Farming and Ranching Risk as Influenced by RAINFALL

KEY TO LOCATIONS ON MAP

1. Alice  16. Hondo
2. Austwell  17. Kingsville
3. Beeville  18. Laredo
5. Brownsville  20. Pearsall
6. Carrizo Springs  21. Port Isabel
7. Corpus Christi  22. Raymondville
8. Cotulla  23. Ricardo
11. Edinburg  26. San Benito
12. Fabens  27. Sarita
13. Falfurrias  28. Three Rivers
14. George West  29. Uvalde
15. Harlingen  30. Whitsett

TEXAS AGRICULTURAL EXPERIMENT STATION
R. D. LEWIS, DIRECTOR, COLLEGE STATION, TEXAS
# Contents

Introduction .............................................................................................................. 3

Rainfall Related to Risk

Length of Records ................................................................................................. 3

Annual Rainfall Reliability ..................................................................................... 3

Extremes in Annual Rainfall ................................................................................... 3

Drought Periods ....................................................................................................... 3

Cyclic Rainfall Patterns .......................................................................................... 4

Seasonal Distribution .............................................................................................. 4

Rainfall Intensity ...................................................................................................... 4

Range Vegetation Changes as Influenced by Rainfall ........................................... 4

Management Precautions

Farming ..................................................................................................................... 4

Ranching ................................................................................................................... 4

Acknowledgments ................................................................................................... 5

Weather Stations Analyzed

Alice ............................................................................................................................. 6

Austwell .................................................................................................................... 7

Beeville ..................................................................................................................... 8

Brackettville ........................................................................................................... 9

Brownsville ............................................................................................................ 10

Carrizo Springs ..................................................................................................... 11

Corpus Christi ......................................................................................................... 12

Cotulla ..................................................................................................................... 13

Dilley ....................................................................................................................... 14

Eagle Pass ............................................................................................................... 15

Encinal ..................................................................................................................... 16

Falfurrias ............................................................................................................... 17

Floresville ............................................................................................................... 18

George West .......................................................................................................... 19

Hebbronville .......................................................................................................... 20

Hondo ..................................................................................................................... 21

Kingsville ............................................................................................................... 22

Laredo ..................................................................................................................... 23

Mission ................................................................................................................... 24

Pearsall .................................................................................................................... 25

Port Isabel .............................................................................................................. 26

Raymondville ........................................................................................................ 27

Ricardo ................................................................................................................... 28

Rio Grande City .................................................................................................... 29

Sabinal ..................................................................................................................... 30

San Benito ............................................................................................................. 31

Sarita ....................................................................................................................... 32

Three Rivers ......................................................................................................... 33

Uvalde ..................................................................................................................... 34

Whitsett ................................................................................................................... 35
Farming and Ranching Risk  

as Influenced by **RAINFALL**

**III. RIO GRANDE PLAIN OF TEXAS**

WILLIAM J. WALDRIP  
Assistant Professor, Department of Range and Forestry

Rainfall is one of the most important factors affecting production on farms and ranches in South Texas. Since precipitation and, in turn, production fluctuate so from year to year, it is important that as much as possible be learned about these rainfall conditions in order to manage for them.

By studying the records of past weather variations in their immediate vicinity, farmers and ranchers may be able to predict better the probability of future drouths and their severity, as well as the possibility of good years. A better understanding of the constantly fluctuating conditions should make them easier to cope with through adjustments in farm or ranch operations.

Operators also should attempt constantly to make better use of the rain that falls. Runoff water is of no use to growing plants and may constitute a flood hazard on low-lying, downstream areas. The land should be maintained in a satisfactory condition to encourage maximum infiltration of rainfall and to reduce runoff to a minimum. Some guides for this purpose are included on the following pages.

This publication gives information and analyses of past rainfall records for 30 locations on the Rio Grande Plain. Annual and average monthly rainfall charts are presented to help appraise the risks associated with rainfall in the area. Some interpretations and predictions have been made to aid in understanding these charts. The individual can make a more complete analysis.

This publication is the third of a planned series on rainfall analyses for several areas of Texas. The first, for the High and Rolling Plains (MP-154), and the second, for the Edwards Plateau and Trans-Pecos (MP-216), may be obtained from the Agricultural Information Center, College Station, Texas.

**RAINFALL RELATED TO RISK**

Length of Records

Official rainfall records for the stations used vary from 28 to 86 years. Records go back to 1671 at five stations and to 1850 at Uvalde. Port Isabel has the shortest record examined, 28 years. This variation in length of records should be considered in making comparisons from station to station. Possibly none of the stations has records sufficient to indicate long-time trends. Records for all years were not available in certain instances.

Since the occurrence of snow is rare on the Rio Grande Plain, total precipitation refers largely to rainfall.

