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How to Farm on the Contour

Ralph E. Hansen

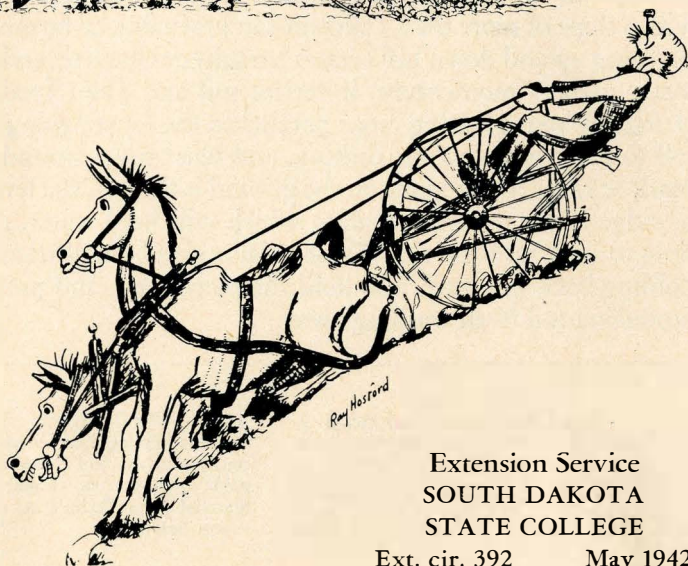
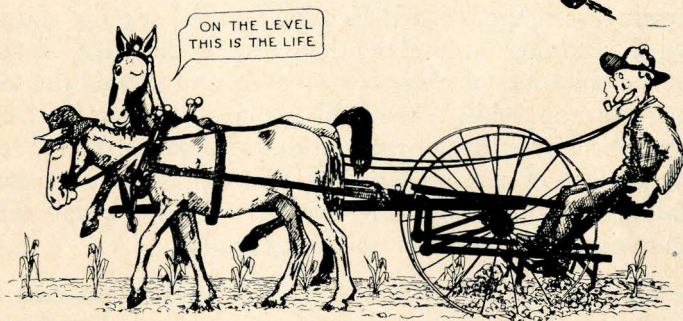
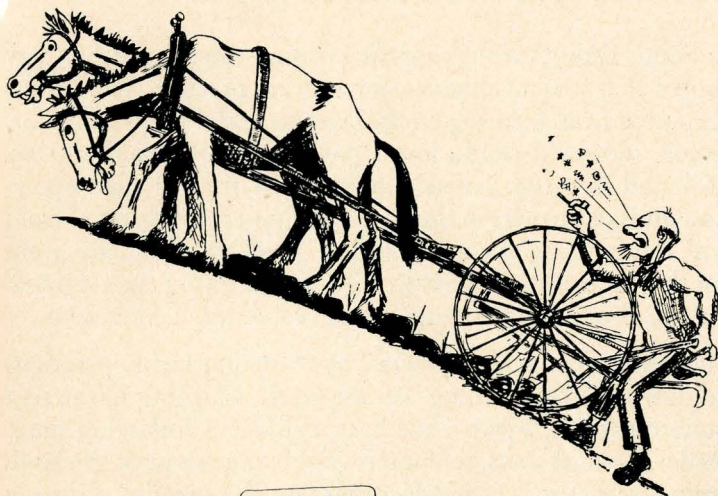
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How to Farm on the Contour



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Why Farm on the Contour

Results in South Dakota from contour farming during the past few years have shown that it is a valuable conservation practice. The results that may be expected from farming on the contour include soil and moisture conservation, increased yields, lower power and fuel requirements, erosion control, and in many instances a saving of time in field operations. The thousands of farmers in the state who have now changed from "up and down" hill farming to contouring, or "level" farming, are proof of the value of this conservation measure. Contour farming pays immediate dividends and also assists in saving the soil for future generations.

Contour farming is the simple practice of switching farm operations from "up and down" hill to farming "on the level." Farming in the past followed a square pattern. Fields have been cultivated following fence rows, field borders, or highways, with no regard for the slope of the land. Contour farming, sometimes called farming "on the wiggle," farming "on the wobble," farming "around the slope" or "on the ridge," is aimed primarily at the objectives of water conservation and to hold the soil in place and increase crop yields. When fields are farmed on the level, every ridge, furrow, wheel, or cultivator mark, forms a miniature dam to retard run-off. The practice of contour farming to fit the land, in contrast to square farming, should be adopted by every farmer in the state who is interested in moisture conservation on sloping lands.

