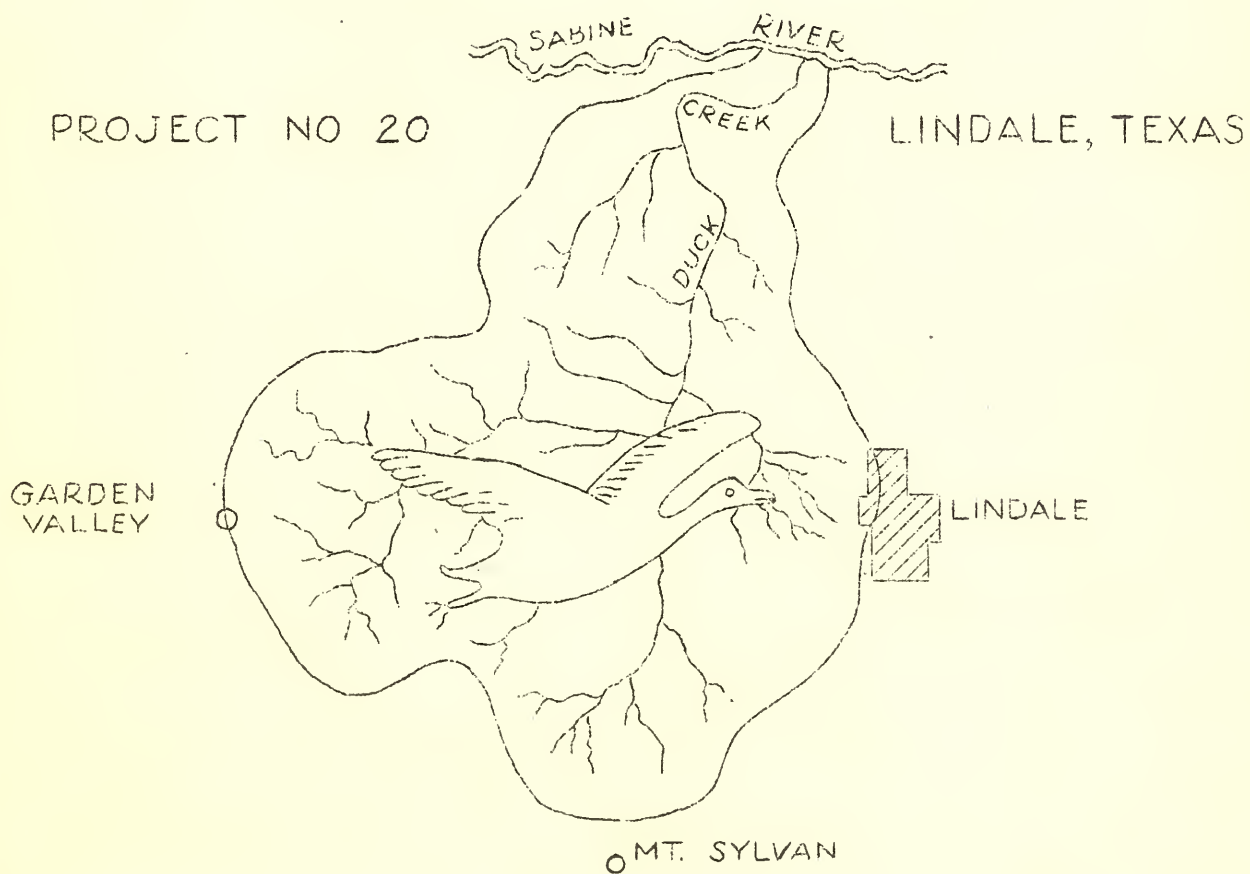


DUCK CREEK NEWS

UNITED STATES
DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



MAY 20 1935

MUDDY WATER

"It looks like that field was bleeding to death," was the comment of a visitor who was watching the water run off of an unprotected red land field during one of the recent heavy rains. The water was red with soil picked up as it poured down the slope in dozens of washes that were being cut through the freshly plowed field. With its load of soil, the water rushed into a rapidly growing gully and on to the creek. That soil was gone from that farm forever!

