72.2	64.8	52.4	37.7	24.8	48.4
Belle Plaine	18.8	22.9	34.9	48.1	60.4	69.2	73.5	71.5	64.4	51.5	37.6	24.5	48.2
Bloom	17.9	23.3	36.0	49.0	59.9	69.0	73.5	70.9	63.5	51.7	36.6	24.4	46.0
*Carroll	17.4	21.9	36.0	48.5	59.9	69.4	73.8	71.1	63.7	51.6	36.1	23.8	47.9
*Cedar Rapids	19.4	23.8	35.7	50.4	61.6	71.4	75.0	73.8	65.5	56.1	35.8	26.6	49.1
Clinton	20.6	24.6	35.8	49.8	61.1	70.4	74.8	72.7	65.2	53.0	37.0	26.8	49.4
Davenport	21.8	24.9	34.9	49.9	61.5	70.5	75.3	73.1	65.6	53.7	39.9	27.1	49.9
Des Moines	18.2	22.4	35.0	49.2	60.1	69.1	73.4	71.5	64.0	51.2	35.6	23.8	47.8
Des Moines	20.1	23.7	35.0	50.1	61.3	70.6	75.3	73.1	65.6	53.4	38.4	26.6	49.3
Fairport	18.5	22.5	34.5	48.5	59.5	68.5	73.5	71.5	64.0	51.5	35.5	23.5	47.2
*Fort Dodge	20.9	23.2	35.3	49.4	60.5	69.6	74.3	72.0	64.9	53.0	37.7	25.9	48.8
Grimmell	18.5	22.0	34.7	49.1	60.0	69.7	74.1	71.9	64.0	51.1	36.3	23.9	48.0
Grimmell Center	17.7	23.0	35.8	49.4	60.5	69.0	73.6	71.7	64.6	52.5	37.0	24.7	48.1
Harlan	18.1	22.9	35.3	49.0	60.1	69.1	73.1	71.0	63.8	51.2	35.8	23.8	47.4
*Iowa City	20.0	24.2	35.6	49.9	60.3	69.1	73.8	72.0	64.8	52.4	37.4	25.8	48.2
*Iowa Falls	18.1	22.0	34.1	47.8	58.8	67.9	72.3	69.6	62.6	50.7	35.3	23.7	46.7
Jefferson	18.1	22.5	35.8	48.5	59.8	68.2	73.3	70.7	63.6	51.4	36.6	24.7	47.7

Little Sioux	19.3	23.0	39.1	50.5	61.1	70.1	74.4	72.6	65.2	52.2	36.5	24.8	48.8
Lynn	20.3	25.4	37.2	50.8	61.3	69.8	74.1	72.1	65.7	52.5	37.3	25.7	49.1
*Marshalltown	20.0	23.6	35.6	49.6	60.9	70.3	75.3	72.8	65.4	53.0	37.4	25.1	49.1
Monroe	20.7	24.6	36.0	50.1	61.1	69.8	75.0	73.4	66.1	54.0	39.0	25.3	49.0
Osaka	18.2	22.1	34.5	49.2	60.3	69.5	74.0	71.6	63.7	51.0	36.1	24.1	47.9
Onawa	18.8	23.2	35.3	50.1	60.9	70.0	74.3	72.1	64.6	51.8	35.7	23.9	48.4
Perry	19.0	23.5	35.4	49.1	59.8	70.5	74.7	72.9	64.5	52.7	37.0	24.9	48.2
Rockwell City	17.3	21.2	33.8	48.2	58.8	69.4	73.1	71.1	63.8	51.6	35.6	23.7	47.2
Sac City	17.8	21.3	33.1	47.8	58.7	69.3	72.9	70.9	63.7	51.5	35.6	23.7	47.1
Shoof City	17.8	21.0	32.7	47.8	58.4	69.5	74.3	72.0	64.3	50.9	35.2	23.1	47.3
Tipton	19.7	23.8	35.5	50.0	60.8	70.7	74.5	72.5	64.8	52.4	37.4	25.6	49.0
Toledo	19.3	23.0	35.4	49.6	60.9	69.9	74.2	72.1	65.1	53.3	37.9	24.6	48.8
Waukegan	18.8	23.1	35.2	49.4	60.7	69.5	74.1	72.5	64.8	52.8	37.1	24.8	48.2
Wheat City	17.4	21.2	34.0	48.5	59.7	69.2	74.0	71.6	64.0	51.4	35.4	23.6	47.3
Williamsburg	19.7	23.7	35.1	49.4	60.4	69.1	73.8	71.7	64.4	51.7	36.5	24.4	48.4
Means	18.5	22.9	35.1	49.2	60.4	69.6	74.0	71.9	64.4	51.7	36.7	24.1	48.3

Southern Division

Afton	21.1	25.0	31.5	50.2	61.4	69.4	73.8	72.6	65.1	53.3	38.5	26.2	49.3
*Albia	20.9	23.4	36.7	50.7	61.3	70.4	74.5	72.6	65.4	53.5	38.9	26.7	49.2
*Atlantic	19.8	23.0	36.0	49.8	60.7	69.4	74.2	72.7	65.0	52.3	37.1	25.7	48.9
Bossarte	22.2	26.8	37.4	50.8	61.2	70.1	74.4	72.8	65.9	53.7	39.6	27.8	50.7
*Burlington	24.2	28.7	38.9	52.1	62.9	71.7	76.0	74.4	67.2	54.9	41.1	29.4	52.3
Centerville	22.6	27.1	37.8	52.0	62.4	70.5	74.9	73.3	65.6	54.0	39.5	27.7	50.5
*Chariton	21.0	25.1	36.0	49.5	60.1	68.8	73.3	71.9	64.8	52.8	38.7	26.4	48.9
*Clarinda	22.4	27.8	38.1	51.1	62.9	71.4	75.9	74.6	66.3	54.0	39.7	28.9	50.9
*Columbus Jet	22.1	26.3	37.6	51.2	62.2	70.7	75.0	73.1	65.1	54.3	39.6	27.7	49.4
Corning	21.0	25.1	35.9	49.5	60.5	69.5	74.1	72.5	64.9	52.4	37.4	25.0	48.9

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Corydon	21.9	26.2	36.6	50.5	61.3	70.2	74.0	73.2	65.7	53.8	38.4	26.4	50.0
*Creston	20.1	24.7	35.6	49.5	60.7	69.7	73.4	72.0	64.1	52.5	38.2	25.5	48.7
Eastham	19.2	23.2	35.0	48.7	59.2	68.5	72.8	71.4	64.1	52.0	32.2	24.4	48.4
Fairfield	21.9	26.3	36.7	50.1	61.1	69.8	74.4	72.8	65.6	53.0	38.5	26.4	49.6
Holmwood	21.9	26.3	37.0	51.3	62.5	71.3	74.8	73.0	65.7	53.0	38.6	26.8	50.4
Iandiola	19.7	24.0	36.3	50.5	61.5	70.0	74.8	73.1	65.6	53.3	38.3	25.6	49.4
Keokuk	21.9	26.3	36.9	50.9	62.0	68.8	72.5	70.9	63.5	55.4	41.1	29.6	52.2
*Keosauqua	22.0	27.3	37.9	51.1	61.3	70.2	74.7	73.2	65.8	53.2	39.0	27.1	50.3
Knoxville	21.4	25.7	36.0	50.6	61.5	70.5	74.5	72.4	65.8	53.7	38.8	25.9	49.8
*Lamoni	21.4	27.4	36.9	50.5	61.2	69.6	73.9	72.4	64.7	53.5	38.1	26.0	49.7
Lenox	21.6	25.5	38.6	50.2	61.9	70.8	75.1	73.7	65.7	53.2	38.0	25.6	49.0
Maquoketa	22.2	26.9	37.0	50.2	61.9	70.9	74.3	73.0	65.4	53.6	38.8	26.3	49.9
Mt. Pleasant	20.9	24.4	36.5	50.1	61.2	70.2	74.8	72.9	65.1	54.0	39.7	28.1	50.0
Oklauga	19.9	24.6	36.2	50.1	61.2	70.2	74.8	72.9	65.1	54.0	39.7	28.1	50.0
Oskauga	20.7	24.7	35.8	50.1	61.2	69.6	73.7	72.1	64.9	52.8	38.5	26.0	49.2
Ottumwa	20.6	24.7	36.0	49.8	60.8	69.8	73.3	71.9	65.4	53.5	38.8	26.1	49.2
Sigourney	20.5	24.7	36.1	50.0	60.8	69.7	73.1	72.6	65.1	54.0	39.2	24.0	49.1
Stockport	21.4	25.7	36.4	49.6	60.5	69.5	73.8	72.2	65.0	52.4	38.4	26.8	49.3
Thurman	21.8	25.8	37.3	51.0	62.5	71.8	75.8	73.7	65.7	52.8	37.4	25.3	50.1
Tingley	21.0	25.5	36.5	50.7	61.5	70.2	74.5	72.4	65.2	53.3	38.7	26.6	49.7
Washington	20.7	24.8	36.2	50.3	61.6	70.4	74.9	73.3	65.3	53.6	38.4	25.8	49.6
Westcott (near)	19.1	23.5	35.0	49.2	60.2	69.2	73.6	71.6	64.8	54.3	38.5	26.4	50.6
Winterset	21.4	25.8	36.8	50.5	61.5	70.2	74.6	73.0	65.6	53.4	38.7	26.5	49.8
Means	18.5	22.6	34.7	48.9	60.2	69.3	73.8	71.7	64.3	51.9	36.6	24.1	48.0

NEW PRECIPITATION NORMALS

Beginning June 1, 1924, new precipitation normals were used for computing departures for each station and for the State, and in the Annual Summary of Climatological Data the departures were corrected for the earlier months of the year.

These normals were based on all available records up to the close of 1920 for stations other than regular Weather Bureau Offices, at which the records included 1923. The longest record, 75 years, is at Muscatine, and no record of less than 10 years was used.

All normals were charted, and where short record stations appeared to be much out of line the normals were smoothed to harmonize with long record stations nearby.

The new annual normal for the State, 32.22 inches, is 0.25 inch more than the old normal. The northern division, made up of the three northern tiers of counties, shows an increase of 0.82 inch in the annual normal, all months showing an increase except July, August, October, and December. The central division shows an increase of 0.17 inch and the southern division, a decrease of 0.25 inch. A decrease in July and August and an increase in September in all three sections brings out in the latter month a secondary maximum in the annual rainfall curve not shown in previous normals. The principal maximum is in May as heretofore.

It is interesting to note that the largest increase in rainfall is in the northern division where more water surface was originally exposed

to evaporation and where drainage has been reduced this water surface for the last 35 years. At Algona near the center of this division the secular trend of the 51 years of precipitation record computed by least square method, shows an annual increase of about 0.06 inch, with wet tendencies culminating in 1875 and 1909, and dry tendencies culminating in 1886 and 1910. There seems to be no relationship between drainage and rainfall in this division.

Precipitation normals for all stations follow:

Northern Division

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Length
Algona	0.82	1.09	1.12	2.02	4.28	4.51	3.06	3.55	3.32	2.27	1.36	0.96	29.25	41
Allison	1.20	1.44	1.80	3.04	5.09	4.95	3.75	3.49	3.59	2.50	1.56	1.29	33.43	10
Alton	0.76	1.02	1.53	3.09	4.91	5.16	4.25	3.58	3.28	2.23	1.42	0.91	32.16	31
Alex	0.76	0.96	1.19	2.49	4.81	3.96	3.54	3.19	3.02	1.96	1.37	0.80	27.61	16
Belmond	1.26	1.11	1.33	3.26	5.21	4.76	3.09	3.08	4.20	2.72	1.65	1.03	33.13	31
Britt	0.98	0.81	1.25	2.57	4.90	5.23	3.98	3.77	3.46	2.40	1.45	0.80	30.60	31
Charles City	1.03	1.14	1.84	3.56	4.37	4.09	3.84	3.43	3.02	2.43	1.60	1.00	30.25	32
Decorah	1.24	1.03	1.80	2.55	4.96	4.02	4.05	3.30	4.11	2.82	1.84	1.28	33.22	33
Dubuque	1.56	1.50	2.19	2.68	4.09	4.35	3.87	3.33	3.87	2.58	1.82	1.13	33.29	72
Fathersville	0.58	0.84	1.27	2.63	4.47	3.14	4.16	3.19	3.33	1.91	1.31	0.71	28.74	24
Fayette	1.25	1.28	2.11	3.19	4.86	4.84	3.58	3.54	3.67	2.53	1.72	1.14	31.14	23
Forest City	0.88	0.94	1.43	2.48	4.64	4.55	3.37	3.37	3.31	2.43	1.55	0.85	30.05	17
Hampton	1.21	1.36	1.75	3.19	5.00	4.94	3.65	3.45	3.45	2.55	1.60	1.23	32.32	40
Humboldt	0.81	0.97	1.44	2.68	4.32	4.38	3.74	3.30	3.27	2.22	1.37	0.87	29.61	28
Independence	1.11	1.05	1.72	2.51	4.27	4.64	3.14	3.21	3.95	2.55	1.44	1.03	33.94	54
Iowa	0.65	0.87	1.20	2.33	4.20	5.11	3.37	3.50	2.79	1.91	1.12	0.69	27.10	17
Lansing	1.20	1.13	2.01	3.56	5.00	4.48	4.03	2.95	3.09	2.40	1.59	0.97	32.96	15
Le Mars	0.57	0.80	1.25	2.82	4.33	4.38	4.08	2.98	3.25	2.06	1.13	0.85	28.46	22
Mason City	0.97	0.96	1.37	2.55	4.69	5.14	3.59	3.74	2.81	2.30	1.44	0.88	30.33	23
Milford	0.98	1.05	1.92	3.00	4.58	4.57	3.77	3.50	3.59	2.69	1.69	1.09	34.36	10
New Hampton	1.10	1.25	1.83	3.00	5.10	5.00	3.80	3.77	3.63	2.50	2.00	1.30	34.36	10
Northwood	1.14	1.38	1.85	2.74	5.09	4.86	3.83	3.96	3.38	2.64	1.97	1.23	34.22	25
Oelwein	0.78	1.15	1.37	2.73	4.43	4.64	3.45	3.37	3.50	2.73	1.68	0.95	30.46	37
Peru	1.22	1.14	1.92	3.01	5.01	5.66	4.69	4.33	3.84	2.88	1.69	1.30	31.43	10
Rock Rapids	0.65	0.68	1.25	2.89	3.53	4.07	3.31	3.35	3.29	1.79	1.19	0.65	25.38	22
Sambor	0.79	1.00	1.40	2.90	4.79	4.73	3.59	3.27	3.29	2.35	1.39	0.85	33.35	10
Social Center	0.74	0.97	1.26	2.82	4.71	4.60	3.83	3.82	3.95	3.14	1.78	0.88	25.98	22
Sosmer	0.70	0.91	1.32	2.90	4.30	4.20	3.50	3.42	3.27	1.92	1.30	0.86	28.27	11
Storm Lake	0.70	0.90	1.30	2.90	4.40	5.00	4.07	3.14	3.32	2.04	1.30	0.82	30.00	26
Washita	0.63	0.94	1.01	2.05	4.67	4.58	4.32	2.94	3.39	2.11	1.23	0.82	29.50	24
Waterloo	1.12	1.18	1.67	3.53	4.09	4.13	3.98	3.33	4.04	2.44	1.49	1.20	31.19	30
Waverly	1.11	1.27	1.78	3.00	4.44	4.37	3.75	3.24	3.69	2.60	1.62	1.19	31.71	24
West Bend	0.95	0.98	1.56	2.97	4.19	4.29	3.47	3.69	3.14	2.03	1.49	1.06	29.85	30
Means	0.94	1.06	1.50	2.77	4.00	4.61	3.79	3.29	3.43	2.32	1.32	1.03	30.97	

Central Division

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Length
Ames	0.90	0.94	1.42	2.98	4.51	4.37	3.86	3.44	3.67	2.61	1.29	1.06	31.00	43
Amesboro	0.83	1.03	1.43	3.12	4.78	4.07	3.53	3.23	3.72	2.12	1.32	0.90	30.33	27
Baxter	0.90	1.02	1.84	3.06	5.36	3.49	3.89	3.23	3.97	2.42	1.43	0.95	32.66	22
Boie Plaine	1.56	1.60	2.28	3.41	4.81	4.33	3.95	3.23	3.57	2.49	1.00	1.33	31.29	31
Boone	0.84	1.09	1.44	2.88	5.03	4.53	3.72	3.36	4.05	2.70	1.37	0.89	32.10	27
Carroll	0.78	1.06	1.69	2.96	4.56	4.78	3.58	3.55	3.47	2.58	1.32	0.98	31.00	29
Cedar Rapids	1.40	1.49	2.38	3.25	4.70	4.55	3.90	3.50	3.90	2.45	1.65	1.31	33.81	30
Clinton	1.87	1.96	2.82	3.94	4.69	4.39	3.69	3.63	3.49	2.56	1.89	1.78	32.17	44
Davenport	1.257	1.50	2.31	2.79	4.10	4.09	4.40	3.41	4.35	2.83	1.84	1.10	31.23	32
Des Moines	0.66	0.94	1.53	2.83	4.28	4.00	3.73	3.81	3.12	2.23	1.33	0.87	29.44	29
Des Moines	1.12	1.12	1.70	3.01	4.74	4.99	3.61	3.54	3.33	2.56	1.47	1.11	32.25	45
Fairport	0.84	0.85	1.69	2.71	4.38	4.42	3.91	3.69	4.38	3.04	1.56	0.83	32.37	30
Foot Dodge	1.12	1.22	1.83	3.71	4.97	4.55	4.37	3.70	3.65	2.31	1.69	1.17	34.50	28
Grinnell	0.97	0.94	1.80	3.25	4.94	5.08	3.73	3.30	3.77	2.79	1.44	1.16	33.13	30
Grundy Center	0.78	1.11	1.50	3.13	4.70	4.46	4.22	3.86	3.77	2.66	1.45	1.11	31.73	24
Harlan	0.80	1.13	1.33	2.86	4.56	4.63	3.88	3.66	3.72	2.40	1.40	0.91	31.73	27
Iowa City	1.51	1.51	2.49	3.18	4.33	4.04	4.12	3.18	3.88	2.74	1.17	1.61	30.37	17
Iowa Falls	1.21	1.62	1.87	3.12	4.61	5.49	3.94	3.41	3.80	2.65	1.00	1.30	34.44	37
Jefferson	0.86	1.03	1.46	2.85	4.50	4.30	3.68	3.18	3.99	2.54	1.50	1.03	31.31	18
The Claire	1.50	1.67	2.36	3.88	4.41	4.16	3.53	3.03	3.41	2.45	1.77	1.44	32.11	42
Little Sioux	0.75	1.28	1.32	2.67	4.44	4.36	4.29	3.74	3.17	2.05	1.37	0.88	30.13	17
Logan	1.00	1.19	2.02	2.79	4.24	5.18	4.41	3.69	3.16	2.36	1.40	1.13	32.22	35
Marshalltown	1.17	1.27	1.86	2.84	4.49	4.57	4.01	3.69	4.11	2.76	1.52	1.22	32.81	40
Maquoketa	1.10	1.28	1.86	3.25	4.95	4.56	3.46	4.40	3.50	2.50	1.50	1.04	30.62	19
Muscatine	1.84	1.92	2.96	3.28	4.42	4.45	3.71	4.14	3.96	2.65	2.30	1.96	36.85	79
Osceola	1.42	1.65	2.26	3.81	4.89	4.18	3.65	3.69	3.67	2.49	1.62	1.33	32.98	22
Onawa	0.69	0.98	1.62	2.67	4.83	4.68	4.15	4.06	3.21	2.18	1.28	0.92	32.45	23
Perry	1.02	1.32	1.74	2.99	4.84	4.42	4.04	4.07	3.77	2.72	1.50	1.02	33.43	27
Rockwell City	1.00	1.32	1.61	3.05	4.93	4.73	3.79	3.62	4.05	2.50	1.70	0.98	33.38	26
Sac City	1.01	1.11	1.43	2.94	4.16	4.76	3.67	3.39	3.30	2.17	1.30	1.19	30.41	45
Sass City	0.65	0.83	1.16	2.07	3.94	3.79	3.44	3.14	2.91	1.76	1.03	0.82	26.07	34
Tipton	1.45	1.49	2.59	3.24	4.80	4.10	3.83	3.82	3.36	2.38	1.87	1.48	35.07	23
Toledo	1.16	1.18	1.60	2.95	4.59	4.55	3.63	3.69	3.97	2.51	1.39	1.12	31.91	27
Van Meter	0.78	1.00	1.30	2.60	4.10	4.10	3.40	3.40	3.40	2.40	1.40	0.90	28.00	20
Waukegan	1.15	1.25	1.65	3.80	4.67	4.09	4.54	3.36	3.94	2.16	1.37	1.15	33.28	21
Weber City	0.93	1.14	1.59	3.19	4.71	4.23	3.79	4.21	4.23	3.13	1.63	0.96	30.18	30
Williamsburg	1.40	1.39	2.11	3.35	4.00	4.00	3.90	3.50	3.65	2.45	1.70	1.25	33.76	19
Means	1.12	1.26	1.82	3.03	4.61	4.46	3.85	3.53	3.69	2.48	1.58	1.17	32.10	

