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GARRY LYNN NALL

Norman, Oklahoma

1972

AGRICULTURAL HISTORY OF THE TEXAS PANHANDLE,

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APPROVED BY

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Preface

This study of the agricultural history of the Texas Panhandle focuses attention upon one small section in the United States. Yet the movements which altered the economic structure of this Southern Plains region reflects larger changes occurring within the nation as a whole. The settlement of the trans-Mississippi West, the impact of the scientific and technological revolutions, and the changing role of government have all been influential factors. However, irregardless of whether one looks at agricultural development on a national or on a regional level, one essential truth becomes clear, the key to successful farming depends upon the ability of man to adjust to his environment.

Numerous librarians and archivists extended generous assistance in the preparation of this work. Mrs. Faye Bell Crain, Mrs. Claire Kuehn, Kim Taylor, and C. Boone McClure gave me complete access to the resources and facilities of the Panhandle Plains Historical Museum. Mrs. Annette Cook and Miss Bertie May Williams of the West Texas State University Library staff were exceptionally helpful in locating government documents. I am also indebted to Newton Mitchell of the Texas State Archives, Dr. Llerena B. Friend of the University of Texas Barker History Center Library, David B. Gracy, II of the Southwest Collection at Texas Technological University, and Mrs. Mary Louise Loyd of the Bivins Memorial Library in Amarillo, all of whom made my research easier.

Several individuals offered invaluable aid. Dr. Donald E. Green of Central State University at Edmond, Oklahoma, placed all of the materials of his study of irrigation on the Texas High Plains at my disposal. Dr. Charles E. Nelson of the Department of Geography at West Texas State University drew the maps included in this study. The expertise of my typist, Mrs. Andrea Green, vastly improved the final product. Ronald F. Briley of West Texas State University, Robert Leveridge and Mrs. Josephine Soukup, both at the University of Oklahoma, handled some of the more unsavory chores. Of my colleagues in the Department of History at West Texas State University, Dr. Frederick Rathjen, Dr. Duane Guy, Dr. Peter Petersen, and Michael Green were especially helpful.

I am appreciative for the time and effort granted by the members of my dissertation committee, Dr. Russell D. Buhite, Dr. Dougald T. Calhoun, Dr. Norman L. Crockett, and Dr. Arrell M. Gibson. I am especially thankful for the guidance, aid, and encouragement of the chairman of my committee, Dr. Gilbert C. Fite.

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AGRICULTURAL HISTORY OF THE TEXAS PANHANDLE, 1880-1965

CHAPTER I

PHYSIOGRAPHY AND THE PANHANDLE FARMER

Physiographical forces have largely shaped agricultural development in the Texas Panhandle. Lying south of 36°30' north latitude between the 100th and 103rd meridians, the twenty-six counties of northwestern Texas are geographically located within the vast interior region of North America commonly known as the Great Plains.[1] Though the plains may generally be described as timberless, level, and subhumid, variations in topography, climate, vegetation, soil, and altitude have created distinct localities. Such differences within the Panhandle distinguish the Eroded Plains of the southeastern counties from the High Plains. Consequently, successful farming in northwest Texas has required adjustment not only to the general plains conditions but also to local variations.

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[1]The counties are Armstrong, Briscoe, Carson, Castro, Childress, Collingsworth, Dallam, Deaf Smith, Donley, Gray, Hall, Hansford, Hartley, Hemphill, Hutchinson, Lipscomb, Moore, Ochiltree, Oldham, Parmer, Potter, Randall, Roberts, Sherman, Swisher, and Wheeler.

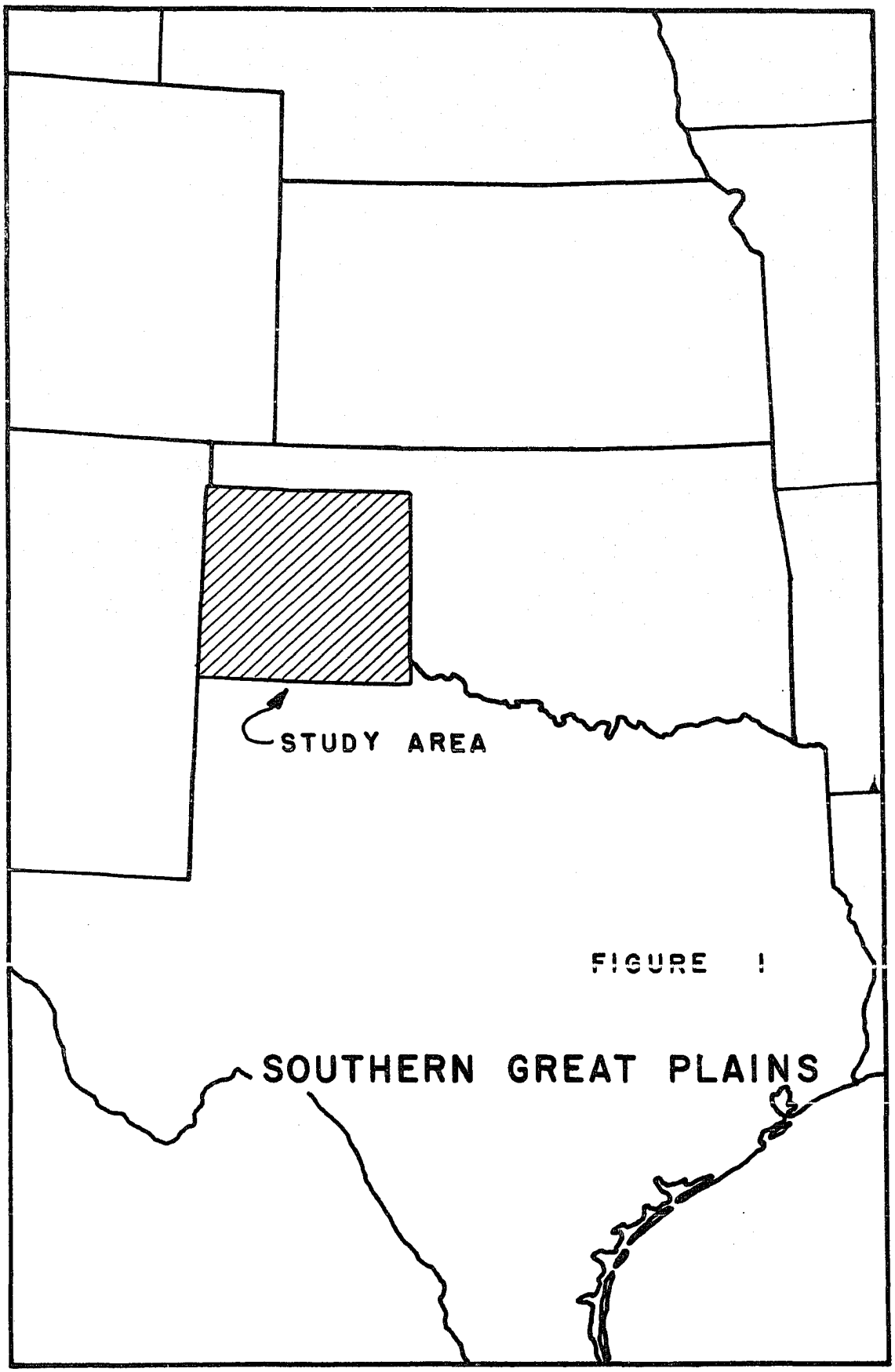


FIGURE 1

Among the most attractive features of the Panhandle to farmers is the overall levelness of the terrain. The land of the Eroded Plains has a rolling surface interrupted occasionally by severely eroded areas along the forks of the Red River. While such a landscape permits widespread cultivation, the extent of arable land compares unfavorably with the incredibly flat High Plains to the north and west. Without rocks or trees this amazingly level terrain allows maximum farm utilization except near the occasional streams and playa lakes or "buffalo wallows." An owner of the XIT Ranch perhaps best characterized the unusual surface quality of the High Plains when he exclaimed: "What a clean stretch of land! Why I could start a plowpoint into the soil at the south line and turn a furrow two hundred miles long without a break. . . ."[2]

Although a level topography extends over most of the Panhandle, areas of rough broken land found near streams and the eastern escarpment of the High Plains or Cap Rock do prevent the utilization for cultivation purposes all of the region's 25,610 square miles.[3] Water erosion has created "breaks" along the Coldwater, Palo Duro and Wolf Creek tributaries of the North Canadian River as well as next to the Prairie Dog Town, Elm, North, Salt, and Washita Forks

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[2]Quoted in J. Evetts Haley, The XIT Ranch of Texas (Norman, 1953), p. 204.

[3]Texas Almanac, 1968-1969 (Dallas, 1967), pp. 242-338.



FIGURE 2

THE TEXAS PANHANDLE

of the Red River. Extensive river wasteland surrounds the Canadian River for twenty to thirty-five miles as it cuts across the High Plains. Even more dramatic is the Cap Rock which towers 500 to 1200 feet above the Eroded Plains and at whose base lie a series of deep canyons and gullies.

While the roughness of such landscape restricts farming, the presence of abundant grasses makes most of the region suitable for grazing purposes. With the exception of tall grasses which thrive near the river and creek bottomlands, short grasses of the buffalo, the blue grama, and the hairy grama varieties are dominant in almost all localities.[4]

Even in those areas where the land surface is satisfactory for cultivation, soils impose further limitations. In general, Reddish Chestnut soils cover most of the arable land. While the drought-resistant qualities of easy absorption and retention of moisture above the heavy subsoils enhance the value of these soils, differences in texture and parent materials cause a variability in productive capacity. On the High Plains most of the soils are highly fertile brown to dark brown, heavy-textured surface clay loams belonging to the Greenburg-Pullman-Richfield and Zita-Pullman Associations.[5]

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[4]Benjamin Carroll Tharp, Texas Range Grasses (Austin, 1952), pp. 60 and 66.

[5]U.S., Department of Agriculture, Soils and Men, Yearbook of Agriculture, 1938 (Washington, 1938), pp. 1086 and 1088; Texas, Agricultural Experiment Station, The Soils of Texas, by W. T. Carter, Bulletin No. 431 (College Station, July, 1931), pp. 147, 149, and 154.

The one exception within the Reddish-Chestnut category is found in the southwestern corner of Parmer County where the fine texture of the red or reddish-brown Amarillo Sandy Loam presents a constant threat of wind erosion.[6]

In the Eroded Plains the primary Reddish-Chestnut soils belong to the Miles-Vernon and St. Paul-Abilene Associations. With sufficient moisture the dark brown, heavy clay loam St. Paul-Abilene soils are among the best in the region. In contrast, the red to reddish-brown Miles-Vernon soils are less satisfactory, for their sandy and clay texture is subject to erosion unless carefully protected.[7]

The extreme northwestern corner of Dallam County contains the only Brown Soils in the Panhandle. The brown to grayish-brown silt loams or silty clay loams with occasional sandy materials belong to the Baca-Prowers group. Although productive under suitable moisture conditions, the frequency of dry or windy seasons makes farming marginal on these soils.[8]

Just as much of the farmer's success depends upon the capacity of the soil, climatic conditions also affect his operations. Although the Panhandle's climate generally may

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[6]U.S., Dept. of Agriculture, Soils and Men, p. 1085; Texas, Agricultural Experiment Station, The Soils of Texas, Bull. No. 431, pp. 150-152 and 155-156.

[7]U.S., Dept. of Agriculture, Soils and Men, p. 1086-1088.

[8]Ibid., p. 1089.

be classified as temperate and subhumid, widespread variations in temperature and rainfall exist. Both the increase in elevation from 1600 feet in Childress County to 4694 feet at Texline in Dallam County and differences in latitude account for some of the diversity.[9] Consequently, each farmer must adjust to the guidelines considered "normal" for his particular vicinity.

One important consideration in the selection of crops for localities within the Panhandle is the temperature range. Those counties below the Cap Rock register warmer readings than those on the High Plains. For example, a comparison between the mean temperatures of the extreme southeastern Childress County and Dallam County in the far northwest reveals a contrast sufficient to affect plant growth. In the former county the maximum July temperature reaches ninety-nine degrees, while the minimum January reading falls to twenty-six degrees. The latter county's July maximum rises to ninety-two degrees, and the January minimum declines to eighteen degrees.[10]

Besides the seasonal temperature extremes, Panhandle farmers must also consider the effects of daily temperature fluctuations upon plants and soil. At Amarillo average January readings range from a moderate 48.8 degrees

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[9]Texas Almanac, 1968-1969, pp. 123 and 255.

[10]Ibid., pp. 104-105.

maximum to a cold 23.5 degrees minimum. In July the daily maximum rises to a hot 92.2 degrees but drops to a cool sixty-six degrees at night.[11] Under such conditions the possibility of soil and plant temperatures becoming too cold in the winter or too warm in the summer to be destructive to crops is reduced.

Directly related to temperature variations is the length of the growing season. Extending from the last killing frost in the spring until the first killing frost in the fall, this major factor in crop selection changes in the Panhandle in direct relation with the elevation. Childress County which lies from 1600 to 1900 feet above sea level has a normal growing season of 217 days (April 3 to November 6).[12] In contrast, Parmer which is situated on the same latitude but is 3800 to 4100 feet in elevation averages 183 days (April 20 to October 20).[13] The same situation occurs in the northern Panhandle where Lipscomb County with an altitude of 2350 to 2850 feet experiences 202 growing days (April 10 to November 6),[14] while Dallam County at 3800 to 4600 feet has a growing season length of only 178 days

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[11]U.S., Department of Commerce, Decennial Census of United States Climate, Monthly Normals of Temperature, Precipitation, and Heating Degree Days, Texas, Climatography of the United States No. 81-36 (Washington, 1962), p. 1.

[12]Texas Almanac, 1968-1969, pp. 255 and 104.

[13]Ibid., pp. 316 and 108.

[14]Ibid., pp. 107 and 303.

(April 23 to October 18).[15] Thus, those areas of lower elevation, particularly the Eroded Plains, have the potential for growing a greater variety of crops than the region of higher altitude, the High Plains.

Throughout the Panhandle a constant climatic factor with which farmers have to contend is the wind. Flowing primarily from the south-southeast in the summer and the north-northwest in the winter, velocities at Amarillo in excess of thirteen miles per hour range in frequency from thirty-six per cent of the time during the calmest month of August to sixty per cent in March and April.[16] Sweeping over the treeless plains, the breezes which generally keep the humidity low and the rate of evaporation high have both salutary and detrimental effects. On the one hand, besides clearing the air of pollutants and providing power when harnessed by the windmill, the constant air flow brings moisture to the dry region, particularly from the Gulf of Mexico during the summer months.[17] On the other hand, cold "northers" cause much discomfort and frequently inflict damage upon vegetation when accompanied by moisture, while hot dry winds from the desert Southwest

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[15] Ibid., pp. 264 and 105.

[16] U.S., Department of Commerce, Weather Bureau, The Climate of Texas and the Adjacent Gulf Waters, by Robert B. Orton (Washington, 1964), pp. 131-132.

[17] Texas, Water Development Board, The Climate and Physiography of Texas, by John T. Carr, Jr., Report 53 (Austin, July, 1967), p. 11.

severely sere crops during their growing stage. In dry years the threat of sand storms and the accompanying wind erosion is everpresent.[18]

Although the soil, temperature, and wind command the farmer's attention, no single climatic element dominates the local interest more than does rainfall. In a fringe area where average rainfall declines from a subhumid twenty-one to twenty-three inches in the east to a semiarid sixteen to eighteen inches in the west, the question of moisture dependability becomes an overriding issue.[19] One study shows that in ten of thirty years examined a twenty-five per cent variability from normal average rainfall occurred on the High Plains.[20] A similar fluctuation appears in the records from sixty-nine years at Amarillo where annual precipitation has ranged from as little as 9.94 inches to as much as 37.21 inches. Even though the same city averages 20.75 inches, its median of 19.85 indicates that in more than one half of the record period precipitation was less than average.[21] Consequently, adaptation to a region of undependable rainfall

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[18]Robert DeCourcy Ward, The Climates of the United States (Boston, 1925), pp. 378 and 405-406; Walter Prescott Webb, The Great Plains (New York, 1931), pp. 23-25.

[19]Texas Almanac, 1968-1969, pp. 104-109.

[20]Texas, Water Development Board, The Climate and Physiography of Texas, Report 53, p. 10.

[21]Texas, Agricultural Experiment Station, "Rainfall at Amarillo, Texas," by Marvin E. Jensen and R. J. Hildreth, Mimeographed Report MP-583 (College Station, May, 1962), p. 5.

becomes a major problem for the farmer.

Certain ameliorating factors reduce the hazards of inadequate precipitation. The general levelness of the terrain, especially on the High Plains, along with the soil's excellent absorptive capacity aid in fully utilizing the moisture that does fall. Furthermore, the fact that three-fourths of the annual rainfall normally occurs within the May to October growing season means that crops receive moisture at the most beneficial time.[22] Even in the usually dry winter period, farmers can expect about 13.5 inches of snow and sleet which as it melts readily penetrates the soil.[23]

Though such conditions contribute to the effective utilization of precipitation, the constant threat of inadequate moisture persists. In response to such difficulties, farmers have increasingly adopted soil and water conservation programs, practiced dry farming techniques, or planted drought-resistant crops. However, the most profitable modern adaptation has been supplementing rainfall with irrigation from underground water and surface impoundment sources.

Throughout most of the Texas Panhandle an underground water supply lies sufficiently near the surface to make irrigation economically feasible. The principal aquifier on the High Plains is the Ogallala formation of the Tertiary System whose sands are found at a depth of from fifty to

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[22] Ibid., p. 6.

[23] Texas Almanac, 1968-1969, p. 103.

400 feet.[24] In the Eroded Plains Blaine Gypsum and Quaternary alluvium provide the primary ground-water sources. Although both aquifiers satisfy irrigation purposes, their mineral contents lessen their suitability for human consumption or industrial use. Calcium sulfate and chloride are principal constituents of Blaine Gypsum water found at a maximum depth of 375 feet.[25] The water from the Quaternary alluvium whose depth ranges from less than one foot to 130 feet is very hard as a result of its calcium and silica content.[26] However, despite the mineral constituents, the presence of the underground water in the Panhandle has enabled farmers to reduce hazards to farming in the subhumid-semiarid area.

Even as irrigation has contributed to the reduction of agricultural risks, farmers have further adjusted to the regional environment through the careful selection of crops. Basically, cotton, grain sorghums, and wheat dominate agricultural production. Restricted within a minimum 200 day

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[24]Texas, Board of Water Engineers, Geology and Ground-Water Resources of the Northern High Plains of Texas, Progress Report No. 1, by W. H. Alexander, Jr., Bulletin 6109 (Austin, November, 1961), p. 14; Texas, Board of Water Engineers, A Summary of the Occurrence and Development of Ground Water in the Southern High Plains of Texas, by J. G. Cronin, Bulletin 6107 (Austin, September, 1961),p. 61.

[25]Texas, Water Commission, Reconnaissance Investigation of the Ground-Water Resources of the Red River, Sulphur River, and Cypress Creek Basins, Texas, by E. T. Baker, Jr., A. T. Long, Jr., R. D. Reeves, and Leonard A. Wood, Bulletin 6306 (Austin, July, 1963), pp. 84-85 and 87.

[26]Ibid., pp. 90 and 93.

growing season and a twenty inch annual rainfall zone, cotton is a major commodity in the extreme southern counties of the High Plains as well as throughout the Eroded Plains.[27] Grain sorghums and wheat do well in all of the twenty-six counties. Sorghums have drought-resistant qualities which permit growth and production in the driest years as long as sufficient soil moisture exists at planting time.[28] With a minimum rainfall of fifteen inches, wheat, particularly the hard red winter variety, thrives on the heavy plains soils.[29]

Though cotton, grain sorghums, and wheat prevail in the Panhandle, several other farm commodities produce well. Of the small grains, either fall or spring-planted barley

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[27]Texas, Agricultural Experiment Station, Cotton Production in Texas, by E. B. Reynolds, Bulletin 938 (College Station, September, 1959), p. 6; C. B. Doyle, "Climate and Cotton," U.S., Department of Agriculture, Climate and Man, Yearbook of Agriculture, 1941 (Washington, 1941), p. 350.

[28]Texas, Agricultural Experiment Station, Grain Sorghum Production in Texas, by J. R. Quinby, N. W. Kramer, J. C. Stephens, K. A. Lahr, and R. E. Karper, Bulletin 912 (College Station, July, 1958), p. 25; J. H. Martin, "Climate and Sorghum," U.S., Dept. of Agriculture, Climate and Man, pp. 344-347.

[29]Texas, Agricultural Experiment Station, Wheat Production in the Panhandle of Texas, by Kenneth B. Porter, I. M. Atkins, and C. J. Whitfield, Bulletin 750 (College Station, June, 1952), p. 7; Texas, Agricultural Experiment Station, Wheat Production in Texas, by I. M. Atkins, K. B. Porter, Keith Lahr, Owen G. Merkle, and M. C. Futrell, Bulletin 948 (College Station, March, 1960), p. 11-12; S. C. Salmon, "Climate and Small Grains," U.S., Dept. of Agriculture, Climate and Man, pp. 323, 324, and 335.

and oats generally provide high yields.[30] Some corn is grown in the area, but the lack of dependable rainfall and low humidity have prohibited its becoming a primary crop except on irrigated land.[31] In fact, irrigation has permitted Panhandle farmers not only to expand their range of commercial production to include such diverse crops as vegetables, soybeans, and sugar beets but also to enlarge the dimensions of future production.

Despite the Panhandle farmers' success in adapting to local physiographical conditions, problems of protecting crops from destructive insects, animals, and diseases remain. Jackrabbits and prairie dogs inflict great damage by eating plants and burrowing in the soil.[32] Of all insects, grasshoppers are the most common and the most menacing to vegetation. Moving in waves, they can ruin yields by biting off grain heads, destroying the flowers of alfalfa and clovers, and cutting cotton seedlings and

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[30]Texas, Agricultural Experiment Station, Oat Production in Texas, by I. M. Atkins and E. S. McFadden, Bulletin No. 691 (College Station, September, 1947), pp. 6-7; Texas, Agricultural Experiment Station, Barley Production in Texas, by I. M. Atkins and P. B. Dunkle, Bulletin No. 605 (College Station, September, 1941), p. 6.

[31]Texas, Agricultural Experiment Station, Corn Production in Texas, by John S. Rogers and Jesse W. Collier, Bulletin 746 (College Station, February, 1952), p. 13; Merle T. Jenkins, "Influence of Climate and Weather on Growth of Corn," U.S., Dept. of Agriculture, Climate and Man, p. 310.

[32]L. F. Sheffy, The Life and Times of Timothy Dwight Hobart, 1855-1935 (Canyon, Texas, 1950), pp. 130-131.

bolls.[33] In years of wet, cool summers followed by dry, mild winters greenbugs and other aphids frequently damage small grains by sucking juices from the plants.[34] Bollworms, also known as corn earworms or tomato fruitworms, occasionally harm such crops as cotton, grain sorghums, corn, tomatoes, and alfalfa.[35] Besides these regular pests, such other insects as spider mites, flea beetles, armyworms, cut worms, root worms, and corn borers are also found in the region.[36]

Several types of plant diseases and weeds injure crops. Of the diseases, smuts, rusts, and root rots are

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[33]J. R. Parker, "Grasshoppers," U.S., Department of Agriculture, Insects, the Yearbook of Agriculture, 1952 (Washington, 1952), pp. 595 and 597.

[34]Texas, Agricultural Experiment Station, Wheat Production in the Panhandle, Bulletin 750, p. 33; Texas, Agricultural Experiment Station, Wheat Production in Texas, Bulletin 948, p. 19-20; Texas, Agricultural Extension Service, Oats in Texas, by Lee Coffey and Ben Spears, Bulletin 884 (College Station, n. d.), p. 10.

[35]Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments in the High Plains Cotton Area of Texas, by A. C. Magee, C. A. Bonnen, and B. H. Thibodeaux, Bulletin No. 652 (College Station, July, 1944), p. 14; Texas, Agricultural Experiment Station, Cotton Production in Texas, Bulletin 938, p. 28; Texas, Agricultural Experiment Station, Corn Production in Texas, Bulletin 746, pp. 37-38; Texas, Agricultural Experiment Station, Grain Sorghum Production in Texas, Bulletin 912, p. 15.

[36]Texas, Agricultural Experiment Station, Wheat Production in the Panhandle, Bulletin 750, pp. 33-36; Texas, Agricultural Experiment Station, Corn Production in Texas, Bulletin 746, p. 38; Texas, Agricultural Experiment Station, Grain Sorghum Production in Texas, Bulletin 912, pp. 14-16; Texas, Agricultural Experiment Station, Cotton Production in Texas, Bulletin 938, p. 28.

the most prevalent. Wheat farmers contend with stinking smut and loose smut, leaf and stem rusts, septoria leaf blotch and septoria glume blotch, western wheat mosaic and root rots, all of which harm the heads, leaves, stems, and roots.[37] Grain sorghums in the Panhandle are frequently afflicted with seed-borne kernel smut or soil-borne milo blight as well as the destructive charcoal rot, a fungus disease in the soil usually found during dry years.[38] Verticillium wilt, seedling disease, and bacterial blight render the most damage to cotton.[39] Common weeds found in the area are the annual grasses--goat grass, little barley, and cheat--as well as the broadleaf perennials--bindweed, blueweed, and Johnson grass.[40]

In spite of pests, weeds, and diseases, successful farming everywhere depends upon the ability of men to adjust to physiographical forces. In the Panhandle the diversity

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[37]Texas, Agricultural Experiment Station, Wheat Production in the Panhandle, Bulletin 750, pp. 24-31; Texas, Agricultural Experiment Station, Wheat Production in Texas, Bulletin 948, pp. 16-19.

[38]Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments, Bulletin No. 652, p. 14; Texas, Agricultural Experiment Station, Grain Sorghum Production in Texas, Bulletin 912, p. 13.

[39]Texas, Agricultural Experiment Station, Cotton Production in Texas, Bulletin 938, pp. 33-35.

[40]Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments, Bulletin No. 652, pp. 13-14; Texas, Agricultural Experiment Station, Wheat Production in the Panhandle, Bulletin 750, p. 23; Texas, Agricultural Experiment Station, Wheat Production in Texas, Bulletin 948, p. 21.

of the terrain, altitude, soils, and climatic factors as well as the availability of water have required farmers to adapt agricultural techniques and crop selection to their immediate locality. Although the abundance of native grasses makes the area ideal for ranching and stock farming, crop production is also important. Cotton has become dominant on the Eroded Plains below the Cap Rock, while wheat and grain sorghum prevail on the High Plains. Even as technological advances and scientific experimentation have enlarged the scope of farm activity, physiographical forces continue to shape the agricultural development of northwest Texas.

CHAPTER II

THE PANHANDLE BEFORE THE FARMER

Twenty years following the Civil War the farmers' frontier approached the Texas Panhandle. Although travelers from the eastern United States had traversed the region for more than two generations, the migration of cultivators into northwest Texas lagged nearly a decade behind most other sections of the Great Plains because of the late removal of the Plains Indians, the rapid expansion of the cattle industry, and the lack of transportation facilities. Yet even as these barriers fell, the question of whether man could fashion an agricultural society within the environment of the Southern Plains remained unanswered.

Few of the Americans who first ventured into the Panhandle believed that farming would develop there. Upon completion of the initial United States military expedition along the Canadian River in 1820, Major Stephen Harriman Long reported to Secretary of War John C. Calhoun: "In regard to this extensive section of the country, I do not hesitate in giving the opinion, that it is almost wholly unfit for cultivation, and of course uninhabitable by a

people depending upon agriculture for their subsistence."[1] Josiah Gregg, a Santa Fe trader, wrote in 1841 that along the Canadian River, ". . . the low valleys . . . are either too sandy or too marshy for cultivation, and the upland prairies are, in many places, but little else than sand hills."[2] Both as a guide for California-bound "forty-niners" and as an explorer of the headwaters of the Red River, Randolph B. Marcy in 1849 described the Llano Estacado as a, ". . . desolate waste of uninhabited solitude, which always has been, and must continue uninhabited forever. . . ."[3] Later, he declared that, ". . . in consequence of the almost total absence of summer rain, and the extreme aridity of the thirsty soil, it is only along the immediate borders of the streams, where artificial irrigation may be resorted to, that crops can be produced with any certainty."[4]

Such statements tended to perpetuate the Great American Desert label which Major Long and Zebulon Pike had applied to the entire Great Plains. However, considering the status of American technology at the moment of the

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[1]Edwin James, "Account of S. H. Long's Expedition, 1819-1820," Reuben Gold Thwaites, ed., Early Western Travels (32 vols.; Cleveland, 1905), Vol. 17, p. 147.

[2]Josiah Gregg, "Commerce of the Prairies," Thwaites, Early Western Travels, Vol. 20, pp. 217-218.

[3]Grant Foreman, ed., Marcy and the Gold Seekers: The Journal of Captain R. B. Marcy (Norman, 1939), p. 232.

[4]Randolph B. Marcy, Border Reminiscences (New York, 1872), p. 370.

comments, the chances for successful farming, particularly on the High Plains, were remote. Easterners had neither the experience nor the equipment for building homes and cultivating lands in an isolated, timberless area.[5]

Had there been no Great American Desert concept to frighten pioneers from the southern plains, the presence of Indians would have delayed immediate settlement. Plains tribesmen from the north probably reached the Panhandle before the last prehistoric cultures disappeared.[6] When Coronado crossed the area in 1541, he encountered two separate groups whom he called Querechos and Teyas. Presumably, these people were Apaches who roamed the region until

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[5]William H. Goetzmann, Exploration and Empire (New York, 1966), p. 82.

[6]Present archaeological evidence indicates that prehistoric men inhabited the area as early as 9000 B. C. While these human beings preyed primarily upon animal life for their sustenance, some groups belonging to the Woodland (0 to 1000 A. D.) and Plains Village (1000 to 1800 A. D.) eras probably engaged in limited agricultural activity. No definite proof of crop production has been found at the Woodland site on Lake Creek in Hutchinson County, but ample signs in the form of the bison scapula hoe and other implements reveal that the Plains Village period residents at Antelope Creek Focus on Wolf Creek in Ochiltree County raised maize and other foods between 1350 and 1450. Gordon R. Willey, An Introduction to American Archaeology, Volume I, North and Middle America (Englewood Cliffs, New Jersey, 1966), pp. 313-315; Jack T. Hughes, "Lake Creek: A Woodland Site in the Texas Panhandle," Bulletin of the Texas Archaeological Society, XXXII for 1961 (1962), pp. 65-84; Alex D. Krieger, Culture Complexes and Chronology in Northern Texas with Extension of Puebloan Datings to the Mississippi Valley, University of Texas Publication No. 4640 (Austin, 1946), pp. 41-46; Floyd V. Studer, "Archaeology of the Texas Panhandle," Panhandle-Plains Historical Review, XXVIII (1955), p. 92.

the late eighteenth century when the warlike Comanches and their allies, the Kiowas and Kiowa-Apaches, surged southward extending their influence over a 2400 square mile area of the Southwest.[7]

Trouble between Texans and the Plains Indians began in 1835 and continued sporadically for forty years. As restless homeseekers advanced westward, frequent clashes occurred. Not until the 1850's when both the federal and state governments built forts and stationed troops along the frontier did it appear that the Comanches and their allies would be controlled.[8] However, the intervention of the Civil War and the attendant withdrawal of the armed forces permitted the southern tribesmen to regroup and renew hostilities as Kit Carson learned at Bent's old trading post of Adobe Walls in Hutchinson County in 1864.[9]

Prompt resolution of the Indian problem in the Southwest seemed likely when United States military troops returned to the frontier after the war. In 1865 an agreement signed at the mouth of the Little Arkansas River restricted the Comanches, Kiowas, and Kiowa-Apaches to a

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[7]W. W. Newcomb, Jr., The Indians of Texas from Prehistoric to Modern Times (Austin, 1961), p. 105; Mildred P. Mayhall, The Kiowas (Norman, 1962), pp. 13-14.

[8]Ernest Wallace and E. Adamson Hoebel, The Comanches, Lords of the South Plains (Norman, 1952), pp. 292-302.

[9]Ibid., p. 306; C. B. McClure, ed., "The Battle of Adobe Walls," Panhandle-Plains Historical Review, XXI (1948), pp. 18-65.

territory which illegally included the entire Panhandle, a part of the Texas public domain.[10] When the accord failed, negotiations resumed at Medicine Lodge in 1867 where a new treaty made the tribes wards of the federal government on a reservation in the southwestern portion of the present state of Oklahoma.[11] Though some Indians attempted to adjust to the more sedentary life, the refusal of others to abide by the agreement along with the inept management of governmental agents protracted the trouble.

The Comanches and their allies continued to roam freely in the Panhandle until buffalo hunters arrived in the early 1870's. Drifting southward from Dodge City, Kansas, in pursuit of the estimated seven million bison of the southern herd, sufficient hunters had moved into the Canadian River region by the spring of 1874 to justify the establishment of trading posts at the Adobe Walls site.[12] For the first time the Indians faced a challenge to their Panhandle hunting ground.

Fearful of the consequences the tribesmen attacked Adobe Walls on June 27 and then initiated a series of raids

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[10]Wallace and Hoebel, Comanches, pp. 306-307; Mayhall, Kiowas, pp. 204-207.

[11]Ibid., p. 210; Wallace and Hoebel, Comanches, pp. 309-310.

[12]Rupert Norval Richardson and Carl Coke Rister, The Greater Southwest (Glendale, California, 1935), p. 297; Derek West, "The Battle of Adobe Walls (1874)," Panhandle-Plains Historical Review, XXXVI (1963), pp. 4 and 7.

on buffalo hunter camps throughout the southern plains. Federal military forces under General Ranald S. Mackenzie and General Nelson A. Miles from surrounding forts responded immediately by systematically rounding up and herding the tribesmen to Indian Territory.[13] The completion of this action and the establishment of a military outpost at Fort Elliott in Wheeler County in 1875 virtually eliminated the Indian barrier to Panhandle settlement.[14]

Following the Indian evacuation, cattlemen soon recognized the region's ideal conditions for the ranching industry. Abundant buffalo and grama grasses as well as wild hay covered the upland prairies and the creek bottoms of the open range. River streams and bubbling springs provided good water, while protection from winter hazards could be found in lowlands and canyons. With a small amount of capital a man could purchase his livestock, select a watering site, claim free range rights to the surrounding grassland, and thus be in business.

Charles Goodnight, a southwestern trail blazer and rancher, initiated the movement of cattlemen into the Panhandle when he drove 1600 head of cattle eastward

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[13] Ibid., pp. 18-27; Wallace and Hoebel, Comanches, pp. 326-328.

[14] L. F. Sheffy, The Life and Times of Timothy Dwight Hobart, 1855-1935 (Canyon, Texas, 1950), pp. 136-137.

from New Mexico to Palo Duro Canyon in 1876.[15] So many others joined the scramble for choice grazing sites along the rivers and tributaries that an open range livestock industry had fully developed within four years. Almost 100,000 head of cattle as well as an equal number of sheep grazed in the twenty-six county area where cattlemen claimed ownership to only 75,000 acres of land. The size of the operations varied. Forty-four outfits in eleven counties ran 87,736 head of cattle, while seventy range operators possessed fewer than 100 head each.[16] With both free grass and water as well as a general increase in cattle prices, the future for ranching appeared bright.

News of the initial success of the open range cattle industry in the Texas Panhandle spread rapidly in both the United States and Great Britain. British newspapers and magazines, in particular, published extensive articles describing the vast opportunities of the cattle business. Some writers claimed that investment returns of thirty to

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[15] J. Evetts Haley, Charles Goodnight, Cowboy and Plainsman (Norman, 1949), pp. 276 and 281-283; Harley True Burton, "A History of the JA Ranch," Southwestern Historical Quarterly, XXXI (January, 1928), p. 222.

[16] U. S. Bureau of the Census, Tenth Census of the United States: 1880. Agriculture, III (Washington, 1883), pp. 170-172; Seymour V. Connor, "Early Ranching Operations in the Panhandle: A Report on the Agricultural Schedules of the 1880 Census," Panhandle-Plains Historical Review, XXVII (1954), pp. 51-68.

fifty per cent were normal the first year.[17] A special Royal Commission dispatched to the United States in 1879 confirmed the optimistic statements by declaring that a cattleman had, ". . . no expense save that of herding his cattle during eight months of the year, and paying a trifle toward the local taxation of the district. . . ."[18] After reading such reports and observing the rapid growth in American cattle exports, investors rushed to cash in on what appeared to be sure profits.

Both eastern and British investments took various forms. Creation of joint stock companies or corporations like the Prairie Cattle Company and the Texas Land and Cattle Company which owned and operated the enterprise were the most common of the large operations. However, a few individuals either entered the business on their own as did Alfred Rowe of the RO Ranch or effected partnerships similar to that of John Adair and Charles Goodnight of the JA Ranch. Further money became available through the sale of mortgage bonds by American-chartered companies on both sides of the Atlantic as well as direct loans to cattlemen by such British mortgage institutions as the Texas Land Mortgage Company of

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[17]Lowell H. Harrison, "British Interest in the Panhandle Plains Area, 1878-1885," Panhandle-Plains Historical Review, XXXVIII (1965), p. 4.

[18]Great Britain, Parliament, Commons, Sessional Papers, "Report of the Agricultural Interests Commissions," by Clare Reed and Albert Pell, 1880, XVIII, p. 10.

London.[19] As a result of the British investments alone, capital in Texas ranching increased between fifteen and twenty-five million dollars in the late nineteenth century.[20]

The introduction of enormous capital transformed Panhandle ranching from an open range industry dependent upon free grazing to a controlled operation. As competition for range sites grew, ranchers had to spend money to establish a firmer tenure over their grassland through lease or purchase.

Both private and public interests offered Panhandle land to cattlemen. Real estate companies which had taken advantage of the state's generosity in distributing portions of the public domain controlled most of the privately-owned property. Such firms as Gunter, Munson, and Summerfield, surveyors and locators of Sherman, Texas, purchased or received land certificates and scrip which authorized the

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[19]Arrell M. Gibson, "Ranching on the Southern Great Plains," Journal of the West, VI (January, 1967), pp. 143-144; W. G. Kerr, "Scotland and the Texas Mortgage Business," Panhandle-Plains Historical Review, XXXVIII (1965), pp. 61-62. For a fuller discussion of ranch organization see Gene M. Gressley, Bankers and Cattlemen (New York, 1966), pp. 89-105 and W. Turrentine Jackson, The Enterprising Scot, Investors in the American West After 1873 (Edinburgh, 1968), pp. 76-85.

[20]J. Fred Rippy, "British Investments in Texas Lands and Livestock," Southwestern Historical Quarterly, LVIII (January, 1955), p. 333; Maurice Frank, W. Turrentine Jackson, and Agnes W. Spring, When Grass Was King (Boulder, 1956), pp. 222-223.

right to stake claims.[21] Others like the New York and Texas Land Company assumed ownership of acreage originally donated to railroad corporations.[22]

Though prices on the sale or lease of Panhandle lands varied, the large New York and Texas Land Company, which controlled 1,832,640 acres originally granted to the Houston and Great Northern and the International and Great Northern railroads, probably set the standard rate in the region.[23] Leases for periods of five to ten years at one and one-half to two cents per acre each year were normal.[24] In 1883 the company sold 781,808.75 acres at prices ranging from $1.25 to $1.75 per acre.[25] That same year the Francklyn Land and Cattle Company bought 529,920 acres at $1.32 per acre from the company.[26]

Under the Land Act of 1879 the State of Texas offered two categories of land to purchasers. Unappropriated domain sold at fifty cents per acre in tracts of 640 acres or less. Alternate sections of railroad surveys went at $1 to $2 per

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[21]Haley, Goodnight, pp. 302-303.

[22]Sheffy, Hobart, pp. 54-55.

[23]First Annual Report, July 1, 1881, New York and Texas Land Company, Limited, Papers, Archives, University of Texas, Austin, Texas.

[24]Second Annual Report, June 30, 1882, ibid.

[25]Third Annual Report, June 30, 1883, ibid.

