THE DESERT THREAT IN THE SOUTHERN GREAT PLAINS

The Historical Implications of Soil Erosion

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Humanity, like animals and plants, has its roots in the soil.[1] As the soil goes, so ultimately goes the society that is based upon it, and the intelligence that people display in the use of the land is an index of their civilization. The most serious threat to the security of the United States today, and for the future, is not communism, fascism, finance-capitalism, or militarism, but soil depletion.

Soil depletion and consequent social discontent are not new in American history, nor can they be dissociated from the main political and economic issues. Nathaniel Bacon, Daniel Shays, and Edmund Ruffin were but forerunners of the bellicose cotton farmers of 1861, the Populists of 1890, and the agrarian "dolees" of 1940. Today, with foreign trade fast declining, technology making fewer farmers necessary, and agricultural resources constantly dwindling, some statesmen still advocate putting the unemployed on farms.

Better land and more land has been the ceaseless pursuit of peoples from earliest times. It was land hunger that brought most of the migrants to America; and it was the same hunger that made the westward-moving farmer destroy the forest, the beaver, the Indian, and the buffalo. As long as there was new land to occupy, the devastating farmer constantly sought new acreage. Today there is none to be had save marginal areas which have been rejected or abandoned at least once; there is no escape from a ruined farm to a virgin tract. The rape of the American soil is over. Hereafter, only by the most assiduous and careful conservation can the farms be kept fertile.

The historical profession, with notable exceptions, has neglected this vital issue in its teaching and writing. It has been too much concerned with the deserts of the Orient rather than the Dust Bowl of today, with the poor whites of 1840 rather than those of 1940, and with the bread and circuses of ancient Rome rather than the bread and cinemas of the New Deal. As a result, contemporary problems like soil erosion that need immediate and skillful attention have been left largely to the news reporter, the special-feature writer, or the sociologist, the geographer, the botanist, and the agrologist. Soil depletion is a world-wide social, economic, and political problem, and one which challenges every historian who is as interested in the present as in the past. For these

[1] This article was presented with the title, "Soil Erosion: The Desert Threat in the South Plains Area," at the session on Regional Problems within the Great Plains Area of the Mississippi Valley Historical Association at Memphis, Tenn., on Apr. 21, 1939.

reasons, therefore, a survey of conditions in the South Plains where erosion has proceeded at a very rapid rate is of special pertinence.

It is an irony of history that the region of the Louisiana Purchase and north Texas (the pre-1850 Texas) was regarded as largely a desert by most people east of the Mississippi River for the greater part of the nineteenth century. It is an even greater irony that the farmer-migrant had already commenced to make the region a desert in reality by the end of the seventies when the myth had been almost completely eradicated.

In view of the fact that the reports of the explorers were misleading and the maps inadequate, it is not surprising that this popular delusion even misled many of the Nation's leaders. Little discrimination was made, either by statesmen or the public, between grassy and grassless areas, if timber was lacking, or, for that matter, between the lands east and west of the Rockies. Moreover, the word "desert" was applied rather indiscriminately to areas ranging from prairies covered with luxuriant 5-foot grass to stretches of herbless, sunbaked sand. Jefferson, for instance, referred to the swamps, sloughs, and prairies of lower Louisiana Territory as "immense and trackless deserts."[2] Monroe described the prairies of the Old Northwest as bushless, "miserably poor" country in 1786, but did not repeat the error in referring to the trans-Mississippi West.[3] Jackson and Benton do not seem to have shared the popular delusion,[4] but Calhoun and Jefferson Davis accepted, with reservations, the inevitability of an arid strip, averaging from two to four hundred miles wide, from Canada to below the thirty-second parallel.[5] When Davis bought seventy-five camels

[2] U. S. Dept. of State, *American State Papers, Miscellaneous*, 1:345 (Washington, 1834)

[3] Monroe to Jefferson, Jan. 19, 1786, in *Writings of James Monroe*, 1:117 (New York, 1898); James D. Richardson, ed., *A Compilation of the Messages and Papers of the Presidents*, 2:235–236 (Washington, 1896).

[4] Seventh annual message on Dec. 7, 1835, in Francis Newton Thorpe, ed., *The Statesmanship of Andrew Jackson as Told in his Writings and Speeches*, 433–435 (New York, 1909); Richardson, *Messages and Papers*, 3:171–172; *Register of Debates in Congress*, 20 Congress, 1 Session, Apr. 9, 1828, p. 610.

