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## Bulletin No. 53 - Utah Sugar Beets (1897)

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EXPERIMENT STATION

OF

THE AGRICULTURAL COLLEGE

OF UTAH.

Bulletin No. 53.

UTAH SUGAR BEETS (1897.)

FEBRUARY, 1898.

LOGAN, UTAH.

Press of THE UTAH LITHOGRAPHING Co  
Salt Lake City

EXPERIMENT STATION

70

THE AGRICULTURAL COLLEGE

THE AGRICULTURAL EXPERIMENT STATION OF UTAH.

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The Bulletins will be sent free to any address in the State, on written application to the Experiment Station, Logan, Utah.

# UTAH SUGAR BEETS.

1897.

## BULLETIN No. 53.

JOHN A. WIDTSOE.

### INTRODUCTORY.

Although the success of the Utah Sugar Co. has proved that sugar beets can be raised profitably in Utah, the farmers of the State, as well as others who are interested in the erection of sugar factories, desire a more accurate knowledge of the possibilities of the sugar beet in the various parts of the State, than can be obtained from isolated and uncontrolled tests. The Utah Experiment Station carried on, therefore, during the season of 1897, a co-operative sugar beet experiment with the farmers of Utah.

Samples of seed, together with instructions for planting, cultivating and harvesting, were furnished about 500 individuals living in Sevier, Sanpete, Davis, Weber, Box Elder and Cache Counties. At the end of the season 215 samples of beets were received for analysis at the Station laboratory. This bulletin is a record of the quality of the beets grown, as shown by the analyses of the samples received.

The seed used was partly obtained from the U. S. Department of Agriculture (variety, Kleinwanzlebener), and partly from the Utah Sugar Co., at Lehi, Utah.

### INSTRUCTIONS SENT THE FARMERS.

Enclosed with every package of seed were the following instructions for planting and cultivating, and for sending samples to the Station laboratory.

### CO-OPERATIVE SUGAR BEET EXPERIMENT.

#### DIRECTIONS FOR CULTURE.

This package of seed is sufficient to plant four square rods, and is furnished with the understanding that the beets will be grown in accordance with the directions, and that samples will be forwarded to the Station for analysis at any time requested. Plant as soon as possible after receiving the seed.

**PREPARE THE SOIL** by plowing at least 10 inches deep and thoroughly pulverizing it. A leveler, or clod crusher, may be used to advantage. The texture should be as fine as for a garden.

**PLANT THE SEED** in drills 20 inches apart, either by hand or with a garden seeder, and cover to a depth of one inch. Use all the seed in the package on the four square rods in order to be sure of a perfect stand.

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The seed and the instructions to those taking part in the co-operative experiment were sent out under the supervision of Director Luther Foster. The analytical work and the tabulation of results have been under the direction of J. A. Widtsoe. Mr. J. C. Thomas, assistant chemist, analyzed the greater part of the samples.

**THIN** when the plants have four leaves. Take a sharp five-inch hoe and cut across the row, leaving small bunches six to eight inches apart. These bunches must be thinned by hand, leaving only one strong healthy plant in a place.

**CULTIVATE OR HOE** the beets soon after thinning. If a cultivator is used it should be a fine-toothed implement, and be run very shallow. The hoe or cultivator should be used often enough to keep the soil mellow and free from weeds.

**THE IRRIGATION** should not begin until the beets show plainly that they are in need of moisture. If water is applied too early the beets are apt to be short and spriggy, instead of long and tapering, as desired. The number of irrigations will depend on the soil and location, but all watering should cease at least three weeks before the time of harvesting. Prepare for irrigation by running small ditches in alternate rows, and in turning the water on be very careful not to overflow the ditches, for flooding will damage the crop. Cultivate as soon as the ground is dry enough after each irrigation. It will keep the soil loose, and help in retaining the moisture.

Please do not harvest the beets or send samples to the Station until directions have been sent you. With the directions for taking samples a blank will be sent, calling for the following information: Date of planting; the nature of the soil; the number of irrigations, and the time each was given. Keep a careful record of the above data. In the dry farming districts it is desirable to have the beets grown without irrigation. A copy of Farmers' Bulletin No. 52, on The Sugar Beet, which will give additional information, will be mailed to all who are supplied with seed.

LUTHER FOSTER, Director.

Agricultural Experiment Station, Logan, Utah, April 19, 1897.

## UTAH EXPERIMENT STATION.

### DESCRIPTION OF SAMPLE OF SUGAR BEETS.

Date planted.....  
 Date thinned.....  
 Date harvested.....  
 Character of soil.....  
 Character of cultivation (dates, implements, etc.).....  
 Length of row harvested (feet).....  
 Width between rows (inches).....  
 Number of beets harvested.....  
 Total weight of beets harvested, less necks and tops (pounds).....  
 Weather for each month.....  
 State.....  
 Postoffice.....  
 Date.....  
 Name.....

NOTE—Samples of beets will not be analyzed unless accompanied with this blank filled out.

THE UTAH AGRICULTURAL EXPERIMENT STATION.

LOGAN, September 21, 1897:

DIRECTIONS FOR TAKING SAMPLES OF SUGAR BEETS FOR ANALYSIS.

Immediately after receiving this circular, please select an average row, and gather every plant along a distance which should vary as follows, according to the width between rows:

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From rows	16 inches	apart,	length	19	feet.
"	"	18	"	"	" 16½ "
"	"	20	"	"	" 15 "
"	"	22	"	"	" 13½ "
"	"	24	"	"	" 12½ "
"	"	28	"	"	" 10¾ "

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The beets growing in the row, of the length above mentioned, are counted. The tops are removed, leaving about an inch of the stems, the beets carefully washed free of all dirt and wiped dry. Where the row is not long enough to meet the conditions, take enough from the adjacent row or rows to make up the required length. Rows of average excellence must be selected; avoid the best or poorest. Throw the beets promiscuously in a pile, and divide the pile into two parts. This subdivision, of one-half each time, is continued until there are about ten beets in a pile. From these ten select four of medium size. Be careful not to select the largest or smallest.

From all the rest of the beets, save these four, the necks are removed with a sharp knife at a point just below the base of the outer leaves. The beets, including the four saved as a sample, are then weighed.

The number of beets harvested, multiplied by 1742.4, will give the total number per acre. The total weight of beets harvested, multiplied by 1742.4, will give the yield per acre.

Wrap the four sample beets carefully in soft paper, and write your name legibly thereon. The beets must be perfectly dry. Fill out blank describing culture, enclose in the envelop, and sew up in bag with beets. Sew the beets up in a cotton bag, attach the enclosed shipping tag thereto and send by express.

No beets will be analyzed which are not sampled as described above and properly identified.

Blanks are sent to each one for two sets of samples. From three to four weeks should elapse between the times of sending the two sets of samples.

If additional analyses are desired, other blanks will be

sent on application. A model, showing how blanks should be filled out, is enclosed.

#### THE WEATHER FOR THE SEASON.

The season of 1897 was very dry. In many cases the seed had to be irrigated up. That resulted naturally in diminished yields, and, often, in a poor quality of beets. On the whole, the season was unfavorable for successful beet production.

The following tables give the mean temperature and annual precipitation at Logan, Cache County, for the past seven years. A more complete discussion of the climate of Utah will be found in Bulletin 47 of this Station.

#### MEAN TEMPERATURE.

	1891	1892	1893	1894	1895	1896	Av'ge	1897
January.....	22.4	.....	24.4	24.3	19.6	28.0	23.7	.....
February.....	24.8	.....	19.6	16.6	22.3	33.3	23.3	.....
March.....	34.8	37.2	.....	32.8	34.1	35.4	34.9	.....
April.....	49.6	42.8	.....	46.8	48.4	43.5	46.2	44.0
May.....	58.8	52.2	53.8	58.8	54.3	47.8	54.3	60.8
June.....	62.2	61.6	63.7	59.7	60.2	66.0	62.2	63.2
July.....	71.1	70.3	72.0	69.1	68.8	71.2	70.4	68.4
August.....	72.4	70.4	69.0	66.4	72.0	70.3	70.1	73.0
September.....	63.6	65.9	59.8	58.6	58.4	60.7	61.2	62.1
October.....	52.4	50.5	49.6	50.3	52.1	53.0	51.3	47.9
November.....	40.9	37.0	35.8	42.8	31.3	33.3	36.8	39.8
December.....	25.4	24.6	33.6	22.2	21.1	30.8	26.3	.....
Annual.....	48.2	.....	.....	45.4	45.2	46.9	46.4	.....

