

DOES POTASSIUM BORATE REDUCE EFFICACY OF DICAMBA?

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The *N,N*-bis(3-aminopropyl)methylamine (BAPMA) salt of dicamba (Engenia) and diglycolamine salt of dicamba with VaporGrip (XtendiMax) are labeled for preemergence and postemergence control of broadleaf weeds in Xtend cotton and soybean systems. Dicamba applications to cotton and soybean have resulted in a record number of complaints regarding off-target movement of the herbicide since the initial introduction in 2017. To counteract the volatility associated with dicamba, the University of Arkansas Division of Agriculture has pursued potassium tetraborate tetrahydrate (potassium borate) as a tank additive. To investigate the impact of this additive on dicamba, small-scale volatility studies were conducted along with trials to evaluate efficacy of dicamba when mixed with the additive. Diglycolamine (DGA) salt of dicamba plus potassium salt of glyphosate were applied in mixture with potassium borate at six rates (0, 0.03, 0.07, 0.13, 0.27, and 0.5 lbs/A boron) to two moist flats placed under low tunnels to increase volatilization. For weed control, two dicamba formulations (XtendiMax and Engenia) plus glyphosate were combined with potassium borate at 0, 0.1, 0.2, and 0.5 lbs boron/A. There was trend for reduction of dicamba volatility as potassium borate rate increased based on the three evaluated parameters of maximum soybean injury, average injury, and distance traveled. Air sample data closely aligned with qualitative assessments. For weed control, there was no concentration of potassium borate that compromised broadleaf or grass weed control when added to either formulation of dicamba, although some numerical decreases were observed. Overall, the addition of potassium borate to dicamba has great potential in reducing off-target movement of dicamba without sacrificing efficacy on key weed species.