Plant Available Nitrogen (PAN)

Plant Available Nitrogen (PAN) is the quantity of Nitrogen made available during the growing season after fertilizing materials are applied. A certain amount of the Nitrogen is immobilized, and the remaining Nitrogen is available to the plant. Some fertilizing options are better than others in terms of **PAN**. The worksheet below illustrates how to calculate **PAN** when determining which material/fertilizer is more effective in terms of available Nitrogen as well as price.

Product Variables	Turkey Litter	Leafy Green Mix
C:N Ratio	12.5:1	4:1
Percent Nitrogen	4 Percent	8 Percent
Pounds Applied	1,000 lbs.	1,000 lbs.
Price per Pound	$0.125 per Pound	$0.25 per Pound

Microbes have an 8:1 Carbon to Nitrogen Ratio.
25% of the Carbon will be utilized for new tissue growth and 75% of the Carbon will be used for energy.

Calculations	Turkey Litter Example	LGM Example
Calculate for Total N: **Number of Pounds Used x %N**	**Calculate for Total N:** **1000 x 4% = 40 lbs**	**Calculate for Total N:** **1000 x 8% = 80 lbs**
Calculate for Total C: **Total N x C:N Ratio**	**Calculate for Total C:** **40 x 12.5 = 500**	**Calculate for Total C:** **80 x 4 = 320**
Calculate 25% Lb New Tissue: **Total C x 25%**	**Calculate 25% Lb New Tissue:** **500 x 25% = 125**	**Calculate 25% Lb New Tissue:** **320 x 25% = 80**
Calculate N Immobilized, Using Microbe C:N of 8: **New Tissue / 8**	**Calculate N Immobilized, Using Microbe C:N of 8:** **125 / 8 = 15.63**	**Calculate N Immobilized, Using Microbe C:N of 8:** **80 / 8 = 10**
Calculate PAN: **Total N - N Immobilized**	**Calculate PAN:** **40 - 15.63 = 24.37**	**Calculate PAN:** **80 - 10 = 70.00**
Calculate Cost per pound PAN: **(Cost per Pound / PAN) x Pounds Used**	**Calculate Cost per pound PAN:** **(0.125 / 24.37) x 1000 = $5.13**	**Calculate Cost per pound PAN:** **(0.25 / 70) x 1000 = $3.57**
Calculate In-Season Efficiency: **PAN / Total N**	**Calculate In-Season Efficiency:** **24.37 / 40 = 61%**	**Calculate In-Season Efficiency:** **70/ 80 = 87.5%**

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In this example, we see that although Leafy Green Mix costs more per ton than turkey litter, *Leafy Green Mix actually costs less per pound* when we determine how much Nitrogen is available from the two products. The Leafy Green Mix is also significantly more efficient than the turkey litter regardless of the cost. When choosing a fertilizing material based on its Nitrogen content, the rule of thumb is to choose the material with the lower C:N Ratio.