#### ANNUAL PRECIPITATION.

	1891	1892	1893	1894	1895	1896	Av'ge	1897
January.....	.....	.....	.75	1.86	2.13	1.31	1.51	.....
February.....	.....	.....	2.45	1.65	.45	.35	1.23	.....
March.....	.....	.....	2.64	1.72	1.71	1.73	1.95	.....
April.....	.....	.....	2.16	1.41	1.05	2.11	1.68	1.74
May.....	2.48	3.00	1.73	.83	2.27	3.17	2.25	.56
June.....	1.15	1.36	.14	.74	.51	1.46	.73	.56
July.....	.13	.34	.01	.28	.56	1.40	.45	.71
August.....	.19	.00	.11	.58	.18	1.49	.43	.25
September.....	1.44	.30	1.67	2.60	1.96	.91	1.48	1.28
October.....	.20	.27	.59	.67	.04	.68	.41	2.62
November.....	.57	.00	.92	.00	1.70	1.97	.86	2.44
December.....	.....	.90	1.44	2.14	.95	.57	1.20	.....
Total inches.....	.....	.....	14.51	14.48	13.51	16.15	14.66	.....

#### THE VALIDITY OF THE RESULTS.

The farmers taking part in this experiment were, with few exceptions, men who had no previous experience in co-operative work. Neither had the majority any experience in the growing of sugar beets. It could not, therefore, be expected

that the results would be as favorable as they would have been had experienced beet growers, or men who would have followed instructions implicitly, taken part in the work. The results show, in fact, what may be done with the sugar beet in Utah, in spite of poor tillage and an unfavorable season. The effect of proper treatment on the sugar content and purity of the beet is well shown in the results from Cache County. One hundred and seven samples of beets from the county were analyzed: fifty-three from farmers living in various parts of the county; and fifty-four from the College farm. Although the soil of the College farm is poor, the superior care produced beets of better quality than those raised elsewhere in the county. The results are as follows:

	Solids in Juice	Sugar in Juice	Purity
Average of 53 samples from Cache County farmers.....	15.9	12.49	78.25
Average of 54 samples from Station farm .....	16.5	14.54	87.44
Average of 107 samples from Cache County.....	16.2	13.52	82.89

Moreover, as comparatively few samples were analyzed from each county, the average results do not represent, exactly, the true averages. Yet they show in every case that all the localities that have been tested will produce high grade sugar beets.

EARLIER RESULTS.

Sugar beets from the Station farm and from various parts of Utah were analyzed in 1891, 1892 and 1896. The results agree in showing the beets to be of a very high quality. For the sake of completeness the averages of the earlier results are copied into this bulletin.

UTAH SUGAR BEETS IN 1891.\*

WHERE GROWN	Number of Sample	Solids	Sugar	Purity
Station farm.....	20	18.56	16.68	86.4
Hyrum, Cache County .....	1	17.23	14.01	81.4
Average of all.....	21	18.47	16.55	86.1

\*Second Annual Report, Utah Experiment Station, page 43.

## UTAH SUGAR BEETS IN 1892.†

WHERE GROWN	Number of Samples	Solids	Sugar	Purity
Lewiston. ....	1	17.00	14.71	86.5
Richmond .....	1	17.50	10.78	61.0
Smithfield.....	1	18.50	.....	.....
Logan .....	3	16.46	15.96	85.5
Station farm.....	20	15.20	14.28	91.9
Hyrum .....	1	15.10	12.13	80.3
Box Elder .....	4	16.29	13.33	82.0
Ogden, Utah .....	10	15.4	11.64	74.8
Heber .....	1	18.50	.....	.....
Farmington.....	2	16.70	12.98	78.5
Franklin, Idaho.....	1	16.30	13.85	85.0
Oxford, Idaho.....	2	17.17	14.06	83.5
Average of all.....	47	16.61	13.12	80.9

†Third Annual Report, Utah Experiment Station, page 168.

## UTAH SUGAR BEETS IN 1896.\*

(Beets grown on the farm of the Utah Experiment Station.)

DATE	Number of Samples	Total Solids in Juice	Sugar in Juice	Purity
September 22 .....	4	18.1	15.4	84.7
September 23—October 2.....	12	18.4	15.7	85.3
October 5-9.....	12	18.9	15.6	82.3
October 12-16.....	12	19.7	16.2	84.5
October 19-23.....	12	19.1	15.9	84.7
October 26-30.....	12	19.1	16.00	84.0
November 2-6 .....	12	18.4	15.5	85.3
November 9-13.....	12	17.8	14.8	83.2
Average.....	86	18.7	15.7	84.7

\*Utah Exp. Station, 8th Annual Report, page 29.

## THE AVERAGE RESULTS OF 1897.

Two hundred and eleven samples of sugar beets were received from Sevier, Sanpete, Utah, Salt Lake, Davis, Weber, Box Elder and Cache Counties; four samples from Idaho, and

fifty-four from the Station farm—making a total of 269 samples. The average results of the analyses, for each county, are found in the next table. The individual analyses, with the cultural notes received, are found in the succeeding tables. These tables are practically self-explanatory—no general deductions can be drawn from the cultural notes until data of several seasons have accumulated. The results are in every case of the most encouraging kind, and emphasize the reputation which Utah already possesses, that sugar beets of excellent quality may be grown within her boundareis.

AVERAGE SUGAR BEET RESULTS FOR 1897.

COUNTY.	Number of Samples	Total Solids in Juice	Sugar (Sucrose) in Juice	Purity
		Per cent	Per cent	Per cent
Sevier .....	18	18.8	14.95	81.07
Sanpete .....	48	18.6	15.38	83.12
Utah.....	16	17.1	13.94	81.17
Salt Lake.....	4	17.3	15.21	88.28
Davis.....	13	16.9	14.47	85.59
Weber.....	41	15.5	13.59	82.38
Box Elder.....	18	17.9	15.01	84.05
Cache (not including Station farm).....	53	15.9	12.49	78.25
Cache (including Station farm).....	107	16.2	13.52	82.89
Idaho .....	4	20.2	17.80	89.72
All Counties.....	269	17.1	14.24	83.10

## SEVIER COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	sugar in Juice.	Purity.
						GR.	OZ.				
3630	Edgar Fillmore .....	Burrville .....	April 30 .....	May 28 .....	Nov. 15 .....	700	24.7	.....	18.9	16.31	86.30
3423	Charles Hancock .....	" .....	May 5 .....	" .....	Oct. 5 .....	377.5	13.3	27,733	19	14.11	74.26
3663	" .....	" .....	" 5 .....	" .....	" 6 .....	440	15.5	27,733	19.8	17.44	88.08
3425	Henry A. Teeples .....	" .....	" 10 .....	June 15 .....	" 6 .....	221	7.8	.....	18	15.66	87
	Average .....	" .....	.....	.....	.....	434.6	15.3	.....	18.9	15.88	83.91
3464	J. W. Fairbanks .....	Annabella .....	April 28 .....	May 26 .....	Oct. 11 .....	578	20.4	42,240	17	14.06	82.71
3590	" .....	" .....	" 28 .....	" 26 .....	" 11 .....	289	10.2	36,120	17.5	14.27	81.54
3537	C. A. Peterson .....	" .....	" 30 .....	" 22 .....	" 17 .....	1615	57	.....	15.4	13.34	86.62
3551	Edward K. Roberts .....	" .....	May 14 .....	June 20 .....	" 23 .....	900	31.8	52,272	19.4	16.89	87.06
	Average .....	" .....	.....	.....	.....	845	29.9	.....	17.4	14.64	84.48
3432	C. C. Cowley .....	Glenwood .....	May 10 .....	May 31 .....	Oct. 8 .....	685	24.2	88,000	19	13.38	70.42
3539	" .....	" .....	" 10 .....	" 31 .....	" 21 .....	801	29.3	66,880	18	13.74	76.33
3602	" .....	" .....	" 10 .....	" 31 .....	Nov. 9 .....	723	25.5	70,400	18.2	13.98	76.81
	Average .....	" .....	.....	.....	.....	736	26.3	.....	18.4	13.7	74.52
3529	Paul Poulsen .....	Richfield .....	May 12 .....	June 5 .....	Oct. 14 .....	514	18.1	.....	18.4	15.98	88.58
3576	" .....	" .....	" 12 .....	" 5 .....	" 14 .....	730	25.7	.....	18.2	15.37	84.45
3578	" .....	" .....	" 12 .....	" 5 .....	" 14 .....	745	26.3	.....	17.4	13.64	78.39
3661	Senion Christensen .....	" .....	" 12 .....	" 5 .....	" 14 .....	95	3.4	.....	25.3	15.26	60.32
	Average .....	" .....	.....	.....	.....	521	18.4	.....	19.8	15.06	77.94
3622	John Dastrup .....	Sigurd .....	May 12 .....	June 15 .....	Nov. 10 .....	468	16.5	.....	18	15.12	84
3629	Charles H. Heap .....	" .....	" 21 .....	" 15 .....	" 13 .....	451	15.9	.....	17.8	14.84	83.37
	Average .....	" .....	.....	.....	.....	460	16.2	.....	17.9	14.98	83.69
3577	Peter Hansen .....	Redmond .....	" 14 .....	.....	Oct. 30 .....	713	25.2	.....	19	15.78	83.05
	Average for Sevier County .....	.....	.....	.....	.....	608	21.7	.....	18.6	14.95	81.07

