

SAGINAW VALLEY BEAN AND BEET RESEARCH FARM REPORT

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Introduction

The Michigan sugar beet industry, represented by the Farmers and Manufacturers Beet Sugar Association, and the Michigan dry bean industry, represented by the Michigan Bean Commission and the Michigan Bean Shippers Association, purchased a 119-acre farm early in 1971 for lease to Michigan State University to conduct field research on sugar beets, dry edible beans, and related cash crops. One additional acre was purchased in 1989, and an additional 66 acres is leased to bring the total to 186 acres. The farm is located in Thomas Township of Saginaw County at the southwest corner of Swan Creek and Thomas Roads.

Field research was initiated in 1971 and the 2006 season was the thirty-sixth season of research at the farm. This research report is primarily a compilation of research conducted at the research farm in 2006. Most of the work represents one year's results, and even though multi-season results are included, **this work should be considered a progress report.**

Soil - The soil type on the farm is classified as a Misteguay silty clay. The soil pH ranges from 7.4 to 7.9 and averages 7.7, and the Bray P₁ phosphorus was low at the initiation of the studies, averaging 15 lb P/acre. It is variable due to fertilization practices carried out in the various experiments. The exchangeable K generally tests between 425 and 475 lb/acre. At this soil test value, no fertilizer potash is recommended for the production of sugar beet, soybean, corn, dry bean and small grains.

Weather -The monthly rainfall for 2006 collected with the automated rain gauge is given in Table 1. The historical monthly totals, compared to the long-term averages from the Research Farm are given in Table 2. All rainfall amounts recorded in Table 2 prior to 1999 were manually collected using a National Weather Service standard rain gauge. Rainfall was adequate to above average through the growing season, which helped most crops grow well, and matured well through a drier August and early September. Harvest and tillage were slowed through a wet September and October. Rainfall was above average for the year.

Maximum and minimum daily temperatures are given in Table 3. Temperatures were average during the 2006 growing season. There were 8 days above 90 degrees and 16 days above 85 degrees in 2006. The fall was wet with cooler temperatures. Harvest and fall tillage finished normal this year.

Growing degree-day accumulation for the six month summer period are given in Table 4. Total accumulation in 2006 was average.

TABLE 1. Precipitation (inches) - Saginaw Valley Research Farm - 2006

Day:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.02	0.01		0.03			0.01		
2				0.01	0.10	0.75						1.02
3	0.16		0.22	0.26		0.04		0.29		0.04		
4							0.18			1.26		
5	0.26			0.01								
6		0.51										
7				0.74		0.25						
8									0.02			
9							0.57		0.12			
10		0.08	0.51		0.62		0.05	0.01		0.03		
11				0.24	1.27		0.98		0.55	0.56		
12				0.01	0.15		0.39		0.36	0.01		
13		0.06	0.65	0.33	0.04				0.09	0.09	1.15	0.57
14					0.19		0.76					
15	0.40											
16		0.20			0.25				0.01	0.01		
17		0.72			0.10		1.66			0.67	0.90	
18	0.38				0.08	0.16			0.05	0.07		
19					0.40				0.01	0.15		
20					0.11		0.02					
21						0.79				0.21		
22							0.16		0.55	0.45		0.22
23	0.40			0.20			0.01	0.01	0.51	0.02		
24			0.04		0.03			0.32	0.01			
25				0.05	0.16			0.31				
26							0.39	1.56				
27									0.08	0.19		
28						0.04	0.21				0.02	0.25
29								0.11				
30	0.31				0.58		0.31		0.17		0.98	
31			0.17		0.08							0.75
TOTAL	1.91	1.57	1.59	1.87	4.17	2.03	5.72	2.61	2.53	3.77	3.05	2.81