[5] Calhoun and Webster were at least partly convinced by the overemphasis on "deserts" made by travelers and explorers. Yet Calhoun reported to President Adams on Jan. 24, 1825, that the area west of Missouri and Arkansas Territory was definitely desirable and fit for the civilized farming Indians, whom he wished to see generously treated. *American State Papers, Indian Affairs*, 2:543–544 (Washington, 1834). His long speech on the Oregon Bill in the Senate on Jan. 24, 1843 gives no intimation that he even thought that any part of the West was a desert. See Richard K. Crallé, ed., *Speeches of John C. Calhoun*, 4:238–258 (New York, 1854).

On the other hand, John Ross, speaking for the Cherokees on Apr. 15, 1824, refused to force his agricultural people to become hunters again. He informed the United States Senate that he understood the region to which the Government wished to remove them was a "barren waste." *American State Papers, Indian Affairs*, 2:502 (Washington, 1834). On Nov. 12, 1824, a Choctaw delegation objected to moving west of the Kiamichi River to an area which they characterized as "nothing but prairies." They did not wish that "our people should always live by hunting." See *ibid.*, 550. On Jan. 25, 1825, Calhoun wrote to H. W. Conway, the delegate from Arkansas Territory, that the Choctaws objected to moving west of the newly established Arkansas line, because the land was "so destitute of

for the Government to use in the West, he certainly helped convince the public that the desert was a reality.[6] Other salesmen for the desert idea were travel writers like Henry M. Brackenridge, Edwin James, and Abbe Domenech;[7] historical fictionists like Washington Irving; traders like Josiah Gregg;[8] anonymous news writers who wrote up newsworthy, and therefore exceptional, items;[9] guidebook compilers;[10] textbook writers; map makers;[11] sentimentalists who hated to see the Indians removed to the "desert"; and gossipers of infinite variety who let their imaginations enlarge a small salt plain or sandy stretch into one of tremendous size. Probably Colonel Philip Cooke's report that it was 114° in the August shade at Fort Gibson in eastern Oklahoma made many converts.[12]

At all times, there was, however, considerable evidence that the treeless plains were not a desert, and the delusion started to disappear in the late fifties. Certainly by the late sixties, the Santa Fe traders, the forty-niners, the railroaders, the stock raisers, and the cattle drivers had made too much information available, and the Texan, Mexican, and Civil wars had focused attention too strongly on the Southwest, for even the popular misconception to endure any longer.[13] Perhaps the giant and influential volume by L. P. Brockett on *Our*

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timber, and of such sterile soil, as to render it unfit for agriculture." See *ibid.*, 557. It would appear that Calhoun either did not believe, or refused to admit he believed, the area was barren. See his letter of Jan. 24, 1825, to the President in *ibid.*, 543.

[6] "Report of the Secretary of War communicating, in compliance with a Resolution of the Senate of February 2, 1857, Information Respecting the Purchase of Camels for the Purposes of Military Transportation," 34 Congress, 3 Session, *Executive Document 62* (Washington, 1857).

[7] Henry M. Brackenridge, "Journal of a Voyage up the River Missouri Performed in Eighteen Hundred and Eleven (Baltimore, 1816)," in Reuben Gold Thwaites, ed., *Early Western Travels, 1748–1846*, 6:155, 160–161 (Cleveland, 1904); Edwin James, "Account of an Expedition from Pittsburgh to the Rocky Mountains . . . under Major S. H. Long (Philadelphia and London, 1823)," in *ibid.*, 16:174, 17:191–200; Abbe Domenech, *Seven Years Residence in the Great Plains of North America*, 1:151, 152 (London, Longmans, Green & Co., 1860), called everything desert from Fort Smith to the Gulf of California between 34 and 36 degrees north latitude.

[8] Washington Irving, *Astoria*, 216 (rev. ed., 1859); and Josiah Gregg, *Commerce of the Prairies*, 39, 44, 51, 224, 229, 345–346, 352–353 (Dallas, 1933).

[9] See item in *Niles' Weekly Register*, 25:357 (Feb. 7, 1824); repeated in *ibid.*, 35:70 (Sept. 27, 1828).

