EVALUATING PLACEMENT OF A PROGRAMMED RELEASE NITROGEN AND A ROOT STIMULATOR FOR COTTON PRODUCTION IN TENNESSEE AND ARKANSAS

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Abstract

Meister Programmed Release Nitrogen (MPRN) has been reported to be an efficient N source for cotton ***(Gossypium hirsutum*** L.) production. The higher efficiency was obtained when MPRN was applied in direct contact with the seed. With increased efficiency through controlled release, the MPRN fertilizers would be more environmentally friendly than conventional fertilizers but additional information is needed on its placement for cotton production. Research was established in Arkansas and Tennessee evaluating MPRN placement, timing of application, and method of application. The experimental design was a RCB. MPRN treatments included: injecting 1.5 to 2 months before planting, injected 2 and 12 inches from the row of cotton planted with and without Asset RTU (1 qt/acre), surface banding at pin-head-square. Ammonium nitrate (AN) was broadcast at planting. In AR, Suregrow 125 was planted May 6 on a Dundee silt loam having row irrigation capabilities. The MPRN was applied at 80 lb N/acre while Ammonium nitrate (AN) was applied at 100 lb N/acre. Treatments were replicated seven times. In TN, D&PL 5409 was planted May 19 on a Collins silt loam. The N rate for the MPRN and AN treatments was 64 lb/acre. Treatments were replicated five times. Applying the 80 lb N/acre MPRN treatments in AR produced higher yields relative applying AN at 100 lb N/acre. No yield differences were observed within the MPRN treatments that ranged from 776 to 867 lb lint/acre. In TN, MPRN yields were lower than the yield produced by AN. Apparently the hot dry August and September weather conditions reduced the MPRN yields. Dry weather conditions would restrict N release from the coated materials. Within the MPRN treatments, several treatments were significant. Banding MPRN in March did not reduce yields relative to applying the MPRN at planting. Banding MPRN 12 inches from the row restricted yields. This yield reduction was partially offset by applying Asset RTU at planting but resulting yields were lower relative to applying MPRN closer to the row. The Asset effect on yields was not observed when MPRN was banded 2 inches from the row. Applying MPRN at pin head square resulted in lower yields relative to applying MPRN at planting. The data from the two locations indicates that MPRN is an efficient N material and placement should not be a concern when soil moisture is adequate. However, in the absence of adequate soil moisture, without irrigation, applying MPRN a considerable distance from the planted row or delaying the application later in the growing season can affect yields.

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