The visitor was just about right when he said the land was "bleeding to death," for unobstructed runoff water carries away the fine particles of soil first, and it is this fine material that is really the "life blood" of the soil. The organic matter and available plant foods, being light or going into solution easily, wash away first, leaving the coarser sand and gravel. When there's nothing much left on the surface but gravel and coarse particles, and crops "burn out" rapidly in the first dry weather, we sometimes think that the rocks have worked to the top, but the truth of the matter is that muddy water has taken its toll, and the real soil is gone, washed away, the land has "bled to death".

CAUSES AND PREVENTION OF GULLIES

In the April issue of the NEWS we discussed two of the common causes of gullying, -- terrace breaks, and unprotected terrace outlets. This month we add two more to the list.

Cultivation of Steep Slopes

It has been common practice in the past in this region to cultivate almost any slope that a mule could walk over. As a result we have thousands of acres of hillside land stripped of its topsoil by sheet washing and cut to pieces with gullies. Some of this land, properly handled in pasture or reforested will slowly come to the point where it will yield a return, but much of it is ruined for generations to come. Terraces on this steep land soon sand-bar and break, or they bench and the water goes on over, stripping off the soil as it goes.

It is a pretty well established fact that under our conditions of heavy seasoned rainfall, erosive soil types, cultivated crops that offer little resistance to running water, etc., slopes above eight or at most ten per cent can not be held in cultivation. If we are to save them, they must be kept covered with vegetation. Put the steep acres back into grass or trees now, before the soil is gone, and they will help pay taxes as long as taxes are paid on the land.

Running Rows with the Slope

Laying off the rows up and down the hill was more common in the past than now, yet we still see far too much of it. Each row carries its water it is true, but the water following a ready made, fresh channel, carries off with it the soil from bottom and sides of that channel, and a series of parallel gullies down the slope soon results. Just watch the fields with rows run in this manner, and see if the furrows are not washed out to the clay after each heavy rain.

When rows are run on the contour, or level, each row or bed does its share of holding the water and slowing its run down hill. Contoured rows alone are not enough to stop washing, except on very gentle slopes, but when used in connection with other devices, such as strip crops or terraces, they do a great deal toward holding the soil in place.

SOILS

The soils of the Duck Creek Watershed are typical of the East Texas Sandy Land Region. These soils have been derived principally from beds of noncalcareous clays, sandy clays, shaley clays, or sands which were laid down in the remote past by water as marine sediments.

The characteristics of the soils show the influence of a warm humid climate and the vegetative cover of trees such as pines, which contribute but little organic matter.

Organic matter acts like a sponge. It takes up moisture readily and holds it a long time so that in periods of drouth there is an available supply for the growing crops.

Under virgin conditions our soils here had an organic layer only an inch or two thick, which when plowed was mixed to plow depth. The soil originally was dark gray or brown, but under continuous cultivation with little or no addition of organic matter, our soils now under cultivation are much lighter in color. To compare the surface soil in a cultivated field with the surface soil in an unburned, ungrazed forest will plainly point out the low organic matter content.

Since the productivity of a soil to a large extent is governed by the organic matter content, it is necessary to use every known means to maintain sound organized farm practices involving the necessary methods of erosion control. The growing of legumes and other crops to be turned under and the use of crop rotations are steps in the right direction.

IN THE PASTURE

Due to the favorable growing season, weeds, nettles, and brush, as well as desirable grasses and clovers, are off to a good start. A number of cooperators are cutting resin woods, nettles, and brush from their pasture during rainy spells. The removal of weeds and brush at this time will afford much more grazing when the weather gets dry. This work not only allows grasses and clovers to become better established but improves the appearance of the farm to a great extent.

Contour furrows that were set to Bermuda grass and were well sodded at the time of heavy rainfall have done everything that could be expected of them. Where contour furrows were not set in grass they have been only partially effective. There are only a few cooperators who have not finished setting their contour furrows to Bermuda grass and we urge them for their own protection and benefit to see that every contour furrow in their pasture is set to Bermuda grass. Just as soon as the permanent pasture becomes set in Bermuda grass, erosion is checked, more grazing is afforded, a better opportunity given for growth of clovers, and the land will begin to build up. Every cooperator should see that his pasture is completely set to Bermuda grass. Pasture improvement will return a sure profit and afford a paying job for rainy days.

