

β-97

Texas-

a Terracing Pioneer



ON THE COVER of this publication is an airplane view of the Texas Agricultural and Mechanical College.

It is no accident that terraces radiate in every direction from the College. Since 1910 the various branches of the Texas A. & M. College have cooperated in the furtherance of terracing work: the Agricultural Experiment Station in research; the School of Agriculture in training students; the Extension Service in utilizing these students to disseminate the information to the farmers and ranchmen of Texas.

From 1910 to 1916 terracing in Texas was in its infancy. Since 1916, when the Extension Service's soil and water conservation program began, the practice of terracing has grown by leaps and bounds. Farmers, civic organizations, interested individuals, and commissioners' courts have rallied to the support of Texas A. & M. College in its terracing campaign and the long time program of strip cropping, contour planting, and use of soil improvement crops.

Terracing has represented but one of the many practices the College has brought to the aid of the Texas farmer, yet in 1933 the Extension Agricultural Engineer was able to announce that the terracing job in Texas was one quarter finished; that a total of 5,700 special terracing machines were owned by farmers or communities in addition to the county road grading equipment; and that more than 8,000 farmers and 6,500 boys in Texas had been trained and were qualified to run terrace lines.

In one year, 1933, more than a million acres in Texas were terraced under the supervision and leadership of county agricultural agents. From 1916 through 1935, these Extension workers have been instrumental in the terracing of more than nine million Texas acres.

Just as the actual terraces branch out toward every point of the compass with the Texas A. & M. College as a center, so has terrace work reached every section of Texas under the guidance of the institution.

Texas-- a Terracing Pioneer

Raindrops of a summer shower sweeping the streets of a little East Texas town just as the century went into its second decade caused the making of history. It happened in Troup in 1910. Dr. Seaman A. Knapp, founder of the demonstration work, on a round of supervising visits changed trains in Troup going from Palestine to Tyler.

Accompanied by state, district and county agents, W. F. Proctor, G. W. Orms, and H. W. Acker, he took refuge on a porch from the sudden furious rain. Standing there the party watched the water pouring down the street literally tearing it to pieces undermining, as it went, the blocks under the porch where they stood.

Said State Agent Proctor to Dr. Knapp: "That, sir, is what is happening to farms in Smith county and all East Texas. They are being washed away by every rain."

"If that is the case," replied Dr. Knapp, "we will send your county agent to Mississippi to be trained in terracing so that he can show farmers how to save their lands."

Acker was sent to Mississippi that autumn and thereafter not only helped the farmers in Smith county to terrace, but at agents' meetings he was always assigned to train other agents in terracing.

Texas agricultural workers visit original Mangum terraces.





Left, R. A. Vest, terracing pioneer of Llano county, used an improvised level for terracing his farm in 1910 and for helping terrace his neighbors' lands.

Upper right, a county agricultural agent teaching terracing to boys in 1917.

Lower right, the beginning of an extensive terracing program in Falls county.

From that day, dates an unceasing battle against soil erosion waged on all fronts by the Extension Service and the farmers and ranchmen who had the vision to see what terracing, contouring and proper cropping could do for soil and water conservation.

To the battle flag raised by the Extension Service have come many valuable recruits, as the years have gone by. Legislatures and commissioners' courts, colleges and universities, chambers of commerce and civic clubs, bankers and merchants, and, as the work proved its worth—while the need became ever greater because of the spreading millions of cultivated acres—other governmental agencies joined in the fray.

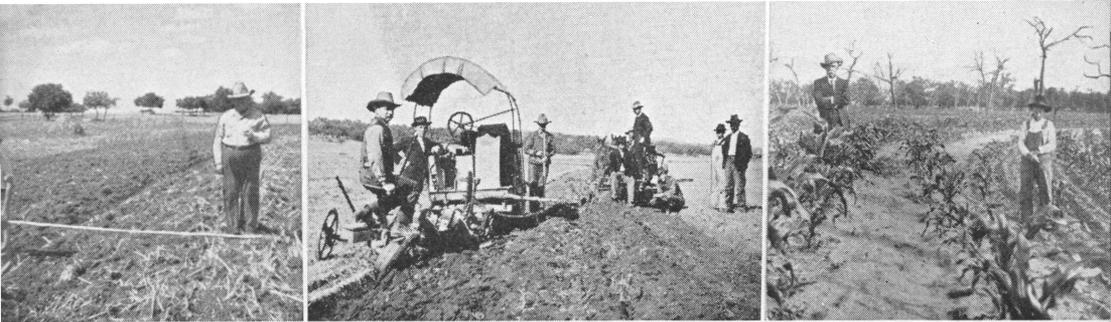
It is a gigantic, colossal battle. Year by year the service has checked off by the hundreds of thousands, and then millions, the acres put under protection of terraces, the crops planted on the contour, the pastures contour listed conserving water, insuring grazing—until by 1936 something like ten million acres had been treated.

