

The A-Frame

MATERIALS NEEDED

- 2 poles about 2 metres long
- 1 shorter pole about 1 metre long
- some string
- a stone

STEP 1

Tie the poles very tightly together to make the shape of a letter A. Hang the stone from the top of the A-Frame, making sure the stone hangs below the cross bar.



STEP 2

Holding the frame upright, mark with two sticks exactly where the poles touch the ground. When the stone stops moving, mark where the string crosses the cross bar. Turn the A-Frame around, placing the poles in exactly the positions marked by the two sticks. Again mark where the string crosses the cross bar.



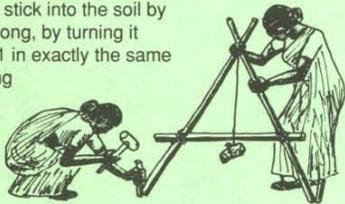
STEP 3

Mark the level mark on the cross bar – exactly half way between the previous marks. If the first two marks happen to be on the same place – this is the level mark.



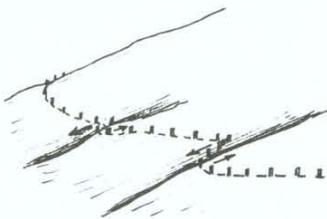
STEP 4

Before using the A-Frame, collect a number of sticks. Begin, ideally with two people, at one side of the field where the first contour line is wanted. Hold one pole firmly on the ground. Move the other pole until both poles are on the ground with the string touching the level mark. Place a stick into the soil by each pole. Move the A-Frame along, by turning it around (pivoting), keeping pole 1 in exactly the same place. Move pole 2 until the string touches the level mark and place another stick into the ground by pole 2. Carry on in this way, pivoting the A-Frame across the field.



Marking the line

Whatever method has been used, the end result will be a line marked across the land with a series of sticks. If there are sharp bends in the line, then move a stick a little to make a smoother line. Such sharp bends are usually due to rocks or small holes which have affected one measurement. The contour line is now ready for whatever control measures are planned.



Contour Lines

THESE ARE IMAGINARY LINES across a slope which are the same height at all places along the slope. Water cannot flow along a contour line – it is completely level. Most soil erosion control methods are built along the contour lines to have maximum effect.

The Hose Level

MATERIALS NEEDED

- Two poles about 2 metres long
- Length of clear plastic tubing 10–25 metres long and about 1 cm in diameter
- Small amount of string or adhesive tape

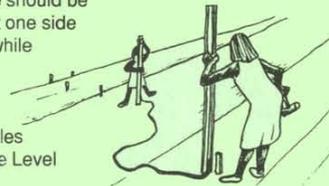
STEP 1

Tie the ends of the tubing securely to the two poles in several places. Carefully fill the tubing with clean water, making sure no air bubbles are trapped inside, until nearly full. Hold the poles side by side, with their lower ends resting on the ground, until the water level settles at exactly the same level on each pole (ideally where it is easy to see without bending). Mark this level clearly on each pole.



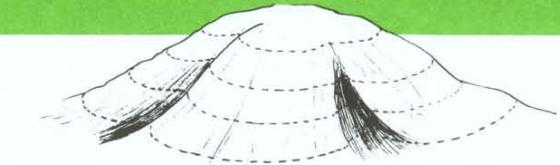
STEP 2

When moving the poles, either use a thumb or fit some kind of plastic stopper to stop water spilling – these should be removed before measuring. Begin at one side of the field. One person stands still while the other moves their pole until the level mark is reached in both poles. As with the A-Frame, use marker sticks and move alternate poles so that any slight faults with the Hose Level do not affect the contour line.



Where should the next line be?

The steeper the slope, the more contour barriers are needed to prevent erosion. Here is a very simple method for deciding where to mark the next contour line. Stand straight with one arm outstretched level in front. Walk backwards down the slope, looking at your outstretched hand, until the previous contour can be seen at the end of your hand. Make the next barrier where you are now standing.



Compiled by Isabel Carter

Three methods

Contour lines cannot be guessed – they need to be measured. How can contour lines be measured without expensive surveying equipment? Here are three tried and tested methods. The first – the A-Frame – can be made at no cost, from material readily available to every farmer, and used by one or two people. The other two methods – the

Spirit Level and the Hose Level – need materials which cost a small amount of money and either two or three people – but they are quicker to use.

A WORD OF WARNING In areas which have very heavy storms it may be dangerous to prevent the water completely from flowing down a slope. Build waterways or drains at a slight angle ($\frac{1}{2}^{\circ}$ – 1°) so that excess water is safely channelled away.

The Spirit Level

MATERIALS NEEDED

- Spirit level with hooks
- 10 metres of string
- Two poles about 2 metres high



Illustration: Tom Hirst

STEP 1

Tie each end of the string firmly at the same height near the top of the poles. Attach the spirit level in the centre of the string.

STEP 2

Three people are needed – two to hold each pole firmly and keep the string tight, and a third to check the reading on the spirit level. When the spirit level is horizontal, the bubble will be seen exactly in the middle of the level. Once the level is found, place marker sticks and move across the field in exactly the same way as with the A-Frame.

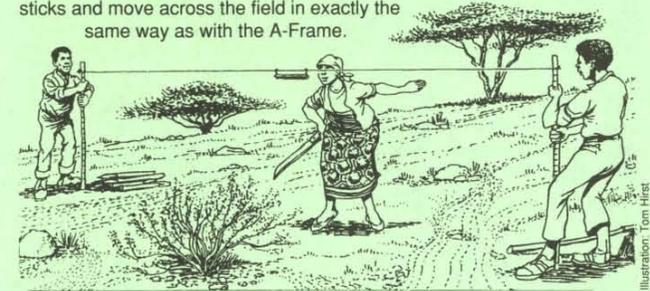


Illustration: Tom Hirst