## SEVIER COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3630	Black loam.			Veg'tables	<b>Burrville.</b>			Hoed by hand.	Too much water.
3423	Black loam, very rich.	12	Potatoes.	Potatoes.	Manure in '96.	April.	Yes	Shovel plowed 3 times. Hoed Jan. 8 & July 3.	
3663	Bl'k loam & gravel.							Hoed once a month,	Frost in June & July 18.
3425	The same.								
3464	Gray loam.	25	Wheat & potatoes.	Potatoes.	<b>Annabella.</b> Manure in '94 & '96.	Oct. '96 & April '26, '97.	Yes	Hoed May 31, June 14, 25 July 6, 20, 31.	
3590	Gr'y loam & grav'l.	25	Wheat.	Potatoes.	The same.	The same.	Yes	The same.	
3537	Bl'ck prairie loam.	25	Alfalfa.	Corn.	Manure in '94.	March 16.	Yes	Hoed May 30, June 19 & 30.	Damaged by hogs.
3551	Clay and sand.	20	Vegetables.	Potatoes.	Manure in '95 & '96.	May 1st.	Yes	Horse plowed Jul. 10, 23 Hoed twice.	Watered every 20 days until Sept.
3432	Black clay.	15	Corn and potatoes.	Potatoes.	<b>Glenwood.</b> Manure in 1895.	May, 1897.	Yes	Hoed May 20, June 20, 24, July 7, 14, 28.	
3539	Black clay.	15	Corn and potatoes.	Potatoes.	Manure in 1895.	May, 1897.	Yes	The same.	
3602	Black clay.	15	Corn and potatoes.	Potatoes.	Manure in 1895.	May, 1897.	Yes	The same.	
3529	Clay loam.	26		Wheat	<b>Richfield.</b> None.	Oct. '96, and spring '97.	Yes	Hoed June 10, plowed July 25 and Aug. 12.	
3576									
3578									
3661									
3622	Red loam.				<b>Sigurd.</b>				Failure.
3629	Red or vermilion.	12	Lucern & potatoes.	Potatoes.	None.	Spring.		Hoed as needed.	Tops eaten off in Sept.
3577	Black loam.	Virg.			<b>Redmond.</b> Spring 1897.	Spring.	Yes	Hoed by hand once.	

SANPETE COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						gr.	oz.				
3647	Gustaf Johnson	Axtell	May	June 1	Nov. 1	544	19.2		18.4	14.08	76.52
3461	C. A. Madsen	Gunnison	"	" 1	Oct. 13	635	22.4	62,920	16.6	14.25	85.84
3540	"	"	"	" 1	" 22	718	25		18.5	15.5	83.78
3570	"	"	"	" 1	" 30	840	29.6		19	16.15	87.16
3484	J. A. Newreen	"	"	"	"	955	33.7		16.90	13.61	81.00
3489	"	"	"	"	"	1700	59.9		21.41	18.2	85.00
3533	"	"	"	"	"	505	17.8		21	18.47	87.85
Average						892	31.4		18.9	16.11	85.12
3525	Wm. Brown, Jr.	Fayette	May 22	July 1	Oct. 15	480	16.9		16.4	14.01	85.43
3664	"	"	" 22	" 1	" 15	400	14.1		19.8	17.44	88.08
3554	John Bartholomew	"	" 12	June 15	" 22	318	11.2	7,865	21.4	18.89	88.27
Average						399	14.1		19.2	16.78	87.26
3635	A. W. Bessy	Manti	May 4	June 15	Oct. 31	190	6.7		15.8	13.04	82.53
3653	"	"	"	"	"	384	13.5		18.2	15.71	86.32
3457	Wm. Bench	"	May 18	July 1	Oct. 13	600	21.2		16	15.22	95.12
3458	George Braithwaite	"	" 20	June 26	" 14	355	12.5		19.8	18.63	94.09
3620	"	"	" 20	" 26	Nov. 13	478	16.9		18.2	17.02	93.30
3456	William J. Killpack	"	" 15	June 10	Oct. 12	614	21.7	50,406	17.6	16.95	96.31
3431	Louis C. Kjar	"	" 3	June 5	" 8	676	23.9	34,850	15.2	13.07	85.99
3617	"	"	" 3	" 5	Nov. 2	615	21.7	34,850	18	16.63	92.39
3409	S. C. Sorenson	"	"	"	"	406	14.3		18.4	16.86	91.63
3478	"	"	May 1	June 1	Oct. 16	304	10.7		16.4	12.53	76.40
3428	O. C. Peterson	"	"	" 5	" 1	201	7.1		16.6	14.66	88.85
3467	Joel Shoemaker	"	April 29	May 25	" 2	245	8.7	25,792	24.04	20.43	85
3535	"	"	" 29	" 25	" 18	365	12.9	25,792	20.5	17.3	84.39
3640	"	"	" 29	" 25	Nov. 16	150	5.3	17,195	27.7	20.32	73.62
Average						399	14.0		18.8	16.31	87.57

## SANPETE COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3647	Clay.	4	Potatoes.	Potatoes.	<b>Axtel.</b>				
3461	Sandy bench land.				<b>Gunnison.</b> M'nure sevr'l times	Nov. '96 and April '97.		Hoed.	Watered every week in June, July and Aug.
3540	Sandy loam.					Fall '96 and spring '97.			Watered nine times.
3484	Sandy loam.				M'nure sevr'l times				Watered seven times.
3489									
3533									
3525	Rich, sandy & m'low	9	Wheat.	Wheat.	<b>Fayette.</b> Manure '94.	April '97.	Yes	Hoed June 13, 21, 30, July 8 and 18.	
3664	The same.				Manure '94.	Same.	Yes	The same.	
3554	Sandy bench.	4	Melons and beans.		Manure '96.	May 10.	Yes	Hoed June 15, July 6, 21.	
					<b>Manti.</b>				
3635	Sandy loam.			Potatoes.				Hoed as needed.	
3653									
3457	Heavy clay.	14	Vegetables.		Manure '95.			Hoed by hand.	
3488	Light gravel.				Manure.			Hoed by hand.	Watered once a week.
3620	The same.				Manure.			Hoed by hand.	Watered once a week until Sept. 15.
3456	Light clay.	10		Cabbage.	Manure.	Nov. 1896.		Hoed 6 times.	
3431	The same.	30		Oats.	Manure in spring.	March 1st.		Hoed 3 times.	Watered eight times.
3617									
3409									
3478	Sandy loam.	28	Lucern & potatoes.	Potatoes.		Oct. '96, May 1, '97.		Hoed June 15, Jul. 1, 15.	
3425	Heavy clay.	20		Wheat.	None.	Fall 1896.			
3467	Sage brush land.				None.	April 25.		Every 10 days with hand hoe and plow.	Watered May 4 and every 9 days in May, 14 d'ys in June & July, 10 days in Aug.

