

March 4, 2016

CHEMIGATION CAN BE A WIN-WIN

Chemigation is the practice of applying agrichemicals to cropland using an irrigation system to distribute both the water and chemical. The majority of the time, nitrogen fertilizer is applied via pivot versus a pesticide. GMO's have really decreased the amount of pesticide used today. However, we will go backwards on this trend when we raise non-GMO's for specialty food markets.

This past week I taught classes in Wilber, Tecumseh and Davenport to applicators needing certification for chemigation. The certification is good for 4 years by Nebraska law. The requirement is a face to face meeting or home study whether you are an initial chemigator or recertifying.

The Nebraska Department of Environmental Quality (NDEQ) developed and implemented the rules and regulations necessary for irrigators to utilize the practice. Under the NDEQ rules, Nebraska's Natural Resources Districts (NRD's) were given the responsibility to manage the chemigation permit component that ensures that proper safety equipment is present and functioning properly. Nebraska Extension is contracted by DEQ to deliver the education with the certification program.

The chemigation certification program is responsible for training Nebraska producers about the Nebraska Chemigation Act and the Rules and Regulations as developed by the NDEQ. Applicants are required to attend a training program and pass a 50 question exam. The safety equipment has served our industry well. The chemical injection line check valve, the mainline check valve, the low pressure drain and safety interlock mechanisms are such that Nebraska farmers do an awesome job of protecting the water supply because of our advanced safety equipment and technology.

There needs to be a better term for the name chemigation. Because chemigation usually is fertilizer, fertigation sounds better to me. The fact is fertigation, managed well, can be very environmentally friendly. The reason I say that is we can increase nitrogen use efficiency and decrease the amount of time fertilizer is exposed to leaching in the soil past the root zone in wet years. A corn plant only needs a very small amount of nitrogen before the four leaf stage. Bulk applications in the fall or before planting increases the chance of leaching depending on the weather conditions. By applying less N up front, producers can time nitrogen applications through the irrigation system right when the crop really needs it.

Nitrogen fertilizer has a large carbon footprint and uses a lot of energy in the manufacture process and to deliver and apply. It is a win-win situation when producers are able to raise more with less nitrogen because of sidedressing strategies whether it is through the pivot or by machine. Furthermore, certain hybrids today are requiring more nitrogen during the grain filling stage so sidedress strategies can deliver that need more efficiently.



Our future may be drones sensing N needs above a pivot and variable rate irrigation and N application can be delivered on a prescription basis. We may have green seeker tools mounted on the pivot to deliver N where it is needed in the field. Our future will be more movement away from fall fertilizer application, as well as eventually spring preplant application. There will be increased use of growing season application – particularly chemigation or fertigation.

Dr. Ferguson at UNL says irrigation and nitrogen management will be increasingly coupled. He sees a future movement away from the use of algorithms that attempt to predict economic optimum N rates. Farmers will increase the use of reactive approaches, using sensors to detect developing crop stress in the growing season. Our future will be nitrogen rates that are temporally and spatially appropriate, jointly optimizing profit and nitrogen use efficiency, using variable rate fertigation systems.

Randy Pryor, Extension Educator

University of Nebraska-Lincoln Extension in Saline County • 306 West 3rd Street, Wilber, NE 68465
Phone (402) 821-2151 • Fax (402) 821-3398 • e-mail: randy.pryor@unl.edu