Contour farming is not a practice reserved for hilly areas. Any field with a slope of more than 2 percent can profitably be farmed on the level. Farming up and down hill creates troughs or channels and as the run-off water gathers momentum, it carries soil and plant food with it. The change is from planting crops parallel to the fences going up and down hill to planting, plowing, disking, and harrowing around the hill. Any mark or ridge that is made on the ground is then on the level. Each mark or ridge forms a pocket or dam which will hold water, giving it more time to soak into the soil. These thousands of small dams and pockets holding back moisture, also hold the plant food, and prevent the food-producing soil from washing away.

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How to Farm on the Contour

by RALPH E. HANSEN, Extension Soil Conservationist

Simple Equipment Needed To Lay Out Contour Lines

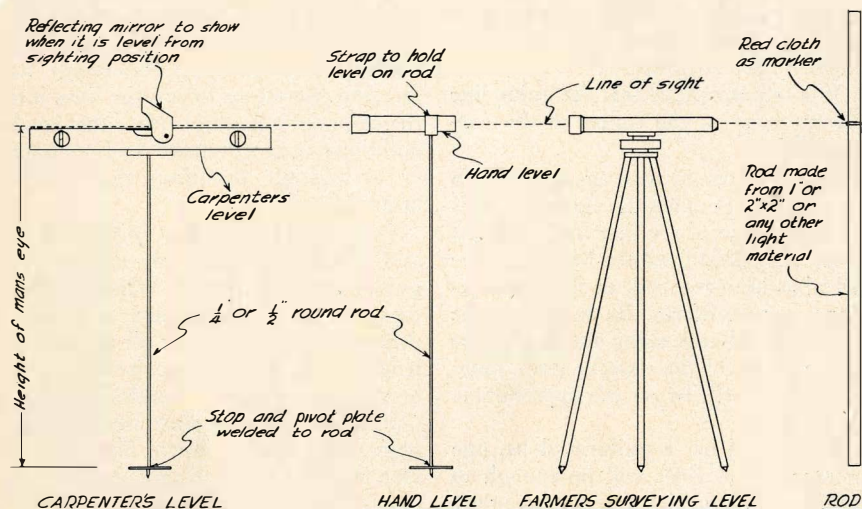
Any farmer or rancher who wishes to stake out a field on the contour will need a level, a rod with a target, stakes or a spade to mark the contour guide line, and someone to help operate the equipment. The rod may be any "2 x 2" or larger board, approximately 6 feet long, tying a cloth on the rod as a target. Laths sawed in half make very good stakes to mark the guide line. A spade may be used to dig up the soil as another method of marking out the proposed contour line.

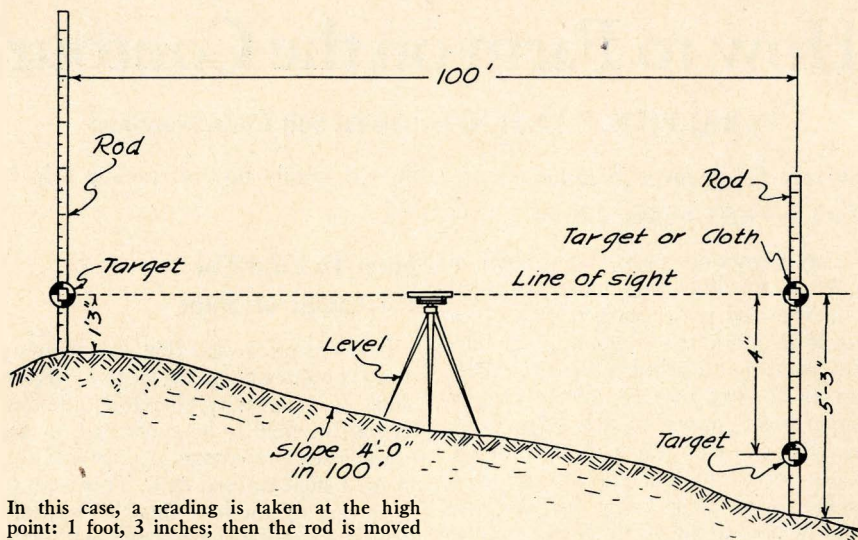
A hand level, which is very inexpensive; a carpenter's level, which is available on most farms; or a farm level, which usually sells for approximately \$25, are three recommended types of levels. Other types of home-made equipment could be used but are not recommended because they are inaccurate and inefficient. More expensive equipment is not necessary for the engineering principle employed in staking out contour

lines is simply that of running a level line.