[10] *Colton's Traveler and Tourist's Guide Book*, 55–56 (New York, 1856) reported the "middle section" of Kansas Territory as "absolutely desert," while Nebraska Territory, in contrast, was well watered and would soon be a "productive granary" and filled with "villages" devoted to industry.

[11] Walter Prescott Webb, *The Great Plains*, 152–160 (Boston, 1931). See map in William M. Thayer, *Marvels of the New West*, 220 (Norwich, Conn., 1887). The wife of Governor Charles Robinson of Kansas Territory was delighted to find a country "beautiful beyond all comparison" instead of the desert she had studied in geography. See Sara Robinson, *Kansas*, 2–4 (Boston, 1856).

[12] Philip St. G. Cooke, *Scenes and Adventures in the Army*, 225–227 (Philadelphia, 1857).

[13] See Ralph C. Morris, "The Notion of a Great American Desert East of the Rockies," *Mississippi Valley Historical Review*, 13:190–200 (September 1926) for the rise and decline of the illusion.

Western Empire which appeared in 1881 gave the *coup de grâce* to the delusion, except for obscurantist writers like Eli Perkins, George Buckman, and William Bickham. In any event, it was obvious that the 962,000 people who went to Kansas and Nebraska in the seventies, and the 800,000 who settled in Texas in the same decade could not all have become desert nomads.[14]

The farmer migration after 1870 soon proved that, given rain, practically every part of the plains could be made to produce crops or support cattle. In fact, most of the settlers, finding the land fertile, began to farm it with customary abandon. Hence, ere the imaginary desert had been banished from the mind of the Ohio schoolboy, his uncles were actually creating one in Kansas.

The National Resources Planning Board has estimated that 3 billion tons of soil are washed or blown out of the fields of the United States every year. That is enough to load a train of freight cars 475,000 miles long, a distance sufficient to girdle the earth nineteen times at the equator. Furthermore, it is not merely the amount of soil lost, but the quality, that must be considered. In the spring of 1937, when a dust storm threatened to blow all the loose soil of the region which has come to be known as the Dust Bowl over into Canada, an experiment, made in Iowa, showed that the dust from the Dalhart dune area in the Texas Panhandle contained ten times as much organic matter, nine times as much nitrogen, and nineteen times as much phosphoric acid as the sandy residuum at Dalhart. The 3 billion tons of topsoil washed or blown away annually contain sixty times as much plant food as is restored to the soil in the same period by commercial fertilizers.[15]

Hugh H. Bennett of the Soil Conservation Service has estimated that it takes from six hundred to a thousand years to build up an inch of topsoil. A few years of indifferent farming can run off 6 inches of topsoil—the product of five thousand years of creation—and no one is the wiser except perhaps the farmer and he is not much concerned unless he owns the farm. The mass of the citizenry are unaware of the tragedy; they may work themselves into a passion if a child in Massachusetts refuses to salute the flag, but they are utterly indifferent to the irreplaceable loss of the very stuff of which they are made. Moreover, the loss of soil is a social and intellectual tragedy as well as an economic one; "soil decadence is usually followed by social and political decadence." Mineral deficiency in vegetation, animals, and man inevitably springs from soil depletion.[16]

The twenty-four thousand farms in the Dust Bowl that should never have been plowed are but one sore spot on the body of the country. As yet no one

[14] L. P. Brockett, *Our Western Empire*, 38, 39, 46, 49, 50, 64, 1124 (Philadelphia, 1881).

[15] Hugh H. Bennett and W. C. Lowdermilk in U. S. Department of Agriculture, *Yearbook*, 1938, p. 590–591, 595, and notes 5–7; Russell Lord, *Behold Our Land*, 46 (Boston, 1938). This volume is a redaction of the same author's "To Hold This Soil," U. S. Department of Agriculture, *Miscellaneous Publication 321* (Washington, 1938).

[16] Lord, *Behold Our Land*, 25–26, 45–46; *Time Magazine*, 36(21):59 (Nov. 18, 1935).

has counted the others that mark the devastation wrought by the westward movement or estimated the total number of ruined acres in the entire country. About half of the Nation's arable land is now cultivated, and every year thousands of acres pass into the class of land permanently ruined for agriculture. Farming in the Great Plains is contributing to this devastation at an unparalleled rate. Fortunately pictures and surveys are now bringing the appalling destruction visited on once fertile areas to public attention.

