

Module 06.01: Composting Parameters – C:N Ratio



LSU AgCenter Home Composting Certificate Course

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What Do Microbes Need?

- Carbon – high carbon compounds as energy for their metabolism
- Nitrogen – biosynthesis of proteins, enzymes and nucleic acids
- Water – for movement, essential for life functions
- Oxygen - respiration
- Hospitable environment
- Remember – You are Microbe Farming

Carbon



Dry leaves

- Carbohydrates are an energy source
- Carbon is a basic building block
- About 50% of the total mass of microbial cells



Cardboard



Twigs & Branches



Newspaper & Junk Mail

Nitrogen



Grass Clippings

Crucial component for growth and cell function

- Protein
- Nucleic acids
- Amino acids
- Enzymes
- Co-enzymes



Vegetable Scraps



Table Scraps

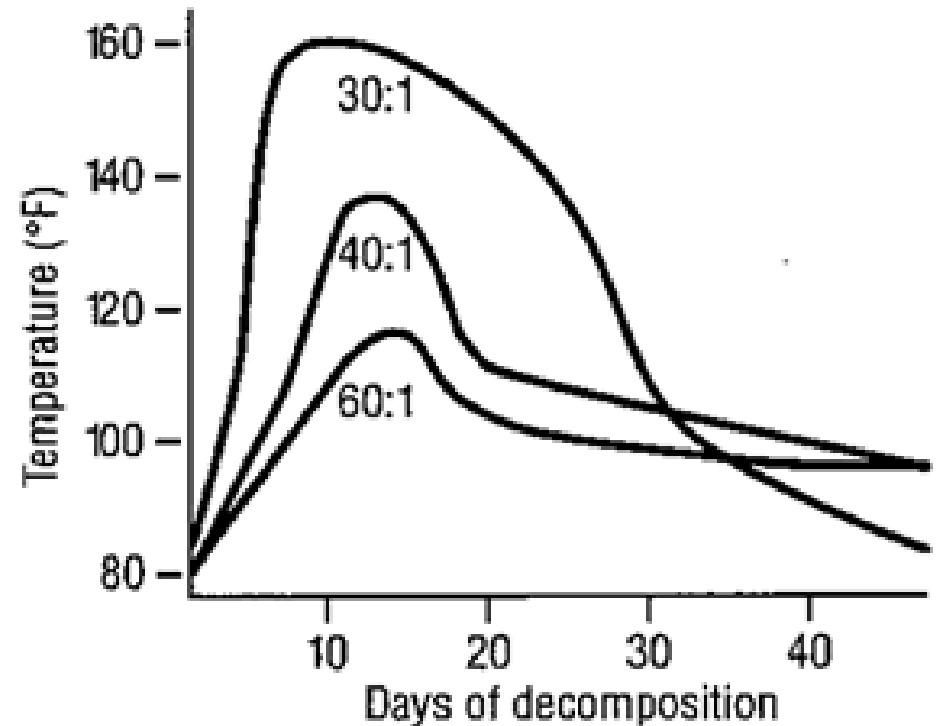


Fruit Scraps

C:N Ratio

- Total mass of elemental carbon divided by the total mass of elemental nitrogen
- Ideal ratio is 25:1 to 35:1
- If $C:N < 20:1$, C gets used up and excess N becomes NH_3 or N_2O – odors
- If $C:N > 40:1$, much longer compost time due to limiting N

Carbon:Nitrogen Ratio Effects on Composting



Material	C:N	Material	C:N	Material	C:N	Material	C:N
Bark	100-130	Garden Debris	20-60	Manure, Pig	5-7	Straw	100-150
Cardboard	200-500	Grass Clippings	15-25	Newspaper	560	Twigs, dry	500
Coffee Grounds	20	Hay	15-32	Peanut Shells	35	Vegetable Scraps	15-20
Corn Stalks	60-73	Leaves, dry	40-100	Pine Needles	70	Wood Chips	200-700
Crab & Crawfish Wastes	4-5.4	Manure, Chicken	5-10	Rice Hulls	85		
Food Waste	15-25	Manure, Cow	20	Sawdust	100-230		
Fruit Waste	20-49	Manure, Horse	15-25	Shrimp Waste	3.4		

You Can Calculate the C:N Ratio Using This Formula

$$\text{C:N Ratio} = \frac{\text{Wt. of "C" in Material A} + \text{"C" in B} + \text{"C" in Material C}}{\text{Wt. of "N" in Material A} + \text{"N" in B} + \text{"N" in C}}$$

OR

Mixture of 2:1 or 3:1 Browns to Greens usually gives a well-balanced compost pile.



Please post all your questions and results to the message board .