BERMUDA SOD PROVES GOOD

The value of Bermuda grass sod in terrace outlet channels was well demonstrated during the hard rain of last Wednesday afternoon. The diversion ditch on the C. S. Flowellen and J. C. Flowellen farms catches the runoff from about 35 acres of hilly land, and at the outlet a short sodded ditch beside the highway carries the water into Duck Creek just below the bridge. When the rainfall was the hardest, water was flowing down the channel at a speed of 9 feet per second, yet after the rain the channel was still in as good condition as before. This sod has been in place less than two months.

SODDED CHANNELS NEED MOWING

Weeds and grass in the sodded channels in the area have grown so tall that all the channels should be mowed immediately. If this is not done, the tall vegetation will collect a great deal of silt during each rain and partly fill the channel. Mowing will also help to kill the weeds and produce a purer stand of Bermuda grass.

If you do not have a mower or a scythe, the Soil Conservation Service will be glad to loan one to you upon request.

ROCK-SOD RAMPS

Inexpensive structures which may be used in terrace outlet channels in place of masonry dams have been developed in the Duck Creek area, and used on a number of farms. An excellent example of this type of structure may be seen at the outlet of the C. S. Flowellen and J. C. Flowellen diversion ditch, just east of the Duck Creek bridge on the Lindale-Mincola highway.

Masonry cutoff walls 6 inches wide and extending 18 inches below ground were placed above and below the sloping excavation. Solid sod was then laid between these walls, and large flat rock laid in the apron excavation and in shingle fashion up the slope. The sod grows up through the cracks and holds the rocks permanently in place. The only cost of the rock-sod ramp, as this type of structure is called, is for the cement in the cutoff walls, each of which requires about one sack. Stop and look at this outlet the next time you pass the Duck Creek bridge.

TERRACE MAINTENANCE

The recent heavy rains have indicated the absolute necessity of terrace maintenance. We wish to call every cooperator's attention to their terraces during this time of stress and remind them that similar conditions are to be expected every spring. Unless terraces are plowed up each fall or early spring the terraces are likely to bench and lose their effective height.

New terraces must always go through an adjustment period and terraces that have been properly maintained should be even better next year than they were this year. Every individual cooperator should take

definite steps now to prevent outside water from entering the terraced field, for during an excessively rainy period outside water will cause sanding up of the channels and later cause terraces to break. All sand bars should be removed from the terrace channel. If the terrace is in danger, they should be removed with a shovel after each rain.

OBSERVATIONS ON STRIP CROPPING

The heavy spring rains have proved the strips on the County Farm and on the big field of Mr. Bowdoin in front of Tom Flewellen's filling station to be adequate protection. Contour tillage and strip cropping will often be found sufficient where practiced properly. Strip cropping and contour tillage are just good farm management and require no heavy costs of building and maintaining like terracing.

Watching the water runoff during the rain Wednesday afternoon, it was very interesting to note the difference in the amount of water coming out of the stripped terraces and unstripped terraces. Not only was less water being lost from the stripped terraces, but it was carrying much less soil.

After each rain, just take time to notice the vast difference in soil losses on stripped terraces and unstripped terraces. The unstripped terraces all show furrowed washes down the sides of the ridge, while that condition is not present on the stripped ridges. Again we can see that terraces need support if the soil is to be held.

Stripped terraces very seldom have sand bars in the terrace channel. Sand bars cause terraces to break. Again we find another fine reason for strip cropping.

Quite a few terraces stripped with oats were treated sometime ago with sulphate of ammonia, a nitrogenous fertilizer. The treated strips have made markedly greater growth, and most of them are promising to make good oats.

After observing how the oats and barley have prevented erosion on the stripped terraces, a good many farmers will want to strip all terraces next year. Mr. Bert Elliott and Mr. Jewell Hall have already expressed a desire to have strips on all terraces.

HERE AND THERE

Discouraging seasons always come, but somehow we always manage to work out. Cotton to plant, corn to plow and strips to plant call for some long hours as soon as the weather permits. With plenty of peas, sorghum, sudan and fertilizer, we are ready to get the remaining strip crops planted. We are going to work hard with you and by July 1 we will all be proud of a job well done.

Don't forget, cotton will be planted next year only where food and feed crops have been planted this year. Be sure to balance your acres.

The lespedeza sericea acres are not so promising just now. But let's give it a little more time, and if it fails, then we can plant something else.