Oklahoma is one of the worst eroded States in the Union; while Texas has suffered the greatest loss in land value. The nature of the soil, the character of the rains, the heavy winds, and cotton cropping are some of the causes of this condition. Seventy percent of all farms in Texas and 42 percent of those in Oklahoma are devoted to cotton. Since the Hawley-Smoot Tariff, only mineral wealth and diversification of crops have kept these States relatively prosperous. The real pinch will come when their oil is gone and they have to depend more exclusively on agriculture.[17]

The soils of Oklahoma, although only tilled for an average of thirty seasons, have felt particularly the ravages of erosion and crop depletion. When crops decline, farms are abandoned, and then they tend to gully and sheet erode almost as fast as when cultivated. About 45 percent of Oklahoma has suffered a loss of more than three-fourths of its topsoil, a loss valued at twenty-five million dollars a year. Over 50 percent of the State's land is gullied and is, therefore, potentially ruined. Except for the river bottoms, the north-central sixteenth (Garfield, Alfalfa, Grant, and Kay counties) is the only part in cultivation that is not seriously eroded.[18] Data collected at the Guthrie Erosion Experiment Station show "that the water run-off from land cultivated continuously to cotton was 11 times greater and the soil loss 760 times greater than from the same kind of land covered with ungrazed Bermuda grass (6-year average 1930–35)."[19] In the last thirty years, the cotton yield in Oklahoma has dropped from 239 to 133 pounds per acre. Soil depletion is the basic cause of this decline, but there

[17] Meredith F. Burrill, "Geography and the Relief Problem in Texas and Oklahoma," in *Southwestern Social Science Quarterly*, 17:297, 300 (December 1936); and *Texas Almanac*, 1939–40, p. 180. Cotton acreage increased 40 percent in Texas and Oklahoma between 1915 and 1930, augmenting their total cultivated acreage by 17 percent. See P. G. Beck and M. C. Forster, *Six Rural Problem Areas*, 23 (Federal Emergency Relief Administration, *Research Monograph 1*, Washington, 1935). Since 1930, cotton acreage in Oklahoma has dropped from a peak of 5 million acres to a low of 2 million in 1939; for years the second ranking State in production, her 500,000 bales put her in eighth place and below Missouri and California which are not even considered cotton-producing States. See Clarence Roberts, editor of the *Farmer Stockman*, in the *Daily Oklahoman*, Nov. 26, 1939.

[18] National Resources Board, *Soil Erosion; A Critical Problem in American Agriculture; Part 5 of the Supplementary Report of the Land Planning Committee*, 82 (Washington, 1935); Oklahoma State Planning Board, *A Compendium of Maps and Charts Pertaining to State Planning in Oklahoma*, April 1936, p. 34–35; E. M. Rowalt, "Soil Defense in the South," U. S. Dept. of Agriculture, *Farmers Bulletin 1809*, p. 60–64 (Washington, 1938).

[19] U. S. Department of Agriculture, *Yearbook*, 1938, p. 105.

will be a temporary upturn when the drought breaks. Rains, however, do not build soil.[20]

Soil conditions in Texas are only slightly less appalling. The Black Prairie of the east-central section, like the blackjack areas of Oklahoma, is highly erosive. It has been farmed for only fifty years, yet is particularly endangered by sheet erosion. The Grand Prairie with 7 million acres which lies west of the Black Prairie has suffered considerably. It can probably be saved, however, because it is relatively level and is now being scientifically handled by the farmers in cooperation with the Soil Conservation Service. West of the Grand Prairie lie the West Cross Timbers with another 7 million acres. Due to continuous cotton cropping, 30 percent of this area has lost from one-fourth to three-fourths of its topsoil. Now, diversification of crops and serious efforts at erosion control have largely stopped the damage. All told, erosion has ruined but 10 percent of the total area of Texas as compared with 49 percent in Oklahoma. However, another 46 percent in Texas has lost from one-fourth to three-fourths of the topsoil, compared to another 18 percent in Oklahoma.[21]