SANPETE COUNTY—CONTINUED.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						GR.	OZ.				
3411	James Armstrong .....	Ephraim.....				446	15.7		19.8	16.79	85
3479	Parley P. Peterson .....	" .....	May 3.....	June.....	Oct. 7.....	596	31		22.8	16.87	73.99
	Average .....	" .....				521	18.4		21.3	16.83	79.50
3420	J. H. Child .....	Chester .....		June 15.....		508	17.9	27,512	19	16.84	88.63
3526	" .....	" .....	May 1.....	" 1.....	Oct. 20.....	593	20.9	43,560	20.6	18.17	88.20
3613	D. A. Canland .....	" .....	April 28.....	" 12.....	Nov. 10.....	493	17.4		19	16.50	86.84
3520	Christen Christensen .....	" .....	May 1.....	" 15.....	Oct. 19.....	253	8.9		18	13.91	77.28
3655	" .....	" .....	" 1.....	" 10.....	Nov. 19.....	295	10.4		15	12.68	85
	Average .....	" .....				428	15.1		18.3	15.62	85.19
3530	Daniel Hutchison .....	Moroni .....	May 28.....	June 25.....	Oct. 18.....	643	22.7		17.2	14.44	83.95
3531	Jens. E. J. Knop .....	" .....	" 12.....	" 15.....	" 19.....	953	33.7		17.5	13	74.29
3536	John W. Nons .....	" .....	" 15.....		" 19.....	890	31.4		16.9	12.83	75.92
	Average .....	" .....				829	29.3		17.2	13.42	78.05
3502	H. J. Brown .....	Mount Pleasant.....	May 16.....	June 10.....	Oct. 20.....	460	16.2		20.25	13.41	66.22
3564	P. C. Mieling .....	" .....				348	12.3		17.4	13.99	80.4
	Average .....	" .....				404	14.3		18.83	13.70	73.31
3435	A. M. Barentson .....	Fountain Green .....	May 11.....	June 2.....	Oct. 9.....	518	18.3	18,822	15.6	12.72	81.54
3637	" .....	" .....	" 11.....	" 6.....	Nov. 15.....	608	21.4	21,780	19.6	16.39	83.02
3436	C. J. Christiansen .....	" .....	" 7.....	" 3.....	Oct. 9.....	225	7.9	14,850	18.9	16.05	85
3591	" .....	" .....	" 23.....	" 5.....	" 5.....	553	19.5	20,420	17.8	16.3	91.57
3477	Sanford Holman .....	" .....	" 13.....	June 12.....	" 6.....	200	7		17.1	10.59	61.93
3646	" .....	" .....	" 15.....	" 10.....	Nov. 16.....	310	10.9	43,560	13.6	6.4	47.66
3473	Jens. M. Jensen .....	" .....	" 20.....	" 20.....	Oct. 8.....	480	16.9	21,780	19.6	16.94	85.83
3616	" .....	" .....	" 20.....	" 20.....	Nov. 15.....	847	29.9	21,780	17	14.17	83.35
3474	Hans. P. Olsen .....	" .....	" 9.....	" 15.....	Oct. 11.....	424	15	31,363	21.2	19.11	90.14
3582	" .....	" .....	" 9.....	" 10.....	Nov. 2.....	488	17.2	36,590	20.4	16.98	83.24

SANPETE COUNTY—CONTINUED.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3535	Sage brush land.	Virg.			<b>Manti.</b> —Continued. None.	April 20.		Plowed & hoed by hand	Watered May 4 and every 9 days in May, 14 in June & July, 10 in Aug. and Sept.
3640	The same.	Virg.			None.			Plowed and hoed.	Same as above.
3411					<b>Ephraim.</b>				
3479	Clay.	5			Manure.			Hoed at intervals.	Watered as v'gtbl's were
3420					<b>Chester.</b>				
3526	Red-brown quick-sand and clay.				Manure in winter.	Spring.		Hoed 5 times.	Ammonia detected while thinning.
3613	Sandy.	20		Potatoes.		Nov. 1896.	Yes	Hoed May 25, July 10, horse plowed June 5.	
3520	Sandy, low bottom.					May 1st.	Yes	Hoed June 15, 30, Jul. 15.	
3655	Sandy bot'm land.					May 1st.	Yes	Hoed June 15, 30, Jul. 15.	
3530	Sandy loam.				<b>Moroni.</b>	June 25.		Hoed July 10, Aug. 15.	
3531	The same.							Cultivated by hand.	
3536	Sandy l'm (bench land)					May 1897.		Hoed twice.	
3502	Black prairie lo'm.	20	Lucern and cereals	Wheat.	<b>Mount Pleasant.</b>				
3564						1896.		Hoed June 10	
3435	The same.	29	Potatoes and corn.		<b>Fountain Green.</b>	Spring '97.	Yes	Hoed June 2, 6, July 14, 29, Aug. 15.	
3637	Black loam.	28		Corn.	Manure in '93.	Spring.	Yes	Hoed 4 times.	
3436	The same.	30	Grain.	Oats.	None.	Spring.		Hoed twice.	Watered May 29, July 15 and 30, Aug 12..
3591	Black.								Piled with angle worms.
3477	Sandy loam.							Hoed by hand.	
3646	Sandy.								

SANPETE COUNTY—CONTINUED.

Number.	Name of Grower.	Post Office	Date of Planting.	Date of Thinning.	Date of Harvesting.	Average Wt. one Beet		Wgt. Beets per acre, lbs.	Solids in juice.	Sugar in juice.	Purity.
						cr.	oz.				
3583	Hans. P. Olsen .....	Fountain Green ...	.....	.....	.....	395	13.9	.....	19.3	17.85	91.09
	Average .....	" "	.....	.....	.....	459	16.2	.....	18.2	14.84	80.40
3632	M. V. Selman .....	Indianola .....	May 3.....	.....	Nov. 17....	383	13.5	.....	18.2	15.92	87.47
	Average for Sanpete County .....	.....	.....	.....	.....	475	18.1	.....	18.6	15.58	83.12

UTAH COUNTY.

3424	Isaac Bowers .....	Spanish Fork.....	April 26....	May 20....	Oct. 8.....	450	15.8	15,840	14.4	13.42	93.19
3482	George G. Holes.....	" "	" 21.....	" 18.....	.....	745	26.9	38,808	17.8	14.91	83.76
3462	Thos. H. Jarvis .....	" "	" 15.....	June 3....	Oct. 12....	1375	48.5	50,021	17	15.45	90.88
3524	" " .....	" "	" 15.....	" 3.....	" 20.....	408	14.7	41,930	18.3	16.83	91.27
3471	August Swenson.....	" "	" 30.....	" 1.....	" 13.....	613	21.6	44,000	18.2	14.54	78.89
3619	" " .....	" "	" 30.....	" 1.....	Nov. 16....	468	16	44,820	17	13.56	79.76
3485	Henry Tilley .....	" "	" 27.....	May 25....	Oct. 15....	467	16.5	27,154	15.8	13.36	84.56
3610	" " .....	" "	" 27.....	" 20....	Nov. 13....	403	14.2	.....	14.8	13.42	90.67
3472	August Swenson.....	" "	" 30.....	June 1....	Oct. 13....	558	19.7	44,000	19.6	13.02	66.43
	Average .....	" "	.....	.....	.....	609	21.5	.....	17	14.28	83.27
3580	R. L. Mendenhall.....	Mapleton.....	.....	.....	.....	611	21.5	.....	19.6	16.89	86.17
3581	John Mendenhall.....	" "	.....	.....	.....	553	19.5	.....	20	17.7	88.5
	Average .....	" "	.....	.....	.....	582	20.5	.....	19.8	17.29	87.34
3458	Utah Sugar Company .....	Lehi .....	.....	.....	.....	622	21.9	.....	14.2	9.12	64.22
3459	Charles Karren.....	" "	.....	.....	.....	454	16	.....	15.8	11.7	74.05
3460	William Webb .....	" "	.....	.....	.....	424	14.9	.....	13.4	10.95	81.72
	Average .....	" "	.....	.....	.....	500	17.6	.....	14.5	10.59	73.33
3439	Frederick Thorne.....	Pleasant Grove.....	April 25....	June 4....	Oct. 8.....	493	17.3	.....	16.25	13.81	85
3493	David Thorne.....	" "	May 20.....	" 10....	" 18....	248	8.7	59,400	20.7	14.4	69.56
	Average .....	" "	.....	.....	.....	370	13	.....	18.5	14.11	77.28
	Average for Utah County.....	.....	.....	.....	.....	556	19.6	.....	17.1	13.94	81.17

SANPETE COUNTY—CONTINUED.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3473	Clay.	25	Wheat and oats.		<b>Fountain Green.</b> (Continued.)	Oct. 1896.		Yes Hoed June 15, July 15.	
3616	Clay.	25	Wheat and oats.			Oct. 1896.		Yes Hoed June 20, 29, plowed July 9, 15.	
3474	Black clay.	30		Potatoes.	None.	April 1897.		Yes Hoed June 15, July 5.	
3582	The same.	30		Potatoes.	None.	April.		Yes Hoed June 12 and twice thereafter.	
3632					<b>Indianola.</b>				Heavy frost in July.

UTAH COUNTY.

