804.00 FERTILIZER

DR Form 125 is required for all bulk fertilizer and bulk blended and then bagged material.

"Fertilizer Grade" refers to the percentages of nitrogen (N), phosphoric acid (P_2O_5) and potassium (K_2O) present. The contractor must furnish corresponding scale ticket from an approved scale for fertilizer used in the work.

804.01 FERTILIZER CHECKLIST (See Seeding Checklist)

804.02 EXAMPLE CALCULATIONS

Our fertilizers are specified in amounts of actual ingredients. A typical specification might read:

N_2 = 32 or 40 kg/ha (26 to 35 lb/acre)
P_2 = 103 or 108 kg/ha (90 to 95 lb/acre)

Typically, the contractors will furnish a 16-48-0 or an 18-46-0 material. These numbers are expressed as a percentage of the total mass. The first number represents the percentage of nitrogen relative to the total mass, the second number is the percent of phosphorous and the third is potassium.

In order for the contractor to furnish the 36 kg/ha of N_2 (nitrogen) he/she would apply 225 kg (bulk) material - this would also give us the 108 kg/ha of P_2 (phosphorus) when using 16-48-0 fertilizer.

Required: 36 kg/ha of N_2
Required Fertilizer: 16-48-0 (16% N_2)
36 kg/ha = (.16) x (Unknown Bulk Quantity)
225 kg/ha = Bulk Quantity
kg/ha of P_2 = (.48) x 225
= 108

NDR specified sulpher coated urea fertilizer is typically a 36-0-0 or a 37-0-0 material and is specified at 67 kg/ha (60 lb/acre):

Required: 67 kg/ha
Required Fertilizer: 36-0-0 36% N_2
67 kg/ha = (.36) x (Unknown Bulk Quantity)
186 kg/ha Bulk with 36-0-0
67 kg/ha = (.37) x (Unknown Bulk Quantity)
181 = kg/ha Bulk with 37-0-0

NDR specified urea formaldehyde fertilizer is a 38-0-0 material and is usually specified at 85 kg of N_2/ha (35 lb of N_2/Acre).

Required: 85 kg/ha of N_2
38% N_2 in the fertilizer
85 kg/ha = (.38) x (Unknown Bulk Quantity)
224 kg/ha = Bulk Quantity

Curve Ball

The contractor wants to use an 11-52-0 to satisfy the 36 or 40 kg N_2 and the 103 or 108 kg/ha requirement for P_2. How much 11-52-0 should be applied? (Our application rates state minimum = 36 or 40 & 103 or 108).

Required: 36 kg/ha N_2
            103 kg/ha P_2
Contractor's fertilizer is 11% N_2 or 52% P_2.
36 kg/ha - (.11) x (Unknown Bulk Quantity)
327 kg/ha = Bulk Quantity to get N_2 and
(.52) x (327 kg/ha) = 170 kg/ha P_2

This would be an excess of P_2 (327 x 52% = 170 kg of P_2), but this is what must be applied to satisfy the minimum N_2 requirement.

Slider

The contractor wants to use the 11-52-0 to satisfy the P_2 requirement. How much 33-0-0 will have to be added to the mixture to satisfy the N_2 requirement.

Required: P_2 = 103 kg/ha
            N_2 = 36 kg/ha
Fertilizers: 11-52-0
              33-0-0
P_2: 103 kg/ha = (.52) x (Unknown Bulk Quantity)
     198 kg/ha = Quantity of 11-52-0.
But now how much N_2 are we short?
(.11) x (198) = 21.78 kg/ha of N_2
        Therefore,
(36 - 21.78) kg/ha N_2 missing

14.22 kg/ha = .33 (Unknown Quantity of Bulk 33-0-0 fertilizer)
43 kg/ha = Bulk Quantity of 33-0-0 that must also be added.

Required 14.22 = 43.09 kg of 33-0-0 to satisfy the N_2 when furnished N_2 = 33% of bulk.

Now what is the applicable rate per ha?

> 198.07 kg of 11-52-0
> \+   43.98 kg of 33-0-0
> =   241.16 kg of the mixture per ha

Split-Ball

At 241.6 kg/ha - the bulk spreader has 3990 kg of mixture on the load. How many hectares will this do?

> SO $\dfrac{3990}{241.6 \text{ kg/ha}}$ kg = 16.51 hectares

Fast-Ball

The load (3990 kg total) is a blend of the 11-52-0 and 36-0-0 (Quick Release Nitrogen) and 37-0-0 (Slow Release Nitrogen) in the right proportions. Now how many hectares can the load do?

> Add the per unit weights of the two components.
> 241.6 kg (the contractor's 11-52-0 plus the supplemental nitrogen in the 33-0-0) + 181 kg of sulpher coat quick release nitrogen requirement = 422.6 kg/ha
>
> Then $\dfrac{3990}{422.6}$ = 9.44 hectares of coverage

804.03   APPLICATION OF FERTILIZER

The fertilized area shall be disced prior to seeding. Harrowing may also be required.