How To Find The Percentage of Slope

It is recommended that the amateur try to contour only fields up to 8 percent slope. It is necessary, therefore, after selecting the field to be contoured, to determine the percentage of slope and the steepest slope on that field. This is done by setting up the level on what appears to be the steepest slope of the field. The rod man should then walk 50 feet (17 paces) up the hill. The individual operating the level should have the target or cloth tied at the point on the rod designated by the "line of sight" or height of instrument. The rod man should then return to the level and walk 50 feet down the slope where another reading is made, and the target again set. This distance between the two targets in feet, will then be the percentage of slope. This method is shown in the illustration on the following page.





In this case, a reading is taken at the high point: 1 foot, 3 inches; then the rod is moved down hill 100 feet and another reading is taken: 5 feet, 3 inches. The difference between the readings is 4 feet or 4 percent slope.

Knowing Where To Start Important As Knowing How

Knowing where to begin operations on a field is just as important as knowing how to operate the level. A general rule to follow is to go to the highest point of the steepest slope and walk down the slope from 5 to 8 rods and then lay out the first guide line. If the first contour guide line is staked out 8 rods below the highest point in the field, an 8-rod strip should be farmed above that guide line and an 8-rod strip below.

It is recommended that the guide line always serve as the center of the contoured field.

The level would then again be set up 16 rods farther down the slope or 8 rods from the edge of the first field, and the process repeated until the bottom of the field has been reached, or the slope becomes very uniform. By following the method of always using the guide line as the center of the contour strip, more of the area will be on the approximate contour.

If the field has a uniform slope, one or more guide lines will be enough to cover the field. For more convenient

farming operations, do not pay too much attention to existing field boundaries. Some part of one field may be put in with another thus making longer rows and avoiding short corner rows. If there are saddles or low places in the ridge or top of the hill, start the first line about five to eight rods, ground run, below this point. Then with the use of a farm level, run a level line around the hill.

If the hill is fairly level on top, start the first line about five to eight rods, ground run, below the top. If farm boundaries prevent the starting at the top of the hill, the highest point in the field should be used. It may be more convenient for farming operations to run the lines into the corner of adjacent fields if that small additional area will make the lines longer or connect the lines that extend around the slope.

On a field which has uniform slope and is not too large, only one or two guides will be necessary. When the buffer areas are to be planted to a close-drilled crop, and part or all of the full length strips to a row crop, it will be necessary to stake out the width of the regular fields so that the exact area in the irregularities will be known. This is necessary in order that the close-drilled crop may be seeded in its proper place before

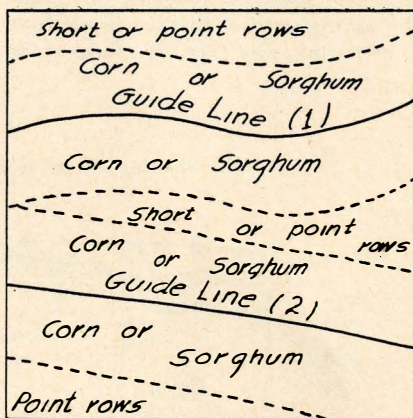
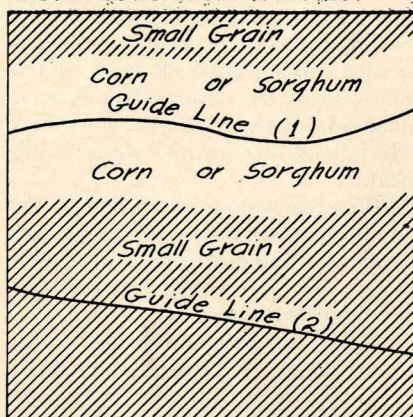
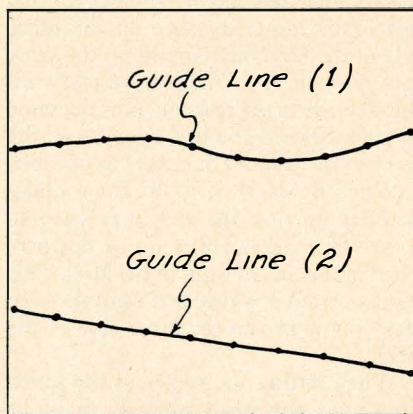
the corn or row crop is planted. An easy method to accomplish this "marking out" is to use a binder twine of a length equal to the width of the crop strip from the guide line. Then have one man walk on the guide line and another walk at the edge of the row crop strip making sufficient marks or setting stakes forming a boundary for the irregular or buffer strips.