Southern Division

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Length
Atton	0.86	1.17	1.80	3.50	4.77	4.03	3.97	3.38	4.36	2.56	1.43	1.19	34.05	35
Albia	1.19	1.56	1.96	3.98	4.99	4.32	4.14	3.33	4.06	2.26	1.56	1.01	33.34	24
Albia	0.81	1.11	1.59											

Bulletin No. 2, April 15, 1924—

Excepting a snow storm on the night of the 16th and the forenoon of the 17th in northern Iowa, the week was generally favorable for field work in which rapid progress was made in the southern portion. Temperature and sunshine were both above normal for the State as a whole. Precipitation was mostly below normal, though from six to nine inches of snow fell in Hardin, Hamilton and Webster counties. A few localities in the southern counties are reporting the need of rain.

Oats seeding made wonderful progress where the soil was dry enough and in some localities the work is practically completed. The soil is disking up fine and mellow and the seed bed for oats is better than the average. Though oats seeding is about a week later than the average, the lateness is offset by the favorable seeding conditions. Plowing in preparation for corn planting is going forward rapidly. Spring wheat seeding which is confined mostly to the Missouri and Big Sioux valleys is nearly completed. In some west central counties there will probably be a slight increase in acreage to take the place of a large decrease in winter wheat acreage which resulted from excessive rainfall at seeding time last fall.

Sows bred for pigs in the spring of 1924 are 16 per cent less than last year as shown by early reports from assessors. This does not seem to warrant the 4 per cent increase in corn acreage shown by the inquiry on "intentions to plant," put out in March. With these facts in mind there is yet time for some change in the intention to plant corn.

Gardening progressed rapidly and some commercial onions were planted in the truck farming districts in Mitchell and Scott counties.

Bulletin No. 3, April 22, 1924—

Field work made excellent progress with favorable weather over much of the State, except a belt about three counties wide extending from the south central to the northeast district where moderately heavy rains fell on the 16th.

Heavy to killing frosts or freezing temperatures on the mornings of the 20th and 22d were unfavorable for early truck which had been set out, and made a good start during the warm days earlier in the month. For the week as a whole temperatures averaged slightly below the seasonal normal; sunshine was above normal. The cool weather beneficially retarded fruits which had advanced too rapidly for safety, though as yet no blooming is reported.

Oats seeding advanced rapidly toward completion, though considerable remains to be done in the extreme northeast counties. The earlier seeded fields are up in the southern, western and east central districts. A good warm rain is needed except in the area covered by the rain of the 16th. Oats acreage has increased in the sections where winter wheat decreased. Reports on winter wheat are mostly favorable, though, as usual, some localities show winter killing or effects of Hessian fly. Rain would help this crop. Barley seeding was active this week. The acreage of this crop will probably be increased.

Plowing for corn made good progress with the soil in good tilth except in some southeast counties. The probable increase in acreage will be offset by poor seed corn, which means that the cost per bushel of producing the crop will be increased.

Most of the early potatoes were planted this week, and most of the commercial onions have been seeded. Truck and home gardening advanced rapidly.

Pastures have advanced more rapidly than usual. In many localities live stock is already getting most of its living from grazing, which greatly lightens the work on the farm and permits longer hours in the field. This, with the favorable weather and soil conditions, is making it possible for farmers to do more of their own spring work, and depend less on hired

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year	Length Record
Glenwood	0.71	0.87	1.21	2.89	4.01	4.87	3.69	3.36	2.68	2.68	1.15	0.40	29.43	24
Indianola	1.15	1.71	1.63	3.16	4.43	4.44	3.79	3.84	3.73	2.96	1.57	1.37	32.45	24
Kosciusko	1.09	1.54	2.29	3.19	4.19	4.29	3.85	3.93	3.96	2.29	1.92	1.20	33.64	30
Kossuth	1.56	1.47	2.27	3.39	4.88	4.17	3.99	3.27	4.20	1.99	1.61	1.28	34.48	30
Keosauqua	1.23	1.25	1.80	3.49	4.35	4.10	3.97	3.91	4.14	2.31	1.26	1.22	33.24	31
Knoxville	1.67	1.68	2.30	3.07	4.83	4.57	3.78	3.45	3.56	2.71	1.66	1.40	33.70	22
Lacrosse	1.06	1.24	1.87	3.47	4.95	4.85	3.94	3.78	4.01	2.63	1.44	1.18	34.67	31
Lamoni	0.87	0.90	1.51	3.24	4.68	4.17	4.21	3.36	4.21	2.72	1.47	0.98	32.24	28
Lenox	1.03	1.30	1.90	3.35	4.47	4.74	4.42	3.40	3.95	2.32	1.34	1.25	34.85	28
Mt. Ayr	1.03	1.30	1.90	3.35	4.47	4.74	4.42	3.40	3.95	2.32	1.34	1.25	34.85	28
Miss. Pecosant	1.53	1.41	2.30	2.97	4.62	5.03	3.66	3.27	3.53	2.49	1.31	1.1	33.84	42
Oakland	1.03	1.15	1.91	2.85	4.35	2.98	3.72	3.09	3.49	2.55	1.90	1.17	30.49	41
Oskaloosa	1.27	1.45	1.97	2.91	4.65	4.91	3.56	3.45	3.85	2.38	1.38	1.06	32.26	32
Osawatomie	1.07	1.20	1.48	3.16	4.49	4.31	3.25	3.28	4.17	2.45	1.56	0.97	30.86	30
Pella	1.07	1.20	1.48	3.16	4.49	4.31	3.25	3.28	4.17	2.45	1.56	0.97	30.86	30
Siouxport	1.56	1.49	2.01	3.29	4.37	4.26	3.83	3.10	3.09	2.25	1.60	1.23	32.15	25
Stockport	1.34	1.39	2.17	3.17	4.66	4.19	4.30	3.10	4.09	2.68	1.64	1.27	33.96	19
Thurman	0.98	1.38	1.44	3.15	4.53	5.29	4.17	4.07	4.26	2.94	1.83	1.33	33.44	29
Washington	1.48	1.29	2.10	2.73	4.16	3.91	3.31	3.65	3.28	2.29	1.67	1.37	31.34	41
Wesport	0.92	1.08	1.73	3.58	4.32	4.87	4.40	3.49	3.73	2.37	1.47	1.10	32.29	26
Winterset	0.62	0.76	1.39	3.01	4.59	5.03	4.33	3.62	3.63	2.35	1.06	0.94	30.66	31
Omaha	1.17	1.20	1.88	3.18	4.62	4.51	3.99	3.49	3.83	2.46	1.57	1.22	33.13	27
Means	1.17	1.20	1.88	3.18	4.62	4.51	3.99	3.49	3.83	2.46	1.57	1.22	33.13	27
State Means	1.07	1.30	1.75	2.99	4.61	4.58	3.85	3.44	3.65	2.42	1.36	1.10	32.25	28

Bulletin No. 1, April 8, 1924—

Extreme variations characterized the weather of the winter of 1923-1924. December was the warmest of record followed quickly by severe wintry weather with the lowest temperatures in twelve years on January 5th. Milder weather came about the middle of January and continued through February, but March averaged considerably colder than usual with a severe snow storm and cold wave 28th-31st. Below zero temperatures occurred in northwest Iowa on April 1st which is the first time such April temperatures have been recorded in Iowa. Ample snow cover generally preceded the severe temperatures.

Winter wheat and grain are believed to have wintered well except in places where the wind swept the snow away. The canes and twigs of the more tender fruits, not being subject to snow cover may have been injured by the sudden and severe temperature changes, though positive information along this line is not as yet available.

There was too much frost in the ground, and the soil was too wet to permit much field work till about April 3d, though a little oats seeding was done in the south central counties, and in a few other scattered localities on March 27th.

Warm sunny weather with practically no rain the past week dried the soil rapidly, permitted oats seeding in the southern counties, and set plowing in many sections. Roads which since February have been the worst in years are improving rapidly.

Spring pigs will be less numerous this spring, due to decreased number of sows bred. While there has been some complaint of loss of young pigs and lambs through inclement weather, the loss will probably not be as great as in the two preceding springs. Livestock did not winter quite as well as in recent years due to the inferior quality of the 1923 corn.

Seed corn testing shows that great care in selection of seed will be necessary. Sufficient good seed is available in nearly every community by using 1922 stock, but at best there will probably be enough carelessness to cut the yield per acre below that of the previous four years.

more than offset the rapid advance of the season during April. Since April 1, the rainfall for the State as a whole has averaged only about one-third of the normal.

Corn planting has proceeded slowly, for the soil has been mostly too dry and cold. For the State as a whole only about 60 per cent of the planting has been done, though some localities report 90 per cent or more. Germination has been slow and uneven and some replanting is being done. Corn that was planted in the latter part of April is up and showing rows, but growing very slowly.

Oats, winter wheat, spring wheat, barley, rye, hay lands, pastures, and newly seeded grasses are suffering for rain in most of the state.

Fruit prospects are mostly good but would be improved by rain. Frost damage on the 11th, though considerable in a few localities, in the southwest portion of the State was not generally serious. Truck crops have made slow progress. Early potatoes show rows in some cases.

The early spring honey flow has been considerably less than usual, but where bees have been well provided with stores, brood rearing has been active and colonies are filled with young bees ready for the June honey flow, if favorable weather brings about such a flow.

Young pigs, lambs, and chicks have not thrived during the recent cloudy, chilly weather, though as yet no large mortality is reported.

Bulletin No. 8, May 27, 1924—

Temperatures averaging 10 degrees below normal, rainfall about half the normal, and deficient sunshine the past week, in continuation of similar conditions for the two preceding weeks have put Iowa crops in the most critical condition in several years. From April 1 to May 27, precipitation for the State averages 3.06 inches, which is 44 per cent of the normal. The greatest deficiency is in the southwest counties. Clarinda and Des Moines have had only 28 per cent of the usual amount. The north-central, northeast and northeast part of the central districts have not suffered so much. At Iowa Falls the season's rainfall has been 78 per cent of normal. Frost occurred on several mornings, culminating in a general freeze or killing frost on the morning of the 24th, except where protected by a cloud blanket. The lowest temperature reported was 24 at Inwood.

First planting of corn is about 93 per cent completed, but much that has been in the ground two weeks has not germinated and has been attacked by wire worms and other insects, or by rot, so that considerable replanting has been done, and much more is contemplated. That which is up shows an uneven stand and some of the earliest was cut to the ground by frost on the morning of the 24th, particularly in Harrison and Shelby counties.

Oats "look sick" over the southwest half of the State. Rye is heading short and winter wheat looks as if it would. Pastures are eaten into the ground in the southwest counties and the hay crop other than alfalfa will be a failure, except in the more moist northeast sections.

Fruits were apparently not much injured by the frosts and freezes of the week, though grapes and strawberries were injured in some localities. The calyx spray was being applied in the northern counties this week. Beans and tomatoes were nipped and in some places killed. Garden truck is generally at a standstill.

The weather has been too cool for bees to fly and they have consumed more stores than they have made, and must depend largely on feeding with sugar syrup. The outlook for white clover honey flow is not good.

Bulletin No. 9, June 2, 1924—

The driest May in 46 years is reported from many Iowa stations, and the coldest since 1907. A few stations report the coldest of record. The mean temperature of the last four weeks has kept constantly about three weeks

or more behind the normal. Showers have been frequent but remarkably deficient in amount. Our correspondents report that on the average the season is 13 days later than normal, and 12 days later than 1923.

Corn is getting a very bad start. Most has been planted once, and considerable has been replanted. Much late planted corn lies ungerminated in the cold dry soil. Considerable complaint is heard of damage by seed corn maggots, particularly in Jasper county. In about half the fields rows can be dimly seen with generally uneven stand and many missing hills. A few early fields have been cultivated once. It is rare that the corn outlook in Iowa has been so poor on June 1.

Oats are only five or six inches high and not looking well. Winter wheat is heading short in the southern counties. Its color is generally good but it is small everywhere. Rye is mostly headed out but short and stunted. Hay will be practically a failure in the southern counties, and short in nearly all portions of the State.

Fruit prospects are fair in spite of the drouth. Strawberries are ripening.

Bulletin No. 10, June 10, 1924—

Following two months of record breaking deficiency in rainfall, the drouth was broken by general rains during the week, mostly on June 7-8, in a belt from Harrison and Pottawattamie counties east to Linn and Johnson counties torrential downpours measuring 3 to 5 inches washed out crops, flooded basements, sent streams out of banks, and did considerable other damage. The greatest weekly total reported is 5.58 inches at Audubon. In general the rain was much more beneficial than harmful. The thirsty soil absorbed great quantities of moisture. There is still a seasonal deficiency in rainfall in the northwest, north-central, and extreme southwest counties. The mean temperature of the week was below normal for the fifth consecutive week, resembling the usual mid-May conditions.

The corn outlook is bad. In much of the State 10 to 25 per cent of the corn has been replanted, because germination was so slow that the seed rotted or was attacked by maggots, wire worms, bill bugs, or other insects, and much was dug up and eaten by striped gophers. The State Entomologist warns that where fields have been taken by bill bugs there is no use replanting, for the bill bugs will continue to destroy the seed. In such a season there are always many fields that seem too good to warrant replanting, yet the stand is, nevertheless, poor. Corn replanted now will be 30 days late and only a prolonged summer can bring it through. Corn which is up shows a poor stand and color; most of it has been cultivated once. For the State as a whole the condition of corn June 1, 77 per cent, is the lowest since 1903, 16 per cent below the 10-year average and 9 per cent below last year. In 1903 incessant heavy rains in May delayed planting and washed out fields so that only two-thirds of the crop had been planted on June 1; this year 96 per cent of the usual amount of the planting had been done June 1, but the soil was too cold for germination. In 1903 the average yield per acre for the State was only 21.2 bushels as compared with 29.5 bushels in the 16 years, 1914-1922.

Oats are short with good stands but poor color in many sections. The rains will greatly benefit oats except where washed out and covered up by floods. Winter wheat is heading generally in the south third of the State, and will be benefited by the rains.

The rain came too late for hay. Even alfalfa is late for first cutting and somewhat shortened.

Gardens, truck crops, potatoes, and pastures show great improvement. Commercial tomatoes, which have been extensively reset on account of damage by frost, cut worms, and backward season, are now going forward rapidly. Commercial cabbage will be set this week. Strawberries are ripening generally.

Bulletin No. 11, June 17, 1924—

Temperatures were above normal this week for the first time since the week ending May 6. Rain was plentiful in all sections and excessive in localities. Violent and damaging local wind and hail storms occurred in Scott, Muscatine, Mills, Lyon, Cass, Cherokee, Harrison and Hamilton counties. All vegetation, including weeds, made the best growth of the season.

Corn improved greatly where not washed off the hillsides or flooded and covered with dirt in the valleys. Much ought to be replanted, but it is now too late. The stand is generally poor. The best corn is 8 to 10 inches high and has been cultivated twice, but not more than 10 per cent is in that class. About 60 per cent has been cultivated once. Frequent rains the past week have interfered with cultivation. Fields are getting weedy in the south and west districts.

Oats greatly improved where not damaged by storms, are stooling nicely, and heading in the southern counties on short straw. Winter wheat is all headed and promises a good yield, though the straw is short.

Some early hay cutting has been done but the yield is disappointing. Red clover is in bloom and shows better prospects than the grasses. White clover and sweet clover have improved greatly and the honey flow is better than anticipated.

A good crop of strawberries is being harvested; early cherries are ripening rapidly and a good crop is in prospect.

Potatoes have come through the drouth in remarkably good condition. Commercial onions were greatly damaged by hail in Scott county, and some fields in Mitchell county were overcome by weeds and had to be plowed up and planted to cabbage. Home gardens are now unusually thrifty. Commercial sweet corn is in poor condition. The stand is very poor.

Bulletin No. 12, June 24, 1924—

Temperature slightly above normal with ample to copious rains brought vegetation forward rapidly, including weeds. In some central and southeast counties the rains were excessive; numerous damaging hail and wind storms were reported.