**Annual Rainfall Reliability**

Although "normal" or average rainfall seldom occurs, reliability in this area seems to increase from west to east and, in most instances, from south to north. Most of the stations had more years below average than above. However, a few of the stations had more years above than below average. Cotulla had the most years below average, 60 percent, and Raymondville the fewest, 47 percent.

**Extremes in Annual Rainfall**

Total precipitation also increases from west to east and, in most cases, from south to north. Lowest rainfall totals were recorded at Cotulla (3.82 inches in 1917) and Laredo (4.31 inches in 1901 and 4.66 inches in 1917). The year with the lowest total precipitation at most stations was 1917, and was an extremely dry year throughout the area. However, some stations recorded the lowest annual precipitation during one of the past 6 years. Highest rainfall year for most locations was 1919. Other periods with high totals were 1941, 1922-23, and 1935-36.

**Drought Periods**

Prolonged drouths occurred two or more times in this region since records have been kept. The longest periods of below normal rainfall occurred at most stations between 1950 and 1956. However, Brownsville experienced an 11-year period from 1892 through 1902 when annual rainfall was never greater than 78 percent of normal and averaged only 66 percent of normal. Other extremely dry periods on the Rio Grande Plain occurred generally during 1916-17 and 1938-39.
Rainfall for the entire area was less than 75 percent of average during 1950-56.

**Cyclic Rainfall Patterns**

The annual rainfall figures were analyzed statistically by a simple test to determine if cycles were present. No significant results were obtained and it appears that weather cycles cannot be predicted for the area.

**Seasonal Distribution**

Annual rainfall distribution patterns are shown by the average monthly precipitation charts. Average monthly rainfall is lowest during January and February, then it increases to a peak in May or June. After a midsummer depression, another peak is reached in September. The midsummer depression coincides with the period of highest temperatures which cause heavy moisture evaporation losses from the soil at a time when plants require large amounts of water. By retaining as much of the spring rainfall as possible in the soil, the farmer and ranchman can minimize the effects of the annual summer drouths.

**Rainfall Intensity**

Annual and monthly rainfall averages are misleading because of differences in rainfall intensity. Heavy rains of short duration may do little to relieve severe drouth conditions because of high runoff and low penetration into the soil. Also, extremely light rains may not be effective for plant growth because of high evaporation. On the Rio Grande Plain, rainfall varies widely both in amount and intensity, and average or normal precipitation rarely occurs.

**Range Vegetation Changes as Influenced by Rainfall**

Although drouth brings about a marked temporary decrease in forage production, long time reductions and changes in vegetative composition are caused by a combination of drouth and misuse. Studies in Brooks county (6) show that grasses which come into a pasture or increase with over-use are much shorter-lived and more susceptible to drouth damage than the desirable, deep-rooted grasses which they replace. Management practices which help to keep these desirable grasses will do much to reduce the risks associated with rainfall variations.

**MANAGEMENT PRECAUTIONS**

Some general management practices have been developed which may help farmers and ranchmen meet the risks and adversities of fluctuating rainfall conditions. The following precautions for farming are the same as those suggested by Thomas and Hildreth (5) for the Edwards Plateau and Trans-Pecos of Texas.

**Farming**

1. Plan ahead for several years rather from year to year. Expect that 47 to 60 per cent of the years will have below average rainfall plan for a series of bad years by accumulating cash and feed reserves in good years.

2. Use moderation in levels of living during good years.

3. It is good practice to carry adequate insurance for protection against losses and to strengthen credit standing.

4. Plant drought-resistant varieties of crops and forage.

5. Use tillage practices which reduce erosion, conserve moisture and prevent wind and water erosion.

6. Diversify the farming system.

7. Maintain a flexible system in terms of cost, time of planting and enterprises. Be able to shift direction without extreme sacrifice of profit.

8. Develop an irrigation system, where practical, for part or all of the farm.

**Ranching**

1. Balance livestock numbers with available forage. Adjust livestock numbers before over-use becomes a factor, and before the market is affected by surplus animals. Use not more than half the current year's production of forage.

2. Cull severely when rainfall is below normal, and sell all replacement stock that will add to the quality of the herd.

3. Keep the operation flexible by maintaining the number of animals in the breeding herd below the average carrying capacity. Make the difference during above-normal years by holding over calves and yearlings or by buying and selling.

4. Save or purchase supplemental feed produced during good years for use during drouth years.

5. Use temporary pastures, if available, to give ranges a rest and to supplement the livestocks diet.

6. Practice deferred or deferred-rotational grazing to maintain or improve range conditions.

7. Encourage proper livestock distribution and more even forage utilization by placing hay or salt-meal mixes in lightly grazed areas, by increasing the number and distribution of water facilities or by fencing.

