

Natural Resources Conservation Service (NRCS) - Minnesota



Photo courtesy of USDA NRCS.

What is contouring?

Contouring is farming with the row direction going around a hill rather than up and down the hill. Contour rows run around a slope nearly on the level. The rows form hundreds of small dams to slow runoff water.

A similar practice called cross slope farming is farming with the row direction across major slopes in the field as much as possible. Although the rows are not always on the level (contour) they are not up and down the hill either. It is not as effective as contouring but may be used on slopes where contour farming is not practical.

How it helps the land

Contour farming can reduce soil erosion from water by as much as 50% from up and down hill farming. It reduces sediment and runoff and increases water infiltration. Cross slope farming reduces water erosion to a lesser extent.

Applying the practice

In order to apply this practice in a field, you will need to establish the contour patterns in that field. To do that, you will need a key contour line. Your land may be steep or irregular enough that you need more than one key contour line. That means that you may have two or more contour patterns in the same field.

The key contour line may not exceed 2 percent or one-half of the up and down hill slope (whichever is less) within the row, except within 150 feet of an outlet, where the grade can be 3 percent.

All tillage and planting operations follow parallel to a key contour line.

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 do not establish more than one contour line, rows above or below the key line may begin to run up and down hill at different points in the field. Contour farming is most effective on slopes between 2 and 10 percent. It will be less effective on slopes exceeding 10 percent. The practice is not well suited to rolling topography having a high degree of slope irregularity because of the difficulty meeting row grade criteria

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

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 into the waterway.



Photo courtesy of USDA NRCS.

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. Be sure the field borders are wide enough to turn farm equipment.

How to lay out the key contour line

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 will need a helper to set the flags for you. Use the following procedure to lay out contours:

- 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.
- Stand facing your helper 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 top of the hill or saddle between hills on 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 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 50 feet around the hill. 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 on the slope and repeat the procedure in the opposite direction until you reach the other field border.
- 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 with machinery.
- If you find a curve too sharp to be farmed, make an adjustment of one or more marker flags, within the contour guidelines.
- Laying out contour lines can go faster if you use tow all- terrain vehicles instead of walking.
- A substitute 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 ball centered. 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 ball of the gauge in the center. Have someone walk behind and place flags in the ground every 100 feet.

Maintaining the practice

To avoid having to lay out a key contour line every year, it is a good idea to establish a permanent strip of grass along the key contour line. Contour markers may also be field boundaries, a crop row left untilled near or on an original contour baseline, or other readily identifiable, continuous lasting marker.

Farming operations should begin on the key contour line and proceed both up and down the slope in a parallel pattern until patterns meet. Where field operations begin to converge between two non-parallel key contour lines, establish a correction area that is in sod or an annual close-grown crop.

In order to maintain grassed waterways, always lift tillage equipment and turn off spraying equipment when crossing waterways.

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For:	Farm #:
Field(s):	Tract #:
Designed By:	Approved By:
	Signature:
Date:	Date:

Purposes (check all that apply)	
☐ To reduce sheet and rill erosion.	☐ To reduce transport of sediment and other water-borne contaminants.

Field	Crop	Field Slope (%)	Maximum In-Row Grade for Contour

Additional Specifications and Notes:

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