3424	Light clay.	44		Barley.	<b>Spanish Fork.</b> Manure in 1896.	Oct. 18, '96.		Yes Hoed May 15, plowed May 25, June 14, July 15, 31, hoed May 28.	Watered 4 times.
3482	Sandy loam.	40	Wheat and beets.	S'g'r beets	Manure in '94.	1896.		Yes Plowed June 10, 17, 24, July 6, 16, with beet cultivator 3 times. Cult. 3 times in June.	Watered 3 times in July and Aug.
3462	The same.		Grain.						
3524	The same.								
3471	Sandy.	39		Beets.	Manure in '96.	Dec. 1896.		Yes Cult. June 10, 28.	Watered 5 times.
3619	The same.	39		Beets.		Dec. 1896.		Yes The same.	Same as above.
3485	Brown clay loam.					Nov. 1896.		Yes Cult. bef'r & aft'r thinning. H'rs hoed ev'ry 2 wk's	
3610	Light clay loam.				Manure in winter.	Fall 1896.		Yes Cult. in spring before planting.	
3472	Sandy.	39		Beets.	Manure in 1896.	Dec. 1896.		Yes Hoed May 25, Cult. June 10, 28.	Watered 5 times.
3580					<b>Mapleton.</b>				
3581									
3458					<b>Lehi.</b>				
3459									
3460									
3439	B'tm l'nd, dark, loamy.	15	Corn, wh't, pot'to's	Potatoes.	<b>Pleasant Grove.</b> Manure '95.	Nov. 1896.		Yes Hoed June 20, July 25.	
3403	Black loam.	15	Same.	Wheat.	Manure '94.	Oct. 1896.		Yes Hoed June 10, plowed June 30, July 15.	

## SALT LAKE COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						GR.	OZ.				
3538	W. L. Snow .....	Draper.....	May 2.....	.....	.....	448	15.8	.....	18.7	16.34	87.38
3449	Isaac Goff, Jr .....	Bingham Junction	.....	.....	.....	367	12.9	.....	16.6	14.74	88.80
3450	William J. Jenkins .....	" "	.....	.....	.....	368	13	.....	17.7	15.06	85
3451	James Wardel.....	" "	.....	.....	.....	315	11.1	.....	16	14.71	91.94
	Average .....	" "	.....	.....	.....	350	12.3	.....	16.4	14.84	88.58
	Average for Salt Lake County .....	.....	.....	.....	.....	375	13.2	.....	17.3	15.21	88.28

## DAVIS COUNTY.

3470	R. E. Egan.....	Woods Cross.....	May 13.....	June 15.....	Oct. 14.....	640	22.6	59,840	15	13.37	89.13
3626	" ".....	" ".....	" 13.....	" 15.....	Nov. 17.....	580	20.5	58,080	16.6	14.44	86.98
3534	William Salter.....	" ".....	" 4.....	June 6.....	Oct. 21.....	498	17.6	.....	11	10.05	91.37
3563	" ".....	" ".....	" 4.....	" 6.....	" 23.....	640	22.6	.....	15.2	11.56	76.05
	Average .....	" ".....	.....	.....	.....	589	20.8	.....	14.4	12.36	85.88
3519	H. Firth.....	Blaine.....	May 12.....	.....	Oct. 16.....	689	24.3	.....	18.9	16.05	84.92
3657	" ".....	" ".....	.....	.....	.....	1050	37.1	.....	18	14.54	80.78
3437	Thomas L. Jones .....	" ".....	April 28.....	June 1.....	Oct. 8.....	333	11.8	26,136	17.8	16.19	90.96
3621	" ".....	" ".....	" 28.....	" 1.....	Nov. 15.....	475	16.8	26,136	14.5	12.72	87.72
3517	George W. Kendall.....	" ".....	May 10.....	July 5.....	Oct. 18.....	1095	38.6	.....	15.8	13.53	85.63
3651	Geo. Stark.....	" ".....	.....	.....	.....	576	20.3	.....	22	18.21	82.77
	Average .....	" ".....	.....	.....	.....	703	24.8	.....	17.8	15.21	85.46
3652	Joseph H. Allen.....	Layton.....	.....	.....	.....	625	22.1	.....	18.2	15.71	86.32
3486	Daniel B. Harris.....	" ".....	April 28.....	June 1.....	Oct. 18.....	866	30.6	.....	22.3	18.92	85
3454	Joseph S. King.....	" ".....	May 20.....	" 30.....	" 12.....	669	23.6	47,520	15	12.79	85
	Average .....	.....	.....	.....	.....	720	25.4	.....	18.5	15.81	85.44
	Average for Davis County.....	.....	.....	.....	.....	672	23.5	.....	16.9	14.47	85.59

SALT LAKE COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3538	Sandy.				<b>Draper.</b>				
3449					<b>Bingham Junct'n.</b>			Hoed by hand.	Watered twice.
3450									
3451									

DAVIS COUNTY.

3470	Black loam.	37	Wheat, veg., oats, corn, cane.	Melons.	<b>Wood's Cross.</b> None.	Oct. '96, May '97.	Yes	Wheel hoed June 10, 20, hand hoed July 1, 15.	
3626	The same..	37	Same.	Melons.	None.	The same.	Yes	The same.	
3534	Sandy loam.							Hoed by hand and cult. used.	Watered once a week until Aug.
3563	The same.							The same.	
					<b>Blaine.</b>				
3519	S'ndy l'm, bottom land.	3	Barley.	Barley.	None.				
3657									
3437	Light sand.	5	Oats.	Oats.	None.	Aug. 1896, April 1897.	Yes	Hoed May 25, June 1, July 3.	Watered 5 times.
3621	Light, sandy.	3	Oats.	Oats.	None.	The same.	Yes	Plowed June 10, 22, July 6, 8.	Same as above.
3517	Dark clay, heavy bo'tm.								
3651									
					<b>Layton.</b>				
3652	Sandy loam.								
3486	The same.	18	Potat's and lucern.	Potatoes.	Manure in 1895.	April 7, 1897.		Hoed May 25, June 5, 15, 24, July 1, 10, 19, 27.	Watered 9 times.
3454	Black gravel loam.	26	Wh't. corn, potat's.	Wheat.	Manure ev'ry 3 y'rs	Dec. '96, May '97.	Yes	Hoed by hand.	

WEBER COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						GR.	OZ.				
3624	A. C. Christensen	Hooper	May 23.....	June 25....	Nov. 15....	955	33.7	.....	14.2	10.5	73.94
3521	Thomas B. Hull	"	" 10.....	" 3.....	Oct. 21....	1915	67.6	.....	16	11.54	72.13
3522	"	"	" 10.....	" 3.....	" 21.....	1883	66.4	.....	14.3	11.61	81.19
3426	Gilbert Parker	"	" 8.....	" 23.....	" 7.....	613	21.6	41,684	19.3	16.44	85
3589	"	"	" 8.....	" 23.....	Nov. 5.....	414	14.6	46,978	17.2	15.35	89.24
3645	Daniel Ross	"	April 30.....	" 15.....	Oct. 5.....	490	17.3	60,984	14.5	10.80	74.48
	Average	"				1045	36.9	.....	15.9	12.71	79.33
3658	H. H. Child	Riverdale	May 7.....	June 1.....	Nov. 11....	1003	35.4	.....	20	17.55	87.75
3453	William C. Parker	"	" 11.....	" 1 & 28	Oct. 11....	463	16.3	33,105	11.4	7.95	69.77
3603	"	"	" 11.....	" 3.....	Nov. 11....	637	22.5	.....	12.2	8.1	66.4
3448	William Stimpson	"	" .....	" 10.....	Oct. 11....	1471	50.7	.....	12.4	9.09	73.31
3609	"	"	" .....	" 10.....	Nov. 15....	1525	53.8	.....	9.5	5.42	57.05
3565	J. Randolph Thompson	"	" 18.....	" .....	Oct. 12....	1203	42.4	.....	15.7	13.03	83.25
3638	"	"	" 18.....	" .....	Nov. 15....	758	26.7	.....	20.2	17.21	85.25
	Average	"				1009	35.4	.....	14.5	11.2	74.68
3480	Walter W. Crain	Ogden	May 3.....	June 17....	Oct. 14....	580	20.5	52,272	15.4	13.07	84.19
3625	"	"	" 3.....	" 17....	Nov. 13....	688	24.3	52,272	15.6	12.85	82.37
3636	P. L. Sherner	"	April 28.....	" .....	Oct. 15....	543	19.2	.....	16.4	14.04	85.61
3542	George Smuin	"	May 1.....	June 10....	" 21.....	840	29.6	30,492	17.2	14.76	85.81
3611	"	"	" 1.....	" 10....	Nov. 15....	943	33.3	30,492	16.8	14.55	86.61
	Average	"				719	25.4	.....	16.3	13.85	84.92
3503	Norman Wright	West Weber	May 17.....	June 20....	.....	795	28.1	.....	18.2	15.9	87.36
3504	"	"	" 17.....	" 20....	.....	845	29.8	.....	16	12.07	75.44
3642	"	"	" 3.....	" 3.....	Nov. 19....	660	23.3	.....	16.3	13.52	81.72
	Average	"				767	27.1	.....	16.8	13.76	81.51

