Adjusting Organic Matter in Soil Materials

If one knows the present organic matter percentage of a soil, the organic matter percentage of an organic amendment (ex. peat moss), and the percentage of organic matter desired in a mix of the two, the volume ratio of the two that must be combined can be determined as follows:

If \( A = \) current soil organic matter \% 

And \( B = \) organic matter \% of organic amendment

And \( C = \) target soil organic matter \% after amendment has been added

Then \( X = \frac{(B-C)}{(B-A)} \)

where \( X = \) fraction by weight of dry soil in the final mix

And \( 1-X = \) the fraction by weight of dry organic amendment needed in mix

To convert weights (\( X \) and \( 1-X \)) to volumes (since that is how one will work with the material), a conversion must be made using the dry bulk densities of the material being mixed.

\[
S = \frac{X}{P_s} \quad \text{and} \quad T = \frac{(1-X)}{P_o}
\]

So, \( S = \) Volume parts of soil material
\( T = \) Volume parts of organic amendments

By dividing \( S/T \) you obtain volume parts of soil per 1 volume part organic amendment.

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\( ^\# \) Obtained from soil test
\( ^\#\# \) Can be assumed to be 100\% for peat moss; composts are typically around 25 to 35\%
\( ^\* \) The dry bulk density of soil can usually be assumed to be about 1.0 to 1.2 grams/cc.
\( ^\** \) The dry bulk density of peat moss can be assumed to be about 0.15 grams/cc. The dry bulk densities of composts are typically in the range of 0.5 to 0.7 grams/cc.