Corn made good growth but the frequent rains interfered with cultivation, so that fields in most sections have become grassy. Most of the corn that is up has been cultivated once, but considerable was replanted during the week, particularly in the northern counties. As a whole the crop is two to three weeks late. The best is nearly knee high but this is limited to a small acreage. In the drier localities the second cultivation is well along. In a normal year farmers should begin to "lay by" the corn about this time. The most favorable future weather cannot make up for the poor stand of corn, the washed out hillsides, and the flooded valleys.

Oats made excellent progress but early oats are heading on short straw throughout the State. With favorable weather late oats should be the better. Winter wheat is blooming and filling nicely, and will probably be an average crop, though the acreage is small. Spring wheat and barley are looking good, but heading short.

Alfalfa cutting has been greatly delayed by the backward season and the continuous rains. The first cutting is now in progress, when it should be nearly ready for the second cutting. Considerable that has been cut has been damaged in curing. Some clover has been cut, but the yield has been light. More damaged acreage than for several years will have to be planted to catch crops, such as grain sorghum, sudan, millet, soybeans, rape, etc.

Potatoes have made excellent progress. The earliest are in bloom and some are reported large enough to use. Other truck and home gardens are in good condition where the fight against the weeds has been successful. Commercial cabbage is all planted in Mitchell county where the acreage

will be about the same as last year. Strawberries are yielding an excellent crop, though there is some complaint of lack of flavor due to the overize resulting from too much rain. Cherries are ripening a large crop and the earliest are being harvested.

Pastures have improved greatly. The succulent grass is producing a good milk flow. White clover is yielding an abundant honey flow.

Bulletin No. 13, July 1, 1924—

As a climax to one of the rainiest, stormiest Junes of record, excessive downpours of rain on the 24th and 25th with violent and destructive wind squalls on the latter date, and with temperatures below normal, made the closing week of the month one that will be long remembered. The largest weekly total rainfalls reported was 7.58 inches at Washington, and other southeast Iowa stations had nearly as much. Audubon reports nearly 13 inches of rain for the month, and several stations have had more than one foot.

One-third of the corn is very weedy and in some fields the sod is so tough it cannot be broken by cultivation. Most all but the late re-planted corn has been cultivated once, and about half has been cultivated twice. The best is "knee-high" and looking well, but this constitutes less than 10 per cent of the crop. Since the 25th abundant sunshine and brisk northwest winds have dried the soil so that cultivation is going ahead full speed. However, nothing can be done now to make up for the defective stand, the drowned out fields and patches in fields, and the eroded hillsides.

An added menace in the form of the army worm has appeared in the last 10 days. The State Entomologist reports serious depredations in 17 counties, mostly in central and eastern Iowa, and has assigned all of his force to act with the county agents in combating the worm. Where these worms are most active, every green thing is destroyed in large areas. About 1,000 acres are affected near Webster City in Hamilton county.

Trees of all kinds, including cherry and apple trees, loaded with fruit were seriously damaged by the remarkable wind squalls from about midnight of June 27 to about 2 or 3 a. m. of the 28th. The greatest damage was from the northwest and west-central counties. Southeast across the central, east-central and southeast counties. Not in many years has such wide spread damage been wrought by wind in Iowa. Being squall winds—not tornadoes—the damage to buildings was of minor consequence. Crops, other than tree fruits, were not seriously injured by the wind, though small grain was lodged in some places.

Oats in general are much improved by the moist, cool weather, and will yield well in spite of the short straw. Winter wheat looks promising and is beginning to turn in the extreme south.

Bulletin No. 14, July 8, 1924—

Cool dry weather with abundant sunshine was excellent for weed killing and favorable for small grain, and for haying, but none too good for the growth of corn.

Cultivation of corn was pushed rapidly, but in many fields the battle with the weeds is hopeless. Very little of the corn was up to the standard of "knee high by the Fourth of July." In the best fields there is great unevenness in the size and vigor of plants. Much of the corn has a poor color. Not in the 35 years of the Iowa Weather and Crop Bureau has the corn outlook been so bad at this time in the season.

Winter wheat harvest is progressing rapidly under favorable conditions in the southern counties, and much of the crop is already in shock in the extreme southeast counties. The heads and straw are rather short, but the kernels are plump and the yield will probably be about the average. Oats are turning in the south, and though the straw is short the heads are

heavy and a fair yield is indicated. The weather seems to have been too cool for the best development of barley.

Early potatoes are yielding well, and late potatoes are making fine progress, due to the cool weather, with abundant soil moisture. Other truck crops, gardens, pastures, and meadows are doing well. Considerable haying was done this week with excellent conditions for curing the crop. Some second crop alfalfa was cut. The yield of hay has been rather light.

A very good crop of cherries and currants has been harvested, though cherry trees were damaged greatly by the wind squalls of last week. The June drop of apples was unusually heavy, and the crop in general will probably not be as large as last year. Bees have been busy on Linden and white clover during the last 10 days.

Army worms are reported in a few more counties this week, but control measures seem to have largely checked their activities.

Bulletin No. 15, July 15, 1924—

Cool weather with ample sunshine and less than normal rainfall in part of the State, was favorable for cultivating corn, haying and harvest, which made excellent progress.

Corn made fair progress in spite of the cool nights. It ranges from 26 inches high, cultivated five times and laid by, to replanted, just up, and not cultivated at all. The best corn is in the northern third of the State. Hail is needed in the northwest counties. Lowland corn has a poor color and considerable has been hopelessly overtaken by weeds. It looks now as though at least one-third of the acreage will not mature marketable corn.

Oats have been greatly benefited by the cool weather with abundant soil moisture, through the critical heading and filling period. Though the straw is shorter than usual, the yield and quality of the grain will be good and the corn shortage should bring about a good price for oats if not rushed to market too rapidly. Oats harvest is under way in the southern counties, and the crop is turning nearly to the north line of the State.

Winter wheat harvest is progressing under favorable conditions, with indications of good yield and quality. Barley harvest is also under way, but the weather has been most too cool for best results.

Much clover and mixed timothy and clover hay was put up this week, and while some difficulty was experienced in curing where the soil was wet underneath, the weather has been favorable and the quality of the crop is mostly good. The yield is heaviest in northern Iowa, where the weather has not been subject to prolonged and extreme periods of droughts and rain. Second crop of alfalfa haying is well under way.

Red raspberries and black raspberries are being harvested with good results. Blackberries are promising.

Bulletin No. 16, July 22, 1924—

Nearly all sections had rain this week but the amounts ranged from very little in about one-fourth of the State to heavy in some localities. Serious need of rain is reported in Lyon county. Heavy local rain and wind storms occurred on the 21st in northern Iowa. Temperatures averaged slightly below normal, though around the 90-degree mark on three afternoons.

Corn made good progress in the central and south portions of the State, but as yet has not made up much for its general lateness which averages 19 to 14 days; and in the northern counties temperatures were not high enough to produce much growth. Early and well situated fields are shoulder high and showing occasional tassels, but the bulk of the crop is still being cultivated, with conditions mostly favorable for weed killing. Some has been laid by with the hills full of weeds. Fields are cleanest in the north where June rains were not so heavy.

Old corn surplus is evidently not large as indicated by the distribution that is going on between farmers which prevents much from going to

terminal markets. A large part of the 1923 crop is now stored up in hogs and cattle. Young hogs are being withheld from market to take care of the soft corn that now seems inevitable this fall.

Winter wheat and barley harvest is moving northward rapidly, having already reached the Big Sioux valley and a few other localities in northern Iowa. Spring wheat harvest is beginning. The weather has been mostly favorable for harvest and haying.

Potatoes, cabbage and other cool weather crops have made good progress. The yield, size and quality of early potatoes are good.

The cool weather has prolonged the honey flow and bees are active. The prospects are good for blackberries, and a good crop of raspberries has been, or is being harvested.

Bulletin No. 17, July 29, 1924—

The past week was the warmest of the season though the nights were mostly too cool for the best development of corn, and with an excess of sunshine all vegetation made good progress, and farm work was pushed to the utmost. The rainfall varied from none in the southwestern section to excessive amounts in the eastern third of the State, the heaviest being in Iowa and Washington counties. Washington, Iowa, reported the heaviest rainfall in a single day in its history, 8.80 inches having fallen in a little more than six hours on the morning of the 24th. The Iowa river and some of its tributaries were out of banks, and much damage was done to bridges, railways, and crops on the bottom lands were badly damaged or destroyed. Crops in the eastern third of the State also suffered from severe wind squalls and hail storms. The worst hail storm occurred in Dubuque county where a strip five to ten miles was affected, whole fields in this area being destroyed and not a bit of vegetation was left standing. Another severe hail storm swept across Hardin county on the 27th that leveled corn and oats.

While corn made the best progress of the season there has been little improvement in the general condition, and the best fields continue from ten days to two weeks later than the average. Tassels are showing in fields in nearly all portions of the State, though there is much corn in the bottom land, particularly in the Missouri bottoms, that range from knee high down, and the stand ranging down to almost nothing. A few of the best fields are in the silk. The weather was favorable for cultivation and in some localities all the corn has been laid by.

Reports on small grain are mostly optimistic. Winter wheat has been generally harvested and threshing begun in most southern and central sections with mostly good yields. Early oats are mostly in the shock and threshing commenced, with the best crop ever harvested reported in Fayette county. Late oats are being harvested and the prospects also are favorable.

Barley and rye harvest are well advanced and a good start has been made on spring wheat. Truck crops, except tomatoes, are very good. Early potatoes are being harvested with excellent yield, and late potatoes promise well.

While clover has continued in bloom for an unusual length and with an abundance of sweet clover the outlook for a good honey flow has improved. The dry weather reduced the raspberry crop in the drier sections of the State.

Bulletin No. 18, August 5, 1924—

Temperatures were about normal till toward the close of the week when afternoon temperatures reached 90 to 95, the highest of the season, and night temperatures were generally above 70. Strong southerly winds on Sunday, August 3, wilted vegetation in dry localities. Heavy rains occurred in the northeast and some north-central counties, and in the

vicinity of Sioux City, but in many southwest and south-central counties rain is badly needed.

Corn was benefited by the high temperatures except in the drier sections of the State where the leaves rolled considerably. In general the crop is far below standard height, and will not average higher than a man's head. Only an occasional field comes nearly up to what it should be on this date. Tasseling is general but on unusually short stalks in the central and southern part of the State. The better fields show silks. Considerable corn was cultivated this week which is probably the latest date for such work in the history of Iowa. In the Missouri River lowlands, thousands of acres of corn have been overtaken by weeds and will be abandoned. Not many fields west of the "divide" between the Des Moines and Missouri rivers will yield above 30 bushels per acre, and the average will probably be less. Nothing but a phenomenally favorable season can mature the crop and much will only make fodder.

Harvest is completed except in the northern counties, and threshing is progressing rapidly in the central and southern districts. All small grains are yielding well and the quality is excellent. Weather conditions have been mostly favorable for harvest and threshing, but some delay has been caused in the regions of heavy rainfall.

The Secretary of the State Horticultural Society in cooperation with the Iowa Weather and Crop Bureau and the United States Bureau of Agricultural Economics reports the condition of fruits and vegetables on August 1 as follows:

"Summer apples, 66; fall apples, 64; winter apples, 60; pears, 41; plums, 65; grapes, 76; red raspberries, 88; black raspberries, 88; blackberries, 89; gooseberries, 89; cucumbers, 82; sweet potatoes, 82; currants, 89; peaches, practically none; early potatoes, 94; late potatoes, 92; early cabbage, 94; late cabbage, 91; onions, 51; sweet corn, 80; tomatoes, 86; watermelons, 71; cantaloupes, 74 per cent of a normal crop."

Bulletin No. 19, August 12, 1924—

Cool, cloudy weather prevailed this week, with ample to heavy rains in most of the State, though in some localities, particularly the extreme southwest counties, more rain is badly needed. The drought was broken in the extreme northwest.

Corn made fair progress though the nights were too cool for rapid growth. About 75 per cent of it is silked and the earliest and best fields are in the roasting ear stage. As a whole the crop is at least two weeks late. Violent wind storms in the early morning of August 8, flattened the corn over much of the region from Buena Vista and Cherokee counties southeast to Wapello county, and in some other localities. For about one day it looked as though this corn was doomed, but as the cars were not heavy, it has straightened up remarkably and will not be seriously damaged.

The remnant of harvesting that remained in the northern counties was greatly delayed by heavy rains, and the standing grain was badly tangled and lodged. Threshing was delayed by the rains and heavy dews in nearly all portions of the State. Grain in shock has been damaged by dampness and mildew. In the wind-swept area mentioned in the preceding paragraph, shocks were scattered about as though no shocking had been done, and in some instances bundles were blown a considerable distance and lodged against wire fences. Reports of yields from early threshing returns are very gratifying. One field of 60 acres of oats in Dallas county yielded 86 bushels per acre. Barley and wheat are also yielding better than expected. Excepting the damage in shock since harvest, the quality is generally excellent.

The cool and generally moist weather has been favorable for second crop hay and pastures. Alfalfa and millet cut this week were cured with

difficulty on account of the cloudy, rainy weather. Timothy for seed was favored by the cool, moist season, as shown by early threshing reports of as high as 7 bushels per acre.

Early commercial cabbage is ready to cut in Mitchell county, but cutting is delayed because of the unprofitable price. Commercial tomatoes are coming along very slowly and canning will be cut short by frost unless warmer weather comes. Sweet corn, like field corn, is very late and its canning season will start two weeks late, and will likely be cut short by frost.

Apples were blown from the trees in large quantities in the wind-swept areas. Many trees have been destroyed by wind during the season.

Bulletin No. 20, August 19, 1924—

Frequent, heavy rains in most of the State, deficient sunshine, and abnormally low temperatures this week have added to the gloom in the outlook for Iowa crops. In a few counties in the extreme southern and extreme northwestern portions of the State, more rain is needed.

Corn made slow progress. A few early fields in the extreme southeast have begun to dent, but for the State as a whole only about 10 per cent has reached the "roasting ear" stage. The crop is now about three weeks late, though not so late as in 1915, when only 35 per cent matured. The condition of the crop, aside from lateness, is probably not as good as in 1915, when the yield was 30 bushels per acre. It looks now as if slightly less than half the crop would escape frost.

Threshing was greatly delayed by rain and much of the fine crop of oats and winter wheat has been damaged in shock. Threshing reports continue to show that this is one of the best oats crops of record in Iowa, and it is regrettable that so much has been damaged since harvest, for it will all be needed as a substitute for the deficient corn crop, so far as it can be substituted.

Pastures, alfalfa, meadows, and new seedings of clover, timothy, and other hay crops are luxuriant for this time of year, when they are often in a semidormant condition. Live stock is doing well on the succulent pastures.

Melons and tomatoes are very late and probably will not mature much of a crop. Several carloads of cabbage were shipped from St. Ansgar, Mitchell county, this week and a few fields of onions were lifted.

Bees are now scarcely maintaining themselves. Though white clover is blooming freely, it is not producing much nectar.

Seed Corn

The seed corn used for planting the 1924 crop was generally inferior, which means that old seed corn for planting the 1925 crop will be still worse. In most every locality there is a field of corn that is better than the rest of the neighborhood. Early steps should be taken to select seed corn from such fields. Some, at least, should be gathered before September 10. Even though it shrivels up on the cob it will produce good corn—much better corn than any that is exposed to frost in the immature stage at which frost is likely to catch most of the corn this year. SAVE SOME SEED CORN BEFORE SEPTEMBER 10, should be the slogan throughout the State.

Bulletin No. 21, August 26, 1924—

The past week with an average temperature of 76 degrees was the warmest of the season and 5 degrees above normal. Rains occurred in nearly all portions of the State but were very light along the Missouri river and in the extreme northwest counties, where more rain is badly needed. The rains exceeded one inch in most of the southern and eastern portions of the State, the heaviest being 3.45 inches during the week at Iowa Falls. Sunshine was ample.

Corn made very good progress, but a full month of such progress would be required to mature the crop, and much of it has been so wanted in growth that it can never make fully developed ears. As yet very little can be said to dispense the gloom of our report of last week.

Threshing delays have continued, due to the frequent, heavy rains. In the vicinity of Iowa Falls, 5.23 inches of rain fell in the 24 hours ending at 7 a. m. of the 19th, and 3.26 on the 23d. This inundated thousands of acres of shocked grain and damaged corn fields. Similar conditions prevailed in several other localities in eastern Iowa. Shocked grain has been badly damaged by discoloration, moulding, and sprouting. Threshers' reports continue to show remarkable yields of oats; and other small grains very good.

The outlook for clover seed from second growth clover is not as good as expected. Apparently the frequent heavy rains have been unfavorable for fertilizing the blossoms. Meadows, pastures, and alfalfa are generally in excellent condition.

The commercial canning season has been greatly delayed, though a beginning has been made on tomatoes; and sweet corn canning will begin in about a week. Onion harvest is going forward steadily in Mitchell county.

Fall plowing is under way when grain is too wet to thresh. The soil turns up easily. Preparations for seeding winter wheat are being made, and an increased acreage is indicated.

Bulletin No. 22, September 2, 1924—

Corn continued to make very good progress till toward the close of the week when the weather turned much cooler. The 13-day period ending August 31, was the most favorable of the season though more rain is badly needed in the extreme northwest portion of the State. The average temperature of the last week, 73 degrees, is 4 degrees above normal; and sunshine 81 per cent or 14 per cent above normal. A full month of abnormally warm and otherwise favorable weather will be needed to mature the corn crop which has now generally reached the roasting ear stage about three weeks late. Only a little has begun to dent.

Several days without rain permitted rapid progress in threshing, but more than the usual amount of threshing remained to be done on September 1.

Fall plowing and preparations for winter wheat seeding are going forward.

Late growth of meadows and pastures is very good, but weather conditions have not been favorable for fertilizing the clover blossoms, consequently a small yield of seed is indicated.

Potatoes have rotted in the ground in some localities due to wet weather. Growth of late potatoes has been prolonged by the cool, moist season. Ten to fifteen carloads of potatoes, onions, and cabbages are being shipped from St. Ansgar, Mitchell county, daily. Commercial sweet corn canning is now going ahead rapidly. The recent warm weather greatly improved the commercial tomato output.

