

Although most yields were obtained in the best possible way, chances for yield differences still exist, due to variations in irrigation, rainfall, land uniformity, and other factors. For this reason, the results of these field trials should not be interpreted too closely. Small differences in yield or other data should probably be regarded as insignificant. Occasionally, results occur in demonstrations that cannot be readily explained. Keep in mind that, even in replicated research tests, relatively large yield differences between varieties can occur without being statistically significant.

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas Cooperative Extension is implied. Readers should realize that results from one experiment, or one year, do not represent conclusive evidence that the same response would occur where conditions vary.

## **WEATHER INFORMATION**

The 2003 crop year for Dawson County was much better than the past few years. Even though we were plagued with early and late hailstorms, and summer drought conditions, cotton crop turned out much better than expected. We harvested 234,000 acres which should produce 195,000 to 200,000 bales. The years total rain fall was 11.12 inches, with 9.53 inches from May thru October. Heat units for the growing season were below the 70 year long term accumulation by 24 heat units (May - October).

Irrigated crops were above average for most producers, most experienced higher yields than expected due to late rainfall and a late freeze.

The harvest went well due to dry weather.

As always we were glad 2003 crop year was over, and hopefully the 2004 will bring even higher yields and prices.

### **Climate of Lamesa, Texas and Dawson County**

Lamesa is located on the high, level South Plains region of Northwest Texas, at an elevation of 2965 feet. It is near the center of Dawson County, and about eleven miles west of the Caprock Escarpment. Sulfur Springs Draw is oriented northwest to southeast across Dawson County, and runs through Lamesa. Fertile loam to sandy loam soils cover most of the Plains area of the county with some sandy lands in the western part. Lamesa is the center of a rich crop-livestock area.

The climate of Lamesa is semi-arid. It is characterized by extreme variability both in rainfall amounts and temperatures. Sunshine is abundant, with the infrequent cloudy weather occurring mostly during the winter and early spring months.

The average rainfall is 17.62 inches, but this value may be misleading because of the large differences from one year to the next. Extremely dry years were 1934, 1946, 1951, 1952, 1953, 1965 and 1998 (10.12), with less than 10 inches. Only 7.06 inches fell in 1956. The wettest year on record was 1941 with 39.07 inches (233% of normal). More than 27 inches fell in 1932, 1935, and 1986. Seventy-five percent of the average annual rainfall occurs during the warmer half of the year, May through October. Most of this warm season rainfall is the result of thunderstorm activity, which helps to account for the extreme variability in amounts from year to year, and from one location to another.

Snow falls occasionally during the winter months, but is generally light, and remains on the ground only a short time. Infrequently, deep low pressure centers will develop over the South Plains during late January or February that will produce heavy snows in the region, but these excessive amounts are rare.

Temperatures, like rainfall, vary over a wide range. Winters are characterized by frequent cold periods followed by rapid warming. This produces frequent and pronounced temperature changes. Summers are hot and usually dry except for small thundershowers. Low humidity and adequate wind circulation, resulting in rapid evaporation help to moderate the effect of the heat. Evaporative coolers are quite efficient in the area.

The prevailing wind is from the south from about May through October, and from the southwest, November through April. The strongest winds occur during the severe thunderstorms of late spring and early summer, but these are gusts or squalls of short duration. The strongest continuous winds occur during March and April as a result of intense low pressure centers that originate on the High Plains region just to the east of the Rocky Mountains. These winds often produce severe dust storms in the region during drought years.

Humidity is rather low, with the highest values occurring during the early morning hours, and the lowest during the afternoons. Early morning values may be expected to average about 75 percent, while afternoon values will average between 40 and 45 percent. As would be expected, evaporation is high in this semi-arid region. Average annual lake evaporation is estimated at 72 inches per year.

Hail may accompany thunderstorms anytime they occur; however, the most damaging hailstorms are usually associated with the severe thunderstorms of the late spring or early summer.