The Dust Bowl (the forty counties within a radius of 160 miles of Guymon, Texas County, Oklahoma, including the Texas and Oklahoma panhandles and several counties of southwestern Kansas, southeastern Colorado, and northeastern New Mexico) is the prime example of what is bound to occur if farming is continued on the High Plains. The dust storm of March 11, 1939—probably the worst in history—took enough soil from the Dust Bowl into Oklahoma alone to cover 5 million acres a foot deep, assuming that the fall over the entire State was as great as at Stillwater.[22] The experiences of the farmers in the Dust Bowl during the past few years have proved the utter impracticability of intensive farming in most of the region. It is fit, or will be when regrassed, only for grazing and forage crops. Unfortunately, the best sod has been turned under.[23] Until it is resodded even stock raising will be no small gamble, for half the stock may be wiped out by a single black blizzard. The chief reason why more of the High Plains is not like the area near Dalhart, Hartley, Boise City, and Richfield is that it has not been plowed.

Of the 16 million acres comprising the heart of the Dust Bowl, 40 percent is being farmed, 9 percent is idle, and 51 percent is in grazing. Over half is seriously or dangerously eroded, and the damage varies from 20 percent in Oldham County, Texas, to 78 percent in Morton County, Kansas. Distributed according to present use, 79 percent of the cultivated lands, 89 percent of the idle lands, and 27 percent of all pasture lands are "seriously" eroded. Most of the farms in the area have had three or more sets of farmers since 1900. One group left during the first dry period, 1908–12; the second during 1920–25; and the third since 1932. The farmers who still remain praise God for the recent showers and

[20] Clarence Roberts in *Daily Oklahoman*, Nov. 26, 1939.

[21] Rowalt, "Soil Defense in the South," 52–60; National Resources Board, *Soil Erosion . . . Supplementary Report*, 88–89. See estimates by L. P. Merrill in *Texas Almanac*, 1939–40, p. 130.

[22] W. B. Gernert in *Daily Oklahoman*, Mar. 19, 1939.

[23] Rupert N. Richardson, "Some Historical Factors Contributing to the Problems of the Great Plains," in *Southwestern Social Science Quarterly*, 18:12 (June 1937).

snows and rush to plant another crop, but many of them will be on relief within five years.[24]

The social and economic complications of the area may be more carefully delineated by using Dallam County, Texas, as an example. It had 106 people in 1900 and 4,000 in 1920; the population is now about 8,000. Half of the land has been plowed, but one-third of this has been abandoned. One-fourth of the rural dwellings are empty. The indebtedness of the county is $10.24 per acre, plus interest. The Federal and local loans and grants total 90 percent of the assessed valuation. Pasture nominally rents for 15 cents an acre—it takes 30 acres per steer—but pasture cannot be rented at that figure, because the annual debt payment is 65 cents an acre, plus 8 cents for taxes. Dallam County is, no doubt, overpopulated, overfarmed, overstocked, and overtaxed. The only people who can prosper are those who foreclose or buy at ruinous rates and resell to unwary newcomers when there is a good crop. Not all counties in the South Plains, nor in the Dust Bowl, are as unfortunate as Dallam, but it is a sample of how overextension of credit and unwise farm practices destroy the settler along with the sod and the soil.[25]

Dune formation and the killing of timber are two other manifestations of wind erosion that need to be mentioned. Already there are 15,000 acres of semisterile sand dunes in the Great Plains region, mostly in or near the Dust Bowl. Dunes are emblematic of destroyed farms and departed topsoil; moreover, they usually cover up good soil. The Soil Conservation Service has learned how to level off and control them with soil-holding grass crops, but the wind can erect them faster than they can be reduced, unless the farming is either largely stopped or scientifically conducted.[26]

The effect of silting on the trees along the North Canadian River has been studied, and it is evident that millions of trees are being killed in this way. This is true not only in river courses, but wherever sand is piled to a depth of several feet over the roots of the trees, either by wind or water. This silting is definitely a byproduct, but nevertheless a serious one.[27] The 24 million trees that were planted in the Texas-Oklahoma shelterbelt before May 1938 can hardly be expected to live through many sandstorms.[28]

Chief among the causes of the depletion of the soil in the plains region is the failure of the plainsman and his creditors to cooperate with nature. After a few years, "the plow that broke the Plains" broke almost everybody who had

[24] Arthur H. Joel, "Soil Conservation Reconnaissance Survey of the Southern Great Plains Wind-Erosion Area," U. S. Department of Agriculture, *Technical Bulletin 556*, p. 2–3, 14–16, 19, 46 (Washington, 1937).

