

Is Another Major Drouth on the Way?

Cloud seeding has been demonstrated as an effective means of increasing rainfall, but suitable clouds are scarce during drouths.



Most stockmen have had to haul water but few have ever enjoyed it.

This article prepared exclusively for The Farmer-Stockman by Irving P. Krick Associates, Inc., Weather Engineers, who prepare our regular forecasts.

SOME OLD TIMERS are getting uneasy . . . the hot sun beating down on the fields after day and the passing of promising looking clouds without yielding any moisture. This persisted early this summer.

Yes, spring was wet, and rains finally ended the sustained heat in

late summer. Nevertheless, we can not help but be reminded of the not too distant years of the 50s and 30s, drouthy years when the next scourge of dry years will come.

Here in the Plains where rainfall is somewhat marginal anyway, and where winds are an every day fact of life, any long exposure can mean devastated land to dryness can mean disaster. Every one would hate to see the dust blowing and soil drifting as they did in the 30s and 50s, but this could happen again (the 60s now ending, had a couple of dry years, 1963 and 1966; otherwise moisture was generally adequate).

Drouths, of course, are not restricted to any continent or region.

Remember it was only a few years ago that India and Russia suffered considerably. The northeastern United States was critically short of moisture a couple years ago. And more recently, drouthy conditions gripped our national capital last spring. Georgia's peanut crop was threatened this summer, and north-eastern Louisiana is still suffering from the lack of general rains.

Dr. Tannehill, in his book, "Drought," indicated that a national drouth recurs approximately every 5 1/2 years. Here in the Plains it appears as though the more protracted and widespread drouths are spaced approximately two sunspot cycles apart (about 22 years). For instance, the 1886-88 years, the World War I drouth years, the mid-30s, and the 50s.

Major Drouths in the Great Plains

This story appeared in The Farmer-Stockman for October 1969 and warned readers that conditions were building up for another drouth.

REMEMBER THIS? "Quite likely the early part of the decade (70s) will not be the critical period, but drouth conditions could become as dominant by 1975 as they were in the 50s and 30s."

This statement was made in an article prepared by Dr. Irving P. Krick for the October 1969 issue of The Farmer-Stockman. He went on to suggest that weather modification offers a solution to lessen the severity of drouth. He wrote:

" . . . we must remember that during dry (drouth) periods, suitable storms to seed are few, and cloud systems are generally more scattered . . . it would make sense, therefore, to consider some type of cloud-seeding program in the early 70s to improve the storage water, both surface and underground. This approach could provide more water to be carried over into the drouthy years . . . "

In the fall of 1969 the thought of a drouth probably was just a passing thing. True, the summer had been hot and dry, but by late summer good rains came. The complexion changed slightly during the winter of 1969-70 as precipitation dropped below normal (50%) again in western Kansas and the Panhandle regions of Oklahoma and Texas. However, the normally

wetter months were still ahead, and many waited hopefully for the spring rains to come. They were not disappointed. Moisture increased during the spring months (through April) to over 100% of normal.

Then dryness began again . . . May generally yielded less than 50% rainfall; June, 50-75%; July, less than 50 to 75%. Drouthy conditions were becoming more noticeable. It was in connection with this emerging situation that Dr. Krick made a personal trip in late summer to survey conditions throughout West Texas and Southwestern Oklahoma. His concern was certainly warranted. He found the dryness in some localities already had reached an acute stage even though above normal rainfall had occurred during the previous year.

San Angelo, Texas, for one, and Lawton, Oklahoma, for another, were suffering considerably from a siege of hot, dry weather. Water consumption was high, and storage water was running low. Alarming as the situation was, the city fathers apparently were not ready to take any remedial steps . . . hoping, perhaps, that the normally good fall rains would help ease the water crisis. This time their wishes were not met; rain continued to be scarce, as shown on accompanying chart. Fortunately, though, the consumption rate of water receded rapidly as the season turned cold.

This early support by agricultural groups will result in great rewards in the coming drouth years. Farmers can look forward with assurance of having proven scientific processes available to reduce drouth damage.

We're Sorry Our Prediction of Drouth Is Proving True!

How is the situation now? The following, extracted from the Water Resources Review for January, 1971, issued by the Interior Department, points out the continuing severity of the water situation:

"Below normal streamflow conditions persisted and increased in areas in Kansas and Texas . . . in west Texas there was no flow at the index station North Concho River near Carlsbad (and San Angelo) for the 16th consecutive month . . . Lake Altus in the Southwest (Oklahoma) was at 22% of normal capacity. The North Fork above Lake Altus has had no flow since June, a condition similar to that which last occurred in 1956."

Additionally, the following table, which gives a breakdown of rainfall in the western parts of Texas, Oklahoma and Kansas, also substantiates the sharp transition from 1969 to 1970:

The water supply problems at municipalities such as Lawton and San Angelo have not been lessened one iota since last summer. Quite possibly action in the form of cloud seeding will still be taken soon, but what about the farmers and ranchers? If good moisture is not forthcoming during the next several months, there is the real risk of reduced crops, lower carrying capacity of pastures, and naturally a generally lower level of income for everyone.