From the front of the battle as the years have rolled by, have come many stories of interest and value, much testimony which has had its weight in spreading the influence of demonstration terraces across line fences. From east and west the stories come—the engineering problem different perhaps, but the results the same—soil and water conserved to produce better crops.

* * * * *

These terrace ridges near Red Springs, Baylor county, were planted to oats in 1918.





Left, a ditch in this Blanco county field was so deep that a mule fell in it when the field was being terraced 19 years ago.

Center, this old type bull wheel tractor was used to build terraces in Kendall county in 1916.

Right, Uncle Bill Plaster, county agricultural agent, at left, demonstrates the height of a terrace and contour planting in Grimes county in 1917.

“Terraces will increase crop yields on the average in this county by at least one-fourth,” said H. Garlitz, Shackelford county farmer and early terracing demonstrator with the Texas A. and M. College Extension Service. He is well qualified to speak on this subject, for on his farm are some of the oldest level terraces built in that section of Texas. He has now 100 acres protected from erosion and water loss on his farm.

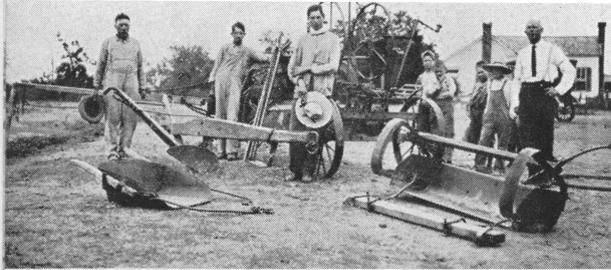
Hegari growing on the terraced land of the Garlitz farm was green and thrifty during the dry month of August 1936 while grain sorghums on unterraced farms nearby were badly burned. A barn well filled with heavy corn is further proof that good crops can be produced in a dry year when level terraces hold the water on the land and cultivation prevents excessive loss.

* * * * *

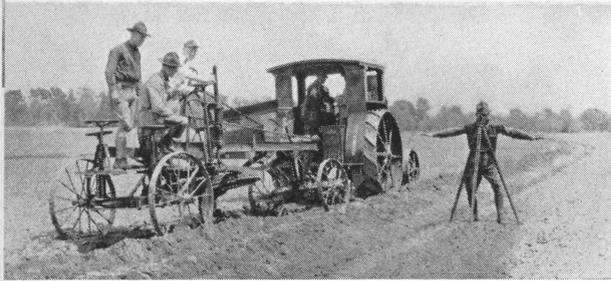
Terraces which have faithfully conserved soil and water for 22 years may be seen on Mrs. Val Smith's farm in Blanco county. In 1914, A. L. Smith, son of the late Val Smith, returned from A. and M. College with an idea that gullies and sheet erosion could be controlled by terraces. He secured the help of a terracing specialist from the Extension Service and the pioneer terraces were built. Soon the gullies filled up and crop yields improved. A. L. Smith now heads the agricultural conservation program which directly affects some 340,000 farms in Texas.

Val Smith is shown in the top picture seated on loose rock terraces built prior to 1918. At the bottom, Carroll Smith, the small boy seated by his father in the upper picture, is shown plowing a terrace built 22 years ago.





Top picture, George Banzhof, Milam county agricultural agent, is shown with 1917 type terracing equipment, which constructed many early terraces in that section.



Bottom, this terrace was built near College Station in 1917 with an old type of farm tractor. Students of A. and M. College are operating the equipment and are "learning to do by doing."

Eight years ago F. H. Westerman, Llano county farmer, decided he would terrace his farm. Lines were laid off and the first terrace was built. Westerman looked it over and decided he wouldn't clutter up his farm with any more crooked rows and terraces.