Bulletin No. 23, September 9, 1924—

Corn made fair progress the past week in spite of the cool nights with temperatures low in the 40's. Some days were 10 degrees below normal. The average temperature of the week, 64 degrees, is 3 degrees below normal. Sunshine was above normal. The earlier fields of corn are denting in nearly all portions of the State at least three weeks later than usual. While the crop looks fairly good from the roads, the careful observer who examines the ears in the interior of the fields finds that they are undersized and not well filled. The yield per acre will probably not be much more than three-fourths as large as in 1923, and the smallest

since 1915. As to maturity, our township correspondents reported on September 1 that with normal weather 28 per cent of the crop will be safe from frost on September 26, and 49 per cent September 30. If killing frost holds off till the average date, October 6, about 58 per cent would be safe; till October 15, 72 per cent; and till October 31, 87 per cent. Light frost was reported at Waterloo on the morning of September 9 with a minimum temperature of 35. Boone, Deseroh and Fort Dodge reported the same temperature and Forest City 34 but no frost.

Several days without rain permitted fair progress in shock threshing. On September 1 only 75 per cent last year and a 10-year average of 84 per cent as compared with 90 per cent last year has been large.

Winter wheat seeding will be generally delayed to avoid Hessian flies, though preparation of the soil is being made with good moisture conditions. Most of the wheat raising sections report an increased acreage in prospect, but in some counties, particularly Polk, a reduced acreage is contemplated.

Melons are practically a failure, due to the cool, wet season. Late potatoes are generally promising. Commercial sweet corn and tomato canning is progressing, though the tomato crop would be greatly benefited by warm weather. Sweet corn ear worm has scarcely made its appearance due to the cool season. The sweetness and general quality of the sweet corn has been favored by the cool, moist season, but the yield is disappointing due to poor stand and irregularity in size and development of the ears. Truck crop shipments have fallen off greatly in Mitchell county due to the low prices, and the storage houses are being filled.

The following is the fruit and vegetable crop condition report for Iowa for September 1, 1924, based on 100 per cent for a normal crop.

Summer apples, 68; fall apples, 63; winter apples, 63; pears, 46; plums, 42; grapes, 70; peaches, failure; early potatoes, 55; late potatoes, 95; early cabbage, 92; late cabbage, 81; onions, 89; sweet corn, 81; tomatoes, 76; watermelons, 51; cucumbers, 78; cantaloupes, 56; sweet potatoes, 73 per cent.

Bulletin No. 24, September 16, 1924—

Corn made poor progress the last week due to abnormally low temperatures closely resembling the conditions of early October, with deficient sunshine and general rains on four days. The mean temperature, 57 degrees, is 8 degrees below normal.

A special inquiry as to the frost on the 9th shows that light frost occurred on lowlands in most of the northern and central counties and as far south as Union, Manasska and Washington counties. In some sections, especially between Union, Mason City and Estherville, the frost was heavy enough to kill corn leaves. Estherville was the only place reporting 32 degrees.

This special inquiry also showed that at the time of mailing the reports, September 11-12, only 21 per cent of the corn had reached the denting stage. Practically none was safe from frost; the bulk of the crop was in the roasting ear or milk stage; and some was just tasseling. Threshing is dragging along toward a close with further reports of damage by rain. Fall plowing and preparation for winter wheat seeding have made fair progress, though a few localities report the soil as too dry and lumpy. The drouth continues in Lyon county where deficient water supply is becoming serious.

Truck crops are being harvested. Potatoes show good yield and quality. Onions did not yield well in Harrison county due to too much rain through the season. The cool, wet weather has not been favorable for ripening tomatoes. Grapes promise a fair crop but are much belated. Bees are scarcely maintaining themselves.

Third crop alfalfa and second crop clover are being cut, but conditions have been unfavorable for curing.

Bulletin No. 25, September 23, 1924—

Temperature averaging 62 degrees, 5 degrees higher this week than last week and just normal, was somewhat more favorable for corn which made fair progress, particularly toward the close of the week. The strong, warm southerly winds of Saturday and early Sunday were favorable except in the more exposed fields where some corn was blown down. Except Emmet and adjoining counties and some southern counties, rainfall was light to moderate which was also favorable.

The bulk of the corn has just begun to dent; about 20 per cent is dented, and not more than 5 per cent is safe from killing frost. A little seed corn has been gathered, but the crop is generally regarded as too immature for seed. In some localities, fodder cutting and silo filling is in progress, though the crop is not far enough advanced for good results.

Our correspondents estimated on September 1 that with normal September weather 28 per cent of the crop would be safe by September 28. The abnormally cold weather since September 1 accounts for the further delay in maturity which now makes the crop about the latest of record. In the year 1915, which has heretofore held the record for backward corn, September had nearly normal temperature. Only 35 per cent escaped frost that year. Phenomenally warm, dry weather for the next two weeks might mature that much of the crop for this year.

Sweet corn canning is going forward slowly, due to the slow and uneven maturity of the crop. Within a few hills the corn runs from just silking to overmature, requiring much sorting. The quality and sweetness of the pack is better than usual, but the total production will not be 75 per cent of last year.

Some winter wheat seeding has been done in spite of the grave danger from Hessian fly. Much of the ground is ready for seeding. Considerable fall plowing for next year's corn crop has been done.

Third crop alfalfa and second crop clover cutting is going forward slowly, due to the damp, cloudy weather being unfavorable for curing. Some clover has been cut for seed and a little threshed. Yields of about a bushel of seed per acre are reported.

Truck crop shipments from Mitchell county were active this week. Potato digging is in progress throughout the State, with reports of good yield and quality.

Bulletin No. 26, September 30, 1924—

Though the average temperature of the past two weeks has been so higher than normal, and night temperatures have mostly been low, there have been many warm, sunshiny afternoons and rainfall has been below normal till the 27th, when heavy rains occurred in most of the State.

Corn made very good progress toward maturity, much better than would seem possible, till a succession of frosts came on the 28th, 29th, and 30th. Warm, sunshiny afternoons were very beneficial. It is impossible at this time to say how much of the crop is safe from frost, but it is believed that the amount is about the same as in 1915, when 35 per cent escaped damage. The crop was 40 to 50 per cent safe in the northwest district when killing frost came. Heavy to killing frost on the morning of the 30th hit the eastern and south-central districts where corn is most backward, and where only 20 to 35 per cent was safe. It is in these districts that the greatest damage has occurred. The lowest temperature reported in the State on the morning of the 30th was 25 at Cedar Rapids.

Estimates of frost damage cannot be made until field inspections show how much of the leaves, stalks, and ears have been affected, and only at husking time will the damage be accurately known. The crop is so uneven in advancement that in the best fields ears are found ranging

from the milk stage to fully mature. Scarcely a field of corn in the State can be marketed without hand sorting, which is expensive.

Withal it may be said that the general corn shortage is reflected in the price so that Iowa's crop of inferior quality amounting to about 75,000,000 bushels less than last year will probably be worth at least 115,000,000 more than last year.

Reports from over the State indicate that at the last moment before the frosts, considerable seed corn was saved. In nearly every locality there is an occasional field of upland corn that was farther advanced than the rest, and that was not damaged by the frosts, from which good seed can yet be saved before the final freeze comes.

The Hessian fly free date has been announced by the State Entomologist for most of the State and winter wheat seeding has gone forward rapidly in the last few days.

CROP SEASON WEATHER, 1924, BY WEEKS

Average rainfall, mean temperature and mean sunshine, with departure from the normal, as derived from records of selected stations.

Week Ending	Rainfall (Inches)		Temperature (Deg. F.)		Sunshine	
	State average	De-parture	Mean	De-parture	Per cent	De-parture
April 8.....	0.1	-0.5	47	+ 4	75	+19
April 15.....	0.2	-0.4	49	+ 2	74	+17
April 22.....	0.3	-0.4	50	+ 1	64	+ 7
April 29.....	0.7	-0.1	57	+ 8	58	0
April 29.....	0.1	-0.3	59	+ 3	79	+20
May 6.....	0.5	-0.5	50	- 9	34	-26
May 13.....	0.7	-0.8	54	- 7	40	-15
May 20.....	0.3	-0.5	56	-10	37	- 5
May 27.....	0.7	-0.5	58	- 6	42	- 1
June 3.....	0.3	-0.8	59	- 6	45	-19
June 10.....	2.3	+1.3	62	+ 3	65	- 2
June 17.....	1.5	+0.5	72	+ 8	69	-10
June 24.....	2.0	+1.0	73	+ 2	69	- 9
July 1.....	1.7	+0.7	68	- 4	63	+ 5
July 8.....	0.2	-0.8	60	- 7	78	+ 5
July 15.....	0.6	-0.3	71	- 4	69	- 5
July 22.....	1.5	+0.5	72	- 2	63	-11
July 29.....	1.6	+0.2	75	+ 1	86	+15
Aug. 5.....	1.2	+0.4	75	+ 1	69	-15
Aug. 12.....	1.6	+0.8	70	- 2	54	-17
Aug. 19.....	1.8	+1.0	67	- 5	60	- 8
Aug. 26.....	1.1	+0.3	70	+ 5	70	+ 8
Sept. 2.....	0.9	+0.1	73	+ 4	81	+14
Sept. 9.....	0.2	-0.5	64	- 3	71	+ 7
Sept. 16.....	0.9	+0.1	57	- 8	53	-10
Sept. 23.....	0.4	-0.4	62	0	59	-12
Sept. 30.....	1.0	+0.2	57	- 2	74	+14
For the season.....	23.1	+0.3	60	- 2	64	- 1

Bulletin No. 27, October 7, 1924—

Abundant sunshine, nearly normal temperature, very little rain and strong winds were favorable for drying the belated and generally frosted corn crop.

Only 29 per cent of the corn was safe from frost on October 1st as shown by the reports of 829 township correspondents well distributed over the State. Such evidence is far better than the opinion of any single observer. In localities of considerable extent as little as 10 per cent of the crop has escaped damage, while in others as much as 90

per cent is safe. Most of the leaves of the corn have been killed, which has stopped further growth. Some upland corn escaped frost and continues to mature in a natural manner, and this will tend to raise the per cent of merchantable corn, but at best it does not now seem that more than 40 per cent of the crop will be merchantable and much of this will need sorting. While some of the damage to the corn is chargeable to the frosts which came a few days earlier than the average, the most of the damage is a direct result of the backward season all the way from the cold planting time. Not more than half of the crop could have matured if frost had held off till November 1st.

In many localities little or no seed corn was saved, for none was fit for seed. That which has been saved will require artificial drying, for moisture tests show that in some cases it contains as much as 40 per cent of moisture. Some unfrosted and well matured upland corn is yet available for seed.

Silo filling and fodder cutting have gone forward rapidly this week. In some sections more than the usual amount of ensilage has been put up; while in others silos have been only half filled because the corn was so immature and so badly frosted as to be unfit for silage.

Winter wheat seeding was pushed vigorously the past week, with soil conditions fair to good. The earliest seeded has begun to sprout. In most of the winter wheat sections of the State, there are reports of increased acreage.

The canning season came to an abrupt close with the frosts toward the close of September. There are prospects of a shortage of good seed sweet corn for 1925 planting. Potato digging is progressing with good reports of yield and quality. Apples and plums are abundant.

Bulletin No. 28, October 14, 1924—

Temperatures the past week averaged 10 degrees above normal, and resembled normal mid-September conditions. In fact, the week was warmer than any week in September, 1924, and merits the title, "Indian summer." While rain was quite general on the 8th and 9th, there were several warm, sunny afternoons.

Corn dried rapidly. In most of the State the leaves are dead and dry, and in many localities the stalks are becoming so. The immature condition of the crop is shown by the shriveling of the kernels. Perhaps 20 per cent has stopped growth at the milk and roasting-ear stages. With a continuation of dry, warm weather much of the crop will dry up and become chaffy, but this is much better than to become sour and fermented. Unless the weather is unusually favorable, not much cribbing can safely be done before November 1st. Considerable new corn has been fed to live stock and the inferior feeding value has already been noticed. The total crop will be nearly 100,000,000 bushels less than in 1923, yet the total value of the crop, based on December prices, will probably not be greatly different from last year.

Much fodder cutting and silo filling was done this week, though the stalks and leaves seemed too dry and dead for best results. Seed corn saving went forward rapidly, and it is believed that most of the farmers now have a good supply of dependable seed.

Winter wheat seeding continued this week, with further reports of increased acreage. Soil conditions were generally good for this crop. The earliest is up and looks good.

Apple picking was brisk and the crop is generally good where orchards were sprayed and well cared for, except where severe winds blew the apples off earlier in the season.

Truck crops that survived the frosts of the closing days of September have been brought back to a fine state of productiveness by the recent warm and favorable weather. Tomatoes in particular have made up somewhat for a partial failure earlier in the season by an unprecedented

late recovery. For the first time in 21 years the canning factory at Okaloosa has reopened after closing for the season. Vines in that section are filled with ripening and rapidly growing tomatoes.

Recent clover seed hulling has been disappointing. The steady growth of the clover plants misled people to the belief that the seed prospect was better than the returns now show. A shortage of clover seed now seems imminent.

WEEKLY NOTES ON WEATHER AND CROPS IN IOWA

Week Ending October 21, 1924—

Corn dried rapidly and that which was frosted and belated was greatly improved by the "Indian summer" weather of the past week. Temperatures averaged 55 degrees or 12 degrees above normal, sunshine was abundant, good winds prevailed and light rains were confined to the 14th and 15th.

Only a few attempts were made at cribbing corn for the ears still contain too much moisture for safe storage. Fodder cutting and silo filling continued in some sections. Some has been snapped and fed to live stock, while hogging down and grazing is becoming general.

Actual frost damage to corn shown by 768 well distributed reports that left the farms about October 8th-10th have been tabulated and became available since last week's report. For the State as a whole 48 per cent of the crop was "seriously damaged." The damage was greatest, 67 per cent, in the northeast district where the crop was most belated and where the frost and freeze was most severe; and least in the southwest district, 31 per cent, where the crop was most advanced. By districts the damage in per cent was: northeast, 67; north central, 54; northwest, 50; west central, 42; central, 42; east central, 26; southeast, 41; south central, 29; southwest, 21.

The 29 per cent reported safe October 1, plus the 48 per cent seriously damaged, subtracted from 100 per cent, leaves 13 per cent, mostly upland corn, to be matured by the fine weather since the frosts of September 28th-30th. If all of this matured, it would make 52 per cent of the crop merchantable. This would still make it possible for the usual number of bushels of corn to be marketed from Iowa, but the other half of the crop which is soft, chaffy and unmerchantable, has such a low feeding value that a serious problem confronts the live stock farmer following abruptly after the hogging and grazing which seems about the best way to utilize the inferior corn.

Since half of the crop cannot safely be stored and must be fed out quickly, far-seeing farmers who are financially able will not be tempted by the relatively high corn prices now prevailing, but will hold the sound corn against the shortage that seems certain before another crop becomes available, and thus provide feed for live stock or be in a position to realize something like famine prices for corn about next August.

Winter wheat seeding continues with further reports of increased acreage. Most of the acreage is up and looking fine as a result of the fine weather. Though soil moisture has been scant, it has been mostly sufficient. However, a good rain would be beneficial. Newly seeded clover and grasses are needing rain. Clover seed hulling continues to be disappointing.

Sugar beet harvest and sugar manufacture are proceeding rapidly in the sugar beet district of northern Iowa. Good yields and quality are reported. Tomatoes continue to bear well, but the flavor is not the best. Other late truck crops are doing well. Winter apple picking is in progress, though some growers are waiting for cooler weather before harvesting the crop.

Week Ending October 28, 1924—

Corn continued to dry rapidly under ideal weather conditions. Sunshine was nearly 100 per cent. with no rain and temperature about normal. Killing frosts or freezing temperatures on the 23d and 24d finished the growing season for all vegetation that escaped the frosts at the close of September. The freeze aided the drying of the corn.

The problem of husking, sorting, storing and feeding the immature corn has been greatly simplified by the remarkable dry weather of the last three weeks. Without such weather there would have been great additional loss to the crop by souring, molding and later heating in the cribs. It is far better that the kernels on about half the crop have shriveled up and become chaffy and loose on the cob, than that they should become nearly a total loss, as would have been the case with normally moist, cool and cloudy weather. With another dry week, husking will become active. A little of the new crop has already gone to market but it was only of "sample grade," containing more than the required 23 per cent of moisture.

These favorable conditions should not deceive people into the belief that the number of bushels of corn in the State have been increased since October 1st. The frosts at the close of September simply stopped the corn making business for this year and the favorable weather since has conserved the unpromising results of a poor season. Early husking returns confirm previous estimates that Iowa's corn crop this year will be at least 100,000,000 bushels less than last year.

Plowing and winter wheat seeding were brought to a standstill by the dry, hard soil which breaks up very lumpy. Winter wheat that is up, has made good growth, but that which was seeded in the last 10 days is mostly lying ungerminated in the ground.

Pastures, too, have deteriorated because of the drouth and in many localities, particularly in the southwest counties, are brown and bare. Winter feeding of live stock became quite general this week.

In the commercial potato growing sections of northern Iowa, a good many fields of potatoes are not being dug, for the prices do not justify the cost of digging and hauling to market. Quantities of onions are being stored at St. Ansgar, Mitchell county, awaiting a satisfactory price.

Dirt roads are dusty and they are becoming rough by wear as they are too dry for efficient dragging.

Week Ending November 4, 1924—

Another week of remarkably favorable weather dried corn so that husking is now under way in nearly all portions of the State. In most sections early husking returns are not up to expectations. Southerly gales on Thursday, October 30, blew down much corn, but with the record breaking high temperature of that date, hastened the drying of the crop. The wind damage was greatest in the vicinity of Waterloo.

This was followed by a decided change to colder with a hard freeze in the northwest portion of the State on November 2. Sunshine averaged 84 per cent for the State, which is abnormally high. Showers occurred over most of the State the afternoon and night of the 30th.

Late seeded winter wheat is needing moisture badly, as much of it has not yet germinated. In some localities the showers of Thursday were heavy enough to be beneficial, but the heaviest rains were in the northeast portion of the State where the winter wheat acreage is not large. Fall plowing has almost ceased on account of the drouth. In Lyon county, the water supply is dangerously low.

Apples are remaining on the trees to an unusually late date. Pastures are affording very little feed. Potato digging continues with excellent yields reported, but the price so low that many fields will not be dug.

Week Ending November 11, 1924—

Warm, windy, and mostly dry weather with ample sunshine dried corn so that husking is in full swing over most of Iowa.

Yield and quality of the corn is poor. Feeding value is so inferior that some farmers are out of corn already and are marketing half finished hogs and cattle. Some new corn is being shelled and going to market. Hogging or grazing the corn fields is more general this year than ever before, as much of the crop does not warrant the expense of husking. Oats will be used largely as a substitute feed in place of corn, but oats can never fully replace corn as a fatteners. Except for this possibility of substitute feeds, the price of corn would be much higher than it is. The greatest corn shortage in many years seems certain before another crop becomes available.

