

THE DUST BOWL

Where America went so badly wrong



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A STUDY IN OVER-FARMING

Dust Bowl

'The Dust Bowl' or the 'Dirty Thirties' was a period of severe dust storms causing major ecological and agricultural damage to American and Canadian prairie lands from 1930 to 1936 (in some areas until 1940). The phenomenon was caused by severe drought coupled with decades of extensive farming without crop rotation, fallow fields, cover crops or other techniques to prevent erosion. Deep ploughing of the virgin topsoil of the Great Plains had displaced the natural grasses that normally kept the soil in place and trapped moisture even during periods of drought and high winds.

During the drought of the 1930s, with no natural anchors to keep the soil in place, it dried, turned to dust, and blew away eastward and southward in large dark clouds. At times the clouds blackened the sky reaching all the way to East Coast cities, such as New York and Washington, D.C. Much of the soil ended up deposited in the Atlantic Ocean, carried by prevailing winds which were, in part, created by the dry and bare soil conditions. These immense dust storms—given names such as “Black Blizzards” and “Black Rollers”—often reduced visibility to about a metre.

The Dust Bowl affected 100 000 000 acres (400 000 km²), centred on the panhandles of Texas and Oklahoma, and adjacent parts of New Mexico, Colorado, and Kansas. Millions of acres of farmland became useless, and hundreds of thousands of people were forced to leave their homes; many of these families (often known as “Okies”, because so many came from Oklahoma) travelled to California and other states, where they found economic conditions little better than those they had left. Owning no land, many travelled from farm to farm picking fruit and other crops at starvation wages. Author John Steinbeck later wrote 'The Grapes of Wrath', which won the Pulitzer Prize, and 'Of Mice and Men' about such people.

Causes

Agricultural and settlement history

During early European and American exploration of the Great Plains, the region in which the Dust Bowl occurred was thought unsuitable for European-style agriculture; and the region was known as the Great American Desert. The lack of surface water and timber made the region less attractive than other areas for pioneer settlement and agriculture. However, following the Civil War, settlement in the area increased, encouraged by the Homestead Act, the transcontinental railroads, and new immigration. An unusually wet period in the Great Plains mistakenly led settlers and government to believe that “rain follows the plough” (a popular phrase among those selling parcels of land) and that the climate of the region had



*A farmer and his two sons during a dust storm in Cimarron County, Oklahoma, 1936.
Photo: Arthur Rothstein.*

changed permanently. Initial agricultural endeavours were primarily cattle ranching with some cultivation; however, a series of harsh winters beginning in 1886, coupled with overgrazing followed by a short drought in 1890, led to an expansion of land under cultivation.

Continued waves of immigration from Europe brought settlers to the plains at the beginning of the 20th century. A return of unusually wet weather confirmed a previously held opinion that the “formerly” semi-arid area could support large-scale agriculture. Technological improvements led to increased automation, which allowed cultivation on an ever-greater scale. World War I increased agricultural prices, which also encouraged farmers to drastically increase cultivation. In the Llano Estacado, farmland area doubled between 1900 and 1920, and land under cultivation more than tripled between 1925 and 1930. Additionally, farmers used agricultural practices which encouraged erosion.

For example, cotton farmers left fields bare over winter months, when winds in the High Plains are highest, and burned stubble (as a form of weeding prior to planting), which deprived the soil of organic nutrients and increased exposure to erosion. This increased exposure to erosion was revealed when a severe drought struck the Great Plains in 1934. The native grasses that covered the prairie lands for centuries, holding the soil in place and maintaining its moisture, had been eliminated by intensively increased ploughing. The drought conditions caused the topsoil to grow dry and friable and it was simply carried away by the wind. The dusty soil aggregated in the air forming immense dust clouds which further prevented rainfall. It was not until the government promoted soil conservation programmes that the area slowly began to rehabilitate.



A dust storm approaches Stratford, Texas, in 1935.

Geographic characteristics

The Dust Bowl area lies principally west of the 100th meridian on the High Plains (see the map on page 7), characterised by plains which vary from rolling in the north to flat in the Llano Estacado. Elevation ranges from 760m in the east to 1800m at the base of the Rocky Mountains. The area is semi-arid, receiving less than 510 mm of rain annually; this rainfall supports the shortgrass prairie biome originally present in the area. The region is also prone to extended drought, alternating with unusual wetness of equivalent duration. During wet years, the rich soil provides bountiful agricultural output, but crops fail during dry years. The region is also subject to winds higher than any region, except coastal regions.