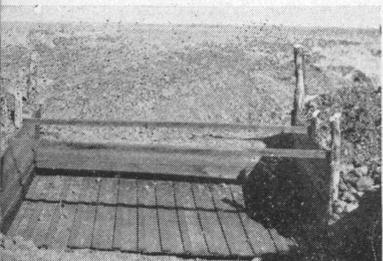
"That year," Westerman says, "about the only crop I made was above that first terrace." County agricultural agent D. D. Steel was called in and the remainder of the field was terraced. Gullies three and four feet deep have leveled up and crops have improved as soil and water losses have been checked.

* * * * *

Terraces constructed more than 23 years ago are still in service on the farm of F. C. Steves, Karnes county dairy farmer living three miles north of Runge. They are believed by the county agent to be among the oldest terraces in Texas. Laid out and built as an experiment with the help of a man sent by the United States Department of Agriculture, surprisingly few mistakes were made.

"There was a ditch so deep in this field that a mule fell into it and we had a hard time getting him out," said Sid Stevenson, Blanco county farmer and county commissioner, in

Three early types of terracing outlet check dams are shown.





Left, this group composed a part of one of the first big county-wide terracing schools in Lamar county in 1923. It was conducted by W. G. North, county agricultural agent, assisted by the Extension agricultural engineer.

Center, this terracing attachment for a disc plow was developed in collaboration with A. and M. College.

Right, A. J. Cotton, county agricultural agent, at left, is shown inspecting a 1916 terrace in Burnet county.

commenting on one of his terraced fields. There is no sign of the ditch today, except that crops are a little better where the terraces have caught the soil and leveled up the field.

Back in 1917 before Blanco county employed a county agricultural agent, Walter Davis, at that time agent in Travis county made a missionary journey to preach terracing to save the soil and water as a part of the conservation program being fostered by the Texas A. and M. College Extension Service. Stevenson was a convert and signed an agreement to keep up the terraces three years (a requirement in the early days). Davis laid out a system of terraces so that run-off water would empty on a pasture.

That terraced field produced 35 bushels of corn to the acre in 1936. On part of the terraced land Stevenson planted cow-peas and sorghum to be turned under as a soil building practice.

Stevenson, being a county commissioner, is interested in agricultural conservation as it affects the county business. After land has been subjected to the ravages of erosion, crop yields go down and people cannot make a living and pay taxes to keep up schools, roads and support their county government. Stevenson's terraces were built with a wooden drag, but he is now using his road machinery to help farmers in his precinct get their terracing done.

* * * * *

Top picture, note the strip planting on these terraces built prior to 1920 in Milam county, as part of the long time program inaugurated by the Extension Service in 1916.



Bottom, part of the 13 terraces laid out in 1917 on a 60 acre farm near Canyon, Milam county. These terraces have protected soil and held water for almost 20 years.





Left, since 1928 when Wenzel Gluck terraced his Frio county farm, every acre in cultivation has been strip cropped on the contour.

Upper right, C. C. Morris, county agricultural agent, is holding the rod in this early terracing demonstration in Camp county.

Lower right, this early terracing machine did yeoman service in 1927.

"The crops growing every year on the reclaimed gullies will pay the taxes on my farm", declared O. H. Hunziker of Houston county in 1932. Hunziker used terracing, regular crop rotation, legumes and fertilizers steadily to increase the productiveness of his farm bought 20 years ago.

* * * * *

"Terraces added \$1,000 to the value of this farm based on the estimates of the neighbors," said R. A. Vest, Llano county farmer and one of the pioneers with terraces. Vest's story makes conservation history. In 1910 on a visit to Burnet county, he met A. J. Cotton, at that time county agricultural agent there. Cotton gave him a bulletin which was being distributed in connection with the soil and water conservation program of the A. and M. College, Farmers' Cooperative Demonstration work, forerunner of the Extension Service.

Vest went home with the bulletin and with some ideas in his head. After several experiments he improvised a level made from an old pipe, iron rings from a wagon wheel hub, a spirit level, and a few scraps. The only cash outlay was 35¢ for the spirit level.