8. Remove undesirable brushy species with mechanical or chemical treatments.

9. Reseed severely depleted areas to drought-resistant grasses.
10. Watch for livestock losses from poisonous plants. Highest losses occur when desirable forage is scarce.

ACKNOWLEDGMENTS

Data used in this publication came from records of the Weather Bureau, U. S. Department of Commerce, and the Texas Agricultural Experiment Station.

The author acknowledges the aid of R. D. W. Blood, state climatologist, U. S. Department of Commerce; and R. J. Hildreth, associate professor, Department of Agricultural Economics and Sociology, and G. W. Thomas, research coordinator for West Texas, Texas Agricultural Experiment Station.

The following publications were of considerable value in this study and are recommended for further reading:


*Range Management versus Drouth*, Department of Range and Forestry Staff, Extension Circular 320.


Alice has 43 years of rainfall records. The highest annual rainfall (51.1 inches) occurred in 1919 and the lowest (7.8 inches) in 1917. The average was 25.3 inches. Fifty-six percent of the years were below average. Half of the years were above 24.1 inches and half below. Past data indicate that 25 percent of the years will be below 19.7 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 28 percent of the time; 20 to 30 inches, 49 percent of the time; 30 to 40 inches, 12 percent of the time; 40 to 50 inches, 7 percent of the time; and over 50 inches, 2 percent of the time.

The greatest number of consecutive below-average years on record were 1924-27, and 7 of the 8 years during 1920-27 were below average. Since 1950, rainfall has average 21.4 inches, or 85 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.9 inches) occurs in September and the lowest (1.2 inches) in February.
AUSTWELL

AUSTWELL

Austwell has 44 years of rainfall records. The highest annual rainfall (52.6 inches) occurred in 1914 and the lowest (14.3 inches) in 1917. The average was 33.1 inches. Fifty-two percent of the years were below average. Half of the years were above 32.4 inches and half below. Past data indicate that 25 percent of the years will be below 25.8 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 14 percent of the time; 20 to 30 inches, 25 percent of the time; 30 to 40 inches, 34 percent of the time; 40 to 50 inches, 23 percent of the time; and over 50 inches, 4 percent of the time.

The recent drought was the most severe on record with 4 consecutive below-average years (1953-56). Annual precipitation during 1950-56 averaged 25.2 inches, or 76 percent of normal.

The seasonal distribution does not follow the usual pattern. Major peaks occur in May and September, but minor peaks occur in July and December. The highest average monthly rainfall (45 inches) occurs in September and the lowest (18 inches) in February.
BEEVILLE
ANNUAL RAINFALL

BEEVILLE
MONTHLY RAINFALL

BEEVILLE

Beeville has 42 years of rainfall records. The highest annual rainfall (48.8 inches) occurred in 1919 and the lowest (9.4 inches) in 1917. The average was 28.7 inches. Fifty percent of the years were below average. Past data indicate that 25 percent of the years will be below 19 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 19 percent of the time; 20 to 30 inches, 31 percent of the time; 30 to 40 inches, 38 percent of the time; and over 40 inches, 10 percent of the time.

The recent drouth was the most severe record, in terms of length, with 4 consecutive years well below average. Rainfall since 1919 has averaged 20.7 or 72 percent of normal. However, 1915-1917 received the lowest total rainfall of any 3-year period.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.7 inches) occurs in May and the lowest (1.7 inches) in January.
Brackettville has 70 years of rainfall records, dating back to 1871 at Fort Clark. The highest annual rainfall (40.5 inches) occurred in 1880 and the lowest (6.4 inches) in 1892. The average was 20.7 inches. Fifty-six percent of the years were below average. Half of the years were above 19.8 inches and half below. Past data indicate that 25 percent of the years will be below 16.9 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 4 percent of the time; 10 to 20 inches, 52 percent of the time; 20 to 30 inches, 32 percent of the time; 30 to 40 inches, 11 percent of the time; and over 40 inches, 1 percent of the time.

The recent drought was the most severe on record with 5 consecutive years of below-average rainfall. Annual precipitation since 1950 has averaged 15.5 inches, or 75 percent of normal. Other prolonged dry periods occurred during 1891-93, 1908-10, 1916-18 and 1938-40.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.1 inches) occurs in May and the lowest (0.8 inch) in January.
Brownsville has 86 years of complete rainfall records, dating back to 1871. The highest annual rainfall (60.1 inches) occurred in 1886, and the lowest (11.6 inches) in 1953. The average was 26.8 inches. Fifty-eight percent of the years were below average. Half of the years were above 25.9 inches and half below. Past data indicates that 25 percent of the years will be below 20 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 25 percent of the time; 20 to 30 inches, 44 percent of the time; 30 to 40 inches, 27 percent of the time; 40 to 50 inches, 2 percent of the time; over 50 inches, 1 percent of the time.