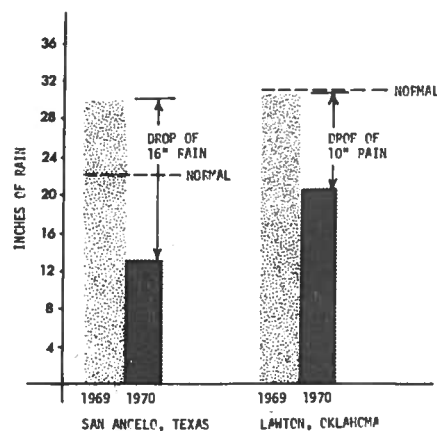
Scare tactics? Not so. One only needs to think back to the drouths in the 30s and the 50s, when deficiencies in moisture persisted for several consecutive years. No one would want to see that happen again.

The present drouthy conditions confirm Dr. Krick's expressions on the subject given in the October, 1969, The Farmer-Stockman article, and it is quite likely serious "drouth years of the 70s" are still ahead.

This parallels his forecast of 1946 calling for severe drouth in the 50s. His organization mounted a gigantic cloudseeding effort in the 50s which relieved millions of acres of farm and ranch land as well as water supply for such cities as Lawton, Oklahoma City, Dallas, Ft. Worth, and many others. This pioneering effort and the results achieved may help again in the 70s if started soon enough. Some of the early farm and ranch projects have been operated continuously since the 50s and have been pretty well immunized against drouth.

Almost everyone has learned a great deal in the conservation and storage of natural precipitation during the past decade. What about any additional precipitation over and above that which might naturally occur? Cloudseeding to increase natural rainfall offers the most practical and by far the cheapest solution for providing additional moisture.

True, cloudseeding does not create rain from clear skies, but if rain-bearing



Annual rainfall for 1969 and for 1970 at San Angelo, Texas, and Lawton, Okla.

ing clouds are present, a significant additional increment of moisture can be extracted from them. If started now, when cloud formations may still be fairly plentiful, the land can be recharged from the rain, and thus reduce the possibility of a more severe drouth developing or spreading to other areas eastward and northward as it did in the 30s and to a lesser extent in the 50s.

Five to 20 years of continual cloudseeding operations by Dr. Krick's group in areas similar in climate to the southern Plains have shown positive results — 20-30% increases in rainfall inside the target as compared to outside. Individual storms frequently yield even larger increments — many times the natural rainfall is doubled.

In recent months, concern over water shortages in this area has been limited to rhetoric, but some real commitment is necessary now. Expensive? Not really. The cost is miniscule — cents per acre annually — when measured against the ravages of drouth. Economic gains are usually 50 to 100 times the costs. The choice is clear.

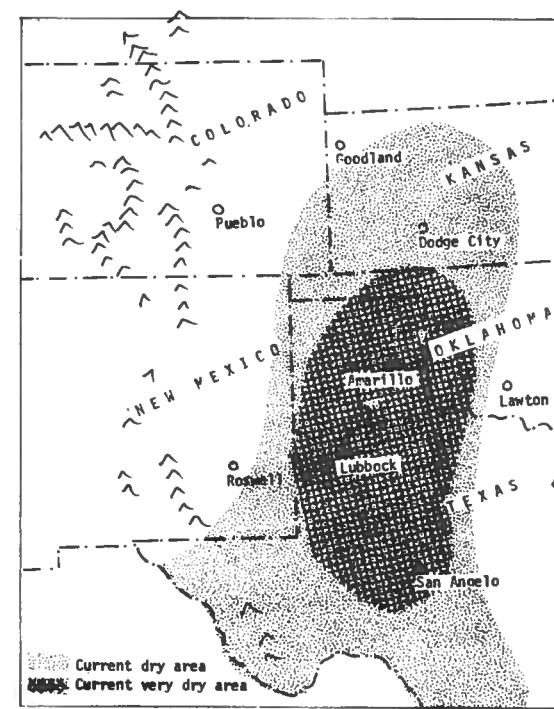


Diagram of Southern Great Plains, showing how severely dry weather in 1970 spread out. Recent snows and rains help, but it's still dry.

Rainfall Comparisons

	Normal in inches	1969 Rain- fall in % of normal	*1970 Rain- fall in % of normal	Decrease 1969-70 in % of normal
Southwest Kansas	18.0	137	85	39
West Central Kansas	19.3	120	90	31
Northwest Kansas	19.3	104	80	17
Oklahoma Panhandle	18.8	134	65	50
Southwest Oklahoma	29.7	101	65	39
Texas High Plains	18.5	126	65	48
Texas Low Rolling Plains	23.0	122	65	49
Texas Edwards Plateau	34.5	114	75	41

* Approximate — December data not official.

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