

CORN INBRED RESPONSE TO BAS 799 AND OTHER GROWTH REGULATOR HERBICIDES APPLIED POSTEMERGENCE. Micheal D. K. Owen, James F. Lux*, Damian D. Franzenburg, Professor and Agricultural Specialists, Agronomy Department, Iowa State University, Ames, IA, 50011.

Herbicides with additives at 1x and 2x application rates were applied postemergence at the V4 growth stage to seven corn inbreds representing a range of herbicide sensitivities and mixture of early to late relative maturities. Herbicide treatments at 1x rates included: BAS 799, diflufenzopyr plus dicamba (Distinct), dicamba, and mesotrione plus atrazine at 5.0 oz (product/A), 0.125+0.05, 0.25, and 0.094+0.225 lb/A rates, respectively. Treatments, except mesotrione plus atrazine, included NIS and AMS at rates of 0.25 % v/v and 5.0 lb/100 gallon. COC and AMS were included with mesotrione plus atrazine at rates of 0.5% v/v and 5.0 lb/100 gallon.

Injury from BAS 799 at 1x and 2x was typically equal or less than the injury from 1x and 2x diflufenzopyr plus dicamba for all inbreds at 7 and 14 days after application (DAA). Injury at 28 DAA was mostly higher from 2x BAS 799 and 2x diflufenzopyr plus dicamba. Further, when comparing rate for rate, injury at 28 DAA was generally significantly less from BAS 799 compared to diflufenzopyr plus dicamba. Inbreds A, B, C, and D demonstrated the most injury, 5 to 33% at 28 DAA from 2x BAS 799 and 1x and 2x diflufenzopyr plus dicamba compared to inbreds E, F and G which demonstrated injury at 0 to 17%. Comparing inbreds A, B, C, and D, inbred D exhibited the least herbicide injury. Generally, injury to all inbreds from 1x dicamba was similar to 2x BAS 799 and 2x diflufenzopyr plus dicamba at 7 and 14 DAA. At 28 DAA, inbreds A, B, C, and D demonstrated less injury from 1x dicamba compared to 2x dicamba & diflufenzopyr, but more injury than 2x BAS 799. Inbreds E, F, and G were the least affected inbreds when injury was evaluated 28 DAA. Dicamba 2x, compared to all other treatments resulted in the highest injury across the inbreds and ranged from 7 to 45% at 28 DAA. Mesotrione plus atrazine applied 1x resulted in 2 to 7% injury to inbreds D, E, F, and G when observed at 7 and 14 DAA, and no injury when evaluated at 28 DAA. Mesotrione plus atrazine 2x resulted in 3 to 15% injury to these same inbreds at 7 and 14 DAA, and 3 to 5% at 28 DAA. Inbreds A, B, and C demonstrated little to no injury from 1x and 2x mesotrione plus atrazine regardless of evaluation date.

Dicamba 2x resulted in significantly higher percentage of root fusion when averaged across inbreds at 55 DAA, compared to all other treatments. Inbreds B, C, E, and F exhibited 24, 50, 30, and 33% root fusion from dicamba 2x, respectively. Inbreds D and G exhibited 10 and 12 % root fusion from dicamba 2x, while inbred A was least affected at 1%. Root fusion averaged across inbreds was observed from 1x and 2x BAS 799 and diflufenzopyr plus dicamba, but none from mesotrione plus atrazine. No significant differences were found between these treatments, however, there were significant differences between the 2x rate of diflufenzopyr plus dicamba and the 1x and 2x rates of mesotrione plus atrazine. Of the inbreds exhibiting root fusion from 2x diflufenzopyr plus dicamba, inbred E was most affected at 14%. When averaged across inbreds, significant differences in height between treatments were observed at 59 DAA. The 2x rate of diflufenzopyr plus dicamba and 2x dicamba resulted in significantly shorter inbred heights overall compared to the other treatments. Differences in overall inbred heights were not significant when comparing 1x BAS 799, 1x diflufenzopyr plus dicamba, and the 1x and 2x rates of mesotrione plus atrazine.