WEBER COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3624	Sandy, slightly alkaline.			Potatoes.	<b>Hooper.</b> Manure in 1896.	May.		Horse hoed in June.	Second growth. Cattle ate off tops.
3521	Heavy sandy.							Horse cultivated.	
3522	The same.							The same.	
3426	Light sand.	4	Wheat.	Wheat.	Manure in 1894.	May 6, 1897.	Yes	Hoed June 2, July 7.	Watered up.
3589	The same.					Spring.			Watered up.
3645	Sandy loam.	25	Wheat and veg'bl's	Veg'tables	Manure in 1896.	April.	Yes	Hoed June, July, Aug.	
					<b>Riverdale.</b>				
3658	Heavy sand.	8	Tomatoes.	Tomatoes.				Cul. once, hoed 4 times.	
3453	Clay, sandy loam.	25	Veg. corn & straw-berries.	Cuc'mb'rs	Manure in 1896.	May 10.	Yes	Hoed June 1, 23, Jul. 30, Aug. 13.	Watered 4 times.
3603	The same.	25	The same.	Same.	The same.	May 10.	Yes	The same.	Same as above.
3448	Sandy loam.	40			None.	April.	Yes	Hoed June, July, Aug.	
3609	Sandy.	40				April.	Yes	Hoed June, July, Aug.	
3565	Rich sandy loam.	30			Manure in 1893.	October and April.		Hoed 3 times, weeded twice. cul. 3 times.	
3638									
					<b>Ogden.</b>				
3480	Gravel and clay.					March and May 1897.	Yes	Horse cul. June 24, hoed by hand for 4 weeks.	Watered up.
3625	The same.					The same.	Yes	Hoed June 12, horse cult. June 24. Hoed by hand.	Watered up.
3636	Light loam.							Cult. once every 10 or 15 days.	
3542	Sandy loam, and gravel subsoil.				Manure in fall '96.				
3611									
					<b>West Weber.</b>				
3503	Sandy loam.					With d'ble shovel plow.		Hoed by hand.	
3504	The same.					The same.		The same.	
3642	Heavy dark clay.		Lucern.	Lucern.		May 1 and 4.	Yes	Hoed by hand.	Watered up.

UTAH SUGAR BEETS.

WEBER COUNTY—CONTINUED.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						GR.	OZ.				
3527	R. D. Brown	Harrisville	May 6	July 12	Oct. 10	885	31.2		17.4	17.05	75
3528	"	"	6	12	"	432	15.2		15.4	12.69	82 4
3642	M. D. Harris	"	11	1	Oct. 15	500	17.6	27,878	19.5	17.45	89.49
	Average	"				606	21.3		17.4	14.40	82.30
3552	James Barker	North Ogden				1005	35.5		18.2	16.36	89.89
3553	"	"	April 28			1240	43.8		18	16.81	93.39
3659	"	"				1058	37.3		14.8	11.59	78.31
	Average	"				1101	38.9		17	14.92	87.20
3468	H. J. Fuller	Eden	May 6	June 15	Oct. 14	1050	37.3	45,844	24.4	12.36	85.83
3634	"	"	6	15	Nov. 6	440	15.5	52,272	18.2	15.9	87.36
3639	Albert Carver	"	17	20	5	620	21.9	37,337	18.2	14.99	82.36
3447	William Gould	"	3	May 26	Oct. 11	973	34.3	809	17.9	15.19	85
3587	"	"	1	June 7	Nov. 6	703	24.8	518	16.8	14.87	88.51
3588	"	"	1	7	6	672	23.7	262	16.2	14.26	88.02
3438	D. H. Johnson	"	10	10	Oct. 10	478	16.9	39,204	14.5	13.89	95.79
3495	Daniel C. Walker	"	4	6	13	599	21.1	49,005	21.9	18.64	85
3633	"	"	4	6	Nov. 8	625	22.1	49,005	20.2	17.28	85.54
	Average	"				684	24.2		17.6	15.26	87.05
3430	Edwin Dix	Plain City	April 30	June 4	Oct. 8	1198	42.3		15.4	11.67	75.78
3499	"	"	30	4	8	1024	36.1		12.5	11.98	95.84
3494	"	"				1170	41.3		18.1	15.35	85
	Average	"				1131	39.9		15.3	13	85.54
3518	James Hewett	Mariotts	May 5	June 1	Oct. 20	800	28.2		15.2	11.59	76.25
3483	T. D. Brown	Far West	June	July	16	1408	49.7		17.8	15.12	84.94
	Average for Weber County					881	31.1		16.3	13.59	82.38

WEBER COUNTY.—CONTINUED.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3527	Heavy dark clay.	40	Lucern.	Lucern.	<b>Harrisville.</b> Manure in 1895.	May 1 and 4.	Yes	Hoed by hand.	Watered up.
3528	Black clay.		Grain.	Wheat.					
3552	Bl'ck prairie loam.	40	Fruit, grain, p't'tos	Raspb're's	None.	Spring.	Yes	Hoed as needed.	
3553									
3659									
3468	Bl'k loam & gravel	10	Vegetables.	Corn.	<b>Eden.</b> Manure in fall '96.	1896 and April '97.	Yes	Hoed June 1, horse cult. June 12.	Watered every 2 weeks.
3634	Dark sandy loam.	10	Vegetables.	Corn.	The same.	Spring.	Yes	Hoed by hand May 30, horse cult. June and twice each month.	Watered twice a month.
3639	Dark loam.	18	Vegetables.		Manure in 1895.				
3447	Black gravel.	30	Grain and grass.	Veg'tables	Manure '95 and '97.	April 28.	Yes	Hoed 4 times.	Watered up.
3587	Bl'ck gravel loam.	30	Oats and wheat.	Veg'tables	Manure in '96, '97	April 27.	Yes	Hoed June 7, 14, 18, Jul. 22, 29.	
3588	Light clay.		Oats and wheat.	Veg'tables	The same.	April 27.	Yes	Hoed June 7, 14, 18, and July 22, 29.	
3438	Bl'k loam & gravel.	20	Carrots & potatoes.	Carrots.	Manure in '96.	Nov. and May 10.	Yes	Hoed June 12, 20, July 1, horse plowed June 10	
3495	Bl'ck prairie loam.		Alfalfa and wheat.	Corn.	Manure in 1888.	April 27.	Yes	Hoed May 30, June 18, 28, July 10.	
3633	The same.	18	Alfalfa and corn.	Corn.	The same.	May 1, '97.		Horse plowed June 18, hoed 4 times.	
3430	Sandy loam.	25	Wheat and alfalfa.	Potatoes.	<b>Plain City.</b> Manure in 1897.	Nov. and April.	Yes	Hand hoed Jun. 1, horse ho'd Jun. 26, Jul. 5, 9, 26.	
3499	The same.	25	Wheat and alfalfa.	Potatoes.	Manure in 1897.	The same.	Yes	The same.	
3494									
3518	Black loam.	25	Vegetables.	Corn.	<b>Mariott's.</b> Manure in '94.	Nov and April.	Yes	Hoed as needed.	
3483	Loam baked on top				<b>Far West.</b>			Hoed 3 times.	