The growing season is short when compared to Central or South Texas, but sufficiently long for cotton. The average freeze free period [the number of days between the last occurrence of 32 degrees F in the spring April 2<sup>nd</sup> and the first occurrence of 32 degrees in the fall Nov 4<sup>th</sup> is approximately 216 days.

## Lamesa's Freeze Dates for the Past 55 Years

YEAR	LAST FREEZE IN SPRING	FIRST FREEZE IN THE FALL	LENGTH OF GROWING SEASON
1949	April 5	October 31	209 days
1950	April 6	November 4	212 days
1951	April 14	November 2	202 days
1952	April 11	November 10	213 days
1953	Missing	November 9	
1954	April 2	October 31	212 days
1955	March 29	October 25	210 days
1956	April 11	November 5	208 days
1957	April 14	October 27	196 days
1958	March 20	November 1	226 days
1959	April 15	October 28	196 days
1960	April 4	October 31	210 days
1961	April 17	November 3	200 days
1962	April 2	Missing	
1963	March 20	November 23	248 days
1964	April 10	November 20	224 days
1965	March 27	November 27	245 days
1966	March 25	November 2	222 days
1967	March 16	November 4	243 days
1968	April 4	November 11	221 days
1969	March 27	October 31	200 days
1970	April 3	October 10	190 days
1971	April 7	November 18	225 days
1972	March 31	October 31	214 days
1973	April 11	November 22	225 days
1974	April 5	November 25	234 days
1975	April 4	November 13	223 days
1976	March 31	October 9	192 days
1977	April 5	November 2	211 days
1978	April 11	November 7	210 days
1979	April 4	November 1	211 days
1980	April 14	October 29	198 days
1981	March 23	November 10	233 days
1982	March 8	November 4	242 days
1983	April 8	November 28	234 days
1984	April 5	November 27	235 days
1985	March 5	November 20	258 days
1986	March 22	November 11	222 days
1987	April 3	November 10	221 days
1988	March 20	November 16	241 days
1989	April 11	October 19	192 days
1990	March 26	October 22	211 days
1991	April 1	October 30	213 days
1992	April 4	October 8	188 days
1993	April 9	October 30	204 days
1994	April 12	November 16	218 days
1995	April 24	November 3	192 days
1996	April 6	October 22	199 days
1997	April 15	October 27	197 days
1998	March 21	November 11	236 days
1999	April 17	November 3	201 days
2000	April 5	November 7	207 days
2001	March 28	October 16	202 days
2002	March 27	November 19	241 days
2003	April 10	November 19	222 days
AVERAGE	April 2	November 4	216 days

## Cotton Crop Heat Unit Calendar for Dawson County - 2003

### Comparison of the Long Term Average Heat Unit Accumulation with the 2003 Monthly Heat Unit (DD60) Accumulations at Lamesa, Texas

Time Period	May	June	July	August	Sept.	Oct.
1932-03 Long Term Average/Month	334	550	637	602	381	93 <sup>A/</sup>
1932-03 Long Term Accumulation	334	884	1,521	2,123	2,504	2,597
1932-85 Long Term Average/Month	327	558	642	611	390	84
1932-85 Long Term Accumulation	327	885	1,527	2,138	2,528	2,612
1986-03 Long Term Average/Month	360	529	637	581	360	130 <sup>B/</sup>
1986-03 Long Term Accumulation	360	889	1,526	2,107	2,467	2,597 <sup>B/</sup>
2003 Average/Month	369	446	633	644	306	175
2003 Month Accumulation	369	815	1,448	2,092	2,398	2,573
2003 from May 10	255	701	1,334	1,978	2,284	2,459
2003 From June 1		446	1,079	1,723	2,029	2,204

