1-1-1946

Around the Hill Farming

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By G. M. BROWNING

FARMING ROUND the hills instead of up and down them pays.

We are convinced of that after 4 years of comparing yields, measuring soil and water losses and observing the difference in power that contouring takes as compared with up-and-down hill farming.

These 4 years of tests show that you can expect to get about 7 1/2 bushels more corn to the acre from contouring on land that washes. The increase in soybean yield has been nearly 3 bushels to the acre and nearly 5 1/2 for oats. These are the average increases we have actually got in the 4 years from 1942 through 1945.

The tests on which these figures are based were made cooperatively by the Iowa Agricultural Experiment Station, Soil Conservation Service and the Iowa Agricultural Extension Service. In the 4 years we had 153 fields of corn, 79 of soybeans and 21 of oats.

Saves the Soil

From a long-time standpoint, the saving of soil from contouring is probably more important than the immediate larger yields. We have found that only about half as much soil has been washed away as with up-and-down hill farming. From our tests, we estimate that on the 3 million acres of corn grown on the contour in 1942 through 1945 there has been a saving of about 15 million tons of soil. Put into terms of depth, the 15 million tons of surface soil saved would equal 6 inches of topsoil on 120 average sized Iowa farms.

In a 3-year rotation of corn, oats and meadow, 10 tons of soil have been lost per year in a test at the Soil Conservation Experimental Farm in Page County. This was Marshall silt loam with a 9 percent slope. At this rate of loss, the 6-inch plow layer would be lost in 75 years. The crops in this test were not grown on the contour, but with ordinary up-and-down hill farming.

The Increased Yields

Why does farming around the hill on the contour increase yields? Because it helps hold the fertile soil in place, holds the needed moisture and improves the stand. Just how much fertility is lost by erosion depends on the steepness and length of the slope, the kind of soil and the type and amount of vegetation.

Studies in Iowa for several years show that corn yields go down as soil is lost by erosion. Just how much the yield drops with loss of surface soil varies widely. The kind of soil and the way it is managed have much to do in determining that. Let's assume for comparison that an average loss of 1 inch of soil reduces the yield of corn 5 bushels an acre. If we take the soil losses previously referred to, then the yield

Its Level Rows Increase Yields, Cut Soil and Water Losses, Save on Power and Fuel

Published by Iowa State University Digital Repository, 1946
would drop about ½ bushel each year because of fertility loss. If we can cut this in half by contour farming, the yield would amount to a great deal over a long period.

It takes between 9 and 15 inches of water to produce a 50-bushel corn crop. The average annual rainfall in Iowa for July and August is 7.3 inches. During July and August alone, corn needs about 70 percent of its total water, so that means 6 to 10 inches of rainfall are needed in those 2 months. If we can conserve some of the early rainfall by contouring, then the corn crop is more likely to get the amount needed. When rows run around the hill on the level, the ridges and furrows made by the planter and cultivator act as small dams, allowing from 2 to 3 inches more water to soak into the soil for use later.

If fertility and moisture are well supplied, then the number of bushels of corn we harvest will depend largely on the stand. We found that up-and-down hill rows had 6.4 percent fewer stalks than corn on the contour grown beside them. That's one reason contourgrown corn outyields the up-and-down hill corn—there are more stalks per acre in the contoured fields.

Sometimes it has been necessary to replant the up-and-townhill rows when rainfall has been heavy with much washing. The contoured corn in these years has had some silting in of the rows, but the damage to the stand never was enough to make it necessary to replant. Rains later in the season also have affected yields by washing gullies between the up-and-down hill rows so that the roots were damaged by the sun and cultivating. When the roots are injured the plant cannot gather the food necessary to make a good crop.

Saves Power, Fuel

Our information shows that one saves about 10 percent in the fuel and power when the tractor and other machinery are operated on the contour. There is also less wear and tear on the machinery since there are fewer gullies to cross. Fields with seep spots in them usually have these spots at about the same elevation on the slope. By contour farming, one can avoid working through these places until they have dried up enough to be worked properly.

Not a Cure-All

Although farming round the hill—on the contour—is one of the most convenient and easily started of soil conservation practices, it's not a cure-all. In general we know that contouring alone on slopes steeper than 5 percent and longer than 200 feet will not give enough control of erosion. The control is not enough to keep the soil producing at top capacity and prevent gullies from starting in our usual Iowa farm cropping systems.

To help in erosion control, we need not only to farm the sloping land on the contour, but to do these other things: (1) Keep the land in legume meadows longer. (2) Strip crop. (3) Terrace. One or more of these should support contour farming on many Iowa farms where contouring alone will not do the job.

The 4-Year Count

As we look back over the past 4 years, we find that Iowa farmers have contoured about 3 million acres of corn. With a yield of nearly 7½ bushels more than would have been obtained with up-and-down hill farming, that means these farmers put a bit over 22 million bushels more corn in their crops. Those 22 million bushels of corn, in terms of pork, were enough to fatten 1½ million 250-pound hogs.

Contouring is on the increase. There were 400,000 acres contoured in 1942 and 1,000,000 acres in 1945. We have about 7,000,000 acres in Iowa that should be farmed on the contour, so we still have a long way to go, but we are on our way.

DDT Helps Potatoes

In small plots of potatoes at the Iowa Station treated with 3 percent DDT dust in 1944, the yield was about twice that of potatoes which received no treatment.

Five applications of DDT dust were made at 10-day intervals during the summer. The DDT effectively controlled the leafhopper, aphids and potato flea beetle.

When 1 percent DDT dust was used there were light infestations of these three insects.

The potatoes which were dusted with 3 percent DDT showed unusually heavy blossoming.

The Minnesota Station has reported favorable results with the use of DDT on potatoes. In fact the dust first gained some of its fame in saving the potato crop from the Colorado potato beetle in Switzerland during the war.

Plots were treated at the Iowa Station in 1945, but the seed was infected with blight virus so that the results had to be discarded.

Cutting Alfalfa Late

Cutting alfalfa after September 1 may injure the stand seriously. Work at the Iowa Station has shown this as have experiments at Michigan and Wisconsin.

If the second crop is cut about the middle of July and growing conditions are good afterward, then a third cutting may be made about September 1 without hurting the stand, the work at the Iowa Station indicates. If the second crop is cut late, however, and the growth is not rapid, a September cutting is likely to injure the stand considerably.

September cutting probably injures the stand because the reserves in the roots are used up by the growth of the new crop and there is not time for the root reserves to be built up again. October cuttings are less injurious because cold weather comes on so quickly that there is not an opportunity for a new growth to be made and use up the root reserves of plant food.

In a fall cutting at the Iowa Station in 1944, the varieties Ladak, Cossack and Ranger were compared to see whether there was any difference in them concerning fall cutting. There seemed to be no noticeable difference.

In 1944 the highest yield was obtained from plots which had not been cut the previous fall.