[26]Lester Fields Sheffy, The Francklyn Land and Cattle Company, A Panhandle Enterprise, 1882-1957 (Austin, 1963), p. 6.

acre depending upon the water supply. Payment could be made in twenty years at eight per cent interest.[27]

After a period of rampant speculation, fraud, and threat of monopolistic control of the West Texas lands by large corporations, the Legislature at the behest of Governor John Ireland suspended the sale of all public land and enacted the Land Act of 1883. Under the new legislation actual settlers could purchase a maximum of one section of timbered or agricultural land at a minimum price of $5 and $3 per acre respectively, if watered, and seven sections of unwatered pasture land at $2 per acre. Corporations could buy only one section in any one county. Provision was made for the leasing of land on a competitive basis with the minimum price set at four cents per acre for a ten-year period. The act also created the State Land Board to administer the law.[28] Shortly afterwards, a separate bill established the State Land Fraud Board to investigate fraudulent activities connected with the public domain.[29]

The Land Act of 1883 represented the state government's first attempt to control public lands in the Panhandle. For years livestock had grazed the open range or the alternate sections of school lands within a ranch's

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[27]H. P. N. Gammel, comp., The Laws of Texas, 1822-1897 (10 vols.; Austin, 1898), Vol. IX, pp. 55-59.

[28]Ibid., pp. 391-397.

[29]Ibid., pp. 412-415.

pasture without charge. Some cattlemen had already begun to surround the state's property with fences as a means of excluding nesters. Although the ranchers agreed to pay for leasing the public grassland, they considered the competitive bidding feature a threat to the tradition of range rights and thus unanimously refused to offer more than the minimum four cents per acre.[30]

The State Land Fraud Board soon found the land legislation unenforceable in West Texas. When the Board rejected the leasing bids and attempted to raise the minimum fee to eight cents per acre, the courts ruled such action illegal. Furthermore, while the Board could persuade grand juries to return indictments against ranchers for fencing state land, local juries consistently issued acquittals.[31] Despite the ineffectiveness of the Land Act of 1883, knowledge gained from the experience led to the adoption of a more satisfactory leasing program in 1887.

Once cattlemen owned or leased grassland, their primary concern became the protection of their pastures from intruders. Since the scarcity of timber in the area made wooden fences extremely expensive, ranchers turned to a type of fencing material especially adapted for the plains, barbed wire. After the T-Anchor Ranch in Randall County initiated the movement in 1881, fencing spread

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[30]Sheffy, Hobart, pp. 78-79; Haley, Goodnight, p. 385.

[31]Ibid., pp. 385-391.

rapidly.[32] By September 1882 Colonel B. B. Groom, range manager of the Francklyn Land and Cattle Company, reported:

> There will be hundreds of miles of fence built in the Panhandle this Fall. . . . I am advised on all sides to fence the lands as soon as possible. I am anxious to get the fence done with so we will not be losing our grass. Every pound of fat others make on our grass is lost to us.[33]

Between 1884 and 1886 the three million acre XIT Ranch strung 781.24 miles of barbed wire fences at a cost of $188,278.[34]

Fencing generally required the additional expense of providing water facilities for livestock when the enclosure of grassland separated the cattle from adequate water sources. Some ranchers constructed earthen tanks and dams to catch rainfall. The Francklyn Company employed a civil engineer at $500 per month to supervise such projects. Cattlemen also dug water wells either by hand or by machine over which they erected windmills.[35] By 1886 the XIT had spent $46,035 for watering purposes.[36]

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[32] Ibid., p. 321.

[33] Sheffy, Francklyn Land and Cattle Company, p. 33.

[34] B. H. Campbell, Ranch Manager to John V. Farwell, General Manager, XIT Ranch, November 1, 1886, XIT Ranch Papers, Archives, Panhandle-Plains Historical Museum, Canyon, Texas. Hereafter cited as XIT Papers.

[35] Sheffy, Francklyn Land and Cattle Company, pp. 51-52.

[36] B. H. Campbell to John V. Farwell, November 1, 1886, XIT Papers.

Despite the growing costs, the boom psychology seemed justified by the early profits and dividends announced by the cattle companies. The Prairie Land and Cattle Company declared dividends of 19 1/2 per cent, 27 5/8 per cent, and 20 1/2 per cent in its first three years of existence, 1881-1883.[37] In 1883 the Hansford Cattle Company and the Western Land and Cattle Company reported profits of £13,231 and £31,488 respectively.[38] With practically every operation issuing similar accounts, enthusiasm for the cattle industry swelled.

As long as the bonanza era lasted, ranchers employed various tactics to discourage farm settlement. Nesters' crops occasionally received damage when livestock raisers deliberately drove their herds across their fields.[39] Some cattlemen erected barbed wire fences around the public domain as a means of preventing the penetration of their range. In Collingsworth County farmers along Elm Creek found themselves fenced in by the Earl of Aberdeen's Rocking Chair Ranch.[40]

Ranchers also actively propagated the notion that the Panhandle and Great Plains were "fit for grazing only." A

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[37]Richard Graham, "The Investment Boom in British-Texas Cattle Companies, 1880-1885," Business History Review, XXXIV (Winter, 1960), pp. 427.

[38]Ibid., p. 444.

[39]Memphis (Texas) Democrat, July 21, 1939.

[40]New York Times, October 14, 1887, p. 1.

New York Times reporter who visited Tascosa in Oldham County in 1881 quoted a local citizen as saying that farming would never be successful there. In explanation, he declared: "One year the floods destroy the crops, the next year they are eaten up by bugs, the next comes a drought and nothing grows, and the next the grasshoppers do for us."[41] As late as 1887 Charles Goodnight told Kansas City reporters: "The Panhandle is not an agricultural country and in fact is not very good for grazing."[42]

Optimism in Panhandle ranching rapidly turned to pessimism as difficulties compounded in the mid-eighties. Several years of extreme weather conditions caused part of the trouble. The severity of the winter of 1884-1885 left many cattle in poor condition. An item in the Dodge City, Kansas, Times of February 5, 1885, extracted from the Mobeetie, Texas, Panhandle stated: "Reports from all the range countries are of heavy losses of [since?] the past six weeks began, and they are no doubt in main part correct."[43] Harry Groom of the Francklyn Company wrote in March: "The stock are all thin, horses as well as cattle--so very cold

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[41] Ibid., May 8, 1881, p. 10.

[42] Tascosa (Texas) Pioneer, November 26, 1887. Typewritten copy in Archives, Panhandle Plains Historical Museum, Canyon, Texas.

[43] Dodge City (Kansas) Times, February 5, 1885, in Lonnie J. White, comp. and ed., "Texas Panhandle News Items 1877-1885, from the Dodge City Times," Panhandle-Plains Historical Review, XL (1967), p. 155.

long continued spells that it took off all the flesh."[44] The Matador Land and Cattle Company reported a calf crop shortage varying from 7000 to 8000 head.[45] Even before some operations had recovered, drought struck in 1887. The managers of the XIT estimated that their calf crop suffered a fifty per cent loss because of the poor conditions.[46] In January 1888 a blizzard cost the same ranch about 4000 head.[47] Such setbacks occurring throughout the region seriously weakened most cattle companies.

Even more ranchers suffered when depression hit the cattle market. On the national level the average values on all cattle declined continuously from a peak of $25.26 in 1884 to a low of $16.49 in 1891.[48] Between 1885 and 1889 the value per head, including bulls, of the Hansford Cattle Company fell from $24.74 to $18.70, while the value per head of the Texas Cattle Company declined from $14.87 to $12.94.[49]

Several factors contributed to the disastrous

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[44]Sheffy, Francklyn Land and Cattle Company, p. 158.

[45]Frink, Jackson, and Spring, When Grass Was King, p. 238.

[46]Annual Report, 1888, XIT Papers.

[47]A. G. Boyce, Ranch Manager to Colonel Abner Taylor, Owner, XIT Ranch, October 31, 1888, XIT Papers.

[48]U. S. Bureau of the Census in Cooperation with the Social Science Research Council, The Statistical History of the United States from Colonial Times to the Present (Stamford, Connecticut, 1965), p. 290.

[49]Frink, Jackson, and Spring, When Grass Was King, pp. 238 and 261.

depression. Perhaps John V. Farwell, General Manager of the XIT Ranch, best summarized the cattlemen's views when he wrote in 1887:

> The reason of the extreme depression in the price of cattle this year is owing to several causes. First, the very high prices of cattle during the years 1879 and 1880 gave rise to a very large over-production and consequent necessity for forced sales on the part of farmers and cattle men when prices began to decline.
>
> Secondly, the high prices then obtained induced a number of people to enter into the cattle business with insufficient capital and insufficient land for their stock. When the drop in prices came these people were all forced to sell for whatever they could get, and in many cases as their herds had increased out of all proportion to the lands on which they had to graze, they were obliged to flood the market in order to get rid of their surplus stock. In addition to this the decrease in price of cattle and the hard times forced a number of small traders out of the business who sent their cattle to market to get what they could for them.
>
> Thirdly, the extreme drought which prevailed during the past summer through the states of Illinois, Iowa, Missouri and Kansas, and the consequent shortness of crops flooded the market with what is known as native cattle, as farmers were compelled for want of food to sell everything they had for anything it would bring.
>
> Fourthly, the enormous losses which were incurred by all cattle men in Montana and the adjacent territory during the last winter, compelled them to send anything that would pay freight to market this season in order to meet necessary expenses, and was therefore a further cause for the glut of the market this year.[50]

Those companies with sufficient reserve capital and adequate grass withstood the distress by withholding their livestock from the market. In 1887 John V. Farwell explained to the directors of the Capitol Freehold Land and Investment

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[50]Annual Report, 1887, XIT Papers, pp. 3-4.

Company, Limited:

> In regard to the comparatively small number of cattle marketed this season we would say, that owing to the extreme depression in the cattle market which we thought would be likely to be permanent after our first shipment, we concluded it was very much better to hold over our cattle for another winter on the good grass which we possess than to sacrifice them this year on a market which we felt sure had reached bottom figures.[51]

Not all companies were in such a sound condition. Some ranches like the Francklyn Land and Cattle Company declared bankruptcy immediately. Others lingered on for several years never recovering from the distress. By the turn of the century most of the British and eastern cattle companies in northwest Texas had disappeared.

As the cattle industry underwent a period of readjustment, one further barrier to Panhandle farm settlement crumbled with the arrival of the railroads. Building across the Cherokee Outlet from Kiowa, Kansas, the Southern Kansas Railway Company, a subsidiary of the Atchinson, Topeka and Santa Fe Railroad, entered Lipscomb and Hemphill counties in the northeast and extended to its terminus at Panhandle City in Carson County in January 1888.[52] Simultaneously, the Fort Worth and Denver City Railroad cut a diagonal path northwestward from Childress to Texline where it joined the Denver, Texas and Fort Worth Railway in March 1888, thus

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[51] Ibid., p. 3.

[52] Ira Clark, Then Came the Railroads, the Century from Steam to Diesel in the Southwest (Norman, 1958), p. 146.

opening direct connections between Fort Worth and Denver.[53] The fifteen mile Pan-handle Railway between Washburn in Armstrong County and Panhandle City linked the two lines.[54]

While trains meant easier access to distant markets, ranchers also recognized their value in the stimulation of immigration. Even before the railroads reached the Panhandle, several cattlemen had concluded that their only salvation lay in the sale of their land to farm settlers. Consequently, if there had been any major antagonism between the rancher and the nester in the area, this began to break down. Henry B. Sanborn of the Frying Pan Ranch of Potter and Randall counties saw the railroads as bringing, ". . . a large enhancement of value in our realty."[55] B. H. Campbell, ranch manager of the XIT, predicted: "When these roads reach us the Cattle business will give way to the Farmer, as the lands will then all be needed for farming purposes and can so be sold to great advantage."[56] By 1889 George Tyng whose White Deer Land Company assumed control of the bankrupt Francklyn Land and Cattle

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[53]Richard Cleghorn Overton, Gulf to Rockies, the Heritage of the Fort Worth Denver-Colorado and Southern Railway, 1861-1898 (Austin, 1953), p. 181.

[54]Ibid., p. 170.

[55]Henry B. Sanborn to P. L. Moen, December 30, 1886, in Laura V. Hamner, Light 'N Hitch, A Collection of Historical Writing Depicting Life on the High Plains (Dallas, 1958), p. 336.

[56]B. H. Campbell to John V. Farwell, November 1, 1886, XIT Papers.

Company reported:

> Owners of cattle ranches have had forced upon them the value of their lands for farming and instead of trying longer to drive back "the man with the hoe," they now look confidently to sales of their lands to settlers to restore to them the fortunes lost in cattle.[57]

Perhaps Colonel W. E. Hughes, a prominent rancher and businessman, best described this change when he told the delegates at the Texas Cattlemen's Convention in Dallas in February 1887:

> The ranchman of the plains was not to be a permanence. he never so considered himself. His mission was to precede the agriculturist and stock farmers, and until a changed order of things should make agriculture profitable, or possible, it was his to establish and maintain, with profit to the state, a valuable industry. He represented as it were, an era--an epoch--a step in social progress.[58]

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[57] Quoted in Sheffy, Francklyn Land and Cattle Company, p. 293.

[58] Ibid., p. 259.

CHAPTER III

THE EXPERIMENTAL PHASE OF PANHANDLE AGRICULTURE

As railroads penetrated the isolation of the Southern Plains and the cattle industry underwent readjustment in the late 1880's, the transition from the ranchers' to the farmers' frontier began in the Texas Panhandle. Lured by the availability of cheap land, cultivators flocked to the region where farming remained virtually untested. Through more than a decade of experimentation, farmers learned that success depended upon the adoption of a proper farm organization pattern to fit the plains environment.[1]

Along with the railroads, the revision of the public land policy by the Texas Legislature in 1887 acted as a major catalyst to Panhandle settlement. According to the provisions of the law, an individual who promised to live on the property for a three year period could purchase a minimum of 160 acres or a maximum of one section of agricultural land or four sections of grazing lands for $2 per acre on dry land or $3 on acreage with water. Particularly

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[1]Gilbert C. Fite, The Farmers' Frontier, 1865-1900, Histories of the American Frontier, edited by Ray Allen Billington (New York, 1966), p. 223.

important for the small farmers were terms providing annual payments for forty years at five per cent interest. The act further encouraged small operators through the prohibition of corporate purchase and the restriction of leasing agreements to five years at four cents per acre with the reservation that agricultural land could be sold to settlers at any time.[2]

As long as the state offered choice lands at such prices, private owners could not compete. One agent complained: "Everybody is settling on school lands and it is almost impossible to get any offer at all for alternate deeded lands."[3] George Tyng of the White Deer Lands urged his company to find water and to establish a demonstration farm if they hoped to sell their property.[4] However, so many farmers had entered the region by late 1889 that Tyng advised the termination of the exhibit.[5]

Prices of private land usually varied according to the proximity to the railroads, availability of water, and quality of soil. General reports in 1887 indicated that

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[2]H. P. N. Gammel, comp., The Laws of Texas (10 vols.; Austin, 1898), Vol. IX, pp. 881-889.

[3]McClelland Brothers Real Estate, Clarendon, Texas, to Munson and Brothers, Dennison, Texas, April 30, 1888, W. B. Munson Papers, Archives, Panhandle-Plains Historical Museum, Canyon, Texas.

[4]Lester Fields Sheffy, The Francklyn Land and Cattle Company, A Panhandle Enterprise, 1882-1957 (Austin, 1963), pp. 271-272.

[5]Ibid., p. 281.

improved acreage ranged from $2 to $10, while unimproved land sold from $1 to $3 per acre.[6] By 1889 property along the Fort Worth and Denver Railroad was selling from $2.50 to $16 per acre.[7] Railway patent tracts north of Amarillo in Moore County went for $2 to $3 per acre in 1891,[8] while Randall County land south of Amarillo brought $3.50 per acre.[9]

While cheap lands acted as the primary magnet in drawing people to the Panhandle, the major motivation came from a promotional campaign which began in the mid-eighties. Four types of individuals or groups became the major boosters of the area. Local newspapermen published glowing articles on the potential of the region. Immigration associations appeared in most communities with plans to entice settlers. Through advertising and personal persuasion, real estate agents pushed land sales. The effectiveness of these efforts increased when the two railroad companies assumed the leadership in telling the world about northwest Texas.

Even before the major barriers to farm settlement

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[6]Texas, Department of Agriculture, Insurance, Statistics, and History, First Annual Report of the Agricultural Bureau, 1887-88 (Austin, 1889), pp. 37, 59, 102, 141, 172, 181, and 233.

[7]Sheffy, Francklyn Land and Cattle Company, p. 281.

[8]Channing (Texas) Register, December 5, 1891.

[9]Eleventh Annual Report, June 30, 1890, New York and Texas Land Company, Limited, Papers, Archives, University of Texas, Austin, Texas.

collapsed, local promoters had initiated an immigration campaign. No one worked harder to lure cultivators to the Panhandle than did Charles F. Rudolph, editor of the Tascosa Pioneer. In the paper's first issue in 1886, Rudolph described the farm situation by writing:

> It is only rarely that agriculture has been attempted throughout the Panhandle proper, but in most of those instances the success has been fairly encouraging. The cereals will always grow better in this section than corn, it is likely, and cotton will never be a Panhandle product. But in the course of time wheat, oats, rye, millet, etc., nearly all of the fruits, and most of the vegetables, will be found to yield an abundant tribute to the grower in Oldham and many of the other counties of this section.[10]

By 1887 this moderate view had given way to ecstasy, for Rudolph declared that:

> . . . the Panhandle is destined to be the garden spot of Texas, the breeding center of the stock countries, the granary of the Union, the commissary headquarters, as it were, for all people and classes, the home of manufactories, and the mart of trade, the resort of invalids and--not exactly the Land of Canaan, perhaps, but a model country.[11]

Despite the effusive praise of the area's agricultural potential, the promoters realistically tempered their propaganda by advising settlers to engage in stock farming. The editor of the Mobeetie Panhandle warned that any attempt to make a strictly agricultural region of the Panhandle would be, ". . . the veriest of folly and prove its ruination."[12]

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[10]Tascosa (Texas) Pioneer, June 12, 1886.

[11]Ibid., March 23, 1887.

[12]Quoted in ibid., July 2, 1887.

Rudolph advised immigrants to bring a few cows and supplies in the event of crop failure the first years.[13] In his opinion the ideal immigrant was a man with from $500 to $5,000 who, ". . . will roll up his sleeves and produce something; the man who will take his section or his two or four sections and grow stock on them, grasses, feed, sorghum, forage and some grain. . . ."[14]

Local boosters organized immigration societies at Tascosa, Amarillo, Mobeetie, Clarendon, and Canadian to tell the world about the agricultural wonders of northwest Texas. The Oldham County Immigration Association at Tascosa issued reports optimistically declaring that the Panhandle would support a million people.[15] The Hemphill County Immigration Association sponsored the publication and distribution of ten thousand copies of a special edition of the Canadian Free Press which proclaimed: "Deep plowing and thorough cultivation seems all that is necessary to make this country, and what speaks best for it is, those who have tried farming here the longest are best satisfied with the results."[16]

The Southern Kansas and the Fort Worth and Denver

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[13] Ibid., April 20, 1887.

[14] Ibid., February 18, 1888.

[15] L. F. Sheffy, "The Experimental Stage of Settlement in the Panhandle of Texas," Panhandle-Plains Historical Review, III (1930), p. 98.

[16] Canadian (Texas) Free Press, April 11, 1888.

railways also joined the immigration campaign. Since neither corporation had received state aid, their success depended upon the business generated in the region. Consequently, both operated agencies to encourage settlement. The Southern Kansas Railway which was already involved in a promotional program in Kansas limited its activities before 1900 to the establishment of townsites at Canadian, Miami, and Panhandle City.[17] However, the Fort Worth and Denver immediately instituted special plans to attract farmers.

As Commissioner of Immigration for the Fort Worth and Denver, General Robert A. Cameron conducted a vigorous advertising campaign to lure farmers to the Panhandle. He organized the Texas Spring Palace Exhibition in Fort Worth in 1889 and 1890 where prospective settlers could view agricultural produce from the region. Special excursion rates were offered to those who wished to see the land.[18] He also distributed materials prepared by local land agents through the Texas and Colorado Immigration Bureau as well as railway timetables, pamphlets, and newspaper advertisements proclaiming northwest Texas as, ". . . the greatest wheat producing, agricultural and fruit country in the United States, offering to Home-

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[17]Sheffy, Francklyn Land and Cattle Company, p. 269n.

[18]Ida Marie Williams Lowe, "The Role of the Railroads in the Settlement of the Texas Panhandle" (Unpublished M. A. Thesis, West Texas State College, Canyon, Texas, 1962), pp. 23-25; Richard C. Overton, Gulf to Rockies, the Heritage of the Fort Worth and Denver Colorado and Southern Railways, 1861-1898 (Austin, 1953), pp. 213-214.

Seekers inducements not to be met with elsewhere."[19] Once Cameron won a customer, the railroad provided "Zulu" cars for transporting his goods from Fort Worth to Childress for $15, to Amarillo for $17.50 or to Texline for $20.[20]

While Cameron glorified the Panhandle from his Fort Worth office, land agents and local newspapers joined in the crusade. A real estate firm in Sherman, Texas, offered property in Moore County belonging to the Houston and Texas Central Railway for $2 to $3 per acre.[21] The XIT Ranch advertised small tracts near Channing in Hartley County, Texline in Dallam County, and LaPlata in Deaf Smith County.[22] An Amarillo editor promised to conduct a personally guided tour to show all school lands to prospective customers.[23] Another newspaperman warned settlers to hurry when he wrote: "There is no country better advertised or more talked about or exciting more intense curiosity than the Panhandle, and each day sees throngs of prospectors and home hunters pouring into Potter County. . . ."[24]

The advance of settlers into northwest Texas quickened in the latter part of the eighties. Piling all of their

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[19]Channing (Texas) Register, December 5, 1891.

[20]Lowe, "The Role of the Railroads," p. 37.

[21]Channing Register, December 5, 1891.

[22]Ibid.

[23]Amarillo Champion, May 17, 1888.

[24]Amarillo Northwest, November 6, 1889.

possessions onto "Zulu" cars or into covered wagons, the frontiersmen headed toward the plains in search of a better life. Editor Charles Rudolph of Tascosa described the scene in 1888 as, "wagons with white tops, rope-bottomed chairs, tow-heads, brindle cows, yellow dogs and a pervading air of restlessness. . . ."[25]

By 1890 the westward movement had swelled the Panhandle's population to 9452.[26] Although a steady stream of pioneers had entered the region throughout the decade, the most rapid growth began in 1887 and continued into the early nineties. The tax records of Donley County clearly illustrated this development. Within a six year period between 1887 and 1892 total valuation of property rose 148 per cent. Increases in land ownership and assessed values accounted for much of the rise. In 1887 the tax rolls listed 354,187 acres; by 1892 the acreage numbered 433,744. At the same time average worth per acre went up from $1.02 to $2.28.[27]

Once the settlers reached the Panhandle, the selection of a location became necessary. By 1890 technology and occupational plans had altered the basic pattern of

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[25]Tascosa Pioneer, June 9, 1888.

[26]U. S. Bureau of the Census, Eleventh Census of the United States: 1890, Population, I (Washington, 1895), pp. 782-785. No report from Briscoe County.

[27]Tax Assessor-Collector Records, 1882-1910, Donley County, Texas, Texas State Archives, Austin, Texas.

settlement. In the days before railroads, barbed wire fences and windmills, those first pioneers who herded cattle onto the open range were particularly cognizant of environmental factors. Of the 1607 residents in 1880, one-half lived in the three eastern counties of Hemphill, Wheeler, and Donley, and one-fourth resided in the western Canadian Valley region counties of Hartley, Oldham, and Deaf Smith. The remaining one-fourth had scattered over fourteen other counties.[28] All of the settlements were located along fresh water streams in river valleys or canyons below the High Plains. Perhaps George Tyng best expressed the reasoning behind the pattern when he wrote: "But the absence of full and permanent water, and the then popular belief that men and animals could not endure the severities of winter storms upon the broad-unsheltered plains, and that good crops could not be grown there have deterred all attempts at permanent settlement."[29]

Although environmental factors remained important in determining the area of settlement of the 9452 people who had moved into twenty-five counties of the Panhandle by 1890, the introduction of the railroad added a new dimension.

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[28]Official census reports list 1616 residents in the Panhandle, but examinations of manuscript reports show at least nine duplications. Ernest Archambeau, "The First Federal Census of the Panhandle, 1880," Panhandle-Plains Historical Review, XXIII (1950), pp. 25 and 37-38; U. S. Bureau of the Census, Tenth Census of the United States: 1880, Population, I (Washington, 1883), pp. 663-664.

[29]Sheffy, Francklyn Land and Cattle Company, p. 293.

Both population and land sales reflected the important influence of the trains. The residents of the fourteen counties through which the Southern Kansas or the Fort Worth and Denver passed saw their citizenry multiply seven times during the eighties, while the growth of the remaining counties tripled. In 1880 the railroad counties contained 60.39 per cent of the total area residents. This percentage had increased to 80.23 by 1890.[30] At the very moment that the railroads moved into the Panhandle, a marked gain in land sales began. Inhabitants of the railroad counties filed two-thirds of the decade's total mortgages between 1887 and 1889. Evidently the trains brought the small operators, for the size of mortgaged land in the railroad counties averaged 718.6 acres as compared with 1741.6 acres in the non-railroad territory.[31]

Yet even the railroads or the introduction of windmills did not entirely eradicate the fear of moving onto the High Plains. Of the 9452 residents in 1890, 5947 or 62.9 per cent settled in the more humid eastern third of the region. Furthermore, 4325 or 44.8 per cent of the total population stayed below the Cap Rock on the Eroded Plains.[32]

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[30]U. S. Census, Eleventh Census: 1890, Population, I, pp. 782-785.

[31]U. S. Census, Eleventh Census: 1890, Real Estate Mortgages, XII, pp. 648-682.

[32]U. S. Census, Eleventh Census: 1890, Population, I, pp. 782-785.

Only a few settlers felt ready to contend with the environmental conditions of the unknown High Plains.

Robert Montgomery probably typified many pioneers who ventured onto the plains. Leaving Parker County, Texas, in 1892 with a wife, a daughter, two brothers, two wagons, five horses, household goods, plows, and a coop of chickens, he led a wagon train more than 300 miles to Swisher County. Upon reaching the destination, Montgomery homesteaded 160 acres of state land for himself, while his brothers, John and Josephus, claimed an adjoining 160 and 80 acres respectively. After measuring the property with a wheel, he proceeded to construct a half-dugout to house his family, drill a water well, and fence areas for livestock corrals and small fields.[33]

The initial investment for Robert Montgomery and other settlers of similar circumstances was probably quite limited. Those less fortunate than Montgomery who had homesteaded his property could still claim one section of state agricultural land by making a down payment of only $48.[34] On that property they could construct a dugout, a half-dugout, or a sod house at a very nominal cost.[35] In fact,

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[33]Elizabeth Montgomery Neeley, Pioneer Life of Early Settlers, Unpublished manuscript, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas, pp. 27-30. Hereafter cited as Neeley, Pioneer Life.

[34]Gammel, Laws of Texas, Vol. IX, pp. 881-889.

[35]Costs for a dugout in the Panhandle probably did not vary much from the $2.78 1/2 expense for similar housing

the most expensive items were fences and water wells. Although an operation like the XIT Ranch could pay $241 per mile for a barbed wire fence, the small farmers without that much capital simply postponed the full expense by enclosing only those areas that needed immediate protection.[36] Likewise, when settlers learned that a well with a windmill would cost about $640, they found ways to reduce the expenditure.[37] In shallow water areas, some dug their own wells. Others saved from $70 to $300 by constructing their own windmills.[38] Occasionally, two or more frontier families shared a well.[39]

The $95 average value of implements on Panhandle farms in 1890 indicated the cultivators' shortage of capital.[40] While every farmer needed a wagon which cost about

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in Nebraska in the 1870's. The prices of other types of structures were not much more. Everett Dick, The Sod-House Frontier, 1854-1890 (New York, 1937), p. 112; Roberta Frances Biles, "Building Construction in Northwest Texas" (Unpublished M. A. Thesis, West Texas State College, Canyon, Texas, 1955), pp. 30-45.

[36]B. H. Campbell, Ranch Manager, to John V. Farwell, General Manager of XIT Ranch, November 1, 1886, XIT Ranch Papers, Archives, Panhandle-Plains Historical Museum, Canyon, Texas. Hereafter cited as XIT Papers.

[37]Sheffy, Francklyn Land and Cattle Company, p. 256.

[38]Donald Edward Green, "The Irrigation Frontier on the Texas High Plains: 1910-1960" (Unpublished Ph.D. dissertation, University of Oklahoma, Norman, Oklahoma, 1969), p. 63.

[39]Neeley, Pioneer Life, p. 30.

[40]U. S. Census, Eleventh Census: 1890, Agriculture, V, pp. 228-231.

$65 and a team of horses or mules which sold from $60 to $200, he found ways to get along without many other expensive tools.[41] The most popular plow, the twelve or fourteen inch walking rod plow, ranged from $7 to $20 in price.[42] A tin pan roller attached to a plow provided an inexpensive planter.[43] Few operators paid more than $10 or $15 for a harrow.[44] Harvesting with manual instruments such as the scythe or cradle did not require much money. Those who did not have equipment either borrowed from their neighbors or hired laborers. For example, Herbert Aldous of Collingsworth County received $2 per day in 1889 for plowing with his own horse and implement.[45] Nevertheless, the lack of capital did not prevent a rapid growth in crop production after the late 1880's.

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[41]Account Book, June, 1895, G. Herbert Aldous Papers, Microfilm Copy, Southwest Collection, Texas Tech University, Lubbock, Texas; Fort Worth and Denver City Railway, Texas, A Complete and Comprehensive Description of the Agricultural and Stock Raising Resources of the Texas Panhandle Country, 5th ed. (n.p., c1895), p. 97. Copy in Texas State Library, Austin, Texas.

[42]T. C. Thompson, Memoirs of Life on the Plains Since Mid-1890, Unpublished Manuscript, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas; Tools and Equipment Inventory, Annual Report, 1890, XIT Papers.

[43]Thompson, Memoirs of Life on the Plains.

[44]1895 Sears, Roebuck Catalogue (Chicago, 1895), p. 386.

[45]Donald E. Green, "G. Herbert Aldous: An English Immigrant in the Texas Panhandle," The Museum Journal, West Texas Museum Association, Texas Technological College, Lubbock, Texas, XI (1969), p. 44.

Those farmers who reached the Panhandle at the end of the cattle boom era found that a considerable amount of crop experimentation had been conducted. Though they usually limited their efforts to small gardens and livestock feed patches, some of the first permanent settlers eagerly tested the productive capacity of the soil. As early as 1875-1876 Sergeant Mark Huselby planted a four acre garden at Fort Elliott in Wheeler County.[46] Beginning in the spring of 1877, Casimero Romero, a sheep rancher at Tascosa in Oldham County, annually obtained water from the Canadian River to irrigate a vegetable garden and a patch of oats and alfalfa.[47] Leigh Dyer, brother-in-law of Charles Goodnight, was less successful in 1878 when he attempted to raise oats in Randall County, for a wandering herd of buffalo destroyed the crop just before harvest.[48] A year after the founding of Clarendon in Donley County in 1878, its newspaper claimed the successful production of corn, oats, millet, potatoes, and even cotton.[49]

The 1880 census clearly reflected the limited nature of farming in the ranchers' frontier. In the entire area

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[46]James M. Oswald, "History of Fort Elliott," Panhandle-Plains Historical Review, XXXII (1959), p. 20.

[47]Jose Ynocencio Romero, "Spanish Sheepmen on the Canadian at Old Tascosa," Panhandle-Plains Historical Review, XIX (1946), pp. 49 and 54.

[48]Boone McClure, "A Review of the T-Anchor Ranch," Panhandle-Plains Historical Review, III (1930), p. 65.

[49]Clarendon News, August 2, 1879.

only 653 acres were classified as tilled land.[50] A small variety of crops appear to have been grown. Indian corn appealed to farmers in Donley and Gray counties. In the former, seven farmers gathered an average of 4.4 bushels per acre from 128 acres. In the latter, forty-six acres yielded 10.87 bushels per acre.[51] Some pioneers who had seen the wild fruit growing along the river banks decided to establish orchards. In Wheeler County, A. P. Simers set out seventy-five peach trees. As the most successful farmer of the area Frederick Ward of Gray County grew 300 bushels of corn on sixteen acres, fifteen bushels of Irish potatoes on one-fourth of an acre, and sold $750 worth of garden produce.[52]

While the small operators had proved that certain products could grow in the Panhandle, the large ranches conducted the most extensive agricultural experimentation before the arrival of the farmers' frontier. At first, curiosity concerning the soil's productive capacity as well as a desire to reduce costs on food supplies for employees and livestock led cattlemen to plant crops. Later, when depression struck the cattle industry, the emphasis shifted to

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[50]U. S. Census, Tenth Census: 1880, Agriculture, III, pp. 133-136.

[51]Ibid., p. 206.

[52]Seymour V. Connor, "Early Ranching Operations in the Panhandle: A Report on the Agricultural Schedules of the 1880 Census," Panhandle-Plains Historical Review, XXVII (1954), pp. 65-66.

the demonstration of the agricultural value of property for potential farm purchasers.

Just south of the Panhandle the huge Spur and Matador ranches began crop testing as early as 1885. While S. W. Lomax, manager of the Spur outfit, successfully grew Johnson grass, kafir corn, milo-maize, oats, and millet, he obtained the most satisfactory results from sorghum which had the double advantage of providing two cuttings per season and being an excellent cattle feed. The Spur management's first efforts at growing cotton failed in the 1890's.[53] The Matador Ranch's early farm activities were best summarized in the company's Annual Report for 1889 which stated:

> The farming experiments begun two years ago in Motley County were extended last spring and a satisfactory crop was raised of sorghum, millet, and Johnson grass. Some grain of a promising character was also raised. The success is of moment--establishing the value of the company's land for farming purposes.[54]

The misfortunes which struck the cattle industry in the late 1880's drastically altered the Francklyn Land and Cattle Company's farming program. At first, land on the ranch was cultivated to supplement the livestock's feed with forage and grain. As early as 1882 haying outfits cut

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[53]William Curry Holden, The Espuela Land and Cattle Company, A Study of a Foreign-Owned Ranch in Texas (Austin, 1970), pp. 235-241; W. C. Holden, "Experimental Agriculture on the Spur Ranch, 1885-1904," Southwestern Social Science Quarterly, XIII (June, 1932), pp. 16-20.

[54]Quoted in W. M. Pearce, The Matador Land and Cattle Company (Norman, 1964), p. 152.

native grasses at a cost of $5 per ton, while other cowboys harvested 360 acres of millet and 5,000 to 7,500 acres of oats.[55] In 1884 a millet crop produced about 200 tons.[56] However, the company's bankruptcy in 1886 and the subsequent court order requiring the White Deer Estates to dispose of the land shifted the emphasis to the demonstration of the soil's productive capacity.

As manager of the White Deer Estates, George Tyng who engaged in grain production soon reached several conclusions on the area's agricultural potential. He found that cool summer nights and the regular June dry spell inhibited the growth of corn. Though barley, oats, and rye provided good yields, the most dependable crop was winter wheat. Commenting upon wheat, he concluded: "When sown before Oct. 1st on land well pulverized to depth of 4 to 5 inches, the yield of experimental plats has been so heavy, that I have become convinced that 30 to 40 bushels per acre can be depended on for several successive years."[57]

Farming on the White Deer land as well as on all other ranches was diminutive in comparison with the extensive crop

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[55]Sheffy, Francklyn Land and Cattle Company, pp. 48-49.

[56]Dodge City (Kansas) Times, August 21, 1884, in Lonnie J. White, comp. and ed., "Texas Panhandle News Items 1877-1885, from the Dodge City Times," Panhandle-Plains Historical Review, XL (1967), p. 149.

[57]George Tyng to Col. B. B. Groom, New York, March 27, 1893, George Tyng Letters, Archives, Panhandle-Plains Historical Museum, Canyon, Texas.

experimentation program conducted on the world's largest ranch, the XIT. When the State of Texas granted three million acres which extended 195 miles southward from the Neutral Strip along the Texas-New Mexico boundary in 1882 in exchange for the construction of the state capitol, the ranch's Chicago owners, Abner Taylor, Amos C. Babcock, Charles B. Farwell, and John V. Farwell, intended to subdivide and sell the land in small tracts to farmers. However, the nearest farmers' frontier lay almost 200 miles away, so the proprietors obtained financial backing through the establishment of the London-based Capitol Freehold Land and Investment Company, Limited, and proceeded to develop a cattle ranch with the understanding that the land would eventually be divided and sold.[58] In 1889 Abner Taylor expressed the original plan when he told a reporter: "As soon as the great tide of immigration settlement reaches our territory, we will cut up our possessions into smaller tracts and make way for the man with the hoe."[59]

Once the tide of immigration reached the Panhandle in the late 1880's, the Capitol Freehold leaders formulated more precise plans to prepare for the eventual sale of their land. Since the nearby state property sold at the $2 per acre grazing rate, they decided to withhold the ranch real

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[58] J. Evetts Haley, The XIT Ranch of Texas and the Early Days of the Llano Estacado (Norman, 1929), pp. 52 and 71-72.

[59] Canadian (Texas) Free Press, January 30, 1889.

estate from the market until settlers had purchased all of the school lands and were willing to pay as much as $5 per acre.[60] The neighboring cattleman, W. M. D. Lee of the LS Ranch, succinctly summed up the policy when he told the Board of Directors in London: "We are holding that land as you are holding yours--for a price."[61] Prospects for the early disposal of the land brightened so much after the Fort Worth and Denver Railroad began operation in the Panhandle that the company surveyed 124,700 acres in Dallam, Hartley, and Deaf Smith counties in 1889.[62] However, when farmers failed to reach the area even after the railroad bought 6,400 acres of the XIT at $5 per acre to raise wheat, the proprietors chose to continue their own experimental program.[63]

The XIT operators utilized the vast resources of the company for their farming venture. As many as 1880 acres in nineteen patches in all areas of the ranch were devoted

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[60]Abner Taylor to C. F. Meek, General Manager, Ft. Worth and Denver Railway, Denver, Colorado, April 19, 1888, Abner Taylor Letters, XIT Papers.

[61]The Capitol Freehold Land and Investment Company, Limited, Proceedings at the Fifth Annual General Meeting of Shareholders, Held June 6, 1890 (London, 1890, p. 12, XIT Papers. Hereafter cited as Fifth Annual Proceedings, June 6, 1890.

[62]Sixth Annual Proceedings, June 4, 1891, p. 15, XIT Papers.

[63]Abner Taylor, Chicago, to John V. Farwell, London, September 10, 1888, Taylor Letters; Fourth Annual Proceedings, March 12, 1889, pp. 4-5, XIT Papers.

to raising garden and field produce.[64] Investments in the latest tools and implements such as John Deere wheel, steel beam, Oliver chilled, bull tongue, New Deal, and sulky plows; corn planters; broadcast seeders; pulverizers; Deering and McCormick mowers; disc harrows; McCormick self-binders; hay balers; and cultivators reached as high as $6,949.50.[65] Cowboys provided the necessary labor.

Even before the first cattle arrived at the XIT, the management instituted plans to test the arability of the soil. In the spring of 1885 John V. Farwell, the general manager of the multi-divisioned ranch, issued instructions for the planting of corn and millet at the Buffalo Spring headquarters in Dallam County. The fair results obtained from the newly-turned sod led not only to the increase of cultivation to 200 acres at the same site the next year but also the tillage of the lands at Middlewater in Hartley County and at Yellow Houses in Lamb County, the southernmost division.[66] Although the cowboys harvested mediocre crops of alfalfa, oats, millet, sorghum, and Indian corn at Buffalo Springs and Middlewater, excessive dry weather almost killed all hope for success at Yellow Houses. However, when the

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[64]Farm and Garden Inventory, Annual Reports, 1888-1901, XIT Papers.

[65]Tools and Equipment Inventory, Annual Reports, 1888-1901, XIT Papers.