Fall plowing has been halted by drouth and by frozen ground on November 8. A little winter wheat seeding was done in Harrison county this week. Moisture is badly needed for late sown winter wheat. That which became deeply rooted is looking well. Pastures also need rain badly.

Week Ending November 18, 1924—

Corn husking, hogging, and grazing is going forward rapidly. The weather was mostly cold and cloudy with rain in the south, and snow in the north portions of the State on the thirteenth, but this did not interfere greatly with the harvest of the corn crop. A few localities report better yield and quality than expected, but most of the reports are "disappointing." Some of the corn is still too moist to crib. Farmers report that it is surprising how rapidly the hogs clean up a field of corn which indicates the low feeding value. As a consequence, there are further reports of farmers being already out of corn and forced to buy corn to sell live stock. The price being paid for corn by feeders is about \$1.60 for grade 4 or 5.

Rain is needed for winter wheat and pastures.

MONTHLY PERCENTAGE CONDITION OF CROPS AND YIELD PER ACRE, 1924

Crops	April	May	June	July	Aug.	Sept.	Oct.	Yield Per Acre
Corn			77	72	74	71	67	28.0 bu.
Oats			83	86	94	98		43.0 bu.
Winter wheat		89	85	83	88	90		20.4 bu.
Spring wheat			86	86	88	95		17.3 bu.
Barley		92	89	91	92	95		31.4 bu.
Rye			85	89	92	95		18.0 bu.
Flax seed			89	91	92	92		11.7 bu.
Potatoes			94	95	95	98		136.9 bu.
Tame hay			94	95	95	95		1.78 tons
Wild hay			89	79	83	94		1.36 tons
Alfalfa			92	87	85	91		3.05 tons
Pastures			90	94	97	97		
	91	87	77	91	90	98	98	

FINAL IOWA CROP REPORT, DECEMBER 1, 1924

The products of Iowa soil in 1924 are valued at \$570,816,000, according to the report of the combined Federal and State crop reporting Bureaus. This is an increase of 11 per cent, or about \$56,000,000, over the value of last year's crops, and an increase of 18 per cent, or about \$85,000,000, over 1922.

Though the price of corn per bushel, paid to farmers at country elevators, has increased from 62 cents December 1, 1923, to 93 cents December 1, 1924, or 50 per cent, the total value of the corn crop is only 5 per cent greater, due to the poorest yield per acre in more than a score of years. The yield per acre was only 28 bushels and the quality so poor that it is difficult to express in words. In arriving at the yield per acre, correspondents gave much consideration to the weight per measured bushel, though it is not certain that full allowance for this was made. The last year with such a low yield was 1901 with 26.2 bushels. The average of the last 10 years is 39.1 bushels per acre.

The total number of bushels produced in 1924 was 304,752,000 as compared with 436,432,000 bushels in 1923. About 132,000,000 less bushels of corn are worth about 13,000,000 more dollars than in 1923. When general frosts put a stop to corn making business September 28-30, 25 per cent of the crop was yet in the milk stage and only 33 per cent was mature. A remarkably favorably autumn converted the immature corn mostly into chaff, but even this was better than the usual sour and soggy frosted corn that cannot be harvested or stored. However, hogs do not fatten on chaff, and hundreds of thousands of shoats have gone to market half finished for lack of feed in the last few weeks, and more hundreds of thousands will go soon, so that next summer a shortage of market hogs seems probable.

The short corn crop was due to low temperatures throughout the season. The cold, dry May gave corn a slow and uneven start, and frost a week earlier than usual shortened the growing season. It was equivalent to moving Iowa northward several degrees in latitude. Kansas corn, which usually suffers from heat, was benefited by this theoretical excursion to northern summer seasons.

On December 1, 85 per cent of the husking was done as compared with 89 per cent last year, and an average of 84 per cent. In 1917, which was the last preceding year of bad corn, only 57 per cent had been husked and the work continued till the following April, for the field was the safest place to store it. The practice of hogging and grazing corn increased to 12.7 per cent of the crop this year. In spite of the large amount of moisture in the corn at the beginning of October, it dried rapidly so that the new corn received at country elevators during the last week of November contained only 20.3 per cent as compared with 20 per cent last year.

In oats Iowa leads the nation with a total production of 248,282,000 bushels, worth \$111,727,000, which is an increase in value of 45 per cent over 1923. The cool season was favorable for oats though heavy and persistent rains between harvest and threshing damaged the grain considerably in shock.

Hay and potatoes yielded well, but the prices of these products are considerably lower than last year.

Further details are shown in the following tables:

IOWA CROPS, 1923 AND 1924

Average, average and total yield, average price and total value.

Crop	1924 Final Revision				December 1, 1924, Estimate					
	Acres	Average yield	Total yield	Average price	Total value	Acres	Average yield	Total yield	Average price	Total value
Corn.....	10,776,000	49.3 bu.	529,495,000	0.47	\$249,985,000	10,804,000	28.0 bu.	304,752,000	0.68	\$208,412,000
Winter wheat.....	5,724,000	35.9 bu.	205,000,000	0.56	117,272,000	5,724,000	35.0 bu.	202,000,000	0.57	115,250,000
Spring wheat.....	1,200,000	32.9 bu.	39,000,000	0.56	21,600,000	1,200,000	32.0 bu.	38,400,000	0.57	21,250,000
Hay.....	128,000,000	25.3 bu.	3,238,400,000	0.52	1,699,200,000	128,000,000	25.0 bu.	3,200,000,000	0.51	1,650,000,000
Barley.....	18,000,000	10.0 bu.	180,000,000	0.50	90,000,000	18,000,000	10.0 bu.	180,000,000	0.50	90,000,000
Flax seed.....	4,000,000	9.4 bu.	37,600,000	2.10	78,960,000	4,000,000	11.7 bu.	46,800,000	2.17	99,560,000
Timothy seed.....	222,000,000	1.05 bu.	2,331,000,000	0.23	529,710,000	222,000,000	0.97 bu.	2,154,000,000	0.26	579,000,000
Produce.....	82,000,000	4.2 bu.	3,444,000,000	12.77	10,520,000,000	79,000,000	13.0 bu.	10,270,000,000	13.52	10,700,000,000
HAY (total).....	3,132,000,000	1.52 bu.	4,770,000,000	12.50	63,550,000,000	3,075,000,000	1.28 bu.	3,700,000,000	11.55	50,200,000,000
GRAIN (total).....	1,130,000,000	1.39 bu.	1,560,000,000	10.20	15,954,000,000	1,091,000,000	1.20 bu.	1,450,000,000	11.83	17,000,000,000
Wheat and grazing.....	30,287,000	3.00 bu.	90,861,000	3.00	90,861,000	30,287,000	2.68 bu.	86,174,000	2.85	86,174,000
Swine.....	4,287,000	7.00 tons	30,009,000	4.00	125,526,000	4,600,000	6.2 tons	28,720,000	6.00	171,250,000
Poultry (omit turk).....	41,000	1.82 tons	74,600	0.61	43,000	41,000	1.48 tons	74,600	0.60	43,000
Stocks.....	3,000	182.00	546,000	75.00	40,500,000	3,000	182.00	546,000	75.00	40,500,000
Stocks (estimated).....	3,000	182.00	546,000	75.00	40,500,000	3,000	182.00	546,000	75.00	40,500,000
Fruit crop (estimated).....	3,000	182.00	546,000	75.00	40,500,000	3,000	182.00	546,000	75.00	40,500,000
Manufactures (estimated).....	3,000	182.00	546,000	75.00	40,500,000	3,000	182.00	546,000	75.00	40,500,000
Total value, not including livestock products, for the year 1924.....					\$570,816,000					\$452,000,000

Subject to revision when census figures become available.
 *Averages included in "Wheat" and "Corn" and excluded from grand totals.
 *Estimate included in "Corn" and excluded from grand totals.

ESTIMATE OF ACREAGE AND AVERAGE AND TOTAL YIELD OF IOWA CROPS, 1924 BY COUNTIES

Districts and Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley			
	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	
																Acres
Northwest—																
Buena Vista.....	137,000	28.6	3,918,000	33,000	48	4,484,000	90	22	2,000	20	17	300	900	40	85,500	
Cherokee.....	132,000	31.1	4,105,000	81,000	39	3,177,000	100	23	2,300	30	18	900	1,800	32	57,100	
Clay.....	121,000	30.6	3,703,000	83,000	46	3,826,000	130	23	3,000	30	18	300	2,000	34	73,800	
Dickinson.....	81,000	27.0	2,187,000	56,000	50	2,818,000	300	25	7,500	300	12	2,400	2,000	33	81,800	
Emmet.....	84,000	23.8	1,999,000	64,000	47	3,026,000	400	24	9,600	100	24	2,400	1,000	41	36,400	
Lyon.....	134,000	25.6	3,430,000	106,000	45	4,700,000	340	12	4,100	200	19	3,200	2,100	32	66,700	
O'Brien.....	129,000	31.5	4,061,000	94,000	49	4,626,000	60	25	1,400	50	15	800	5,300	42	228,000	
Osceola.....	104,000	24.8	2,579,000	70,000	46	3,240,000	40	25	1,000	100	18	1,800	1,400	33	29,200	
Palo Alto.....	135,000	27.0	3,645,000	94,000	45	4,250,000	540	21	11,000	100	18	1,800	1,400	33	45,700	
Plymouth.....	112,000	31.2	3,494,000	112,000	39	4,386,000	1,900	22	41,300	9,500	17	165,500	5,000	28	138,000	
Pocahontas.....	147,000	28.0	4,114,000	109,000	45	4,925,000	1,900	22	41,300	100	18	1,800	1,400	33	45,700	
Sioux.....	184,000	34.4	6,339,000	130,000	47	6,133,000	440	35	15,400	1,800	19	36,100	5,700	33	181,100	
For District.....	1,690,000	29.2	46,688,000	1,092,000	45.5	40,701,000	3,900	22.7	89,900	12,300	17.9	215,400	29,100	33.8	182,800	
North Central—																
Butler.....	117,000	25.2	2,948,000	75,000	40	3,002,000	100	24	2,400	30	20	400	500	35	19,000	
Cerro Gordo.....	116,000	26.8	3,109,000	78,000	46	3,588,000	150	24	3,600	280	19	5,400	2,400	36	87,800	
Floyd.....	95,000	29.8	2,845,000	65,000	44	3,206,000	100	24	2,400	80	28	2,200	1,500	32	10,400	
Franklin.....	125,000	27.4	3,425,000	82,000	51	4,692,000	200	23	4,800	80	12	1,000	840	31	25,200	
Hancock.....	108,000	27.4	2,929,000	73,000	40	3,358,000	500	23	11,000	200	19	3,800	1,440	39	55,400	
Humboldt.....	212,000	26.6	5,638,000	166,000	47	7,460,000	60	24	1,400	40	20	800	1,400	43	68,000	
Kossuth.....	82,000	30.5	2,481,000	53,000	48	3,504,000	350	25	9,100	100	19	1,900	1,000	32	60,000	
Mitchell.....	80,000	28.5	2,280,000	58,000	53	3,074,000	60	33	2,000	300	25	5,000	2,800	40	27,100	
Winneshong.....	70,000	27.3	1,911,000	63,000	56	3,528,000	250	24	6,000	300	24	4,800	1,300	48	67,200	
Wright.....	134,000	29.0	3,886,000	99,000	44	4,358,000	600	23	11,200	100	19	1,900	1,900	39	87,600	
For District.....	1,264,000	29.9	34,008,000	930,000	47.6	44,280,000	2,550	23.7	69,400	1,500	20.1	31,300	17,300	36.5	638,300	
Northeast—																
Alamakee.....	30,000	30.6	1,520,000	40,000	42	1,680,000	900	28	25,000	1,000	20.5	38,600	18,000	32.1	106,000	
Black Hawk.....	111,000	29.7	3,296,000	63,000	41	2,790,000	810	20	16,500	100	22	2,300	2,200	35	79,700	
Bremner.....	77,000	26.5	2,040,000	58,000	44	2,552,000	50	25	1,300	40	20	800	500	38	13,000	
Buchanan.....	105,000	22.2	2,331,000	65,000	40	2,600,000	440	23	10,300	1,400	100	20	2,000	230	28	8,800
Chickasaw.....	73,000	23.8	1,757,000	60,000	39	2,340,000	60	23	1,400	100	20	2,000	1,170	32	68,000	
Clayton.....	95,000	25.9	2,446,000	68,000	43	2,924,000	980	22	21,000	100	22	6,200	2,200	47,200		
Clinton.....	106,000	24.8	2,629,000	57,000	41	2,357,000	700	22	17,000	100	20	4,100	420	33	13,700	
Delaware.....	66,000	34.6	2,284,000	53,000	45	2,385,000	900	22	5,700	300	20	4,100	1,500	32	56,400	
Dubuque.....	107,000	25.5	2,728,000	76,000	44	3,314,000	520	25	9,100	100	19	1,900	2,400	34	80,400	
Fayette.....	92,000	23.8	1,476,000	60,000	47	2,830,000	50	24	1,300	100	19	1,900	2,400	34	80,400	
Howard.....	93,000	23.8	2,213,000	75,000	41	3,075,000	940	22	26,000	400	22	5,600	5,100	39	156,000	
Winnebago.....	945,000	26.6	25,010,000	675,000	42.7	28,796,000	4,940	23.7	115,100	1,000	20.5	38,600	18,000	32.1	106,000	
For District.....	945,000	26.6	25,010,000	675,000	42.7	28,796,000	4,940	23.7	115,100	1,000	20.5	38,600	18,000	32.1	106,000	
West Central—																
Ansonia.....	97,000	25.6	2,488,000	42,000	41	1,732,000	1,170	20	23,500	100	16	1,600	6,500	31	200,700	
Calhoun.....	144,000	26.7	3,845,000	112,000	40	4,480,000	280	30	5,000	40	20	800	500	28	14,000	
Carroll.....	140,000	25.6	3,584,000	75,000	33	2,475,000	1,040	27	25,100	600	10	12,600	2,670	30	75,900	
Crawford.....	161,000	25.7	4,137,000	79,000	45	3,555,000	570	19	5,100	1,380	10	22,300	4,100	30	123,500	
Greene.....	148,000	27.4	4,054,000	92,000	37	3,282,000	320	22	3,800	20	14	300	420	32	55,300	
Guthrie.....	115,000	25.5	2,932,000	52,000	37	1,924,000	2,830	19	32,800	100	19	1,600	1,670	25	55,300	
Harrison.....	162,000	26.0	4,212,000	97,000	39	3,800,000	1,110	16	372,000	3,300	15	49,700	1,720	35	42,900	
Iowa.....	162,000	26.0	4,212,000	97,000	39	3,800,000	1,110	16	372,000	3,300	15	49,700	1,720	35	42,900	
Monona.....	142,000	25.8	3,664,000	57,000	35	1,908,000	7,920	19	100,000	100	16	1,000	2,180	32	66,800	
Sac.....	125,000	29.3	3,682,000	86,000	42	3,444,000	300	25	7,000	900	17	15,400	3,650	32	25,900	
Shelby.....	129,000	25.9	3,341,000	66,000	39	2,583,000	2,300	19	44,100	900	17	15,400	3,650	32	25,900	
Woodbury.....	217,000	29.9	6,488,000	74,000	36	2,664,000	1,000	21	21,000	900	17	15,400	3,650	32	25,900	
For District.....	1,682,000	27.3	45,988,000	783,000	38.4	30,237,000	37,350	20.1	759,100	9,800	15.5	151,500	43,100	25.5	945,000	
Central—																
Boone.....	138,000	27.2	3,754,000	77,000	45	3,500,000	1,600	23	36,500	200	22	4,100	430	31	13,700	
Dallas.....	130,000	26.2	3,406,000	64,000	48	3,107,000	13,000	22	304,000	300	13	3,000	350	23	7,800	
Des Moines.....	196,000	25.4	4,982,000	77,000	39	3,068,000	3,400	20	10,500	50	18	500	1,100	20	29,300	
Grundy.....	134,000	28.0	3,752,000	101,000	46	4,681,000	690	22	15,300	50	17	800	660	31	39,000	
Hamilton.....	132,000	27.9	3,682,000	80,000	46	3,715,000	140	24	3,300	40	18	700	970	34	39,000	
Hardin.....	150,000	31.7	4,754,000	64,000	43	2,783,000	9,150	24	295,100	300	17	2,000	300	28	5,600	
Jasper.....	119,000	25.9	3,081,000	64,000	43	2,783,000	2,290	25	56,000	100	20	8,000	770	33	25,000	
Marshall.....	125,000	30.8	3,848,000	48,000	46	2,243,000	23,770	22	296,000	500	17	8,000	80	27	2,000	
Polk.....	120,000	26.8	3,240,000	48,000	48	3,827,000	950	18	5,400	200	16	2,300	500	32	15,800	
Poweshiek.....	149,000	27.1	4,038,000	71,000	41	2,949,000	1,450	21	31,400	500	19	9,800	1,000	37	69,200	
Story.....	131,000	27.8	3,642,000	71,000	41	2,949,000	1,450	21	31,400	500	19	9,800	1,000	37	69,200	
Tama.....	166,000	28.2	4,681,000	124,000	45	5,615,000	1,430	25	19,700	1,000	17	2,000	860			