YEAR END TOTAL: 33.63 INCHES

TABLE 2. MONTHLY PRECIPITATION, SAGINAW VALLEY RESEARCH FARM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1973	1.25	1.13	3.42	2.12	3.97	2.72	3.17	1.26	1.80	2.26	3.40	1.68	28.18
1974	2.99	2.08	3.35	2.11	3.30	2.83	2.50	1.75	2.59	1.72	2.14	1.37	28.73
1975	3.00	1.70	1.86	2.50	1.61	3.85	1.66	8.66	2.52	0.50	2.80	2.68	33.34
1976	1.45	2.37	5.51	4.56	4.16	5.38	1.83	1.22	1.56	2.56	0.82	0.50	31.92
1977	0.37	0.66	2.87	2.95	1.48	2.73	1.92	4.77	8.96	2.74	2.10	1.63	33.18
1978	2.26	0.34	1.27	1.43	2.18	2.03	2.27	1.71	4.52	1.13	1.77	2.08	22.99
1979	1.65	0.39	1.76	2.51	1.36	3.59	5.64	2.10	0.10	2.47	3.46	2.10	27.13
1980	1.00	0.71	1.84	3.91	2.60	4.04	5.90	2.11	4.61	3.26	0.94	2.44	33.36
1981	0.29	1.73	0.53	3.43	3.52	3.09	2.41	3.83	9.09	2.74	2.21	0.68	33.56
1982	2.37	0.46	2.26	1.27	3.32	3.09	2.65	2.55	3.02	0.76	4.01	3.26	29.02
1983	0.89	0.90	3.29	4.55	6.15	3.55	1.91	2.50	5.11	2.95	3.06	2.00	36.86
1984	0.56	0.73	3.18	3.20	3.66	3.94	2.42	3.75	3.29	3.05	2.67	2.18	32.63
1985	1.85	2.12	4.08	3.96	2.30	1.87	2.38	7.02	4.38	3.08	4.66	1.05	38.75
1986	1.34	2.24	1.62	1.87	3.10	3.48	1.38	2.76	18.05	2.64	0.75	1.38	40.61
1987	1.11	0.82	1.03	2.03	0.67	4.11	1.35	3.92	5.03	1.88	2.13	2.63	26.71
1988	1.04	1.01	1.70	3.26	0.56	0.59	3.45	3.52	2.46	3.25	4.36	1.08	26.28
1989	1.09	0.34	1.40	2.05	5.03	6.25	1.06	2.92	4.43	1.72	3.24	0.48	30.01
1990	1.23	1.21	1.17	1.54	2.81	2.07	2.53	6.94	3.74	5.87	4.51	1.45	35.12
1991	0.85	0.60	3.68	6.61	3.71	2.66	4.53	2.61	1.50	3.52	2.04	1.24	31.58
1992	1.2	1.65	1.31	4.56	1.10	2.10	4.33	2.92	4.08	2.54	4.50	2.10	32.39
1993	2.72	0.47	0.87	4.08	2.76	3.03	2.46	4.62	4.00	3.70	1.99	0.53	31.23
1994	0.55	0.66	0.91	3.58	2.04	6.99	2.57	4.44	2.19	2.24	4.40	1.03	31.60
1995	1.67	0.35	1.38	2.72	1.44	1.96	1.29	5.00	1.33	2.39	4.05	0.79	24.37
1996	0.83	0.94	0.49	3.18	5.47	5.65	2.32	1.53	3.52	3.31	1.37	2.21	30.82
1997	1.51	4.25	1.32	1.38	3.00	0.69	2.44	3.61	3.46	1.31	1.03	0.36	24.36
1998	2.66	2.05	3.17	2.14	1.87	1.56	1.02	2.01	1.41	3.18	1.79	1.32	24.18
1999	2.75	0.41	0.62	5.01	2.33	3.07	5.02	3.01	2.52	1.12	1.04	1.90	28.80
2000	0.57	1.35	0.89	2.94	5.34	2.65	3.03	3.69	3.27	0.90	2.07	1.57	28.27
2001	0.33	3.16	0.11	2.38	4.42	2.45	0.53	3.52	4.34	4.90	1.76	1.61	29.51
2002	1.02	1.49	2.47	3.49	4.46	3.15	3.00	4.50	0.50	1.87	1.19	0.97	28.11
2003	0.27	0.21	1.66	0.36	4.19	2.04	2.49	1.33	1.99	1.09	5.35	1.20	22.18
2004	1.09	0.55	2.50	1.31	7.34	2.70	2.01	2.32	0.66	2.41	3.44	1.51	27.84
2005	2.90	0.71	0.62	1.32	1.74	4.97	3.20	0.72	0.72	1.30	3.83	1.49	23.52
2006	1.91	1.57	1.59	1.87	4.17	2.03	5.72	2.61	2.53	3.77	3.05	2.81	33.63
AVG.	1.34	1.14	1.79	2.71	2.91	3.00	2.46	3.17	3.50	2.30	2.51	1.44	28.26