BOX ELDER COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						GR.	OZ.				
3433	Lars. J. Halling.....	Geneva.....	May 4.....	May 30.....	Oct. 8.....	550	19.4	39,942	13	15.31	85.06
3571	" ".....	".....	" 4.....	" 30.....	Nov. 1.....	715	25.2	26,110	16.2	14.36	88.64
3429	Peter C. Jensen.....	".....	" 1.....	June 1.....	Oct. 9.....	675	23.8	41,818	13.50	11.87	87.93
3648	" ".....	".....	" 1.....	" 1.....	" 9.....	1080	38.1	41,818	13	10.67	82.08
	Average.....	".....				755	26.6	.....	15.2	13.05	85.93
3410	L. J. Lund.....	Brigham.....				1255	44.3		16.6	12.94	77.95
3492	" ".....	".....				1350	47.6		17.7	15.03	85
3421	Matilda Hanson.....	".....				1288	45.4		15.8	14.04	88.86
3498	" ".....	".....				1503	53		21.7	18.42	85
	Average.....	".....				1349	47.6	.....	18	15.11	84.20
3601	Fred G. Elliot.....	Corinne.....	May 12.....		Nov. 12.....	1160	40.9		17.8	14.14	79.44
3660	H. L. Hoyt.....	".....			" 22.....	863	30.5		18.6	17.17	92.31
3654	L. W. Kling.....	".....	May 13.....		" 20.....	1010	35.6		22.2	19.29	86.89
3585	J. Stearns.....	".....	" 3.....		" 15.....	458	16.2	33,880	18.2	15.61	85.77
3618	" ".....	".....	" 8.....		" 15.....	609	21.7	33,880	20.8	.....	.....
	Average.....	".....				818	29	.....	19.5	16.55	86.10
3555	Abe Rose.....	Park Valley.....	May 8.....		Oct. 13.....	286	10.1		19.8	18.23	92.07
3662	Jacob Kunzler.....	Rosette.....			Nov. 6.....	599	21.1		17.7	15.02	84.86
3497	Wm. Thurd.....	Snowville.....				777	27.4	52,272	21.5	18.31	85
3562	Joseph Robbins.....	".....	April 29.....	June 1.....	Oct. 20.....	273	9.6		21	17.21	82.33
	Average.....	".....				525	18.5	.....	21.3	17.76	83.67
3500	Robert Thomas.....	Three Mile Creek..	May 4.....	July 29.....	Oct. 7.....	605	21.3		12.8	7.63	59.61
	Average for Box Elder County.....					836	29.5	.....	17.9	15.01	84.05

BOX ELDER COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3433	Bl'k loam & gravel.	33	Wheat.	Wheat.	None.	April 24.	Yes	Hoed every 2 w'ks from June until Sept.	Watered once in 2 weeks
3571	Black gravel.	32	Wheat.	Wheat.	None.	April 24.	Yes	The same.	Watered once in 2 weeks
3429	Bl'k gravelly loam.	33	Grain, potatoes.	Barley.	Manure in 1895.	April.	Yes	The same.	
2648									
3410					<b>Bingham.</b>				
3492									
3421									
3498									
3601					<b>Corinne.</b>				Watered up.
3660									Watered up.
3654	Sand, clay subsoil.				None.			Hoed twice.	Watered up,
3585	Clay & sand (alkali.)				None.				
3618	The same.								
3555	Sage brush.				<b>Park Valley.</b>				
3662					<b>Rosette.</b>				
3497					<b>Snowville.</b>				
3562	Sandy loam.	15	Vegetables.	Veg'tables		Fall and spring.			
3500	Mineral land.	10	Grain.	Oats.	<b>Three Mile Creek.</b>	May 2d.	Yes	Hoed July 29, plowed Aug. 8.	

CACHE COUNTY.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	sugar in Juice.	Purity.
						gr.	oz.				
3501	Thomas J. Pearce	Paradise	May 21		Oct. 18	620	21.9		13.3	10.47	78.72
3612	A. A. Allen, Jr.	Hyrum	3	July 1	Nov. 15	183	6.4	27,225	15.2	7.2	47.37
3627	Elan Allen	"	15		1	1168	41.2		17.4	13.77	79.14
3505	J. E. Jacobson	"	8	June 8	Oct. 19	1285	45.3	51,584	18.3	15.54	85
3608	"	"	2		Nov. 13	1442	50.9	61,901	15.5	11.87	76.58
3586	Andreas P. Rose	"	20	June 25	3	554	19.5		18.2	15.04	82.64
2593	"	"				560	19.8		14.6	10.96	75.09
Average		"				865	30.5		16.5	12.40	74.30
3566	James Jeppson	Millville			Oct. 30	392	13.8		13.5	6.98	51.70
3567	"	"			30	247	8.7		15.08	6.98	44.32
Average		"		June 22		319	11.3		14.6	6.98	48.01
3605	John Schank	College	May 18	" 22	Nov. 6	760	26.8		14.3	11.77	82.31
3606	Fred Schank	"	15		6	591	20.9		14.2	11.30	79.5
Average		"				675	23.9		14.2	11.54	80.91
3572	Henry Beard	Providence	May 8		Oct. 29	626	22.1		15	13.29	88.60
3511	James Fife	"	10		18	620	22.1		14.5	11.39	78.55
3513	Jacob Miller	"	20	July 8	18	526	18.6		15.3	11.19	73.14
3512	Ulrich Stauffer	"	7	June 15	18	713	25.2		15	10.78	71.87
3514	Ferdinand Zallinger	"	10		19	526	18.6		15	10.29	70.20
3515	"	"			18	522	18.6		18.3	13.13	71.75
3516	"	"				423	15		17.4	12.27	69.16
Average		"				565	20		15.8	11.76	76.16
3614	G. W. Adams	Logan	May 14		Nov. 12	345	12.2	18,150	13.2	10.49	79.47
3532	William Evans	"	20	June 29	Oct. 21	1068	37.7		14	10.09	72.07
3628	Charles Fletcher	"	20	Aug. 1	30	730	25.8		17.8	14.84	83.37
3556	Robert Davidson	"	8	June 15	26	1810	63.9	63,777	12.7	8.9	70.08

CACHE COUNTY.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
3501	Clay loam & gravel.	15	Vegetables.		<b>Paradise.</b> Manure in 1896.			Hoed by hand.	
3612	Clay.	10	Wheat.	Wheat.	<b>Hyrum.</b> None.	May 4.	Yes	Hoed July 15.	
3627	Black loam	30	Corn and veget'bls.		Manure 1896.			Shovel plowed & hoed.	
3505	Sandy loam.							Hoed May 30, plowed	
3608	The same.	18		Beans.	Manure 1893.	April 20.		June 16, July 2.	
3586	Black loam, gravel, saleratus,								Watered every 10 days.
3593					<b>Millville.</b>				
3566	Upland clay.							Hoed. Hoed.	Watered 3 times. Same as above.
3567	Light clay.				<b>College.</b>				
3605	Black clay.	6		Potatoes.	Manure in spring.	May.	Yes		Watered up 4 times in summer.
3606	Heavy black clay.							Hoed in July once.	
3572	Gravel.				<b>Providence.</b>				
3511	Black.							Hoed 3 times.	Watered 3 times.
3513	Light gravel.	30	Corn and potatoes.		Manure.			Hoed. Hoed. Hoed. Hoed.	
3512	Light clay.								
3514	Sandy.								
3515									
3516									
3614	Red clay.				<b>Logan.</b>				
3532	Black loam.	30	Alfalfa and corn.	Corn.	None. None since 1884.	Aug. 1896. Nov. and May.	Yes	Hoed by hand 4 times.	