ESTIMATE OF ACREAGE AND AVERAGE AND TOTAL YIELD OF IOWA CROPS, 1924 BY COUNTIES—Continued

Districts and Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley		
	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels
East Central—															
Benton.....	148,000	23.8	3,522,000	91,000	44	4,002,000	1,860	20	36,300	400	17	6,800	2,510	31	76,700
Cedar.....	107,000	27.0	2,880,000	51,000	48	2,482,000	3,100	22	66,700	200	21	4,200	1,840	33	59,800
Clinton.....	118,000	29.3	3,456,000	52,000	41	2,173,000	3,500	23	78,700	250	18	4,500	4,010	27	106,300
Iowa.....	96,000	28.5	2,736,000	37,000	40	1,521,000	2,580	16	41,300	200	18	3,600	730	27	19,400
Jackson.....	71,000	31.7	2,251,000	35,000	43	1,546,000	1,300	20	26,000	180	18	3,300	700	36	24,900
Johnson.....	106,000	28.6	3,032,000	49,000	46	2,295,000	3,340	22	72,000	80	20	1,600	550	34	18,400
Jones.....	84,000	27.4	2,302,000	41,000	45	1,856,000	420	21	8,800	250	15	3,800	400	30	11,800
Linn.....	118,000	25.8	3,044,000	66,000	46	3,077,000	960	22	21,100	180	22	4,000	800	28	22,000
Muscatine.....	78,000	29.8	2,324,000	24,000	48	1,193,000	6,300	17	102,700	100	19	3,000	900	31	27,500
Scott.....	82,000	36.3	2,977,000	36,000	49	1,805,000	14,000	24	327,200	300	20	6,100	5,900	33	193,800
For District.....	1,008,000	28.3	28,533,000	482,000	45.6	21,067,000	37,300	20.9	780,800	2,200	19.0	41,000	18,400	30.5	500,000
Southwest—															
Adair.....	109,000	22.8	2,485,000	46,000	35	1,640,000	3,740	18	66,800	50	16	800	3,710	27	93,300
Adams.....	76,000	23.2	1,763,000	27,000	37	1,028,000	4,100	18	72,800	50	19	1,000	670	20	13,100
Cass.....	113,000	27.2	3,074,000	54,000	34	1,865,000	12,980	22	285,800	100	17	1,700	4,800	28	137,300
Fremont.....	146,000	22.8	3,329,000	14,000	34	505,000	13,230	24	310,900	20	15	300	160	28	4,700
Mills.....	112,000	28.7	3,214,000	21,000	37	806,000	7,780	19	148,100	300	14	4,100	330	30	9,700
Montgomery.....	100,000	25.4	2,540,000	26,000	39	1,044,000	13,000	22	315,000	60	14	800	1,080	29	30,800
Page.....	116,000	28.9	3,352,000	27,000	37	1,028,000	18,120	20	371,700	100	14	1,400	440	25	12,100
Pottawattamie.....	234,000	29.5	6,902,000	64,000	32	2,077,000	13,500	20	271,500	220	14	3,100	9,800	31	300,800
Taylor.....	96,000	23.6	2,266,000	32,000	32	1,054,000	9,570	16	100,400				150	30	4,400
For District.....	1,102,000	26.2	28,925,000	311,000	35.5	11,047,000	97,000	20.9	1,943,000	900	15.1	13,200	21,200	28.6	606,200
South Central—															
Appanoose.....	53,000	24.2	1,283,000	19,000	29	551,000	1,720	16	27,500						
Clarke.....	55,000	25.1	1,380,000	22,000	33	726,000	2,920	16	46,700				50	35	1,700
Decatur.....	77,000	23.3	1,794,000	23,000	37	851,000	3,919	13	50,830				40	31	1,200
Lewis.....	62,000	26.3	1,631,000	28,000	38	1,064,000	1,800	15	28,350				20	31	600
Madison.....	96,000	28.5	2,736,000	32,000	44	1,408,000	13,070	21	274,470	100	16	1,600	920	33	29,800
Marion.....	93,000	31.9	2,966,000	33,000	41	1,353,000	16,280	19	309,420	400	15	6,100	200	28	7,400
Monroe.....	51,000	28.8	1,469,000	13,000	33	429,000	6,120	16	98,020	10	12	100	20	31	600
Ringgold.....	92,000	18.0	1,656,000	28,000	30	846,000	4,080	14	57,120				50	20	1,700
Union.....	72,000	22.3	1,606,000	24,000	35	840,000	3,030	16	48,480				430	25	10,000
Warren.....	94,000	29.6	2,782,000	24,000	40	960,000	22,570	20	451,570	150	16	3,000	520	29	14,800
Wayne.....	81,000	26.1	2,114,000	30,000	33	990,000	1,110	10	11,100				10	31	300
For District.....	826,000	25.9	21,417,000	276,000	36.5	10,012,000	76,700	18.3	1,403,600	700	14.8	10,800	2,300	29.9	68,700
Southeast—															
Davis.....	53,000	29.8	1,579,000	22,000	32	704,000	1,250	26	32,800						
Des Moines.....	73,000	37.0	2,701,000	30,000	42	1,260,000	13,470	23	305,800	30	18	500	170	29	4,500
Henry.....	72,000	32.4	2,333,000	33,000	39	1,287,000	3,630	21	76,200				130	20	3,700
Jefferson.....	65,000	28.4	1,846,000	30,000	35	1,050,000	3,990	22	86,800	10	16	300	80	35	2,000
Keokuk.....	109,000	26.6	2,899,000	42,000	37	1,554,000	4,650	18	80,800	200	16	3,200	270	29	7,700
Lee.....	58,000	34.4	1,995,000	25,000	40	1,000,000	13,330	20	290,000	50	16	800	100	20	2,000
Louisia.....	67,000	31.2	2,090,000	21,000	41	861,000	12,730	23	286,700				30	29	600
Mahaska.....	119,000	22.4	3,499,000	43,000	39	1,638,000	9,700	22	308,500	140	15	2,100	280	29	7,000
Van Buren.....	60,000	28.3	1,698,000	20,000	34	680,000	2,820	18	49,800				20	29	600
Wapello.....	50,000	26.4	1,358,000	19,000	35	665,000	14,200	20	277,300	10	16	100	50	30	1,500
Washington.....	112,000	29.8	3,337,000	46,000	34	1,564,000	1,020	18	34,700	60	14	800	170	31	5,100
For District.....	847,000	30.1	25,535,000	330,000	37.4	12,263,000	81,740	20.8	1,700,200	500	15.5	7,700	1,300	28.5	37,100
For State.....	10,884,000	28.0	304,752,000	5,774,000	43.0	248,282,000	386,000	20.4	8,078,000	32,000	17.2	550,000	150,000	31.4	4,710,000

ESTIMATE OF ACREAGE AND AVERAGE AND TOTAL YIELD OF IOWA CROPS, 1924 BY COUNTIES

Districts and Counties	White Potatoes			Rye			Hay (Wild)			Alfalfa			Timothy Seed			Pasture
	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Total Bushels	Acres	Tons Per Acre	Total Tons	Acres	Tons Per Acre	Total Tons	Acres	Bus. Per Acre	Total Bushels	Acres
Northwest—																
Buena Vista.....	810	149	120,700	100	23	2,300	4,840	1.4	6,780	3,740	3.8	15,250	60	7.3	440	67,500
Cherokee.....	1,010	108	109,000	30	30	900	7,230	1.2	8,680	6,200	2.8	18,780	180	5.5	990	83,100
Clay.....	580	121	70,200	300	15	4,500	8,330	1.0	8,330	1,350	2.9	4,470	720	3.2	2,280	77,100
Dickinson.....	570	127	72,400	250	21	5,250	6,620	1.1	7,280	870	2.8	2,470	190	3.0	570	53,100
Emmet.....	640	164	105,000	300	21	6,300	5,140	1.1	5,650	1,010	2.6	2,650	50	5.5	280	51,000
Lyon.....	1,570	116	222,900	100	21	2,100	9,110	1.2	10,930	6,560	2.5	16,200	20	4.9	100	64,100
O'Brien.....	1,030	142	146,300	40	20	800	6,200	1.6	9,920	3,270	3.4	12,280	530	4.0	2,120	60,800
Osceola.....	1,000	100	106,000	80	21	1,680	6,260	1.4	8,760	720	2.9	2,070	460	7.0	3,220	48,200
Palo Alto.....	480	137	65,800	1,200	20	24,500	13,910	1.0	13,900	1,430	2.7	4,380	70	3.0	210	62,900
Plymouth.....	1,540	129	198,700	1,400	20	28,500	16,300	2.0	30,720	19,840	2.9	58,330	150	4.0	600	113,200
Pocahontas.....	560	142	79,500	300	18	5,400	5,020	1.0	5,020	680	3.9	2,680	100	6.5	650	52,100
Sioux.....	1,620	138	223,600	200	21	4,200	13,430	1.6	20,140	14,780	3.0	44,040	60	2.0	120	83,100
For District.....	11,470	133	1,520,200	4,300	20	86,430	102,450	1.33	136,110	60,510	3.03	183,600	2,500	4.5	11,580	825,200
North Central—																
Butler.....	1,010	131	132,300	1,330	22	29,760	9,700	1.2	10,670	10	3.8	40	490	4.0	1,960	99,600
Cerro Gordo.....	1,170	171	200,100	400	20	8,000	8,150	1.5	12,220	550	2.8	1,560	130	4.0	520	82,800
Floyd.....	1,420	168	238,600	670	18	12,560	3,050	1.1	3,300	90	3.5	320	1,220	7.5	9,150	74,700
Franklin.....	1,240	148	183,500	290	16	4,640	4,070	1.1	4,480	260	3.6	940	130	5.5	720	80,600
Hancock.....	1,420	140	198,900	850	19	16,350	6,500	1.3	8,450	520	3.1	1,620	70	4.3	300	78,200
Humboldt.....	350	168	58,800	100	24	2,400	3,910	1.1	4,300	2,060	3.2	6,600	100	5.5	560	47,600
Kossuth.....	1,560	137	213,700	1,050	14	15,200	19,560	1.1	21,520	1,830	3.0	5,420	100	7.3	730	122,300
Mitchell.....	3,330	130	433,200	250	22	5,500	1,740	1.1	1,910	60	3.0	180	2,740	5.0	13,700	64,000
Winnebago.....	720	144	103,700	420	25	10,500	12,490	1.3	16,240	260	2.9	750	110	9.0	990	54,500
Worth.....	850	144	122,400	770	30	23,400	9,670	1.1	10,640	110	3.3	360	400	4.5	2,070	62,000
Wright.....	700	142	99,400	70	20	1,400	3,630	1.4	5,080	450	3.4	1,530	140	5.1	720	68,500
For District.....	13,770	144	984,500	6,200	21	129,710	82,470	1.20	98,870	6,280	3.10	19,320	5,600	5.5	31,420	834,800
Northeast—																
Allamakee.....	940	116	109,000	130	24	3,120	1,180	1.5	1,770	30	2.5	80	3,200	3.8	12,200	161,100
Black Hawk.....	790	131	99,600	3,000	20	61,000	5,150	1.1	5,660	210	3.2	690	620	4.3	2,670	95,300
Bremer.....	1,140	150	171,000	380	25	9,400	19,270	1.3	15,050	240	3.4	810	40	4.0	160	75,900
Buchanan.....	670	100	67,000	820	17	13,940	7,240	1.0	7,240	140	2.8	390	970	3.3	3,230	106,400
Chickasaw.....	820	143	117,300	290	20	5,800	12,100	1.2	14,520	40	3.2	120	5,700	4.3	24,680	92,500
Clayton.....	1,060	146	286,200	200	18	3,600	1,000	1.1	1,100	300	3.2	970	1,280	4.9	6,260	181,600
Delaware.....	820	144	118,100	800	13	10,400	3,590	1.0	3,590	170	2.6	430	1,300	4.5	5,850	116,000
Dubuque.....	1,610	102	164,200	100	19	1,900	910	2.0	1,820	340	2.6	800	810	5.0	4,050	156,000
Fayette.....	1,210	156	188,800	200	21	4,200	7,680	1.2	9,220	60	2.9	180	3,330	5.0	16,650	160,600
Howard.....	840	165	138,600	300	17	5,100	14,900	0.9	13,410	130	2.4	350	4,210	3.2	13,350	86,700
Winneshiek.....	1,170	167	195,400	280	30	8,400	5,240	0.5	2,620	60	2.3	130	6,530	4.0	20,120	153,000
For District.....	11,940	129	1,655,200	6,500	20	126,800	78,200	1.10	86,000	1,740	2.88	5,010	27,900	4.1	115,280	1,386,200
West Central—																
Audubon.....	820	117	95,900	370	18	6,660	1,170	2.1	2,400	3,950	3.3	14,150	2,770	3.0	8,310	60,200
Calhoun.....	410	158	64,800	310	29	9,890	1,730	1.0	1,730	1,080	2.9	3,180	80	4.8	380	52,600
Carroll.....	1,550	165	255,800	270	19	5,130	5,090	1.5	7,440	1,700	3.3	5,610	1,110	6.0	6,600	79,400
Crawford.....	1,430	125	178,700	370	19	7,130	3,660	1.9	6,920	12,030	3.0	37,570	540	4.0	2,160	124,800
Greene.....	260	117	30,400	130	18	2,340	3,000	1.1	3,300	650	3.0	1,960	330	4.7	1,540	71,700
Guthrie.....	440	161	70,800	280	18	5,040	2,590	1.3	3,370	1,590	4.0	6,310	8,480	4.0	33,920	125,300
Harrison.....	950	122	113,500	300	20	6,000	4,740	1.8	8,530	19,400	2.8	57,350	40	4.8	190	96,300
Ida.....	810	135	109,400	110	10	1,100	1,210	1.8	2,180	6,550	3.3	22,480	230	5.0	1,150	64,700
Monona.....	880	144	126,700	300	12	3,600	8,120	1.5	10,180	16,420	3.3	54,890	130	8.0	1,040	103,100
Sac.....	800	114	101,500	140	19	2,660	2,730	1.1	3,000	2,630	3.2	8,420	540	8.0	4,320	72,100
Shelby.....	1,100	126	138,600	300	24	7,200	2,890	1.0	2,890	8,420	3.0	26,000	670	4.5	3,020	95,300
Woodbury.....	1,090	134	226,500	390	20	7,800	6,480	1.1	7,130	28,000	2.6	75,080	70	4.8	330	114,800
For District.....	11,210	135	1,512,600	3,300	20	61,320	43,410	1.39	59,130	102,510	2.95	313,570	14,900	4.2	63,690	1,067,300
Central—																
Boone.....	210	123	25,800	190	20	3,800	4,260	1.3	5,540	2,160	3.0	6,390	110	5.4	590	77,600
Dallas.....	180	162	29,200	140	18	2,520	1,120	1.3	1,460	1,380	2.6	3,640	110	8.2	910	100,400
Grundy.....	1,550	151	234,000	30	22	660	2,870	1.5	4,300	120	3.2	390	690	8.4	5,780	70,500
Hamilton.....	500	146	73,000	550	31	17,050	3,020	1.2	3,620	840	3.0	2,500	160	8.0	1,280	66,600
Hardin.....	780	161	125,000	70	26	1,820	3,000	1.1	3,300	1,170	3.3	3,850	100	7.0	700	80,000
Jasper.....	470	130	56,400	370	16	5,920	450	1.6	720	210	3.6	750	1,140	4.2	4,790	150,400
Marshall.....	750	147	110,200	150	24	3,600	140	1.3	180	240	2.6	630	1,430	5.8	8,340	95,200
Polk.....	710	135	95,800	150	20	3,000	1,270	1.3	1,650	1,740	2.9	5,080	270	6.5	1,720	90,300
Poweshiek.....	610	144	87,800	120	29	2,400	70	1.3	90	160	3.2	510	12,510	4.1	51,280	121,500
Story.....	70	129	9,700	150	20	3,000	1,500	1.0	1,500	820	3.2	2,640	110	4.5	500	64,500
Tama.....	1,140	129	147,100	100	15	1,500	500	1.5	840	220	3.2	1,020	4,350	6.5	28,280	116,900
Webster.....	810	164	132,800	380	22	8,360	6,100	0.8	4,880	3,430	3.3	11,250	100	5.8	580	81,400
For District.....	7,780	145	1,127,400	2,400	22	33,620	24,260	1.15	28,080	12,590	3.07	38,610	21,080	5.0	104,890	1,140,100

ESTIMATE OF ACREAGE AND AVERAGE AND TOTAL YIELD OF IOWA CROPS, 1924, BY COUNTIES—Continued

Districts and Counties	White Potatoes			Rye		Hay (Wild)			Alfalfa			Timothy Seed		Pasture Acres		
	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Acres	Tons Per Acre	Total Tons	Acres	Tons Per Acre	Total Tons	Acres	Bus. Per Acre		Total Bushels	
																Hay (Wild)		Alfalfa		Timothy Seed
East Central—																
Benton.....	760	147	111,700	1,000	16	16,000	1,120	1.5	1,680	240	3.1	740	3,310	5.2	17,210	116,240
Cedar.....	500	158	88,500	500	20	10,000	90	1.3	120	240	3.8	930	3,250	3.9	12,010	115,800
Clinton.....	530	114	60,400	1,110	16	18,200	1,110	1.6	1,780	570	4.1	2,310	430	7.4	3,180	141,300
Iowa.....	1,010	100	101,000	920	15	9,300	350	1.3	460	90	3.9	350	24,730	4.2	104,400	120,400
Jackson.....	1,150	146	167,900	810	16	13,000	1,470	1.5	2,200	330	2.6	1,900	810	5.3	4,320	200,500
Johnson.....	800	144	125,800	1,020	17	17,300	780	1.3	1,010	500	3.9	1,520	5,330	6.3	33,710	129,600
Jones.....	630	150	94,500	1,250	15	18,800	170	1.0	170	170	2.8	480	1,040	4.3	4,300	136,800
Linn.....	1,130	133	150,300	2,040	14	28,000	1,870	1.0	1,870	240	3.5	840	1,010	5.0	5,050	143,800
Muscatine.....	700	129	84,000	3,400	13	45,200	530	1.0	530	1,300	3.2	4,200	1,000	5.0	5,000	87,000
Scott.....	1,800	129	231,400	1,620	18	29,200	1,290	1.1	1,420	3,600	3.5	12,800	1,380	5.5	2,000	84,000
For District.....	9,190	132	1,216,500	13,000	15	199,000	8,780	1.28	11,240	7,400	3.45	25,540	41,300	4.6	102,100	1,390,100
Southwest—																
Adair.....	770	136	104,700	100	15	1,500	2,040	1.7	3,470	330	3.0	990	5,900	5.6	32,800	122,500
Adams.....	310	125	38,800	230	17	2,900	1,520	1.3	1,980	1,300	2.6	3,670	2,610	6.0	17,150	119,400
Cass.....	900	125	112,500	360	16	5,800	830	1.5	1,280	2,330	3.0	7,490	2,990	4.8	4,700	160,200
Franklin.....	470	132	62,000	430	23	9,900	1,400	2.0	2,800	11,500	2.9	34,030	80	5.1	410	71,800
Frederick.....	540	125	67,500	280	19	5,300	3,430	2.0	7,800	13,330	2.9	40,200	300	5.0	450	66,200
Montgomery.....	300	100	42,500	180	21	2,800	880	1.0	1,380	7,770	3.0	24,080	100	4.1	710	77,100
Pocahontas.....	300	142	88,500	320	14	4,300	990	1.6	1,800	10,310	2.8	30,400	310	4.0	1,240	107,600
Pottawattamie.....	1,720	124	217,100	300	16	8,100	5,400	1.8	8,830	26,070	3.0	81,510	430	3.3	1,470	135,300
Taylor.....	400	121	48,400	390	12	4,300	530	1.0	530	1,880	2.5	3,230	5,210	5.2	27,550	122,700
For District.....	6,120	127	778,900	2,800	17	47,100	16,640	1.72	28,670	75,170	2.92	227,620	15,770	5.5	86,280	912,800