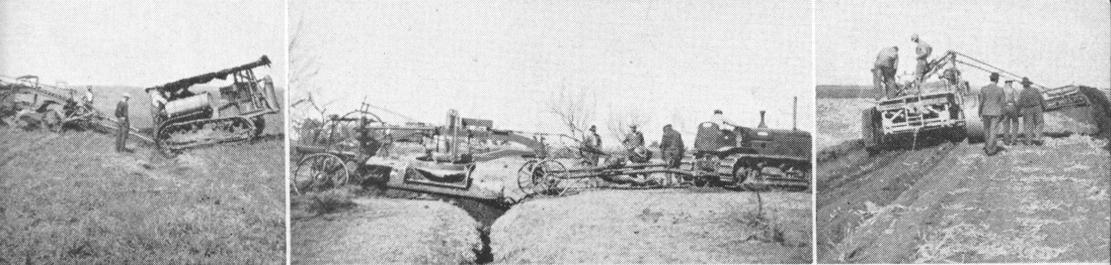
A few lines were run with the home made level and terraces were built with a home made drag. Vest did not put his terraces out on the road, but hid them in the back of the field where he could watch how they worked. That was 26 years ago, and building ridges in a field and laying out crooked rows might have been grounds for a lunacy trial.

Left, Louis Burke, Stephens county farmer, credits these terraces with practically doubling the yield of peanuts per acre over adjacent unterraced land.

Center, D. D. Steele, county agricultural agent, and F. H. Westerman, right, showing terraces built in Llano county in 1928.

Right, these 10 year old level terraces in Shackelford county have increased crop yields 25 per cent.





These powerful types of terracing outfits have come into favor in the past few years.

The first crop from the terraced land doubled any other in the field, according to Vest. More terraces and contoured rows were laid out. Neighbors ridiculed until they saw the increased crops, then they asked him to help them run their terrace lines. On one farm when Mr. Vest's level refused to lay off a straight terrace line, the owner indignantly ran him out of his field and refused to build a crooked terrace. A dozen or more neighbors did build terraces as laid out by Vest.

Gullies waist deep disappeared from the Vest farm after the terraces were built. Holding the soil in place, preventing the loss of water, and returning fertility to the land in the form of cowpeas and other soil building crops has enabled Vest to make his soil more productive than it was in 1910 when he started his conservation work. An orchard of healthy, vigorous trees is now growing on land considered useless before it was terraced.

Terraces which have withstood rains and floods for a quarter of a century may be seen on the J. B. Winters farm two miles south of Stephenville in Erath county. In 1911 Winters agreed to use his farm for a soil and water conservation demonstration in cooperation with the A. and M. College Extension Service, then designated as Farmers' Cooperative Work.

The 50 acre field terraced in this pioneer demonstration has been in continuous cultivation and Winters says it is as productive as it was 25 years ago. Since 1911, more than 50,000 acres have been terraced in Erath county.

Three generations of the Winters family have worked with the Extension Service.



This Sight In 1931



S. Miller on the Westbrook farm in McLennan county—note the automobiles.

Flyers Above Texas Saw This Sight In 1931



This picture shows a terracing demonstration conducted in 1931 by county agricultural agent R. S. Miller on the Westbrook farm in McLennan county—note the automobiles.



This terraced pasture was crop land in 1934. In 1935 it was rented to the government in an AAA cotton contract and was allowed to lay out. Bermuda grass spread on the place and the owner terraced it. He plans to mow the pasture and possibly poison the bull nettles out.

During the 26 years since Vest's first venture, terracing and contoured rows have become recognized as good farming practices. County agricultural agent, D. D. Steele, estimates that 19,000 acres of Llano county farm land have been protected from loss of soil and water by terraces.

* * * * *

Land terraced 20 years before with the help of the county agricultural agent yielded more than one-half bale of cotton per acre in 1933 on the farm of D. W. Benton, Trinity county farmer. Unterraced farms in the community averaged about one-third of a bale to the acre, he says. When he started terracing, Benton says his land was gullied and washed and not as good as several other farms in the neighborhood were.

* * * * *

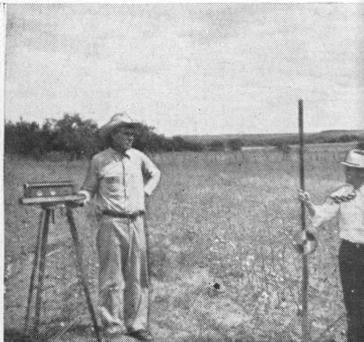
Louis Burke, Stephens county farmer, when asked "How much are terraces worth?" replied: "On this terraced land in 1935 I gathered 65 bushels of peanuts to the acre. Over there on the same kind of land unterraced I harvested 34 bushels per acre—just about half." Further questioning brought out the fact that the figures given by Burke were not estimates but were taken from the peanut thresher's weights.