[25] E. D. G. Roberts, and others, *A Physical Basis for Tax and Mortgage Delinquencies in Dallam County, Texas,*—a 173-page mimeographed report consisting chiefly of maps and tables.

[26] Charles J. Whitfield, "Sand Dunes of Recent Origin in the Southern Great Plains," in *Journal of Agricultural Research*, 56:907, 916 (June 15, 1938).

[27] Horace J. Harper, "Effect of Silting on Tree Development in the Flood Plain of Deep Fork of the North Canadian River in Creek County," Oklahoma Academy of Science, *Proceedings*, 18:46–49 (Norman, 1938).

[28] U. S. Dept. of Agriculture, Forest Service, Prairie States Forestry Project, *Trees That Temper the Western Winds* (Washington, 1938).

held it. The region west of the ninety-eighth meridian has little precipitation, a high rate of evaporation, strong winds, hot summers, and friable soil. The farmer who took a chance on a crop during the World War may have "cashed in," but, if he continued on the land afterward, he is probably bankrupt today. For the plains of Oklahoma and Texas, the weather of an entire growing season is unpredictable. The evidence deduced from the tree rings of the region does not substantiate the idea of 7-year cycles of which the farmers speak.[29] Equally unreliable is the conclusion of the university professor who "proved" that plowing and cultivating the soil caused rain.[30] The belief of the Indians and many whites as well that burning the prairies brought rain is in the same category.[31] Oklahoma west of the ninety-eighth meridian has had eleven failures of 50 percent or more in the last thirty years.[32] These will unquestionably increase rather than decrease as more of the sod is broken and more effort expended to wrest a profit from land largely unsuited to cultivation.[33]

Farm tenancy is a very important factor in soil depletion. Tenants cannot be, and are not usually expected to be, interested in conserving the soil. Since Oklahoma gained statehood in 1907, over half of its farms have been operated by tenants. In 1910, the number of tenant farms was 55 percent; by 1935, it was 62 percent. The remaining farms were not owned outright; the actual equity was only 29 percent. The percentage of tenancy in Oklahoma and Texas is considerably higher than for the rest of the United States, but there is no reason to expect it to decrease under present conditions.[34] Between 1930 and 1935, 112,000 people in Texas and 71,000 in Oklahoma went back to farms. Most of them became tenants on so-called submarginal lands, and most of them are, or soon will be, on relief.[35] Those who took up small subsistence homesteads, especially on the High Plains, are in a no less precarious situation than they were while sitting in town, waiting for factories to open. When a Kansas farm of 640 acres—probably the smallest feasible unit for the plains west of the ninety-eighth meridian—produces an average annual net income of only $35 over a 20-year period, augmented by one season when the crop brought $20,000, it is no wonder that the West Coast is being flooded with migrants or that the Government is forced to loan some $150,000,000 a year in the Great Plains.[36]

[29] R. S. Campbell, "Climatic Fluctuations," 140–142, in *The Western Range* (74 Congress, 2 Session, *Senate Document 199*, Washington, 1936); Warren Thornthwaite, "The Great Plains," in Carter Goodrich, and others, *Migration and Economic Opportunity*, 223 (Philadelphia, 1936).

[30] Lord, *Behold Our Land*, 193; J. F. Kinney, Indian agent at Yankton, in U. S. Commissioner of Indian Affairs, *Report*, 1884, p. 58.

[31] S. N. Carvalho, *Incidents of Travel and Adventure in the Far West with Colonel Fremont's Last Expedition*, 48 (Cincinnati, 1857).

[32] Oklahoma State Conservation Commission, *Biennial Report*, Jan. 15, 1937, p. 9.

[33] See Webb, *The Great Plains*, 17–26, 319–382, for an excellent discussion of the climate.

[34] Oklahoma State Planning Board, *Preliminary Report on State Planning*, 1936, p. 39–41; U. S. Dept. of Agriculture, *Yearbook*, 1938, p. 9. For Texas, see *Texas Almanac*, 1939–40, p. 92.

[35] Burrill, "Geography and the Relief Problem in Texas and Oklahoma," 295–296.