The most severe drouth on record at Brownsville occurred during 1892-1902 with 11 consecutive years of below average rainfall. During the period, annual precipitation averaged 17.7 inches or 66 percent of normal. In only 3 years during 1890-1911 was above-average rainfall recorded. These 22 years followed 12 years (1878-89) in which every year received above average rainfall.

During the recent drouth, below-average rainfall occurred for 7 consecutive years (1953-56); and for the 10-year period, 1947-56, only 1 year (1949) received rainfall higher than average. Annual precipitation averaged 15 inches, or 70 percent of normal, during 1950-53.

The seasonal distribution does not follow the usual pattern although peaks occur in May, June and September. The highest average monthly rainfall (6.3 inches), almost twice as much as in any other month, occurs in September and the lowest (1.1 inches) in March.
CARRIZO SPRINGS
ANNUAL RAINFALL

Carrizo Springs has 35 years of rainfall records. The highest annual rainfall (33.9 inches) occurred in 1931 and the lowest (7.4 inches) in 1917. The average was 20.8 inches. Forty-nine percent of the years were below average. Half of the years were above 21.5 inches and half below. Past data indicates that 25 percent of the years will be below 15.9 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 3 percent of the time; 10 to 20 inches, 43 percent of the time; 20 to 30 inches, 51 percent of the time; and over 30 inches 3 percent of the time.

The recent drought was the most severe on record at Carrizo Springs with 7 consecutive years (1950-56) below average. The average annual rainfall recorded during this period was 15.9 inches, or 76 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.3 inches) occurs in September and the lowest (0.9 inch) in February.
CORPUS CHRISTI

ANNUAL RAINFALL

50
45
40
35
30
25
20
15
10
5
0
YEARS ABOVE AVERAGE
YEARS BELOW AVERAGE
YEARS BELOW 21.5

MONTHLY RAINFALL

CORPUS CHRISTI

Corpus Christi has 70 years of complete rainfall records. The highest annual rainfall (48.5 inches) occurred in 1888 and the lowest (5.6 inches) in 1917. The average was 26.0 inches. Fifty-six percent of the years were below average. Half of the years were above 25.4 inches and half below. Past data indicate that 25 percent of the years will be below 21.5 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 14 percent of the time; 20 to 30 inches, 61 percent of the time; 30 to 40 inches, 17 percent of the time; and over 40 inches, 6 percent of the time.

Periodic drouths have occurred throughout the recorded period at Corpus Christi. The most severe occurred during 1907-11 when below average rainfall was recorded for 5 consecutive years. Rainfall during this period averaged 18.6 inches annually, or 72 percent of normal. Annual precipitation since 1950 has averaged 21.1 inches or 81 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (4.7 inches) occurs in September and the lowest (1.4 inches) in January.
COTULLA

ANNUAL RAINFALL

COTULLA

Cotulla has 40 years of rainfall records. The highest annual rainfall (36.5 inches) occurred in 1949, and the lowest (3.8 inches) in 1917. The average was 20.6 inches. Sixty percent of the years were below average. Half of the years were above 19.8 inches and half below. Past data indicate that 25 percent of the years will be below 17.3 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 5 percent of the time; 10 to 20 inches, 45 percent of the time; 20 to 30 inches, 40 percent of the time; and over 30 inches, 10 percent of the time.

The recent drought was the most severe on record with 7 consecutive years of below-average rainfall. Annual precipitation since 1950 averaged 14.0 inches, or 68 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.5 inches) occurs in May and the lowest (0.9 inch) in January.
DILLEY
ANNUAL RAINFALL

Dilley has 46 years of rainfall records. The highest annual rainfall (39.1 inches) occurred in 1919 and the lowest (6.0 inches) in 1917. The average was 21.1 inches. Fifty-nine percent of the years were below average. Half of the years were above 20.2 inches and half below. Past data indicate that 25 percent of the years will be below 16.9 inches.

Using past data to predict the future, up to 10 inches of precipitation may be expected 4 percent of the time; 10 to 20 inches, 46 percent of the time; 20 to 30 inches, 39 percent of the time; and more than 30 inches, 11 percent of the time.

Two extended drought periods were recorded for Dilley. Eight of the 9 years during 1910-18 received below-average rainfall; 9 of the 10 years during 1947-56 were below average. Rainfall since 1950 has averaged 15.6 inches, or 74 percent normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.1 inches) occurs in May and the lowest (1.0 inch) in January.
EAGLE PASS

EAGLE PASS has 79 years of rainfall records, dating back to 1871. The highest annual rainfall (44.4 inches) occurred in 1900, and the lowest (6.0 inches) in 1956. The average was 20.5 inches. Fifty-three percent of the years were below average. Half of the years were above 20.0 inches and half below. Past data indicate that 25 percent of the years will be below 15.7 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 8 percent of the time; 10 to 20 inches, 42 percent of the time; 20 to 30 inches, 44 percent of the time; 30 to 40 inches, 5 percent of the time; and over 40 inches, 1 percent of the time.