It was 12 years ago that Burke built terraces on a 20 acre sandy field. His was some of the early soil and water

Left, a 40 acre cow pea crop was planted on this terraced farm in Coleman county for soil building.

.....Center, H. Garlitz, Shackelford county farmer, exhibits a crib full of corn grown on terraced land in a dry year.

Right, in 1910 terrace lines were run in the back fields on this Llano county farm as an experiment. They proved so successful, however, that more than 19,000 acres have been terraced in the county since then.





Left, pasture terraces in Tom Green county are shown here.
 Center, this land in Coke county was recently terraced.
 Right, this outmoded type of equipment was used in building early terraces in Stonewall county. It has been superseded by more modern machinery.

conservation work in Stephens county in cooperation with the Extension Service. The terraces were built with farm power and with Burke's own labor.

* * * * *

Terracing begun in 1915 by a county agricultural agent explains why poor washed-away soil on the farm of J. W. Maxwell in Tarrant county was the most productive land in the neighborhood in 1932, says M. C. Counts, county agricultural agent. Maxwell valued his land at \$100 per acre on a productive basis in that year whereas unterraced land in that section was in worse condition than 20 years ago and worth no more than \$25 per acre in many instances.

* * * * *

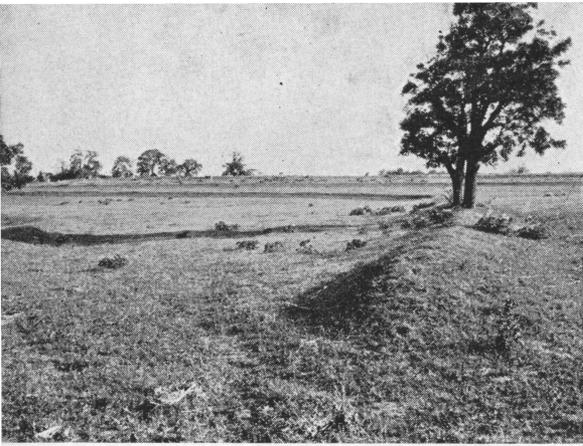
Terraces on the W. A. Dulin farm in Mitchell county were constructed in 1917. They have a two inch fall per 100 feet; are 33 feet wide; have an elevation of 18 inches; and are laid with a "three feet fall" between terraces.

An interesting thing about these terraces is that in 1936 with a rainfall of less than eight inches prior to September 20 Mr. Dulin averaged more than one-third of a bale of cotton per acre.

The terraces start on the east side of the field and carry the water to the west on the upper half of the field. When the water is released on the west side of the field, it is carried down until it meets the terraces on the lower half of the field. The terraces on the lower half of the field then pick this water

Strip cropping, terracing and contouring are shown on a Young county farm. Annual figures for 1935 show that terracing and erosion control demonstrations were conducted by county agricultural agents on 9,791 Texas farms involving 702,152 acres on which terraces or contour lines were run during the year.





In 1934, dust eddies swirled around a farm home in McLennan county from the cotton field in front of the house. Today it is a terraced permanent pasture which supports 65 head of cattle and affords a peaceful view from the front porch.

up and carry it back to the east side. By such a plan Dulin receives the maximum benefit from the rain that falls in his field. Incidentally, Dulin has for 18 years planted all of his feed crops "two rows and skip one", and for the past four years has planted his cotton the same way.

Dulin was the first county agricultural agent in Mitchell county, where he began work in 1914. Many terraces in this county date back to 1915.

Dulin's kind of terrace has come into great popularity in regions of little rainfall. It is known as the "syrup pan" terrace; and in it the water goes down and around with little, if any, coming out anywhere after the thirsty land has had its chance to drink.

