

HOW TO CALCULATE THE CARBON-TO-NITROGEN RATIO OF YOUR COMPOST MIX

Do The Math

To calculate the carbon-to-nitrogen of your compost mix, use the chart on the following page to find the approximate percentages of carbon and nitrogen in your ingredients. Even if you're unlikely to weigh every ingredient you add to your heap, this formula will give you an idea of how to adjust the proportions of materials in your pile to get finished compost more quickly.

1. Calculate your pile's Total Carbon Value by multiplying the percent carbon of each ingredient by the number of parts (by weight) of that ingredient and then adding up the carbon totals for all the ingredients
2. Do the same for the nitrogen.
3. Divide the carbon by the nitrogen to get the C:N ratio. If it's between 25 and 35, your pile should compost beautifully. If the ratio is higher or lower than that, adjust the proportions of ingredients to bring it into the range of 25 to 35 parts carbon for each one part nitrogen.

Here's an example of how the carbon-to-nitrogen ratio works when you apply the formula to real-life amounts of real-life compost ingredients:

Starting with 50 pounds of non-legume hay, 10 pounds of kitchen scraps, and 2 pounds of coffee grounds:

$$\begin{aligned} 50 \text{ lbs hay} \times 40\% \text{ C} &= 20 \text{ lbs. C} \\ 10 \text{ lbs kitchen scraps} \times 10\% \text{ C} &= 1 \text{ lb. C} \\ 2 \text{ lbs coffee grounds} \times 25\% \text{ C} &= 0.5 \text{ lb. C} \\ 20 + 1 + 0.5 &= \mathbf{21.5 \text{ Total Carbon Value}} \end{aligned}$$

$$\begin{aligned} 50 \text{ lbs hay} \times 1\% \text{ N} &= 0.5 \text{ lb. N} \\ 10 \text{ lbs kitchen scraps} \times 1\% \text{ N} &= 0.1 \text{ lb N} \\ 2 \text{ lbs coffee grounds} \times 1\% \text{ N} &= 0.02 \text{ lb. N} \\ 0.5 + 0.1 + 0.02 &= \mathbf{0.62 \text{ Total Nitrogen Value}} \end{aligned}$$

$$\mathbf{21.5/0.62} = 34.7 \text{ parts carbon to 1 part nitrogen}$$

Carbon and Nitrogen Content of Common Compost Ingredients*		
Material	% Carbon	%Nitrogen
Alfalfa pellets	40.5	2.7
Blood meal	43	13
Cottonseed meal	42	6
Soybean meal	42	6
Legume hay, dry	40	2.0-2.5
Non-legume hay, dry	40	1.0-1.5
Fresh manure, cow	12-20	0.6-1.0
Fresh manure, horse	20-35	0.5-1.0
Fresh manure, laying chickens	10.5-20	1.5-3.0
Fresh manure, broiler chickens	20-32.5	1.3-2.0
Wheat or oat straw, dry	48	0.5
Grass clippings, fresh	10-15	1-2
Fallen leaves	20-35	0.4-1.0
Newspaper or cardboard, dry	40	0.1
Wood chips or sawdust	25-50	0.1
Coffee grounds	25	1.0
Vegetable wastes, fresh, leafy	10	1.0
Vegetable wastes, starchy	15	1.0
Kitchen scraps	10-20	1-2
Fruit wastes	8	0.5
Seaweed, fresh	10	1.0
Weeds, fresh	10-20	1-4
* average; based on fresh weight		

(From *Organic Gardening* magazine.)

Your stuff not on there? Guess. Contrary to what you've been led to believe, composting is not rocket science. Compost happens.