Although several periods of drouth have been recorded at Eagle Pass, only one other period compares with the recent drouth. Average annual rainfall for 5 consecutive years, 1907-11, was 14.4 inches. Since 1950, annual precipitation has averaged 13.8 inches, or 67 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.1 inches) occurs in September and the lowest (0.8 inch) in January.
Encinal has 46 years of rainfall records. The highest annual rainfall (47.0 inches) occurred in 1919 and the lowest (6.7 inches) in 1917. The average was 20.7 inches. Fifty-seven percent of the years were below average. Half of the years were below 20.0 inches and half above. Past data indicate that 25 percent of the years will be below 15.0 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 4 percent of the time; 10 to 20 inches, 46 percent of the time; 20 to 30 inches, 39 percent of the time; 30 to 40 inches, 9 percent of the time; and over 40 inches, 2 percent of the time.

Six consecutive years, beginning with 1911, were below average. Annual rainfall during this period averaged 16.2 inches, or 78 percent of normal. The next longest drought period on record ended in 1919, after at least 4 consecutive below-average years.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.0 inches) occurs in May and the lowest (1.1 inches) in February.
FALFURRIAS

The highest annual rainfall (36.7 inches) occurred in 1919 and the lowest (9.0 inches) in 1917. The average was 23.5 inches. Fifty-two percent of the years were below average. Half of the years were above 23.4 inches and half below. Past data indicate that 25 percent of the years will be below 19.2 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 23 percent of the time; 20 to 30 inches, 58 percent of the time; and over 30 inches, 17 percent of the time.

The recent drought was the most severe on record with at least 4 out of 5 consecutive years receiving below-average precipitation. The average rainfall during 1950-56 was 18.9 inches, or 80 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (4.0 inches) occurs in September and the lowest (0.9 inch) in February.
Floresville has 38 years of rainfall records. The highest annual rainfall (46.3 inches) occurred in 1919 and the lowest (7.9 inches) in 1917. The average was 26.6 inches. Fifty-eight percent of the years were below average. Half of the years were above 24.5 inches and half below. Past data indicate that 25 percent of the years will be below 21.3 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 3 percent of the time; 10 to 20 inches, 16 percent of the time; 20 to 30 inches, 55 percent of the time; 30 to 40 inches, 16 percent of the time; and more than 40 inches, 10 percent of the time.

The recent drought was the most severe on record with 4 consecutive years below average. The average rainfall during 1950-56 was 213 inches, or 82 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.2 inches) occurs in May and the lowest (1.6 inches) in January and March.
GEORGE WEST

George West has 41 years of rainfall records. The highest annual rainfall (46.3 inches) occurred in 1919 and the lowest (7.6 inches) in 1917. The average was 26.1 inches. Fifty-four percent of the years were below average. Half of the years were above 25.0 inches and half below. Past data indicate that 25 percent of the years will be below 19.3 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 24 percent of the time; 20 to 30 inches, 42 percent of the time; 30 to 40 inches, 22 percent of the time; and over 40 inches, 10 percent of the time.

The recent drought was the most severe on record with 7 consecutive years of below-average rainfall. The average during 1950-56 was 19.2 inches, or 73.5 percent of normal.

The seasonal distribution follows the usual pattern with peaks in June and September. However, George West is one of only two stations in the area (the other being Raymondville) at which March rainfall exceeds April. The highest average monthly rainfall (4.0 inches) occurs in September and the lowest (1.3 inches) in February.
Hebbronville has 45 years of rainfall records. The highest annual rainfall (37.6 inches) occurred in 1941 and the lowest (7.0 inches) in 1917. The average was 20.2 inches. Fifty-eight percent of the years were below average. Half of the years were above 18.8 inches and half below. Past data indicate that 25 percent of the years will be below 15.2 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 56 percent of the time; 20 to 30 inches, 33 percent of the time; and over 30 inches, 9 percent of the time.

The most severe drought on record occurred during 1907-11 with 5 consecutive years having less than average rainfall. At least 4 consecutive years of below-average rainfall were recorded during the recent drought, but records were incomplete for 1951 and 1952. The average annual rainfall recorded during 1950-56 was 18.1 inches, or 75 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.6 inches) occurs in September and the lowest (0.8 inches) in February.
Hondo has 59 years of rainfall records. The highest annual rainfall (58.7 inches) occurred in 1935 and the lowest (11.9 inches) in 1954. The average was 28.0 inches. Forty-nine percent of the years were below average. Half of the years were above 28.1 inches and half below. Past data indicate that 25 percent of the years will be below 22.5 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 17 percent of the time; 20 to 30 inches, 46 percent of the time; 30 to 40 inches, 32 percent of the time; 40 to 50 inches, 3 percent of the time; and over 50 inches, 2 percent of the time.