[66]John V. Farwell to the Marquis of Tweedale, Chairman of the Board of Directors, Capitol Freehold Land and Investment Company, October 31, 1886, Annual Report, XIT Papers.

rains came in late July and early August, the land was resowed. Within sixty days the ranch manager reported, ". . . as fine a crop of millet as I ever saw grow in Illinois."[67] Such reports convinced John V. Farwell that, ". . . all these lands will be available for agricultural purposes in the near future."[68]

From this beginning until 1892 the XIT managers utilized certain criteria for determining the selection of crops. Emphasis upon the production of commodities for ranch use as well as for advertising purposes prevailed. However, interest also existed in finding products with the potential for important commercial value.

Both millet and corn received special attention at first, but then lost favor. Although the planting never exceeded 220 acres in any one year, the cowmen found that millet grew best on the southern farms. Yet after a general failure in the excessively dry years of 1890 and 1891 millet sowing virtually ended. The same pattern held true for corn. Raised both for its grain and fodder primarily on the northern farms, the return of two to five bushels of grain per acre plus one to two tons of fodder were most common.[69]

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[67]B. H. Campbell to John V. Farwell, October 31, 1886, XIT Papers.

[68]John V. Farwell to Tweedale, October 31, 1886, Annual Report, 1886, XIT Papers.

[69]Farm and Garden Inventory, Annual Reports, 1888-1891, XIT Papers.

By 1900 the ranch farmed only twenty acres of millet and eleven acres of corn.[70]

Cereal grains did not grow well on the XIT. With the exception of a twenty acre patch at Spring Lake in 1889, oats failed completely between 1888 and 1891. Wheat harvests in 1889 and 1890 were as poor as the oats. The gathering of only forty-five bushels of barley from fifteen acres on three farms in 1889 convinced the ranchers never to plant that crop again.[71]

The XIT attempted to produce cotton in 1888 and 1889. The first year's yield provided only enough bolls for the British investors to admire.[72] In 1889 the employees gathered 200 pounds from one acre at Spring Lake and 600 pounds from an acre at Yellow Houses. The ranch avoided cotton after that.[73]

Various forage crops provided feed for livestock. The northern division of Buffalo Springs offered the best area for alfalfa. In seasons of adequate moisture and late frost at least two or three cuttings could be expected. The mowing and stacking of wild hay furnished an inexpensive fodder

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[70]Farm and Garden Inventory, Annual Report, 1900, XIT Papers.

[71]Farm and Garden Inventory, Annual Reports, 1888-1890, XIT Papers.

[72]John V. Farwell to Tweedale, Annual Report, 1888, XIT Papers.

[73]Farm and Garden Inventory, Annual Report, 1889, XIT Papers.

which grew in importance through the years.[74]

The XIT's truck gardens received much publicity when a display of products appeared at the Dallas State Fair in 1887.[75] Cabbages, onion, beets, carrots, cucumbers, squash, lettuce, tomatoes, beans, peas, radishes, turnips, cauliflours, pumpkins, and various types of melons generally grew well on the soils. By 1891 one patch alone produced 3500 heads of cabbage and 2500 watermelons valued at $810.[76]

Sorghum emerged as the most satisfactory crop tested on the XIT. The ranchers liked its drought-resistant qualities as well as its nutritional value as a livestock feed. In the peak year of 1890 when sorghum averaged eight tons per acre at the Escarbada division in Deaf Smith County and six tons per acre at Spring Lake in Lamb County, as many as 1189 acres were planted.[77]

As a result of the success in sorghum production, John V. Farwell became convinced that the XIT should become a sugar plantation. The idea first developed when he received glowing reports of the experiments in the extraction

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[74]Farm and Garden Inventory, Annual Reports, 1888-1901; John V. Farwell to Henry Bowman, London, September 25, 1888, Letterpress Book, Abner Taylor Letters, XIT Papers.

[75]Tascosa Pioneer, November 12, 1887.

[76]Farm and Garden Inventory, Annual Report, 1891, XIT Papers.

[77]Farm and Garden Inventory, Annual Report, 1890, XIT Papers.

of sugar from sorghum at Fort Scott, Kansas.[78] Since sorghum did so well in the area, Farwell believed sugar beets would grow also.[79] Once such a program got underway, he predicted enormous profits coming from the colonization and sales of the land at $100 per acre.[80] One of the Chicago managers, George Findlay, attempted to persuade the Oxnard Beet Sugar Company of Grand Island, Nebraska, to build a factory on the land.[81] Senator Charles B. Farwell and Congressman Abner Taylor encouraged the plan by pushing federal legislation to provide a sugar bounty.[82]

Despite the ambitious plans, the sugar plantation never materialized. In 1889 and 1891 attempts to raise sugar beets on the dry lands of Alamositos, Yellow Houses,

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[78]John V. Farwell to Tweedale, October 31, 1886, Annual Report, 1886; Capitol Freehold Land and Investment Company, Limited, Report of the Managing Director, Hon. John V. Farwell, for the Year Ending October 31, 1887 (London, 1887), pp. 8-12, XIT Papers. Hereafter cited as Report of Managing Director.

[79]Report of Managing Director, October 31, 1888, pp. 2-3.

[80]Report of Managing Director, October 31, 1887, p. 12.

[81]George Findlay to J. R. Alter, J. R. Alter and Brother, Grand Island, Nebraska, November 14, 1890, Letter press Book, George Findlay Letters, p. 89; Alter to Findlay, November 24, 1890, Findlay Letters; Findlay to Oxnard Beet Sugar Factory, Grand Island Nebraska, November 28, 1890, Letterpress Book, Findlay Letters, p. 131, XIT Papers.

[82]Congressional Record, 50th Congress, 1st Session, December 12, 1887, p. 28; Fourth Annual Proceedings, March 12, 1889, p. 18, XIT Papers.

and Spring Lake failed.[83] Disappointment also developed when the Oxnard Beet Sugar Company declined to construct a factory.[84] Furthermore, the additional cost of removing the discoloration from sorghum sugar reduced its profitability.[85] Finally, although the McKinley Tariff of 1890 granted a two-cent per pound bounty on domestically-produced raw sugar, the free listing of imported sugar in effect nullified the advantage.[86]

Drought and financial difficulties forced the XIT to suspend the experimental program in 1892. Even though the hope of colonizing the three million acres had not been achieved, the tests laid the foundation to the future farm development of the Texas High Plains. Perhaps John V. Farwell best evaluated the program when he concluded that the experiments, ". . . clearly showed to our mind the adaptability of our land to diversified farming, as well as stockraising."[87]

While crop experimentation on the XIT and other ranches revealed the arability of the plains and encouraged

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[83]Farm and Garden Inventory, Annual Reports, 1889 and 1891, XIT Papers.

[84]C. Kennedy Hamilton, Jr., Secretary, Oxnard Beet Sugar Company, Grand Island, Nebraska, to Findlay, December 4, 1890, Findlay Letters, XIT Papers.

[85]Fifth Annual Proceedings, June 6, 1890, p. 24-25, XIT Papers.

[86]Annual Report, 1892, XIT Papers.

[87]Ibid.

the advance of the agricultural frontier, the true test of whether farming would become important in the grazing country depended upon the success of the small cultivators. Usually arriving with preconceived notions of proper farm techniques, the settlers soon found those ideas challenged by the physiographic conditions of the semi-arid region. From the late 1880's until the turn of the century successful agricultural development depended upon the ability of farmers to adapt.

The selection of crops reflected the tendency of early settlers to attempt to transplant their farm methods to the Panhandle. In their first years farmers generally planted corn. As a staple with which most settlers had experience, corn could be grown and harvested with the most primitive implements. While only fifty-one acres of wheat and 825 acres of oats were planted in 1888, cultivators devoted 4494 acres to corn which remained the dominant crop, particularly in the northeastern counties, until 1891.[88]

Beginning with the small patches sowed in the fall of 1887 by G. L. Oliver at Washburn in Armstrong County and Judge A. J. Fires in Childress County, wheat rapidly replaced corn as the most planted commodity.[89] With the value

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[88] Second Annual Report of the Agricultural Bureau, 1888-89 (Austin, 1890), pp. 278-281.

[89] G. L. Oliver, Amarillo, to L. F. Sheffy, January 21, 1930, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas; LeRoy Reeves, "The History of Childress County" (Unpublished M. A. thesis, West Texas State College, Canyon, Texas, 1951), p. 35.

about ninety-two cents per bushel and yields averaging more than seventeen bushels per acre, farmers looked upon the commodity as a major cash crop.[90] By 1893 total acreage had reached 48,432 of which ninety-five per cent grew in the six southeastern counties below the Cap Rock.[91]

The introduction of cotton in those southeastern counties furnished a prelude for the development of a major industry. While a few farmers had sowed some small patches earlier, serious consideration of the crop did not begin until the 1892-1893 season. In 1892 a merchant at Memphis in Hall County provided cotton seed to anyone who would plant them. One of those who accepted the offer, O. B. Burnett, gathered two bales from six acres and received 4 1/2 cents per pound. Word of this success convinced cultivators throughout the area to put as many as 967 acres in the crop by 1894.[92] Cotton gins were soon erected by E. R. Alexander in Childress County in 1893 and at Memphis and Newlin in Hall County the next year.[93]

The early cultivators also grew several other types

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[90] Fourth Annual Report of the Agricultural Bureau, 1890-91 (Austin, 1892), pp. 328-329; Fifth Annual Report of the Agricultural Bureau, 1891-92 (Austin, 1893), pp. 354-355.

[91] Seventh Annual Report of the Agricultural Bureau, 1893-94 (Austin, 1895), pp. 536-538.

[92] Memphis (Texas) Democrat, July 21, 1939.

[93] Reeves, "History of Childress County, p. 37; Inez Baker, Yesterday in Hall County, Texas (Memphis, Texas, 1940), p. 68.

of commodities. Oats and millet increased in importance in the nineties, while rye and barley remained minor crops. Truck gardens with Irish and sweet potatoes, beans, and peas along with peach and apple orchards provided food for the resident.

Yet as farmers searched for the most satisfactory commodities, the influence of the cattle industry dominated most agricultural ventures. Even if an operator owned only one or two milk cows, the prospect of selling livestock feed to a neighbor who possessed several hundred head affected his crop selection. Consequently, forage production grew in importance in all types of operations.

Although a considerable amount of both wild and cultivated hay was mowed for livestock use, sorghum emerged as the most valuable forage. S. G. Carter of Adobe Walls who had ordered Yellow milo-maize and Kafir corn seed after reading an article in the Atlanta Constitution became an advocate of nonsaccacharin sorghums after their successful yields in the dry year of 1888.[94] By 1894 farmers on both the High Plains and below the Cap Rock had planted as much as 17,871 acres in the crop.[95]

The initial optimism of the first wave of farm settlers began to fade as drought and depression spread into

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[94]Canadian (Texas) Free Press, January 10, 1889.

[95]Eighth Annual Report of the Agricultural Bureau, 1894 (Austin, 1895), pp. 208-212.

the Panhandle. In the seven years between 1887 and 1894 rainfall in Amarillo averaged 16.73 inches in comparison with the 20.75 inch normal.[96] By the early nineties the inadequate moisture problem had begun to have its effects. When Henry S. Bishop arrived in the area in the spring of 1893, he found "a dismal looking country."[97] J. W. Morrison who lived in Hall County experienced crop failure every year from 1890 to 1893.[98] Average crop yields dropped precipitately throughout the region. Yet even if drought had not hurt production, the sharp price decline and the scarcity of money caused by the Panic of 1893 would have made conditions bad enough. However, with both calamities occurring simultaneously, the result was disastrous.

Along with the drought and depression, grasshoppers struck the newly-settled farmers of the southern counties in 1893.[99] Moving in waves across the countryside, they left the land in a desolate condition. One Swisher County

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[96]Texas, Agricultural Experiment Station, "Rainfall at Amarillo, Texas," by Marvin E. Jensen and R. J. Hildreth, Mimeographed Report MP-583 (College Station, May, 1962), p. 5.

[97]Judge Henry S. Bishop to Charles Crudgington, Van Dale Collection, Archives, University of Texas, Austin, Texas.

[98]J. W. Morrison, Pampa, to J. Evetts Haley, July 15, 1926, Interview Files, Panhandle-Plains Historical Museum, Canyon, Texas.

[99]N. M. Akeson, Hale Center, Texas, to L. F. Sheffy, June 19, 1934; T. L. Anderson to Anna Lee Anderson, July 7, 1936; John Dyer to Ruth Hooper, June and July, 1938, Interview Files, Panhandle-Plains Historical Museum, Canyon, Texas.

resident described the scene poignantly:

> We had enough rain that spring to bring up the crops. The grass was a carpet of green. Corn was almost knee-high when calamity again blighted our prospects. Grasshoppers had hatched out to the south of us and had started North. They were full-grown in size but had not reached the flying stage. We heard they were coming. Nothing could be done. Soon we could see the indications of the advancing army. As far as the eye could see to the east and to the west was a clearly defined line. Behind it to the south was brown and bare. The edge of the succulent green receded north day by day. It was said that the army traveled a half mile a day. When they reached our dugout the ground was a crawling mass. . . . The chickens became so satiated with their meat diet that we could not eat the eggs. These hoppers would crawl to the sill of the dugout door and tumble in. Mother swept them up on a shovel. Some got by and would eat holes in the flour sack. . . . Not a sprig of vegetation was left. . . . Our stock wandered away in search of grass. Our promising garden was no more. What was the use, anyway?[100]

The drought, the depression, and the grasshoppers almost ruined the farm movement in the Panhandle. Inadequate food and improper diets caused some illness. One community of farmers in Swisher County left their families to work on the wheat harvest in Hardeman and Wilbarger counties to earn enough to live through the winter.[101] Other families simply abandoned their property and went elsewhere. In Carson County several people moved to the newly-opened Cherokee Strip.[102] Many who had purchased the $2 land from the state with the five per cent interest

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[100] Neeley, Pioneer Life, p. 34.

[101] Ibid., p. 35.

[102] L. F. Sheffy, The Life and Times of Timothy Dwight Hobart, 1855-1935 (Canyon, Texas, 1950), pp. 136-137.

could not maintain payments and were forced to abandon their claims. In Floyd County just south of the Panhandle, as many as 122 farmers gave up their land in 1892.[103]

Even if some farmers did leave their homes, many remained. As one settler declared:

> They had no where to go, and no way of going. They had no railroad fare, they had no feed for their stock nor the money to buy feed. Everything was right here and there were no buyers, so that they could not sell out. They had a few cattle, a garden, chickens, and it was a case of existing here or starving on the road away.[104]

A sample of the tax rolls in selected counties provided further evidence of the effects of the drought and depression. The total valuation of property in Donley, Ochiltree, Deaf Smith, and Dallam counties began to decline in 1892 and 1893 and continued until 1895 in Donley County, 1897 in Deaf Smith and Dallam counties, and 1898 in Ochiltree County. The drop was so sharp that total evaluation did not reach the previous highs for ten years in Donley County, twelve years in Dallam and Ochiltree counties, and fifteen years in Deaf Smith County.[105]

The hard times hit the Fort Worth and Denver railroad so seriously that it went into receivership. The decline in

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[103]Jean Alexandre Paul, "The Farmers' Frontier on the South Plains" (Unpublished M. A. thesis, Texas Technological College, Lubbock, Texas, 1959), p. 127.

[104]Bishop to Crudgington, Van Dale Collection.

[105]Tax Assessor-Collector Records, 1882-1910, Dallam, Donley, Deaf Smith, and Ochiltree counties, Texas State Archives, Austin, Texas.

the shipping of livestock and crops caused net earnings in 1896 to drop about $600,000 below the 1890 level.[106] As a temporary remedy for helping the farmers, the line offered to haul seed wheat for spring planting in 1895.[107] Yet General Grenville Dodge, president of the railroad, realized that such a simple remedy really evaded the basic problem of too much dependence upon one crop, wheat. In Dodge's mind, diversification in agricultural production would provide the answer.[108]

In 1895 prospects for the region brightened. The first break in the drought came as almost twenty-five inches of rain fell at Amarillo.[109] Just as the long-awaited moisture brought some relief, the Texas Legislature enacted a new land law, commonly known as the four section act, which would have the long range effect of realistically encouraging the development of stock farming in the Panhandle. The legislation permitted the purchase of a maximum of one section of agricultural land at $2 per acre and three additional sections of pasture land for $1 per acre with payments

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[106] Poor's Manual, 1898 (New York, 1898), p. 832.

[107] D. B. Keeler, Freight Traffic Manager, Fort Worth and Denver Railway, January 28, 1895, to F. A. Kennedy, Agent, Amarillo, Texas, in Amarillo News, February 2, 1895. Typewritten copy in Van Dale Collection, Archives, University of Texas, Austin, Texas.

[108] Overton, Gulf to Rockies, p. 348.

[109] Texas, Agricultural Experiment Station, "Rainfall at Amarillo Texas," p. 5.

over a forty year period at three per cent interest. Furthermore, settlers could forfeit land purchased under previous laws and refile at the more liberal terms.[110] An amendment to the law in 1897 further encouraged land sales by reducing agricultural land to $1.50 per acre.[111]

Both the availability of cheap land and the improved moisture conditions brought a resurgence in the Panhandle's growth in the latter part of the decade. By 1900 the number of people residing in the twenty-six counties had increased from 9452 to 21,284, and farm units had grown from 897 to 2565. Although about fifty-five per cent of the population and farm operations were located in the eastern third of the area, the movement of farmers onto the High Plains had begun. The ratio of the number of people and farms in the central area in relationship with the whole area increased by ten per cent with Swisher, Randall, and Briscoe counties showing rapid growth.[112]

The influence of the four section act and the emphasis upon stock farming became evident by the turn of the century as indicated by the significant shift in farm size. Although the average acreage on farms dropped from 5944.4 to 4040.87

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[110] Gammel, Laws of Texas, X, pp. 793-805.

[111] Ibid., p. 1238-1242.

[112] U. S. Bureau of the Census, Twelfth Census of the United States: 1900, Population, I (Washington, 1901), pp. 40-42; U. S. Bureau of the Census, Fourteenth Census of the United States: State Compendium, Texas (Washington, 1925), pp. 13-16.

in the decade of the nineties, most of the farm units tended to be larger. In 1890 almost sixty-two per cent of the farms were in the 500 acres to 999 acres category.[113] By 1900 almost fifty-nine per cent of the farms were in the 1000 and over group.[114] Furthermore, even though total acreage on farms multiplied five times in the decade, the amount of improved or cultivated land declined by 9000.[115]

The large size of each agricultural unit indicated the continued importance of the ranching and stock farming business in the region. Cattle raising remained the dominant occupation. However, several signs pointed to a combination with farming. In the eastern third of the Panhandle where crop production was most concentrated, a marked increase in livestock production occurred. In 1890 the section produced only 24.8 per cent of all the cattle in the region.[116] By 1900 that percentage had increased to 42.4.[117]

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[113] U. S. Census, Eleventh Census: 1890, Agriculture, V, pp. 182-188.

[114] U. S. Census, Twelfth Census: 1900, Agriculture, V, pp. 124-131.

[115] In 1890, total acreage on farms was 1,848,656; improved acreage was 264,722. In 1900, total acreage on farms was 10,364,842; improved acreage was 255,064. U. S. Census, Eleventh Census: 1890, Agriculture, V, pp. 228-231; U. S. Census, Fourteenth Census, State Compendium, Texas, pp. 108-130.

[116] In 1890, the number of cattle totaled 254,927. U. S. Census, Eleventh Census: 1890, Agriculture, V, pp. 307-310.

[117] In 1900, the number of cattle totaled 904,901. U. S. Census, Twelfth Census: 1900, Agriculture, V, pp. 480-484.

The prevalence of hay and forage crops also reflected the interest in stock farming. Besides the prairie hay mowed primarily in the northern counties, stockmen raised alfalfa, clover, millet, and Johnson grass. Almost 70,000 acres were devoted to such forage crops as maize, milo-maize, and corn.[118]

Kafir corn used both as a grain and as forage emerged as one of the most widely planted crops. A farm editor who traveled through the area in the fall of 1899 saw several hundred acres covered with kafir shocks which provided nutritious feed for the rapid growth of cattle.[119] Stock farmers in three southeastern counties planted more than 6,000 acres in the crop.[120]

Interest in diversification altered past production practices. While corn and oats continued as significant grains, wheat and rye lost their importance.[121] Farmers found that the general lack of moisture between January and May to aid maturity caused the major trouble in growing winter wheat.[122] Cotton also assumed a prominent role,

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[118] Ibid., VI, p. 260-263.

[119] "Editorial," Farm and Ranch, XIII (October 19, 1899), p. 8.

[120] The counties were Briscoe, Childress, and Collingsworth. U. S. Census, Twelfth Census: 1900, Agriculture, VI, p. 195.

[121] Ibid., pp. 184-187.

[122] "Editorial," Farm and Ranch, XIII (October 19, 1899), p. 8.

particularly in the southeast, for 2500 acres were allotted to the fiber which yielded an average of one-third of a bale per acre.[123] At the same time farmers in Deaf Smith County began to experiment with broom corn after J. N. Askran received $100 per ton for the product.[124]

In 1892 a Kansas City reporter visiting the Texas Panhandle asked Colonel Charles Goodnight if a farmer could succeed in the area. The cattleman responded:

> Yes, a farmer can make a living out here. But he can't make money. He may, by hard work, do a little better some seasons than a living, but he can't get rich. The only way a farmer can do well here is to combine stock-raising with his farming.[125]

The basic changes in the pattern of farm practices by 1900 revealed the extent to which the difficulties of the nineties had convinced the Panhandle farmers of Colonel Goodnight's wisdom. The trend toward crop diversification and stock farming indicated not only the cultivators' awareness of the hazards associated with farming on the subhumid-semiarid plains but also their willingness to adjust to those problems. This recognition of the necessity of adaptation by the end of the nineteenth century brought the stability which meant that farming would succeed in northwest Texas.

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[123] U. S. Census, Twelfth Census: 1900, Agriculture, VI, pp. 434-435.

[124] Ibid., pp. 584-585; The Industrial West, Clarendon, Texas, January 12, 1900.

[125] Fort Worth and Denver City Railway, Texas, p. 112.

CHAPTER IV

PANHANDLE FARMING IN THE "GOLDEN ERA" OF AMERICAN AGRICULTURE

The end of the experimental phase of Panhandle farming coincided with the "golden era" of American agriculture. Between 1900 and the outbreak of World War I the farmers' economic position improved as agricultural commodity prices advanced more rapidly than those of non-farm goods and services. A corresponding rise in land values further enhanced the welfare of the farm community. Thus, the future for agricultural expansion appeared bright.

As one of the few remaining undeveloped farm areas in the nation, the Texas Panhandle became a focal point in the expansionist movement. A land rush reminiscent of the late 1880's began around 1903, intensified by 1906, and continued for almost a decade.[1] By 1910 the population in the twenty-six county area reached 89,285, representing more

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[1]David B. Gracy, II, "A Preliminary Survey of Land Colonization in the Panhandle-Plains of Texas," The Museum Journal, West Texas Museum Association, Texas Technological College, Lubbock, Texas, XI (1969), p. 66.

than a fourfold increase above the previous census.[2] The number of farms grew from 2565 in 1900 to 9423 ten years later. Furthermore, improved acreage swelled from 255,064 to 2,058,794.[3] The availability of good farm land at cheap prices, an expanded railroad system, and skillful promotion provided the key elements for attracting settlers to northwest Texas in the period of general farm prosperity.

Since settlers had acquired most of the state lands by 1900, the marketing of property controlled by realty companies, railroad corporations, and large ranches provided the foundation for the land rush. As the century began, the New York and Texas Land Company retained 173,062 acres in Armstrong, Hemphill, and Randall counties.[4] In Gray, Carson, Hutchinson, and Roberts counties, the White Deer Land Company which had received a court order in 1887 to sell its tract when prices rose prepared to dispose of more than 600,000 acres.[5] A deadline imposed by the state forced Colonel C. C. Gibbs, attorney for the land-grant

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[2]The 1900 population was 21,284. U. S. Bureau of the Census, Fourteenth Census of the United States: State Compendium, Texas (Washington, 1925), pp. 13-16.

[3]Ibid., pp. 108-130.

[4]Twenty-first Annual Report, June 30, 1900, New York and Texas Land Company, Limited, Papers. Archives, University of Texas, Austin, Texas.

[5]L. F. Sheffy, The Life and Times of Timothy Dwight Hobart, 1855-1935 (Canyon, Texas, 1950), pp. 174 and 185; Lester Fields Sheffy, The Francklyn Land and Cattle Company, A Panhandle Enterprise, 1882-1957 (Austin, 1963), pp. 268 and 320.

Houston and Texas Central Railway and the Texas and New Orleans Railroad companies, to initiate a sales campaign of about one million acres.[6] Along with these large tracts, several huge ranches, including the three million acre XIT Ranch, made their property available to farm settlers. While the need for obtaining quick cash to redeem bonds of the Capitol Freehold Land and Investment Company compelled the XIT managers to open land sales around 1901, rapidly increasing realty prices at the same time that cattle production costs rose, acted as a primary catalyst in convincing many cattlemen to subdivide and sell their pastures.[7] As one writer commented: "There is no good business policy in running steers on land that is worth $15 to $30 an acre, while it might have been profitable when the same land was worth only $1."[8]

The expansion of the railroad system in the Panhandle

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[6]C. C. Gibbs, One Million Acres of Land for Sale in the Panhandle of Texas (San Antonio, n. d.), Pamphlet, XIT Papers, Panhandle-Plains Historical Museum, Canyon, Texas; J. W. Pigman to Laura V. Hamner, Dalhart, Texas, June 9, 1936, Typewritten Copy, Earl Van Dale Collection, Archives, University of Texas, Austin, Texas.

[7]H. Milner Willis, Secretary, Capitol Freehold Land and Investment Company, Limited, London, to George Findlay, Office Manager, Chicago, July 8, 1901, Findlay Letters, XIT Papers; J. Evetts Haley, The XIT Ranch of Texas and the Early Days of the Llano Estacado (Norman, 1953), p. 218; Lewis Nordyke, Cattle Empire: The Fabulous Story of the 3,000,000 Acre XIT (New York, 1949), pp. 244-245; John T. Schlebecker, Cattle Raising on the Plains, 1900-1961 (Lincoln, 1961), p. 20.

[8]C. F. Drake, "The Country of Many Sides," Texas Magazine, VIII (May, 1913), p. 9.

provided a further stimulus to the boom era. While the Fort Worth and Denver and the Santa Fe-owned Southern Kansas Railway systems had effectively served the area since the late 1880's, much of the twenty-six county population resided at an inconvenient distance from the nearest station. The Santa Fe's acquisition of the Pecos Valley and Northern Texas Railway Company, a line completed in 1899 extending southwesterly from Amarillo to Roswell, New Mexico, and the subsequent construction of a track from Canyon City to Plainview connected the Panhandle's southern High Plains to the northern area. The Rock Island system penetrated the northwestern Sherman, Dallam, and Hartley counties with the Chicago, Rock Island, and Mexico Railway Company in 1901. Nine years later, the same system also opened the Choctaw, Oklahoma and Texas Railroad which cut through the central Panhandle, tying Oklahoma with New Mexico.[9] With the exception of Ochiltree, Hutchinson, Hansford, and Moore in the north and Briscoe in the south, a railroad touched every Panhandle county by 1910.

Once the expansion of the railroad system increased the accessibility of more parts of the region, the work of promoters remained the major ingredient for inducing the land boom. Concentrating their primary attention upon those midwestern farmers seeking less expensive acreage

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[9]S. G. Reed, A History of the Texas Railroads (Houston, 1941), pp. 301-303 and 407.

when their own land skyrocketed after 1900, landowners, real estate agents, speculators, railroad officials, and community leaders, acting either independently or cooperatively, directed their efforts toward attracting farm settlers by emphasizing soil fertility, diversity of crops, the temperate climate, the presence of an inexhaustible underground water supply, and cheap land prices at reasonable rates.

Some salesmen employed conservative techniques in disposing of farm lands. As manager of the White Deer Lands, T. D. Hobart inaugurated a program in 1905 designed to sell land in small tracts only to actual settlers. Avoiding association with agents or immigration companies, Hobart personally handled promotional activities by preparing and distributing pamphlets as well as placing advertisements in Iowa and Missouri newspapers announcing the availability of "500,000 acres of rich farming land in the famous Panhandle of Texas." Those homeseekers who investigated the offer found that they could acquire from 160 to 640 acres by paying one-fifth in cash and the balance between two and eight years at 6 per cent interest with the first year's payment deferred as a means of encouraging rapid improvements. By 1914 stock farmers controlled one-half of the White Deer Lands indicating the success of Hobart's low-keyed policy.[10]

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[10]Sheffy, Hobart, pp. 183-186 and 195.

Other real estate agents and speculators launched campaigns to lure settlers to the region. Operators like William F. Soash of Waterloo, Iowa, or C. O. Keiser of Keota, Iowa, and Redkey, Indiana, acquired Panhandle acreage, divided the property into small plats, then sold to customers whom their midwestern representatives sent on special trains. Purchasing land in Dallam County from the XIT Ranch and R. S. Coon in 1905, Soash made arrangements with John Sebastian, general passenger and freight agent for the Rock Island Railroad, to organize homeseekers' excursions. Between 1905 and 1908 eighty-seven Soash Special Trains, each carrying from seventy-five to 150 customers who gathered in Chicago, Detroit, St. Louis, Minneapolis, and Kansas City reached the Panhandle and South Plains. About 15 to 20 per cent of the people whom Soash brought to Texas purchased property.[11] C. O. Keiser of the Keiser Brothers and Phillips Land and Cattle Company who arrived in Canyon City in 1906 acquired 104,415 acres, principally in Randall County. Company agents in Illinois, Iowa, and Nebraska sent clients on special cars via the Santa Fe Railroad. Upon reaching the destination, local representatives showed the homeseeker the acreage, taking care that

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[11]W. P. Soash to Laura V. Hamner, November 15, 1936, Van Dale Collection, Archives, University of Texas, Austin, Texas; Vance Johnson, "'New Eldorado' for Farmers Provided by Land Companies," Amarillo Globe-News, Golden Anniversary Edition, August 14, 1938; Gracy, "Preliminary Survey of Land Colonization," pp. 65-66.

the contact with residents remained minimal.[12] One of the Keiser customers, Anton Beckman, who purchased lands in the Umbarger community in 1907 complained that he paid $22.50 per acre for land locally valued at $10.[13] Keiser Brothers and Phillips successfully continued their methods of operation until drought struck in 1909.[14]

Numerous other land promotion companies joined the drive to settle the Panhandle. The Reed-Allen Realty Company of Chicago took charge of land grant railroad property in the vicinity of Dalhart. The North Texas Land Company composed of H. M. Hay, governor of Washington, and associates, assumed control of ninety-seven sections near Texline in Dallam County in 1906 and began importing people from the Columbia River Valley of the Pacific Northwest.[15] Local agents such as Smith, Williams and Company Real Estate of Dalhart or William F. Beck of Stratford issued advertisements describing the diversity of crops in Hartley, Dallam,

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[12]William M. Black, "C. O. Keiser's Economic Activities in Randall County, Texas" (Unpublished M. A. Thesis, West Texas State College, Canyon, Texas, 1960), pp. 13, 36, and 53.

[13]Hubert Wilhelm Oppe, "Umbarger: Its History and People, A Monograph on a German Settlement in the Texas Panhandle," Mimeographed copy (Canyon, Texas, June, 1964), pp. 28-29.

[14]Black, "C. O. Keiser," p. 76.

[15]Laura V. Hamner, Federal Writers' Project, Notes Made June 9, 1936, William P. Soash Papers, Literary Efforts, Southwest Collection, Texas Technological University, Lubbock, Texas.

Moore, and Sherman counties.[16] The McClelland Brothers of Clarendon in Donley County actively pushed land in the area below the Cap Rock.[17] The Deaf Smith County firm of Witherspoon and Gough of Hereford became the local representative for the South and West Land Company of Chicago. In exchange for securing options on land in the southwestern Panhandle and acting as guides for prospective buyers, Witherspoon and Gough received ten per cent of the gross profits.[18]

In a manner similar to their activity in the 1880's and 1890's, the three railway systems in the Panhandle--the Santa Fe, the Fort Worth and Denver, and the Rock Island--complemented the work of the land agents. Since increased settlement meant more business, the railroad companies encouraged the land boom by providing special services such as reduced rates for prospective settlers. For those individuals who ventured into the area with no organized groups, the Fort Worth and Denver offered a "special thirty day homeseekers ticket" in which each individual in a party of five or more persons would pay a one-way fare on a round trip. The Santa Fe provided excursion rates from Chicago and Kansas City at one-way fare, plus $2, for the round

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[16]Handbills, 1905, Findlay Letters, XIT Papers.

[17]Banner-Stockman, Clarendon, Texas, February 23, 1906.

[18]Duplicate Contract, July 20, 1905, L. Gough Papers, Interview File, Panhandle-Plains Historical Museum.

trip.[19] A round trip ticket from Galesburg, Illinois, to Canyon City on the same line cost $18.45.[20] The Rock Island charged a flat fee of $25 for a round trip from Chicago to any point along its lines.[21] Those prospective buyers traveling under the direction of promoters like Soash or the Keisers usually rode in special cars and paid the special excursion rate with the understanding that if they purchased land, the real estate company would pay the fare.

The railroads further aided promotional efforts by extensive advertising. Through the publication of The Earth, beginning in 1904, and the Western Trail, later South West Trail, in 1905, the Santa Fe and the Rock Island lines respectively issued monthly magazines which included articles describing the farm potential of the Panhandle.[22] The Santa Fe also distributed pamphlets carrying testimonials of local citizens praising the fertile soil and the available underground water supply.[23] The Fort Worth and Denver ingeniously gave out seed packets labeled "Panhandle

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[19]Ida Marie Williams Lowe, "The Role of the Railroads in the Settlement of the Texas Panhandle" (Unpublished M. A. Thesis, West Texas State College, Canyon, Texas, 1962), p. 29; Handbill, John J. Burns Land Company, Findlay Letters, XIT Papers.

[20]Handbill, Early Land Sales, Interview File, Panhandle-Plains Historical Museum.

[21]Lowe, "The Role of the Railroads," p. 76.

[22]Ibid., pp. 43-50 and 72.

[23]Santa Fe Railroad, The Panhandle of Texas, Homeseekers Series No. 10 ([Chicago], [1903]), XIT Papers.

Seed" bearing such inscriptions on each envelope as:

> "Cotton Seed"--Government reports show that cotton can be grown in the Texas Panhandle country at one-fourth less expense than Alabama, Mississippi, Arkansas, or South Carolina. This means about $10 per bale extra profit to the Texas Panhandle grower. Do you need any better evidence of a good thing?[24]

Local communities received help from the railroads in their publicity efforts. Nine southwestern lines established the Colonization Agency in 1903 to furnish information to attract settlers.[25] In 1905 the Santa Fe transported Colonel S. T. Howard with a display of farm products from the Hereford area to Kansas City without charge.[26] In December 1909 the same railroad helped Dallam County send samples of various crops to the United States Land and Irrigation Exposition in Chicago.[27]

The Santa Fe Railroad also actively supported the efforts of a land speculator, C. L. Talmadge of Chicago. Railway officials used their influence to assist Talmadge in securing options through the owners of the XIT Ranch and the Hereford real estate firm of Witherspoon and Gough for a minimum of 150,000 acres along the Pecos Valley Railway. Directing tours into New Mexico in early 1904, he stopped at Hereford in Deaf Smith County and Bovina in Parmer County

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[24]Lowe, "The Role of the Railroads," p. 30.

[25]Canyon City (Texas) News, August 21, 1903.

[26]Hereford (Texas) Brand, October 13, 1905.

[27]Lowe, "The Role of the Railroads," p. 56.

where he managed to sell several sections at prices $3 to $5 per acre more than the normal rate. All the real estate men in Hereford received a two and one-half per cent commission to remain silent. After the initial success Talmadge turned his efforts southward to the Plainview area.[28]

The decision of the management of the Capitol Freehold Land and Investment Company to dispose of the three million acre XIT Ranch further aided the land boom on the western High Plains. Ever since the initial acquisition of the property, the Chicago owners had intended to subdivide and sell the acreage to farmers at the proper moment. However, the necessity of meeting financial obligations quickly forced the disposition of huge blocks of the property. Between 1901 and 1903 the company sold about 1,350,000 acres in large tracts at $2 per acre. In a second phase of the program such real estate promoters as W. P. Soash or George G. Wright of Kansas City, along with other groups, acquired and sold much of the domain. In 1905 the Capitol Syndicate created the office of land commissioner as a means of encouraging smaller, more permanent settlers.[29] These various programs resulted in the reduction of the enterprise

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[28]Hereford Brand, September 9, 1904; Amarillo Globe-News, Golden Anniversary Edition, August 14, 1938; C. L. Talmadge, Chicago, to George Findlay, Chicago, December 31, 1903; A. G. Boyce, Channing, Texas, to Findlay, February 20, 1904, Findlay Letters, XIT Papers.

[29]Haley, XIT Ranch, pp. 218-222.

to 900,000 acres by 1914.[30]

In the disposition of their property the XIT officials emphasized the agricultural potential of the acreage. The company issued pamphlets promising average yields per acre of fifteen to twenty bushels of wheat, twenty to fifty bushels of corn, one-fourth to one bale of cotton, and forty to sixty bushels of grain sorghum.[31] In cooperation with the Farm Land Development Company and the Santa Fe Railroad, the XIT made arrangements for Hardy Webster Campbell of Lincoln, Nebraska, creator of the Campbell system of soil culture, to establish two model farms near Bovina and Farwell in Parmer County to demonstrate the potential of dry land farming in 1904 and 1905.[32] Even more significantly, the Capitol Syndicate cooperated with the United States Department of Agriculture in establishing the Panhandle's first experiment station at the company's headquarters at Channing in 1903.[33]

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[30]Capitol Freehold Land and Investment Company, Limited, Report of the Board of Directors, 11 October 1904 (London, 1904), XIT Papers. Hereafter cited as Directors Report, XIT Papers.

[31]Francis C. Farwell, Charles F. Harding, and George Findlay, Capitol Reservation Lands, 500,000 Acres Offered For Sale As Farm Homes (Chicago, [1905]), Pamphlet, XIT Papers.

[32]Francis W. Farwell, Chicago, to Findlay, Channing, September 21, 1904; Findlay, Chicago to A. G. Boyce, October 19, 1904; Findlay to Boyce, October 20, 1904; Findlay to Walter Farwell, Channing, July 18, 1905, Findlay Letters, XIT Papers.

[33]U. S. Department of Agriculture, Cereal Experiments in the Texas Panhandle, by John F. Ross and A. H. Leidigh, Bureau of Plant Industry Bulletin No. 283 (Washington, 1913), p. 10.

The importance of the agricultural potential of Panhandle land also provided the main theme of the advertising conducted by local community organizations or newspaper editors. The Tulia Commercial Club in 1909 proclaimed: "There has never been a failure of crops in Swisher County since the small farmer began to come in. . . ."[34] The editor of the Canyon City News suggested a display of Texas Panhandle farm products at the World's Fair to show what could be produced in the area.[35] The Silverton Commercial Club summarized its feelings by declaring: "If there is any portion of the great Plains country more favored than the rest, in the way of soil, soil foundation, rainfall and sure crops, Briscoe can claim that distinction and is constantly entitled to it."[36]

As a result of such promotional efforts, land prices rose rapidly in northwest Texas. In Randall County farm land that sold for $3.50 an acre in 1900 went at $16 to $18 in 1907 and as high as $30 in 1911.[37] The first

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[34]Tulia Commercial Club, Reliable Reading for the Homeseeker About Swisher County, Texas, The Pride of the Plains (Tulia, January 1, 1909), Pamphlet, Copy in Archives, Texas State Library, Austin, Texas.

[35]Canyon City News, January 24, 1904.

[36]Silverton Commercial Club, Briscoe County, Growth and Development of the Great Plains of Texas (Silverton, n.d.), Pamphlet, Copy in Archives, Texas State Library.