TABLE 3

MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH FARM - 2006

DAY	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	37	33	45	25	33	16	48	42	71	53	79	63
2	39	33	42	31	19	18	51	30	63	50	78	58
3	38	35	43	32	34	12	58	34	77	43	71	54
4	42	33	38	31	35	11	40	24	70	47	76	49
5	35	24	31	22	40	7	54	29	61	45	81	46
6	28	17	27	20	35	16	61	27	58	34	83	49
7	32	26	28	18	44	9	58	33	71	35	72	61
8	36	27	24	2	46	31	45	25	76	36	82	59
9	37	31	29	1	57	35	55	23	75	49	69	55
10	37	21	32	18	48	29	65	27	77	57	69	46
11	45	31	30	8	59	28	76	38	63	43	69	41
12	51	33	30	0	54	41	64	49	47	41	71	44
13	46	31	26	20	67	33	72	40	55	43	74	48
14	32	21	36	18	34	27	78	48	63	48	76	51
15	27	17	39	24	40	25	70	40	60	49	81	47
16	30	22	32	27	36	21	59	35	67	50	89	59
17	34	24	27	8	38	21	54	38	70	48	92	64
18	32	18	9	0	38	19	66	32	51	42	81	57
19	40	21	18	1	47	23	72	34	59	42	84	65
20	43	29	25	11	31	21	75	39	69	38	76	54
21	32	8	30	17	37	20	78	45	53	38	75	58
22	36	5	40	10	39	29	70	41	61	34	78	66
23	32	8	36	17	37	25	53	37	71	32	70	53
24	36	23	31	11	40	29	68	43	77	39	76	44
25	30	26	38	19	2	28	59	35	80	53	76	50
26	32	18	26	14	48	26	66	25	77	60	78	54
27	42	19	28	14	53	20	58	35	81	53	81	58
28	49	29	30	7	49	27	62	25	93	65	78	55
29	49	39			57	21	69	32	94	66	78	54
30	40	29			67	30	70	47	90	65	81	55
31	34	28			70	44			81	65		

TABLE 3

MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH FARM - 2006 cont.

DAY	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	88	49	92	77	69	52	65	35	39	25	34	27
2	84	67	91	75	72	54	69	41	36	26	33	28
3	84	62	77	62	74	53	76	51	38	25	31	19
4	80	61	84	56	78	50	69	43	46	20	24	17
5	73	50	82	54	77	49	54	37	55	31	28	11
6	77	49	81	56	73	50	58	32	62	28	35	24
7	82	49	83	65	81	51	57	30	49	40	25	15
8	83	52	78	57	84	56	73	34	50	45	29	16
9	86	65	80	51	62	53	60	41	65	40	36	22
10	74	57	80	62	64	44	58	46	46	28	45	31
11	79	56	72	52	61	50	60	41	39	33	49	38
12	79	64	78	44	66	61	41	29	38	27	48	39
13	89	58	79	46	65	60	40	32	38	28	49	30
14	83	59	81	59	72	52	48	36	39	35	50	30
15	90	66	79	55	75	47	54	29	45	29	45	30
16	89	66	80	48	75	47	54	31	41	31	48	25
17	89	65	79	53	83	52	55	47	40	33	50	37
18	80	60	81	64	73	58	62	51	42	33	37	24
19	82	57	80	63	61	47	56	41	37	29	41	19
20	83	64	78	52	62	39	46	38	38	24	42	26
21	74	57	79	45	67	35	50	40	43	23	41	35
22	79	60	81	54	63	46	50	35	50	22	52	37
23	78	53	79	48	73	57	43	33	54	21	44	35
24	84	56	74	59	60	44	44	30	57	23	44	31
25	80	64	77	60	67	38	45	36	58	29	39	26
26	76	67	81	59	67	37	51	27	57	41	36	30
27	82	66	76	61	68	46	44	38	57	41	38	25
28	85	66	72	57	56	39	42	36	63	42	40	31
29	89	67	76	63	57	31	49	33	61	53	37	34
30	84	65	69	53	56	42	68	27	56	29	43	32
31	92	68	72	50			61	28			47	35