A dust storm; Spearman, Texas, April 14, 1935

Drought and dust storms

The unusually wet period, which encouraged increased settlement and cultivation in the Great Plains, ended in 1930. This was the year in which an extended and severe drought began, which caused crops to fail, leaving the ploughed fields exposed to wind erosion. The fine soil of the Great Plains was easily eroded and carried east by strong continental winds.

On November 11, 1933, a very strong dust storm stripped topsoil from desiccated South Dakota farmlands in just one of a series of bad dust storms that year. Then, beginning on May 9, 1934, a strong two-day dust storm removed massive amounts of Great Plains topsoil in one of the worst storms of the Dust Bowl. The dust clouds blew all the way to Chicago, where dirt fell like snow. Two days later, the same storm reached cities in the east, such as Buffalo, Boston, Cleveland, New York City, and Washington, D.C. That winter, red snow fell on New England.

On April 14, 1935, known as “Black Sunday”, twenty of the worst “Black Blizzards” occurred throughout the Dust Bowl, causing extensive damage and turning day to night; witnesses reported that they could not see five feet in front of them at certain points.

Human displacement

This catastrophe intensified the economic impact of the Great Depression in the region.

Canada

Two-thirds of farmers in “Palliser’s Triangle”, in the Canadian province of Saskatchewan, had to rely on government aid. This was due mainly to drought, hail storms, and erratic weather rather than to dust storms as was occurring on the U.S. Great Plains. Many Canadians fled to urban areas such as Toronto.

U.S.

Dust Bowl conditions fomented an exodus of the displaced from Texas, Oklahoma, and the surrounding Great Plains to adjacent regions. More than 500,000 Americans were left homeless. 356 houses had to be torn down after one storm alone. Many Americans migrated west looking for work. Some residents of the Plains, especially in Kansas and Oklahoma fell ill and died of dust pneumonia or malnutrition.

The Dust Bowl exodus was the largest migration in American history within a short period of time. By 1940, 2.5 million people had moved out of the Plains states; of those, 200,000 moved to California. With their land barren and homes seized in foreclosure, many farm families were forced to leave. Migrants left farms in Oklahoma, Arkansas, Missouri, Iowa, Nebraska, Kansas, Texas, Colorado and New Mexico, but all were generally referred to as “Okies”. The second wave of the Great Migration by African Americans from the South (especially the states of Arkansas, Louisiana, Mississippi, Alabama, Tennessee and Texas) to the North was larger, involving more than 5 million people, but it took place over decades, from 1940 to 1970. There was also a small but influential migration of Mexican-Americans of dust-bowl and poverty-stricken areas of Texas, New Mexico, Arizona and Colorado, as they headed westward to other Hispanic communities and farming valleys of California.



Buried machinery in a barn lot; Dallas, South Dakota, May 1936

Characteristics of migrants

When James N. Gregory examined the Census Bureau statistics as well as other surveys, he discovered some surprising percentages. For example, in 1939 the Bureau of Agricultural Economics surveyed the occupations of about 116,000 families who had arrived in California in the 1930s. It showed that only 43 percent of southwesterners were doing farm work immediately before they migrated. Nearly one-third of all migrants were professional or white-collar workers.

U.S. Government response

During President Franklin D. Roosevelt's first 100 days in 1933, governmental programs designed to conserve soil and restore the ecological balance of the nation were implemented. Interior Secretary Harold L. Ickes established the Soil Erosion Service in August 1933 under Hugh Hammond Bennett. In 1935 it was transferred and reorganised under the Department of Agriculture and renamed the Soil Conservation Service. More recently it has been renamed the Natural Resources Conservation Service (NRCS).



An Oklahoman boy during a dust storm, 1936

Additionally, the Federal Surplus Relief Corporation (FSRC) was created after more than six million pigs were slaughtered to stabilise prices. The pigs went to waste. The FSRC diverted agricultural commodities to relief organisations. Apples, beans, canned beef, flour and pork products were distributed through local relief channels. Cotton goods were later included, to clothe the needy.