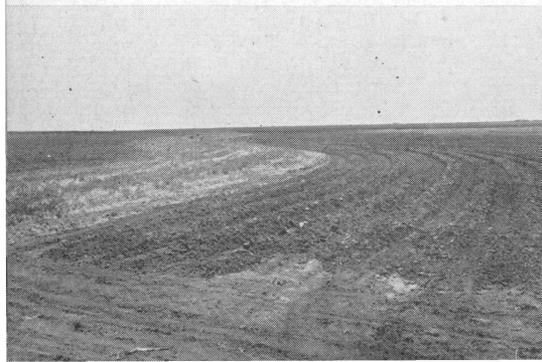
* * * * *

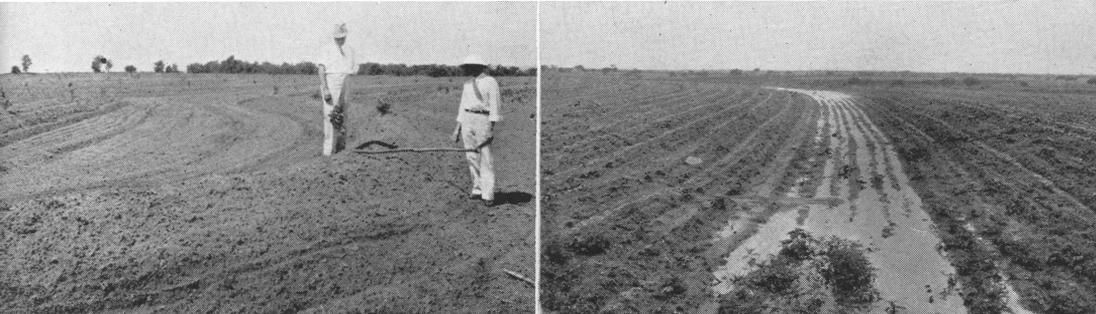
"A farmer living two miles north of Mt. Vernon in Franklin county has rented the same land from the same man for 27 years with the best feeling between them all these years," reported V. O. Teddlie, county agricultural agent in 1933.

"The nearest break they ever had was about 12 years ago when the landlord decided to have the farm terraced. The renter seemed well satisfied until the agent laid off the line and advised that rows be run parallel with the terraces. The renter became angry and declared he wouldn't work land with such crooked rows, but the landlord had the terraces built any way.

Left, terracing, strip cropping, and contour planting on a farm near Bourland, Wilbarger county.

Right, two Foard county men illustrate the construction of level terraces.





Left, D. A. Adam, Young county agricultural agent, is shown on top of one of the 47 terraces needed for this terraced orchard.

Right, these Callahan county terraces were built at a cost of one dollar per acre. They are 32 feet broad at the base.

“The renter is now thoroughly converted to the crooked rows. He says that land which was making 100 pounds of lint per acre before terracing gradually increased in yield until it now makes 200 pounds lint per acre.”

Wenzel Gluck of Frio county believes in terraces, contoured rows, and strip cropping. He terraced his land in 1928 and it has been strip cropped and planted on the contour every year since.

Farmer Gluck says that he believes in these practices because they have saved his fine top soil from washing away, have increased his crop yield, and have given him the satisfaction of knowing that he is preserving his farm land for future generations.

“If I hadn’t built those terraces,” he says, “my land would resemble some more I have seen. On account of washes I wouldn’t be able to drive my wagon across my field to gather my crops. No gullies on my farm,” he says.

* * * * *

In 1932, Andrew Taraba, successful farmer living near Moulton in Lavaca county, declared that terraces increased

This banner was awarded to Dallas county 4-H club winners in terracing work in 1928. Other winners were Caldwell county, 1926; Wise county, 1927; Montague county, 1929, 1930, 1931; and Upshur county, 1932.

Training of boys in terracing work has been an important part of the soil and water conservation program of the Extension Service. Terracing schools in the early days and demonstrations in the present day 4-H clubs served that purpose.





This 24 acre pasture is a striking example of what can be done with eroded land. It was an old broom-weed pasture on eroded and gullied land belonging to Walter Cardwell of Caldwell county, but now it has a covering of bermuda and mesquite grass with a mixture of clover. It is contoured on the level which not only helps to maintain the soil but maintains the moisture so badly needed during the summer.

Cardwell has 300 acres of cultivated land terraced and is a firm believer in soil conservation.

his crop yields 50 per cent. He adds that diversified farming and manure increased yields still further.

"I am glad to use county road equipment to build terraces for the farmer at cost," said Wayne Bennett, county commissioner in San Saba county. Within a few weeks time commissioner Bennett and his crew constructed terraces on more than 300 acres on eight farms in his precinct. Unless steps are taken to protect farm land from soil and water loss, crop yields will continue to decline, farmers cannot pay their taxes and schools, roads and county governments will suffer, according to Mr. Bennett.

