Pricing Nitrogen Fertilizer

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Does a visit from your fertilizer sales person often leave you bewildered? What are the questions you should be asking yourself as you listen to the sales pitch?

- Should I use organics or inorganics?
- Should I use slow release or solubles?
- Should the nitrogen be as a nitrogen only carrier or a mixed fertilizer?
- What time and rate of application should I use?
- What analysis should I buy?
- What price should I pay?

An article could be written on each factor. Each is important. With today's budget restrictions, however, price often overrides the other factors. How should one go about making a price comparison of the various materials that are available today? In the final analysis it is the price which most often dictates the sale.

A fertilizer generally consists of one or more of the three major nutrients - nitrogen, phosphorus and potassium. However, in the production of turf the principle reason for purchasing fertilizer is to supply the turf with nitrogen. In many, many cases, if the turf manager has a soil test for phosphorus and potassium he will find, for most applications, that he only needs a nitrogen fertilizer.

How does one compare nitrogen carriers on the basis of price? It is totally erroneous to compare carriers on the basis of cost per tonne. Such a comparison is analogous to the proverbial comparison of apples and oranges. They are both round, yet even their skins are different. In a comparisons of nitrogen carriers they all contain nitrogen, but that nitrogen may be in a different chemical form, may be slow release, may have a high potential for foliar burn, etc. Furthermore a comparison on the basis of price per tonne can be erroneous because of the different nitrogen analysis of the various carriers.

The most precise way to compare the cost of nitrogen carriers is to calculate the *price per unit of nitrogen* (cents/kg N) in the carrier.

An example calculation for a 30-0-0 material valued at $300.00/tonne is:

$$\frac{\$300.00}{\text{tonne } 30\text{–}0\text{–}0} \times \frac{\text{tonne}}{1000\,\text{kg}} \times \frac{100\%\ 30\text{–}0\text{–}0}{30\%\ \text{N}} \times \frac{100\ \text{cents}}{\$} = 100\ ^{\text{cents}}/_{\text{kg}}\ \text{N}$$

This calculation, which at first appears daunting and time consuming, may be simplified and use for any material by multiplying the price/tonne in dollars by 10 and dividing the product by the percent nitrogen in the material, i.e.:

$$\frac{300 \times 10}{30} = 100^{\text{cents}}/_{\text{kg}}\ \text{N}.$$

An even more simple rule is to move the decimal point in the price one position to the right and divide by the percent nitrogen in the carrier.

What could be simpler!

Table 1 provides a comparison of some commonly used materials for turf fertilization based on November, 1994, prices. The data illustrate that urea is the cheapest form of nitrogen available, followed by ammonium nitrate. Note that while urea costs more per tonne it is actually cheaper per kilogram of nitrogen; due to the higher analysis.

As one moves into the slow release forms there are dramatic increases in the cost of each kilogram of nitrogen. The more complex the chemistry of the manufacturing process the higher the cost of the nitrogen.

If a comparison is made between two organic sources, I.B.D.U. and Turkey Litter on the basis of price per tonne the Turkey Litter would win. Placing the comparison of the carriers on the basis of price per kilogram of nitrogen leaves I.B.D.U. the winner by three times.

There are many situations where low use turf only needs a yearly shot of nitrogen. A farm grade material may be the answer. Using the price comparisons in Table 1 it would be $0.55 cheaper per 100 m^2 to apply one kilogram of nitrogen as 20-10-15 than to use sulphur coated urea; while at the same time you would be applying 1/2 kilogram of phosphate and 3/4 kilogram of potassium for free. With today's technology it is possible to produce high quality turf by apply 1/2 kilogram of nitrogen/100 m^2 as urea with a pneumatic (air-flow) spreader followed immediately by a light irrigation. Do you have the equipment and manpower to take advantage of the low cost urea or must you substitute the more expensive materials? A accurate knowledge of what they are costing relative to the cost of urea aids you in making the decision.

Table 1: A comparison of some nitrogen sources on the basis of the cost per tonne and the cost per kilogram of nitrogen.

Carrier	Analysis	$/tonne	cents/ Kg N
Ammonium Nitrate	34-0-0	305.00	89.7
Urea	45-0-0	330.00	73.3
Sulphur Coated Urea	32-0-0	600.00	187.5
I.B.D.U.	31-0-0	1700.00	548.4
Organic (Turkey Litter)	5-2-4	856.80	1713.6
Farm Grade Mixed	20-10-15	264.00	132.0