

1990
CLIMATIC REPORT
CENTRAL AGRICULTURAL RESEARCH CENTER
MOCCASIN, MONTANA

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Table 1.. Summary of climatic data by months for the 1989-90 crop year (Sept. to Aug.) and averages for the period 1909-1990 at the Central Agricultural Research Center, Moccasin, Montana.

	Sept. 1989	Oct. 1989	Nov. 1989	Dec. 1989	Jan. 1990	Feb. 1990	Mar. 1990	April 1990	May 1990	June 1990	July 1990	Aug. 1990	Total or Average
Precipitation (inches)													
Current Year	1.01	0.96	0.96	1.16	0.30	0.07	1.11	1.16	3.31	0.90	1.16	2.21	14.31
Average 1909 to 1989-90	1.43	0.88	0.59	0.58	0.58	0.49	0.74	1.13	2.60	3.18	1.64	1.60	15.44
Mean Temperature (0°F)													
Current Year	54.7	43.0	35.9	23.8	27.8	26.4	33.9	41.3	48.2	59.2	65.5	66.8	43.9
Average 1909 to 1989-90	54.2	44.7	32.5	24.4	20.8	24.0	29.7	40.8	50.2	58.1	65.8	64.3	42.5
Last killing frost in Spring													
1990	-	-	-	-	-	-	-	-	-	-	-	-	-
Average 1909 - 1990	-	-	-	-	-	-	-	-	-	-	-	-	May 18 (30°F)
													May 26
First killing frost in Fall													
1990	-	-	-	-	-	-	-	-	-	-	-	-	-
Average 1909 - 1990	-	-	-	-	-	-	-	-	-	-	-	-	Oct. 2 (29°F)
													Sept. 17
Frost free period													
1990	-	-	-	-	-	-	-	-	-	-	-	-	-
Average 1909 - 1990	-	-	-	-	-	-	-	-	-	-	-	-	137 days
													114 days
Maximum summer temperature	-	-	-	-	-	-	-	-	-	-	-	-	99°F on August 6, 1990
Minimum winter temperature	-	-	-	-	-	-	-	-	-	-	-	-	-29°F on December 21, 1989

Table 2. Daily and monthly precipitation in inches at the Central Research Center, Moccasin, Montana. 1990.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1		T				.07	.05				.06		
2							.10	.01	T	.02			
3					.04	.02							
4				T		.01							
5			.06	.07							.05		
6			.29							.02			
7					.05								
8					T		.07						
9		.01		.01	.03								
10				.06				.01					
11				.02		T		.03					
12		.02	.01		T								
13		T	.06	.01	.05								
14			.49	.02	.01	T							
15				.03	.45	.54					.15		
16	.03			.07	.42					T			
17	.10		.06					.37		.06			
18		.02			.42	.11		.34				.18	
19								.15		T	T	.03	
20						.03		.56				.04	
21						.07		T			.04	.01	
22			.01	.01				.03					
23			.08				T						
24	.15		.05	.05	.03		.24	.37				.02	
25				.11	.95		.45	.19					
26	T	.02		T	.31		.14	.14			.12		
27				.05			.01	.01					
28				.27		.05					.02	.03	
29				.25	T								
30				.13	.55						.02	.01	
31	.02				T		.10						
Summary	0.30	0.07	1.11	1.16	3.31	0.90	1.16	2.21	T	0.10	0.46	0.32	11.10

Table 3. Summary of precipitation and snowfall at the Central Research Center. Moccasin, Montana. 1990

Month	Precipitation-Inches		Winter Snowfall-Inches*		Yearly Snowfall-Inches		Snow** Depth Inches
	1990	82 Yr. Ave.	1990	29 Yr. Ave.	1989-90	28 Yr. Ave.	
January	0.30	0.58	5.0	13.1	22.0	13.4	12.0
February	0.07	0.49	1.5	7.4	13.5	7.6	8.0
March	1.11	0.74	16.5	11.4	19.0	11.2	14.0
April	1.16	1.13	9.0	8.3	17.0	8.2	8.0
May	3.31	2.60	0	1.8	3.0	1.9	3.0
June	0.90	3.18					0
July	1.16	1.64					0
August	2.21	1.60					0
September	T	1.41					0
October	0.10	0.87	1.5	5.4	1.5	5.5	1.5
November	0.46	0.58	4.0	7.4	4.0	7.5	1.5
December	0.32	0.58	5.0	11.3	5.0	11.6	2.5

* Winter Snowfall - Sept. thru May

** Highest snow depth during month on ground.

Table 5. Summary of soil temperature at three soil depths under bare ground and sod. Central Research Center - Moccasin, Montana. 1990.

Month	4 inch Soil Depth Bare Ground		8 inch Soil Depth Bare Ground		20 inch Soil Depth Bare Ground		4 inch Soil Depth Under Sod	
	1990	25 Yr.	1990	25 Yr.	1990	15 Yr.	1990	25 Yr.
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
January	33.1	31.0	33.5	30.9	35.3	33.9	33.5	32.2
February	31.7	32.0	30.9	31.3	33.0	32.6	31.3	31.7
March	37.9	36.6	35.2	35.1	33.3	34.3	39.2	37.3
April	48.4	45.8	45.6	43.6	41.9	40.5	48.6	47.2
May	56.0	56.1	52.8	53.8	47.6	48.5	55.2	57.5
June	68.1	66.4	64.5	63.6	55.6	56.1	65.8	66.8
July	77.6	74.2	73.0	71.5	63.2	62.4	73.4	73.7
August	75.9	70.9	72.0	70.1	64.5	63.3	72.5	72.4
September	70.2	61.0	67.2	59.7	62.0	58.1	67.0	61.7
October	50.3	48.5	49.6	48.0	52.3	49.9	50.2	50.0
November	39.7	38.0	40.5	38.4	45.7	42.9	41.7	40.9
December	27.4	33.6	28.7	33.7	37.3	37.3	28.5	35.1

Low and high soil temperature during winter (1989-90) and summer 1990

4 inch bare:	Low 25° F February 12	High 103° F on August 15
8 inch bare:	Low 28° F February 28	High 88° F on August 6, 7 and 8
20 inch bare:	Low 31° F March 5,7,8,12, 15, 16 & 22	High 67° F on August 8, 15, 16 & 17
4 inch sod:	Low 16° F February 5	High 85° F on August 7

Dates when soil first froze (32°F) and dates when last thawed (33°F) winter 1989-90

4 inch bare:	Froze February 4	Thawed: March 4
8 inch bare:	Froze February 3	Thawed: March 12
20 inch bare:	Froze February 20	Thawed: March 31
4 inch sod :	Froze January 1	Thawed: March 8

Table 6. Inches of evaporation from a free water surface.
Central Research Center - Moccasin, Montana. 1990

Month	Water Evap. - Inches		Precipitation - Inches	
	1990	1909-90	1990	1909-90
April	2.97	4.13	1.16	1.13
May	5.77	5.85	3.31	2.60
June	8.55	6.65	0.90	3.18
July	10.55	8.88	1.16	1.64
August	9.33	8.39	2.21	1.60
September	8.83	5.51	T	1.41
Total	46.00	39.41	8.74	11.56
Mean	7.67	6.56		

Ratio of Precipitation to Evaporation

1990: 1 inch precipitation to 5.26 evaporation

1909-1990: 3.41 inches

Highest daily evaporation in 1990: 0.63 on August 5, 1990.