Although drouths have occurred periodically at Hondo, the recent drouth apparently was the most severe. All years recorded since 1949 were below average. Annual precipitation during 1950-56 averaged 20.6 inches, or 74 percent of normal. Other extended dry periods occurred during 1909-11 and 1924-30.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (4.4 inches) occurs in May and the lowest (1.5 inches) in January.
KINGSVILLE

KINGSVILLE ANNUAL RAINFALL

KINGSVILLE

Kingsville has 35 years of rainfall records. The highest annual rainfall (41.1 inches) occurred in 1903 and the lowest (13.2 inches) in 1911. The average was 23.7 inches. Fifty-one percent of the years were below average. Half of the years were above 23.0 inches and half below. Past data indicate that 25 percent of the years will be below 15.5 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 34 percent of the time; 20 to 30 inches, 54 percent of the time; 30 to 40 inches, 9 percent of the time; and over 40 inches, 3 percent of the time. Records for many years are missing for Kingsville, but the most severe drought on record was the recent one. Six of the 7 years during 1950-56 received below-average rainfall. The average, during this period, was 18.9 inches, or 80 percent of normal.

The seasonal distribution follows the usual pattern with peaks in June and September. The highest average monthly rainfall (3.5 inches) occurs in September and the lowest (1.2 inches) in January.
LAREDO

Laredo has 79 years of rainfall records dating back to 1871 at Fort McIntosh. The highest annual rainfall (52.6 inches) occurred in 1919 and the lowest (4.3 inches) in 1901. The average was 18.4 inches. Fifty-three percent of the years were above average. Half of the years were above 18.9 inches and half below. Past data indicate that 25 percent of the years will be below 14.0 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 8 percent of the time; 10 to 20 inches, 45 percent of the time; 20 to 30 inches, 42 percent of the time; 30 to 40 inches, 4 percent of the time; and over 40 inches, 1 percent of the time.


The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.2 inches) occurs in May and the lowest (0.8 inch) in February.
Mission has 36 years of rainfall records. The highest annual rainfall (33.5 inches) occurred in 1933 and the lowest (8.0 inches) in 1921. The average was 20.1 inches. Fifty-three percent of the years were below average. Half of the years were above 19.25 inches and half below. Past data indicate that 25 percent of the years will be below 14.9 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 3 percent of the time; 10 to 20 inches, 50 percent of the time; 20 to 30 inches, 39 percent of the time; and over 30 inches, 8 percent of the time.

The recent drouth was the most severe record. In only one year (1954) during 1945-1956 was above-average rainfall recorded. Incomplete records for 1951 and 1956 indicated that these years also were below average. The recorded rainfall since 1950 has averaged 15.4 inches, 76 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.4 inches) occurs in September and the lowest (0.9 inch) in February.
Pearsall has 51 years of rainfall records. The highest annual rainfall (47.1 inches) occurred in 1919 and the lowest (5.2 inches) in 1956. The average was 22.2 inches. Fifty-seven percent of the years were below average. Half of the years were above 21.6 inches and half below. Past data indicate that 25 percent of the years will be below 17.5 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 4 percent of the time; 10 to 20 inches, 41 percent of the time; 20 to 30 inches, 39 percent of the time; 30 to 40 inches, 14 percent of the time; and over 40 inches, 2 percent of the time.

The recent drought was the most severe on record for Pearsall. During the 10-year period, 1947-56, only 1 year (1949) received above-average rainfall; and in only 3 years since 1943 has higher than average rainfall been recorded. Annual precipitation since 1950 averaged 15.6 inches, or 70 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.2 inches) occurs in May and the lowest (1.1 inches) in January.
Port Isabel has 28 years of rainfall records. The highest annual rainfall (44.6 inches) occurred in 1941 and the lowest (12.3 inches) in 1938. The average was 26.0 inches. Fifty-seven percent of the years were below average. Half of the years were above 24.9 inches and half below. Past data indicate that 25 percent of the years will be below 19.4 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 25 percent of the time; 20 to 30 inches, 43 percent of the time; 30 to 40 inches, 25 percent of the time; and over 40 inches, 7 percent of the time.

The recent drought was the most severe record with 7 consecutive years of below-average rainfall. Annual precipitation during 1954-55 averaged 18.3 inches, or 70.5 percent of normal.

