

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 2005 season was the thirty-fifth season of research at the farm. This research report is primarily a compilation of research conducted at the research farm in 2005. Most of the work represents one years 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 2005 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 above average in June and July, which helped most crops grow well through a dry period in August, and matured well through a dry September and October. Rainfall was below average for the year.

Maximum and minimum daily temperatures are given in Table 3. Temperatures were above average during the 2005 growing season. There were 12 days above 90 degrees and 44 days above 85 degrees in 2005. The fall was dry with warm temperatures. Harvest and fall tillage finished earlier than normal this year, with little rainfall there were more work days available.

Growing degree-day accumulation for the six month summer period are given in Table 4. Total accumulation in 2005 was the second highest since 1974.

Table 1. Precipitation (inches) - Saginaw Valley Research Farm - 2005

Day:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1											0.83	
2												
3	0.38		0.33									
4							0.36	0.19				
5						1.85	0.06					0.41
6					0.15							
7	0.32										1.14	
8						0.96						
9						0.10					0.56	0.16
10						0.06		0.02				
11					0.09	0.12		0.01		0.01		
12					0.01			0.44				0.05
13					0.80	0.77					0.11	
14	1.93				0.23	0.15						
15					0.01	0.15	0.04				0.20	
16		0.06			0.01	0.04					0.59	0.38
17										0.03		
18							0.78					
19								0.02				
20	0.05			0.31		0.08	0.04	0.04				
21		0.55	0.29				0.19					
22				0.07	0.14		0.15					
23	0.22			0.19	0.29		0.85			0.04		
24				0.54						0.39		
25				0.06						0.29		
26				0.01			0.70					0.17
27				0.01			0.03		0.01	0.01		
28		0.10		0.13		0.65			0.59		0.40	
29					0.01				0.12			
30						0.04						
31										0.53		0.32
TOTAL	2.90	0.71	0.62	1.32	1.74	4.97	3.20	0.72	0.72	1.30	3.83	1.49

YEAR END TOTAL: 23.52 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
AVG.	1.38	1.17	1.84	2.79	3.00	3.10	2.53	3.27	3.60	2.37	2.59	1.48	29.12

Table 3 MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH FARM - 2005

DAY	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	32	23	33	5	29	16	56	33	54	29	80	45
2	48	29	33	11	19	10	45	35	48	36	81	52
3	34	30	37	5	29	0	58	33	43	30	74	61
4	31	26	41	20	35	-1	65	35	60	24	86	55
5	26	20	48	22	38	4	77	43	65	32	93	63
6	24	12	45	30	47	30	69	44	71	35	81	62
7	24	17	40	33	46	15	56	36	64	39	90	58
8	28	21	37	24	21	10	59	26	77	36	88	64
9	32	26	25	18	23	9	67	28	83	53	91	64
10	33	26	30	13	30	8	69	32	81	56	90	66
11	33	25	30	14	33	17	60	39	58	46	87	69
12	54	30	43	29	31	16	57	31	48	36	74	70
13	55	27	33	23	28	6	55	31	55	39	76	67
14	27	5	48	30	32	9	54	25	60	44	82	64
15	16	3	41	33	33	17	63	28	52	43	70	58
16	11	3	34	25	36	13	74	26	52	36	66	52
17	11	0	26	12	34	20	72	50	64	37	66	50
18	14	-6	20	11	32	25	79	43	71	45	67	56
19	29	13	31	16	34	28	84	46	61	51	74	47
20	15	8	28	19	36	31	68	40	70	45	79	50
21	14	-1	35	24	40	30	57	29	79	37	80	55
22	15	4	32	21	41	26	50	31	65	47	75	53
23	15	-4	29	0	32	25	44	31	56	48	84	48
24	28	5	30	16	42	20	35	30	62	46	93	66
25	30	23	31	21	35	24	59	34	73	40	88	67
26	29	0	27	0	42	18	53	40	73	42	87	63
27	25	-12	27	-1	48	22	49	37	71	42	94	63
28	22	-9	31	22	50	26	51	33	68	42	89	68
29	36	5			63	25	53	30	71	39	89	66
30	31	7			67	39	56	34	75	41	83	67
31	28	8			54	41			78	48		

MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH FARM - 2005 cont.

