

Measuring Contour Lines: Building and Using an A-Frame

Conservation Practices

Justin Santos, Ilene Iriarte, Extension Associates, David Mantanona, Extension Assistant, L. Robert Barber, Extension Agricultural Economist

Many conservation practices are installed on contour lines across the farm. This publication provides a low cost method of marking contour lines on your farm's sloping land.

What is a Contour Line?

A contour line is a level line across the slope of a hill. Many practices create a barrier (trench, mound or planting) on the contour of a slope to help prevent soil erosion. Identifying the contour lines on a slope is the first step in erosion control. Marking the contour lines of a hilly area will indicate where to create erosion controlling barriers like contour canals, tree plantings or vegetative strips.

The A-frame:

The A-frame is a simple instrument for marking contour lines. Although the process of marking contour lines with an A-frame is somewhat slow, this method requires little to no purchased materials. It is inexpensive and easy to construct, making it readily accessible to farmers and gardeners.



Materials Needed:

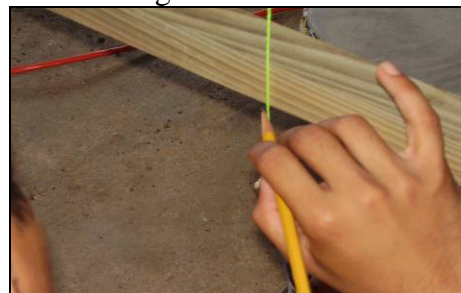
- 3 straight wood poles,
 - 2 – six to eight feet in length and
 - 1 – four to five feet in length
- Saw or machete
- Nails or bolts
- String
- Stakes or marking paint
- Round stone or plumb
- Pencil

Building an A-Frame:

Cut 2 poles six to eight feet in length, and cut one pole four to five feet in length. Attach the longer poles together with a bolt or nail. Attach the shorter pole as a crosspiece to form the shape of an “A” using either a nails or bolts. Tie a piece of string to the top of the A-frame and attach a round stone or plumb to the other end of the string. Make sure the string is long enough to pass over the horizontal crossbar of the A-frame with the plumb hanging below.

Calibrating the A-frame:

1. Place the A-frame on relatively level ground. Mark the ground where the leg stands.
2. Using the pencil, mark the horizontal crossbar where the string crosses it.



3. Turn the A-frame so that each leg stands exactly where the other leg stood.
4. Using the pencil, make a second mark where the string crosses the horizontal crossbar.
5. The two marks should be fairly close together. Directly in between the two marks is the level. Now, make a heavy pencil mark or notch the horizontal crossbar at this point.



Marking the Contour:

Choose a place on the slope to begin. Stand the A-frame and mark where the first leg is positioned using a stake or marking paint. Without moving the first leg, swing the second leg up or down the slope so that the string (when allowed to move freely) crosses the crossbar exactly where the heavy pencil mark or notch is. At this point the two legs of the A-frame are standing on a contour line. Now, mark the spot where the second leg stands.



Marking the contour line with spray paint

Keeping the second leg in place, pivot the first leg around. Move the first leg up or down the slope so that the string aligns with the heavy pencil mark or notch.



A-frame legs on contour, plumb line aligns with notch

Now mark the spot where the first leg stands. Continue this process across the hillside to the end of the field. The markings on the ground will show a contour line across the slope.



Walking the A-frame along the contour

This process of walking the A-frame across the hillside and marking points along the contour, results in a contour line marked across the slope of the hill. This is without the use of expensive surveying instruments or the services of high priced engineers.

Potential Contour Practices:

Once the contour lines are identified and marked on the hillside the contours may be used in a number of conservation practices to increase water retention and reduce soil erosion. These practices are the topics of other publications in this series. These practices include; contour trenches, vegetative filter strips, contour tillage and contour plantings of nitrogen fixing hedgerows, windbreaks and orchard trees.

The key to success of each of these practices is the identification of level contour lines. The A-frame is a simple inexpensive tool that can be built and utilized in almost any situation to identify accurate contour lines.



Workshop on Building and using an A-Frame