Port Isabel has an unusual seasonal distribution although peaks occur in May and September. September receives almost twice as much rainfall (4.8 inches) as May (2.7 inches) and October ranks second in total precipitation (3.2 inches). The lowest average monthly rainfall (1.0 inch) occurs in February.
RAYMONDVILLE

RAYMONDVILLE has 43 years of rainfall records. The highest annual rainfall (44.2 inches) occurred in 1941 and the lowest (8.8 inches) in 1917. The average was 26.5 inches. Only 47 percent of the years were below average. Half of the years were above 27.3 inches and half below. Past data indicate that 25 percent of the years will be below 20.4 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 16 percent of the time; 20 to 30 inches, 40 percent of the time; 30 to 40 inches, 40 percent of the time; and more than 40 inches, 2 percent of the time.

Records show that the most severe drought occurred during 1950-54. All 5 years were below average, and incomplete records for 1956 indicate that it also was an extremely dry year. The average during 1950-56 was 21.7 inches, or 84 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September; however, this station and George West receives more rain in March than in April. The highest average monthly rainfall (4.7 inches) occurs in September and the lowest (1.2 inches) in April.
Ricardo has 39 years of rainfall records. The highest annual rainfall (54.0 inches) occurred in 1919 and the lowest (11.2 inches) in 1952. The average was 25.8 inches. Fifty-nine percent of the years were below average. Half of the years were above 24.9 inches and half below. Past data indicate that 25 percent of the years will be below 20.0 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 23 percent of the time; 20 to 30 inches, 54 percent of the time; 30 to 40 inches, 15 percent of the time; 40 to 50 inches, 5 percent of the time; and over 50 inches, 3 percent of the time.

The recent drouth was the most severe on record with at least 5 consecutive years of below-average rainfall. Another severe drouth occurred during 1915-17. Annual precipitation since 1950 has averaged 17.6 inches, or 68 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (4.7 inches) occurs in September and the lowest (1.2 inches) in February.
RIO GRANDE CITY

RIO GRANDE CITY

Rio Grande City has 75 years of rainfall records. The highest annual rainfall (32.3 inches) occurred in 1887 and the lowest (5.3 inches) in 1926. The average was 17.3 inches. Fifty-five percent of the years were below average. Half of the years were above 16.8 inches and half below. Past data indicate that 25 percent of the years will be below 13.6 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 5 percent of the time; 10 to 20 inches; 65 percent of the time; 20 to 30 inches, 27 percent of the time; and over 30 inches, 3 percent of the time.

Rio Grande City was one of the few locations in the area at which the recent drought was not the most severe on record. Annual precipitation during 1950-56 averaged 14.6 inches, or 85 percent of normal. Only 2 consecutive below-average years occurred during this period. Periods on record during which annual rainfall was below average for 4 consecutive years include: 1915-18, with an average of 14.2 inches, 1926-29, 14.8 inches, and 1937-40, 14.0 inches.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.1 inches) occurs in September and the lowest (0.8 inch) in February.
Sabinal has 43 years of rainfall records. The highest annual rainfall (48.2 inches) occurred in 1935 and the lowest (11.3 inches) in 1956. The average was 24.4 inches. Fifty-three percent of the years were below average. Half of the years were above 23.6 inches and half below. Past data indicate that 25 percent of the years will be below 18.1 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 33 percent of the time; 20 to 30 inches, 46 percent of the time; 30 to 40 inches, 14 percent of the time; and over 40 inches, 7 percent of the time.

The recent drought was the most severe on record with at least 6 consecutive years having below average rainfall. The average annual precipitation during 1950-56 was 17.8 inches, or 71 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.8 inches) occurs in May and the lowest (1.1 inches) in January.
SAN BENITO

San Benito has 32 years of rainfall records. The highest annual rainfall (47.3 inches) occurred in 1993 and the lowest (12.7 inches) in 1956. The average was 26.9 inches. Fifty-three percent of the years were below average. Half of the years were above 25.9 inches and half below. Past data indicate that 25 percent of the years will be below 21.6 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 16 percent of the time; 20 to 30 inches, 47 percent of the time; 30 to 40 inches, 31 percent of the time; and over 40 inches, 6 percent of the time.

The recent drouth was the most severe on record with 6 consecutive years of below-average rainfall. Annual precipitation during 1950-56 averaged 21.4 inches, or 80 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May, June and September. The highest average monthly rainfall (5.6 inches) occurs in September and the lowest (1.0 inch) in March.
SARITA
ANNUAL RAINFALL

SARITA
MONTHLY RAINFALL

SARITA

Sarita has 51 years of rainfall records. The highest annual rainfall (43.6 inches) occurred in 1919 and the lowest (12.2 inches) in 1917. The average was 26.7 inches. Fifty-three percent of the years were below average. Half of the years were above 25.8 inches and half below. Past data indicate that 25 percent of the years will be below 21.4 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 16 percent of the time; 20 to 30 inches, 55 percent of the time; 30 to 40 inches, 23 percent of the time; and more than 40 inches, 6 percent of the time.

