

BUILDING A GLYPHOSATE FORMULATION FOR HARD WATER. Donald Penner, Jan Michael, Michigan State University, East Lansing, MI 48824-1325 and William G. Brown, Adjuvants Plus, Kingsville, Ontario, Canada N9Y2S5.

Maximum efficacy of glyphosate requires an activator adjuvant to enhance penetration of the glyphosate and a water conditioner to counter the cations found in hard water. The challenge is to combine the various components into a single product. Liquid formulations have the advantage that they can be pumped or poured. Dry formulations cost less to ship, reduce container deposit costs, and reduce worker exposure. Using a soluble bag within a bag can reduce registration costs. This study evaluated dry surfactants containing urea clathrates plus dry diammonium sulfate as the adjuvant components with dry glyphosate acid to form an all dry formulation to test on velvetleaf and common lambsquarters in the greenhouse. The urea clathrate, ATPLUS UCL 1007, was more effective than ATPLUS UCL S-10 or AL-3265. Weed control obtained with the dry formulation of glyphosate acid, ATPLUS UCL 1007, and diammonium sulfate was similar to that obtained with popular commercial liquid glyphosate products plus 2% diammonium sulfate under both greenhouse and field conditions. The results indicate that dry glyphosate formulated products can be as effective as liquid products and have the advantage of containing a water conditioner within the product.