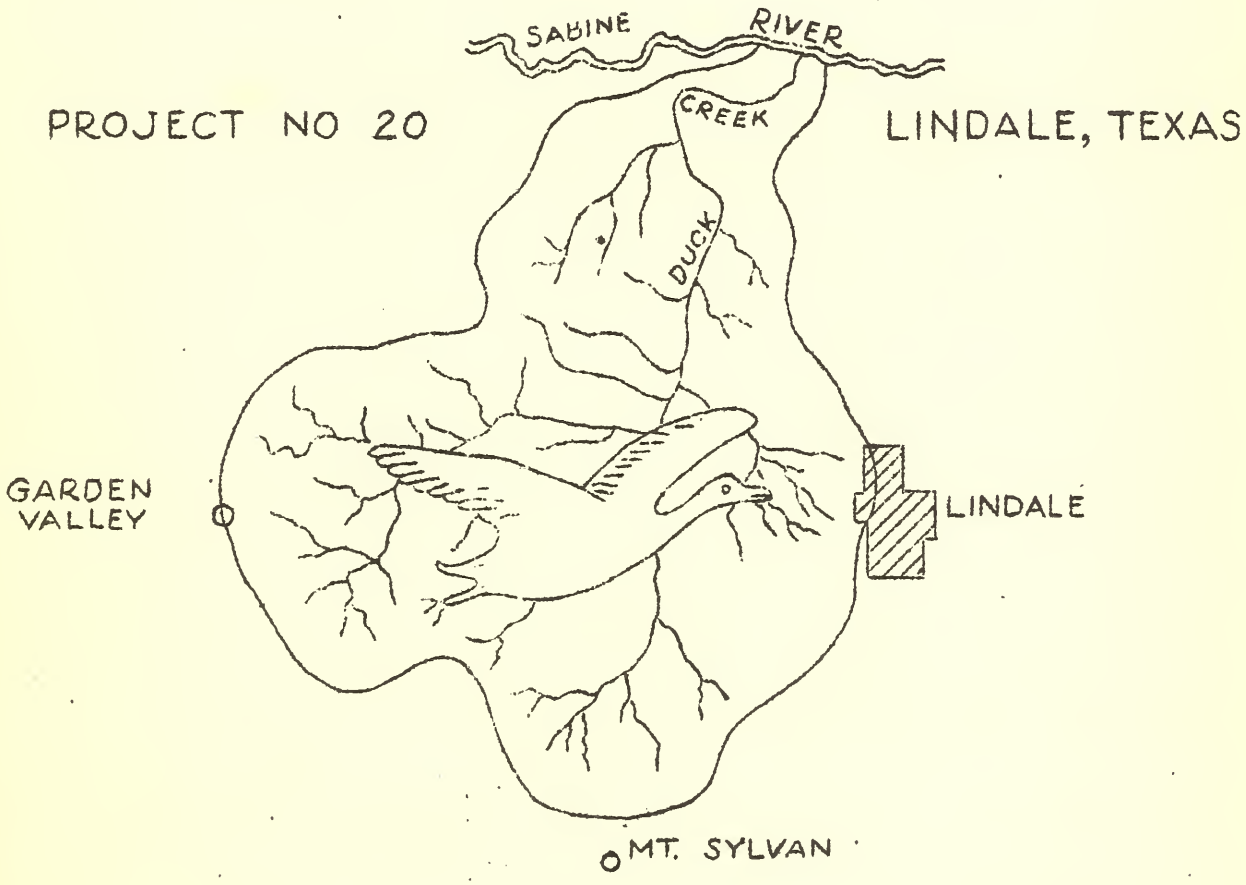
DUCK CREEK NEWS

UNITED STATES
DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



PROJECT NO 20

LINDALE, TEXAS

THE FUTURE

In July 1934 members of the S. E. S. staff were busy in the Duck Creek watershed making the economic survey of the farms, getting acquainted with prospective cooperators and telling them about the work that would be done.

In the year that has passed many great changes have been brought about through cooperative effort. On 44 per cent of the farms there are agreements to carry on the coordinated demonstrations of soil conservation methods that have been set up there. Mile after mile of terraces, strip crops, contour furrows and other devices have been installed. Many thousands of acres of land are now receiving better protection from erosion than they have had since first being put under the plow. We believe that cooperating farmers now face the future with greater confidence because their principal asset, their land, is being protected.

