

Moisture and Carbon/Nitrogen Ratio Calculation Spreadsheet				
Developed by Tom Richard, Department of Agricultural and Biological Engineering, Cornell University				
To use this spreadsheet, insert data in the first table for your ingredients (up to four ingredients).				
The spreadsheet then calculates the mixture moisture content and C/N ratio.				
Alternatively, the spreadsheet will calculate the proper proportions for moisture and/or C/N goals (see				
For further explanations of the formulas embedded in this worksheet, see the Science and Engineering				
Cornell Composting web site:		<a href="http://www.cals.cornell.edu/dept/compost">http://www.cals.cornell.edu/dept/compost</a>		
NOTE - do not copy and paste the existing data out of the table, as the formulas may remain tied to the				
Input areas are shaded blue or purple. Formula results are in red cells.				
Ingredient	% Moisture	% Carbon	% Nitrogen	Mass (kg or lbs.)
grass	77.0	45.0	2.4	10.00
leaves	35.0	50.0	0.8	13.32
food scraps	80.0	42.0	5.0	8.14
water	100.0	0.0	0.0	0.00
Calculated mixture moisture content:				60.0 (masses as specified)
Calculated mixture C/N ratio:				30.0 (masses as specified)
The required mass of the third material can be determined given characteristics, the masses of the first				
moisture goal:		60.0 (set these goals to match your requirements)		
C/N ratio goal:		30.0		
Calculated mass of third ingredient:				food scraps
To achieve moisture goal:				8.15
To achieve C/N goal:				8.15
For these same moisture and C/N goals, the required mass of the fourth material can be determined given				
the masses of the first three:		Calculated mass of fourth ingredient:		
				water
To achieve moisture goal:				0.01
To achieve C/N goal:				#DIV/0!
Notes: negative numbers indicate that the characteristics of the added ingredient are on the opposite side of the goal from the initial mixture. A "divide by zero" error occurs if you try to add water to balance the C/N ratio.				
The simultaneous solution for moisture and C/N ratios (goals as above) for a three ingredient mixture given the mass of the first material, is:				
Calculated mass of second ingredient:				leaves
				13.32
Calculated mass of third ingredient:				food scraps
				8.14

	Note: A negative number indicates that a simultaneous solution for these goals is not possible with the mixture of ingredients selected. Try some different ingredients, re-evaluate your goals, or add a fourth ingredient using the formula below.				
You can check these solutions by plugging the calculated masses into the table at the top of this spreadsheet.					
Similarly, the simultaneous solution for moisture and C/N ratios (goals as above) for a four ingredient mixture, given the mass of the first and second materials, is:					
		Calculated mass of third ingredient:		food scraps	
				8.15	
		Calculated mass of fourth ingredient:		water	
				0.00	
	Note: A negative number indicates that a simultaneous solution for these goals is not possible with the mixture of ingredients selected. Try some different ingredients, re-evaluate your goals.				
Again, you can check these solutions by plugging the calculated masses into the table at the top of this spreadsheet.					

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