<sup>A/</sup> 70 Year Average

<sup>B/</sup> 16 Year Average

Prepared by Casey Barrett, CEA-AG

### Cotton Heat Unit Requirement

Growth Stage	Accumulated (Test Unit)	Growth Stage	Accumulated (Test Unit)
Planting	0	First Mature Boll	1800
Emergence	75	First Open Boll	1900
First Square	450	5 Percent Mature Bolls	1975
First Bloom	900	95 Percent Mature Bolls	2270

### 2003 Weather Data\*

#### Average Temperature by Months 1999 through 2003

Temp	1999	2000	2001	2002	2003	Temp	1999	2000	2001	2002	2003
<b>Jan.</b>	43.85	44.73	38.61	42.31	41.98	<b>July</b>	76.67	81.44	83.82	78.6	80.4
<b>Feb.</b>	48.40	47.48	40.68	37.98	37.98	<b>Aug.</b>	81.40	79.95	79.92	81.1	80.77
<b>Mar.</b>	52.30	55.21	47.66	48.92	53.35	<b>Sept.</b>	71.85	71.74	70.74	70.52	67.85
<b>Apr.</b>	60.65	60.77	61.5	60.77	60.90	<b>Oct.</b>	61.35	61.4	62.24	60.24	65.13
<b>May</b>	68.55	75.0	72.1	69.21	71.52	<b>Nov.</b>	54.45	42.0	50.52	46.39	49.53
<b>June</b>	75.30	73.37	78.4	75.97	72.45	<b>Dec.</b>	41.90	37.7	42.81	41.34	41.63

2003 Monthly Average Temperature - 60.29

\*From Lamesa Reporting Station

**Peanut Crop Heat Unit Calendar for Dawson County - 2003**  
**Comparison for the Long Term Average Heat Unit Accumulation**  
**with the 2003 Monthly Heat Unit Accumulations at Lamesa, Texas**

TIME PERIOD	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1993-03 Long Term Avg/month	227	521	670	767	727	510	239
1993-03 Long Term Accumulation	227	748	1,418	2,185	2,912	3,422	3,661
2003 Average/Month	257	507	592	760	759	454	314
2003 Month Accumulation	257	764	1,356	2,116	2,875	3,329	3,643

<sup>A/</sup> 11 Year Average (DD-55, Max 95°F)

Prepared by Casey Barrett, CEA-AG

**Irrigation Schedule for Peanuts Dawson County**

	IRRIGATION AND/OR RAIN AMOUNT	
	BEFORE PLANTING	WATER SO SOIL MOISTURE ROD WILL REACH MINIMUM OF 3 FT DEPTH RANDOMLY THROUGHOUT FIELD.
	PLANTING TO 25 DAYS AFTER	FOR EMERGENCE ONLY-SHOULD REQUIRE LESS THAN 1" /WEEK
IRRIGATION CAPACITY IS LESS THAN 1"/WEEK	DAY 25 AFTER EMERGENCE	START CONTINUOUS IRRIGATION
IRRIGATION CAPACITY IS 1-1.5" /WEEK	DAY 30 AFTER EMERGENCE	START CONTINUOUS IRRIGATION
IRRIGATION CAPACITY IS GREATER THAN 1.5"/WEEK	DAY 35 AFTER EMERGENCE	START CONTINUOUS IRRIGATION

**NOTE:**

FROM FRUIT INITIATION UNTIL MAXIMUM SOIL TEMPERATURE IN THE POD ZONE DROPS TO 80 F - IRRIGATE 1.5 TO 2.5"/WEEK

AFTER MAXIMUM SOIL TEMPERATURE DROPS BELOW 80 F - REDUCE IRRIGATION TO INCREASE MATURATION.