Results of the work are beginning to show, as is brought out elsewhere within these pages. Future and greater results and benefits will depend upon the carrying on of the work by the cooperator. Erosion is an enemy which will be with us as long as the land is tilled and rain falls. Our efforts to stop erosion must never stop else we lose all that has been gained and the future will become again dark.

STRAIGHT FROM THE SHOULDER

Mr. C. W. Flewellen, talking to party of visitors: "Gentlemen, I think this is one of the finest programs that I ever heard of and I'm glad that I'm located where I can get the advantage of it. My terraces and strips are fine, but my pasture is better; -- these contours do their job -- they keep the water on the hill sides where we need it. Before my hill land was contoured and my neighbors' land contoured and terraced, the branch that runs through my pasture got very high, overflowed nearly all my hay meadow, but now contours, terraces, and strips keep this water from rushing down so fast -- it doesn't get more than half as high as it did before this land was protected. Duck Creek doesn't get high like it did before the erosion control work started -- the contours and terraces hold back so much of the water that before ran straight into the creek. Where the water used to get shoulder deep on my meadow it didn't get knee deep with all the rain we had this spring. The creek stays up longer, but doesn't get as high as it used to.

"My meadow is making more hay by far this first cutting than it did all last year. The Erosion men got me to cut my meadow land with a disc in the winter, and I can see now that the cultivation has done it more good than I had ever thought of before. I wanted to break it with a plow, but they said discing was better so I disced it and now I think they are right on anything they suggest about terracing, contouring, cultivating meadows, and controlling weeds in the pasture. I haven't done all the work I want to do yet, but I'm doing it as fast as I can get to it."

GETTING RESULTS

One of the best examples of erosion control by pasture improvement to be found in the area is on the farm of I. L. Pool. Mr. Pool has done a lot of hard work on this pasture, but he is pleased with the results of his labor as is shown in the following statement. We quote Mr. Pool:

"I don't think the pasture improvement work can be too highly praised for when we have plenty of grass it saves feed. I now realize it more after seeing it done -- it should have been done years ago. If I had known the value of it and known what to do, I would have done it long ago.

"I have a hard, dry place on which to make pasture, but it has been improved so much over past years that I can hardly say enough for the pasture improvement. The clovers and lespedeza have been wonderful in improving grazing. My lespedeza is fine and a perfect stand. Although it is dry now, the clovers are furnishing quite a lot of extra grazing I have never had before at this time of the year. You can hardly miss it where my stock are grazing.

"I might say the terraces and strips and other things are fine in their places, but it takes the pasture to complete the program. My contours have about covered up with Bermuda sod which is better grass than ever before. The sodded contours hold the water on the land when it rains instead of letting it run off as it did before I put up the contour furrows.

"I now realize the value of keeping bushes and weeds cut, as I can already see that it improves the grass. Bushes shade the grass out and take up moisture -- the weeds do the same thing. I am now cutting them the second time. I am going to plant more Bermuda sod this fall. I am going to do more work on my pasture as fast as I can because it pays."

MOWING WEEDS IN PASTURES

In the County Agent's column of the "Winnsboro Weekly News" we note the following statements by Wood County farmers:

"Yes, I've been mowing my pastures for the last three years," remarked As Robinson of the Coke community last week, in conversation with the county agent. "The weeds were pretty bad in the pastures, especially on the better land when I started three years ago. On part of it this year I expect to use just a hoe to cut the weeds as I figure it will be much cheaper than running a mower over the pasture since they are very thin and light now. I believe my pastures are furnishing me twice as much grazing now as they were three years ago."

"Yes, boys, weeds were all over this 10 acres of bottom pasture three years ago very badly, and you can see now that they are very light and scattering," remarked M. V. Anders of Hainesville, to a

group of 4-H Club boys, accompanied by County Agent McCown, who were in his pasture last week looking at his Jersey cows. Continuing, Mr. Anders said, "three years ago the county agent and another group of 4-H boys were in my pasture and Mr. McCown stopped his car right over there, and we went to see the cows over there by the willow tree and looking back we could hardly see the car. A few days later I decided to cut the weeds with hoes, thinking at the same time it was an almost impossible task, but I was surprised at the speed we made and in a days time the five of us had cut the weeds off of the ten acres. It is my suggestion that the weeds be cut twice a year, in June and August. You can see what it has done for my pasture."