[37]The Stayer, Canyon City, Texas, October 24, 1901; Keiser Brothers and Phillips, Canyon to Farmers Savings Bank, Keota, Iowa, January 19, 1907; C. O. Keiser, Canyon to George Phillips, Redkey, Indiana, December 27, 1901, Keiser Brothers and Phillips Papers, Panhandle-Plains Historical Museum.

large tracts on the XIT Ranch sold for about $2 an acre in 1901.[38] By 1910 the average price of all sales was $12.76.[39] While the amount of tillable acreage on a tract, the status of improvements, the distance from the nearest railroad or town, or the weather conditions all affected prices, the sheer desire of people to acquire good farm property served as the primary force behind the region's increasing values. Consequently, most farmers paid from $2 to $4 at the beginning of the decade and $12.50 to $15 by 1910.

Immigrants flocked to the Panhandle from all directions. Basically, those counties below the Cap Rock attracted pioneers from eastern Texas. Farmers moving into the Memphis area in 1908 and 1909 came from such Texas counties as Hill, Wichita, Eastland, and Franklin.[40] The High Plains lured midwesterners. Keiser Brothers and Phillips sold to men from such areas as Washington and Clinton counties, Iowa, Thurston County, Nebraska, and Kane County, Illinois.[41]

As more farmers arrived, the size of farms declined. The average 4,040.87 acre unit of 1900 decreased to 1,055.21

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[38]Capitol Freehold Land and Investment Company, Limited, Report of the Proceedings of the General Meeting of Shareholders, 21st August 1907 (London, 1907), p. 3, XIT Papers.

[39]Directors Report, 21st December 1910, XIT Papers.

[40]John Thomas Duncan, "Economic and Social Movements of the Memphis, Texas Trade Area, 1908-1912" (Unpublished M. A. Thesis, Texas Technological College, Lubbock, Texas, 1942), p. 23.

[41]Black, "C. O. Keiser," pp. 68-71.

in 1910. More significantly, however, was the growth in the number of smaller units. At the turn of the century 59 per cent of the farms contained more than 1,000 acres. Ten years later, 75 per cent had below 1,000.[42] Quarter section farming was dominant in the eastern third of the Panhandle, while the western two-thirds of the region contained mostly one section units. Such a reduction in farm size reflected the increasing emphasis on crop production.

As farm units became smaller, the operation of agricultural education programs by several public and private groups aided the new settlers in making their acreage more productive. The Panhandle's first experience with such movements began with the Farmers Institutes backed by the Department of Agriculture. Organized in the local communities, the members held meetings where they discussed their experiences or heard visiting lecturers make suggestions on the improvement of farm practices. One typical speaker, Professor J. W. Carson of Texas Agricultural and Mechanical College, appeared before Farmers Institutes in Tulia, Hereford, and Silverton in 1904 encouraging the production of forage crops. The general theme of diversification, rotation, seed selection, better cultivation methods, as well as beef and pork raising received special emphasis.[43]

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[42]U. S. Census, Fourteenth Census, State Compendium, Texas, pp. 108-130.

[43]Hereford Brand, September 2, 1904 and September 9, 1904.

The agricultural demonstration work conducted by the regional railroad corporations supplemented the government's efforts.[44] Each of the three major lines appointed farm experts to conduct their respective programs. W. F. Sterley, the general freight and passenger agent of the Fort Worth and Denver, arranged for agricultural specialists to appear in communities along the company's lines. Sterley also arranged for the United States Bureau of Forestry to survey the region for the possibility of planting trees between Fort Worth and Texline.[45] When the bureau's report suggested that such varieties as black walnut, pecan, black locust, mulberry, red cedar, and bois d'arc could thrive in the area, local editors in Hereford, Panhandle, and Higgins called for massive tree planting.[46] Canyon City residents went so far as to organize the Panhandle Forestry Association in 1906.[47]

Few men were as active as Harry M. Bainer of the Santa Fe Railroad in making suggestions for the advancement of Panhandle agriculture. He wrote articles for local

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[44]An excellent article on this topic is Roy V. Scott, "American Railroads and Agricultural Extension, 1900-1914: A Study in Railway Developmental Techniques," Business History Review, 39 (Spring, 1965), pp. 74-98.

[45]Lowe, "The Role of the Railroads," pp. 35-36; The Stayer, Canyon City, Texas, September 11, 1902.

[46]Hereford Brand, September 2, 1904; Higgins (Texas) News, October 20, 1904; Panhandle (Texas) Herald, January 17, 1908.

[47]Canyon City (Texas) News, February 2, 1906.

newspapers and regional magazines pushing such diverse crops as oats, spelt, and flax.[48] He campaigned for the erection of silos on every farm.[49] Bainer promoted the area by arranging for displays of Panhandle forage crops and small grains.[50] In the Higgins community local farmers cooperated with the Santa Fe agent for growing demonstration crops.[51]

Both the Santa Fe and the Rock Island systems sent special trains to local communities along their lines. Arriving with exhibits and experts, each special generally followed a certain theme. In 1913 H. M. Cottrell of the Rock Island organized a nine-car Kafir-Milo Special in February and a Silage Special in August.[52] The Santa Fe demonstration cars usually encouraged the importance of diversification by promoting dairy, poultry, and livestock production as well as a variety of crops.[53]

The Panhandle farmers' persistent search for the best methods of land adaptation aroused widespread interest in the activities of Hardy Webster Campbell of Lincoln, Nebraska. Known over the plains as an expert in dry farming, Campbell came to the area in 1904 when he and business

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[48]Amarillo Daily News, January 12, 20 and 26, 1912.

[49]Ibid., July 13, 1913 and May 11, 1913.

[50]Ibid., October 26, 1912.

[51]Higgins News, August 21, 1914.

[52]Amarillo Daily News, February 8, 9, and July 29, 1913.

[53]Panhandle Herald, February 16 and March 9, 1911.

associates of the Farmland Development Company of Chicago obtained an option to sell 156,000 acres of the XIT Ranch. After establishing two demonstration farms near Bovina and Farwell in Parmer County in 1905, he made several appearances in the area preaching the methods of the Campbell Soil Culture system.[54]

Believing that a capillarity movement of water toward the surface led to evaporation, Campbell convinced several regional farmers of the necessity for packing the subsoil so that moisture could not escape. His scheme called for intensive cultivation through following a routine of plowing, packing the soil with the Campbell subsurface packer, seeding, and repetitive harrowing with either an Acme or a disc harrow for the creation of a loose mulch on top to permit the better absorption of water.[55]

By 1906 Campbell claimed that the use of his system in the Panhandle had contributed to increased production and immigration.[56] Cultivators like J. C. Coker and Judge L. Gough of Hereford did report better wheat yields in 1907

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[54]Prospectus, Farmland Development Company, February, 1905; Findlay to A. G. Boyce, Channing, October 20, 1904; Findlay Letters, XIT Papers.

[55]Mary Wilma M. Hargreaves, Dry Farming in the Northern Plains, 1900-1925 (Cambridge, 1957), pp. 87-89 and 91; Hereford Brand, March 31, 1905; James C. Malin, The Grassland of North America, Prologomena To Its History (Lawrence, Kansas, 1948), pp. 227-242; Hardy Webster Campbell, Campbell's 1907 Soil Culture Manual (Lincoln, c1907), pp. 37-43.

[56]H. W. Campbell, "The Campbell System of Soil Culture: What Is It?" Farm and Ranch, XXV (February 10, 1906), p. 5.

when they followed the Campbell method.[57] However, the editor of the Hereford Brand complained that the farmers listened to the agricultural experts in dry years but discarded the new ideas for the old methods in years of sufficient rainfall.[58]

The work of area federal and state experimental stations provided a more far-reaching impact upon Panhandle farming than the efforts of Campbell. The United States Department of Agriculture established the first regional experiment station on the XIT Ranch at Channing in October 1903. For three years representatives from the Bureau of Plant Industry conducted tests on 450 separate varieties of cereal grains and forage crops. In the fall of 1905 the operation of an experimental farm opened at Amarillo and within a year all of the personnel at Channing transferred to the larger city. Later, the Office of Dry Land Agriculture began research at Dalhart, and the Office of Forage Crop Investigation in cooperation with the State of Texas created a testing station just outside the Panhandle at Chillicothe in Hardeman County.[59]

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[57]Hereford Brand, August 2, 1907; L. Gough, Deaf Smith County, Texas, to Editor, Farm and Ranch, August 1, 1908, B & H File: Deaf Smith County, Archives, Texas State Library, Austin, Texas.

[58]Hereford Brand, May 3, 1907.

[59]U. S. Dept. of Agriculture, Cereal Experiments, Bureau of Plant Industry Bulletin No. 283, pp. 10-11 and 77-79.

The United States Department of Agriculture further encouraged farm development in the Panhandle by making arrangements with the commissioners courts in Potter, Randall, Carson, and Oldham counties for sending a demonstration agent in 1913. As the first appointee, Harmon Benton wrote and distributed newspaper articles and informational newsletters describing how to improve farming. Under his direction 261 farmers planted plats of kafir corn, milo, feterita, wheat, oats, rye, barley, spelt, emmer, sorghum, millet, and Sudan grass which showed superior production in comparison with regular farm methods.[60]

The use of silos attracted much attention around 1910. Since kafir corn, milo maize, and other sorghums which made good ensilage grew extremely well in the area, the prospect of profiting through livestock feeding appeared good. Colonel J. Morgan Trummell, a Kentuckian who settled at Tulia, began pushing silo sales in Swisher, Briscoe, and Castro counties.[61] H. M. Bainer of the Santa Fe Railroad who became a vigorous advocate of the use of silage claimed that silos would pay for themselves within a year or so. In 1913 the Amarillo Chamber of Commerce held a silage conference for farmers, and the Rock Island Railroad sent a Silage Special train through the area.[62] By 1914 farmers

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[60]Amarillo Daily News, October 12, 1913, August 11 and December 30, 1914.

[61]Ibid., November 16, 1912.

[62]Ibid., May 11, 1913 and July 29, 1913.

had erected at least sixty-four silos in Potter, Randall, Carson, and Oldham counties alone.[63]

At the same time that the silage movement became popular, interest emerged in using underground water for irrigation purposes. For several years promoters of the High Plains area south of the Canadian River had spread the myth that an inexhaustible supply of water underlay the region. Theories on the origins of the water ranged from the low of an underground river developed from the snow of the Rockies to melting Arctic glaciers or the more logical percolation of surface water over a long period of time.[64] However, regardless of the origins, the knowledge of the presence of underground water aroused interest in its use for irrigation purposes.

Shortly after the turn of the century several individuals considered watering crops. Land promoters around Bovina in Parmer County sought aid from the XIT Ranch officials for drilling an artesian well, but the excessive costs cancelled those plans.[65] In his attempt to sell

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[63]Ibid., August 11, 1914.

[64]Donald E. Green, "The Idea of an Inexhaustible Supply of Ground Water on the Texas High Plains: The Obstacle of a Myth to Water Conservation," Proceedings of the Oklahoma Academy of Science, 50 (1970), pp. 151-152.

[65]Findlay to Thomas Kelley, Bovina, Texas, October 14, 1904; Charles K. Warren, Three Oaks, Michigan, to Findlay, September 12, 1905; H. M. McIntosh, President, American International Fuel and Petroleum Company, Chicago, to Findlay, September 23, 1950; Charles K. Warren to Findlay, September 26, 1905, Findlay Letters, XIT Papers.

Dallam County property Governor H. M. Hay of Washington irrigated alfalfa from a sixty or seventy foot well for a short time.[66] In 1905 a farmer in Deaf Smith County, G. R. Jowell, dug a 100 foot well near Hereford and placed a Wood propellor pump powered by a twenty-five horsepower steam engine. However, Jowell never used the well for irrigation purposes.[67]

The regular application of underground water to crops did not begin until a drought in 1909 almost terminated the land boom. Discouraged by the decline of business, a Deaf Smith County real estate agent, D. L. McDonald, who had seen irrigation wells in operation at Portales, New Mexico, obtained $3,000 from the Hereford Commercial Club and proceeded to drill two wells, one south of the city in Frio Draw and the other north of the town. Striking water at twenty-five feet at the first site, he installed a vertical centrifugal pump propelled by a steam traction engine. On the second, McDonald placed a Layne and Bowler "pitless" pump powered by a Fairbanks-Morse gasoline engine at the thirty-eight foot depth. With these plants in operation the irrigation era began in the Texas Panhandle.[68]

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[66]Hamner, Federal Writers' Project, June 9, 1936, Soash Papers.

[67]Hereford Brand, February 24, 1905.

[68]Donald Edward Green, "The Irrigation Frontier on the Texas High Plains: 1910-1960" (Unpublished Ph.D. Dissertation, University of Oklahoma, Norman, Oklahoma, 1969), pp. 125-132 and 139; Donald E. Green, "Pioneers of Irrigation, D. L. McDonald and the Beginnings of Irrigation on the Texas High Plains," Irrigation Age, 3 (December, 1968), pp. G3-G10.

The idea of irrigation caught on rapidly. By 1912 reports from nine or ten counties showed at least 100 strong wells providing water for 10,000 acres.[69] In Randall County drillers struck water at 154 feet on Mrs. J. A. Mooney's section.[70] In 1913 the XIT Ranch installed a well near Friona,[71] while the Texas Land and Development Company as well as Judge J. D. Webb obtained water in the Kress area of Swisher County.[72] In the same county the people of Tulia inaugurated a water carnival in 1914 to celebrate the development of irrigation there.[73] In that same year D. L. McDonald who had founded a drilling company completed two wells on the Alamositas Division of the Matador Ranch in Oldham County.[74]

Despite this extended activity, the area around Hereford in Deaf Smith County became the primary center for both those who watered for crop purposes and those essentially interested in using irrigation for land speculation.

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[69]H. M. Bainer, "Diversification in the Panhandle," Farm and Ranch, XXXIII (November 7, 1914), p. 3.

[70]Amarillo Daily News, February 18, 1912; C. C. Keiser to A. W. Hamill, Keota, Iowa, February 20, 1912, Keiser Brothers and Phillips Papers.

[71]Annual Report, 1913, XIT Papers.

[72]Amarillo Daily News, June 10, 1913.

[73]"Glimpses of Shallow Water Districts," The Earth, XI (September, 1914), p. 11.

[74]Green, "Irrigation Frontier," p. 164; W. M. Pearce, The Matador Land and Cattle Company (Norman, 1964), p. 152.

In 1912 McDonald dug wells which brought 1500 acres under irrigation for the growing of alfalfa, wheat, oats, kafir corn, milo maize, and millet.[75] McDonald and a local banker, S. B. Edwards, devised an ingenious scheme for promoting irrigation by dividing a quarter section of land into units which they sold for $250 each with the guarantee that the investor would receive 7 per cent interest plus one-half of the profits. This plan, however, failed to supplant the regular methods of real estate investment.[76] Of the several companies which speculated in irrigated land, none surpassed the Walker and Perkins Land Company of Wichita Falls which invested $400,000 in land and wells in order to sell irrigated farms.[77]

The installation and operation of an irrigation well required considerable capital. Depth and size of the hole, type of pump, and engine horsepower determined the cost with the estimated price ranging from $3,000 at Plainview to $5,000 at Hereford.[78] A well drilled and set up on the

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[75]Amarillo Daily News, July 28, 1912 and February 25, 1912.

[76]Ibid., July 28, 1912; Green, "Irrigation Frontier," p. 140.

[77]Amarillo Daily News, July 2, 1913.

[78]Zenas E. Black, "Market Gardens of the Texas Plains," The Earth, X (June, 1913), p. 6; Amarillo Daily News, July 28, 1912. A Layne "pitless" vertical centrifugal pump cost about $500. A seventy horsepower Bessemer oil engine retailed for $1540. Amarillo Daily News, July 28, 1912; Green, "Irrigation Frontier," pp. 78 and 89.

XIT Ranch in 1913 cost about $4600.[79] The expense of running an oil engine with fuel at three and one-half cents a gallon attached to a centrifugal pump lifting water sixty-five feet was estimated at about $1 per acre foot.[80]

The development of irrigation had an immediate impact upon the area. Farmers who watered in 1912 in the Hereford area reported yields of four tons of alfalfa from five cuttings, seventy-five bushels of milo maize, eighty bushels of kafir corn, 108 bushels of oats, and fifty bushels of wheat to the acre.[81] However, the land speculators who provided the primary backing for the movement probably gained the most, for land prices soared. Undeveloped acreage within the proven irrigation district sold in 1914 for $25 to $50 an acre, while improved tracts with wells, pumps, fences and buildings ranged from $60 to $125 an acre as compared with unimproved dry land at $10 to $25 an acre and improved dry land at $15 to $30 an acre.[82]

Just as the introduction of the centrifugal pump and the oil engine modernized irrigation, the substitution of mechanical power for animal power affected farming in general. When representatives from implement companies approached the XIT officials about buying the steam traction

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[79]Annual Report, 1913, XIT Papers.

[80]Amarillo Daily News, February 17, 1912.

[81]Ibid., February 9, 1913.

[82]Bainer, "Diversification in the Panhandle," p. 3.

engine and disc plows, J. J. Edgerton, the farm manager, went to the Texas State Fair in Dallas to investigate their feasibility. While Edgerton advised the postponement of purchase until development had passed the experimental stage, other Panhandle residents decided to buy the new implement.[83] The cattleman, Thomas S. Bugbee of Clarendon, acquired an engine and twelve disc plows capable of cultivating forty acres a day in February 1906.[84] By 1908 farmers operated sixteen steam plows in Carson County, while at least fifteen similar machines worked in Swisher County the next year.[85]

The steam thresher, however, received more general use than the steam plow in the early years of the twentieth century. Since the thresher represented an investment ranging from $300 to $1500 or more, most farmers depended upon independent outfits which moved from farm to farm to handle their grain.[86] One such operator, W. E. Bates of Canyon City, in 1906 charged for each bushel six cents for wheat, three cents for oats, seven cents for rye, and four

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[83]J. J. Edgerton to Findlay, November 9, 1905, Findlay Letters, XIT Papers.

[84]Banner-Stockman, Clarendon, Texas, February 16, 1906.

[85]Panhandle Herald, June 5, 1908; Farm and Ranch, XXVIII (July 10, 1909), p. 2.

[86]H. E. Patterson, Farm Manager, Channing, to Findlay, Glendive, Montana, June 20, 1905, Findlay Letters, XIT Papers.

cents for barley.[87]

Despite the interest in the use of mechanical power, horses remained important. For breaking and planting, Panhandle farmers used the one, two, or three disc Hancock plow, the rod-moldboard plow, the steel moldboard plow, sulkeys, gangplows, one and two row listers and planters as well as a variety of harrows.[88] One Briscoe County farmer, S. J. Arnold of Silverton, an advocate of the Campbell system, claimed that operators needed only a Clark's double action cuttaway harrow to prepare the surface, an Eagle lister for seed planting, and an Acme harrow for cultivation.[89] For harvesting farmers owned one row kafir wagon box headers, one row binders, regular binders for broadcast sorghum and Johnson grass, five and six foot mowers for hay, nine foot sulkey rakes, buck rakes for hay, and corn cutters.[90]

Just as the introduction of power machinery, irrigation, educational programs, and the pattern of settlement in the early years of the twentieth century revealed the general directions of agricultural development in the

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[87]Canyon City News, June 22, 1906.

[88]T. C. Thompson, Memoirs of Life on the Plains Since Mid-1890, Unpublished manuscript, Interview File, Archives, Panhandle-Plains Historical Museum.

[89]S. J. Arnold, "The Dust Mulch in the Panhandle," Texas Farm Journal, XXVI (June 1, 1906), p. 2.

[90]Thompson, Memoirs of Life on the Plains.

Panhandle, so did the emergence of wheat, cotton, and sorghums as the primary commercial crops of the region. The introduction of varieties of wheat more adaptable to local conditions in a period of high prices and good yields led to its rise as an important cash crop. Upon noticing the soil and climatic similarities between western Texas and the great grain producing areas of southern Russia, Turkestan, and Algeria, M. A. Carleton, cerealist for the United States Department of Agriculture, suggested that grains from those areas should be tested in the Southern Plains.[91] Taking up this idea, government researchers at the experiment stations near Channing and Amarillo instituted a study. The results indicated that hard red winter wheat of the Turkey, Crimson, or Kharkof varieties provided the best yields, followed by the semihard red winter wheat of the Mediterranean and Sibley golden types. Spring wheat did not do well.[92] Farmers quickly accepted the recommendation of the specialists, and the area, particularly the northern High Plains, became one of the major winter wheat grain regions in the nation.

Wheat planting spread rapidly. In the same area where farmers sowed 436 acres in 1899, the acreage expanded

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[91]M. A. Carleton, "Macaroni Wheat as a Texas Crop," Farm and Ranch, XXII (July 25, 1903), p. 1.

[92]U. S. Dept. of Agriculture, Cereal Experiments, Bureau of Plant Industry Bulletin No. 283, pp. 25-26 and 78; U. S. Dept. of Agriculture, Cereal Crops, Farmers' Bulletin 738, p. 11.

to 82,138 in 1909.[93] Interest in wheat growing began in the 1903-1904 period as reports of large harvests in Kansas spread. Farmers at such divergent points as Hereford in Deaf Smith County and Higgins in Lipscomb County showed enthusiasm for the grain.[94] The XIT Ranch gathered from fifteen to twenty bushels in 1905 and eighteen to thirty in 1906.[95] Pius Friemel of Umbarger raised forty bushels per acre in 1905, while some of his Randall County neighbors harvested forty-five bushels on dry land the next year.[96] In 1912, the Santa Fe Railroad shipped a total of 2850 cars containing 2,850,000 bushels from that portion of the northeastern Panhandle between Amarillo and Higgins. Production averaged twenty bushels per acre.[97] After the initial success the editor of the Dalhart Texan predicted: "What wheat has done for the Dakotas, Nebraska, and Kansas, it will do for the northwest Panhandle."[98]

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[93]U. S. Census, Twelfth Census: 1900, Agriculture, VI, pp. 184-187; U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

[94]Hereford Brand, September 9, 1904; Higgins News, September 8, 1904.

[95]Patterson to Findlay, June 29, 1905; Joseph Frazier, Channing, to Findlay, July 13, 1905, Findlay Letters; Directors Report, 31st December 1906, XIT Papers.

[96]Oppe, "Umbarger," pp. 26-27.

[97]Amarillo Daily News, September 13, 1912.

[98]Dalhart Texan, November 25, 1905. Quoted in William David Mauldin, "History of Dallam County" (Unpublished M. A. Thesis, University of Texas, 1938), p. 57.

The combination of such excellent yields and good prices made wheat producing profitable. Prices generally advanced during the pre-war era. In 1904 wheat buyers in the Higgins area paid between eighty-four and ninety-four cents per bushel depending upon the test weight.[99] By 1907 the heaviest and best wheat in Amarillo sold for $1.08.[100] Average prices over the entire state between 1909 and 1914 ranged from $1.17 in the former year to eighty-seven cents in 1913.[101] When farmers like Judge L. Gough of Hereford invested $9.30 per acre in 1907 and obtained a net profit of $18.42 per acre, High Plains farmers directed more attention to wheat as a commercial crop.[102]

Just as wheat emerged as a prevalent commodity above the Cap Rock, the importance of cotton increased, especially on the Eroded Plains. While the crop had grown in the area for several years, average annual production began to expand around 1904. In that year Dr. Seaman A. Knapp, a cotton expert from Houston and a nationally-known agricultural specialist, toured the communities along the Fort Worth and Denver Railroad as far north as Channing encouraging farmers

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[99]Higgins News, September 8, 1904.

[100]Panhandle Herald, February 21, 1908.

[101]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, by John G. McNeely, Elbert O. Schlotzhauer, and V. C. Childs, Bulletin 700 (College Station, July, 1948), p. 23.

[102]L. Gough to Farm and Ranch, August 1, 1908.

to plant cotton.[103] Traveling with Dr. Knapp, Walter E. Bently so effectively sold farmers in the Rowe community of Donley County on cotton production that by 1906 the construction of a gin became necessary.[104] The steady production increase in Hall County from 717 bales in 1900 to 3679 bales in 1904 and 28,000 bales in 1912 reflected the general growth in the area below the Cap Rock.[105] By 1909 at least thirty-seven gins baled cotton in the six counties.[106]

On the High Plains land promoters and civic boosters also pushed cotton raising. The managers of the XIT Ranch obtained early maturing seed from the Department of Agriculture to use in experimentation on land around Bovina in Parmer County.[107] The editor of the Canyon City News and the local Board of Trade began a solicitation campaign in 1904 to obtain a commitment of a minimum of 1,000 acres in

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[103]Hereford Brand, August 26, 1904.

[104]Banner-Stockman, Clarendon, Texas, September 30, 1904 and January 19, 1906.

[105]Texas, Department of Agriculture, Insurance, Statistics, and History, Agricultural and Statistical Report, 1905, by W. J. Clay (Austin, 1905), pp. 387-407; Amarillo Daily News, December 4, 1912.

[106]Texas, Department of Agriculture, The Panhandle and Llano Estacado of Texas, by Frederick W. Mally, Bulletin No. 12 (March-April, 1910), p. 36. Hereafter cited as Mally, The Panhandle.

[107]A. G. Boyce to Findlay, January 25, 1904; W. F. Sterley, General Freight Agent, Fort Worth and Denver Railway, Fort Worth, Texas, to Boyce, February 2, 1904; M. A. Carleton, Cerealist, United States Department of Agriculture, Washington, D. C., to Boyce, March 31, 1904, Findlay Letters, XIT Papers.

Randall County in order to obtain a gin.[108] Similar projects developed in Deaf Smith and Hemphill counties.[109]

Most of the efforts to raise cotton on the High Plains collapsed before World War I. The XIT managers found the growing season too short in their area.[110] In Randall County the gin project faltered when farmers promised to plant cotton on only 500 acres.[111] Pius Friemel who devoted eight acres to the crop in 1904 and 1905 quit because he could make more money by raising other crops.[112] At Hereford and Canadian subscription campaigns produced sufficient money to erect gins costing $1,000 and $3,000 respectively in 1904.[113] However, cotton raising on the High Plains generally failed at that time, for in 1909 five counties reported the production of only thirty-one bales.[114]

Cotton farmers faced several problems. Frequently, growers in Hall County complained that the weighers favored the buyers. As a means of meeting this difficulty, farmers

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[108]Canyon City News, January 8, 1904, January 29, 1904, and February 12, 1904.

[109]Hereford Brand, August 26, 1904.

[110]Boyce to Findlay, February 3, 1940, Findlay Letters, XIT Papers.

[111]Canyon City News, February 26, 1904.

[112]Ibid., October 19, 1906 and October 18, 1907.

[113]Hereford Brand, October 21, 1904 and September 9, 1904.

[114]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

established their own co-operatives with their own scales.[115] Also, almost every year frost caught the cotton bolls unopened or half-opened, thus reducing the yield. The introduction of hullers in area gins alleviated the bollies problems, for the machinery knocked the bolls to pieces and picked out the seed cotton for ginning.[116]

Cotton growers generally prospered until prices plunged to 6.5 cents in November 1914, as the outbreak of World War I disrupted the American cotton exchanges in a bumper crop year.[117] Several groups offered solutions for ending the depression. Merchants at Memphis and Amarillo joined the "buy-a-bale" movement which called upon individuals and organizations to purchase a bale of cotton at ten cents a pound and hold it off the market until prices increased.[118] At Childress, F. R. Friend proposed the creation of a joint commission in the cotton states that, once given a monopoly over marketing the commodity, would establish minimum prices and acreage limits.[119] Governor O. B. Colquitt of Texas suggested legislation limiting a farmer to twenty

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[115]Duncan, "Economic and Social Movements of Memphis, Texas," pp. 50-52.

[116]Mally, The Panhandle, p. 36.

[117]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 30.

[118]Amarillo Daily News, September 10, 1914 and September 15, 1914.

[119]Ibid., September 10, 1914.

acres.[120] However, all these programs failed to materialize, so cotton farmers suffered.

The non-saccharine sorghums, kafir corn and milo maize, remained important crops because of their drought resistant qualities. In 1910 some 133,664 acres in the Panhandle yielded 1,262,897 bushels of both kafir corn and milo maize.[121] Grown for grain and forage, the three varieties best suited to the region--the red, the white, and the black-hulled white--sold at either fifty to sixty cents per bushel as grain or $12 to $15 per ton with heads or $7 to $8 per ton as bundled fodder. Farmers raised milo maize almost exclusively for grain purposes. Selling at prices ranging from $1.25 to $1.75 per hundredweight, average yields frequently varied from twenty-five to forty bushels per acre.[122] Research at the Amarillo Experiment Station between 1908 and 1916 revealed dwarf milo, dawn (dwarf) kafir, and sunrise (early) kafir as the varieties of non-saccharine sorghums most suitable for the region.[123]

A few individuals recognized the value of grain sorghums for livestock feeding operations. After George

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[120]New York Times, October 8, 1914 and October 22, 1914.

[121]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

[122]Mally, The Panhandle, pp. 59-62 and 65.

[123]U. S. Department of Agriculture, Grain-Sorghum Experiments in the Panhandle of Texas, by Carleton R. Ball, Bulletin No. 698 (Washington, October 31, 1918), pp. 87-89.

Findlay, the office manager of the XIT Ranch, suggested the idea in 1902, a steer feeding program had proved successful by 1906.[124] H. M. Bainer of the Santa Fe Railroad tried to sell farmers on feeding kafir corn and milo maize to hogs, for he believed one bushel would produce ten to fourteen pounds of pork which meant a value of from sixty to eighty cents.[125] On the Kafir-Milo Special of the Rock Island Railroad in 1913, H. M. Cottrell emphasized the fattening values of kafir, milo, and Spanish peanuts.[126]

Discussion of commercial livestock feeding reflected the approaching maturity of Panhandle agriculture. Besides expanding their production of wheat, cotton, and grain sorghums, many farmers diversified. Not only did they raise grain and forage crops, but attention was directed toward certain experimental commodities. Furthermore, livestock and poultry raising added to each operator's income. Even with such protection farming remained a hazardous occupation on the semi-arid plains.

Besides wheat and the non-saccharine sorghums, farmers raised such other grains as corn, oats, and barley. Although early settlers had bad experiences with corn in

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[124]Findlay to Boyce, January 16, 1902, Findlay Letters, XIT Papers; "Milo Maize, A Great Stock Feed," Texas Farm Journal, XXVI (June 15, 1906), p. 13.

[125]H. M. Bainer, "Kafir and Milo Maize," Farm and Ranch, 31 (May 18, 1912), p. 24.

[126]Amarillo Daily News, February 8, 1913 and February 9, 1913.

dry, hot years, farmers in 1910 devoted 168,423 acres to the crop with eighty-nine per cent of the land located in the eastern third of the region.[127] Bloody butcher, hickory king, and squaw corn were the most popular varieties.[128] Even though 40,319 acres of oats averaged only ten bushels in the dry year of 1909, the cereal remained popular, for occasionally farmers harvested from forty to sixty bushels per acre.[129] Tests at the Amarillo Cereal Field Station between 1906 and 1915 revealed that Red Algeria and Red Rustproof spring oats were best suited for the area.[130] Barley which had the advantage of being an excellent livestock feed as well as good winter pasture remained fairly insignificant as acreage in 1909 reached only 2740 with seventy-seven per cent of the production located in Ochiltree County.[131]

The devotion of 313,925 acres in 1909 to hay and forage crops provided the evidence of the continued importance of the livestock business.[132] The cutting of millet,

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[127]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

[128]Mally, The Panhandle, pp. 30-31.

[129]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

[130]U. S. Dept. of Agriculture, Cereal Crops, Farmers' Bulletin 738, pp. 13-14.

[131]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 678-699.

[132]Ibid.

Johnson grass, wild, salt, and prairie hay remained a common practice over the region. However, aside from some minor experiments with clover around Dalhart and Canyon City, sweet sorghums and alfalfa received the most attention of all the cultivated hay and forage crops. The amber, the orange, the sumac, and the gooseneck sweet sorghum generally yielded from eight to twenty tons per acre as green forage or three to eight tons as cured fodder and sold for $8 to $10 per ton.[133]

As in the early years of settlement, a fascination for the growing of alfalfa existed in the Panhandle. On such large ranches as the XIT and the Matador, fields of the crop provided livestock feed,[134] while Henry C. Harding, a manager of the LX Ranch north of Amarillo, advocated alfalfa as the best crop for the increasingly high-priced lands.[135] When Frederick W. Mally of the Texas Department of Agriculture toured the Panhandle in 1909, he visited a very successful alfalfa grower, J. M. Simmons, who raised 400 acres of the crop on his farm along Paloduro River Canyon in

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[133]Mally, The Panhandle, pp. 48-55.

[134]J. J. Edgerton, Channing to Editor, Farm and Ranch, 25 (August 25, 1906), p. 7; Matador Land and Cattle Company, Limited, Report of Proceedings at the Twenty-Ninth Annual General Meeting of the Shareholders, February 7, 1911 (Dundee, Scotland, 1911), p. 9, Matador Ranch Papers, Southwest Collection, Texas Technological University.

[135]Texas, Department of Agriculture, Yearbook, 1908, Bulletin No. 8 (Austin, July-August, 1909), pp. 145-147.

Hansford County. Simmons cut alfalfa for hay twice each season and harvested one seed crop which averaged six or seven bushels per acre for which he received from fourteen to seventeen cents per pound.[136] L. C. Lair of Canyon City estimated he profited about $100 per acre for his investment in alfalfa.[137] Under such conditions, alfalfa remained popular.

In an effort to encourage diversification, the agricultural demonstrators continually pressed the farmer to experiment with a wide variety of crops. In the period after 1906 the Amarillo Experiment Station conducted tests on emmer and spelt, grains resembling wheat, and concluded that their drought-resistant qualities and high feeding value made them superior to corn and oats as feedstuffs.[138] After W. M. Martin of Castro County and D. L. Hickox of Potter and Randall counties averaged over fifteen bushels per acre, H. M. Bainer of the Santa Fe Railroad advised farmers to grow flax.[139] Bainer also advocated Spanish peanuts, for he found a Donley County farmer, H. G. Shaw, who claimed a good stand of nuts would produce from 850 to

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[136]Mally, The Panhandle, pp. 11-21.

[137]Canyon City News, October 7, 1907.

[138]U. S. Dept. of Agriculture, Cereal Experiments, Bureau of Plant Industry Bulletin No. 283, pp. 42-43; Amarillo Daily News, January 26, 1912.

[139]Hereford Brand, October 13, 1905; Amarillo Daily News, January 12, 1912 and December 22, 1911.

1,000 pounds of pork per acre.[140]

With prices averaging from $100 to $180 per ton and with the expectation of raising from one-fourth to one-third of a ton per acre, several Panhandle farmers raised broom corn.[141] A. J. Lundegreen who called himself the "broom corn king" sowed 2400 acres on his Randall County farm.[142] In an area extending from Higgins in Lipscomb County to Texline in Dallam County to Panhandle in Carson County broom corn growing became popular.[143] In 1909 the Santa Fe Railroad reported shipping 121 cars of the crop, while the Rock Island transported fifty-five cars.[144] Thus broom corn represented a profitable commodity for many cultivators.

Several groups and individuals envisioned the Panhandle as a sugar beet country. In 1905 the Rock Island Railroad sent beets grown near McLean in Gray County to the Armour Institute of Technology in Chicago and found the sugar content excellent.[145] That same year the Experiment Station at Channing tested the crop but did not recommend

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[140] Farm and Ranch, 31 (May 4, 1912), p. 19.

[141] Mally, The Panhandle, p. 28.

[142] Amarillo Daily News, January 31, 1912.

[143] Higgins News, August 25, 1904; Maulden, "Dallam County," p. 20; Panhandle Herald, September 1, 1910.

[144] Mally, The Panhandle, p. 28.

[145] John Sebastian, Passenger Traffic Manager, Rock Island System, Chicago to Findlay, July 18, 1905, Findlay Letters, XIT Papers.

its commercial feasibility at that time.[146] Community leaders at Clarendon, Panhandle, and Hereford distributed sugar beet seeds to farmers. H. T. Groom of Carson County told the Panhandle Farmers Congress in 1908 that one could net $65 per acre from beets.[147] B. F. Williams of Dalhart, "sugar beet father of the Panhandle," found the crop very profitable as a feedstuff.[148] In fact, the conditions looked so bright, particularly in the irrigated areas around Hereford, that Dr. C. O. Townsend, a sugar expert in the United States Department of Agriculture, optimistically declared in 1912: "If this is not sugar beet land, there is none."[149]

Such efforts at diversification did not detract from the general stock farming practices. Almost every farm included a vegetable garden in which Irish and sweet potatoes, onions, celery, tomatoes, beets, peppers, cucumbers, peas, lettuce, beans, radishes, carrots, and other similar products grew. In the sandy soils of Donley and Collingsworth

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[146]C. O. Townsend, Pathologist in Charge of Sugar Beet Investigation, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C., to Findlay, March 22, 1905; Townsend to Findlay, May 3, 1905; Findlay to Walter Farwell, Channing, July 19, 1905, Findlay Letters, XIT Papers.

[147]Banner-Stockman, Clarendon, Texas, February 9, 1906 and February 16, 1906; Panhandle Herald, May 15, 1908; Hereford Brand, March 27, 1908.

[148]Mally, The Panhandle, pp. 68-69.

[149]Amarillo Daily News, February 25, 1912.

counties cantaloupes and watermelon production often reached commercial status. Apple, peach, plum, and pear orchards along with grapes and an assortment of berries also added variety to the farmers' diets.[150]

Poultry and dairy operations generally remained small. The number of chickens increased fourfold in the first decade of the century, generally reflecting the similar increase in farms and population.[151] By 1911 a Randall County Poultry Association had organized to the extent of holding shows where exhibitors brought such varieties as White Leghorns, Rhode Island Reds, White Orpingtons, Buff Orpingtons, Light Brahmas, Barred Plymouth Rocks, Golden Wyandottes, and bantams.[152] Around 27,000 dairy cows produced milk in the area in 1910.[153] The major urban center of Amarillo had five or six dairies where such men as C. O. Wolflin sold milk at ten cents a quart and butter for thirty-five cents a pound.[154] Farm wives like Mrs. Paul Christian of Randall County regularly carried butter and eggs to the market to supplement the family

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[150]Mally, The Panhandle, pp. 75-113.

[151]U. S. Census, Twelfth Census: 1900, Agriculture, VI, pp. 480-484; U. S. Census, Thirteenth Census: 1910, VII, pp. 633-653. In 1900 90,726 chickens were reported on Panhandle farms. By 1910 farmers had 399,697.

[152]Amarillo Daily News, December 31, 1911.

[153]U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 633-653.

[154]Mally, The Panhandle, p. 121.

income.[155]

The vast growth in the hog and sheep business added to the farm wealth. With the great variety of feedstuffs, the number of hogs increased from 18,490 in 1900 to 81,583 in 1910 with the favorite breeds being Tamworths, Poland Chinas, Berkshires, and Durocs.[156] A Boys' Hog Club was organized in Hall County to further the interest in pork production.[157] Great interest in sheep growing developed in Deaf Smith and Castro counties around 1905. By 1912 reports estimated that 75,000 sheep grazed in the area, producing more than 750,000 pounds of wool.[158]

Just as hog and sheep production expanded rapidly in the pre-war years, cattle raising declined. About 350,000 fewer cattle grazed in the Panhandle in 1910 than at the beginning of the century.[159] As Frederick Mally surmised in 1909, this represented the transitional phase of the

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[155]Diary of Paul and Nora Christian, Randall County, Texas, January to September, 1902, Xeroxed copy in Mary E. Bivins Library, Amarillo, Texas.

[156]U. S. Census, Twelfth Census: 1900, Agriculture, VI, pp. 480-484; U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 633-653; Drake, "Country of Many Sides," pp. 17-18.

[157]Duncan, "Economic and Social Movements of Memphis, Texas," p. 53.

[158]"Hereford, A Sheep Center," The Earth, IX (April, 1912), p. 4.