How To Stake Out A Contour Guide Line

In staking the contour line set the instrument or level on the proposed contour line in the center of the field or at a point from which both ends of the field are visible. On a small field this will be possible. Set the rod next to the instrument and tie a red or white cloth at the same height as the instrument or line of sight. The man with the rod then moves away from the level at not to exceed 50 feet spacings. The rodman is motioned either up or down the slope until the cloth marker is in line with the level. This point is marked by a stake or by spading up a pile of soil.

On a large field where the contour lines cannot be laid out by one setting of the level, the following system is used: Set the rod on the contour line at the edge of the field, then move the level into the field approximately 300 feet or to a point where the rod may still be seen.

Try to set the level some place close to the contour line. When the instrument is level, the rod will be in the line of sight. The cloth marker should now be tied on the rod at the point where the line of sight intersects the rod. Then start the rodman moving on the contour line setting stakes every 50 feet. When



Top drawing shows guide lines on field with uniform slope. Illustration in the center shows corn and grain in a strip crop pattern with irregular areas in small grain. Illustration at the bottom shows entire field in row crop. The illustrations show a field with two guide lines. It also shows different methods of farming the fields. A simple field with uniform slopes of 4 to 5 percent, no foreign drainage, and no defined draws running through the field.

the rodman has moved the 200 to 300 feet or the same distance on the other side of the level, he remains on the same spot and the level man moves forward the distance to the rodman, plus the same distance beyond and tries again to set the level on the contour as closely as possible.

When the level is set up, the rodman without moving the rod, may have to move the marker either up or down to get it in the line of sight of the level. This same operation is repeated until the contour line is run to the other side of the field.

When setting the stakes, if the guide lines cross any small swale or draw, be sure to set the stakes up a few steps above the line through the swale or draw to prevent concentration of water and to spread it over the contour strip. Keep in mind also not to make curves too sharp to be followed easily with farming equipment.

When the contour line is laid out, be sure it is marked out by plowing a back furrow or using other means of making a ridge, so that it will be remain for future years' operations.

All farming operations should be done toward the guide line to help maintain and keep a permanent line established. It is very necessary to mark this guide line permanently so that it will not have to be re-run every year. By marking the

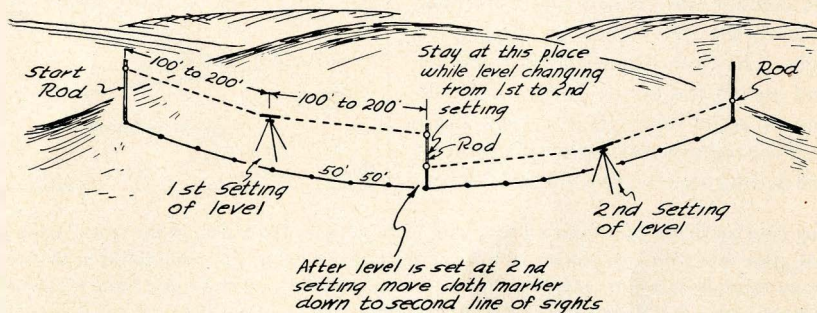
point on the fence where the guide line hits the field edge, the same row can be followed for the guide line next year.

Number of Necessary Guide Lines Will Vary

The number of guide lines necessary varies with the size of the field and the irregularity of the slope. Fields with a very uniform slope may require only one, or at most, two guide lines. The average number of guide lines will undoubtedly be from two to four per field. When the slope of the field becomes so irregular that additional guide lines are necessary, contouring becomes a complex practice and technical assistance may be required.

In plowing, most farmers use a definite width of lands. This same width can be used in laying out guide lines. This holds true unless the land in the field is steep or irregular; that is, the land is steeper in one part of the field than in another. Then the lines should be a little closer together to get a larger number of the rows on the true contour. After the lines are run on the complete field, go back over them and straighten out any sharp curves to make the lines more easily followed by the farm machinery.

Showing resetting level to run one contour line.