DAY	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	73	55	88	63	81	52	77	44	51	33	29	22
2	74	47	89	59	78	53	86	45	58	27	28	14
3	81	48	89	63	80	48	85	65	66	45	24	9
4	81	60	85	65	80	48	87	59	68	44	25	16
5	81	64	82	58	82	47	86	61	56	41	22	12
6	76	58	84	53	85	49	69	44	60	41	19	2
7	79	52	89	54	87	53	55	41	58	33	21	2
8	81	56	87	59	77	60	53	42	58	36	21	-5
9	86	52	90	63	80	49	59	35	60	41	29	17
10	89	52	84	67	87	49	61	37	43	27	26	14
11	90	58	76	61	89	53	54	45	56	25	29	14
12	86	67	82	61	90	56	52	54	66	34	21	1
13	87	68	78	64	91	58	57	54	58	41	24	13
14	82	63	78	59	78	57	70	46	45	27	28	20
15	91	61	81	53	74	49	61	45	59	38	33	26
16	83	69	83	59	67	56	60	40	59	27	30	23
17	88	66	83	55	77	49	57	29	29	20	25	22
18	89	70	82	58	80	44	64	41	32	19	23	13
19	83	62	80	67	79	49	58	34	52	31	22	11
20	87	55	81	60	79	54	56	28	45	35	25	5
21	87	66	77	56	88	51	56	33	41	32	25	8
22	84	62	68	52	70	58	52	31	33	22	36	21
23	84	55	73	51	69	48	50	38	33	21	38	33
24	90	67	78	45	71	46	49	39	33	11	3	30
25	89	69	78	49	80	60	47	40	28	15	34	32
26	82	63	84	59	70	50	45	32	30	18	34	32
27	75	56	82	56	71	41	47	28	44	25	33	31
28	76	50	83	52	76	45	52	28	60	44	35	32
29	73	52	86	51	60	42	59	24	54	31	34	31
30	80	48	80	53	69	39	62	28	32	23	33	29
31	83	54	81	57			59	49			35	30

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
1975	30.50	307.00	445.00	543.50	491.50	168.50		1986
1976	113.00	151.50	537.50	596.00	500.50	276.50	72.00	2247
1977	140.50	398.00	389.00	675.00	485.00	344.00	43.00	2474.5
1978	4.00	316.50	474.50	571.50	588.50	393.50	75.00	2423.5
1979	47.50	228.50	458.50	577.50	479.00	330.00	116.00	2237
1980	34.00	281.50	369.00	617.50	606.00	317.50	33.50	2259
1981	55.50	187.00	491.00	579.50	312.00	265.00	13.50	1903.5
1982	54.50	428.50	365.50	626.00	476.00	298.00	156.00	2404.5
1983	16.00	118.50	491.00	716.00	645.00	369.50	97.00	2453
1984	67.50	164.50	506.00	558.50	627.00	282.00	114.50	2320
1985	183.50	306.00	388.00	603.50	523.00	394.50	100.00	2498.5
1986	124.50	310.00	435.00	664.00	459.50	370.00	96.50	2459.5
1987	84.00	336.50	566.50	725.50	537.50	334.00	19.50	2603.5
1988	35.50	290.50	544.50	739.50	667.50	283.00	48.00	2608.5
1989	21.50	202.00	456.50	648.00	535.00	315.00	167.00	2345
1990	165.50	146.00	493.50	587.50	553.50	332.50	100.50	2379
1991	144.00	423.50	541.00	641.00	567.50	289.50	114.00	2720.5
1992	56.00	241.50	367.00	446.50	403.50	257.50	41.50	1813.5
1993	23.50	208.00	430.00	642.00	613.50	184.50	25.00	2126.5
1994	95.50	227.50	526.50	613.50	501.50	380.00	115.00	2459.5
1995	3.00	221.00	536.00	698.50	745.00	225.00	125.50	2554
1996	41.00	157.00	486.00	572.00	611.00	357.50	91.50	2316
1997	27.00	48.00	534.00	596.50	443.00	299.50	134.50	2082.5
1998	46.00	267.00	505.50	623.50	648.00	456.00	114.00	2660
1999	49.50	299.00	578.50	684.50	500.00	339.00	67.50	2518
2000	17.00	284.00	474.50	509.50	544.50	289.00	157.00	2275.5
2001	78.00	289.50	504.00	649.50	654.00	282.00	114.00	2571
2002	123.00	141.50	535.00	710.00	575.00	443.00	99.00	2626.5
2003	66.50	147.50	410.00	606.00	608.00	312.50	82.00	2232.5
2004	89.00	240.50	429.50	561.00	450.50	421.50	69.00	2261
2005	58.00	145.00	623.00	647.50	611.50	429.00	130.00	2644
AVERAGE	67.41	239.25	477.58	617.48	544.41	320.55	91.05	2358