[159]Between 1900 and 1910 the total number of cattle decreased from 904,901 to 550,570. U. S. Census, Twelfth Census: 1900, Agriculture, VI, pp. 480-484; U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 633-653.

regional cattle industry. As more settlers moved in, land values increased so much that cattlemen could not afford to devote as much acreage to livestock. However, as cropland replaced pastures, the possibilities of raising more cattle on less land meant that the future for the cattle industry looked good.[160]

The changes occurring in the cattle industry reflected the extent of Panhandle agricultural growth in the first years of the twentieth century. While farmers continued to stress stock farming, the utilization of more land for crops, the adoption of scientific tillage methods, the introduction of mechanized implements, and the inauguration of irrigation laid the foundation for an increased emphasis upon commercialized agriculture.

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[160]Mally, The Panhandle, pp. 119-120.

CHAPTER V

SPECIALIZATION AND EXPANSION: THE 1920'S

With the foundation for commercial agriculture securely laid, Panhandle farming achieved greater prominence after 1914. As a means of meeting Allied and domestic food demands during World War I, northwest Texas farmers began concentrating on the production of a limited number of commodities. Despite a short postwar depression, this pattern continued on an even larger scale as more grassland was diverted to crops. Thus, specialization and expansion became the key words to describe Panhandle agriculture in the 1920s.

The land rush into the Southern Plains reached its final stage just as the war erupted in Europe. The fourfold increase in the number of people and farms of the first decade of the century dwindled to 29.2 and 17.3 per cent respectively in the following ten years. Similarly, the amount of improved acreage grew only 11.8 per cent in comparison to the previous period's 707 per cent.[1] Thus,

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[1]Reports in 1910 showed 89,285 people, 9423 farms, and 2,058,794 acres of improved land. In 1920 there were 114,054 people, 11,054 farms, and 2,402,441 acres of

the pace of physical development slowed down during the war years.

Along with the diminishing growth rate, Panhandle agriculture shifted toward specialization. Like other counterparts throughout the nation, local farmers joined the wartime effort to satisfy the domestic and Allied demands for foodstuffs. Both patriotism and rising prices provided powerful incentives for diverting attention to the production of wheat, grain sorghum, cattle, and hogs in northwest Texas.

Of all crops, wheat underwent the most dramatic expansion during the war years. Farmers devoted only 82,138 acres or 3.5 per cent of the area's improved land to wheat in 1909, when it was only one of several agricultural products raised for market. Ten years later, Panhandle farmers planted 582,827 acres or 24.6 per cent of their improved land in the small grain. Wheat had become the region's dominant crop.[2]

Several factors convinced the farmers of northwest Texas to make the abrupt switch to wheat production. Always anxious to develop the region along their line, the leaders

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improved land. U. S. Bureau of the Census, Fourteenth Census of the United States: State Compendium, Texas (Washington, 1925), pp. 13-16 and 108-130.

[2]U. S. Bureau of the Census, Thirteenth Census of the United States: 1910, Agriculture, VII (Washington, 1913), pp. 678-699; U. S. Bureau of the Census, Fourteenth Census of the United States: 1920, Agriculture, VII, Part 2 (Washington, 1922), pp. 716-737.

of the Santa Fe Railroad inaugurated a loan program in 1917 to encourage the cultivation of wheat land in the newly-settled areas of Hansford, Ochiltree, and Lipscomb counties.[3] That same year the United States Department of Agriculture provided loans to wheat farmers hurt by drought. L. W. Hillam, the agricultural agent for Potter, Randall, and Oldham counties, secured this aid for the sowing of 9,000 acres.[4] However, no factor attracted the farmers' attention more than the rapid increase in the price of wheat. Few men who witnessed the rise from ninety cents per bushel in 1914 to $2.71 three years later could ignore the impulse to get the grain in the ground.[5] Furthermore, when the federal government guaranteed at least a $2 minimum per bushel following the entrance of the United States into the war in 1917, no other commodity seemed to offer as much opportunity for profit.[6] Consequently, wheat acreage grew at a phenomenal rate.

Panhandle farmers also responded to the wartime demand for meat and fats. First, cattle and hog production swelled

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[3]Amarillo Daily News, July 22, 1917.

[4]Ibid., November 16, 1918.

[5]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, by John G. McNeely, Elbert O. Schlotzhauer, and V. C. Childs, Bulletin 700 (College Station, July, 1948), p. 23.

[6]A. B. Genung, "Agriculture in the World War Period," U. S. Department of Agriculture, Farmers in a Changing World, The Yearbook of Agriculture, 1940 (Washington, 1940), p. 282.

in conjunction with higher prices. The rise of beef cattle values from $3.70 to $8.40 per hundredweight between 1912 and 1919 contributed to the reversal of the diminishing number of cattle in the region. In fact, 38.2 per cent more cattle grazed in the twenty-six counties in 1919 than in 1909.[7] Similarly, the tripling of prices between 1916 and 1919 led to a 32.5 per cent increase in the number of hogs.[8] Secondly, expansion in grain sorghum and forage production accompanied the enlargement of the beef and pork business. For years both H. M. Bainer of the Santa Fe Railroad and Harmon Benton, agricultural agent in Potter, Oldham, and Carson counties, had promoted livestock feeding programs by recommending the raising of kafir corn, milo maize, feterita, sweet sorghum, alfalfa, and Sudan grass.[9] The sowing of

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[7]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 40. The number of cattle rose from 550,570 in 1909 to 762,762 in 1919. U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 633-653; U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part II, pp. 687-709.

[8]Average hog prices increased from $6.10 per hundredweight in January, 1916 to $18.60 in August, 1919. Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 39. The number of hogs grew from 81,583 in 1910 to 108,096 in 1920. U. S. Census, Thirteenth Census: 1910, Agriculture, VII, pp. 633-653; U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 687-709.

[9]H. M. Bainer, "Development and Possibilities of Panhandle and Plains of Texas," Texas, Dept. of Agriculture, Seventeenth Texas Farmers' Congress, 1914, Bulletin 40 (Austin, November-December, 1914), p. 328; Harmon Benton, "Brief Suggestions for Successful Livestock Farming in the Panhandle Country," Progressive Panhandle (Amarillo, 1916), p. 28.

567,312 acres in kafir and milo alone in 1919 indicated the extent that their ideas on livestock feeding had caught on.[10] As in the case of wheat, wartime production of meats and fats proved both profitable and patriotic.

The great emphasis placed upon wheat, grain sorghum, and livestock did not mean that the cultivators of northwest Texas ignored other crops during the war period. Actually, acreage devoted to corn and oats exceeded 100,000 for each, while more than 200,000 acres were planted in cotton. About 40,000 acres of High Plains land were sown in barley and rye.[11]

The irrigation of crop land practically disappeared during the war years. Adequate rainfall throughout most of the war as well as the rocketing commodity prices made dry-land farming exceedingly profitable. Furthermore, the increasing costs of well equipment and maintenance, along with restricted credit, made the consideration of tapping the underground water supply less attractive. Since land speculators had been the primary promoters of irrigation, few farmers saw a need to alter their methods of operation at a time when they were doing so well.[12]

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[10]U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 716-737.

[11]Ibid.

[12]Donald Edward Green, "The Irrigation Frontier on the Texas High Plains: 1910-1960," (Unpublished Ph.D. Dissertation, University of Oklahoma, Norman, Oklahoma, 1969), pp. 170-194.

Even though the fighting in Europe ended in late 1918, the American agricultural community continued to produce heavily. Farmers generally assumed that the physical and economic devastation in Europe would perpetuate the demand for American farm commodities at the wartime level for several years. Few people believed that the days of thirty-six cent cotton, $2.71 wheat, or hogs at $18.60 a hundredweight would end soon.

Nevertheless, a decline in farm prices began in the summer of 1920. Between July and December the values of the ten leading crops in the nation dipped 57 per cent.[13] Average prices in Texas in 1921 fell to $1.09 for wheat, 16.77 cents for cotton, $6.90 a hundredweight for hogs, and $4.75 a hundredweight for cattle.[14] Despite the sharp downturn, one Panhandle editor expressed cautious optimism about the future when he wrote: "Prices of farm products are distressingly low now, but they will come back. . . . The man who has to sell at present ruinous market prices is unfortunate, but the farmer who can hold his products will in the course of events receive a fair compensation for them."[15]

Such an expression of hope revealed a general lack of

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[13]James H. Shideler, Farm Crisis, 1919-1923 (Berkeley, 1957), p. 46.

[14]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, pp. 23, 30, 39, and 40.

[15]Canadian (Texas) Record, January 13, 1921.

understanding of the true nature of the crisis. Stated succinctly, the basic problem was that farmers' production exceeded demand causing surpluses. Since few acted to stem the momentum of the wartime agricultural expansion that had supplied both American and Allied consumers, the prevention of glutted markets depended upon the continuation of a high volume of farm exports. However, United States farmers encountered difficulty in disposing of their export commodities at wartime prices, for the combination of competition from such other nations as Canada, Australia, Argentina, and Brazil as well as the decline of European purchasing power forced prices downward. As long as farmers overproduced and depended upon exports for the disposal of their surplus, domestic prices would be determined abroad. Whether the Panhandle farmer understood the situation or not, external factors increasingly affected his welfare.[16]

The cultivator in northwest Texas did recognize the immediate difficulties he faced as his income dwindled. The failure of non-farm goods and services to show a corresponding decrease meant that his purchasing power had suffered. While he might be able to do without some consumer goods, the Panhandle farmer had to meet certain fixed obligations which could not be postponed. If he owned land, he owed

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[16]Gilbert C. Fite, "The Farmers' Dilemma, 1919-1929," John Braeman, Robert H. Bremner, and David Brody, Change and Continuity in Twentieth Century America: The 1920's (Columbus, Ohio, 1968), pp. 73-74.

taxes. Those High Plains property holders who paid 4.8 cents per acre in taxes in 1913 spent 12.4 cents in 1921, while the rate on the Eroded Plains rose from 9 cents to 19 cents during the same period.[17] Furthermore, about 30 per cent of the agricultural operators had to make payments on long term mortgage debts totaling more than $16 million.[18] Consequently, low prices and high debts created a dilemma for the agricultural community.

Farmers received a variety of suggestions on methods for coping with their problems. The idea of withholding commodities from the markets until prices increased received some attention. The Texas Commissioner of Agriculture advised cotton farmers to stop selling that crop until the price reached 48 cents per pound.[19] A banker at Estelline in Hall County suggested the application of that practice to all crops.[20] Others offered the standard response when agricultural difficulties arose, diversification. However, such an action generally required additional investment for

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[17]Texas, Agricultural Experiment Station, Trend of Taxes on Farm and Ranch Real Estate in Texas, 1890-1946, by L. P. Gabbard and Robert G. Cherry, Bulletin 702 (College Station, July, 1948), p. 12.

[18]U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 738-746.

[19]Texas, Department of Agriculture, Monthly News Bulletin, II (September 1, 1919), p. 6.

[20]H. P. Davis, Estelline, Texas, to J. Neille, Director of Farm Institutes, Austin, Texas, November 28, 1919, ibid., II, No. 8 (January 1, 1920), p. 2.

the debt-ridden operator. These individual-oriented proposals lacked the appeal of group action through co-operatives.

The movement for the establishment of a co-operative marketing association for the Panhandle area wheat farmers began in 1921. Gathering at Pampa in Gray County in April, wheat producers from Texas, Oklahoma, and Kansas discussed the merits of the co-operative movement but postponed any formal action. In October area representatives attended the Texas Farm Bureau Federation convention in Dallas where they heard an address by Aaron Sapiro, a California attorney who championed co-operative marketing. Inspired by the talk and encouraged by the Farm Bureau, a committee of local growers called a mass meeting in December in Amarillo where the Texas Wheat Growers Association was born with E. M. McCracken of Pampa as president and Judge L. Gough of Hereford as vice-president.[21]

Beginning with 742 members, the Texas Wheat Growers Association inaugurated a program designed to achieve better wheat prices for its membership. Realizing that most wheat producers failed to receive adequate payment for their crop because the lack of storage facilities forced them to sell during the market-glutted harvest season, the association built elevators to permit a more orderly marketing procedure

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[21]L. Gough, The Texas Wheat Growers Association, Typewritten Manuscript Prepared for Works Progress Administration, 1938, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas.

spread throughout the year. Furthermore, the requirement that each member sign a standard marketing contract agreeing to sell exclusively to the association for five years gave the leadership a wheat pool large enough to deal directly with processors and exports, thus eliminating those middlemen who received fees between the producer and the consumer.[22]

The Texas Wheat Growers Association claimed immediate success. In 1924 Judge Gough who had become president announced that the members received an average $1.257 per bushel in comparison with the $1.098 paid to nonmembers. Furthermore, the margin separating the amount received by producers and paid by the miller declined from 18 cents to 6 cents per bushel. By 1926 the co-operative had grown so large that it handled 3,381,000 bushels for 4600 members.[23]

While the co-operative movement offered partial relief to wheat producers, farmers found that the expanding role of government had an even more powerful impact upon their operations. Several federal, state, and local programs designed to educate, advise, aid, and finance farmers were inaugurated during the Wilson administration and continued to grow afterwards.

The establishment of the Agricultural Extension

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[22] Ibid.

[23] Ibid., L. Gough, Talk Broadcasted by Texas Wheat Growers Association (Amarillo, [1925]). Interview Files, Panhandle-Plains Historical Museum.

Service through the Congressional enactment of the Smith-Lever Act in 1914 laid the foundation for a valuable educational aid. Operating under the slogan, "education through demonstration," agricultural and home demonstration agents supervised by Texas Agricultural and Mechanical College went to those counties willing to assume a portion of their salaries. At first, a few counties pooled their resources to obtain an agent as did Potter, Randall, Carson, and Oldham counties by hiring Harmon Benton as agricultural agent in 1913 and Miss Leah Harris as home demonstration agent in 1917.[24] In Hall County the Commercial Club of Memphis employed A. H. Silt, "a real dirt farmer," as county agent for four years.[25] Eventually, most Panhandle counties followed the example of Hemphill County which agreed to pay $1,000 of an agent's annual salary, while the state provided $1550.[26] By 1933 agricultural and home demonstration agents aided farmers and their wives in every Panhandle county.[27]

W. H. Upchurch, agent for Hartley and Randall

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[24]Amarillo Daily News, October 12, 1913 and November 9, 1918.

[25]Inez Baker, Yesterday in Hall County, Texas (Memphis, Texas, 1940), p. 72.

[26]Canadian Record, March 17, 1921.

[27]Joe F. Taylor, "Federal Aid to the Farmers in the Panhandle of Texas: Some Federal Agriculture Laws Passed Before 1929 Enlarging the Scope of These Laws to 1940" (Unpublished M. A. Thesis, West Texas State Teachers College, Canyon, Texas, June, 1940), p. 26.

counties, probably typified county agents throughout the nation. Arriving in Hartley County in 1924 as the first representative from the Extension Service, Upchurch encountered two divergent attitudes. On the one hand, some operators resented the presence of an outsider telling them how to farm. On the other hand, others looked upon the county agent as "an individual service station for every citizen" expected to visit every farm regularly and often. Despite such opinion, Upchurch pursued a multi-phased program. He urged an increase in dairy production. Believing that better grain sorghum seed would aid yields, he obtained 3,000 pounds of milo-maize seed from the Texas Station at Lubbock which he distributed to thirty farmers.[28] Furthermore, he preached the idea of summer fallowing of wheat land.[29] Upon moving to Randall County later, Upchurch began a terracing demonstration project for land control and aided farmers in controlling the stinking smut plant disease.[30] The involvement by Upchurch and other county agents in such a variety of projects offered a valuable information service to those seeking help.

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[28]W. H. Upchurch, Narrative Reports for County Extension Agents, Hartley County, Texas, 1924 and 1925, W. H. Upchurch Papers, Archives, Panhandle-Plains Historical Museum. Hereafter cited as Upchurch Papers.

[29]Upchurch to Hartley County Wheat Growers, Channing, Texas, July 30, 1926, Upchurch Papers.

[30]Narrative Report, Randall County, Texas, 1927, Upchurch Papers.

The education of farm youth also became an essential part of the governmental program. The agricultural and home demonstration agents assumed the responsibility for organizing 4-H clubs which involved elementary school age as well as older boys and girls in farm and home projects. For the secondary school level, Congress in 1917 approved the Smith-Hughes Act which promoted the teaching of vocational agriculture and home economics. Financed through federal-state dollar-matching along with local support, area schools rapidly joined the program which emphasized both the scientific and practical study of all elements of farm life as well as involvement in the Future Farmers of America and Future Homemakers of America clubs. Within twenty years eighteen of the twenty-six counties had high schools teaching vocational agriculture and home economics.[31]

The enactment of the Federal Rural Road Act of 1916 established another dollar-matching program which eventually affected Panhandle farm development. The lack of an adequate road system throughout the region had long hampered the movement of crops to market and had restricted farmers to trading almost exclusively with merchants within their community or county. George M. Perry of Ochiltree County complained that the absence of paved highways to Amarillo caused northern Panhandle residents to trade in Oklahoma

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[31]Taylor, "Federal Aid to Farmers," pp. 24-25 and 32-34.

and Kansas.[32] While the road program did not have an immediate impact throughout the region, the appropriation of $2,656,000 for thirty-two projects between 1919 and 1931 did indicate that work on the system had begun.[33]

The federal government's concern with agricultural credit relieved one of the basic problems faced by northwest Texas farmers. For many years farmers had depended upon local merchants to extend credit on purchases. One Hall County storekeeper in 1917 declared his charge of 25 per cent interest or more compared favorably with banks which discounted loans from 10 to 12 per cent for three to six months, representing a rate of 20 to 40 per cent a year.[34] However, farm operators needed cheaper and more credit than merchants could grant. On crops and land the commercial banks generally extended loans for about one year at an average of 8.39 per cent on first mortgages and 8.76 per cent on second mortgages. Those farmers who wished to borrow for periods of five to ten years found that insurance companies and farm mortgage companies charged an average 6.47 and 6.94 per cent respectively, while joint stock land banks made loans for thirty years at 6 per cent.[35] Generally,

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[32]Amarillo Sunday News-Globe, September 1, 1929.

[33]Taylor, "Federal Aid to Farmers," pp. 57-59.

[34]Texas, Agricultural and Mechanical College, Extension Service, Credit in Texas, by Clarence Ousley, Bulletin B-34 (College Station, February, 1917), pp. 70-72.

[35]Texas, Agricultural Experiment Station, Farm Mortgage Financing in Texas, by V. P. Lee, Bulletin 330 (College Station, April, 1926).

Panhandle farmers found credit sources limited, interest rates exorbitant, and loan periods short in the pre-war years.

The Congressional enactment of the Federal Farm Loan Act in 1916 was a major breakthrough in alleviating the farm credit problem. The legislation established twelve Federal Land Banks throughout the nation which extended long term loans to farmers through local associations. Such associations were formed when a minimum of ten land owners in any community desiring to borrow a total of at least $20,000 made application to the Federal Land Bank. If approved, each borrower became a shareholder of the local association by buying stock valued at 5 per cent of the desired loan.[36]

The federal loan legislation had a profound impact upon the Panhandle. By the end of 1917 local associations were founded in Childress, Dalhart, Pampa, Panhandle, Shamrock, Spearman, Tulia, Wellington, and Amarillo. Similar organizations appeared at Canyon in 1918, Perryton in 1919, Clarendon in 1922, and Turkey and Vega in 1928.[37] More importantly, the establishment of these associations made

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[36]U. S. Treasury Department, Federal Farm Loan Bureau, National Farm Loan Association, Circular No. 1 (Washington, August 19, 1916); U. S. Treasury Department, Federal Farm Loan Bureau, How Farmers May Form a National Farm Loan Association, Circular No. 2 (Washington, August 23, 1916).

[37]Taylor, "Federal Aid to Farmers," pp. 43, 46, and 47.

so much more money available from agricultural expansion that the area mortgage debt grew from $16,008,567 in 1920 to $21,624,662 in 1930.[38]

Although one of the state's largest, the Dalhart National Farm Loan Association probably typified the other associations. Founded in December 1917, the Dalhart agency loaned money for buying land, providing buildings and improvements, purchasing livestock, or paying existing indebtedness. Covering loans from $100 to $25,000, interest rates varied from 5 per cent to 6 per cent for a period of thirty-six years. By 1926 this one association had loaned $1,483,840.[39]

Improved credit was only one of several factors that contributed to the growth of Panhandle farm operations in the 1920's. The construction of the North Texas and Santa Fe Railroad from Shattuck, Oklahoma, to Spearman, Texas, in 1920 increased the accessibility of the north central area.[40] At the same time various real estate promoters inaugurated campaigns to lure settlers to the area. Arthur W. Large, agricultural agent for the Rock Island line, worked to entice purchasers to buy land in the immediate vicinity of

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[38]These figures represent debt on owned land only. U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 738-746; U. S. Bureau of the Census, Fifteenth Census of the United States: 1930, Agriculture, II, Part 2, pp. 1574-1585.

[39]Lawrence Ashby, "The Dalhart National Farm Loan Association," Hartley County News, Rural Life Supplement, October 1, 1926, p. 26.

[40]Canadian Record, June 19, 1929.

that railroad.[41] One Amarillo firm, the T. Z. Bishop Land Company, attracted attention by utilizing an airplane to fly prospective customers over the available property.[42] Nevertheless, the decision of cattlemen to dispose of their ranch land provided the fundamental stimulus for farm expansion.

The trend of subdividing and selling pasture land to farmers developed as area ranchers encountered two contrasting economic factors. Cattle prices plummeted in the postwar era from an average of $7.20 a hundredweight in 1920 to a low of $4.15 in 1924.[43] At the same time the demand for cotton and wheat land forced real estate prices up to the range from $20 to $60 per acre.[44] For many cattlemen, land sales once again offered financial salvation in difficult times.

The breakup of ranch lands occurred throughout the Panhandle. Below the Cap Rock in Donley County the 38,000 acre C. T. Word operation went on sale in 1925. Simultaneously, John and Charles McLoughlin began subdividing their 20,000 acres north of the Canadian River in Hansford County. On the western High Plains the 4,000 acre Morman Ranch in Deaf Smith County along with the XIT property

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[41] Amarillo Globe, September 30, 1924.

[42] Ibid., October 12, 1924.

[43] Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 40.

[44] Amarillo Daily News, March 23, 1924 and April 26, 1925.

provided good land for interested farmers.[45]

The cattlemen's decision to dispose of their grazing lands reflected the continuation of the trend of turning the natural grassland into crop acreage. During the 1920's, the number of farms in the Panhandle increased 70.6 per cent with the most extensive growth occurring in the western High Plains counties. More reflective of the transition from ranch operation to the farm or stockfarming enterprise was the decline of the average size farm from 1095.13 acres in 1920 to 849.39 acres in 1924 and 702.42 in 1929.[46] More significantly, the percentage of farms less than 175 acres increased from 31.6 per cent in 1920 to 41.2 per cent in 1924 and 41.7 per cent in 1929. Operations of 1,000 acres or more fell from 17.7 per cent at the beginning of the decade to 10.4 per cent at the end of the period.[47] This indicated that, although large ranches and farms continued to exist in the area, the general movement was toward the family size farm of the quarter, half, or even the full section of land. Furthermore, the percentage of improved land or crop land in relation to all land on farms grew

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[45] Ibid., February 23, 1924, April 26, June 26, and December 20, 1925.

[46] The number of farm units rose from 11,054 in 1920 to 18,865 in 1930. U. S. Census, Fourteenth Census: State Compendium, Texas, pp. 108-130; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1362-1381.

[47] U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 664-685; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1402-1421.

from 19.8 to 34 per cent with most of the increase occurring after 1924.[48] Land values rose from $252 million to $310 million during the decade, while values of land and buildings grew from $275 million to $345 million.[49]

Similar expansion on the High Plains of Kansas and Oklahoma contrasted sharply with agricultural development in other parts of the country. In Iowa land values dropped from $6.6 billion to $3 billion between 1920 and 1930. In Kansas the worth of farm land and buildings declined in the eastern counties at the same time the High Plains counties' values grew. Land prices between Dallas and the Red River in Texas fell as Panhandle values increased.[50]

Yet as the Panhandle's relative position in the nation's agricultural community grew, several problems plagued the area farmers during the era. In 1924 and 1925 rabbits became a menace in the southwestern counties. Sweeping across the grass land and crop land, hares by the thousands seriously damaged all the vegetation in sight. The commissioners of Deaf Smith, Parmer, Castro, and Oldham counties encouraged eradication by offering bounties of

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[48]Land in farms-- 12,105,620 in 1920, 12,306,047 in 1924, 13,251,215 in 1929; Improved land--acres--2,402,441 in 1920, 2,864,660 in 1924, and 4,553,004 in 1929. U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 664-685; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 136-138.

[49]Ibid., pp. 1421-1432.

[50]Carter Goodrich et al., Migration and Economic Opportunity (Philadelphia, 1936), pp. 216-217.

five cents per animal.[51] However, when that failed, massive rabbit hunts were staged. In one hunt 6,000 people congregated around the four boundary lines of Castro County in the spring of 1925 where they began a drive on foot and by car toward the center of the county. Unfortunately, a strong gale of blowing dust interfered, so the rabbits remained until the last vegetation disappeared.[52]

Though not as destructive physically, the failure of railroad companies to provide adequate service in critical periods hurt the farmers almost as badly as the pests. As the federal government began the process of returning railroads to civilian control at the end of the war, Panhandle grain farmers encountered a shortage of cars to transport their crops to market. In 1919 an estimated seven to ten million bushels of wheat and thirty million bushels of grain sorghum were dumped on the ground when all storage facilities became full. The immediate problem was resolved only after the Panhandle Plains Chamber of Commerce and the local congressman, Marvin Jones, applied sufficient pressure on the Railroad Administration in January 1920 to divert about 20,000 cars to the area.[53] However, as late as 1929 farmers complained that they were losing from four to ten cents per

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[51]Amarillo Daily News, June 12, 1924.

[52]Ibid., April 2, 1925.

[53]Canadian Record, October 16, 1919, January 15 and January 29, 1920; Amarillo Daily News, January 30, 1920.

bushel of grain because of car shortages.[54]

Throughout the decade agricultural experts, publicists, and bankers repeated the same advice that had been given to farmers for years, i. e. the necessity for diversification and better techniques. The experts advocated crop rotation. As district agent for the Extension Service, John R. Edmonds recommended a three year rotation program in the sandy loam areas. He suggested the planting of grain sorghum in wide rows interspersed with peas the first year, followed by cotton the second year, and a small grain such as wheat the third year. On tight soils, he advised a two phase variation between wheat and grain sorghum with peas.[55] H. M. Bainer, agricultural agent for the Santa Fe Railroad, and H. H. Finnell, soil expert at Panhandle Agricultural and Mechanical College at Goodwell, Oklahoma, preached summer fallowing. Bainer recommended the planting of a row crop the first year, plowing the land five or six inches deep with a moldboard followed by harrowing during the fallow year, and raising wheat the third year. Soil conservation seemed uppermost in the minds of the agricultural experts.[56]

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[54]O. H. Loyd, Introduction to a Brief History of Oldham County, Texas, Typewritten manuscript, Earl Vandale Collection, Archives, University of Texas, Austin, pp. 12-13.

[55]John R. Edmonds, "Crop Rotation for the Panhandle," Farm and Ranch, XLVI (January 22, 1927), p. 4.

[56]H. M. Bainer, "Summer Fallowing in the Texas Panhandle," Oklahoma Farmer-Stockman, XXIX, No. 10 (May 25,

Publicists stressed the economic advantages of diversification, particularly in stock farming. One of the most widely read farm journals in the area, the Oklahoma Farmer-Stockman, periodically emphasized the desirability of diversified agriculture. Surveying the eastern Panhandle in 1924, Robert Rea of the magazine staff found that the better farmers were those who had more than one money crop such as cattle, hogs, cotton, or vegetables.[57] In one article Henry Jahnel of Gem City in Hemphill County was named a prosperous farmer because he divided his operation into 300 acres of wheat, 40 acres of oats, 200 acres in row crops, and grazed 140 cattle on his grass and fodder crop.[58] On another occasion the Farmer-Stockman carried the story of Ben Purcell of Childress County. After growing cotton exclusively for several years, Purcell found himself in debt $7,000 in 1920. Discouraged by the lack of success, he entered the dairy business and also diversified to the extent of raising hogs, chickens, sudan, wheat, and cotton. By 1926 his debt-ridden operation had become a successful venture.[59]

1916), p. 4; H. H. Finnell, "Dry Farming Problems of Tight Panhandle Soil," Oklahoma Farmer-Stockman, XL (April 15, 1927), p. 41.

[57]Robert Rea, "How Folks in the Texas Panhandle Get Along," Oklahoma Farmer-Stockman, XXXVII (June 10, 1924), p. 7.

[58]"Panhandle Farming," Oklahoma Farmer-Stockman, XXXVII (October 10, 1924), p. 13.

[59]C. W. Mullen, "Went Broke with Cotton: Saved by Milk Cows," Oklahoma Farmer-Stockman, XXXIX (November 15, 1926), p. 5 and 27.

Such success through diversification was also a theme encouraged by several area bankers. By 1929 reports circulated that farmers could more easily obtain loans from such bankers as T. A. Horn of White Deer, I. C. Ussell or J. Knorpp of Groom, and Frank A. Paul of Panhandle if they owned cows, chickens, and hogs. Paul, in particular, strongly recommended dairying and was influential in obtaining a creamery established in Panhandle in 1929.[60]

Undoubtedly, many Panhandle farmers listened to the pleas of these advisers, for production of a wide variety of crops and livestock remained steady throughout the decade. The acreage devoted to corn harvested for grain increased from 101,770 in 1919 to 128,484 in 1929. Grown primarily in the eastern Panhandle counties of Collingsworth and Wheeler at the beginning of the decade, the crop spread into the western Dallam and Parmer counties at the end of the ten years.[61] While barley acreage tripled, the land planted in oats fluctuated from 103,020 acres in 1919 to 146,895 in 1924, and then down to 50,233 in 1929.[62] Grain sorghum planting remained around a half million acres.[63]

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[60]Panhandle (Texas) Herald, February 15 and July 26, 1929.

[61]U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 716-737; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1468-1487.

[62]Ibid.

[63]Ibid., pp. 1508-1527; U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 716-737.

The harvest of hay and forage continued on the same scale. The various sorghums used for silage, fodder, and hay dominated production, although acreage fell from 431,160 to 348,622.[64] As they had done for years, farmers cut both tame and wild grasses, alfalfa, and small grains. Besides its usefulness as a grain, corn was also popular as a forage, as well as for silage.

Such production of grain, hay, and forage along with the natural grasslands helped perpetuate the importance of the cattle industry in the region. Beef cattle producers, in particular, had suffered severely during the postwar depression and because of this the number of all cattle in the Panhandle fell from 762,762 valued at $44,670,000 in 1920 to 640,498 worth $16,291,000 in 1925.[65] However, the prices began to rise in the summer of 1925 making beef production fairly profitable during the last years of the decade. By 1930 there were 696,091 head of cattle worth about $30 million. An 84 per cent rise in the number of dairy cows along with almost $3 million in income from the sale of milk and butter in 1929 reflected the increasing growth of both the dairy industry and the more diversified

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[64] Ibid., U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1508-1527.

[65] U. S. Census, Fourteenth Census: 1920, Agriculture, VII, Part 2, pp. 687-709; U. S. Bureau of the Census, Census of Agriculture: 1925, II (Washington, 1927), pp. 1174-1205.

family farm.[66]

Along with cattle, poultry and other livestock provided income on most farms. Chicken production almost tripled during the 1920's.[67] Although the growing of such excellent feeds as milo and other sorghums, as well as the availability of cottonseed meal at low prices, made the Panhandle an excellent area for hog raising, the decline in the average price of hogs from $22.51 to $10.56 during the decade probably contributed to the lack of increase in their number.[68] The sheep count grew from 47,261 in 1919 to 120,250 in 1930.[69] Despite such evidence of diversification, Panhandle farmers moved more toward specialization in the twenties than at any previous period. In the area below the Cap Rock, cotton was dominant. On the High Plains, wheat reigned supreme.

Although cotton had played a major role in the agricultural development of the Eroded Plains, farmers never placed as much emphasis on the crop as they did during the twenties. Between 1919 and 1929 cotton acreage in the eight counties rose from 205,216 or 19.35 per cent of the improved

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[66]U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1448-1467 and 1562-1573.

[67]Ibid., pp. 1448-1467.

[68]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 39; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1448-1467.

[69]Ibid., pp. 1550-1561.

land to 675,856 or 48.4 per cent of the crop land. In the latter year, Hall and Childress county farmers planted more than 70 per cent of their land in the crop.[70]

The great enthusiasm for cotton on the Eroded Plains reflected the general westward extension of the Cotton Belt. In fact, the vast areas of level, fertile soil and the absence of the boll weevil lured cotton growers onto the High Plains. To the south the Lubbock Chamber of Commerce in 1924 reported that farmers in the thirteen counties surrounding that city had devoted 60 per cent of their improved land to the crop.[71] The five southwestern counties of the Panhandle High Plains planted more than 10,000 acres in cotton.[72] Even more surprising to those observers who believed in the necessity of a 200 day growing season was the spread of cotton across the Canadian River into the northern High Plains.

In 1921 O. B. Burnett, one of the men who had planted the first cotton in Hall County in 1892, decided to experiment with the crop in Moore County. After successfully raising six rows the first year, he convinced his neighbors to sow 350 acres in 1922. The next year 2500 acres in Moore

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[70] Ibid., pp. 1468-1487.

[71] Joseph F. Gordon, "The History and Development of Irrigated Cotton on the High Plains of Texas," (Unpublished Ph.D. Dissertation, Texas Technological College, Lubbock, Texas, 1961), p. 149.

[72] U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1468-1487.

and the adjacent counties produced 878 bales. So enthusiastic did the northern Panhandle farmers become that Burnett persuaded 172 men at a banquet in February 1924 to sign an agreement to plant 12,000 acres in cotton that year.[73] In the nine counties north of the Canadian River where the crop had never been planted before 1921, 13,387 acres were devoted to cotton in 1924.[74]

Several factors contributed to the rapid expansion of cotton throughout the Southern Plains region during the 1920's. By that time research scientists at the Texas Agricultural and Mechanical College substation at Lubbock and Chillicothe had found several strains of short staple cotton adaptable to the high altitude, light rainfall, low temperatures, and short growing season. Below the Cap Rock the Half and Half and the Mebane varieties proved particularly successful. Along with Burnett and the Mebane breeds, the Westex variety which experimenters at Lubbock had developed especially for the High Plains region emerged as the most popular.[75] Furthermore, after the postwar

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[73]Edna Roberts-Chase, "Cotton Growing on the North Texas Plains," Farm and Ranch, XLIII (September 6, 1924), pp. 1 and 7; Roy Cartwright, "The Smile of the Cotton Boll," Farm and Ranch, XLIII (December 6, 1924), pp. 1 and 19; Amarillo Daily News, February 17, 1924.

[74]Hemphill County was an exception, for cotton acreage there was 285 in 1919, 1197 in 1924, and 17,149 in 1929. U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1468-1487.

[75]Texas, Agricultural Experiment Station, Varieties of Cotton in the Red Prairies of Northwest Texas, by J. Roy

depression, cotton prices generally remained strong until the end of the decade. After reaching a low of 9.2 cents per pound for cotton lint in April 1921, prices fluctuated between 15.9 cents and 32.3 cents between September 1921 and January 1930 except in the winter of 1926-1927. Similarly, the yearly average of cottonseed prices remained above $25 per ton from 1921 until 1930 with the exception of 1926.[76] In normal years yields ranged from one half to a quarter of a bale per acre.

Accompanying the increase in cotton production was the erection of several new gins throughout the Panhandle. In the north, Burnett and the farmers around Dumas in Moore County constructed a gin in 1922. Within two years similar plants appeared in such other northern Panhandle communities as Spearman in Hansford County and Perryton in Ochiltree County.[77] While privately-owned gins such as those operated by the Memphis Cotton Oil Company had existed for several

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Quinby, Bulletin 366 (College Station, November, 1927), pp. 16017; Texas, Agricultural Experiment Station, Varieties of Cotton in Northwest Texas, by R. E. Karper, Bulletin 299 (College Station, August, 1922), pp. 25-26; Texas, Agricultural Experiment Station, Varieties of Cotton in Northwest Texas, by R. E. Karper and D. L. Jones, Bulletin 364 (College Station, August, 1927); Texas, Agricultural Experiment Station, Cotton Production on the Texas High Plains, by D. L. Jones et al., Bulletin 830 (College Station, April, 1956).

[76]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, pp. 30-31.

[77]Roberts-Chase, "Cotton Growing," p. 1; Amarillo Daily News, February 26, 1925.

years below the Cap Rock, co-operative gins established under the terms of the Texas Society Act of 1917 appeared in all of the eight counties. Each followed a pattern similar to the Childress Farmers Co-operative Society. Organized in 1922, ninety farmers in the Childress area invested $575 each for the erection of a $52,000 gin for which the gin manufacturer loaned $41,000 in exchange for the first mortgage and a local lumber dealer held a second mortgage for $6,000. The gin proved so successful that the indebtedness was eliminated within three years.[78]

Although the success of the gins and the great expansion of acreage seemed to indicate that all was well with cotton production during the twenties, several problems plagued those farmers who raised the crop. A labor shortage created difficulties throughout the twenties. As long as pickers received from $3 to $3.50 per hundred pounds as they did in 1919, a sufficient number of workers were available, but when picking rates fell in conjunction with cotton prices, labor became scarce. As a means of alleviating the dilemma, Hall County residents permitted Negroes to enter the county for the first time in 1920.[79] The Negro population in the eight counties below the Cap Rock grew from 151

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[78] Baker, Hall County, p. 71; Texas, Agricultural Experiment Station, Successful Cooperative Cotton Gin Associations in Texas, by W. E. Paulson, Bulletin 636 (College Station, July, 1943).

[79] Baker, Hall County, p. 69.

in 1920 to 3164 in 1930 with two-thirds of the latter total within the main cotton counties of Childress, Collingsworth, and Hall.[80] Along with climatic difficulties which caused declines in yields in 1926 and 1929, the occasional collapse of prices hurt cotton farmers. When the lint market collapsed in 1926-1927, Hall County farmers plowed under thousands of acres and planted another crop.[81] Such low prices probably aided in convincing the northern Panhandle farmers to forget about cotton, for acreage then fell from 13,387 in 1924 to 1248 five years later.[82] The outbreak of the depression in 1929 dealt an even harsher blow to all those farmers who had concentrated so heavily on cotton.

The impact of the expansion of cotton acreage during the twenties was diminished by the even more spectacular growth in wheat farming. While the importance of the small grain for the Panhandle farmer had risen steadily since the outbreak of World War I, the most rapid increase occurred after 1924. In both 1919 and 1924 cultivators in the entire area devoted about one-fourth of their improved land to wheat. However, the planting of 1,959,210 acres in 1929 represented 43 per cent of the area's crop land. In all

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[80] U. S. Census, Fourteenth Census: 1920, Population, III, pp. 990-1014; U. S. Census, Fifteenth Census: 1930, Population, III, Part 2, pp. 975-990.

[81] Baker, Hall County, p. 69.

[82] U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1468-1487.

of the Panhandle counties wheat acreage multiplied with the exception of the five cotton counties below the Cap Rock. In fact, wheat production expanded so rapidly that by the end of the decade the twenty-six counties alone accounted for 65.9 per cent of the wheat grown in Texas.[83]

The same factors which contributed to this phenomenal expansion in northwest Texas similarly stimulated wheat production throughout the five other Great Plains states of Kansas, Oklahoma, Nebraska, North Dakota, and South Dakota at a time when the crop declined in importance in most other sections of the country. The availability of cheap lands, the stability of prices, and good yields from high protein grain convinced many Plains farmers to raise wheat. More importantly, the technological development of machinery particularly suited to the level terrain spurred the movement toward wheat specialization.[84]

As wheat prices began recovering from the postwar depression, farmers noticed that land prices remained steady. Starting in late 1923, average prices for the grain began an upward swing until they peaked at $1.57 per bushel for the year 1924. From that point on, farmers received more than $1 per bushel until 1929.[85] At the same time land remained

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[83]The five counties were Childress, Hall, Collingsworth, Donley, and Wheeler. Ibid.

[84]U. S. Department of Agriculture, Yearbook of Agriculture, 1927 (Washington, 1928), pp. 12-14.