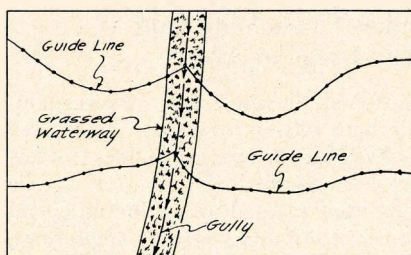


Many different methods have been devised for planting the row crops. In starting the job of plowing, the first step is to plow out the guide lines. Start at the end of the field so the soil can be thrown uphill, following the stakes. In returning, follow the same line, throwing the soil downhill. Crowd the line so that the soil on the return trip will be put on top of the first slice, thus piling it up into a pile or ridge. Do not build up too much of a ridge as a marker for the permanent guide line, as this practice might lead to a concentration of water that could be quite damaging.

No Need To Change Your Equipment For Contour Farming

There is no need to change the type of equipment now on the farm for contour farming. The ordinary plow will operate on the contour as well as up and down hill. The same corn planter can be used with the exception of the wire. Corn must be drilled instead of checked. The same cultivator can be used, the same picker, the same harvesting equipment. Subsurface tillage equipment is well adapted to working on the contour. To keep the row crop clean, it is necessary to destroy the weeds when they are small. This may mean a little more care at the start, an extra harrowing, or the use of a weeder. Small grain can be planted and harvested on the contour with the customary farm machinery.

All of the operations should be done on the contour. Power is saved as there are no hills to climb. In plowing, it is best to plow around the guide lines until about one-third of the land between the guide lines is plowed out. Then plow around the unplowed area until the entire area is plowed. In planting row crops, several different methods can be used. The method used should depend upon the regularity of the field. The most common method is to start with one wheel on each side of the guide line, using two markers, both markers out to get the line for the next row. Then start planting on the upper side until the



A field with slopes above 6 or 8 percent and a definite draw with a considerable amount of foreign drainage which runs over the field is illustrated here. Either the foreign drainage must be diverted away from the field to a permanent meadow or pasture, or a permanent grassed waterway will have to be established. In most cases, it is advisable to keep the foreign drainage in the same watercourse and establish a permanent grass waterway to stop the erosion. Farming can continue on the whole field, but when crossing the vegetative waterways, care should be taken to be sure that farming implements are lifted to protect the sod.

entire hill above the first line is completely planted. Then start on the lower side until about one-half of the area below the first line is planted. Next, drop down to the second line and repeat the process, planting above the second line until the areas planted meet midway between the first and second lines. Completely plant the remaining area with short or stub rows.

Repeat the same process carried out between the first and second rows. This method will give the maximum protection with the majority of rows on or near the contour. Another method which can be used where the slope is very uniform is to start as in the first method and plant from one guide line until the next guide line is reached and then filling in the odd or irregular areas as in the first method. This planting can be done either above or below the guide line. It can be seen that this method will not give as many rows on the true contour as the first method. This method, therefore, should be used only where the condition of uniformity of slope is ideal.

What To Do With Odd And Irregular Areas

After all the full length rows are planted, there will, in most cases, be an area midway between the guide lines that has not been planted. These areas can be completely planted by continuing operations just as if they were full length rows, turning on rows that have already been planted. If no short or stub rows are desired, this area may be planted to some hay crop such as sudan grass, millet, or permanent grass. Another way to avoid turning on corn rows is to put an even width strip of hay next to the full length

rows completely across the field and, using this strip as a turn strip, planting up or down from the other full length rows.

In cultivating these odd areas, cultivate the full length rows first. Then cultivate the short or stub rows. By following this procedure some of the corn in the full length rows will be knocked down or bent over, but if left it will straighten out. But if the short rows are cultivated first, the corn that is bent over will be hit twice and there is a possibility that it will be broken off and will not recover. This same procedure should be followed in the process of cutting or picking.

Some Contour Don'ts

Do not take shots over 50 feet when using a home-made level.

Do not make one or two contour lines do on an irregular field when in your own mind you know there ought to be more.

Do not lay out lines on approximate contour. Lay them out on the true contour and stay as close as possible in the farming operations.

Do not feel that you are not able or qualified to do this job—try it and see how simple it is to lay out and farm on the contour. "It pays dividends."

Do not contour farm a solid block field and farm across all the drainages. Leave them in close grown crops or permanent vegetation.

Contour Farming in South Dakota