[36] Thornthwaite, "The Great Plains," 232, 234. "Benefit payments" in Oklahoma alone for 1933–39 totaled $150,000,000. See Clarence Roberts in *Daily Oklahoman*, Jan. 7, 1940.

Certainly the Agricultural Adjustment Administration has not solved any problem by paying landlords bonuses for not raising crops and permitting them to turn off their labor. The three hundred Negroes hired to pick the 1937 cotton crop in Cochran County, Texas, is a case in point. The following winter, they were herded into dugouts and maintained at public expense. Their plight was accentuated when the cotton allotment of the county for 1938 was cut in half, and the crop actually fell off two-thirds.[37]

The number of families on relief in Texas, Oklahoma, and Kansas constitute at least 10 percent, and a movement to the farm is hardly the answer to unemployment. It seems unquestionable that the High Plains area is overpopulated by at least a third. To permit or induce more people to go into intensive agriculture there is almost criminal.[38]

Technological improvement is another threat to the prosperity of the small farmer and the individualistic farmer who refuses to cooperate fully with his neighbors. In the last fifteen years, the number of tractors in the Plains region has increased more than 200 percent. The small farm is increasingly at a disadvantage as compared with the large, efficient, mechanized one. Cooperative farming is the only solution of this problem, especially if the small farmer insists on a one-crop economy.[39]

Overgrazing is another serious factor in erosion and soil depletion. According to the report of the Great Plains Committee, 95 percent of the range lands in the Great Plains have declined from one-fourth to three-fourths in productivity.[40] Stock totaling 17,100,000 head are now being grazed on land that should carry only 10,800,000. Three-fourths of the range is still on the downgrade, and it is estimated that a century of careful restoration is needed to make it support the 22,500,000 head it was once capable of doing. Yet today it produces three-fourths of the Nation's wool and mohair, over half of its sheep and lambs (in pounds), one-third of its cattle and calves, and one-sixth of its wheat.[41]

Finally, the widespread practice of burning the grass must cease. Nothing, short of plowing, so thoroughly destroys roots and facilitates the breakup of the soil.[42]

The desert threat in the South Plains is real, but not in the sense that the region is destined to become a sandy Sahara. It may, however, become so unproductive through misuse that it will have to be abandoned, even as parts of

[37] Lord, *Behold Our Land*, 272–276. The actual yield for Cochran County fell from 17,466 to 6,620 bales. See *Texas Almanac*, 1939–40, p. 184.

[38] Oklahoma State Planning Board, *Preliminary Report*, 1936, p. 182–183; Texas State Planning Board, *Report*, 1936, p. 64; Thornthwaite, "The Great Plains," 243, 245–248. The Oklahoma State Welfare Board reported 360,000—exactly 15 percent of the population —on relief in January 1940. See *Oklahoma City Times*, Jan. 13, 1940.

[39] Lord, *Behold Our Land*, 205–207. The number of tractors in Oklahoma increased 800 percent in the last twenty years, and this increase was mostly in the west half of the State. See *Daily Oklahoman*, Apr. 23, 1939.

[40] 75 Congress, 1 Session, *House Document 144*, p. 5.

[41] Joel, "Soil Conservation Reconnaissance Survey," 14; *The Western Range*, iii–iv, vii–viii; Thornthwaite, "The Great Plains," 231.

[42] Rowalt, "Soil Defense in the South," 63.

it already have been, unless proper land utilization is achieved. The splendid work being carried on by bureaus of the Federal, State, and local governments is contributing to this end.

Congress, converted by the black blow of 1934 when western dust blew through the Nation's Capital for the first time in history, has willingly granted appropriations. Perhaps the New Deal's most permanent contribution to a planned prosperity was the creation of the National Resources Committee, which seeks to apply scientific methods to the conservation of land, water, and mineral resources. By virtue of the Aerial Photographic Survey, the Flood Control and Irrigation Projects Law, and the splendid extension and demonstration service, much progress is being made. To the recently reconstituted Bureau of Agricultural Economics has been assigned the integration of the various efforts at national conservation, the elimination of duplication and waste, and the putting of conservation on a self-liquidating basis.