VEGETATIVE CONTROL

There is an old saying to the effect that "the proof of a pudding is in the eating." By the same token, the proof of effectiveness of erosion control devices is the way they take care of heavy rainfall. The last month has seen a pretty thorough test given the work on cooperating farms in the Duck Creek Area. During the ten days between April 26 and May 5 seven to eight inches of rain fell, much of it at a high rate of intensity. The soil was already saturated from rains which had fallen earlier in April, so the rate of runoff was exceedingly high. Unprotected land suffered heavy soil losses, and small terraces broke by the hundreds, cutting many new washes and deepening old ones.

Within the project area strip crops and sodded channels proved outstanding in their effectiveness. Strips of oats seeded after the heavy winter freezes did an especially fine job of slowing and spreading the flow of water, and making it drop the soil it was carrying. Many of the strips showed a considerable deposit of sand and silt at the upper side but no sign of washing at the lower side. Stripped terraces showed very little sanding in the channels, no washes down the sides of the ridges, and far less muddy water flowing out at the ends. Sod stripped and sodded outlet channels took heavy flows of water and emerged as good as new.

The other erosion control devices all did their part in checking soil losses, but the test was in many ways a triumph for vegetative control.

See the following page for chart of rainfall in the Duck Creek area, April 5 to May 17, inclusive.

Farm location of gage	Copeland	Flewellen	Elliott	County Farm	Yarbrough	Hall, M. F.	Hazel, T. R.	Lindale	Inches of Rainfall	
									Date	
April 5	0.03	0.02	0.03	Not read			0.03	0.12	Not	
April 9	0.16	0.24	0.20	0.28	0.05	0.25	0.23	Read		
April 10	0.50	0.56	0.58	0.55	0.94	0.68	0.48	0.78	Not	
April 19	0.47	0.40	0.36	0.33	Read	0.39	0.55	0.55		
April 20	0.79	1.01	0.95	1.21	1.50	0.90	0.76	0.74		
April 26	2.28	2.34	3.35	2.51	2.66	2.47	1.98	2.18		
April 28	0.34	0.18	0.16	0.11	0.11	0.18	0.14	0.37		
Total for April	4.57	4.75	5.63	4.99	5.26	4.87	4.52	4.74		
May 2	2.55	2.49	1.99	2.60	2.31	2.48	2.40	2.52	Not	
May 4	0.27	0.28	0.40	Read	0.50	0.31	0.30	0.48		
May 5	2.08	1.99	1.98	2.67	2.28	1.96	2.20	2.17	Not	
May 10	0.20	0.02	0.03	Read	0.17	0.15	0.26	0.03		
May 14	0.15	0.05	0.05	Read	0.05	0.07	0.10	0.05	Not	
May 15	1.07	0.94	0.90	0.72	0.71	0.88	1.22	1.35		
May 17	0.05	0.03	0.05	0.05	0.05	0.05	0.03	0.03		
Total May 1-17	6.37	5.80	5.40	6.04	6.07	5.90	6.51	6.63		
Total for April 1st to May 17	10.94	10.55	11.03	11.03	11.33	10.77	11.03	11.37		

EROSION CONTROL SHORT COURSE

Beginning in February a series of sixteen one hour discussions of the various phases of erosion control work was held at Camp SES-T-3. The discussions were given by members of the Soil Conservation Service Staff, and were attended by an average of about fifty CCC boys, who reported voluntarily for the meetings. Attention and interest shown by the boys was excellent, and some of the speakers stated that they were among the finest audience they had ever addressed. The erosion problem, importance of a complete program of control, soils, strip cropping, pasture development, reforestation, terracing, gully control, farm planning and rotation were among the subjects discussed.

After the "short course" was completed oral and written tests were given to the boys who desired them. Forty boys took the tests, and to the surprise of the examiners showed an exceptionally clear grasp of the erosion problem and its solution. We congratulate those boys! They are going to be assets to any community in which they may live after they leave the CCC!

CAMP ACTIVITIES FOR THE MONTH OF APRIL

The month of April was a busy one for the boys in camp SES-T-3. The average number of men used on field work for the twenty-two working days was 148. Twelve enrollees were sick or otherwise absent for each day during the month. The average company strength for the month was 214. Fifty-seven new men were enrolled in April and were retained in camp for two weeks for conditioning. This conditioning consisted of vaccinations and inoculations for smallpox, typhoid and para-typhoid.

