

STERIC-P™

STERIC-P™ contains chemistries that have been patented by NAP as the process called the Phosphate Steric Transport Vehicle (STV). The summary of this invention is that it provides an improved means of applying phosphates as a fertilizer through (1) phosphate ion shielding and (2) interfering ion inactivation. In this process we found that the different ionized forms of 2-hydroxy-1,2,3, propane tri-carboxylic acids and other organic acids can be used as a vehicle to facilitate the transport of soluble orthophosphates through soils.

STV works in two ways. First, it shields the negative charges on the phosphate (PO_4^{-3}) molecule so that the calcium and magnesium in the soil can not inactivate it. This STV-complexed phosphate molecule is more mobile in the soil solution than is the unprotected phosphate ion. Analysis of phosphate movement in soils has shown that the STV-Phosphate complex can move up to 12" into the soil profile when applied in the irrigation water whereas the naked phosphate ion rarely moved deeper than 2" into the profile.

Secondly, the STV chemistry can complex the metal ions in phosphate solutions as well in the soil that can inactivate the phosphate. Steric-P itself is free of heavy metal ions that would inactivate the phosphate. But, research indicates that the STV chemistry in STERIC-P™ also makes the phosphate in 10-34-0 more available when combined in the planter band.

The STV chemistry not only shields the phosphate ion but it also combines with metal ions in the soil solution that interfere with phosphate availability. By the proper use of STV, phosphorus availability is increased.

Research done by NAP and different cooperators over the last two years has shown that Steric-P™ is three times more efficient than 10-34-0 or 0-52-0 in delivering phosphorus to the plant. This is true whether applied in planter bands or through irrigation. The effectiveness of the STV chemistry in STERIC-P™ has been proven many times in field conditions in a variety of soil types throughout the western United States on potato, corn, and sugar beets.

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