* * * * *

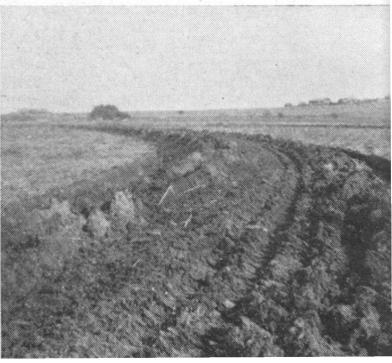
A three acre field considered almost worthless in 1925 was farmed for eight years by demonstration methods outlined by county agricultural agents and in 1933 was considered one of the best fields in Shelby county, according to C. P. Scurlock, county agricultural agent.

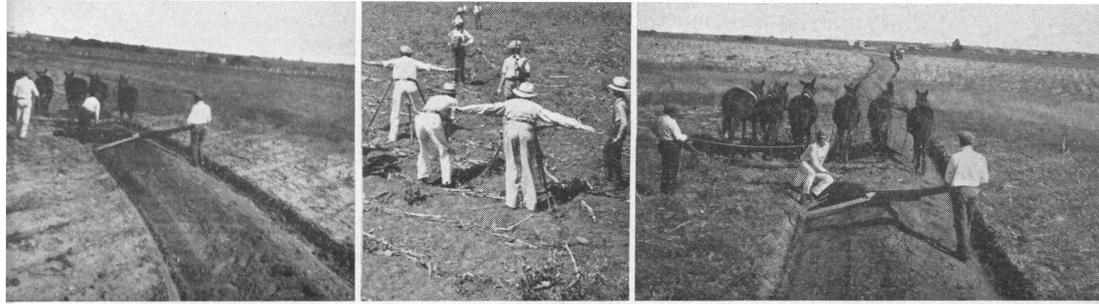
The owner, I. B. Bell, states that this tract paid him \$800 more than he would have made had he not used improved methods during the eight years. In 1931 the plot produced 45 bushels of corn and 15 bushels of peas per acre without fertilizer and in 1932 produced one bale of cotton per acre.

When taken over by Bell the land was almost washed away, as it had three gullies across it which were four to six feet deep. The first step was terracing, followed by the planting of soil building crops. All the cropping has been done by a regular crop rotation plan.

Terracing is making rapid strides in Fayette county under the supervision of J. C. Yeary, county agricultural agent. At the left and right are scenes from the Peter Baron farm which was recently terraced.

Center, this Dawson county farm was terraced, farmed on the contour, strip cropped with alternate strips of cotton, sudan and feed crops of milo and hegari. More than 20,000 acres have been terraced and contoured in the county in the past two years.





Terracing in Brazos county is making great strides, with approximately 2,000 acres terraced during 1936. At left and right are typical scenes while in the center 4-H club boys are shown taking part in the running of terrace lines.

Terraces built 22 years ago may be seen on the R. L. Bates farm in the Novice community on the Coleman and Runnels county line. Observing the loss of soil and water from his farm Bates decided to build terraces in a day when terracing was little known in his part of Texas. He had to move those first terraces around until, by trial and error, he got them level. Now they are so wide they are more like swells in the land than like ridges.

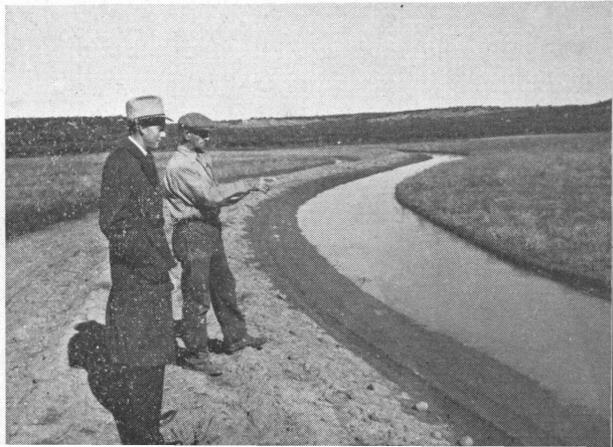
"In 1918," Bates said, "the only crops grown in my community were on my terraced fields." He averages one-half bale of cotton to the acre. His maize which he has bred and selected for many years takes prizes at so many fair and grain shows that he has been given the title, "Maize King."