RAINFALL IN DUCK CREEK WATERSHED

Location of Station

Date	Copeland, S. S.	Flewellen, C. W.	Elliott, E. A.	County Farm	Yarbrough, W. E.	Hall, M. F.	Hazel, T. R.	Lindale	Duration of rain in minutes
	Rainfall in inches								
June 17	1.39	1.42	1.77	1.16	1.37	1.53	1.46	1.21	180
June 21	1.46	0.79	1.37	0.46	0.53	1.40	1.34	1.15	130
Total June 15-31	2.85	2.21	3.14	1.62	1.90	2.93	2.80	2.36	
July 1	0.50	0.09	0.00	--	0.40	0.60	0.00	0.00	10
July 3	0.28	0.00	0.04	0.00	0.00	0.90	1.00	0.16	20
July 11	0.24	0.77	0.14	0.28	0.08	0.55	0.03	0.42	25
July 12	0.04	0.03	0.05	--	--	--	--	0.17	20
Total July 1-15	1.06	0.89	0.23	0.28	0.48	2.05	1.03	0.75	
Total April 1- July 15	19.55	18.50	19.24	17.79	18.18	20.08	19.47	18.58	

CAUSES AND PREVENTION OF GULLIES

Terrace breaks, unprotected terrace outlets, cultivation of steep slopes, running rows with the slope, farm roads and trails, and rodent damage as causes of gullying have been discussed in previous issues. Again we add two more.

Clean cultivated crops. Cotton and corn, the two most widely grown crops in this section, are rated along with tobacco as being the worst erosion permitting crops. There are many reasons why they offer so little resistance to erosion. The plants are spaced rather wide apart in the row and the rows are wide apart. Due to these facts the root systems have little opportunity to bind together and hold the soil. A loose seed bed is prepared for them, and the soil stirred and kept loose during the growing season, which is also a season when we get heavy erosive rains. The tops of the plants are open and allow much of the rainfall to beat directly on the unprotected ground. Methods of cultivation frequently practiced, such as "laying by" corn with a plow, throwing up a high bed and deep water furrow, concentrate water and start it running and carrying soil unless the rows are perfectly contoured. Finally when the crops are harvested, in most cases livestock clean up all leaves, grass and part of the stalks, leaving the ground again unprotected and without cover against washing winter rains.

We may more readily understand why cotton and corn permit so much erosion if we compare the habits of growth, methods of cultivation and other characteristics of these crops with those of grass, which gives almost perfect erosion control.

To help check soil and water losses from land cultivated in cotton and corn use only contour tillage. Never run the rows up and down slope. Use strip crops to slow down the flow of water and cause dropping of soil being carried. Use terraces where necessary. Don't plant corn or cotton on steep slopes. Plant cover crops as soon as cultivation of the crop is completed. Hold all crop residues on the ground instead of grazing or burning them off.

Degree or extent of erosion. One of the characteristics of soil erosion is that it speeds up or goes on at a faster rate as more and more topsoil is removed. In other words, when we put a piece of sloping, new ground in cultivation in clean tilled crops, and do not immediately begin practicing erosion control methods, we may expect soil losses the first year, heavier loss the second year, and so on. The reason for this is that most of our common soil types have thin topsoils and tight subsoils. These tight subsoils take up very little water, so when the layer of topsoil becomes saturated or waterlogged the rest of the water must start down hill picking up soil as it goes. So it follows that as more topsoil is lost, less water can be held, more runs off and more soil goes with it. When all the topsoil is gone and a clay gall appears, there is so little absorption of water that practically all of it runs off immediately, following the low places, and a gully quickly appears.

If we would prevent gullying we must hold every grain of topsoil possible, use every means of adding to the water holding capacity of the soil, and slow down the speed of water that must run off the field. Addition of organic matter in the form of barnyard manure, green manure crops and crop residues all help greatly in increasing water holding

capacity. Use of terraces with controlled outlets, strip crops, winter cover crops, contour cultivation and rotations all help to slow down the flow of water and hold the soil. All of them must be used in a coordinated manner if you expect to get the job done effectively.

SOIL TERMINOLOGY CONT'D.

Soil Structure - Structure is a term expressing the arrangement of the individual grains and aggregates that make up the soil mass.

Crumb Structures - Porous aggregates of irregular shape, rarely over two centimeters in diameter and of medium to soft consistence.

Granular - Aggregates varying in size to two centimeters in diameter, of medium consistence, and more or less sub-angular or rounded in shape. For example, Houston black clay.

Buckshot - Aggregates of roughly spherical shape, usually two or three millimeters in diameter, and of hard consistence. This shows up in heavy clays, such as Houston black clay.

