

Measuring Length and Distance

What is length

Length is a basic measurement and describes the distance between two points. In the metric system it is defined in meters (m) but some countries still use foot (ft) from the imperial system.

Why is measuring length important

It is important to be able to measure length and distance as many of the critical decisions that are made on a farm are based on being able to measure those with some degree of accuracy. Measurement of yield/unit area and speed of operation are a few variables that depend on distance measurement as input.

How to measure length

Meters and calipers



Standard tools for machine component and grain sizes are calipers in various forms.

Include objects of known size (e.g. swiss pocket knife) in photos as reference.

Tape measure



Made of steel, fiberglass or plastic tape measures vary from 1 to 200 meters in length. As most discrepancies occur at change stations, the longer the tape measure used the more accurate will be the distance measured.

Steel tapes are more accurate than other materials but can be less flexible and more prone to damage when being used.

Care must be taken to use the starting point of the tape. On some tapes this will be metal ring or tag and on others it will be where these are joined to the tape proper.

1. Check weather the tape measure is complete.
2. Hold the start of the tape at the first point and applying a reasonable load to the tape, read off the second mark.
3. In windy conditions a third person may be necessary between the two measured points to help align the tape.

The Calibrated Step

Where errors of less than 5% are acceptable distances could be measured by a calibrated step.



To calibrate a step count the number of steps taken to walk a known distance in each environmental condition. This will vary according to the person, walking surface, the presence of obstacles and the slope.

1. Mark out a distance of 100 meters
2. Count the number of steps while walking at normal walking speed and stride length over the 100-meter course
3. Repeat this at least twice and preferably 4 times
4. Add up the total number of steps and divide by the total distance walked
5. The outcome will be your step factor
6. Calculate the distance between two objects by walking at normal speed counting the number of steps and dividing this by your stride factor.

Example

1. I walked 100metres and it took 107 steps. I walked back over the 100m course and this time I took 113 steps
2. My total number of steps for the course up and back was 220 and I walked 200m
3. By dividing the 220 steps by 200 my step factor will be 1.1
4. Therefore, if the distance between two objects was 40 of my regular steps, the actual distance is $40/1.1$ which equals 36.6m.

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