[85]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 23.

relatively cheap. In Sherman County the average sale price ranged from $14.44 to $20.96 during the decade.[86] In the neighboring Dallam County both Arthur D. Decker and J. M. Wiens purchased crop land for $16 per acre in 1923.[87] That same year Harry Elam paid $25 per acre for a quarter section in Deaf Smith County.[88] C. B. Erwin paid $15 per acre for Randall County land in 1929.[89] Although similar property in other parts of the region might sell for slightly more, as long as wheat prices did not drop radically and yields of high quality grain remained normal, the prospects for success looked good.

As a winter wheat region where dryland farming dominated, farmers generally expected minimum yields of ten to fifteen bushels per acre. In 1924 the entire twenty-six county area averaged 12.4 bushels per acre. Five years later, the average reached 16.7 bushels per acre.[90] However, frequent reports revealed much greater production.

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[86]Texas, Agricultural Experiment Station, The Price of Texas Farm and Ranch Lands, by Joe R. Motheral, John Southern, and Samuel L. Crockett, Bulletin 688 (College Station, April, 1947), p. 10.

[87]W. D. Mauldin, "The Coming of Agriculture to Dallam County," West Texas Historical Association Yearbook, XII (October, 1937), p. 110.

[88]Amarillo Sunday Globe-News, July 8, 1928.

[89]Interview of author with David Erwin, Canyon, Texas, December 1, 1971.

[90]U. S., Census of Agriculture: 1925, II, pp. 1206-1238; U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1468-1487.

Several Childress County farmers claimed thirty-two bushels per acre in 1926.[91] Harry Elam's acreage in Deaf Smith County yielded fifty bushels in 1928.[92] By planting the heavy Turkey red and Kanred varieties almost exclusively, Panhandle farmers generally harvested good yields of high quality grain during the twenties.[93]

The tremendous rise in the value of farm implements and machinery from $10 million in 1920 to $26,675,000 in 1930 revealed a fundamental element responsible for the increase in wheat acreage.[94] Like their counterparts throughout the Great Plains, Panhandle farmers began to invest extensively in motorized equipment. The switch from steam to oil, kerosene, or gasoline-fueled engines stimulated interest in the use of tractors. At Panhandle in Carson County an estimated 500 farmers attended a tractor show conducted by the McCormick-Deering Company in the spring of 1929. By summer nine dealers in that community had sold 100 tractors costing about $100,000.[95] In 1930 over 8,000 tractors were in use in the twenty-six counties.[96]

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[91]Amarillo Daily News, June 20, 1926.

[92]Amarillo Sunday Globe-News, July 8, 1928.

[93]Narrative Reports, Hartley County, 1924 and Randall County, 1928, Upchurch Papers.

[94]U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1421-1432.

[95]Panhandle Herald, March 22 and June 7, 1929.

[96]U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1586-1605.

The development of the vertical disk plow especially designed for wheat land accompanied the increasing use of the tractor.[97]

The utilization of the combined harvester-thresher provided an even greater stimulus to wheat production. Capable of cutting swaths ranging from eight to twenty feet, the tractor-drawn auxiliary engine machine and the power take-off machine were the two types most common in the Panhandle during the twenties. Whether using combines to harvest their own wheat or for custom cutting their neighbors' crops, the owners of such machines found them superior from both a labor-saving and economical viewpoint. While harvesting and threshing with a binder and a stationary thresher required approximately 4.6 man hours per acre and 3.8 man hours per acre with a header and stationary thresher, the combine did the same work in .75 man hours. The average cost per acre declined from $4.85 with the old equipment to $1.62 for the new.[98]

The Panhandle wheat farmer's recognition of such increase in efficiency made the combine an essential machine as wheat production expanded in the latter part of the twenties. Introduced in the state in 1919, manufacturers

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[97]U. S. Department of Agriculture, Yearbook of Agriculture, 1932 (Washington, 1932), pp. 441-442.

[98]Texas, Agricultural Experiment Station, Harvesting Grain with the Combined Harvester-Thresher in Northwest Texas, by H. P. Smith and Robert F. Spilman, Bulletin 373 (December, 1927), pp. 8, 13, and 14.

had shipped 2682 machines to Texas by 1927, a large majority of which were sold in the Panhandle. The demand in the counties north of the Canadian River became so great that the farmers around Perryton in Ochiltree County acquired more of the machines in 1926 than at any other place in the state.[99] The sale of forty combines at a cost of $80,000 at Panhandle in Carson County in 1929 further indicated the rapid acceptance of the machines on the High Plains.[100]

The utilization of power machinery generally lowered the cost of wheat farming. In 1928 James Lovell in Randall County prepared and seeded 400 acres with a 15-30 tractor. After cultivating the land twice with a one-way disk plow and seeding with a drill, Lovell calculated that the average acreage cost for fuel, repairs, seed wheat at $1 per bushel, interest on a $2,000 loan for machinery, and the use of a Ford car along with the depreciation of the equipment was $1.41, exclusive of labor.[101] Thus, a farmer who did his own planting and owned a combine which averaged $1.62 per acre could expect minimum expenses of $3 to $4 per acre. Disregarding all other operating costs, a farmer who averaged ten bushels per acre needed at least forty cent wheat to

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[99] Ibid., p. 5.

[100] Panhandle Herald, June 7, 1929.

[101] Narrative Report, Randall County, 1928, Upchurch Papers.

make a profit.

As long as wheat remained more than $1 per bushel and ample credit was available, High Plains farmers could think only of planting more of the small grain. Reports from throughout the region heralded the triumphs of wheat expansion. Dallam County yields were reaching twenty to thirty bushels per acre in 1928.[102] From Carson County came the announcement of the largest harvest ever in the summer of 1929. Both large and small operators rushed to turn over the sod and sow the grain.[103] The owners of the Landergrin Brothers Ranch in Oldham County planted 5,000 acres in 1929.[104] The success of Arthur D. Decker of Dallam County who purchased a section of land for $10,240 in 1928 and received $7,108 from a 400 acre crop on the land the first year became common knowledge throughout the region.[105] Much to the chagrin of the full time farmers, many "town farmers," city men with other occupations, acquired or leased land to raise wheat. In 1930 an estimated 100 "town farmers" operated in Ochiltree County alone.[106]

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[102]Mauldin, "Dallam County," p. 110.

[103]Panhandle Herald, July 19, 1929.

[104]James O. Palmer, "History of the Landergrin Brothers Company Ranch" (Unpublished M. A. Thesis, West Texas State University, Canyon, Texas, August, 1967), p. 62.

[105]Mauldin, "Dallam County," p. 110.

[106]Robert Rea, "Town Farmers Grow Huge Acreages of Wheat," Oklahoma Farmer-Stockman, XLIII (July 1, 1930), pp. 5 and 19.

The story of Hickman Price received national attention. Price, an executive of Fox Movie News, relinquished his motion picture career to come to the Panhandle to establish the most modern agricultural operation employing the latest engineering and economic knowledge. He believed that if one could take large tracts of land, apply power machinery, and obtain good workers at low cost, success was inevitable. Therefore, after leasing 30,000 acres in Swisher, Castro, and Deaf Smith counties, he acquired six, sixty-horsepower tractors capable of plowing 320 acres per day. Keeping a mechanic nearby, he placed the tractors in operation day and night. A graph on each machine indicated every stop, the weight of the load, and the efficiency of the engine. For harvesting, he purchased twenty combines. Each man on his work crew received $3 per day plus ten cents an hour or the equivalent of $4 to $4.50 daily. As a large operator he bought supplies at wholesale prices and sold his grain directly to exporters saving from five to seven cents per bushel. In the first year from July 1, 1929 to July 1, 1930, the Price lands averaged fifteen bushels an acre with production costs at $4.31 per acre plus $2 for harvesting and transportation. By operating on such a scale over a long period of time, Hickman Price expected that great profits awaited.[107]

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[107] H. L. Gantz, "Practicing a Super-Farming System," Farm and Ranch, XLIX (August 23, 1930), p. 1, 4, and 13.

Even in the midst of such enthusiasm for wheat production, a few people issued periodic warnings. The editor of the Panhandle Herald recommended two farmers on each section who would diversify. Several local bankers recommended a greater emphasis upon livestock production.[108] Back as early as 1925 H. M. Bainer pleaded for a reduction in wheat acreage and the turn to "the cow, the sow, and the hen."[109]

However, few listened. Wheat and cotton dominated the Panhandle farmers' thoughts, so the acreage in those commodities soared. In 1930 High Plains operators along with those in Hale and Floyd counties just to the south seeded 3,381,900 acres in wheat.[110] Cotton acreage in the twenty-six counties reached 710,680.[111] Farmers seemed to believe that prosperity accompanied the concentration upon a few cash crops. Thus, the Panhandle farmers entered the decade of the thirties following two basic themes--expansion and specialization.

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[108]Panhandle Herald, July 5, 1929.

[109]Amarillo Daily News, June 11, 1925.

[110]Texas, Agricultural Experiment Station, Field Crop Statistics for Texas, by C. A. Bonnen and L. P. Gabbard, Circular 130 (College Station, June, 1951), p. 9.

[111]Texas, Agricultural Experiment Station, Cotton Statistics for Texas, by C. A. Bonnen and L. P. Gabbard, Circular 117 (College Station, September, 1947), pp. 11 and 16.

CHAPTER VI

DUST BOWL DAYS: THE 1930'S

The Panhandle farmers' hope of achieving prosperity through expansion and specialization faded rapidly as depression and drought gripped the Southern Plains during the 1930's. Striking both large and small operators with equal force, the twin disasters rendered all the plans of efficiency through mechanization and extensive land usage for crop production temporarily meaningless. However, the tragic experience implanted in the farmers' minds a realization of the necessity of adjusting agricultural techniques to regional conditions as well as the recognition of the need of each operator's dependence upon other individuals and institutions.

Like all other segments of the national economy, American agriculture suffered a bitter blow with the outbreak of the depression. The sudden drop in farm prices at a faster rate than the decline of nonfarm goods and services placed the farmers in a difficult position. As was true throughout the nation, Panhandle operators watched helplessly as the value of their commodities slipped. Wheat producers were stunned as average prices

descended from ninety-four cents a bushel in 1929 to thirty-three cents in 1932. Likewise, cotton growers witnessed lint falling from 16.89 cents a pound in 1929 to 5.57 cents in 1931 at the same time that cotton seed went down from $31.56 a ton to $9.03. In 1933 hog and beef cattle raisers received $3.25 and $3.10 per hundredweight respectively, a tumble from $8.30 and $8 four years before.[1] The factors that made such decreases so serious were the fact that the exchange value of farm products for industrial commodities dropped some 50 per cent while such fixed charges as taxes and interest continued unchanged.[2]

Southern Plains farmers faced an even more tragic situation as their region became the center of the Dust Bowl. Although periodic droughts had plagued plainsmen since the earliest settlement, never before had the rainfall been so sparse or the winds so strong for such a long period. In nine of the twelve years between 1929 and 1940 rainfall failed to reach the normal 19.67 inches at Amarillo. At Canyon an average of thirteen inches of

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[1]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, By John G. McNeely, Elbert O. Schlotzhauer, and V. C. Childs, Bulletin 700 (College Station, July, 1948), pp. 23, 30-31, and 39-40.

[2]Chester C. Davis, "The Development of Agricultural Policy Since the End of the World War," U. S. Department of Agriculture, Farmers in a Changing World, The Yearbook of Agriculture, 1940 (Washington, 1940),p. 313.

moisture was received between 1933 and 1936.[3] Farmers in the Dalhart vicinity recorded an average of 9.96 inches in 1933-1934. An additional hazard developed when wind velocities ranging from thirty to sixty miles per hour caused severe dust storms. Amarillo residents alone experienced 192 dusters in the three years between January 1933 and February 1936.[4]

The dust storms swept across the open terrain threatening the land and its inhabitants. As one Moore County resident reported: "Winds howled across the Plains country day and night. Black clouds of dust buried everything in front of them. The farm lands literally got up and took off."[5] In a letter to President Franklin Delano Roosevelt, Everett C. Green of Hansford County complained that: "Much of the time the dust is so dense that one does well to see fifty feet."[6] A newspaper editor probably reflected the hopelessness that so many people felt when

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[3]Amarillo Sunday News-Globe, January 2, 1972; Rainfall at Canyon, Texas, 1880-1954, Typewritten manuscript, W. H. Upchurch Papers, Archives, Panhandle-Plains Historical Museum, Canyon, Texas. Hereafter cited as Upchurch Papers.

[4]U. S. Department of Agriculture, Soil Conservation Reconnaissance Survey of the Southern Great Plains Wind-Erosion Area, By Arthur H. Joel, Technical Bulletin 556 (Washington, January, 1937), pp. 60-62.

[5]C. F. Bennett, History of Moore County, Texas, Unpublished manuscript, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas.

[6]Quoted in Fred Floyd, "A History of the Dust Bowl" (Unpublished Ph. D. Dissertation, University of Oklahoma, Norman, Oklahoma, 1950), p. 100.

he wrote:

> We can make plans, arrange finances and erect protective walls until we are blue in the face, then in the end nature has the last word. Whether the farmers of a given territory are to have a good year or a bad year depends, in the last analysis, on the mysterious forces which we cannot control and which we only begin to understand . . . . but the wind . . . bloweth where it listeth; and if it blows dry and hot, week after week and month after month with never a rain cloud to ride its crest, the people underneath it are going to suffer, whether they have farmed their land wisely or foolishly.[7]

At first, farmers attempted to resolve their difficulties independently. When the market prices of wheat collapsed, High Plains growers planted an additional one million acres as a means of offsetting a loss in income. However, even in 1931 when yields averaged fifteen bushels per acre, few farmers could meet production costs with thirty-six cent wheat. Similarly, cotton acreage remained steady, while prices fell drastically. Even the most optimistic farmer felt helpless as the drought reduced yields of the low-priced crops.[8]

Various reports from throughout the region revealed the seriousness of the situation. In 1932 County Agent

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[7]Dalhart Texan, June 16, 1933, quoted in Floyd, "A History of the Dust Bowl," pp. 55-56.

[8]Wheat acreage rose from 2,413,000 in 1929 to 3,607,500 in 1931. The amount of land in cotton ranged from 733,640 acres in 1929 to 694,580 in 1933. Texas, Agricultural Experiment Station, Field Crop Statistics for Texas, By C. A. Bonnen and L. P. Gabbard, Circular 130 (College Station, June, 1951), pp. 9-10; Texas, Agricultural Experiment Station, Cotton Statistics for Texas, By C. A. Bonnen and L. P. Gabbard, Circular 117 (College Station, September, 1947), pp. 11-12 and 16-17.

W. H. Upchurch reported: "For the first time a condition of near poverty is found on farms in Randall County. . . . Many farmers who have failed for two years could not obtain credit for reseeding their fields this fall. It is said and pretty generally believed that the three short crop years have hurt Randall County farmers a great deal more than the low prices for their products."[9] The shortage of money caused tax delinquency on farm acreage to rise above 50 per cent in five counties.[10] Large operators who dreamed of commercial success through mechanized farming saw their empires collapse. Hickman Price, the much-publicized wheat producer in Castro and Swisher counties, declared bankruptcy in the summer of 1932 after a hard freeze, hail storm, a cutworm invasion, and the drought wiped out his 23,000 acre crop.[11] That same year W. J. Casey of Dallam County, "America's Corn King," abandoned 9,000 acres.[12] The failure of such men as well as innumerable smaller farmers indicated the real dangers facing the continued existence of Panhandle

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[9]W. H. Upchurch, Narrative Reports for County Extension Agents, Randall County, Texas, 1932, W. H. Upchurch Papers.

[10]The counties were Castro, Childress, Deaf Smith, Randall, and Swisher. Texas, Agricultural Experiment Station, Tax Delinquency on Farm Real Estate in Texas, Bulletin 507 (College Station, April, 1935), pp. 11-13.

[11]Vance Johnson, Heaven's Tableland, The Dust Bowl Story (New York, 1947), pp. 152-153.

[12]Dallas Morning News, August 7, 1937, Drouth Scrapbook, Archives, University of Texas, Austin, Texas. Hereafter cited as Drouth Scrapbook.

agriculture.

Despite the concern of local and state governmental leaders, the massive nature of the problem called for federal action. When the emergency conditions developed, the national farm program was based upon President Herbert Hoover's Agricultural Marketing Act of 1929. Designed to encourage more effective marketing practices, a Federal Farm Board assumed the responsibility of establishing national co-operative associations for each of the major commodities and stabilization corporations to maintain prices by acquiring surpluses.[13] Panhandle operators observed the development of the Farmers National Grain Corporation, the American Cotton Co-operative Association, and the National Livestock Marketing Association with especial interest. In fact, before the end of 1929 the local Texas Wheat Growers Association had merged with the grain co-operative.[14] However, the stock market crash, the rise in production, and the subsequent decline in agricultural commodity prices in spite of the efforts of the Grain Stabilization Corporation and the Cotton Stabilization Corporation doomed Hoover's entire farm program. Most Panhandle operators probably

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[13]Harris Gaylord Warren, Herbert Hoover and the Great Depression (New York, 1959), pp. 171-176; Albert U. Romasco, The Poverty of Abundance: Hoover, the Nation, the Depression (New York, 1965), pp. 106-121.

[14]L. Gough, The Texas Wheat Growers Association, Typewritten Manuscript Prepared for the Works Progress Administration, 1938, Interview Files, Archives, Panhandle-Plains Historical Museum, Canyon, Texas.

agreed with the wheat farmers around Spearman in Hansford County who were quoted as saying that: "The Farm Board is the bunk."[15]

The inauguration of Franklin Roosevelt's New Deal farm program offered new hope for even the most skeptical Panhandle farmer. Although attention was directed toward raising commodity prices, Roosevelt's agricultural policy represented much more to the Southern Plainsman. The emergency plan to help drought victims rescued many farms from extinction. The soil conservation program aroused interest in preserving the land in the midst of the Dust Bowl. The focus on credit, tenancy, and electrification dealt with fundamental problems facing the entire agricultural community. More importantly, the New Deal gave most farmers the satisfaction of knowing that the government recognized their predicament.

For the High Plains wheat growers who watched helplessly as prices and yields declined, the Agricultural Adjustment Act of 1933 provided a different type of solution for their problems. Conceived on the premise that the elimination of surpluses and the achievement of a parity price could be accomplished through production control,[16]

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[15]Spearman (Texas) Reporter, June 19, 1930.

[16]The aim of parity was to achieve prices for agricultural commodities which would restore a purchasing power equivalent to the level which had been obtained in the base period, 1909-1914.

the program called for the voluntary reduction of wheat acreage by not more than 20 per cent in 1934 and 1935. In exchange for cooperating, each farmer was assigned a domestic allotment of 54 per cent of his average production over the five year base period, 1928-1932, and received a benefit payment to supplement the market price so that parity could be obtained on the allotted grain.

With county agents and local agricultural leaders conducting educational meetings in each community, the machinery for the AAA wheat program went into operation in the fall of 1933. After the government issued allotments in November, the wheat growers signed contracts agreeing not to raise cash crops on 15 per cent of their acreage in 1934 in exchange for payments of twenty cents per allotted bushel immediately and seven cents on June 1, 1934.[17] In the first year an estimated $5 million in benefit payments flowed into the Panhandle High Plains, providing much needed relief to wheat farmers.[18] After the second year, wheat growers revealed their overwhelming approval of AAA by registering such majority votes as 95 per cent in Castro County and 97 per cent in Carson County in a referendum on the continuation of a similar program for an additional

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[17]Van L. Perkins, Crisis in Agriculture, The Agricultural Adjustment Administration and the New Deal, 1933, University of California Publications in History, Volume 81 (Berkeley, 1969), pp. 122-126.

[18]Panhandle (Texas) Herald, November 23, 1933.

four years.[19]

While much of the support for AAA developed because of the government payments, the rapid increase in prices also affected the wheat producers' attitudes. After reaching an average low of thirty-three cents per bushel in 1932, the value of the grain climbed so that the farmers received seventy-four cents in 1933, seventy-eight cents the next year, and eighty-four cents in 1935.[20] Undoubtedly, the acreage reduction plan and the government's export scheme contributed to the elimination of the national surplus and the price increases. However, drought throughout the wheat producing areas of the Great Plains also had an impact. Even though wheat acreage remained around 3.4 million acres in the Panhandle alone during the mid-1930's, low average yields ranging from 1.5 to 2.2 bushels per seeded acre drastically diminished the total production.[21] Consequently, the combination of government action and climatic conditions contributed to the improvement in the price level.

Like the wheat farmers, cotton growers received assistance from the AAA program. In June 1933 the Department of Agriculture launched an emergency plow-up campaign as a

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[19]Castro County News, Dimmitt, Texas, May 30, 1935; Panhandle Herald, May 31, 1935.

[20]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 23.

[21]Texas, Agricultural Experiment Station, Field Crop Statistics, Circular 130, pp. 9-10.

means of offsetting a price-depressing bumper crop. Under the authority granted by AAA, growers who signed contracts to destroy from 25 to 50 per cent of their planted crop could select one of two plans for reimbursement. One arrangement offered cash payments ranging from $7 to $20 per acre, depending upon each producer's normal yield. A producer could also participate in the cotton option program which paid $6 to $12 an acre along with the right to purchase from the Secretary of Agriculture an amount of cotton equivalent to that destroyed at a price of six cents per pound. If the price rose above six cents, the grower could sell the cotton and receive a profit. If not, he had the right to refuse to exercise the option.[22] As a means of maintaining the reduced acreage, AAA offered a two year contract in which those producers who agreed to cut their planted area in the base period, 1928-1932, by 35 to 45 per cent in 1934 and 25 per cent in 1935 would receive a payment of 3.5 cents per pound on the average yield of cotton lint per acre. The government also made an additional one cent per pound parity payment in 1934 and 1.25 cents in 1935.[23] To encourage participation in acreage reduction, Congress approved the Bankhead Cotton Control Act in 1935 which, though it imposed a tax of 50 per cent of the average price of all

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[22]Perkins, Crisis in Agriculture, pp. 103-104.

[23]Henry I. Richards, Cotton and the AAA (Washington, 1936), pp. 46 and 52.

cotton ginned, provided for the issuance of exemption certificates on the amounts permitted under the AAA contractual agreements not to exceed ten million bales. The originators of all these plans hoped the reduction of cotton acreage would stimulate prices.[24]

Most Panhandle cotton producers eagerly cooperated with the federal program. For example, Donley County farmers plowed up 21,563 of 68,150 acres in 1933, while Castro County growers removed 7,744 acres from production.[25] As a result of the 1934 and 1935 plans, area cotton plantings dropped some 250,000 to 300,000 acres.[26] The Bankhead Act had the effect of pumping several thousand dollars into the Panhandle economy, for when the drought of 1934 so seriously decimated the crop that the growers' allotted tax exemption certificates exceeded their production, the government encouraged the sale of the surplus certificates to the national pool at $13.25 per allotted bale. In Donley County alone, the disposition of 69 per cent of the surplus certificates increased farm income by more than $63,000.[27]

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[24] Ibid., pp. 163-193; Murray R. Benedict, Farm Policies of the United States, 1790-1950 (New York, 1953), p. 304.

[25] Clarendon (Texas) News, March 1, 1934; Castro County News, August 3, 1933.

[26] Cotton acreage was 694,580 in 1933, 400,180 in 1934, and 442,430 in 1935. Texas, Agricultural Experiment Station, Cotton Statistics, Circular 117, pp. 12 and 17.

[27] Clarendon News, March 14 and July 4, 1935.

One major complaint against the Bankhead Act emerged among those High Plains farmers who received few exemption certificates because they had just begun to plant cotton extensively. Earl A. Hagerty of Castro County deplored the fact that 800 farmers in that county were assigned only 990 bales in 1934.[28] Despite such attacks, most northwest Texas cotton growers welcomed the Bankhead Act and the other programs.

The New Deal cotton programs stimulated Panhandle farm income. The rise of prices for lint to 12.51 cents per pound and cottonseed to $33.22 per hundredweight in 1934 from a low of 5.57 cents and $9.03 respectively in 1931 helped.[29] Furthermore, Donley County producers, who received a total of $592,620 for their entire crop in 1932, not only collected $812,295 from their sales the next year but also obtained $249,000 from the plow-up program and $50,000 in option money.[30] Carson County cotton income rose from $5,320 in 1932 to $14,673 in 1934.[31] With similar increases occuring in all of the cotton-producing counties, farm income received a significant boost.

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[28] Oklahoma Farmer-Stockman, XLVII (October 1, 1934), p. 4.

[29] Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, pp. 30-31.

[30] Clarendon News, March 1, 1934.

[31] Panhandle Herald, August 9, 1935.

The AAA corn-hog program also aided northwest Texas farmers. The decline of hog prices to about $3 per hundredweight in the early thirties created a serious situation in the region.[32] Consequently, when the Roosevelt administration announced the decision to slaughter four million pigs and one million sows in 1933, Panhandle hog raisers generally approved of the reduction effort. In fact, the prospect of receiving from $6 to $9.50 per hundredweight for pigs and a bonus of $4 over the prevailing market price for sows engendered so much interest that many producers were disappointed when the government refused to buy all of their animals.[33] In Carson County an estimated 1350 pigs qualified under the slaughter plan, but only about 450 were acquired.[34] The 1934 and 1935 plans which required a 25 per cent reduction below the base period, 1932-33, in exchange for a $5 per head bonus on the allotted number of hogs assigned to each farmer further supplemented local income. In 1934, 235 Donley County hog growers received $30,964 in benefit payments, while 240 Castro County contract signers claimed around $41,000.[35] Collingsworth

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[32]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 39.

[33]Perkins, Crisis in Agriculture, p. 140.

[34]Panhandle Herald, September 22, 1933.

[35]Clarendon News, January 31, 1935; Castro County News, March 28, 1935.

County participants collected $11,747 the next year.[36] The combination of such payments, along with the rise in hog prices to $7.30 in 1935, pleased pork raisers so much that when the AAA conducted a referendum on the continuation of the corn-hog program in October 1935, the voters registered approval by margins of 44 to 1 in Collingsworth County and 22 to 1 in Castro County.[37]

While the AAA programs emphasized the problems of overproduction and low prices, the Federal Government also recognized the necessity of coping with the drought conditions in the Southern Plains. As reports of, "no feed, no wheat, little stock water, and poor prospects for any crops," filtered into Washington, the Department of Agriculture in the summer of 1934 declared all twenty-six counties either emergency or secondary drought areas, thus entitling each farmer to procure direct relief.[38] A maximum of $250, later $500, in crop loans became available to those who needed to purchase seed, fertilizer, and other supplies but could not obtain cash from any other source. Those who agreed to summer fallow their land and purchase winter wheat, rye, or barley could borrow $400.[39] In Randall County

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[36]Wellington (Texas) Leader, December 5, 1935.

[37]Ibid., October 31, 1935; Castro County News, October 31, 1935.

[38]Waco (Texas) Times-Herald, July 15, 1934, Drouth Scrapbook.

[39]Burkburnett (Texas) Star, July 27, 1934, Drouth Scrapbook; Castro County News, March 8 and April 12, 1934, April 4, 1935.

emergency crop loans to 279 operators totaled $78,672 in 1934.[40] In Collingsworth and the surrounding five counties, farmers in 1935 received $196,220 in loans.[41] Similar arrangements for the acquisition of livestock feed and forage became available through the Texas Relief Commission and the Farm Credit Administration. The Interstate Commerce Commission and the three major area railroads also assisted livestock growers by reducing freight rates by as much as 66.7 per cent for the importation of feed into the drought area as well as for shipping animals to pastures outside the region.[42] This plan saved Randall County cattlemen alone an estimated $2500 in freight charges in 1934.[43]

Although cattlemen had refused participation in AAA, the severity of the drought in 1934 caused most to welcome the drought relief cattle buying program. With ranges overstocked and cattle so cheap that raisers could hardly afford to sell them, Congress in June 1934 authorized the Drought Relief Service to undertake the massive purchasing campaign. Government buyers and appraisers went into all counties designated as emergency areas and bought cattle which were

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[40]Narrative Reports, Randall County, 1934, Upchurch Papers.

[41]The five counties were Childress, Hall, Motley, Hardeman, and Cottle. Wellington Leader, December 12, 1935.

[42]Amarillo Daily News, August 8, 1934.

[43]Narrative Report, Randall County, 1934, Upchurch Papers.

either sent to packing plants for processing or condemned to destruction on the farm or ranch because of their diseased condition or their inability to survive shipping. Depending upon the condition of the livestock, the producers received from $4 to $8 for calves, $10 to $15 for yearlings, and $12 to $20 for cows, steers, and bulls over two years old. The program remained in effect until January 31, 1935.[44]

The cattle purchase program had an immediate effect upon the Panhandle. By late July 1934 Dallam County operators had already sold 4,725 head for $49,710 with another 1,000 head awaiting appraisal.[45] In Donley County the disposition of 6,072 head added $78,152 to the area income.[46] The program in Randall County probably typified results in the entire region. On January 1, 1934, an estimated 36,000 head of cattle were in the county. Of that number, the government bought 11,273, mostly cattle over two years old, and condemned 2,795. For these livestock, 601 producers received $57,929 in benefit payments and $83,340 from sales. Only twenty-one cattlemen with 2500 head did not participate. An estimated 1400 head died during the year and about 5,000 were shipped to

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[44]John T. Schlebecker, Cattle Raising on the Plains, 1900-1961 (Lincoln, 1963), pp. 140-141; D. A. Fitzgerald, Livestock Under the AAA (Washington, 1935), pp. 200-209.

[45]Dalhart Texan, July 26, 1934.

[46]Clarendon News, January 31, 1935.

pastures elsewhere. By February 1935 only 19,000 head of cattle remained in Randall County.[47]

The drought cattle purchase plan received both criticism and praise. Some cattlemen believed the prices paid were too low. Others did not like the irregular administration, particularly the stopping and starting of the buying schedules.[48] J. Evetts Haley of Randall County saw the program as an attempt of the government to capture the cattle industry by coming, "to our relief on condition that we surrender to the Secretary of Agriculture the right to manage our affairs."[49] However, despite such attacks, the cattle purchase program had the positive effect of reducing the cattle surplus, eliminating diseased animals, and preventing livestock starvation at the same time that producers received benefit payments.

By 1936 reliance upon the AAA and the other federal emergency programs had grown among Panhandle farmers. More than $22 million in benefit payments had flowed into the twenty-six counties, and national farm income had risen 58 per cent since 1933.[50] For many, government subsidies had

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[47]Final Report, Drouth Cattle Purchase Plan, Randall County, 1934, Upchurch Papers.

[48]C. Roger Lambert, "The Drought Cattle Purchase, 1934-1935: Problems and Complaints," Agricultural History, XLV (April, 1971), pp. 85-93.

[49]Ibid., p. 91.

[50]Clarendon News, July 16, 1936; Marvin Jones, Washington, D. C. to W. C. Black, Canyon, Texas, June 27, 1936, Upchurch Papers.

become the major source of income. A study of Dallam County wheat producers in 1934 revealed that of the $719 average receipts, crop sales provided $28, $277 came from the marketing of livestock, mostly through the drought cattle buying program, and AAA paid $414.[51] Consequently, when the United States Supreme Court declared the AAA program unconstitutional, both rural and urban people expressed concern. The Clarendon Chamber of Commerce wired the area Congressman, Marvin Jones: "Action of Supreme Court voiding AAA deplorable to all West Texas."[52] The Panhandle Herald reported: "Invalidation of the AAA by the Supreme Court this week has riled the people of Carson County as few events have in recent years."[53] A feeling of hopelessness spread across the region.

Congress and the Roosevelt administration responded immediately by approving the Soil Conservation and Domestic Allotment Act in February 1936. Besides altering the measurement of parity from a price objective to an income objective, the legislation provided for payments to those who reduced their acreage of such "soil-depleting" crops as cotton, wheat, and corn and increased their planting of the "soil-conserving" grasses, legumes, and forage crops. The emphasis on soil conservation served the interest of the

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[51] Vance Johnson, Heaven's Tableland, p. 190.

[52] Clarendon News, January 9, 1936.

[53] Panhandle Herald, January 10, 1936.

Dust Bowl farmers quite well. Acreage allotments for major cash crops were also included in the act.[54] In 1937, 91 per cent of the Randall County agricultural operators participated in the program. However, recognizing this legislation as merely a stopgap measure,[55] farmers anxiously awaited the completion of the more permanent farm program.

The Agriculture Adjustment Act of 1938, signed by President Roosevelt on February 16, broadened the scope of the governmental activity. Maintaining the soil conservation aspects of the 1936 legislation, the act gave the Secretary of Agriculture three tools for controlling surpluses. Besides the payments for shifting from "soil-depleting" to "soil-conserving" crops as well as making acreage allotments on major cash crops, he had the power to assign marketing quotas, subject to the approval of two-thirds of the producers affected. Violators would receive penalties of fifteen cents per bushel for excess wheat and either two or three cents per pound for too much cotton. Thirdly, the Secretary could call upon the Commodity Credit Corporation to grant non-recourse loans to permit farmers to withhold their crops from the markets if prices fell below parity levels. For wheat and cotton, loans were to be available at a minimum of 52 per cent and a maximum of

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[54]Benedict, Farm Policies, pp. 350-352.

[55]W. H. Upchurch, Canyon, Texas to Marvin Jones, Washington, D. C., November 23, 1937, Upchurch Papers.

75 per cent of parity. The 1938 legislation also included a crop insurance program.[56]

Panhandle farmers welcomed the second AAA. In the first year cotton growers received 2.4 cents per pound on their allotted yield per acre, while wheat producers obtained twelve cents per bushel. Payments of about $1 per allotted acre were available for general crops. Furthermore, the program granted fifty cents per acre for planting soil-building crops.[57] In 1938 the Commodity Credit Corporation made loans of seventy-seven cents per bushel for wheat delivered to Galveston and seventy-two cents on that sent to Kansas City.[58] In 1939, 1010 wheat farmers paid $122,720 in premiums to insure their crops at either 50 or 75 per cent of the average yield of their farms.[59] Thus, the Agricultural Adjustment Act of 1938 made allotments, parity, quotas, commodity loans, and crop insurance a primary concern of northwest Texas farmers.

While the multiplicity of governmental programs dealing with commodity production affected all Panhandle farmers, the question of whether a profitable agricultural system would re-emerge in the area remained unanswered during

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[56]Benedict, Farm Policies, pp. 375-383.

[57]Castro County News, May 12, 1938.

[58]Panhandle Herald, July 15, 1938.

[59]"Insurance for Texas Wheat Crop," Farmer-Stockman, LII (January 1, 1939), p. 18.

the Dust Bowl era. The winds which swept across the Southern Plains in the succession of drought years after 1932 threatened to destroy the most fertile soils through erosion. In fact, 83.3 per cent of the land in the High Plains counties of Dallam, Sherman, Hansford, Ochiltree, Hartley, Oldham, and Deaf Smith experienced wind erosion damage from both soil removal and accumulation.[60] A 47,175 acre tract near Dalhart exemplified conditions throughout the area. The accumulation of sand in clumps of Russian thistle and weeds badly hummocked 11,200 acres of cultivated land, while an additional 11,603 acres suffered from topsoil removal to depths of two to more than four inches. Shifting sands severely injured 8 per cent of the domain, including one-fourth of the grassland.[61] Under such conditions Panhandle farmers faced a choice of either leaving the land or determining the basic causes and seeking the best possible remedy for survival.

While the plow-up of the grasslands on the Great Plains, particularly in the 1920's, increased the acreage susceptible to erosion and contributed to the Dust Bowl

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[60] U. S. Department of Agriculture, Soil Conservation Reconnaissance Survey, Technical Bulletin 556, pp. 43 and 58.

[61] U. S., Congress, House, The Future of the Great Plains, 75th Congress, 1st Session, February 10, 1937, House Document 144 (Washington, 1937), p. 137; Hugh Hammond Bennett, Soil Conservation (New York, 1939), p. 757; U. S. Department of Agriculture, Crops Against the Wind on the Southern Great Plains, By Glenn K. Rule, Farmers' Bulletin 1833 (Washington, 1939), p. 56.

conditions, the real problem lay in the unsuitable farming methods. Too frequently, agricultural operators ignored such basic elements as types of soil, climatic factors, and slope of the terrain. Although the dominant crop on the High Plains, winter wheat, provided an excellent soil cover during the growing season, the producers mistakenly allowed the land to lie fallow or burned the stubble after harvest, thus inviting wind erosion. On the Eroded Plains, cotton farmers erred by planting in parallel rows without regard to the slope of the terrain or the prevalent wind direction. Not only did these practices cause wind damage, but they also prevented conservation of the available moisture. Even in the driest years when crop failure appeared certain, farmers erroneously plowed and seeded the land, providing further opportunity for the soil to blow.[62]

Even before the 1930's, local and state agricultural leaders had urged better conservation methods. The Texas Agricultural Experiment Stations, along with local county agents, had stressed the need for crop adaptation, contouring, and terracing. Between 1916 and 1933 Texas farmers received assistance in the terracing of more than seven million acres.[63] W. H. Upchurch in Randall County initiated

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[62] Ibid., pp. 61-66; H. H. Finnell, "The Plowup of Western Grasslands and the Resultant Effect Upon Great Plains Agriculture," Southwestern Social Science Quarterly, XXXII (1951), pp. 94-100; Bennett, Soil Conservation, p. 737.

[63] Robert J. Morgan, Governing Soil Conservation: Thirty Years of the New Decentralization (Baltimore, [1965]), pp. 3-4.

such a program in 1929.[64] However, most agricultural operators ignored this aid and advice and continued to engage in their destructive practices until it was almost too late. Consequently, when the emergency conditions developed, the problem was much too massive for either state or local agencies to handle.

The Federal Government responded to the critical conservation problems in 1933 by establishing the Soil Erosion Service, an agency authorized by the National Industrial Recovery Act and assigned to the Department of Interior.[65] The first work of the Soil Erosion Service in the Panhandle began in August 1934 when H. H. Finnell, director of the state experiment station at Goodwell, Oklahoma, assumed the supervision of the Dalhart Wind Erosion Control Project Number 27.[66]

Envisioning his responsibility as one of education through demonstration, Finnell selected a 27,000 acre tract which suffered from both severe wind erosion and hummocking in the Conlen community in eastern Dallam County and instituted a soil control program. After the farmers signed a five year cooperative agreement, Finnell

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[64]Fred E. Wortham, "Terracing in Randall County," Farm and Ranch, L (October 10, 1931), p. 13.

[65]Benedict, Farm Policies, p. 318; Morgan, Governing Soil Conservation, p. 10.

[66]Albert H. Law, "Returning Protection to the Land," Farm and Ranch, LIV (January 15, 1935), p. 1.

terraced and contour plowed the cultivated land and then planted erosion resisting cover crops on part of the acreage and wheat on the other. In case the wheat failed, he was prepared to substitute sorghum for protective purposes. The 7,000 acres of grassland were contoured, and 17,000 trees were planted to provide windbreaks. Within a year after the Conlen project began, Finnell claimed success, for all but 900 acres was under erosion control.[67]

The success of the initial effort at Conlen provided the pattern for similar projects throughout the Southern Plains. Under the supervision of the Soil Conservation Service of the Department of Agriculture, the replacement of the Soil Erosion Service, a regional office with Finnell as director was established in Amarillo to direct the emergency work for eastern Colorado, southeastern Kansas, eastern New Mexico, and the Panhandles of Texas and Oklahoma. Locally, demonstration areas appeared near Hereford in Deaf Smith County, Channing in Hartley County, Vega in Oldham County, and Stratford in Sherman County. Furthermore, the Soil Conservation Service utilized the labor of the Civilian Conservation Corps camp workers at Perryton in Ochiltree County, Memphis in Hall County, and Amarillo in Potter County. While such demonstration work showed farmers how

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[67] Ibid., pp. 1, 4, and 16; C. W. Mullen, "High Plains Will Bloom Again," Farmer-Stockman, XLVIII (April 1, 1935), pp. 3 and 18; Albert H. Law, "The 'Dust Bowl' Comes Back," Farm and Ranch, LV (February 15, 1936), pp. 1 and 10.

to deal with the emergency situation, its value rested upon their willingness to follow the example.[68]

Both state and national programs made the implementation of soil conservation advantageous for the individual farmer. In 1935 the Texas Legislature enacted legislation authorizing the establishment of wind erosion conservation districts in each county. With the members of the county commissioners court acting as the governing board, local landowners developed plans designed to resolve their specific problems. Since 20 per cent of each county's registration fees was diverted to finance the administration of the program, the operators paid only for the actual cost of the work on his property. With the Soil Conservation Service supplying labor, equipment, and materials and the Texas Extension Service providing assistant county agents to provide technical advice, the cost was minimal on each farmer.[69] After the Congressional passage of the Soil Conservation and Domestic Allotment Act in 1936, farmers received subsidies of twenty-five cents an acre for contour listing, fifty cents an acre for planting cover crops on contour, and thirty-five cents per acre for either seeding sorghum, sudan grass, or millet without contour or for

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[68]Amarillo Sunday News-Globe, October 6, 1935.

