UConn Soil Nutrient Analysis Laboratory
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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.

So, $S = X/P_s$ and $T = (1-X)/P_o$

Where P_s is the dry bulk density of the soil[*]
P_o is the dry bulk density of the organic amendment[**]

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.

[#] 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.

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