ANNUAL REPORT OF THE

IOWA WEATHER AND CROP BUREAU

Districts and Counties	White Potatoes			Rye		Hay (Wild)			Alfalfa			Timothy Seed		Pasture Acres		
	Acres	Bus. Per Acre	Total Bushels	Acres	Bus. Per Acre	Acres	Tons Per Acre	Total Tons	Acres	Tons Per Acre	Total Tons	Acres	Bus. Per Acre		Total Bushels	
																Hay (Wild)		Alfalfa		Timothy Seed
South Central—																
Appanoose.....	190	143	27,200	140	19	2,700	800	1.8	1,350	150	2.9	430	13,000	4.5	60,700	117,300
Clarke.....	90	121	10,900	140	15	2,100	80	1.4	110	110	2.7	290	10,010	4.3	68,080	100,300
Decatur.....	150	158	23,700	460	9	4,140	170	1.4	240	210	3.4	700	15,810	3.8	50,200	146,000
Lewis.....	280	109	28,000	170	11	1,200	70	2.0	140	150	2.5	380	12,330	4.7	57,000	118,500
Madison.....	400	149	59,000	170	11	1,870	800	1.1	930	980	2.9	2,850	2,550	6.6	16,730	147,100
Marion.....	250	127	29,200	180	15	2,700	440	1.4	620	620	3.2	1,970	780	3.5	4,290	131,000
Mourne.....	100	142	14,200	220	14	3,080	40	1.4	60	130	3.1	400	1,650	3.0	4,950	132,100
Ringgold.....	230	131	30,100	330	18	5,940	190	1.2	230	270	1.8	500	14,440	6.1	87,510	132,400
Union.....	400	128	62,700	170	11	2,380	740	1.8	1,330	100	3.4	330	9,000	5.8	57,000	111,200
Warren.....	240	123	29,500	330	22	8,000	280	1.5	430	740	2.6	1,950	3,200	5.1	10,410	128,000
Wayne.....	100	118	11,800	200	17	4,400	100	0.8	80	180	2.1	380	27,000	4.5	129,310	114,500
For District.....	2,300	131	326,000	2,300	15	38,370	3,830	1.50	5,730	3,610	2.76	10,030	118,370	4.8	361,050	1,429,200
Southeast—																
Davis.....	280	85	23,800	500	14	3,640	10	1.5	20	240	2.8	670	14,850	4.6	68,310	126,000
Des Moines.....	710	138	98,000	600	30	12,000	40	1.5	60	700	3.2	2,500	730	6.1	4,260	94,200
Henry.....	520	127	66,000	700	15	10,500	40	1.5	60	110	2.8	310	930	5.0	4,400	100,500
Keokuk.....	400	111	44,000	100	18	1,800	30	1.5	40	110	3.1	340	2,370	3.3	10,980	100,000
Lee.....	920	123	60,200	180	18	3,240	40	1.0	40	140	3.1	440	1,200	4.7	21,020	132,100
Louisia.....	320	122	112,200	1,500	16	24,800	240	1.5	360	2,920	3.3	9,610	4,200	1.7	31,020	141,800
Lawrence.....	420	136	42,900	2,350	18	45,900	90	2.0	180	140	3.1	440	600	5.6	3,700	75,000
Maquoketa.....	160	99	18,800	100	10	1,000	40	1.2	200	570	2.9	1,400	300	7.0	2,720	117,800
Wapello.....	300	112	33,600	250	16	4,000	40	1.3	60	350	2.0	1,080	1,250	4.0	18,320	150,800
Washington.....	430	124	53,300	500	16	8,000	70	1.5	100	370	2.7	370	1,410	4.5	5,900	104,500
For District.....	5,020	124	631,800	7,000	17	117,380	800	1.46	1,170	6,210	3.01	18,700	34,230	4.6	156,180	1,208,200
For State.....	79,000	136	10,744,000	48,000	18	861,000	301,000	1.29	45,000	376,000	3.05	842,000	282,000	4.7	1,325,000	10,211,000

AVERAGE PRICE OF FARM PRODUCTS DECEMBER 1, 1924, BY COUNTIES

Districts and Counties	Corn per bushel of 50 lbs. in ear or 50 lbs. shelled	Winter wheat per bushel of 60 lbs.	Spring wheat per bushel of 60 lbs.	Oats per bushel of 32 lbs.	Barley per bushel of 56 lbs.	Rye per bushel of 56 lbs.	White potatoes (Irish) per bushel of 60 lbs.	Sweet potatoes per bushel of 50 lbs.	Flaxseed per bushel of 56 lbs.	Apples per bushel of 48 lbs.	Tame hay (loose) per ton of 2,000 lbs.	Wild hay (loose) per ton of 2,000 lbs.	Alfalfa (loose) per ton of 2,000 lbs.	Troutley seed per bushel of 45 lbs.	Clover seed per bushel of 45 lbs.	Top corn per pound of stalked	Comb in sections	Extracted lard	Suet of con-	Tallow	In bulk	
																						Money (per lb.)
Northwest—																						
Buena Vista.....	.50	.88	1.22	.45	.65	.80	.40	.00	.00	.54	11.53	10.84	9.55	11.17	12.37	12.00	.50	.87	.20	.12	.51	
Clarke.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Clay.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Dickinson.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Emmet.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
O'Brien.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Osceola.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Palo Alto.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Polk.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Pocahontas.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
Shoemaker.....	.50	.90	1.20	.45	.75	.90	.40	.00	.00	1.00	8.75	10.33	9.11	11.77	12.87	12.00	.50	.87	.20	.12	.51	
For District—																						
North Central—																						
Adair.....	.90	1.00	1.00	.45	.75	1.07	.41	.00	.00	1.00	10.43	8.52	9.11	9.00	7.75	8.17	.50	.19	.19	.19	.19	
Adams.....	.90	1.00	1.00	.45	.75	1.07	.41	.00	.00	1.00	10.43	8.52	9.11	9.00	7.75	8.17	.50	.19	.19	.19	.19	
Adams County, Georgia.....	.90	1.00	1.00	.45	.75	1.07	.41	.00	.00	1.00	10.43	8.52	9.11	9.00	7.75	8.17	.50	.19	.19	.19	.19	
Adams County, Virginia.....	.90	1.00	1.00	.45	.75	1.07	.41	.00	.00	1.00	10.43	8.52	9.11	9.00	7.75	8.17	.50	.19	.19	.19	.19	
Franklin.....	.94	1.20	1.41	.50	.80	1.00	.45	.00	.00	1.00	11.20	9.00	10.00	11.00	12.50	14.00	.50	.20	.16	.15	.15	
Floyd.....	.94	1.20	1.41	.50	.80	1.00	.45	.00	.00	1.00	11.20	9.00	10.00	11.00	12.50	14.00	.50	.20	.16	.15	.15	
Franklin.....	.94	1.20	1.41	.50	.80	1.00	.45	.00	.00	1.00	11.20	9.00	10.00	11.00	12.50	14.00	.50	.20	.16	.15	.15	
Franklin.....	.94	1.20	1.41	.50	.80	1.00	.45	.00	.00	1.00	11.20	9.00	10.00	11.00	12.50	14.00	.50	.20	.16	.15	.15	
Humboldt.....	.97	1.07	1.07	.48	.64	.97	.44	.00	.00	1.00	10.80	7.67	8.33	11.22	11.00	11.00	.00	.22	.18	.18	.18	
Humboldt.....	.97	1.07	1.07	.48	.64	.97	.44	.00	.00	1.00	10.80	7.67	8.33	11.22	11.00	11.00	.00	.22	.18	.18	.18	
Humboldt.....	.97	1.07	1.07	.48	.64	.97	.44	.00	.00	1.00	10.80	7.67	8.33	11.22	11.00	11.00	.00	.22	.18	.18	.18	
Kossuth.....	.83	1.15	1.15	.43	.68	1.19	.35	.00	.00	1.00	10.10	6.25	6.75	11.72	11.00	11.00	.00	.20	.16	.16	.16	
Kossuth.....	.83	1.15	1.15	.43	.68	1.19	.35	.00	.00	1.00	10.10	6.25	6.75	11.72	11.00	11.00	.00	.20	.16	.16	.16	
Kossuth.....	.83	1.15	1.15	.43	.68	1.19	.35	.00	.00	1.00	10.10	6.25	6.75	11.72	11.00	11.00	.00	.20	.16	.16	.16	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64	1.10	.34	.00	.00	1.00	9.50	6.00	6.50	11.00	11.00	11.00	.00	.19	.15	.15	.15	
Keosauqua.....	.80	1.10	1.10	.42	.64</																	

AVERAGE PRICE OF FARM PRODUCTS DECEMBER 1, 1924, BY COUNTIES—Continued

Districts and Counties	Certs per bushel of 50 lbs. net or 70 lbs. in cart or 90 lbs.	Spring wheat per bushel of 60 lbs.	Oats per bushel of 32 lbs.	Barley per bushel of 56 lbs.	Rye per bushel of 56 lbs.	White potatoes (Irish) per bushel of 60 lbs.	Sweet potatoes per bushel of 50 lbs.	Flaxseed per bushel of 56 lbs.	Apples per bushel of 48 lbs.	Tanned hay (loose) per ton of 2,000 lbs.	Wild hay (loose) per ton of 2,000 lbs.	Alfalfa (loose) per ton of 2,000 lbs.	Timothy seed per bushel of 45 lbs.	Clover seed per bushel of 60 lbs.	Pop corn per pound	Sheep	Honey (per lb.)	
																	Comb in sections	Extracted (less cost of box)
East Central—																		
Benton.....	\$.57	1.24	1.23	.44	.72	.80	.67	..	\$.58	10.05	10.05	8.21	2.51	13.20	.05	..	.21	.16
Boonville.....	1.00	1.25	1.10	.43	.72	1.00	.66	3.12	1.12	12.75	10.00	17.00	3.24	17.00	.06	..	.20	.14
Clinton.....	1.00	1.25	1.00	.46	.71	.70	.96	..	1.25	12.33	10.00	15.00	3.24	15.70	.06	..	.20	.14
Franklin.....	.87	1.25	1.00	.46	.71	.70	.96	..	1.25	12.33	10.00	15.00	3.24	15.70	.06	..	.20	.14
Jackson.....	.87	1.25	1.00	.46	.71	.70	.96	..	1.25	12.33	10.00	15.00	3.24	15.70	.06	..	.20	.14
Johnson.....	.87	1.25	1.10	.47	.71	.70	.96	..	1.25	12.33	10.00	15.00	3.24	15.70	.06	..	.20	.14
Lincoln.....	1.00	1.25	1.00	.45	.70	.80	.92	1.85	1.20	10.00	7.00	10.00	3.24	15.70	.04	..	.16	.10
Marion.....	1.00	1.25	1.00	.45	.70	.80	.92	1.85	1.20	10.00	7.00	10.00	3.24	15.70	.04	..	.16	.10
Muscatine.....	.92	1.33	1.27	.48	.71	.82	1.12	.62	1.24	12.00	9.67	14.50	2.68	16.43	.05	..	.20	.10
Scott.....	.95	1.33	1.31	.48	.71	1.11	1.30	..	1.24	14.80	11.34	19.30	2.56	15.00	.06	..	.23	.10
For District.....	\$.98	1.30	1.26	.48	.70	1.03	.98	2.13	1.20	12.15	9.00	13.57	2.80	16.00	.06	..	.23	.17
Southwest—																		
Adair.....	\$.97	1.25	1.10	.45	.68	.95	1.11	1.57	1.25	9.00	6.50	12.50	2.84	16.87	.06	..	.20	.10
Adair.....	.95	1.25	1.10	.45	.68	.95	1.11	1.57	1.25	9.00	6.50	12.50	2.84	16.87	.06	..	.20	.10
Cass.....	.95	1.25	1.17	.47	.69	1.01	.64	3.07	1.25	11.00	10.00	13.00	2.87	15.00	.07	..	.23	.13
Clatsop.....	.95	1.25	1.17	.47	.69	1.01	.64	3.07	1.25	11.00	10.00	13.00	2.87	15.00	.07	..	.23	.13
Fremont.....	.95	1.25	1.17	.46	.68	1.00	.68	2.00	1.20	11.00	10.00	14.00	2.81	14.42	.05	..	.23	.15
Grant.....	.95	1.25	1.17	.46	.68	1.00	.68	2.00	1.20	11.00	10.00	14.00	2.81	14.42	.05	..	.23	.15
Montgomery.....	1.00	1.33	1.25	.44	.74	1.07	.67	2.90	1.20	9.67	10.30	12.45	3.50	15.50	.05	..	.22	.10
Page.....	.97	1.33	1.40	.46	.67	.80	.45	1.84	1.20	12.50	..	14.37	2.88	12.04	.06	..	.22	.20
Polk.....	.97	1.33	1.40	.46	.67	.80	.45	1.84	1.20	12.50	..	14.37	2.88	12.04	.06	..	.22	.20
Pottawattamie.....	.97	1.25	1.33	.45	.65	.90	.45	1.84	1.20	10.00	7.33	14.39	2.13	14.67	.01	..	.22	.18
Taylor.....	1.07	1.25	1.33	.45	.65	.90	.45	1.84	1.20	10.00	7.33	14.39	2.13	14.67	.01	..	.22	.18
For District.....	\$.98	1.27	1.28	.46	.69	1.00	.59	1.90	1.22	10.60	8.50	12.10	2.98	14.61	.03	..	.22	.17

South Central—																		
Clarke.....	\$.99	1.30	1.15	.45	.72	1.00	.71	2.07	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Deaer.....	.99	1.30	1.15	.45	.72	1.00	.71	2.07	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Des Moines.....	.97	1.24	1.10	.44	.69	1.00	.70	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Henry.....	.97	1.24	1.10	.44	.69	1.00	.70	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Keokuk.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Lee.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Low.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Louis.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Madison.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Marion.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Monroe.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
North Central.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Union.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Warren.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Wayne.....	.98	1.30	1.22	.45	.69	.82	.74	2.00	1.28	12.00	8.30	14.14	2.87	15.43	.06	..	.22	.17
For District.....	\$.98	1.27	1.24	.47	.72	1.00	.71	2.07	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Southwest—																		
Des Moines.....	\$.99	1.31	1.05	.40	.70	1.00	.68	1.62	1.11	12.62	8.55	12.62	2.73	13.75	.05	..	.21	.15
Henry.....	.97	1.24	1.10	.44	.69	1.00	.70	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Keokuk.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Lee.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Low.....	.97	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Louis.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Madison.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Marion.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Monroe.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
North Central.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Union.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Warren.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
Wayne.....	.96	1.25	1.10	.44	.68	1.00	.69	1.87	1.28	10.00	7.50	13.50	2.96	15.43	.06	..	.23	.18
For District.....	\$.96	1.27	1.22	.45	.70	1.00	.68	1.62	1.11	12.62	8.55	12.62	2.73	13.75	.05	..	.21	.15
For State.....	\$.96	1.27	1.22	.45	.70	1.00	.68	1.62	1.11	12.62	8.55	12.62	2.73	13.75	.05	..	.21	.15

MISCELLANEOUS TABLE, BY COUNTIES

Corn husked; acreage, average and total yield of clover seed, 1924.

Districts and Counties	Corn				Districts and Counties	Clover Seed			
	Per cent husked Dec. 1	Acres	Bus. per acre	Total bushels		Per cent husked Dec. 1	Acres	Bus. per acre	Total bushels
Northwest—					Jasper	85	3,020	0.9	2,800
Buena Vista	83	210	0.5	100	Marshall	94	1,280	1.9	1,310
Cherokee	89	80	0.4	30	Polk	85	410	1.0	420
Clay	84	500	0.8	460	Poweshiek	88	1,350	0.6	790
Dickinson	78	200	0.8	170	Story	87	40	0.2	19
Emmet	86	170	0.8	140	Tama	80	1,040	0.6	620
Lyon	93	190	0.8	180	Webster	86	90	1.0	90
O'Brien	83	230	0.8	240	For District	87	8,570	0.8	6,730
Osceola	99	270	0.4	120	East Central—				
Palo Alto	79	40	0.5	20	Benton	94	600	1.0	640
Plymouth	86	300	1.5	530	Cedar	85	140	0.5	70
Pocahontas	77	230	0.4	90	Clinton	92	90	2.7	240
Sioux	86	110	0.8	90	Iowa	93	1,470	0.6	900
For District	84	2,640	0.8	2,170	Jackson	92	1,100	0.9	950
North Central—					Johnson	89	1,160	0.7	840
Butler	91	280	1.7	460	Jones	84	250	0.4	100
Cerro Gordo	81	80	1.7	130	Linn	88	620	0.5	290
Floyd	72	330	0.5	270	Muscatine	89	70	1.7	120
Franklin	83	240	1.0	230	Scott	94	110	1.0	110
Hancock	82	70	1.5	100	For District	90	5,670	0.8	4,300
Humboldt	81	40	1.7	70	Southwest—				
Kossuth	79	30	2.2	70	Adair	88	1,330	0.4	530
Mitchell	77	250	1.7	420	Adams	85	2,080	0.6	1,350
Winnebago	84	—	—	—	Cass	86	1,470	0.3	440
Worth	94	50	1.7	80	Fremont	90	190	1.0	180
Wright	82	230	3.7	820	Montgomery	93	3,000	0.7	2,100
For District	82	1,500	1.7	2,650	Page	88	890	1.0	910
Northwest—					Pottawattamie	89	580	0.7	420
Allamakee	80	1,000	1.8	1,840	Taylor	92	1,110	0.7	790
Black Hawk	86	160	0.4	60	For District	89	10,950	0.6	6,940
Bremer	76	210	0.7	140	South Central—				
Buchanan	88	280	0.2	60	Appanoose	81	340	0.7	240
Chickasaw	85	60	1.2	70	Clarke	82	830	0.6	480
Clayton	91	4,250	0.6	2,760	Decatur	75	300	0.6	210
Delaware	78	490	1.0	480	Lucas	85	1,200	0.7	910
Dubuque	94	1,470	0.7	1,000	Madison	83	1,400	0.6	830
Fayette	87	270	0.7	180	Marion	84	1,900	0.4	900
Howard	85	90	0.2	20	Monroe	76	400	0.7	320
Winneshiek	94	110	0.7	70	Ringgold	90	620	0.5	320
For District	87	8,300	0.8	6,740	Union	86	1,840	0.4	740
West Central—					Warren	82	1,550	1.1	1,700
Audubon	87	200	0.7	190	Wayne	80	2,190	0.6	1,340
Calhoun	94	220	1.7	380	For District	82	12,900	0.6	8,000
Carroll	91	770	0.5	366	Southeast—				
Crawford	85	200	0.7	140	Davis	82	470	0.7	340
Greene	88	130	0.2	30	Des Moines	84	190	0.5	100
Guthrie	84	840	0.4	310	Henry	88	580	0.3	150
Harrison	80	310	0.7	220	Jefferson	84	1,220	0.1	160
Ida	84	60	0.7	40	Keokuk	88	1,160	0.5	320
Monona	81	1,000	1.4	1,470	Lee	63	920	0.2	200
Sac	92	100	0.2	20	Louis	79	220	0.1	30
Shelby	91	149	0.9	120	Mahaska	86	1,050	0.2	170
Woodbury	82	1,900	0.9	1,800	Van Buren	78	1,160	1.1	1,240
For District	87	6,050	0.8	5,080	Wapello	77	400	0.7	290
Central—					Washington	79	1,870	0.5	450
Boone	81	260	0.2	40	For District	81	9,240	0.4	3,440
Dallas	85	460	0.5	230	For State	85	66,000	0.7	46,000
Grundy	94	80	0.7	50					
Hamilton	89	170	1.2	216					
Hardin	84	360	0.7	260					

MISCELLANEOUS TABLE

Corn moisture. Price of buckwheat, hogs for market, cattle for market, feeder cattle, finished lambs, feeder lambs, ewes.