[69]U. S., House of Representatives, Future of the Great Plains, pp. 172-173; Morgan, Governing Soil Conservation, p. 57; Amarillo Sunday News-Globe, September 13 and November 11, 1936.

planting alternate rows of sorghum or sudan grass.[70] So adopting soil conservation techniques became an attractive proposition to most agricultural operators.

As the farmers became cognizant of the value of conservation practices, demand for the work reached overwhelming proportions. H. M. Breedlove, who as county agent in Donley County supervised the AAA and the conservation programs, operated his office on a twenty-four hour schedule in order to meet local needs.[71] By December 1937, 6,056 farms in the High Plains counties had 1,374,200 acres contoured, 101,422 acres terraced, and 300 dams constructed. With similar activity occurring in the remaining northwest Texas counties, most of the emergency conservation work was completed by the end of the 1930's.[72] In fact, the Amarillo regional office of the Soil Conservation Service closed in 1942.[73]

One other federal conservation project which aroused much interest among the local farmers was the shelterbelt program. Conceived by President Roosevelt in 1934 as a means of controlling soil evaporation and wind erosion,

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[70]"AAA Announces Emergency Wind Erosion Program," Farm and Ranch, LVI (May 1, 1937), p. 7.

[71]Interview of author with H. M. (Flip) Breedlove, Clarendon, Texas, March 16, 1972.

[72]Amarillo Daily News, December 16, 1937.

[73]Frank A. Briggs, "What Has Become of the Dust Bowl?" Farm and Ranch, LXI (August, 1942), p. 5.

the plan called for the planting of trees in 100 mile strips along the 100th meridian from the Canadian border to the Texas Panhandle.[74] Beginning on the J. R. Brummett farm in Childress County on April 5, 1935, the United States Forest Service set out tamarix, desert willow, Chinese and American elm, hackberry, green ash, honey locust, osage orange (bois d'arc), and cottonwood seedlings in 132 foot strips of seventeen to twenty-one rows, one mile apart in the eastern two-thirds of the Panhandle. With each landowner obligated only to the extent of building a fence around the trees, the Forest Service completed strips of more than 120 miles in Collingsworth and Wheeler counties alone within two years.[75] Although the shelterbelt program received much criticism, the trees did offer valuable protection, particularly in the sandy areas.

The shortage of money during the 1930's posed a problem almost as serious as the threatened destruction of the soil. For years most farmers had depended primarily upon local banks for short-term credit and the area national farm loan associations, founded under the provisions of the Federal Farm Loan Act of 1916, for long-term loans. However, these institutions proved inadequate to meet the

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[74]Wilmon H. Droze, "The New Deal's Shelterbelt Project, 1934-1942," in Wilmon H. Droze, George Wolfskill, William E. Leuchtenburg, Essays on the New Deal, The Walter Prescott Webb Memorial Lectures, II (Austin, 1969), p. 23.

[75]Amarillo Sunday News-Globe, April 5, 1936 and February 21, 1937; Amarillo Daily News, April 3, 1937.

immediate needs of farmers in the emergency situation. While Congress in 1932 provided some help by enacting the Emergency Relief and Construction Act which authorized the Reconstruction Finance Corporation to grant short-term loans up to $400 for crop production purposes, this measure was too limited in scope to save those farmers whose crops did not make or who faced foreclosure on their property.[76]

Recognizing the seriousness of the credit problem, the Roosevelt administration induced Congress in 1933 to reorganize the government loan program under the direction of the newly-created Farm Credit Administration. Long-term credit remained available for expenditures on land, farm improvements, equipment, livestock, fertilizers, and debts through the Federal Land Bank and the local national farm loan associations. However, since these institutions extended only first mortgage loans ranging from $100 to $50,000, those operators whose property was already mortgaged could not obtain additional credit. Consequently, this difficulty was resolved by the Emergency Farm Mortgage Act of 1933 and the Federal Farm Mortgage Corporation Act of 1934 which authorized the Land Bank Commissioner, working through the local farm loan association, to grant either first or second mortgage loans up to $7,500. Congress also created the Production Credit Corporation which established local production credit associations for the purpose of

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[76]Panhandle Herald, March 18, 1932.

issuing minimum loans of $50 on a short-term basis for financing crop and livestock production, farm improvements, and other general agricultural purposes. The Farm Credit Administration also supervised the emergency crop and feed loans to agricultural operators who could not furnish sufficient security to obtain money elsewhere.[77]

Panhandle farmers took immediate advantage of the improved credit situation. The combination of the bad conditions and the reduction of interest rates from 5 and 6 per cent to 4.5 per cent caused most operators to either borrow for the first time or refinance their indebtedness. Carson County farmers obtained $869,100 the first year from the Federal Land Bank and the Land Bank Commission.[78] Loans of the Randall County National Farm Loan Association jumped from $800,000 in 1931 to $1,750,000 in 1934.[79] Similarly, fourteen Panhandle associations saw their financial transactions rise from 1990 contracts for $8,892,445 in 1932 to 2874 contracts for $14,273,425 in 1934. After the initial phase, loans leveled off in the fourteen associations to

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[77]U. S. Department of Agriculture, Farm Credit Administration, Agricultural Financing Through the Farm Credit Administration, Circular 5 (July, 1942), pp. 3-16.

[78]Panhandle Herald, July 20, 1934.

[79]Joe F. Taylor, "Federal Aid to the Farmers in the Panhandle of Texas: Some Federal Agriculture Laws Passed Before 1929 Enlarging the Scope of These Laws to 1940" (Unpublished M. A. Thesis, West Texas State Teachers College, Canyon, Texas, June, 1940), p. 45.

3209 agreements for $15,428,810.[80] In general, the work of the agencies of the Farm Credit Administration received widespread approval. In fact, even the Panhandle Bankers Association in 1934 praised the program for, "restoring hope to farmers, and placing back on the road to economic recovery many deserving citizens of this state."[81]

Besides the programs designed to help property-holding operators continue their operations, the Federal Government also recognized a responsibility for providing aid to the dispossessed and destitute farm families, particularly tenants, who lacked sufficient collateral to obtain loans. For those people, the Resettlement Administration, later replaced by the Farm Security Administration, instituted a multiphased scheme. Rehabilitation loans at 5 per cent interest for five years became available for the acquisition of tools, livestock, seed, and other general agricultural needs. To qualify, each farmer pledged to diversify to the extent of growing sufficient food to meet the needs of his family and livestock for a year. The Resettlement Administration and the Farm Security Administration also organized programs for medical care, water facilities, reduction of indebtedness, community service

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[80] Ibid., pp. 47-48.

[81] Duane F. Guy, A History of the Panhandle Bankers Association ([Canyon], [1966]), p. 30.

loans, and land purchase by tenants and sharecroppers.[82]

Farmers in forty-seven West Texas counties took advantage of the Resettlement and Farm Security Administrations' aid through the Amarillo-based Region XII office. In the first year of operation, July 1, 1936 to June 12, 1937, Castro County farmers obtained $50,240 in rehabilitation loans. The health plan provided better medical care for 1573 families, while community service loans helped 2,326 families. In fourteen counties, 166 tenants became landowners. By 1940 local supervisors working with county advisory committees had aided 6,542 families and extended loans of $6,698,234.[83]

The land purchase program touched upon one of the basic problems that plagued Panhandle agriculture, tenant farming. The increase of tenancy had coincided with the spread of wheat and cotton farming in the region during the twenties. In 1920 almost 41 per cent of the farm operations were controlled by renters or sharecroppers. By the 1930's the percentage had reached more than 53.[84]

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[82]Benedict, Farm Policies, pp. 324-327 and 362-363; U. S. Resettlement Administration, Resettlement Administration, Amarillo, Texas, Region XII, By L. H. Hauter ([Amarillo], [1937]).

[83]John L. McCarty, Some Aspects of the Farm Problem With Special Reference to the Panhandle Area of Texas, Unpublished manuscript, West Texas State College, Canyon, Texas, 1941-1942. Copy in Library, West Texas State University.

[84]U. S. Bureau of the Census, Fifteenth Census of the United States: 1930, Agriculture, II, Part 2 (Washington, 1932), pp. 1362-1381.

When President Roosevelt's Great Plains Committee examined the causes of the Dust Bowl in 1936, absentee ownership and tenancy were pinpointed as detrimental factors. Too often, instability of tenure encouraged land abuse through the emphasis upon cash crop production.[85] While the amount of tenancy in the Panhandle did not differ extensively from the southern and middle western regions of the nation, the problem was serious.[86]

By 1940 tenancy in the Panhandle had been reduced to 40.6 per cent of the farm operations.[87] Undoubtedly, such a decline contributed to a more efficient agricultural system. However, action in the name of efficiency often destroyed a way of life for many people. In 1940 the regional Farm Security Administration office in Amarillo sent a letter to local program participants discouraging their joining the "Okie" movement to California. In response, tenants complained that the tractor and the greediness of nonfarm landlords for AAA payments threatened their displacement. One Oklahoman wrote: "Will say I have no wish to move but I feel I will be forced to as the place I live on is going to sell and a man don't have very much

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[85] U. S. House, Future of the Great Plains, p. 46.

[86] U. S. National Resources Committee, Farm Tenancy, Report of the President's Committee (Washington, 1942), pp. 355-377.

[87] U. S. Bureau of the Census, Sixteenth Census of the United States: 1940, Agriculture, I, Part 5 (Washington, 1942), pp. 355-377.

chance of getting another on account of the tractor situation."[88] A South Plains tenant declared: "It is just a few big farmers trying to get all the government checks. . . . We was [sic] put out by big oil man of Amarillo. He put the place on day labor and one of the men has never got over $1 per day."[89]

Regardless of the legitimacy of such charges, statistical evidence revealed that dramatic changes were occurring in the Panhandle farm community. The expansionist trend of the 1920's ended abruptly in the mid-thirties. An estimated 20,000 people left the farms which dwindled in number from 20,496 in 1935 to 15,446 five years later.[90] Although the amount of land in agricultural use remained steady throughout the decade, cultivated acreage declined by 900,000, indicating a return to larger grazing areas. Thus, the average size of farms rose from 702 acres in 1930 to 988 acres in 1940.[91] The percentage of farms

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[88]Quoted in McCarty, Some Aspects of the Farm Problem, p. 8.

[89]Ibid., pp. 8-9.

[90]Total population decreased from 238,618 in 1930 to 227,663 in 1940. Rural population declined from 146,601 in 1930 to 127,412 in 1940. U. S. Census, Fifteenth Census: 1930, Population, III, Part 2 (Washington, 1933), pp. 975-990; U. S. Census, Sixteenth Census: 1940, Population, I (Washington, 1942), pp. 1041-1044; U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 332-353.

[91]Land in farms--13,251,215 acres in 1930, 15,243,078 acres in 1935, 15,261,996 acres in 1940; Land used for crops--4,553,004 acres in 1930, 5,260,221 acres in 1935, 4,370,651 acres in 1940. Ibid.

less than 180 acres decreased from 41.7 in 1929 to 29 in 1940, while operations of 1,000 acres or more grew from 10.4 per cent to 16.3 per cent during the same period.[92] With the $20 land of the previous decade selling for $10, property values slipped from $345 million to $213 million.[93] Therefore, a major readjustment occurred in northwest Texas farming.

A rapid shift from horsepower to tractor-power during the 1930's accompanied the enlargement in farm size. As the horse and mule population declined from 52,243 in 1930 to 18,548 in 1940, the number of tractors increased from 8,168 to 12,110.[94] This switch began after 1934 with the ease in credit restrictions, the arrival of government benefit payments, the improvement in tractors, and the rising costs of feed and workstock. When farmers learned that the estimated cost of using horses and equipment was $3.01 per acre as compared to the $1.74 to $1.88 per acre of tractors using two-row and four-row equipment respectively, the initial investment of from $1375 to $1700 for tractors did not seem so exorbitant. The utilization of mechanical power also offered the advantage of permitting

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[92]U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1402-1421; U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 401-421.

[93]Ibid., pp. 332-353; Interview of author with H. M. (Flip) Breedlove.

[94]U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 423-443 and 530-547.

one man to handle more acreage. Whereas a cotton-small grain operator could expect to care for from 120 to 200 acres, depending upon his equipment, a mechanized farmer could cultivate from 260 to 400 acres.[95] While the tractor had the effect of displacing workers and tenants, it brought more efficiency to each agricultural operation.

By 1940 evidence indicated that the bad times had taught Panhandle farmers the importance of maintaining a balanced agricultural program. Wheat and cotton remained the dominant cash crops for the region. In the twenty-six county area 44.3 per cent of the cultivated land was in wheat.[96] Below the Cap Rock the farmers harvested cotton from 31 per cent of their arable acreage.[97] However, stock farming received greater emphasis. Even after the government buying plan, the number of dairy and beef cattle increased about 30,000 head. Similar gains also occurred in the hog and sheep population, although poultry production

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[95]Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments in the Rolling Plains Area of Texas, By P. H. Czarowitz and C. A. Bonnen, Bulletin 617 (College Station, September, 1942), pp. 65-72; Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments in the High Plains Cotton Area of Texas, By A. C. Magee, C. A. Bonnen, and B. H. Thibodeaux, Bulletin 652 (College Station, July, 1944), pp. 50-61.

[96]Of the 4,370,651 acres in cultivation in 1940, 1,940,041 were in wheat. U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 456-475.

[97]Of the 1,002,495 acres, 310,989 were in cotton. Ibid., pp. 476-495.

declined.[98] More significantly, the land devoted to livestock feed expanded as the acreage planted in sorghum for silage, fodder, and hay increased from 348,622 to 584,359,[99] while all other hay acreage rose 30,000.[100] In most counties the typical farm became one on which the operator raised a cash crop, a feed crop, and livestock.

The drought also restored interest in irrigation on the High Plains. The initial enthusiasm for watering cropland had subsided when the outbreak of the First World War terminated the land speculation era. In 1930 only 41 wells pumped on 25 farms, primarily in the shallow water belt areas of Deaf Smith and Swisher counties.[101] Since dry land farming seemed profitable most of the time, few agricultural operators had the inclination to invest in such projects. In fact, the previous irrigation movement had benefitted the land and civic promoters more than the farmers. However, the absolute failure of dry land crops

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[98]Cattle--591,178 in 1930, 619,898 in 1940; Hogs and Pigs--73,659 in 1930, 81,687 in 1940; Sheep and Lambs--82,560 in 1930, 100,812 in 1940; Chickens--1,152,504 in 1930, 971,675 in 1940. Ibid., pp. 423-443 and 445-455.

[99]U. S. Census, Fifteenth Census: 1930, Agriculture, II, Part 2, pp. 1508-1527; U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 456-475.

[100]Acreage for all hay, exclusive of sorghums rose from 22,188 in 1929 to 52,438 in 1939. Ibid., pp. 476-495.

[101]U. S. Census, Fifteenth Census: 1930, Irrigation of Agricultural Lands (Washington, 1932), pp. 220 and 223.

during the Dust Bowl era caused desperate men to search for a solution to their problems.

Several factors made underground water irrigation appear more feasible in the 1930's. Such technological changes as the high speed pump, the horizontal gear on the pump shaft meshed with the vertical gear on the engine shaft, and the industrial or automobile gasoline engines had reduced costs and increased efficiency. With the accompanying decline in drilling rates, a typical 180 foot deep well could be installed for $2,073.[102] The willingness of pump companies and local bankers to offer credit for irrigation purposes provided an essential stimulus. Furthermore, the farmers' concept of irrigation changed. They began to emphasize the utilization of underground water as a means of increasing the production of cash crops, particularly wheat, cotton, and vegetables. To accomplish this, watering became more than just a supplement to rainfall but a full time operation extending from the pre-planting period until harvest.[103]

As a result of such factors, a revival in the use of underground water for irrigation occurred in the High Plains counties. By 1940, 717 wells on 1299 farms,

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[102]Donald Edward Green, "The Irrigation Frontier on the Texas High Plains: 1910-1960" (Unpublished Ph. D. Dissertation, University of Oklahoma, Norman, Oklahoma, 1969), pp. 204-207, 212.

[103]Ibid., pp. 231-235.

primarily in Castro, Deaf Smith, Parmer, and Swisher counties, irrigated 82,729 acres.[104] While irrigators devoted some acreage to such crops as corn, potatoes, and cotton, the watering of sorghums and wheat surpassed all other commodities. In Deaf Smith and Swisher counties, about 25,000 acres of wheat and 21,000 acres of sorghum were irrigated.[105] Although the amount of acreage in irrigation was limited in 1940, its acceptance by more farmers indicated a new direction in Panhandle agricultural methods.

Living conditions also improved for all farmers with the establishment of the Rural Electrification Administration. Founded by an executive order issued by President Roosevelt in 1935 and backed by legislation enacted the next year, REA became a lending agency to provide low interest, long-term loans to locally owned and managed electric co-operatives. With county agents and agricultural committees assuming the leadership by conducting community meetings to explain the plan, farmers who desired electricity enthusiastically paid a $5 membership fee to join local co-operatives. The Deaf Smith County Electric Co-operative, Inc. at Hereford received the first area loan on March 30, 1937. Within three years the Greenbelt Electric Co-operative at Wellington in Collingsworth County, the

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[104] U. S. Census, Sixteenth Census: 1940, Irrigation of Agricultural Lands (Washington, 1942), pp. 544-555.

[105] U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 638-650.

Hall County Electric Co-operative at Memphis, the Gate City Electric Co-operative at Childress, and the Swisher County Electric Co-operative at Tulia were also in operation.[106] By 1940 electrification had spread to almost one-third of the Panhandle farms.[107]

Although the drought and depression had a tragic impact upon the lives of Panhandle farmers, the experience gained in the struggle for agricultural survival laid the foundation for the emergence of a modern agribusiness system. The government programs for controlling commodity production made northwest Texas operators cognizant of their involvement in the national agricultural economy. The Dust Bowl era re-enforced the necessity for cultivators to adjust their techniques to the environmental conditions of the Southern Plains. More importantly, the bad times of the 1930's made Panhandle farmers more receptive to new ideas of modern technology and scientific knowledge--the key to successful farming.

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[106] U. S. Dept. of Agriculture, Rural Electrification Administration, Rural Lines, USA, The Story of the Rural Electrification Administration's First Twenty-five Years, 1935-1960, Miscellaneous Publication 811 (Washington, January, 1960), pp. 7-9, 12-13, and 59-64; Interview of author with H. M. (Flip) Breedlove.

[107] 5,041 of the 15,446 farms had electricity. U. S. Census, Sixteenth Census: 1940, Agriculture, I, Part 5, pp. 530-547.

CHAPTER VII

SCIENCE, TECHNOLOGY AND THE PANHANDLE FARMER

During the quarter of a century after the Dust Bowl era, Panhandle farming underwent a major transformation. Emerging from a period when natural and economic conditions threatened the existence of the agricultural system, the region became one of the major food production centers in the United States. The fundamental element underlying this dramatic change was the willingness of farmers to utilize their natural resources more effectively by adopting modern technological and scientific practices while adjusting to economic and political realities.

Certain basic modifications occurred in the Panhandle's farm organizational pattern as the region's agricultural importance grew. Between 1940 and 1964 the number of farms dwindled from 15,446 to 9,974. Since the total acreage in agricultural use remained essentially the same, the average size of farms rose from 988 to 1,531 acres. However, despite the growth in each unit, farmers used one million fewer acres for cropland purposes in 1964 than they

had twenty-four years before.[1] Yet even as the number of farms and the amount of cropland declined, the value of crops sold increased ten times, an indication of the tremendous enlargment of the area's productive capacity.[2]

The restoration of prosperity during the Second World War supplied the economic stimulus for the expansion of Panhandle production. As national and international demands for food and fiber swelled, northwest Texas farmers, like their counterparts throughout the nation, found themselves in the enviable position of being asked to increase their production of wheat, feed, and livestock at the same moment that commodity prices rose.

Area expansion of wheat acreage did not occur until the latter phases of the war. Since a large wheat surplus filled the storage bins of the Commodity Credit Corporation in 1941, acreage allotments, marketing quotas, and subsidy payments for conservation practices continued through 1943. Thus, the growers in the wheat-producing counties of the High

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[1]Land in farms--1940, 15,261,996; 1964, 15,276,370. Cropland harvested--1940, 4,370,651; 1964, 3,286,317. U. S. Bureau of the Census, United States Census of Agriculture: 1945, Texas, I, Part 26 (Washington, 1946), pp. 18-67; U. S. Bureau of the Census, United States Census of Agriculture: 1964, Texas, I, Part 37 (Washington, 1967), pp. 312-355.

[2]Value of crops sold--1940, $18,834,418; 1964, $185,685,522. Ibid., pp. 424-450; U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161. Although higher prices in 1964 contributed to the increase, the variation was not that great. With the index price of crops standing at 90 in 1940, the 1964 level was 237. U. S. Bureau of the Census, Statistical Abstract of the United States: 1965 (Washington, 1965), p. 634.

Plains seeded only between 2.6 and 3 million acres. However, when the government abandoned the restriction programs and permitted the price of wheat to jump to $1.45 per bushel, acreage expanded to 3.6 million.[3]

Livestock feed production also increased at a rapid rate. Although farmers planted more corn and alfalfa than they had in previous years,[4] the most significant development was the emergence of grain sorghum as the primary feed. While Panhandle operators had a lengthy experience in raising kafir and milo-maize mostly as a forage, the emphasis shifted to harvesting the crop as a grain when the cross-breeding efforts of scientists succeeded in producing a plant short enough for combining. The Federal Government encouraged this transition by offering both price support loans and subsidies.[5] This action, along with a leap in price from ninety-one cents per hundredweight in 1940 to

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[3]Texas, Agricultural Experiment Station, Field Crop Statistics for Texas, By C. A. Bonnen and L. P. Gabbard, Circular 130 (College Station, June, 1951), pp. 10-11; Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, By John G. McNeely, Elbert O. Schlotzhauer, and V. C. Childs, Bulletin 700 (College Station, July, 1948), p. 23.

[4]Acreage in corn--1940, 20,260, 1945, 29,509; acreage in alfalfa--1940, 5514, 1945, 10,328. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161 and 164-213.

[5]Murray R. Benedict and Oscar C. Stine, The Agricultural Commodity Programs, Two Decades of Experience (New York, 1956), pp. 227-228; W. H. Upchurch, Narrative Reports for County Extension Agents, Randall County, Texas, 1943, W. H. Upchurch Papers, Archives, Panhandle Plains Historical Museum, Canyon, Texas; Castro County News, Dimmitt, Texas, September 25, 1941.

$2.11 in 1945, caused the area's harvested acreage of the feed grain to grow from 468,773 in the former year to 1,126,524 in the latter.[6]

Similarly, the wartime demand for meat prompted an increase in livestock and poultry production. Area cattlemen expanded their herds by 51 per cent despite their disappointment in seeing price controls imposed on beef. The hog and chicken population rose one-third. With the sales of livestock and their products doubling, farm and ranch income showed extensive growth.[7]

The postwar years found Panhandle agricultural operators in a better financial condition than they had experienced since the end of World War I. Annual gross income from commodity sales in 1945 exceeded the 1940 level by $50 million.[8] Even greater prosperity developed when agricultural prices reached 115 per cent of parity.[9] Wheat soared to $2.13 per bushel in 1947, while cotton sold for 31.01 cents per pound. Grain sorghum reached $3.18 per hundredweight,

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[6]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, p. 28; U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161.

[7]Ibid., pp. 268-317.

[8]Ibid., pp. 112-161.

[9]Gilbert C. Fite, American Agriculture and Farm Policy Since 1900, American Historical Association Service Center for Teachers of History Publication Number 59 (New York, 1964), p. 22.

and beef cattle averaged $16.20 per hundred.[10] Harvests of some crops surpassed all previous yields. High Plains wheat growers who sowed a record-breaking four million acres combined almost eighty-one million bushels in 1947, "the greatest wheat crop in the history of the Panhandle."[11] Area cotton producers gathered over 300,000 bales two years later, a total four times that of the 1940 crop.[12]

Such prosperity provided the foundation for even greater agricultural growth. Since most farmers had used their wartime profits for the retirement of their debts, they now had cash for further investments in their operations.[13] As a result of the disposition of such funds, production capabilities expanded to the extent that within twenty years after the war agricultural operators on 4410 fewer farms received almost twice as much for their products, even though basic commodity prices were substantially the same.[14]

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[10]Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, pp. 23, 28, 30 and 40.

[11]Texas, Agricultural Experiment Station, Field Crop Statistics, Circular 130, p. 11; Panhandle (Texas) Herald, July 18, 1947.

[12]In 1940, there were 69,937 bales harvested, while in 1949 there were 291,955 bales. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 164-213; U. S., Bureau of the Census, United States Census of Agriculture: 1954, Texas, I, Part 26 (Washington, 1956), pp. 326-335.

[13]W. H. Upchurch, Narrative Reports for County Extension Agents, Randall County, Texas, 1944, Upchurch Papers.

[14]Number of farms--1945, 14,384; 1964, 9,974. Value of all farm products sold--1945, $160,476,767; 1964, $310,438,516. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 424-450.

Of all the factors responsible for the growth in production, more Panhandle operators were affected by mechanization. Throughout the region tractors replaced horses and mules as the source of power on practically every farm during the 1940's. Such technical improvements as motor lifts and hydraulic systems for controlling both drawn and mounted implements, continuous-running and independent power takeoffs which allowed attached machines to operate while tractors were not in motion, and fuel attachments which permitted the use of low-cost liquified petroleum and diesel enlarged the functional usage and decreased the operational expenses of the tractor. With power, cultivation of from 80 to 100 acres in a ten hour day became possible as farmers substituted four, six, or eight-row equipment for one and two-row implements. A few High Plainsmen managed to cover even more land each day with less labor by using driverless machines.[15] By 1964 power farming had become so extensive in the Panhandle that not only did practically every agricultural operator own one tractor but 70 per cent possessed two or more.[16]

As tractor usage expanded, adjustments made implements more adaptable and efficient. Whether pulled by a drawbar or

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[15]U. S. Dept. of Agriculture, Power to Produce, The Yearbook of Agriculture, 1960 (Washington, 1960), pp. 36-42, and 147.

[16]U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

mounted on front or rear frames, the basic farm tools increased in size or were used in multiples. Instead of thinking in terms of the single row moldboard plow or planter and the seven-opener grain drill, cultivators employed four or five moldboards, eight-row planters, and sixteen-opener drills. As the application of chemicals to soils and crops grew, such special instruments as sprayers, flame equipment, dusters, dry fertilizer broadcasters, and high pressure liquid fertilizer depositors became common sights in the region.[17] Subsurface tillage implements which permitted the retention of crop residue on the surface attracted special attention in the Panhandle. Among such equipment available, the Amarillo-manufactured Graham-Hoeme plow, a chisel tool, proved especially valuable in seedbed preparation.[18]

Major improvements in harvesting equipment also enhanced farming efficiency in the Southern Plains. At the outbreak of the Second World War grain producers in the region harvested their crops with six to twelve foot tractor-drawn combines. However, self-propelled harvesters with fourteen foot headers made their appearance in area fields before the war ended. More maneuverable and more effective in saving grain, the self-propelled combine gained popularity in the 1950's, particularly when the header size reached

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[17]U. S. Dept. of Agriculture, Power to Produce, pp. 147, and 153-157.

[18]John L. McCarty, "Plowing with a Pitchfork," Southwestern Crop and Stock, II (April, 1948), pp. 10 and 34.

eighteen feet.[19] By 1964 self-propelled combines outnumbered the tractor-drawn models 4342 to 1062.[20]

The mechanization of cotton harvesting underwent even more dramatic changes. Although the reliance upon manual laborers continued after the Second World War, the high cost of hand snapping and the occasional shortage of workers forced many cotton producers to turn to machines. Although the mechanical picker which removed the lint and the seed from the bur existed, most operators found the less expensive cotton stripper much more satisfactory. First utilized extensively in 1926 when farmers in the Lubbock area constructed sleds with a V-shaped opening which they pulled along the rows, tractor-attached roll type and finger type commercial strippers achieved general acceptance during World War II. With the planting of storm-proof varieties of cotton and the application of chemical defoliants, farmers found the stripper the cheapest method of harvesting.[21]

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[19]U. S. Dept. of Agriculture, Power to Produce, pp. 38 and 166. Interview of author with John Maxwell, Canyon, Texas, May 1, 1972.

[20]U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

[21]Texas, Agricultural Experiment Station, Mechanized Production of Cotton in Texas, By H. P. Smith and D. L. Jones, Bulletin 704 (College Station, September, 1948), pp. 37-40; Texas, Agricultural Experiment Station, Tenure and Mechanization of the Cotton Harvest, Texas High Plains, By William G. Adkins and William H. Metzler, Bulletin 813 (College Station, July, 1955), pp. 5-8; Gilbert C. Fite, "Recent Progress in the Mechanization of Cotton Production in the United States," Agricultural History, XXIV (January, 1950), pp. 24-26.

Mechanical harvesting equipment for several other crops appeared on Panhandle farms. By 1964 almost 1,000 automatic pickup balers gathered hay.[22] When the potato industry emerged, harvesters which had the capability of picking up as many as 500 bags per hour were used.[23] Sugar beet growers also employed machines which topped, gaged, cut, lifted, and loaded their crop.[24]

The adoption of mechanization enhanced the Panhandle farmer's ability to increase production between 1940 and 1960. During that period the number of hours required to grow and harvest an acre of wheat fell from 7.5 to 3.1. Similarly, the manhours needed for each acre of cotton dwindled from 98 to 54.[25] Such a decline in labor requirements for these and other crops encouraged northwest Texas farmers to expand the size of their operations.

The spread of irrigation enabled Panhandle farmers to increase their production on each acre. The switch from dry land farming to the use of water began in the shallow-water areas of Deaf Smith, Castro, and Swisher counties during the Dust Bowl era. By 1940 about 700 wells pumped

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[22]U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

[23]Nelda C. Thomas, "Master Spud Grower Talks Harvesting," Irrigation Age, V (July-August, 1970), pp. 14-20.

[24]U. S. Dept. of Agriculture, Power to Produce, p. 176.

[25]U. S. Bureau of the Census, The Statistical History of the United States from Colonial Times to the Present (Stamford, Connecticut, 1965), pp. 281 and 304B.

water on 80,000 acres.[26] Although an equipment shortage during World War II slowed the expansion of irrigation, the movement continued with the restoration of peace and the emergence of general prosperity. By 1950 farmers in the southern High Plains counties watered about 470,000 acres.[27]

This irrigation movement did not go unnoticed by the operators either north of the Canadian River or below the Cap Rock. Clarendon merchants and agricultural experts in Donley County began promoting the idea of drilling wells for crop watering in the late 1940's.[28] In the northern High Plains counties about 150 wells were put into operation for watering about 15,000 acres in the early 1950's.[29] However, most North Plains farmers, in particular, hesitated to bear the expense of digging from 300 to 500 feet to tap the underground water supply. Furthermore, as long as commodity prices remained high and dry land wheat and cotton yields were good, few men saw the need for altering their methods of operation.

Attitudes toward irrigation changed rapidly when a

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[26]U. S. Bureau of the Census, Sixteenth Census of the United States: 1940, Irrigation of Agricultural Lands (Washington, 1942), pp. 544-555.

[27]U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 84-93.

[28]Interview of author with H. M. (Flip) Breedlove, Clarendon, Texas, March 16, 1972; Donley County Leader, Clarendon, Texas, November 21, 1946 and November 18, 1948.

[29]U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 84-93.

severe drought struck the region. In the period from 1952 to 1956 rainfall at Amarillo averaged 12.55 inches.[30] Dust storms which reminded residents of the Dust Bowl era appeared. As dry land farmers saw their crops fail at the same time irrigators harvested normal yields, they began drilling wells. By 1959 an estimated 422,569 acres north of the Canadian River were being watered. Five years later, 17,644 wells irrigated 2,402,421 acres or 16.3 per cent of all the land in Panhandle farms, a considerable increase from the 468,915 acres or 2.9 per cent just fifteen years before.[31]

As irrigation expanded, several technical improvements enhanced the efficiency of the watering process. The introduction of aluminum and plastic siphon tubes shortly after World War II made watering from open ditches easier. The replacement of open ditches with closed conduits of large diameter aluminum or concrete pipe in the 1950's reduced evaporation and seepage. In areas of sandy soils or uneven terrain where irrigators used sprinklers, the substitution of automated equipment for the manual laydown pipe system in the 1960's reduced labor.[32] One South Plains cotton grower

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[30]Amarillo Sunday News-Globe, January 2, 1972.

[31]U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 84-93; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 336-347; Texas Agricultural and Mechanical University, College of Agriculture, Panhandle Economic Program, Production and Management Guidelines (College Station, 1966), p. 111. Hereafter cited as Panhandle Economic Program.

[32]Donald Edward Green, "The Irrigation Frontier on the Texas High Plains: 1910-1960" (Unpublished Ph.D. Dissertation,

explained the importance of this development when he stated:

> With my old hand-moved laydown pipe, it used to take me 21 days to irrigate a quarter section of cotton. Today with my center privot system, I can lay down two inches of water over the entire 160 acres in five days. Then I can move the whole system to another quarter section in less than two hours. This gives me incredible flexibility.[33]

Adjustments of well engines to permit the use of natural gas and liquified petroleum instead of gasoline reduced fuel expenses.[34]

Even with these alterations, the costs of irrigating land increased considerably. In the southern High Plains counties, farmers averaged spending $7.06 per acre in the late 1940's. By 1965 they paid out $21.26 per acre which compared unfavorably not only with the earlier costs but also with the $9.05 per acre northern High Plains irrigators expended that same year. A 20 per cent decline in the water level which required the lowering of wells, the installation of underground distribution systems, and the ability of each well to provide water for only 96.6 acres as compared to the 268.3 acres on the northern High Plains accounted for the high dollar requirements south of the Canadian River. Yet

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University of Oklahoma, Norman, Oklahoma, 1969), pp. 245 and 251-252; Donald Edward Green, Land of the Underground Rain: A History of Irrigation on the Texas High Plains, 1910-1970, Unpublished manuscript, pp. 226-227.

[33]"Water-Wise Farmers Turn to Self-Propelled Irrigation," Texas Agriculture, West Texas Edition, XXXVI (November, 1970), p. 8A.

[34]Green, "The Irrigation Frontier," pp. 246-250.

even at such prices, irrigated crop yields ranging from two to five times that of dry land production made watering appear more desirable.[35]

As irrigation and mechanization spread, Panhandle farmers became more dependent upon agricultural chemicals. The application of fertilizer increased in conjunction with the expansion of irrigation. In 1938 commercial fertilizer producers sold seventy-five tons in the area.[36] In 1954 sales reached 18,069 tons for 266,073 acres. Ten years later, 174,123 tons fertilized 1,884,974 acres.[37] Through experience and scientific tests, farmers discovered that the addition of nitrogen and phosphorous compounds worked best in the region's clay loams and fine, sandy loams, while potassium was required in sandy soils. By using anhydrous ammonia, ammonium nitrate, and ammonium sulfate primarily, producers' yields showed considerable gains.[38] One study of irrigated

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[35]Texas, Agricultural Experiment Station, Changes in Investment and Irrigation Water Costs, Texas High Plains, 1950-54, By William F. Hughes and A. C. Magee, Bulletin 828 (College Station, March, 1956), p. 7; Panhandle Economic Program, pp. 120-123.

[36]Texas, Agricultural Experiment Station, Fertilizer Statistics for Texas, 1926-1938, By G. S. Frap and T. L. Ogier, Bulletin 572 (College Station, February, 1938), p. 11.

[37]U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 176-195; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 508-531.

[38]Texas, Agricultural Experiment Station, Distribution of Fertilizer Sales in Texas, January 1 to June 30, 1961, By J. F. Fudge, Progress Report 2200 (College Station, August 8, 1961), pp. 3-7; Texas, Agricultural Experiment Station, General Fertilizer Recommendations for the High Plains,

wheat found that yields on land fertilized with proper compounds surpassed the returns from unfertilized soil ten to forty bushels per acre.[39]

Northwest Texas crop growers also found the use of pesticides just as important as fertilizers in achieving higher production. The application of herbicides grew as farmers became aware that such perennial and annual weeds as bindweed, blueweed, Johnson grass, bur ragweed, and tansy mustard reduced their yields. Scientists estimated that one weed per square foot cut returns by 10 per cent.[40] Using airplanes, helicopters, tractor-mounted sprayers, and other equipment, farmers applied such chemicals as propazine, altrazine, and 2-4-D to more than half a million acres in 1964.[41] Infestation of such insects as fleahoppers, bollworms, boll weevils, greenbugs, and aphids forced regional agricultural operators to spend considerable money on such insecticides as parathion, toxaphene, DDT, malathion, azodrin, and

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Leaflet 226 (College Station, 1964-65); Texas, Agricultural Extension Service, Crop Fertilization on Texas High Plains Soils, By James H. Valentine, Arthur Onken, Charles D. Welch, and Grant W. Thomas, Leaflet 742 (College Station, n.d.).

[39]Texas, Agricultural Experiment Station, Fertilizing Irrigated Wheat on the High Plains of Texas, By Alex Pope, Miscellaneous Publication 688 (College Station, November, 1963), p. 3.

[40]Panhandle Economic Program, pp. 69 and 93-95.

[41]Texas, Agricultural Experiment Station, Production Practices and Specified Costs of Producing Wheat and Grain Sorghum on Irrigated Farms, Upper Texas Panhandle, 1960-61, By William F. Hughes and A. C. Magee, Miscellaneous Publication 656 (College Station, May, 1963), p. 13; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

others.[42] In the mid-1960's farmers annually sprayed or dusted 100,000 acres of grain crops and 135,000 acres of cotton.[43]

Major developments in the production of the Panhandle's basic crops reflected the impact of the application of the technological and scientific practices. The volume of cotton harvested in the area climbed despite an acreage decrease. In 1949, the peak year of mostly dry land farming, cotton growers gathered 291,955 bales from 524,279 acres. Fifteen years later, 410,362 acres yielded 313,425 bales.[44] Although improvements in such cotton types as Big Boll, Texas Stormproof, and Western Open Boll partially accounted for the better returns, irrigation made the most important difference.[45] In 1964 dry land cotton averaged .38 bale per acre, while the crop on watered land averaged 1.14 bales per acre.[46]

The primary center of cotton production in the

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[42] Panhandle Economic Program, pp. 95-96; Texas, Agricultural Extension Service, Guide for Controlling Cotton Insects in the High Plains, Rolling Plains, and Trans-Pecos Areas of Texas, Leaflet 508 (College Station, 1972).

[43] U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

[44] Ibid., pp. 690-716; U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 326-335.

[45] Texas, Agricultural Experiment Station, Cotton Production in Texas, By E. B. Reynolds, Bulletin 938 (College Station, September, 1959), pp. 8-9.

[46] U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 690-716 and 774-800.

