



Counting Bacteria Levels in Inoculants Without a Scientific Calculator

When you're in the field ready to put up silage, you don't have time to mess with scientific calculators to figure out how much of a bacterial inoculant to mix up. Guessing about how much bacteria an inoculant is providing per gram of silage is out of the question.

Here's a simple formula you can use with a standard calculator. Values you need to know in the calculations are:

- 1) One (1) pound (lb) equals 454 grams (g).
- 2) One (1) ton (t) equal 2,000 pounds
- 3) Therefore, one (1) ton equals 908,000 grams.

Dry Inoculant

- 1) If your dry inoculant guarantees delivery of 100 billion colony forming units (cfu) of bacterial per pound;
- 2) And the recommended application rate is one (1) pound per ton of silage;
- 3) Therefore:

$$\frac{100,000,000,000 \text{ cfu/t}}{908,000 \text{ g/t}} \rightarrow \frac{100,000}{.908} = \mathbf{110,132 \text{ cfu/g of silage}}$$

NOTE: Most standard calculators can't display a 12 digit entry (such as "100 billion" above). So you need to move the decimal point from right to left to reduce the number of digits being entered. In the above example, canceling out six (6) zeros in the numerator allows you to move the decimal point in the denominator six (6) digits to the left. (This same procedure applies to the water soluble inoculant calculation below.)

Water Soluble Inoculant

- 1) If the water soluble inoculant contains 60 billion cfu/gram;
- 2) And one (1) pound of the inoculant (before mixing with water) will treat 200 tons of silage;
- 3) Then:

$$\frac{454 \text{ g}}{200 \text{ treated t}} = 2.27 \text{ g of inoculant/t of silage}$$

- 4) And sixty (60) billion cfu/g of inoculant \times 2.27 g of inoculant/t = 136.2 billion cfu/t of silage
- 5) Therefore:

$$\frac{136,200,000,000 \text{ cfu/t}}{908,000 \text{ g/t}} \rightarrow \frac{136,000}{.908} = 150,000 \text{ cfu/g of silage}$$