compared to that from solid fertilizers in Georgia. Some data are presented in Table 3. A comparison of treatments 1 and 2, and treatments 3 and 4, shows that liquid fertilizers gave lower yields than solids; this difference being greater at the higher rate of application. The author of that article states that yield difference may be due to plant poisoning by the liquid fertilizer, since foliage on plots that received liquid fertilizer, in any form, was injured. Injurious effects disappear about two weeks after application. The liquid nitrogen used was composed of one-half urea and one-half ammonium nitrate. Concentration of the fertilizer solution was not given, but it appears that the concentration was too high because leaves were burned.

A comparison of treatment 5 with 6 shows a 648-lb. difference in yield in favor of treatment 6. The only difference between these two treatments is that liquid nitrogen in treatment 6 was applied separately, followed by H$_3$PO$_4$. The liquid in treatment 8 was mixed with the H$_3$PO$_4$ before application, and they were applied together. The author suggests this increased yield is due either to a reduction in loss of nitrogen from urea in the nitrogen solution, a decrease in the phytotoxicity of the materials from mixing, or a combination of these factors. These data emphasize the fact that application of liquid fertilizers in too high concentration can seriously damage grass.

Equal crop response, therefore, has been obtained from the proper application of either liquid or solid forms when the same amount of actual N, P, and K has been applied.

Should You Use Liquid or Solid?

Since liquid and solid fertilizers give the same yield response, which form should be used? In order to answer this question, one must evaluate several factors concerning these two forms of fertilizer. Two of the most important factors are relative cost per unit of plant nutrient and application costs of the two materials. Also considered must be the relative concentrations of nutrients in the final volume of applied material.

Data in Table 4 illustrate some calculations which should be made during the evaluation of the two forms. A liquid nitrogen fertilizer containing 17% N, such as ammonium nitrate (NH$_4$NO$_3$), is compared with a solid nitrogen fertilizer containing 21% N, ammonium sulfate (NH$_4$)$_2$SO$_4$. The liquid material weighs about 11.5 lbs. per gallon and is supplied in 30-gal. drums, while the solid material comes in 80- or 100-lb. bags. Manufacturers recommend...