

Summer 2009, No. 6

FERTIGATION CONSIDERATIONS

Fertigation, or application of fertilizer with irrigation water, is a long-established and sound practice.

For example, application of N through center pivot systems in cotton production has been practiced for many years in the Texas South Plains, and more recently the use of subsurface drip systems in this region has increased substantially. The potential advantages of fertigation include reduced labor and energy cost compared to conventional application, the ability to “spoon feed” the crop, higher yields, and greater nutrient use efficiency. Of course, the topic of fertigation is very broad; nevertheless, a few things to remember when considering fertigation are listed below.

Water quality. The practice of fertigation requires an appropriate irrigation system and an adequate supply of water. Water quality is also a factor to consider, especially in drip systems or anywhere else small emitters are involved. Addition of fertilizers to irrigation water needs to be done carefully to avoid precipitation with minerals or other added chemicals. Thus, care must be taken to avoid plugging orifices or otherwise fouling systems. This is particularly a concern with P fertilizer in water high in calcium. A “jar” test can be a simple way to check fertilizer-water compatibility.

Fertilizer compatibility. There are many fertilizer materials suitable for use in fertigation. It is important to know though that some materials cannot be mixed. Product compatibility charts are available to use for guidance.

Hardware compatibility. Fertilizer and other injected chemicals can be corrosive and thus injurious to irrigation equipment. Operators should be familiar with the limitations of certain types of equipment when it comes to fertigation.

Uniformity. A crucial requirement for effective fertilizer injection into irrigation water is system uniformity. Nutrients applied through the irrigation system cannot be delivered to the crop in the right amount unless the water delivery is predictable and uniform.

Yield boost. In many studies there have been demonstrable and significant yield and quality benefits resulting from fertigation. One example of this was reported in *Better Crops* magazine (2005, No. 3) where multiple applications of P through center pivot irrigation (in a sandy soil) boosted both cotton yield and quality.

Nutrient use efficiency. Delivery of fertilizer with irrigation has the potential to significantly increase nutrient recovery efficiency, especially with more efficient delivery systems. An example of this can be found in work from the south plains of Texas reported in *Better Crops* magazine (2008, No. 4). Cotton N recovery efficiency in this work was as high as 75% with multiple in-season applications through a subsurface drip system.

Interest in fertigation technologies and methodologies will likely continue to grow as the need for improving efficiency of water and other inputs increases. There are several good sources of information for guidance in fertigation decisions. Among these are publications such as *Fertigation* (by Charles M. Burt, et al.), and experienced extension and industry professionals.

– WMS –

For more information, contact Dr. W.M. (Mike) Stewart, Southern and Central Great Plains Director, IPNI, 2423 Rogers Key, San Antonio, TX 78258. Phone: (210) 764-1588. E-mail: mstewart@ipni.net.

Abbreviations in this article: CO₂ = carbon dioxide; N = nitrogen; P = phosphorus; K = potassium.