* * * * *

Fifteen years ago, Adolph Balsler of Caldwell county began to realize that his farm was producing less each year. His neighbors also complained that their farms were not as productive as in former years. Balsler and many of his neighbors had cleared their lands of mesquite trees and plowed under the native grasses. Sheet erosion had begun its work and small gullies had appeared on the steeper slopes.

Then Balsler learned of the soil conservation program of the Extension Service and began terracing his farm. This work was completed in 1935, and his crop yields are now improving each year.

A. P. Key, at right, and Elmo V. Cook, Eastland county agricultural agent, are examining a fresh terrace holding water on the land. Water stood from one end of the terrace to the other and was covered with ice when this picture was made. Eighty acres on this farm were terraced with road building machinery at a cost of \$1 per acre.



Balsler's five year average from 1928 to 1932, as accepted under the AAA farm program, on cotton lint yield was 157 pounds per acre. Under the new farm program, the county committee adjusted this yield to 175 pounds per acre. Neighbors of Balsler who have not terraced, find that their adjusted yields under the new program are lower than that of the 1928 to 1932 average.

* * * * *

"When I started terracing my land 20 years ago," says D. W. Benton of Trinity county, "there were several farms in my community better than mine. My land was washing away and was all cut up with gullies.

"However, where my cotton was not destroyed during the 1933 cotton adjustment program my cotton land averaged more than one-half a bale per acre. Farms adjoining mine that have not been terraced averaged about one-third of a bale or less per acre.

"On the land where the cotton was destroyed, I cut the stalks with a disc harrow and then turned them under and planted peas in the water furrow. From these peas, I cut 1,200 bales of hay for my work stock and turned under the second growth of green peas. I am a firm believer in terraces and am sure that my increased yields are a result of good terraces. I learned how to terrace from the county agricultural agent."

* * * * *

In 1882, Duke Howell constructed the first terraces in Newton county on his farm near Newton. Howell used a "walking jack"—an A-shaped frame and a plumb bob—to locate the lines for his terraces.

After Howell's death the terraces were kept up and the original terraces on this farm are still in good repair. Due to the terraces and soil management practices carried out by the Howell family, their farm is one of the most productive sandy land farms in the county. An average yield of 44 bushels of corn was harvested from the farm in 1936.



Above the fence is pasture contoured on 35 acres of the J. A. Burford ranch in Taylor county. The gullies in the foreground show the effect of erosion on uncountoured land.

MILESTONES IN TEXAS TERRACING

- 1882—Duke Howell, Newton County farmer, constructs first known Texas terraces.
- 1903—Numerous fields in East Texas are terraced by farmers who moved from southeastern states.
- 1910—Field agents of Farmers' Cooperative Demonstration Work, now designated as the Extension Service, conduct few demonstrations in terracing.
- 1911—Provision made by Texas Legislature for employing instructor to teach terracing at Texas A. & M. College and in the field.
- 1911—Farmers' Cooperative Work sends Henry W. Acker, then field agent of Smith county, to Mississippi to study terracing. Acker returns to instruct Texas agents in terracing work.
- 1912—First Texas bulletin on terracing published by R. B. Pearce, Instructor in Farm Terracing, Division of Highway and Rural Engineering of A. & M. College.
- 1914—Texas Extension Service employs Extension Terracing Specialist, now designated as Extension Agricultural Engineer.
- 1916—Texas Extension Service fosters soil and water conservation program, with 56,487 acres terraced under supervision and leadership of county agents in twelve month period.
- 1927—Federal Land Bank of Houston creates Erosion Control Department for Texas.
- 1928—Texas terracing specialists study design of Mangum terraces, built in 1885, at Wake Forest, N. C.
- 1931—Total of 1,031,888 Texas acres terraced in one year under supervision and leadership of Extension agricultural agents.
- 1932—Texas passes five million acre mark in terracing.
- 1933—Total of 7,168,117 Texas acres terraced since 1916.
- 1933—U. S. Forest Service requests M. R. Bentley, Extension Agricultural Engineer, to supervise Texas CCC Soil Erosion Control work.
- 1934—Soil Conservation Service, then designated as Soil Erosion Service, sets up demonstration projects in certain watershed areas.
- 1935—Total of 9,065,857 Texas acres terraced since 1916.