In 1935, the federal government formed a Drought Relief Service (DRS) to coordinate relief activities. The DRS bought cattle in counties which were designated emergency areas, for \$14 to \$20 a head. Animals unfit for human consumption – more than 50 percent at the beginning of the program – were destroyed. The remaining cattle were given to the Federal Surplus Relief Corporation (FSRC) to be used in food distribution to families nationwide. Although it was difficult for farmers to give up their herds, the cattle slaughter program helped many of them avoid bankruptcy. “The government cattle buying program was a God-send to many farmers, as they could not afford to keep their cattle, and the government paid a better price than they could obtain in local markets.”

President Roosevelt ordered the Civilian Conservation Corps to plant a huge belt of more than 200 million trees from Canada to Abilene, Texas to break the wind, hold water in the soil, and hold the soil itself in place. The administration also began to educate farmers on soil conservation and anti-erosion techniques, including crop rotation, strip farming, contour plough, terracing, and other improved farming practices. In 1937, the federal government began an aggressive campaign to encourage Dust Bowlers to adopt planting and plough methods that conserved the soil. The government paid the reluctant farmers a dollar an acre to practice one of the new methods. By 1938, the massive conservation effort had reduced the amount of blowing soil by 65 percent. Nevertheless, the land failed to yield a decent living. In the fall of 1939, after nearly a decade of dirt and dust, the nearly decade long drought ended as regular rainfall finally returned to the region.

Lasting consequences

By the time the major drought concluded in the mid 1940s the demographics and political economy of the plains of the 100th meridian had fundamentally changed. The out migration of the 1930s and the demands of World War II employment outside the region of almost all the male and head-of-household migrating population in the war and in war-related industries outside of the region permanently removed from these great western plains small-scale single-family farming agriculture which had been the origin of the disaster in the first place.

The families who migrated experienced a permanent, significant increase in their household incomes in the aftermath of the war in their new locations and settings as non-farm workers. This guaranteed that they had no desire to return to the harrowing poverty of their rural existence as it was, even before the great drought. Advances in agriculture, transportation and agri-business in the post war period further contributed to the collapse in demand for the small-scale farming that had taken place in the region. In simple terms, the cost of returning these lands to useful agricultural production, given the need to protect the delicate soil environment of the region, would have produced wholesale farm product prices that were uncompetitive with prices for products produced elsewhere in the US.

Influence on the arts

The crisis was documented by photographers, musicians, and authors. Many were hired by various U.S. federal agencies during the Great Depression. The Farm Security Administration hired numerous photographers to document the crisis. This helped the careers of many notable artists, including Dorothea Lange. She captured iconic images of the storms and migrant families. The work of independent artists, such as folk singer Woody Guthrie and American novelist John Steinbeck, also was influenced by the crises of the Dust Bowl and the Depression. Migrants' leaving the Plains states took their music with them. Oklahoma migrants, in particular, were descended from rural Southerners and transplanted country music to California. Today, the "Bakersfield Sound" describes this blend, which developed after the migrants brought country music to the city. Their new music inspired a proliferation of country dance halls as far south as Los Angeles.

Future Dust Bowls

The conditions that produced the Dust Bowl of the 1930s can occur again. Some arid regions are being stressed by overgrazing of livestock. Conditions that put China, Africa, and Australia at risk are detailed below.

Africa

The Sahel region, between the Sahara Desert and the Sudanese savannas, is a transition zone nearly 1,000 kilometres wide across Africa that is particularly prone to devastating droughts. Normally, a few years of drought are relieved by a few rainy years. Since the late 1960s, however, the Sahel has endured extensive and severe drought. When the land is dry, desertification can be caused by overgrazing of cattle, on which the people depend.

Australia

Australia's largest river system, the Murray River, is drying up. Crop yields have dropped drastically after seven years of drought. Australia had a major dust storm in 2009.

China

In 2007, the WorldChanging web site stated that China was turning productive land into desert at the rate of one million acres per year, which has produced huge sandstorms. The population of grazing animals had quadrupled since the 1960s, with overgrazing contributing to desertification. The government tries to reduce overgrazing by resettling traditional herders to villages.

United States of America

A 1°C (1.8°F) rise in global temperatures due to the effects of global warming could turn much of the semi-arid American Midwest into a shrub-steppe, likely starting with an area near the Sand Hills in Nebraska, severely impacting food supplies and exports from the American breadbasket.

Popular Culture

Dorothea Lange was a photographer who took iconic images of the refugees from the dust bowl. Here are a few of her famous images.



Geography

The Dust Bowl 1930 - 1940

This map shows the area of the dust bowl. Once a lush, green and fertile area, the land was destroyed by a combination of avarice, over-farming and climatic events.



