Fertilizer spreader calibration

Proper calibration assures even and exact nutrition to the crop, saving money, and preventing environmental hazards.

Broadcast type spreader calibration

Calibration of broadcast type spreader defines the required overlap and therefore the swath spacing width which is necessary in order to apply the complete application evenly throughout the entire field.

Step 1: Determine the spread pattern width, either according to the operator's manual or by actual measurement in the field.

Step 2: Set the swath spacing width (value D in the Worksheets 1 and 2) which is the lateral distance between spreader centerlines. The swath spacing width should be less than the spread pattern width. A 100% overlapping is normally required to achieve even coverage. For instance, if the spread pattern width is 10 meters wide for a 100% overlapping, a five meters swath spacing width is required.

Step 3: Measure the fertilizer flow – the weight of fertilizer applied in one minute.
The safest and easiest way to collect fertilizer from a spinner type spreader is to remove the spinners and collect the fertilizer in a large bucket. In the case there are two spinners, it is recommended to collect into two separate buckets and compare the amounts before combining the weights.

Step 4: Measure the distance traveled in one minute (value C in the Worksheets). It is very important to follow the spreader operation manual's recommendations for PTO-rpm and gear selection. It is not necessary to spread fertilizer at this time. To ensure accurate distance traveled, make sure the tractor/spreader is up to speed when it passes the first measure stake. For each test, do this at least twice.

1 mph = 88 ft./min,
1 km/h = 16.7 meters/min.

Step 5: To set the actual application rate, insert the test values into the calculation worksheet. If the actual application rate is different from the desired rate, the spreader must be adjusted.

The parameter which is easiest to change is the fertilizer flow (the amount of fertilizer collected from the spreader in 60 seconds), which is directly proportional to the change for the preferred application rate. For example, if the measured application rate is too low, the spreader must be adjusted to increase fertilizer flow. The desired fertilizer weight (value B in the worksheet) can then be inserted in the worksheet and calculated. The spreader should be adjusted to reach this value.

Calibration calculation

Worksheet 1: Calculations to measure the actual application rate

43,560 ft^2/acre x ___ B (lbs) ÷ ___ C (ft) ÷ ___ D (ft) = ___ A (lbs/acre)

10,000 m^2/ha x ___ B (kg) ÷ ___ C (m) ÷ ___ D (m) = ___ A (kg/ha)

A = application rate (lbs /acre or kg/ha)
B = weight of fertilizer (lbs or kg) collected from the spreader in 60 seconds
C = distance traveled (ft or m) in 60 seconds
D = swath spacing width (ft or m)

Worksheet 2: Calculations to determine fertilizer weight for desired application rate

___ A (lbs/acre) x ___ C (ft) x ___ D (ft) ÷ 43,560 = B (lbs)

___ A (kg/ha) x ___ C (m) x ___ D (m) ÷ 10,000 = B (kg)

A = application rate (desired amount lbs /acre or kg/ha)
B = weight of fertilizer (lbs or kg) collected from the spreader in 60 seconds
C = distance traveled (ft or m) in 60 seconds
D = swath spacing width (ft or m)