MATURATION PERIOD	110 TO 150 DAYS	IRRIGATE 1"/WEEK
PEANUT GROWTH AND DEVELOPMENT		

**PLANTING**

EMERGENCE (7 TO 21 DAYS)

BLOOM (45 DAYS AFTER EMERGENCE)

PEGS (PENETRATE SOIL 10 TO 14 DAYS AFTER BLOOM)

PODS (START 3 TO 4 DAYS AFTER PEGS HIT THE GROUND)

RUNNERS 155 DAYS AFTER

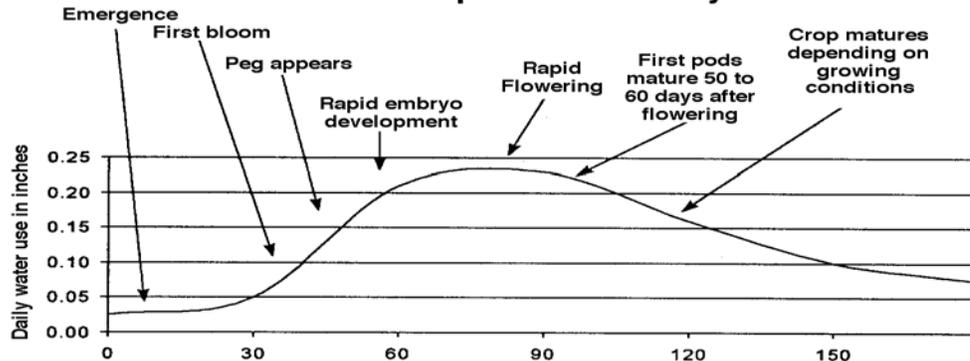
EMERGENCE

VIRGINIA 145 DAYS

SPANISH 140 DAYS

VALENCIA 140 DAYS

**Peanut Plant Development and Daily Water Use**



### Dawson County 72-Year Rainfall Record\* 1932-2003

YEAR	ANNUAL	YEAR	ANNUAL	YEAR	ANNUAL	YEAR	ANNUAL						
1932	33.36	1939	13.73	1946	9.93	1953	8.08						
1933	12.28	1940	12.46	1947	13.48	1954	14.32						
1934	8.91	1941	39.07	1948	12.5	1955	18.98						
1935	27.62	1942	19.83	1949	18.9	1956	7.06						
1936	19.66	1943	13.42	1950	17.8	1957	20.86						
1937	19.7	1944	21.12	1951	9.80								
1938	15.81	1945	18.24	1952	9.63								
YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1958	1.20	.35	2.14	1.17	2.21	.98	1.65	1.87	2.64	2.22	.80	T	17.23
1959	.05	.17	.36	.42	3.80	2.00	3.27	1.65	1.53	4.12	.78	1.31	19.36
1960	1.00	.76	.15	.30	1.20	.15	3.91	.64	.30	4.44	0	1.48	14.33
1961	1.61	.40	1.30	0	.64	2.58	3.79	.65	1.25	.47	.87	.26	13.82
1962	T	0	.05	1.46	.21	2.40	1.58	.60	4.86	1.69	.24	.59	13.64
1963	.02	.21	0	.39	5.22	4.41	1.21	.69	4.31	2.98	.74	.46	29.64
1964	.80	.31	.46	0	1.90	1.67	.29	.99	2.58	.81	.30	.23	10.34
1965	.26	T	.06	1.30	1.82	1.77	.35	1.26	.55	0	0	.21	7.58
1966	.60	.10	.75	2.55	1.07	2.59	.83	4.21	3.67	0	0	.03	16.40
1967	0	.02	1.26	.25	.01	5.69	3.09	0	1.09	.53	.77	.75	13.46
1968	1.68	1.20	3.39	1.54	1.02	2.04	1.28	2.99	.52	.16	2.67	.28	18.77
1969	.27	.98	1.74	1.82	7.65	2.50	2.22	.47	5.66	3.95	1.34	.20	28.80
1970	T	.07	3.12	.20	1.52	1.95	.22	.26	3.08	2.54	0	.15	13.11
1971	0	0	0	1.01	2.02	2.45	2.41	4.80	4.20	.79	.06	.23	17.97
1972	.25	0	.15	.10	2.67	.90	4.96	6.06	1.18	3.47	.57	0	20.31
1973	2.55	1.11	1.64	.70	1.46	1.51	4.40	1.01	2.06	1.25	.02	0	17.71
1974	.08	.02	.54	.72	.50	.11	.35	3.18	6.83	5.73	.52	.17	18.75