Districts	Moisture in corn marketed Nov. 24-29, per cent	Average Price December 1, 1924						
		Buckwheat per Bu. of 48 pounds	Hogs for market, per cwt.	Cattle for market per cwt.	Cattle, feeder stock, per cwt.	Finished lambs, per cwt.	Feeder lambs, per cwt.	Ewes, per cwt.
Northwest	19.5	7.95	8.70	5.45	12.40	11.45	6.70	
North Central	18.8	1.10	7.95	8.00	5.45	12.00	6.00	
Northeast	26.5	1.27	7.85	7.80	5.30	11.30	9.75	
West Central	18.5	7.90	9.30	5.95	12.35	11.70	6.00	
Central	20.1	1.25	8.00	8.00	6.05	12.05	11.00	
East Central	25.0	1.72	8.00	9.25	6.35	11.50	10.25	
Southwest	17.5	8.00	9.35	7.10	12.35	12.25	6.70	
South Central	23.0	1.50	8.05	8.80	6.10	11.00	10.75	
Southeast	18.2	1.25	8.25	9.05	6.25	11.85	11.00	
State	20.3	1.35	8.00	8.00	6.00	11.05	11.10	

WINTER WHEAT AND RYE OUTLOOK IN IOWA FOR 1925

The acreage of winter wheat sown in Iowa this fall, as reported by the Federal and State Crop Reporting Bureaus, is 469,000 acres, compared with 408,000 acres sown in the fall of 1923. This is 115 per cent of last year's acreage. The condition on December 1, was 89 per cent of normal, which is 3 per cent below the average for the last 10 years. Soil moisture conditions were unfavorable for germination of wheat sown after October 15, of which there was considerable. Some seeding was reported during the first week of November. As a whole the crop did not make as good growth as usual. Of the acreage seeded, 86 per cent was reported as having made good growth and became well established; 11 per cent germinated but made very little showing, and 3 per cent did not germinate.

The acreage sown to rye in Iowa this fall is estimated at 43,000 acres, compared with 48,000 acres harvested in 1924. This is approximately 90 per cent of last year's acreage. The condition of Rye on December 1, is 91 per cent of normal, or 4 per cent below the 10-year average.

WINTER WHEAT IN THE UNITED STATES

Winter Wheat. Area sown this fall is 42,317,000 acres, which is 6.5 per cent more than the revised estimate of 39,749,000 acres sown in the fall of 1923. The sowings in the fall of 1922 were 46,100,000 acres and in the fall of 1921 they were 49,787,000 acres. Winter damage during the past ten years has caused an average abandonment of 10.6 per cent of the acreage sown to winter wheat. The abandonment has ranged from 1.1 per cent to 28.9 per cent in different years during that period. Condition on December 1, was 81.0 against 88.0 and 79.5 on December 1, 1923 and 1922, respectively, and a ten-year average of 85.6. Details by states follow:

State	Area Sown			Condition Dec. 1				Farm Price Per Bu. Dec. 1	
	Autumn 1924 (Preliminary)	Autumn 1923 (Revised)	Autumn Compared With 1923	1924		1923		1924	1923
	Acre	Acre	P. Ct.	P. Ct.	P. Ct.	P. Ct.	Cents	Cents	
New York	380,000	380,000	100	82	92	93	144	110	
New Jersey	82,000	77,000	106	87	90	89	157	110	
Pennsylvania	1,265,000	1,240,000	102	82	92	91	144	100	
Delaware	113,000	106,000	107	85	86	86	144	100	
Maryland	373,000	562,000	102	83	88	88	145	100	
Virginia	814,000	775,000	105	86	86	88	148	110	
West Virginia	212,000	212,000	100	84	88	90	147	116	
North Carolina	467,000	486,000	96	88	91	90	160	118	
South Carolina	125,000	130,000	95	84	87	89	170	114	
Georgia	129,000	140,000	92	85	86	91	169	107	
Ohio	2,567,000	2,658,000	104	89	90	92	145	99	
Indiana	2,237,000	1,968,000	115	81	88	88	142	98	
Illinois	2,678,000	2,678,000	100	87	88	89	136	94	
Michigan	968,000	922,000	105	83	91	90	138	98	
Wisconsin	61,000	66,000	92	90	90	92	128	98	
Minnesota	126,000	105,000	120	90	89	92	139	95	
Iowa	469,000	468,000	115	89	92	107	119	92	
Missouri	2,247,000	2,134,000	110	85	85	88	135	92	
South Dakota	116,000	86,000	130	90	92	93	125	83	
Nebraska	2,352,000	2,941,000	114	78	91	89	122	82	
Kansas	10,246,000	9,819,000	107	76	84	83	143	108	
Kentucky	631,000	620,000	105	82	97	89	145	108	
Tennessee	434,000	385,000	110	79	83	86	147	115	
Alabama	11,000	11,000	100	70	90	90	161	119	
Mississippi	4,000	4,000	100	70	88	88	136	110	
Texas	1,822,000	1,469,000	124	75	92	80	129	102	
Oklahoma	2,485,000	2,485,000	105	84	85	86	124	95	
Arkansas	62,000	62,000	100	81	86	86	135	108	
Montana	767,000	685,000	112	85	90	92	124	82	
Wyoming	21,000	16,000	130	93	93	88	111	80	
Colorado	1,355,000	1,708,000	119	88	92	87	118	92	
New Mexico	123,000	123,000	105	75	80	82	125	108	
Arizona	26,000	22,000	80	80	95	94	141	140	
Utah	134,000	137,000	98	86	93	97	130	91	
Nevada	5,000	5,000	105	95	98	89	130	115	
Idaho	337,000	307,000	110	82	94	94	131	80	
Washington	1,518,000	1,687,000	90	77	94	85	130	85	
Oregon	1,921,000	945,000	208	87	97	91	129	88	
California	677,000	691,000	98	88	82	90	124	100	
U. S. Total	62,317,000	59,749,000	106.5	81.0	88.0	85.6	132.1	85.1	

UNITED STATES CROP SUMMARY

The December estimates of the Crop Reporting Board of the United States Department of Agriculture of the acreage, production, and value (based on prices paid to farmers on December 1) of the important farm crops of the United States in 1922, 1923 and 1924, based on the reports and data furnished by crop correspondents, field statisticians, and cooperating State Boards (or Departments) of Agriculture and Extension Department, are as follows:

Crop	Acreage	Production		Farm Value December 1			
		Per Acre	Total	Per Unit	Total		
Corn	1924.....1923.....1922.....	160,012,000 194,824,000 192,846,000	33.2 29.5 28.3	2,436,512,000 5,623,527,000 2,906,020,000	Bu. 98.7 72.6 65.8	2,405,486,000 2,217,229,000 1,910,713,000	
Winter wheat	1924.....1923.....1922.....	36,438,000 30,518,000 42,358,000	16.2 14.3 13.8	590,637,000 437,836,000 586,978,000	" " " " "	132.1 85.1 164.7	779,510,000 345,710,000 614,380,000
Spring wheat	1924.....1923.....1922.....	17,771,000 20,141,000 19,809,000	15.9 11.2 14.1	282,626,000 225,422,000 280,730,000	" " " " "	156.3 83.3 92.3	357,096,000 192,283,000 250,013,000
All wheat	1924.....1923.....1922.....	54,309,000 50,659,000 62,317,000	16.1 13.4 13.9	872,673,000 707,251,000 867,708,000	" " " " "	139.2 92.3 100.7	1,136,506,000 735,960,000 873,412,000
Oats	1924.....1923.....1922.....	42,452,000 40,981,000 40,790,000	36.3 31.9 29.8	1,541,906,000 1,395,883,000 1,215,463,000	" " " " "	48.0 41.4 29.4	739,405,000 541,130,000 478,949,000
Hay	1924.....1923.....1922.....	7,086,000 7,833,000 7,317,000	26.5 25.2 24.9	187,875,000 197,661,000 182,989,000	" " " " "	73.1 54.1 52.5	137,370,000 107,028,000 95,900,000
Rye	1924.....1923.....1922.....	4,178,000 5,171,000 6,672,000	15.2 12.8 13.5	63,446,000 68,677,000 102,397,000	" " " " "	107.3 65.9 68.5	69,061,000 49,971,000 79,841,000
Barley	1924.....1923.....1922.....	816,000 739,000 764,000	19.6 18.9 19.1	15,556,000 13,965,000 14,564,000	" " " " "	102.0 91.1 88.2	16,441,000 13,008,000 12,880,000
Buckwheat	1924.....1923.....1922.....	417,000 417,000 417,000	9.2 9.3 9.3	30,173,000 2,014,000 1,113,000	" " " " "	27.3 219.7 211.5	69,611,000 219.7 21,941,000
Potatoes, white	1924.....1923.....1922.....	3,692,000 2,856,000 4,307,000	124.7 109.9 165.3	454,784,000 416,165,000 423,296,000	" " " " "	64.8 78.1 58.1	294,861,000 25,251,000 269,536,000
Sweet potatoes	1924.....1923.....1922.....	908,000 963,000 1,117,000	76.6 97.9 97.0	71,861,000 97,177,000 109,294,000	" " " " "	128.4 97.9 77.1	92,200,000 95,691,000 84,295,000
Hay, tame	1924.....1923.....1922.....	61,434,000 59,488,000 61,150,000	1.28 1.28 1.25	97,870,000 89,236,000 95,882,000	Tons " " " "	\$12.35 \$14.15 \$12.50	\$1,782,700 \$1,361,646,000 \$1,394,161,000
Hay, wild	1924.....1923.....1922.....	14,621,000 15,556,000 15,871,000	.92 1.11 1.09	14,480,000 17,261,000 16,131,000	" " " " "	\$ 7.50 \$ 7.88 \$ 7.14	\$13,829,000 \$16,784,000 \$13,176,000
All hay	1924.....1923.....1922.....	76,055,000 75,044,000 77,021,000	1.47 1.41 1.43	112,450,000 106,611,000 112,015,000	" " " " "	\$12.00 \$13.15 \$11.28	\$1,469,646,000 \$1,388,229,000 \$1,319,977,000

UNITED STATES CROP SUMMARY—Continued

Crop	Acreage	Production			Farm Value December 1		
		Per Acre	Total	Unit	Per	Total	
					Unit	Total	
					Cents	Dollars	
Cotton	1924.....	49,115,000	8156.8	13,153,000	Bales	522.6	1,497,225,000
	1923.....	37,125,000	8199.6	910,139,671	"	521.6	1,371,515,000
	1922.....	33,636,000	8141.3	9,730,000	"	523.8	1,161,946,000
Cotton seed	1924.....			5,849,000	Tons	833.37	196,040,000
	1923.....			4,192,000	"	845.92	206,732,000
	1922.....			4,336,000	"	849.19	174,730,000
Clover seed	1924.....	747,000	1.3	977,000	Bu.	813.68	13,362,000
	1923.....	775,000	1.6	1,228,000	"	810.76	13,218,000
	1922.....	1,120,000	1.7	1,863,000	"	819.38	18,322,000
Sugar beets*	1924.....	842,000	8.88	7,478,000	Tons	87.10	73,000,000
	1923.....	627,000	10.66	7,006,000	"	88.86	62,960,000
	1922.....	553,000	9.77	5,182,000	"	87.91	41,716,000
Sorghum sirup	1924.....	494,000	67.7	37,329,000	Gals.	94.6	25,869,000
	1923.....	380,000	84.2	32,001,000	"	86.2	27,365,000
	1922.....	447,000	81.5	36,440,000	"	71.0	25,552,000
Beans, dry, edible	1924.....	1,376,000	9.7	13,327,000	Bu.	83.71	49,494,000
	1923.....	1,320,000	11.1	16,004,000	"	83.65	58,437,000
	1922.....	1,079,000	11.9	12,767,000	"	83.74	47,843,000
Grain sorghums*	1924.....	2,065,000	22.5	114,231,000	"	85.2	97,465,000
	1923.....	2,792,000	18.3	165,835,000	"	84.9	98,471,000
	1922.....	5,067,000	17.9	59,524,000	"	87.8	79,303,000
Cabbage	1924.....	100,900	8.8	973,000	"	16.14	15,770,000
	1923.....	104,880	7.7	805,700	"	22.27	17,599,000
	1922.....	133,830	8.1	1,080,000	"	12.29	11,288,000
Onions	1924.....	59,000	294	17,027,000	Bu.	55.75	16,751,000
	1923.....	61,940	279	17,306,000	"	1.35	23,343,000
	1922.....	68,200	296	18,760,000	"	.85	13,676,000
Apples, total	1924.....			179,443,000	Bu.	118.3	212,120,000
	1923.....			202,542,000	"	101.9	206,006,000
	1922.....			202,702,000	"	98.6	189,848,000
Apples, commercial	1924.....			28,701,000	Bbls.	83.67	160,229,000
	1923.....			35,998,000	"	2.91	104,406,000
	1922.....			31,945,000	"	2.93	51,036,000
Peaches	1924.....			51,479,000	Bu.	127.5	45,914,000
	1923.....			45,382,000	"	136.7	49,923,000
	1922.....			55,532,000	"	133.8	74,717,000
Pears	1924.....			17,815,000	"	140.8	25,287,000
	1923.....			17,815,000	"	129.9	21,229,000
	1922.....			29,706,000	"	106.0	21,913,000
Total	1924.....	353,210,400		9,479,902,000			8,726,860,000
	1923.....	356,504,730		8,726,860,000			8,726,860,000
	1922.....	333,835,250		7,816,020,000			7,816,020,000

*Minor crop prices mostly for November 15. †Pounds. ‡Census. §Per pound. ¶Principal producing States. ††Minimum.

HONEY: YIELD PER COLONY AND PERCENTAGE SOLD TO OUTSIDE MARKETS IN 1924, BY STATES.

State	Average Yield Per Colony		Form						Per Cent Sold to Outside Markets	
	1913- 1922	1923	1924	Comb		Extracted		Chuck (bulk)		
				P.Ct.	P.Ct.	P.Ct.	P.Ct.	P.Ct.		P.Ct.
	Lbs.	Lbs.	Lbs.	P.Ct.	P.Ct.	P.Ct.	P.Ct.	P.Ct.	P.Ct.	
Alabama	27	48	28	98	74	20	18	8	18	2
New Hampshire	37	42	34	79	74	16	20	4	12	14
Vermont	39	60	27	74	62	37	34	4	46	30
Massachusetts	32	43	33	53	41	41	37	3	2	7
Rhode Island	35	37	13	10	91	90	1			
Connecticut	41	35	38	49	30	46	78	5	2	12
New York	27	81	45	47	30	54	61	1	2	41
New Jersey	40	22	32	85	35	21	68	1	1	18
Pennsylvania	44	44	32	35	42	40	55	4	3	22
Delaware	27	21	30	40	8	24	42	26	50	11
Maryland	37	37	30	57	85	30	15	8		23
Virginia	37	35	30	60	30	19	18	22	14	22
West Virginia	29	21	37	47	22	14	26	27	52	11
North Carolina	30	39	34	33	24	20	24	46	13	22
South Carolina	24	20	47	43	23	21	34	22	33	14
Georgia	55	36	36	29	18	40	22	51	59	26
Florida	59	43	65	17	5	84	93	1		39
Ohio	47	36	43	57	47	40	45	2	8	29
Indiana	47	23	70	62	28	44	28	11	14	7
Illinois	49	45	58	43	44	59	40	4	6	23
Michigan	56	67	60	44	33	59	64	1	8	30
Wisconsin	55	67	50	36	21	66	76	1	2	29
Minnesota	55	57	60	29	17	23	74	2	9	18
Iowa	62	62	79	51	43	50	52	5	22	23
Missouri	60	26	50	37	28	45	48	22	24	9
North Dakota	90	136	100	81	5	50	81	1	14	17
South Dakota	72	88	135	35	28	45	67	8	5	15
Nebraska	55	46	54	38	42	37	6	6	16	22
Kansas	25	27	40	20	10	21	39	2	1	20
Kentucky	42	29	35	35	9	49	48	29	37	36
Tennessee	27	28	24	28	23	38	27	34	52	10
Alabama	25	6	35	29	14	40	22	24	82	11
Mississippi	33	18	35	42	26	28	34	27	40	21
Louisiana	43	55	50	27	19	30	90	33	15	48
Texas	43	23	41	10	3	62	67	21	30	49
Oklahoma	23	41	29	32	15	29	29	40	56	4
Arkansas	27	23	35	23	14	38	28	29	48	12
Montana	89	118	88	37	27	44	71	2	2	23
Wyoming	96	105	95	13	43	86	1	1	57	79
Colorado	34	31	39	56	44	44	47	2	9	64
New Mexico	50	73	43	47	36	47	61	9	2	58
Arizona	59	60	44	11	2	93	98	2		52
Utah	73	81	52	16	11	88	89	1		63
Nevada	61		100	25	24	75	100	1		77
Idaho	74	61	69	30	24	66	73	1		64
Washington	55	74	90	36	2	70	96	2	2	43
Oregon	52	32	78	56	18	67	80	2		37
California	62	35	30	18	2	88	97	2		78
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STATE OF IOWA
1923

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STATE APIARIST

FOR

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Also Report of the Convention of the Iowa Beekeepers' Association
in Des Moines, December 5-6, 1923

F. B. PADDOCK, State Apiarist
Ames, Iowa

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