Nut Structure - Compact aggregates, more or less rounded in shape, of hard to medium consistence, and usually from one-half to four centimeters in diameter. This sometimes shows up in Kirvin soils.

Single Grained - An incoherent condition of the soil mass with no arrangement of the individual particles into aggregates. Structureless. Usually found in soils of coarse texture; i. e. Norfolk fine sand.

Massive - A soil mass showing no evidence of any distinct arrangement of the soil particles. Structureless. May be found in soils of any texture.

Puddled - A condition of massive structure brought about when by artificial or natural action the previously existing structures are broken down and destroyed. Deflocculated. A condition such as would be found where livestock had tramped over muddy ground.

Laminated - An arrangement of the soil in very thin plates or layers, less than one millimeter in thickness, lying horizontally or parallel to the soil surface. Usually of medium to hard consistence. This may be easily seen in road cuts through Kirvin soils.

Columnar - A natural arrangement of the soil mass in more or less regular columns separated by vertical cleavage planes, and usually broken by horizontal cracks into sections with longer vertical than horizontal axes. Windthorst soils of the Cross Timber section show this characteristic.

PROTECT FORESTS TO HELP CONTROL EROSION

Forests offer one of the best means of preventing soil erosion, when properly managed and protected, especially on the steeper slopes. The over story with its covering of leaves and branches breaks the velocity of rain and allows the water to drip onto the forest floor. The forest floor, composed of dead and decaying vegetation and humus can absorb several times its own weight in water. For example, air-dried beech-leaf humus was found in one study to absorb 4.41 times its weight in water. This sponge-like action, of course, greatly retards the run-off. The tree roots growing in the soil keep the dirt broken up and open channels to carry water from the humus layer into the soil. These channels are protected above from clogging with dirt and silt because the forest floor holds all such material. Hence, even on very steep forested slopes there will usually be no run-off after a hard rain.

Fire in the forest destroys the forest floor, kills trees and other vegetation, and exposes mineral soil. This exposure causes the soil to pack. Hard surface, no spongy material and little vegetation results in surface run-off. Sheet and gully erosion start, the soil being carried to lower slopes, covering pastures and field crops.

Grazing has a like effect. Vegetation is destroyed, surface soil is packed by the hoofs, trails that serve as ditches in wet weather are started and erosion begins.

It will pay every land owner, therefore, to keep fire and livestock out of forested areas. Pastures developed and managed as such will prove much more profitable for livestock. Protected forests will not only prevent erosion but can grow more and better timber crops faster and thus increase farm income. It pays in every way to protect the farm forest from fire and grazing.

FOREST LITTER MAKES SOIL ABSORB MORE WATER

Soil erosion is caused by water running off the land surface. Therefore, if falling rain can be made to sink into the soil instead of running away over the surface, it is obvious that soil erosion can be greatly reduced. That forest litter has the ability to make soil absorb more water is shown by a study of the Southern Forest Experiment Station of the U. S. Forest Service. Two plots were established on a severely eroded barren 10% slope of an abandoned field. Run-off and erosion from the plots were measured after each rain for one year. Then forest litter from a nearby oak forest was applied to one plot and soil and water losses again measured. There were no trees on either plot. In four heavy rains (2.32 to 6.23 inches) the litter covered soil absorbed 32 to 88 percent more rainfall than did the barren exposed soil. There can be no litter on the soil if woods are burned. Keep all fires out of the woods to increase the amount of litter and thereby the water absorbing capacity of the soil. It will mean decreased erosion, better forest, improved farm values.

WORK DONE IN JUNE BY CAMP SCS-3

During the month of June an average of 174 men were released to the Camp Superintendent each day for field duty. Twenty-one calendar days were worked during the month.

The following work was accomplished:

1. 2.5 miles of truck trails built or repaired.
2. Gullied areas, totaling 28 acres, treated with structures or vegetation.
3. 40,736 square yards of gully banks sloped.
4. 769 temporary structures built.
5. 9 permanent structures built.
6. 518 linear feet of channel cut.
7. 761 linear feet of diversion ditches cut.
8. 119,660 square yards of seeding and sodding in gullies.
9. 1,287 square yards of sodding in terrace outlet channels.
10. 64 man days were spent on miscellaneous erosion control work.

Work is very nearly complete in the Duck Creek Area and farms outside the Duck Creek Project are being mapped and planned for complete erosion control programs. A large number of farmers outside the area have indicated their desire to cooperate in the installation of soil conservation practices on their farms.