1975	.50	2.32	0	.41	3.22	4.49	4.67	.80	4.17	.10	1.10	.38	22.16
1976	T	.03	.06	4.24	1.47	1.31	7.92	.92	4.80	2.45	.55	.48	24.23
1977	.94	.25	.84	1.27	1.45	4.09	.65	2.34	.03	.74	T	.03	12.63
1978	.42	.59	.75	.54	4.10	2.93	.13	1.03	5.81	1.78	1.32	.03	19.43
1979	.72	.37	.69	.30	1.35	5.32	3.63	2.77	0	T	.45	2.25	17.85
1980	.61	.18	.01	.82	3.33	1.68	.09	2.10	9.00	.02	1.15	1.16	20.15
1981	.27	1.65	.34	2.29	1.24	2.48	1.66	4.12	4.33	4.36	.13	.36	23.23
1982	.68	.38	1.03	.85	2.98	4.17	1.46	.09	.99	.60	1.01	1.68	15.92
1983	2.43	.08	.49	1.14	.55	.04	0	.42	.38	5.83	1.74	.51	13.60
1984	.24	T	.05	T	1.05	5.30	4.65	5.24	1.38	4.35	2.50	1.61	26.37
1985	.34	.44	1.14	2.32	4.28	3.56	1.12	.14	2.37	7.89	.4	.05	23.79
1986	T	.29	.33	.46	2.60	6.69	1.38	1.70	7.11	2.38	1.99	5.53	27.46
1987	.20	2.51	.20	.13	8.53	3.00	1.08	2.35	5.18	.17	.08	.29	23.72
1988	.12	1.02	.85	1.36	2.87	1.95	6.55	1.33	6.76	0	.01	.32	23.14
1989	.43	1.09	.12	.49	2.05	3.26	.79	1.34	4.57	.10	T	.27	14.51
1990	.23	2.22	2.06	2.18	.56	2.00	1.58	3.80	4.67	1.31	1.48	.75	22.84
1991	1.75	.24	1.18	0	1.36	1.41	4.97	2.57	5.87	.67	2.62	4.34	26.98
1992	1.67	2.41	1.55	.71	6.17	5.60	1.59	2.64	2.28	T	2.02	.26	26.90
1993	1.09	2.49	.91	1.46	4.39	1.54	1.30	2.05	.74	1.15	1.10	.68	18.90
1994	.33	.15	.02	.73	3.20	.75	1.73	0	6.81	.85	1.14	.43	15.42
1995	.64	.47	.07	.98	3.92	3.21	.27	1.71	5.09	.75	.16	.01	17.28
1996	.15	0	.05	.56	.16	1.81	1.25	2.76	1.88	.41	1.0	.01	10.04
1997	.03	1.87	0	1.41	1.38	3.12	2.33	2.50	2.33	.93	.28	2.36	18.54
1998	.28	.91	1.98	.007	.31	1.84	.56	1.47	.64	.79	.89	.44	10.12
1999	.43	0	2.24	.37	2.79	5.46	1.33	1.15	.27	.21	0	.07	14.30
2000	.23	.15	1.34	.13	.73	5.02	.08	.12	0	5.39	1.73	.62	15.54
2001	1.06	.5	1.46	.08	1.95	1.17	0	.84	1.61	.24	1.25	.03	10.19
2002	.75	.96	3.29	.98	.65	1.01	2.59	.24	.71	4.41	.40	1.57	17.56
2003	0	.43	.64	.16	2.79	4.78	.02	.50	.98	.46	.36	0	11.12
AVERAGE	.64	.68	.89	.90	2.31	2.71	1.98	1.75	2.98	1.90	.83	.73	17.62

\*From: Lamesa Reporting Station.