

Contour Farming

Nebraska Conservation Planning Sheet No. 1



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What is contour farming?

Contour farming is preparing the soil, planting and cultivating crops around a hill rather than up and down the hill. Contour rows run around a slope nearly on the level. These rows form hundreds of "small dams" to slow runoff.

How contour farming helps the land

Contour farming can reduce sheet and rill erosion on sloping cropland. It can also reduce the transport of sediment and other waterborne contaminants.

Where the practice applies

Contour farming applies on sloping land where crops are grown and is most effective on slopes between 2 and 10 percent. The practice will be less effective on slopes exceeding 10 percent and is not well suited to rolling topography having a high degree of slope irregularity because of the difficulty meeting row grade criteria.

Where to get help

For assistance in planning and establishing a contour farming system on your farm, contact the Natural Resources Conservation Service office. The NRCS staff can develop a conservation plan for your farm. Refer to NRCS Contour farming Conservation Practice Standard (330) for specific information concerning:

- Results of NRCS-approved erosion prediction tools
- Alignment along contour
- Stable outlets
- Supporting or facilitating conservation practices

Requirements of contour farming

The lay of your land, or the shape and steepness of the slopes on your land, determines the row pattern of your contours. Your land may be steep or irregular enough that you have more than one key contour line. That means that you may have two or more contour patterns in the same field.

To minimize soil loss, NRCS requires:

A Maximum Row Grade of 6 percent

The row grade shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction. The maximum grade of rows shall not exceed 6 percent or one half of the up and down hill slope percent used for erosion prediction, whichever is less. Up to a 25% deviation from the design row grade is permitted within 150 feet of the approach to a grassed waterway, field border or other stable outlet. When the row grade reaches the maximum allowable design grade, a new base line shall be established up or down slope from the last contour line and used for layout of the next contour pattern. All tillage and planting operations will follow the contour line established.

A Minimum Ridge Height of 1 – 2 inches

Maintaining ridges will make contouring more effective at controlling water erosion. The ridge height shall be designed to reduce soil erosion compared to that of rows oriented up and down the slope. As a minimum, this practice shall be designed to achieve a:

- 2 inch ridge height for row crops during the period of the rotation that is most vulnerable to soil erosion.
- 1 inch ridge height for close-grown crops, such as small grains.

The minimum ridge height criteria is not required when no-till or strip till is used on the contour and at least 50 percent ground cover is maintained after planting.

Critical Slope Length

A contour farming layout is not effective on long, steep slopes unless supported by other practices (e.g., terraces, diversions) that reduces slope length. If the slope is irregular, very steep, or longer than 250 feet, you may need to establish a second or third key contour line. If you don't establish more than one contour line, rows above or below the key contour line may begin to run up and down hill at different points in the field.

Stable Outlets

All runoff from contouring shall be delivered to stable outlets, such as grassed waterways, field borders, water and sediment control basins, or underground outlets for terraces and diversions.

Applying the practice

This practice is considered applied when the row pattern meets the above requirements.

A hand level or a contour gauge, and a way of marking your contour lines are the only tools you need to lay out contours. You'll need a helper to set the flags for you. Follow this procedure to lay out contours in your fields.

Lay out the key contour line

- Test your hand level for accuracy. Look through the level with your right eye into a mirror. If the level is accurate, you should be looking at yourself in the center of your left eye with the bubble centered.
- On level ground, look through the hand level and find a spot on your helper that's the same height as your eye level.
- Go to the nose or saddle of the slope, walk downhill to a point that is slightly above the midpoint of the slope and place a flag in the ground. Have your helper stand by the flag.
- With your level and flags, walk about 50 feet (17 steps) around the hill. Turn around and sight in the spot on your helper you saw on level ground. Move uphill or downhill until the bubble is centered on the spot on your helper. Put a flag in the ground.
- Advance another 17 steps. Your helper should move to the flag you just set. Repeat the previous procedure until you reach the field border. To save flags, your helper could pull every other flag, leaving flags spaced every 100 feet.
- Return to your beginning point at the nose of the slope and repeat the procedure in the opposite direction until you reach the other field border.

Check the key contour line

- The line you have made with the flags is the key contour line. Follow the key contour with a pickup or tractor to make sure there are no curves too sharp to maneuver machinery.
- If you find a curve too sharp to be farmed, make an adjustment to one or more marker flags.

Remember to check with your NRCS office to see how much you can adjust the contour.

Other Considerations

Laying out contour lines can go faster if you use two all terrain vehicles, instead of walking.

A substitute tool for a hand level is a contour gauge. Drive your tractor or pickup to a level spot, and mount the gauge on a side window with the bubble centered. To improve gauge accuracy, avoid using short wheel base vehicles (tractors are best). Then drive to the field. When you get to the point where you want to begin your contour line, drive slowly around the hill, keeping the bubble of the gauge in the center. Have someone walk behind and place flags in the ground every 100 feet.

Where curves in contour lines are too sharp to farm, grass turn strips may be needed for turn areas.

Use field borders with contouring. You defeat the purpose of contouring if you plant end rows up and down hill. Instead, use a grassed field border as a turn row at the ends of your field. Field borders often qualify for continuous CRP. They're also good cover for wildlife. Be sure the field borders are wide enough to turn farm equipment.

Use grassed waterways in areas where runoff concentrates. Never plant crop rows up and down the side of the waterway. Where grass waterways are established, contour rows should enter the grass area nearly on the level, but with a slight grade downhill to direct the water to the waterway.

Maintaining the practice

To avoid having to lay out a key contour line every year, it's a good idea to establish a permanent strip of grass along the key contour line.

For more information refer to the Nebraska Field Office Technical Guide (eFOTG) (http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=NE), Section IV, Conservation Practice Standard – Contour Farming, (330), or your local Natural Resources Conservation Service Office.