The Soil Conservation Service, operating in the twelve regions of the South Plains, has put almost a million acres in demonstration areas.[43] The establishment of soil conservation districts by State legislation but with Federal supervision and support is a promising step. Oklahoma has thirty-nine of these districts—more than any other State. Chartered by the State on the petition of twenty-five farmers, and having been approved by a majority of the farm voters in the proposed district, they may enforce conservation practices on minority recalcitrants by court order.[44]

These districts, in actual operation, have been slow in starting due to Federal red tape, have proved too expensive for wide use due to the tendency to expend more for conservation than the land is worth, and have aroused opposition among farmers who are notoriously hard to coerce. In short, the interest of the farmers has been aroused but not satisfied with action, nor has the economic soundness of the plan been demonstrated to them with figures.

In many Oklahoma counties a modification is being developed which overcomes the defects of the soil conservation districts plan. To a committee appointed by the county agricultural council, its president, the county commissioners, the president of the bankers' association, a member of the chamber of commerce, and the county agent are added as ex-officio members. This committee is known as the county conservation and soil resources association. Its members are men whom the farmers know and trust. It supervises conservation practices throughout the county at a very low cost.

In Cleveland County, for example, splendid work is being done under this arrangement. The county has 132,000 tilled acres; 12,000 of these are aban-

[43] Glenn K. Rule, "Land Facts on the Southern Plains," U. S. Dept. of Agriculture, *Miscellaneous Publication 334* (Washington, 1939). See also Lord, *Behold Our Land*, 299–303.

[44] National Resources Committee, *State Planning; Programs and Accomplishments*, 60–61, 76–77 (Washington, 1937); Texas State Planning Board, *Report*, 1935, p. 39, 42, 51; Lippert S. Ellis, "The Soil Conservation Districts Law of Oklahoma," *Southwestern Social Science Quarterly*, 19:183–188 (September 1938); U. S. Great Plains Committee, *The Future of the Great Plains*, 80–89, 106, 108, 172–173 (Washington, 1936).

doned, and 12,000 more lie idle, chiefly due to erosion. Reseeding and construction of small spreader-dams and diversion ditches under the supervision of the county agent is arresting the destruction. In the last two years, 30,000 acres have been terraced and 5,000 contour-listed, and 120 small lakes and ponds have been built. The farmer or owner pays only for the oil and gasoline consumed by the tractor and for the labor of one or two men. Technical aid is rendered by the county agent and his staff, the assistants being paid from the county's share of the State tractor tax, supplemented by a subsidy from the Norman Chamber of Commerce. The county's machinery and skilled help are available at all times except during the 60 or 70 days they are being used on the roads. The county agent, backed by the county agricultural council, is the real commander-in-chief of these operations. The farmers are much happier cooperating with him than with officials from Washington or Oklahoma City. The Federal and State governments would do well to spend conservation appropriations through the offices of the county agents. A million little dams and lakes and terraces would cost less and do immensely more for the Southwest than, for example, the Red River Dam. Moreover, this is local government of the most vital sort. It is a real example of the fundamental process which must be developed if democracy is to be preserved in America.

Planning, whether Federal, State, or local, is the greatest forward step that agriculture needs to take. Farming is a gamble, especially on the Great Plains, and planning of the highest type is needed. Every State in the Union now has a planning board except Delaware; and Federal, State, and local assistance is available to help every farmer plan his farm. This planning, however, must be integrated. At present the cheapest and most effective base for scientific conservation is the local county unit. The Federal and State governments must support this splendid work.

Education by the schools, the farm organizations, and county and home demonstration is enlightening the farmer and the general public as well. Much remains to be done. Vocational agriculture and 4-H club work should be taught in all high schools, rather than only one-fourth of them. One can scarcely hope to see all the future farmers of America cooperate with their neighbors, cease raising surpluses that cannot be marketed, or depart from present suicidal practices, unless they are taught how and why.

Scientific farming, it may be noted in conclusion, is based fundamentally on three factors: ownership, education, and scientific practice. When ownership problems are worked out intelligently, when every farmer in the land is scientifically trained, and when proper land utilization is planned and established, the soil will be saved. The day of the outlaw farmer who destroys everything he touches in order to barely live is about over. Every slaughtered animal and plant can be replaced if only the soil is saved. If agrarian discontent, continued social degradation, and barbarous dictatorship are to be avoided, every educator must participate in saving the farmers and the soil of America.