Panhandle shifted from the Eroded Plains to the High Plains because of the irrigation movement. At the end of World War II farmers in five counties below the Cap Rock--Childress, Collingsworth, Donley, Hall, and Wheeler--raised 90 per cent of the area's cotton. In 1964 those counties harvested only 33 per cent of the total crop. While a decline in the Eroded Plains' part of the region's total acreage from 90 per cent to 54.6 per cent partially contributed to the alteration, the fact that the five counties contained only 15 per cent of the total irrigated cotton acreage undoubtedly made the difference.[47]

The application of scientific and technological methods to the growing of wheat helped the Panhandle maintain its position as the leading producer of the small grain in the state. As improved seed varieties appeared, growers planted them. In the 1940's most farmers sowed such winter wheat varieties as Comanche, Triumph, Westar, and Wichita. In the 1950's they switched to Tascosa, Apache, Crockett, Aztec, and Red Chief.[48] When irrigation spread north of the

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[47]In 1945 the five counties produced 109,933 bales on 267,961 acres. In 1964 they raised 103,730 bales on 224,160 acres. The Panhandle total in 1945 was 121,577 bales on 296,582 acres, while in 1964 the figure was 313,425 bales on 410,362 acres. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 164-213; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 690-716.

[48]Texas, Agricultural Experiment Station, Wheat Production in the Panhandle of Texas, By Kenneth B. Porter, I. M. Atkins, and C. J. Whitfield, Bulletin 750 (College Station, June, 1952), pp. 10-13; Texas, Agricultural Experiment Station, Wheat Production in Texas, By I. M. Atkins, K. B. Porter, Keith Lahr, Owen G. Merkle, and M. C. Futrell, Bulletin 948 (College Station, March, 1960), p. 11.

Canadian River, the amount of watered wheat land in the region increased from 7.2 per cent in 1954 to 33.4 per cent ten years later. Although irrigated wheat generally yielded at least three times that of the dry land crop, most farmers preferred to devote their watered acreage to other commodities because of their greater financial returns. However, whether they irrigated or not, the region's wheat growers continued to harvest about one-half of the state's production in the 1960's.[49]

Of all the major crops grown in northwest Texas, irrigation and scientific advancements most affected grain sorghum. Emerging as the area's leading feed grain during World War II, farmers in 1945 devoted 1.1 million acres to the crop. In 1964 an equivalent amount of land was planted in grain sorghum, yet production exceeded the previous yield by 357 per cent.[50] Two major developments contributed to the vast increase. First, Panhandle farmers began

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[49]There were 127,489 acres in irrigated wheat in 1954. In 1964 irrigated wheat acreage stood at 481,278. Total wheat acreage in the former year was 1,772,530 and 1,438,355 in the latter. Of the state's total production of 60,570,209 bushels, the Panhandle produced 28,809,307 bushels in 1964. The average yield for irrigated wheat that year was 35.6 bushels per acre as compared to the dry land yield of 12 bushels per acre. U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 264-283; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 634-660.

[50]The Panhandle produced 20,602,205 bushels on 1,126,524 acres in 1945, while in 1964 there were 73,817,469 bushels on 1,090,139 acres. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 606-632.

irrigating grain sorghum extensively. The impact of this alteration in practice was indicated by one study which showed watered sorghum outyielding dry land sorghum 5,160 pounds to 2,140 pounds per acre.[51] Secondly, revolutionary changes occurred in sorghum breeding. While the successful crossing of milo and kafir to create a plant short enough for combining during the World War II era was an important step, the development of hybrid sorghums vastly enhanced the crop's productive capacity. After years of experimentation, scientists of the Texas Agricultural Experiment Station and such seed growers as the DeKalb Agricultural Association, Inc. initiated extensive test plantings of hybrids in 1954. Three years later, farmers received the improved seeds. With hybrids having the capability of yielding between 6,000 and 8,000 pounds per irrigated acre and 1,300 to 3,000 per dry land acre, Panhandle grain sorghum production rose immediately. Area farmers who averaged 1,600 pounds per acre in 1949 and 1954 harvested an average of 3,800 pounds per acre in 1964.[52] As a result of these developments, northwest Texas became the leading grain

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[51]Texas, Agricultural Experiment Station, Production Practices and Specified Costs of Producing Wheat and Grain Sorghum, Miscellaneous Publication 656, p. 17.

[52]Ibid., pp. 2, 12, and 13; Panhandle Economic Program, p. 132; Texas, Agricultural Experiment Station, Requirements for Grain Sorghum Irrigation on the High Plains, By Norris P. Swanson and E. L. Thaxton, Jr., Bulletin 846 (College Station, January, 1957), p. 3.

sorghum production region in the world.[53]

Even as Panhandle farmers reaped the benefits of the application of science and technology to cotton, wheat, and grain sorghum production, they encountered a dilemma which threatened to nullify all the gains. Agricultural operators in other areas of the United States were also using similar modern techniques in growing the same commodities. Consequently, surpluses accumulated and prices declined when national production exceeded consumption. While such a situation was discouraging, Panhandle farmers partially resolved the problem by cooperating with the Federal Government, seeking foreign markets, and diversifying.

In response to the farmers' dilemma, the Federal Government initiated various programs designed to accomplish a reduction in production while maintaining a decent standard of living for the American agricultural community. The Agricultural Adjustment Act of 1938, the basic farm legislation of the period, assigned acreage allotments and permitted the imposition of marketing quotas, in exchange for offering parity payments and price support loans for the basic commodities. These restrictions remained in effect until the demands for food and fiber during the Second World War eliminated their need. During the war the government agreed to guarantee that prices would be maintained at 90 per

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[53]Amarillo Daily News, December 11, 1962.

cent of parity until two years after the achievement of peace. Although marketing quotas would be re-imposed for wheat and cotton in 1949 and 1950, the level of support remained in effect until 1955.[54]

As Secretary of Agriculture for the Eisenhower administration, Ezra Taft Benson sought to re-orient the government's agricultural policy. Hoping to free the farmers from acreage and marketing restrictions and desiring to halt the rapid growth of surpluses, he proposed that price supports be reduced so that growers would voluntarily decrease their production of the basic commodities. Although Congress established flexible price support prices in the Agricultural Act of 1954, acreage allotments were maintained. When surpluses continued to accumulate, Benson convinced the legislative body to inaugurate the Soil Bank program which paid farmers to withdraw portions of their land from agricultural use. Despite such efforts, surpluses expanded.[55]

During the 1960's the Kennedy-Johnson administrations imposed more restrictive measures. The Feed Grain Act of

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[54]Fite, American Agriculture and Farm Policy Since 1900, pp. 19-23; Murray R. Benedict, Farm Policies of the United States, 1790-1950 (New York, 1953), pp. 375-380; Wayne D. Rasmussen and Gladys L. Baker, "Programs for Agriculture, 1933-1965," in Vernon W. Ruttan, Arley D. Waldo, and James P. Houck, Agricultural Policy in an Affluent Society (New York, 1969), pp. 74-82.

[55]Ibid., pp. 82-84; Fite, American Agriculture and Farm Policy Since 1900, pp. 23-24; U. S. Dept. of Agriculture, Century of Service, The First 100 Years of the United States Department of Agriculture (Washington, 1963), pp. 383-386.

1961 and subsequent legislation offered price supports on corn and grain sorghum to those who reduced acreage by 20 per cent. Of the various legislative enactments dealing with cotton and wheat, the Cotton-Wheat Act of 1964 reflected the trend in the government's farm program. Each cotton grower received a regular and a domestic acreage allotment. For complying with the regular allotment, the farmer's crop was supported at thirty cents a pound, while his compliance with the domestic allotment brought a 15 per cent higher support price. Wheat producers who accepted acreage allotments and diverted part of their land from production received price supports, marketing certificates, and land diversion payments. The government agreed to support that portion of the grower's crop which would be consumed in the United States at 65 to 90 per cent of parity. The export and remaining portions were supported from 0 to 90 per cent of parity. Nonparticipants received no aid from the government.[56]

The amount of land devoted to cotton, wheat, and grain sorghum in the Panhandle fluctuated in accordance with the government programs. Prior to the Second World War, northwest Texas farmers planted about 400,000 acres in cotton and less than 3 million acres in wheat. As the demand for foodstuffs grew during the war years, cotton acreage fell 125,000,

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[56] Ibid., pp. 406-407; Rasmussen and Baker, "Programs for Agriculture," pp. 85-87.

but wheat acreage increased by 600,000.[57] The government's wartime encouragement of grain sorghum production caused a 140 per cent growth in the feed grain's acreage.[58] However, when all controls were lifted in the immediate postwar years, grain sorghum acreage dipped 25 per cent, while cotton and wheat land registered a 76 and 10 per cent growth, respectively. The re-imposition of allotments on wheat and cotton in 1954 caused a reversal of the trend, for farmers began substituting grain sorghum on the restricted land. The feed grain's acreage rose to 1,684,612, while area producers devoted 1,772,530 acres to wheat and 477,957 acres to cotton.[59] The Soil Bank program had little effect upon cotton or wheat farmers, for area payments of $11 to $20 per acre fell far below the expected return from normal production.[60] However,

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[57]Texas, Agricultural Experiment Station, Field Crop Statistics, Circular 130, pp. 10-11; Texas, Agricultural Experiment Station, Cotton Statistics for Texas, Circular 117, pp. 14-15 and 19-20.

[58]Grain sorghum acreage rose from 468,773 in 1940 to 1,126,524 in 1945. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 112-161.

[59]Wheat acreage: 1945, 3,040,154; 1949, 3,357,335; Cotton acreage: 1945, 296,582, 1949, 524,279; Grain Sorghum: 1945, 1,126,524; 1949, 841,458. Ibid., pp. 112-161 and 164-213; U. S., Census of Agriculture: 1954, Texas, I, Part 26, pp. 264-283 and 326-335.

[60]One farmer who placed his wheat under loan in 1958 and received $1320.95, figured that had he put his 138.9 acres in the Soil Bank he would have obtained only $412.90. Rene E. Gunzelman, Stratford, Texas, to L. F. Sheffy, Canyon, Texas, July 11, 1958, L. F. Sheffy Letters, Department of History, West Texas State University, Canyon, Texas; Interview of author with John Fuston, Randall County ASCS Office, Canyon, Texas, May 15, 1972.

most farmers did cooperate with the Kennedy-Johnson programs. As a result, wheat acreage fell 18.8 per cent below the 1954 level, while land assigned to cotton and grain sorghum declined 14.6 per cent and 35.8 per cent, respectively.[61] With the Panhandle operators cooperating with the national farm programs and the government providing subsidies, most farmers maintained a decent standard of living.

Besides the efforts of the government to restrict production as a means of reducing surpluses, Panhandle farmers themselves initiated action to dispose of their commodities. During the 1950's area farmers organized the Texas Wheat Producers Association and the Grain Sorghum Producers Association. While both groups encouraged scientific research, conducted promotional campaigns, and lobbied in Washington for their respective crops, they devoted much of their efforts to foreign sales. In 1957 Bill Nelson, executive secretary of the Grain Sorghum Producers, assumed the leadership in founding the United States Grain Council, an organization designed to promote exports. Ten years later, about 37 per cent of the region's feed crops were acquired by foreign nations. Later, as executive secretary of the Wheat Producers, Nelson worked through the Great Plains Wheat, Inc., in getting about 80 per cent of the Panhandle wheat crop sold to Japan and several European

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[61] U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 606-632, 634-660 and 690-716.

nations.[62]

The application of water to land in northwest Texas permitted greater crop diversification, a further stimulant to area income. The commercial production of potatoes became one of the most successful ventures following the emergence of irrigated farming. In 1939 Joe Ballinger who had just arrived in Deaf Smith County from Idaho planted a crop of Irish potatoes. The yield pleased him so much that he convinced twenty-two Idaho potato farmers to migrate to the Panhandle. In 1940 the group organized the Hereford Potato Growers Association and constructed a shed for processing their 60,000 bushel harvest. The crop became so popular that Deaf Smith, Castro, Parmer, and Swisher county operators began devoting between 3,000 and 4,000 acres to Irish potatoes each year.[63] Coinciding with the government's imposition of restrictions on wheat and cotton acreage, in the mid-1950's potato acreage swelled to around 8,000 acres.[64] Since production costs ranged from $201 to $400 per acre, most growers made pre-planting contracts with processors. With yields averaging 203 hundred pound

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[62]Amarillo Sunday News-Globe, September 5, 1971.

[63]"Deaf Smith County's Agricultural Progress," The Shamrock (January, 1947), p. 5; Bessie Chambers Patterson, From Cowtown to Capitol of Farming Empire to 1952, Unpublished manuscript, Interview Files, Archives, Panhandle Plains Historical Museum, Canyon, Texas.

[64]Potato acreage rose from 3,623 to 8,654 in 1959. U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 662-688.

sacks per acre and prices ranging from $1.75 to $5.09 per hundredweight since 1955, potato producers generally found the crop profitable.[65]

Commercial vegetable production expanded along with the potato industry. Beginning on a small scale in the late 1940's, income from the business reached $2 million in 1959. Onions, carrots, lettuce, cantaloupes, and cucumbers dominated the crop selections. While most of the vegetable production was centered in Deaf Smith, Castro, and Parmer counties, farmers in Moore, Hartley, and Dallam counties north of the Canadian River, began planting the foods in the 1960's.[66]

One idea which the XIT Ranch officials had conceived as early as the 1890's reached full fruition in the 1960's, the commercial production of sugar beets. Despite sincere efforts through the years to encourage local development of the crop, the lack of moisture and the distance from processing plants prevented any serious consideration. However, interest revived in 1947 when the American Crystal Sugar Company of Rocky Ford, Colorado, contracted with local growers to raise beets on 1440 acres, agreeing to pay $14.50 per ton on all beets averaging 16.5 per cent sugar

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[65] Panhandle Economic Program, p. 84; Amarillo Daily News, July 23, 1965; Texas, Department of Agriculture, Texas Prices Received and Paid by Farmers (Austin, 1970), p. 6.

[66] Panhandle Economic Program, p. 84; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 396-423.

content.[67] Although area sugar beet production continued on a limited scale for the next decade or so, the realization that the crop could be grown profitably in the region provided the impetus for further expansion.

Around 1960 farmers and businessmen in the vicinity of Hereford in Deaf Smith County reached the conclusion that a thriving sugar beet industry would enhance their area's wealth. However, their lack of a processing plant and sufficient acreage allotments for the crop prevented immediate action. As a means of remedying the situation, they organized the Texas Sugar Beet Growers Association. The group dispatched lobbyists to Washington, D. C., who argued that the Cuban sugar quota which the United States had cancelled following the emergence of Fidel Castro should be assigned to domestic producers, particularly in areas with small allotments. While Congress did not fully accept the suggestion, the Sugar Act of 1962 authorized the designation of any additional acreage and tonnage allotments required because of population growth to new sugar-growing areas. This provision permitted the allocation of 50,000 tons on 22,230 acres to agricultural operators in Castro, Deaf Smith, Parmer counties as well as in the neighboring Curry County, New Mexico.[68]

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[67] Farm and Ranch, LXVII (September, 1948), p. 6.

[68] Amarillo Daily News, September 27 and October 19, 1960 and September 15 and December 19, 1962.

Even before the Sugar Act of 1962 became law, the Texas Sugar Beet Growers Association had reached an agreement with the Holly Sugar Company of Colorado Springs, Colorado, for the construction of a processing plant at Hereford should the region receive a sufficient allotment. The arrangements specified that Holly Sugar would build a $25 million plant if growers would provide $5 million to be collected through a $1 assessment for each ton of sugar beets processed. When the Sugar Act became effective, construction began, and the Hereford plant began operation in 1964.[69]

The local farmers responded enthusiastically to sugar beet production. By 1969 growers were signing contracts for the planting of as many as 45,000 acres. Since beets required six or eight waterings each season, production costs were relatively high, generally $150 to $200 per acre. However, with acreage yields of twenty-one tons per acre of beets with sugar content varying from 12 to 16 per cent, net profits usually ranged from $70 to $160 per acre.[70]

The possibility of sugar beet production also attracted other Panhandle farmers. The Great Western Sugar Company assigned 1,300 acres to seven South Plains counties, including Swisher and Castro.[71] Excellent yields on fifteen

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[69] Ibid., September 15, 1962; Interview of author with Paul Willis, Agriculturist, Holly Sugar Company, Canyon, Texas, July 22, 1971.

[70] Ibid.

[71] Amarillo Daily News, December 1, 1964.

test plots in seven counties north of the Canadian River led to the formation of the North Plains Sugar Beet Association in 1963. Farmers and businessmen pledged $17.5 million toward the financing of a co-operative sugar mill at Dumas in Moore County. However, the failure to obtain a 50,000 acre allotment dashed hopes for sugar beet production there.[72]

The spread of irrigation and the government restrictions on basic crop acreage encouraged agricultural operators to experiment with a wide variety of crops not previously grown in the area. After researchers at the High Plains Research Foundation at Halfway in Hale County assumed the leadership of promoting the raising of soybeans, farmers devoted almost 20,000 acres to the crop.[73] The planting of castor beans began when operators learned that average net returns exceeded the gains from grain sorghum.[74] Below the Cap Rock, guar, a summer legume, became a common sight on unallotted acreage.[75]

Although Panhandle farmers continued to grow oats, barley, and corn for grain, forage crops received increased

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[72] Ibid., September 3, 1963 and February 18, April 22, and December 30, 1964.

[73] Panhandle Economic Program, p. 71; "Hinn Soybean Proves Popular with Plains Farmers," Grain Producers News, XVII (March, 1965), p. 14; "Patterson Soybean Excells in Milling Properties," Grain Producers News, XVIII (April, 1966), p. 19; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 774-800.

[74] Amarillo Daily News, July 21, 1962.

[75] Panhandle Economic Program, p. 82.

attention. As in the past, livestock producers baled wild hay and alfalfa. However, such other forages as sorghum and corn for silage became more popular. Sudan and its hybrids as well as Midland bermuda grass also gained importance both for grazing and hay purposes.[76]

Major changes in the cattle industry made forage crops and feed grains more valuable to northwest Texas operators. Prior to the 1960's Panhandle cattlemen generally engaged in at least one of two practices. Most had a cow-calf operation in which a beef cow annually produced a calf which was raised until it weighed about 450 pounds and then was sold. However, wheat growers usually acquired stocker cattle in the late fall, grazed them on the winter wheat, and sold them in the early spring. Most wheat-producing counties experienced a situation similar to that of Moore County in 1960 when 4,500 head of cattle grazed the grassland throughout the year, but 20,000 to 25,000 stockers were placed on wheat pasture during the winter.[77]

The emergence of the cattle feeding industry on the High Plains during the 1960's vastly enhanced the area's role in beef production. For years Panhandle farmers and ranchers had raised a substantial portion of the nation's beef and feed grain supply. Yet before the beef reached consumers,

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[76] Ibid., 85-89.

[77] Charles R. Koch, "Ding Dong Daddies from Dumas," Farm Quarterly, XVI (Summer, 1961), p.70.

both the livestock and the feed went to feedlots and packing houses outside the state for final processing.

Realizing the irony of the situation, Sam Thomas, agricultural development manager for Southwestern Public Service Company, the region's leading privately-owned electrical company, and Dr. W. L. Stangel, Dean Emeritus of the Texas Technological College School of Agriculture and chairman of the Farm and Ranch Committee of the West Texas Chamber of Commerce, began organizing tours in 1959 for area farmers and businessmen to survey feedlot operations in other parts of the nation. On a trip to California and Arizona the Texans found Panhandle-raised feeder cattle consuming grain sorghum from the Texas High Plains. Such a discovery awakened interest for developing a cattle feeding industry locally.[78]

During the 1960's the feeding industry spread rapidly throughout the High Plains. Beginning with seventeen feedlots and 40,000 head in 1959-1960, 115 such operations fed 2,229,469 head in 1970.[79] Taking cattle primarily from grassland either in the local area or in nearby New Mexico and Oklahoma, feedlot operators used rations of feed concentrates, mostly grain sorghum-based, for increasing the weight

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[78]Interview of Betty Holcomb with Sam Thomas, Amarillo, Texas, September 23, 1971; Amarillo Sunday News-Globe, September 5, 1971.

[79]Interview of Betty Holcomb with Sam Thomas; Panhandle Economic Program, p. 36.

of 500 pound animals to from 800 to 1,000 pounds.[80] The erection of packing plants by such major national firms as Wilson and Company and Missouri Beef Packers permitted the completion of the entire beef production process within the region. By 1970 the cattle feeding industry had become a billion dollar business.[81]

As Panhandle farmers diversified and increased their production, several industries and institutions also expanded to meet the agricultural needs of the region. The vast growth of grain production in the Panhandle required an expansion of storage and terminal facilities. In practically every community either privately-owned or co-operative grain elevators stored or handled the sales of farmers' crops.[82] While such private firms as the Amarillo Grain Exchange provided terminal facilities for some of the commodities, Producers Grain Corporation became the area's leading co-operative marketing organization. Founded in 1938 when members of twenty-nine co-operative elevators pooled their resources for the acquisition of a two-million bushel elevator in Amarillo, PGC spread to such other Texas points as Lubbock, Plainview, Fort Worth, and Corpus Christi as well

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[80]Texas, Agricultural Experiment Station, The Texas-Oklahoma Cattle Feeding Industry, By Raymond A. Dietrich, Bulletin 1079 (December, 1968), pp. 3-4.

[81]Interview of Betty Holcomb with Sam Thomas.

[82]In 1966 the Panhandle had storage space for 120 million bushels of grain. Texas, Department of Agriculture, Texas Grain Warehouses (Austin, 1966).

as to Colton, California. By 1965 more than 100 owner-co-operatives sold over sixty-five million bushels of grain to both domestic and foreign purchasers through PGC.[83]

Other types of co-operatives also served northwest Texas farmers. Several area cotton gins were owned by their users. Supply co-operatives which sold feed, seed, implements, gasoline, liquified petroleum, chemicals, and other goods offered reduced costs to agricultural operators. By 1967 eighty-one co-operatives did business in the Panhandle.[84]

The availability of credit supplied an essential element in Panhandle agricultural expansion. As in the past, agencies created by the Federal Government provided a substantial portion of the farmers' loans. The Federal Land Bank continued to make long-term loans for the acquisition of land. Extending credit at 65 per cent of the normal agricultural value of the property, area loans averaged $19,000 per borrower in 1965.[85] For general farm and ranch operational expense, farmers turned to Production Credit Associations in Amarillo and Canadian which offered credit on a yearly basis. The associations also granted intermediate credit loans for the purchase of tractors, implements, irrigation equipment, and other goods. Although loans in 1965

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[83]"The Producers Grain Corporation Story," Grain Producers News, XIX (May, 1967), pp. 6-10; Amarillo Sunday News-Globe, September 5, 1971.

[84]Texas, Department of Agriculture, Texas Co-operative Directory for 1967-68 (Austin, 1967).

[85]Panhandle Economic Program, p. 19.

averaged $52,000, the Amarillo office advanced one feedlot operator $1 million.[86] For farmers who could not obtain credit elsewhere, the Farmers Home Administration granted loans for operational expenses, land purchases, housing, livestock, equipment, soil conservation practices, and numerous other needs. Founded as a successor to the Farm Security Administration, the Farmers Home Administration established eleven offices in the Panhandle which offered interest rates ranging from 4 per cent to 6.25 per cent for periods varying from seven to forty years.[87]

Commercial banks also assumed a major role in supplying agricultural credit. The institutions in the farm communities and in Amarillo generally granted short or intermediate-term loans for operating expenses. As primary promoters of the cattle feeding industry, both the small town banks and the Amarillo institutions pooled their resources to handle financing for such a large undertaking. When demands became too large, many farmers and ranchers turned to banks and insurance companies in Fort Worth, Oklahoma City, Dallas, and New York City.[88]

The presence of research facilities in the Panhandle also aided farmers. Established in 1936 by the United States

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[86] Ibid., pp. 19 and 179; Amarillo Sunday News-Globe, September 5, 1971.

[87] Ibid.; Panhandle Economic Program, pp. 19 and 177-179.

[88] Amarillo Sunday News-Globe, September 5, 1971.

Department of Agriculture and the Texas Agricultural Experiment Station, the Southwestern Great Plains Research Center at Bushland in Potter County tailored its program to the needs of area operators. During the Dust Bowl era, the experimental farm emphasized the study of soil conservation, wind erosion control, and stubble mulch tillage. As irrigation became important, the scientists worked on effective watering procedures and water recharging. Feedlot problems became a major topic with the emergence of the cattle feeding industry.[89] After farmers north of the Canadian River initiated efforts in 1956 for its creation, the North Plains Research Field Station at Etter in Moore County, an adjunct to the Bushland operation, began research in methods of utilizing irrigation water on crop production.[90] The Texas Tech University Research Farm at Pantex, east of Amarillo, became a center for the study of beef production. However, the farm's experts also worked on such other projects as the improvement of grain sorghum varieties, the problem of loss of underground water supplies, and the development of Triticale, a cross between rye and wheat. The High Plains Research Foundation at Halfway in Hale County also aided local agricultural operators. Founded as a nontax-supported

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[89]"1,600-Acre Laboratory," The Shamrock (June, 1951), pp. 8-14.

[90]Texas, Agricultural Experiment Station, Research at North Plains Research Field, 1967, Consolidated Progress Reports 2546-2555 (College Station, June, 1968), pp. 3-4.

institution by area farmers, ranchers, and businessmen in 1956, the research station concentrated upon enhancing the production efficiency of the area's commodities.[91] The work of all these experimental stations as well as agricultural research conducted by West Texas State University at Canyon, Texas Tech University at College Station helped keep Panhandle farmers aware of the latest scientific developments.

Most agricultural operators who remembered the Dust Bowl experience supported area conservation programs. The United States Department of Agriculture's Soil Conservation Service continued the erosion control work begun in the 1930's. However, the scope of the agency's responsibilities expanded to include the development of long-range conservation plans with the creation of the Great Plains Conservation Program in 1956.[92] Locally, eighteen farmer-controlled soil conservation districts initiated a variety of projects.[93] The Dallam County district planted sand love, blue and side oats gramma, and Canada wild rye grasses in the 1940's.[94]

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[91]Amarillo Sunday News-Globe, September 5, 1971.

[92]Panhandle Economic Program, p. 180.

[93]John I. Kincaid, Area Conservationist, Soil Conservation Service, United States Department of Agriculture, Austin, Texas, to Senator Andy Rogers, Austin, Texas, 1958, Andy Rogers Papers, Archives, Panhandle Plains Historical Museum, Canyon, Texas

[94]Texas, Soil Conservation Board, Report of the Eighth Annual Meeting of Texas Soil Conservation District Supervisors, (Brownwood, 1948), pp. 42-43.

The Tierra Blanca Soil Conservation District of Deaf Smith County provided a crawler tractor, a motor patrol grader, land levelers as well as grass and legume seeders for farmers' use.[95] Most districts offered assistance for terracing, contouring, demonstrating stubble mulch tillage, laying irrigation pipe, and developing grazing areas.

The scientific and technological changes had a direct impact upon the Panhandle farm residents. Living conditions improved immensely after the Second World War. With the establishment of two additional rural electric co-operatives, the North Plains Electric Co-operative, Inc. at Perryton in Ochiltree County and the Rita Blanca Electric Co-operative, Inc. at Dalhart in Dallam County, seven area co-operatives made electricity available to 99 per cent of the farm homes.[96] When Congress amended the Rural Electrification Act of 1936 in 1949 to provide for rural telephone service, Panhandle farmers organized three more co-operatives, the West Texas Rural Telephone Co-operative, Inc. at Hereford in Deaf Smith County, the Mid-Plains Telephone Co-operative, Inc. at Tulia in Swisher County, and XIT Rural Telephone Co-operative, Inc. at Dalhart. By borrowing almost $6 million for thirty-five

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[95]Annual Report, Tierra Blanca Soil Conservation District, January 1 to August 31, 1960, Mimeographed copy, Andy Rogers Papers.

[96]U. S. Dept. of Agriculture, Rural Electrification Administration, 1965 Annual Statistical Report, Bulletin 1-1 (Washington, 1966), pp. 214-227; Amarillo Sunday News-Globe, September 5, 1971.

years at 2 per cent interest, automatic exchange dial service became available to rural areas.[97]

Northwest Texas agricultural operators became more mobile after World War II. After the Texas Legislature enacted a law in 1949, farm-to-market paved roads spread throughout the rural areas of the state. As the highway system expanded, farmers acquired more automobiles and trucks which permitted them to enlarge their area of business activity.[98] No longer were they limited to marketing their produce or buying their consumer goods in the local community. Instead they made Amarillo, Lubbock, and the county seat towns their major trade centers.

Those farmers who owned land witnessed a great upsurge in their property's value as agricultural production expanded. In 1940 the average price of area land ranged from $14.43 per acre on the High Plains to $23.02 per acre below the Cap Rock. As prosperity returned during the postwar years, prices jumped to $46 and $52 per acre in each respective area.[99]

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[97]U. S. Dept. of Agriculture, Rural Electrification Administration, Rural Telephone Service, USA, Miscellaneous Publication 823 (Washington, May, 1960), pp. 7-8; U. S. Dept. of Agriculture, Rural Electrification Administration, 1965 Annual Statistical Report, Rural Telephone Borrowers, Bulletin 300-4 (Washington, December, 1966), pp. 195-196 and 198.

[98]Automobiles--1945, 12,750; 1964, 11,794; Trucks--1945, 10,358; 1964, 21,424. U. S., Census of Agriculture: 1945, Texas, I, Part 26, pp. 70-110; U. S., Census of Agriculture: 1964, Texas, I, Part 37, pp. 480-506.

[99]Texas, Agricultural Experiment Station, The Price of Texas Farm and Ranch Lands, 1920-1945, By Joe R. Motheral, John H. Southern, and Samuel L. Crockett, Bulletin 688 (College Station, April, 1947), p. 10.

While these increases were substantial, the spread of irrigation created even more dramatic changes in land prices. For example, the adoption of extensive crop watering in the counties north of the Canadian River in the late 1950's caused average values to rise from $74 in 1954 to $124 in 1960. In actuality, most irrigated property sold for prices in excess of $300. By 1965 Panhandle land values averaged $197 per acre above the Cap Rock and $128 per acre on the Eroded Plains, an increase since the postwar era of 328 per cent and 146 per cent, respectively.[100]

Even as the established Panhandle farmers in the 1960's enjoyed the rise in land values or the benefits of a vast growth in production, they found themselves caught in a cost-price squeeze. While prices agricultural operators received for the three basic crops were comparable to those obtained during World War II,[101] expenses had risen tremendously. No longer could one put a tractor and two-row equipment in a

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[100]Texas, Agricultural Experiment Station, Trends in the Texas Farm and Ranch Land Market, By F. B. Andrews and Alvin B. Wooten, Bulletin 1063 (College Station, April, 1967), p. 4; Author's interview with H. M. (Flip) Breedlove.

[101]Wheat prices--1945, $1.45 per bushel; 1965, $1.34 per bushel; Cotton prices--1945, 21.5 cents per pound; 1965, 26.10 cents per pound; Grain sorghum--1945, $2.11 per hundredweight, 1965, $1.80 per hundredweight. Texas, Agricultural Experiment Station, Texas Farm Commodity Prices, Bulletin 700, pp. 23, 28, and 30; Texas, Dept. of Agriculture, Texas Prices Received and Prices Paid by Farmers, pp. 3 and 8.

field for less than $1,500.[102] The tractor alone cost from $3,560 to $7,000 or even more, while two bottom moldboard plows sold for $310. Most farmers had a $420 stalk cutter, $495 disk harrow, $900 grain drills, $395 sprayers, $2,600 planters as well as other implements.[103] The fourteen foot self-propelled combine which sold for $3,500 in 1949 retailed for $8,000 in 1964.[104] The $6,000 cotton picker of 1948 cost $17,500 twenty years later.[105] While the irrigator south of the Canadian River had spent $2,073 for the installation of a well in the 1930's, the northern High Plains operator paid $11,400 in 1960. With an additional $7,850 for a closed distribution system, investments in each North Plains irrigation farm averaged $30,000.[106]

Production expenses for the basic commodities were high. The cost of dry land wheat and grain sorghum averaged $8.82 and $10.95 per acre, respectively. This required an

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[102]Texas, Agricultural Experiment Station, Information Basic to Farm Adjustments in the Rolling Plains Area of Texas, By P. H. Czarowitz and C. A. Bonnen, Bulletin 617 (College Station, September, 1942), p. 72.

[103]Panhandle Economic Program, p. 72; Texas, Dept. of Agriculture, Texas Prices Received and Prices Paid by Farmers, p. 27.

[104]Ibid.; Interview of author with John Maxwell.

[105]Fite, "Recent Progress in the Mechanization of Cotton Production," p. 27; Texas, Dept. of Agriculture, Texas Prices Received and Prices Paid by Farmers, p. 27.

[106]Green, "The Irrigation Frontier on the Texas High Plains," p. 212; Texas, Agricultural Experiment Station, Production Practices and Specified Costs of Producing Wheat and Grain Sorghum, Miscellaneous Publication 656, p. 19.

average of five bushels per acre for wheat and 730 pounds for the feed grain to break even. With irrigated wheat and grain sorghum averaging about $37 per acre, yields of 28.9 bushels and 2,680 pounds were necessary.[107] Solid row planting of cotton cost $29.02 per acre on dry land and an average of $83.27 per acre on irrigated land. Thus, cotton growers needed harvests of 111 pounds per acre for the former and 334 pounds per acre for the latter.[108] These requirements, along with the rising costs of implements, taxes, labor, and interest, placed those who received $1.70 per bushel for wheat, $1.50 per hundredweight for grain sorghum, and 26.10 cents per hundredweight for cotton in the mid-1960's in a tight situation as yields fluctuated.[109]

Besides the cost-price squeeze, High Plains irrigation farmers saw their methods of operation threatened as the water supply dwindled. For years farmers had pumped more water from the underground source than the natural recharge could replace. While the annual decline was only about one foot in the first decade of watering, by the late 1950's wells in Deaf Smith, Swisher, Castro, and Parmer counties

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[107] Panhandle Economic Program, pp. 72-77.

[108] Texas, Agricultural Experiment Station, An Economic Analysis of Production Responses for Cotton and Grain Sorghum, Mixed Soils, Texas High Plains, By James E. Osborn and Don E. Ethridge, Miscellaneous Publication 858 (College Station, November, 1967), p. 38.

[109] Panhandle Economic Program, pp. 72-77.

were dropping between 3.6 and 4.1 feet each year.[110] Although these High Plains counties south of the Canadian River encountered the most serious trouble, irrigators throughout the region created such organizations as the High Plains Underground Water Conservation District No. 1, the North Plains Ground Water Conservation District No. 2, and the Panhandle Ground Water Conservation District No. 3 to help find ways to conserve water. They regulated well spacing, controlled water waste, and searched for methods of water recharging. Yet the water levels continued to fall.[111] Faced with the problem of the possible complete depletion of the water supply, area farmers and businessmen in the late 1960's established Water, Incorporated, an organization which championed the idea of importing water to the plains from the Mississippi River. However, the failure of Texas voters to approve the massive $9 billion project in 1969 left the question of how long extensive irrigation on the High Plains could continue unanswered.[112]

In the quarter of a century after the Dust Bowl era, the Panhandle emerged as a major food center in the nation.

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[110]Texas, Board of Water Engineers, A Summary of the Occurrence and Development of Ground Water in the Southern High Plains of Texas, By J. G. Cronin, Bulletin 6107 (Austin, September, 1961), p. 61.

[111]Green, "The Irrigation Frontier on the Texas High Plains," p. 294; Green, Land of the Underground Rain, pp. 247-253.

[112]Amarillo Sunday News-Globe, September 5, 1971.

With the application of scientific and technological practices to the natural resources, agricultural operators produced more commodities on less land. While this development brought a better life, the farmers encountered such difficulties as overproduction, low prices, high costs, and depleted water resources. Although many groups and institutions would attempt to aid in the resolution of the problems, successful farming in the Texas Panhandle in the 1960's depended upon the ability of the farmers themselves to adjust to the economic, political, and environmental conditions, the same lesson that even the earliest northwest Texas agricultural operators had learned.

CONCLUSION

Within less than a century after the initial farm settlement of the Texas Panhandle, the region emerged as one of the major food production centers in the United States. Although the efforts of individual farmers in carving out an agricultural empire in the Southern Plains should not be de-emphasized, revolutionary changes in American agricultural development laid the foundation for the area's transition from frontier farming to a modern agribusiness system.

The farmers' arrival in the Panhandle culminated one of the major phases in the westward expansion of American agriculture, the settlement of the Great Plains. Even though the initial rush into the Northern and Central Plains preceded the movement into the Southern Plains by a generation, similar factors influenced the settlers' approach to the vast grassland. The presence of Indians, the lack of railroads, and the uncertainty of environmental conditions delayed advancement into the region. However, when the Indian and railroad problems were resolved, settlement proceeded rapidly as such groups as land speculators and town boosters inaugurated vigorous promotional campaigns to eradicate doubts about living on the plains.

Unlike most settlers of the Great Plains, those farmers who approached northwest Texas faced a peculiar problem, the

presence of cattlemen. During the cattle boom era of the early 1880's, ranchers generally frowned upon the prospect of the plowing up of the grassland. However, this attitude changed rapidly when livestock prices plummeted in the late eighties. Realizing that farmers were potential land purchasers, cattlemen took steps to ease the flow of farm immigration into the region. Besides inaugurating promotional campaigns to lure settlers, ranchers conducted experiments in crop production. When the farmers arrived, cattlemen also helped by purchasing the newcomers' commodities for livestock feed. In the final analysis, the Panhandle rancher was more of an aid than a deterrent to farm settlement.

As all participants in the westward expansion of agriculture learned, the development of a successful farm system depended upon the adjustment of farming techniques to environmental conditions. In the Panhandle the shortage of water most affected the farmers' decisions on crop production. In the early years, agricultural operators found that the utilization of dry farming methods, the planting of drought resistant crops, and the adoption of stock farming provided the best results. Later on, farmers further enhanced the subhumid-semiarid region's productive capacity by terracing, contouring, and irrigating from underground water sources.

Like their counterparts throughout the nation, Panhandle farmers benefitted from the scientific and

technological advances of the twentieth century. Research in seed improvements, tillage methods, and soil erosion control, along with the application of commercial fertilizers, insecticides, fungicides, and weed killers, enabled the production of higher yielding crops of better quality. Among the major technological developments, the introduction of the tractor caused the most dramatic change in farming. Besides lightening the farmers' work load, the machine vastly enhanced the amount of land each agricultural operator could cultivate efficiently. Improvements in implements, harvesting machinery, and irrigation equipment also stimulated the expansion of crop production.

The tremendous growth in farm production created a dilemma for all American farmers. As they became capable of raising more commodities than the markets could absorb, prices declined. In response to this problem, basic changes occurred in farm operations. The number of farms and the amount of cultivated acreage declined. Great emphasis was placed upon diversification. More importantly, the Federal Government assumed a greater role in influencing agricultural development.

The Federal Government's involvement in agriculture remained minimal until the 1930's. Although federal experiment stations, credit services, and educational programs had offered some assistance previously, Panhandle agricultural operators saw no need to seek extensive governmental aid.

This attitude changed when drought and depression almost destroyed the region's agricultural system. Beginning with the New Deal legislation, government assumed the responsibility for helping farmers control production, conserve soil, and maintain a decent standard of living. While the acceptance of such aid limited farmers' independence, the existence of the federal programs provided a greater stabilization for the agricultural economy.

Agricultural development in the Texas Panhandle epitomized the revolutionary changes that occurred in American farming after 1880. The westward expansion of agriculture, the application of science and technology to farming, the alteration in farm organizational patterns, and the government's increasing involvement in agricultural affairs reflected the major developments that made the United States the world's leading food producer.

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An important compilation of material dealing with the early development of northwest Texas is found in the Earl Vandale Collection in the University of Texas at Austin Archives. This depository also contains the annual reports of the New York and Texas Land Company as well as several scrapbooks of county newspaper clippings.

At the Texas State Archives in Austin, county tax records, land promotional pamphlets, and rare state documents are helpful for surveying the early years of farming in the Panhandle.

Among the most significant materials for this study in the Southwest Collection of Texas Tech University at Lubbock are the papers of Bradford Knapp, the Matador Land and Cattle Company, the Santa Fe Railroad, and William P. Soash.

The Lester Fields Sheffy Papers in the possession of the Department of History, West Texas State University at Canyon includes interviews, correspondence, and private records covering the entire scope of this work.

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