## CACHE COUNTY—CONTINUED.

Number.	Name of Grower.	Post Office.	Date of Planting.	Date of Thinning.	Date of Harvest.	Average wt. of One Beet.		Wgt. of beets per acre, lbs.	Solids in Juice.	Sugar in Juice.	Purity.
						gr.	oz.				
3412	Ferdinand Jacobson .....	Logan—Continued.	May 7.....	June 15...	Oct. 4....	317	11.2		13	9.79	75.31
3569	William C. Kilgore.....		" 10.....	" 20....	" 24....	380	13.4	66,000	20	17.52	87.60
3650	" .....		" 10.....	" 20....	" 20....	350	12.4	66,000	14.5	11.43	77.85
3604	Henry Kloepfer .....		" April 28....	May 20....	Nov. 4....	1527	53.9		17	13.85	81.47
3561	C. L. Olsen.....		" May 15.....	June 20....	Oct. 27....	630	22.2		13.2	10.86	80.4
3541	Karl Gustaf Linblad.....		" " 15.....	" 3.....	" 24....	1818	64.1	63,947	14.6	11.55	79.11
3523	L. H. Pedersen.....		" " 20.....	" 24....	" 21....	835	29.5	63,890	16.6	13.48	81.20
3607	" .....		" " 20.....	" 24....	" 22....	820	28.9	63,890	15.6	12.10	77.56
3631	J. H. Read.....		" .....	" .....	" .....	422	14.9		15	13.80	91.99
3579	A. L. Skanchy.....		" May 14.....	June 20....	Oct. 22....	695	24.5		16.6	13.90	83.73
3574	Thomas X. Smith.....		" .....	" .....	" .....	373	13.2		15.4	12.50	81.17
3491	Henry Worley.....		" May 10.....	June 5.....	" .....	530	18.7	60,183	19.2	16.34	85
3623	" .....	" 10.....	" 5.....	Nov. 15....	635	22.4	61,900	17.5	14.62	83.54	
3557	Richard Yeates.....	" " 28.....	July 7.....	Oct. 25....	1695	59.8	57,024	11.3	8.31	73.54	
3641	" .....	" .....	" .....	" .....	380	14.4		16.1	14.09	87.51	
	Average .....	" .....	" .....	" .....	870	28.6		15.4	12.55	80.63	
3466	David Grant.....	Hyde Park	May 25.....	" .....	Oct. 8.....	1030	36.4		16.2	12.56	77.53
3490	Reuben Perkey.....		" 20.....	June 20....	" 18....	463	16.3		17.4	14.82	85
3584	L. C. Petersen.....		" .....	" .....	" .....	805	28.4		15.2	11.78	77.50
	Average .....	" .....	" .....	" .....	766	27		16.3	13.05	80.01	
3469	Christian Larsen .....	Newton	April 29....	June 5-20..	Oct. 8.....	473	16.7	44,880	16.8	14.06	83.60
3475	" .....		" .....	" .....	" .....	1155	40.8		18	14.76	82
3476	" .....		" .....	" .....	" .....	92	3.2		18	10.98	61
3592	" .....		" April 29....	June 5-20..	Nov. 3.....	876	30.9	47,520	16	10.84	67.75
	Average .....	" .....	" .....	" .....	649	22.9		17.2	12.66	73.59	

CACHE COUNTY—CONTINUED.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.		
					<b>Logan.—Continued.</b>						
3628	Blk pr'rie l'm, alkali	35	Vegetables.		Manure 1895.	April.		Hoed by hand.	Watered twice. Watered after thinning.		
3556	Sandy loam.									Hoed by hand.	
3412	Gravel.	17	Vegetables.	Veg'tables	Manure 1896.	Spring.		Hoed by hand.	Watered 3 times.		
3569	Clay and sand.							April.		Hoed.	
3650	The same.							Nov.		Hoed by hand.	
3604	Sandy loam.				33	Wheat and potato's	Wheat.	None.		The same.	Alkali in soil.
3561	Bl'k prairie loam.								Yes	Hoed once.	
3541	Sandy loam.				26	Corn and potatoes.		Manured in 1896.	May 1st.		
3523	Black loam.				20	Corn and potatoes.		The same.	Spring.	Yes	Hoed by hand 4 times.
3607	Bl'k loam and clay.							Hoed twice.	Watered once in Aug.		
3631	Sandy loam.										
3579	Sandy loam.										
3574											
3491	Black.	25	Vegetables.	Potatoes.	Manure 1896.			Cult. 6 times.	Watered once.		
3623	The same.	25	Vegetables.	Potatoes.	Manure 1896.	May 1, 1897.		Hoed 6 times.	Watered twice.		
3557	Sandy loam.			Veg'tab'es	Manure 1895.	Nov. and spring.		Hoed by hand.			
3641											
					<b>Hyde Park.</b>						
3466	Dark loam.	15	Wheat and potato's	Wheat.	Manure.			Hoed July 1.			
3490	Blk pr'rie l'm, alkali							Nov. 2, 1896.		Yes	Hoed & plowed 6 times.
3584											
					<b>Newton,</b>						
3469	Black clay loam.	15	Vegetables.		Manure 1897.	Fall 1896 and spring.	Yes	Cult 4 times.	Watered three times.		
3476		15	Vegetables.		Manure 1897.	Fall and spring.	Yes	Cult. 4 times.	Watered 3 times.		
3475											
3592	Black clay loam.										

## CACHE COUNTY—CONTINUED.

Number.	Name of Grower.	Post Office	Date of Planting.	Date of Thinning.	Date of Harvesting.	Average Wt. one Beet		Wgt. Beets per acre, lbs.	Solids in juice.	Sugar in juice.	Purity.
						av.	oz.				
3465	Sidney B. Kent .....	Lewiston .....	May 1. ....	.....	Oct. 13. ....	985	34.8	.....	15.4	14.50	94.16
3615	" " .....	" .....	" 1. ....	.....	" 29. ....	893	31.5	.....	17.8	13.63	76.57
3455	M. Hawkeswood .....	" .....	April 27. ....	May 22. ....	" 13. ....	998	35.2	.....	17.3	14.71	85.03
3573	" " .....	" .....	" 27. ....	" 22. ....	Nov. 1. ....	210	7.4	.....	19.6	18.16	92.65
3644	" " .....	" .....	.....	.....	.....	835	29.5	.....	17.6	14.99	85.17
3487	Henry Webber .....	" .....	May 3. ....	July 15. ....	Nov. 15. ....	764	27	.....	20.7	17.60	85.00
3558	David E. West .....	" .....	" 1. ....	June 16. ....	Oct. 27. ....	310	10.9	.....	11.7	10.36	90.25
	Average .....	" .....	.....	.....	.....	713	25.2	.....	17.1	14.85	86.98
3559	David Smith .....	Richmond .....	May .....	June .....	.....	689	24.3	.....	18	14.81	82.28
3568	James Smith .....	" .....	.....	.....	Oct. 10. ....	988	34.9	.....	17.6	14.84	84.32
	Average .....	" .....	.....	.....	.....	838	29.6	.....	17.8	14.83	83.30
	Average for Cache County .....	.....	.....	.....	.....	729	24.7	.....	15.9	12.49	78.25
	Average of 54 samples from Station farm .....	.....	.....	.....	.....	.....	.....	.....	16.5	14.54	87.44
	Average for Cache Co., including Station farm .....	.....	.....	.....	.....	.....	.....	.....	16.2	13.52	82.89
3427	(Samples not located) .....	.....	.....	.....	.....	415	14.6	.....	17	14.60	85.88
3434	" " .....	.....	.....	.....	.....	403	14.2	.....	17.6	14.35	81.53
	Average .....	.....	.....	.....	.....	409	14.4	.....	17.3	14.48	83.71
IDAHO.											
3543	M. V. Pratt .....	Fairview .....	May 18 .....	.....	Oct. 21. ....	176	23.9	14,288	14.4	11.07	76.88
3463	L. L. Hatch .....	Franklin .....	" 20. ....	July 6. ....	" 13. ....	278	9.8	18,235	13.4	10.76	80.30
3496	Thos. W. Roe .....	Stone .....	" 1. ....	June 12. ....	" 16. ....	598	21.1	.....	24.1	20.48	85
3560	O. J. Norr .....	" .....	" 3. ....	" 12. ....	.....	558	19.7	.....	16	15.11	94.44
	Average .....	" .....	" .....	.....	.....	578	20.4	.....	20.1	17.80	89.72
	Average for all Counties .....	.....	.....	.....	.....	533	23.7	.....	17.1	14.24	83.10

CACHE COUNTY—CONTINUED.

Number.	Soil.	Years in cultivation.	What Crops.	Last Crop.	Fertilized.	Plowed.	Harrowed.	Cultivated.	Remarks.
					<b>Lewiston.</b>				
3465	Black sandy loam.							Hoed May 20, horse	
3615	Sandy loam.							cult. June 15.	
3455	The same.	4	Vegetables.	Veg'tables	Manure in 1896.	Oct. and Spring.		The same.	
3573	The same.							Hoed 6 times.	
3644								Cult. 7 times.	
3487	Sandy.	5	Wheat.	Wheat.	Manure 1897.	April.	Yes	Hand cult. every week.	Watered 3 times.
3858	Sandy.								
					<b>Richmond.</b>				
3559	Black loam.	32	Potatoes.	Potatoes.		Fall 1896.	Yes	Hoed by hand, horse	Second growth.
3568	Black gravel.	30	Potatoes.	Potatoes.		Fall 1896 and spring.		cult 4 times.	Second growth.
					<b>Not Located.</b>				
3427									
3434									

IDAHO.

3543	Loam betwe'n sand and clay.			Wheat.	<b>Fairview.</b>			Plowed once, hoed as needed.	
3463	Black clay.				<b>Franklin.</b>			Cult. once.	
					<b>Stone.</b>				
3496	Clay loam.		Vegetables.		Last 3 years.	April 31.	Yes	Plowed 4 times, hoed by hand.	
3560	Clay and sand.			Potatoes.	Manure spring.	Oct and May 3.		Hoed by hand.	Watered every 10 days.