-- Dale L. Bidwell
Camp Sup't. SCS-3

REGISTERED VISITORS JUNE 20 TO JULY 19

Group of 23 farmers from Anderson County.
Group of 54 farmers from Wood County.
16 farmers from Hopkins County, Texas.
H. S. Estello, District Agent, Prairie View, Texas, and 43 colored County Agents.
34 colored farmers from Wood and Hopkins County.
16 Fisher County farmers.
18 Van Zandt County farmers.
25 Wood County farmers.
H. O. Henderson, Vocational Agriculture teacher, and R. H. Johnson, Jr. Supt. of School, Tennessee Colony, Texas, and 23 Anderson County farmers.
18 farmers from Van Zandt County.
Group of 75 from Texas, Oklahoma, Louisiana, Mississippi, Kansas and Arkansas who attended the Southwest Soil and Water Conservation Conference in Tyler.
M. P. Tomberlain, Vocational Agriculture teacher, Simms, Texas and 20 Bowie County farmers.
Ted Calvert, Vocational Agriculture teacher, Cushing, Texas and 9 Nacogdoches County farmers.
W. T. LaRue, Vocational Agriculture teacher, Slocum, Texas, and 10 Cherokee County farmers.
L. G. Jolley, Vocational Agriculture teacher, Tyler, Texas and 27 negro farmers.
J. O. Moosberg, County Agent, and 36 Henderson County farmers.
S. L. New and 21 Hopkins County farmers.

VISITORS CONT'D.

Ernest V. Frederick, Associate Agronomist, Washington, D. C.
Messrs. Reeves Haley and P. L. Carter, Shelbyville, Texas.
J. S. Howard, Center, Texas.
L. D. Eagles, Assistant Agronomist, Washington, D. C.
Messrs. T. C. Anderson, Frank Williams, M. A. McCollum, L. Monzingo, Sam Whitener, K. V. Stuart, F. B. Culbertson, Jack Batton, W. H. Luck, and D. Foreman, Soil Conservation Service, Minden, Louisiana.
S. L. Adams, Wortham, Texas.
Messrs. J. S. Adams and E. H. Rigsby, Cooledge, Texas.
Messrs. W. P. Chandler, G. S. Prim and Jess Spencer, Sulphur Springs, Texas.
Mr. & Mrs. Hal G. Gary and Mr. and Mrs. Freemen Haines, Gladewater, Texas.
J. O. Moosberg, County Agent, Jap Lucas, State Representative, and John Ballow, County Judge, Athens, Texas.
County Agent Virgil Sandlin and Messrs. Page and Cromwell of Robertson County.
W. R. Lace, County Agent, Scurry County.
W. N. Whitt and Tom M. Dorman, Van, Texas.
H. M. Allstedt, Texas Agricultural Experiment Station, College Station, Texas.
J. M. Wilson, Vocational Agriculture teacher, Marlin, Texas.
M. H. Mims, Science teacher, Conroe, Texas.
Clarence DeBusk, Jacksonville, Texas.
Mr. Myers, Engineer, Sabine-Neches project.
Dr. F. L. Duley, Regional Director, S. C. S., Mankato, Kansas.
Messrs. L. H. Hampton and J. W. Cates, Pollok, Texas.
Messrs. I. D. Bargainer, and L. T. Bargainer, Clawson, Texas.
M. M. Barcley, Lufkin, Texas.
Dick Burleson, Vocational Agriculture teacher, Barry, Texas, and Messrs. R. C. Marshall, H. O. Varnell, Joyn Wolton, Luther Boswell, L. Reed, and C. P. Watson.
W. B. Frederick, County Agent, Fairfield, Freestone County, Texas.
F. E. Reynolds, Teague, Texas.
Eugene Lynch, Point, Texas.
W. T. Posey, Vocational Agriculture Teacher, Emory, Texas.
R. Lano Barron, Vocational Agriculture teacher, Cayuga, Texas.
Dr. E. B. Reynolds, Experiment Station, A & M College.
J. O. Moosberg, County Agent, and D. B. Pitts, Teacher of Vocational Agriculture and 23 Henderson County farmers.

****

Have YOU visited the Duck Creek Demonstration?

Between January 1, 1935 and July 1, 3218 visitors registered and had the various phases of soil conservation work on the Project explained to them as they were conducted over it. During the last month, June 20 to July 19, nearly 600 people studied the work.

If you haven't visited us, we hope you will. If you have been here before, come again, for it is only by making repeat visits that you can study the progress and value of the demonstration.