TABLE 4. GROWING DEGREE DAYS - SAGINAW VALLEY RESEARCH FARM

Base 50 (max + min / 2 - 50)

	<u>APRIL</u>	<u>MAY</u>	<u>JUNE</u>	<u>JULY</u>	<u>AUG</u>	<u>SEPT</u>	<u>OCT</u>	<u>TOTAL</u>
1974	62.50	143.00	391.00	529.00	458.00	218.50		1802.00
1975	30.50	307.00	445.00	543.50	491.50	168.50		1986.00
1976	113.00	151.50	537.50	596.00	500.50	276.50	72.00	2247.00
1977	140.50	398.00	389.00	675.00	485.00	344.00	43.00	2474.50
1978	4.00	316.50	474.50	571.50	588.50	393.50	75.00	2423.50
1979	47.50	228.50	458.50	577.50	479.00	330.00	116.00	2237.00
1980	34.00	281.50	369.00	617.50	606.00	317.50	33.50	2259.00
1981	55.50	187.00	491.00	579.50	312.00	265.00	13.50	1903.50
1982	54.50	428.50	365.50	626.00	476.00	298.00	156.00	2404.50
1983	16.00	118.50	491.00	716.00	645.00	369.50	97.00	2453.00
1984	67.50	164.50	506.00	558.50	627.00	282.00	114.50	2320.00
1985	183.50	306.00	388.00	603.50	523.00	394.50	100.00	2498.50
1986	124.50	310.00	435.00	664.00	459.50	370.00	96.50	2459.50
1987	84.00	336.50	566.50	725.50	537.50	334.00	19.50	2603.50
1988	35.50	290.50	544.50	739.50	667.50	283.00	48.00	2608.50
1989	21.50	202.00	456.50	648.00	535.00	315.00	167.00	2345.00
1990	165.50	146.00	493.50	587.50	553.50	332.50	100.50	2379.00
1991	144.00	423.50	541.00	641.00	567.50	289.50	114.00	2720.50
1992	56.00	241.50	367.00	446.50	403.50	257.50	41.50	1813.50
1993	23.50	208.00	430.00	642.00	613.50	184.50	25.00	2126.50
1994	95.50	227.50	526.50	613.50	501.50	380.00	115.00	2459.50
1995	3.00	221.00	536.00	698.50	745.00	225.00	125.50	2554.00
1996	41.00	157.00	486.00	572.00	611.00	357.50	91.50	2316.00
1997	27.00	48.00	534.00	596.50	443.00	299.50	134.50	2082.50
1998	46.00	267.00	505.50	623.50	648.00	456.00	114.00	2660.00
1999	49.50	299.00	578.50	684.50	500.00	339.00	67.50	2518.00
2000	17.00	284.00	474.50	509.50	544.50	289.00	157.00	2275.50
2001	78.00	289.50	504.00	649.50	654.00	282.00	114.00	2571.00
2002	123.00	141.50	535.00	710.00	575.00	443.00	99.00	2626.50
2003	66.50	147.50	410.00	606.00	608.00	312.50	82.00	2232.50
2004	89.00	240.50	429.50	561.00	450.50	421.50	69.00	2261.00
2005	58.00	145.00	623.00	647.50	611.50	429.00	130.00	2644.00
2006	79.00	283.50	470.50	661.00	555.50	260.00	38.50	2348.00
AVERAGE	67.76	240.59	477.36	618.80	544.74	318.71	89.35	2357.32