The following work was accomplished:

1. 1897 check dams of various types were constructed.
2. 101,709 square yards of gully banks were sloped.
3. 181,567 square yards of terrace outlets and gullies were sodded and sprigged.
4. 822 linear feet of diversion ditches were cut.
5. 143 man days were spent on unclassified erosion control.
6. All work previously done was maintained.

The recent rains have afforded us an unusual opportunity to study our work under the conditions that it was designed and constructed to meet. Every place a failure has occurred something worthwhile can be learned.

The enrollees have constructed about 5,000 check dams of various types since last October. Less than one half of one percent of these structures showed faulty construction or defective materials.

-- J. H. Check, Camp Superintendent.

VISITORS

- E. Fischer, Erosion Control Investigation, South African government, Pretoria, South Africa.
- J. T. Trotter, graduate student, Civil Engineering, A & M College.
- J. L. Tinnerello, graduate Civil Engineering, Rice Institute.
- W. G. Bradford, senior, Arch. Engineering, A & M College.
- R. W. Walker, senior, Mechanical Engineering, Texas University.
- Gene Walker, junior, Geology, Texas University.
- B. R. Brown, Pres. Chamber of Commerce, P. Cain, Sec. of Chamber of Commerce, and Scott Hardy, Greenville, Texas.
- 54 Lindale citizens.
- J. L. Myrick, teacher of Vocational Agriculture, and 31 farmers and business men from Mabank, Texas.
- R. W. Knight, Secretary-Manager, Chamber of Commerce, Crockett, Texas, and 42 farmers and business men.
- V. F. Fitzhugh, Vocational Agriculture teacher, Tyler, Texas, and 68 farmers.
- R. B. Cleveland, Vocational Agriculture teacher, Garland, Texas.
- O. G. Mack, teacher of Vocational Agriculture, Garland, Texas.
- J. J. Shaw, Vocational Agriculture teacher, Wills Point, Texas.
- V. E. Ahlrich, Soil Conservation Service, Meridian, Mississippi.
- M. J. Kowsee, Soil Conservation Service, Meridian, Mississippi.
- W. W. Hull, Soil Conservation Service, Meridian, Mississippi.
- Joe T. Wilkins, Soil Conservation Service, Meridian, Mississippi.
- D. C. Morris, Soil Conservation Service, Meridian, Mississippi.
- D. Z. Wright and group of 31 farmers from near Winnsboro, Wood County, Texas.
- A. S. Locky and group of 50 farmers from near Winnsboro, Wood County, Texas.
- Thomas C. Richardson, Field Editor, Farm & Ranch, Dallas, Texas.
- Mr. & Mrs. Joe Justiss, Omaha, Nebraska and family of 4.
- S. E. Wolff, Soil Erosion Nurseries, Stillwater, Oklahoma.
- Mr. Mitchell, teacher Vocational Agriculture, Emory, Texas.
- G. M. Morris, County Agent, and A. B. Emmons, Vocational Agriculture teacher, Marshall, Texas, and group of 40 Harrison County farmers, business men and vocational agriculture teachers.
- Mr. & Mrs. R. T. Baggett, Dallas, Texas.
- P. H. Manire, Marshall, Texas.
- Geo. E. Berglund, Marshall, Texas.
- O. J. Harris, Marshall, Texas.
- Stroud Nesbitt, Marshall, Texas.
- J. M. Hancock, Vocational Agriculture teacher, Whitehouse, Texas, and 30 boys.
- Glenn Burgess, Sec'y. Chamber of Commerce, R. J. Eddins and K. N. Koenco, teachers of Vocational Agriculture, Center, Texas, with 20 farmers and agricultural students.
- 58 farmers and business men from Anderson County.
- 13 farmers and business men from Titus County.
- A. C. Reed and 60 farmers from Winnsboro, Wood County, Texas.
- Prof. Dan Scoates, Agricultural Engineering Department, A & M College.
- Floyd Dodson and 12 Wood County farmers, Mineola, Texas.
- John P. Culpepper and Mark Buckingham, Erath County, and 65 farmers and business men.
- 58 farmers, Winnsboro and Cartwright, Wood County, Texas.
- Messrs. Jeffords, Dean, Burdett, and Watson, Agronomy Dept., Soil Conservation Service, Spartansburg, South Carolina.