SOME RECENT RESULTS OF SOIL EROSION RESEARCH

A radio talk by H. H. Bennett, Bureau of Chemistry and Soils, delivered Monday, October 24, 1932, in the Department of Agriculture period, National Farm and Home Hour, broadcast by a network of 46 associate NBC radio stations.

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Hello, Farm and Home Listeners:

This is my third talk with you about the results of our soil erosion research work. I have told you about the observations of myself and other soils men on the widespread and costly damage done to our lands by erosion--the menace that already has ruined 21 million acres of our land and reduced the productive power of many more millions of acres.

I have told you how in the past three years we have established 11 erosion experiment farms in 11 major soil and climatic regions where the acute erosion problem demands quick remedies.

We have learned much about the extent and nature and the possibilities of controlling erosion in these few years of experimental work. But we know there is vastly more to be learned. For example, take the results of the first experiments with terraces and cropping systems on terraced land.

Farmers in the southeastern United States have used terraces for nearly a hundred years. But only now are we getting precise engineering facts on the best methods of building terraces, the best methods of maintaining them, and the types of terraces that make for most efficient operation of farm machinery. Better terraces are coming into use as the result of these experiments.

Recently the experiment station at Spur, in West Texas, devised a practical system of terracing, whereby the runoff from a neighboring watershed can be distributed over lower-lying crop and pasture land. You can see that this system will make possible much more efficient use of water. For instance, in June this year, the Spur system of terracing concentrated the water from a rain of 1 and three-quarters inches, and spread it out gradually over a 120-acre field. Well, the result was that the water from this rainfall of 1 and three-quarters inches did that field as much good as the water from seven inches of rain ordinarily would. Naturally, the yields of feed crops on that field increased enormously. Naturally, too, the farmers around Spur already are beginning to use this new terracing system. They are not going to let a quarter or more of the rainfall flow away to the oceans while their crops are parching for lack of water.

Our experiments this year have again shown that strip-cropping is a very effective method of fighting erosion on various types of gently sloping land. I may explain again that strip-cropping means growing along the natural contours of the land thick, soil-saving crops like sorghum, clover, lespedeza, alfalfa, velvet beans and grass, in strips between cleantilled crops such as cotton, corn and

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potatoes. Strip-cropping slows down erosion by water, and we are finding that it also offers a most promising means of controlling erosion by wind, such as does much damage in the Great Plains and other less humid parts of the country. In fact, strip-cropping is so practical, so cheap, and so easy to apply that we can say without reservation that it will find extensive use in many parts of the country.

In some western localities strip-subsoiling has helped farmers to keep erosion under control. And now, we have a hole-digging cultivator developed at the Hays, Kansas Erosion Station. This machine operates much like an ordinary cultivator, but it digs thousands of holes to the acre, and these holes catch and retain more than 50,000 gallons of rainwater to the acre. Last year experimental plots in Kansas treated with this cultivator suffered no appreciable erosion losses from rains which normally would have done much damage. This new method of cultivation also is giving good results in the great Palouse Wheat Belt of Washington, Idaho and Oregon. It seems to be a very promising practice for a large part of the country, especially in those regions where summer fallow and fall plowing are extensively practiced.

The results at the erosion experiment stations have confirmed the soundness of old ideas on crop rotation and using winter and summer cover crops. We know that thick-growing vegetation comes nearer to complete erosion control than any other implement that nature employs. Last year in Western Kansas we found that native sod held back 236 times more rain water and 8 thousand times more soil than clean-tilled Kafir corn grown immediately alongside. In the erosion experiments near Temple, Texas, there has been no runoff from Bermuda grass sod for two years. Also, there has been no appreciable erosion from strip-cropped areas at that station for a period of 20 months; and there has been practically none this year at the Red Plains station, in Oklahoma.

We have found that vegetation effectively controls erosion, not only because it offers obstruction to running water, but because it keeps the pore spaces of the ground open, and supplies absorptive, sponge-like humus. Take the simple matter of manuring: At the Missouri Valley erosion station between Clarinda and Shenandoah, Iowa, two rains in August this year washed 11 and one-half tons of soil per acre from unmanured land, as against only 4 and one-half tons per acre from land to which 8 tons of manure had been added.

Well, I have not time to pass on to you details on methods of controlling gullies with grass dams, brush dams, black locust, willow, and honeysuckle. If you are interested, write to the nearest erosion station. As rapidly as possible we shall give you helpful information coming from the experiments at these 11 soil erosion experiment stations. We hope that these results will be used widely. Already this nation has too much subsoil farming. This is a degrading type of farming. The man forced to farm subsoil exposed by erosion has little chance for making a satisfactory living, whether prices are up or down.

We must stop cultivating unmanageable steep slopes. We must plant these slopes to trees or grass, or not plant them at all. Beyond this, we must increase our practice of soil and water conserving methods on the erosive slopes that we do plow.

Let me urge that you let us have any suggestions that you have tried out and found promising in control of erosion. We propose to try at the earliest possible moment every promising practical method for slowing down the progress of erosion, which is so rapidly cutting into our most indispensible national asset, our agricultural lands. Now is a good time to inaugurate better systems of soil management, using our smoother lands for cultivated crops, and giving these lands the best protection possible. Much of this can be done at little or no extra cost, aside from the time spent on the job.