

Costs of Applying Nitrogen Fertilizer

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WHAT TYPE of nitrogen fertilizer should a farmer buy for top-dressing and side-dressing operations? What method of application will result in the lowest cost per pound of nitrogen? These questions can best be answered with knowledge of the individual farm and conditions. However, there are general considerations that help, and they can best be understood by studying the chart comparing the costs of three methods of fertilizer application.

Nitrogen solution equipment now on the market has sufficient accuracy of metering to justify a strict economic comparison when recommended rates of nitrogen are applied. Accuracy of metering becomes important when the rates of application approach the critical rate for lodging in small grain. Convenience of operation and dependability become important when acreages are large and labor rates high. Equipment currently offered at prices between \$100 and \$200, or home-built for considerably less, will do a satisfactory job for the farmer-owner.

Although any economic comparison of a general nature will not specifically fit all farm needs, it is of interest to show in graphic form the relation between annual acreage fertilized and per-acre cost of the operation. All costs of top- or side-dressing have been included in the analysis (fertilizer, labor, tractor, and equipment).

It was assumed that an average of 60 pounds of nitrogen per acre would be applied for top- and side-dressing on an individual farm. Generally, small grain, pasture, and cotton will require less, while corn will require more. A basic cost of 15 cents per pound was used for dry fertilizers, although most sources actually cost more and a few slightly less. A basic cost of 11 cents per pound of nitrogen was assumed for the solution nitrogen, although low analysis solutions cost more and high analysis solutions less.

In North Carolina, custom application of either solution nitrogen or anhydrous ammonia costs the farmer 15 cents per pound of nitrogen.

Labor rates in North Carolina are low—about 65 cents per hour for common farm labor and about 70 cents per hour for tractor drivers. However, a marked increase in labor rates would not materially affect the break-even acreages since custom application prices would increase along with farm labor costs. Seventy cents per hour was used for labor costs here.

Tractor costs were based on the use of a heavy two-plow tractor with an initial cost of \$2200 and an annual use of 500 hours. Under North Carolina conditions this size tractor can tend approximately 75 acres of cropland and improved pastures. The service life of the tractor was considered to be 12 years with no salvage value at the end of that time. Fuel and lubricant costs were taken to be 41 cents per hour of use.

Dry fertilizer equipment for side-dressing is normally part of a farmer's raw-crop planting equipment. Only the portion of the annual cost attributed to side-dressing was used in this analysis. New cost of dry fertilizer equipment for side-dressing was taken as \$60. Service life was considered to be 10 years.

Solution nitrogen application equipment was depreciated over a period of five years, and 20% of the original cost is included for keeping the equipment in repair for the five years.

It is evident from the chart, that at 15 cents per pound of nitrogen (basic cost), a farmer cannot afford to buy and apply dry fertilizer with his own equipment. Side-dressing of

dry fertilizer as a joint operation with cultivation costs from 40 to 60 cents an acre, and, as a separate operation, from \$1.00 to \$1.30 an acre.

With a \$100 piece of solution-nitrogen equipment used on 17 acres a year, the costs will be the same as those for custom application of solutions. He will, however, save about 55 cents an acre over using dry fertilizer. If he uses this same equipment on 30 acres, he will save \$1.00 an acre over custom application of solution and \$1.50 an acre over using his planter distributor and dry fertilizer. He can buy \$200 equipment and break even at approximately 31 acres of annual use. Break-even acreages for applying solution fertilizers with the farmer's own equipment as compared to applying dry fertilizer with his planter distributors is 12 acres and 22 acres for \$100 and \$200 equipment respectively.

This analysis indicates that nitrogen solutions are usually more economical when custom applied than dry fertilizers when farmer applied, and that equipment ownership can provide substantial cash savings with sufficient acreage.

OPERATION COST vs ANNUAL ACREAGE

FOR APPLYING SIDEDRESSING AND TOPDRESSING OF NITROGEN FERTILIZER