The recent drouth was the most severe on record with 6 consecutive years below average. Rainfall during 1950-56 averaged only 19.8 inches or 74 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (4.6 inches) occurs in September and the lowest (1.1 inches) in March.
THREE RIVERS
ANNUAL RAINFALL

Three Rivers has 33 years of rainfall records. The highest annual rainfall (47.2 inches) occurred in 1955 and the lowest (13.1 inches) in 1956. The average was 26.2 inches. Fifty-five percent of the years were below average. Half of the years were above 25.2 inches and half below. Past data indicate that 25 percent of the years will be below 18.3 inches.

Using past data to predict the future, 10 to 20 inches of annual precipitation may be expected 30 percent of the time; 20 to 30 inches, 43 percent of the time; 30 to 40 inches, 18 percent of the time; and over 40 inches, 9 percent of the time.

The recent drought was the most severe on record with 5 consecutive below-average years during 1952-56. Average annual rainfall during 1952-56 was 17.5 inches, or 67 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.4 inches) occurs in May and the lowest (1.3 inches) in January.
UVALDE
ANNUAL RAINFALL

UVALDE
MONTHLY RAINFALL

UVALDE has 59 years of rainfall records, dating back to 1850 at Fort Inge. The highest annual rainfall (45.0 inches) occurred in 1923 and the lowest (9.3 inches) in 1956. The average was 23.1 inches. Fifty-nine percent of the years were below average. Half of the years were above 20 inches and half below. Past data indicate that 25 percent of the years will be below 18.1 inches.

Using past data to predict the future, up to 10 inches of annual precipitation may be expected 2 percent of the time; 10 to 20 inches, 37 percent of the time; 20 to 30 inches, 39 percent of the time; 30 to 40 inches, 17 percent of the time; and over 40 inches, 5 percent of the time.

The recent drought was by far the most severe on record at Uvalde. Below-average rainfall was received every year during 1950-56. Annual precipitation during this period averaged 16.6 inches or 72 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.1 inches) occurs in May and the lowest (1.1 inches) in January.
WHITSETT

WHITSETT

WHITSETT has 39 years of rainfall records. The highest annual rainfall (46.4 inches) occurred in 1941 and the lowest (5.2 inches) in 1917. The average was 25.1 inches. Fifty-one percent of the years were below average. Half of the years were above 24.9 inches and half below. Past data indicate that 25 percent of the years will be below 20.2 inches.

Using past data to predict the future, up to 0 inches of annual precipitation may be expected 5 percent of the time; 10 to 20 inches, 18 percent of the time; 20 to 30 inches, 59 percent of the time; 30 to 40 inches, 10 percent of the time; and over 40 inches, 8 percent of the time.

The recent drought was the most severe on record with 4 consecutive very dry years. Average annual precipitation during 1950-56 was 19.7 inches, or 78 percent of normal. Another very dry period occurred during 1936-39 when the average annual rainfall was 18.7 inches, or 75 percent of normal.

The seasonal distribution follows the usual pattern with peaks in May and September. The highest average monthly rainfall (3.6 inches) occurs in September and the lowest (1.2 inches) in February.
State-wide Research

The Texas Agricultural Experiment Station is the public agricultural research agency of the State of Texas, and is one of ten parts of the Texas A&M College System.

IN THE MAIN STATION, with headquarters at College Station, are 16 subject matter departments, 2 service departments, 3 regulatory services and 16 administrative staff. Located out in the major agricultural areas of Texas are 21 substations and 9 field laboratories. In addition, there are 14 cooperating stations owned by other agencies. Cooperating agencies include the Texas Forest Service, Game and Fish Commission of Texas, Texas Prison System, U. S. Department of Agriculture, University of Texas, Texas Technological College, Texas College of Arts and Industries and the King Ranch. Some experiments are conducted on farms and ranches and in rural homes.

THE TEXAS STATION is conducting about 400 active research projects, grouped in 25 programs, which include all phases of agriculture in Texas. Among these are:

- Conservation and improvement of soil
- Conservation and use of water
- Grasses and legumes
- Grain crops
- Cotton and other fiber crops
- Vegetable crops
- Citrus and other subtropical fruits
- Fruits and nuts
- Oil seed crops
- Ornamental plants
- Brush and weeds
- Insects
- Beef cattle
- Dairy cattle
- Sheep and goats
- Swine
- Chickens and turkeys
- Animal diseases and parasites
- Fish and game
- Farm and ranch engineering
- Farm and ranch business
- Marketing agricultural products
- Rural home economics
- Rural agricultural economics
- Plant diseases

Two additional programs are maintenance and upkeep, and central services.

Research results are carried to Texas farmers, ranchmen and homemakers by county agents and specialists of the Texas Agricultural Extension Service.

Today's Research Is Tomorrow's Progress