

ARMOUR AGRICULTURAL CHEMICAL COMPANY

WHY SO MUCH A TON?

By Ed G. Devinger, Turf Chemical Specialist

Do you often wonder why certain types of fertilizer cost so much as compared to other types? There are many different factors which must be taken into consideration in determining the cost of fertilizer.

The greatest cost of any fertilizer is the Nitrogen, Phosphorous, and Potash. The cost will also vary with the types of N-P-K that are used. For instance, when U.F. is added to a fertilizer as another source of Nitrogen, the cost of the product becomes considerably higher. The reason for this is due in part to the cost of U.F. but due mainly to the critical controls that must be maintained during the manufacturing process. These critical controls are: pH, moisture and most of all temperature!

The origin of the materials, N-P-K, have an effect as to the cost of a certain product. Potash is mined primarily in Canada and New Mexico. Phosphorous is mined in Tennessee and Florida. Nitrogen is manufactured at many points around the country from the air and also as a gas by product.

The second greatest cost is in the minor elements which the fertilizer contains. Some minor elements can be added in a combined form, but others must be added separately and alone. This takes time and therefore — cost.

Other factors which enter into the cost of fertilizer, not necessarily in order of importance, are:

a) Rate of Production, depending on plant facilities. (normal is 20 ton per hour but a fertilizer with U.F. and minor element reduces rate of production to only 6 tons per hour.)

b) Size of Product.

c) Of course, Total N-P-K is important.

Actually, fertilizer is fertilizer, but when cost comes into the picture there are three types of fertilizer.

1) Blended.

2) Manufactured or Homogenous.

3) Manufactured or Homogenous w/minor elements.

The process of manufacturing a homogenous product begins when the materials used in the manufacturing are checked for physical and chemical properties. They must meet minimum requirements as to size, analysis and moisture.

They are then very accurately weighed and mixed together at the mixing mill. If it were going to be a blend, it would go directly from the mixing mill to the bagging area. If it is to be a homogenous product, the liquids including Amonia are then added. It then goes on to the granulizing section.

At this point, the critical controls, pH moisture and temperature are watched very carefully as not to destroy the analysis or granular size of the product. It then enters the dryer to remove excess moisture. The temperature again must be controlled to prevent high temperature which would destroy the desired analysis. Now it enters the cooler. After it has been cooled to a desired temperature, it is screened and bagged. Of course, fertilizer by the bulk is cheaper than bagged fertilizer. There are three reasons for the difference in price.

1) Cost of Bags

2) Less handling

3) Easier to ship bulk than bag.

In the screening, all undersized or oversized particles are recycled back to the mixing point. The problem here is that with any products containing U.F., the recycling must be held to a minimum. This is another reason for the cost of fertilizer containing U.F. There is some waste.

During the complete manufacturing process, tests are continually run to make sure that the proper chemical and physical properties are maintained including moisture analysis including minor elements; pH, CWIN, screen size and the A.I. The A.I. or Activity Index is the rate at which CWIN (cold water insoluble nitrogen) is available.

Formulas are being continually researched and developed by research stations and Universities to meet the needs of Superintendents. Naturally, the higher the analysis, the less of the product that will have to be used to get a desired amount of N per 100 sq. ft., the less that will have to be stored and the less fertilizer there will be to handle.

This is how fertilizer is produced and what factors determine the cost of fertilizer.



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