

SWEET CORN CULTIVAR INFLUENCES BIOLOGICALLY EFFECTIVE HERBICIDE DOSE. Martin M. Williams II¹, Rick A. Boydston², and John C. Frihauf¹, Ecologist, Research Agronomist, and Biological Science Technician, USDA-ARS, ¹Invasive Weed Management Research Unit, Urbana, IL 61801 and ²Vegetable and Forage Crop Research Unit, Prosser, WA 99350.

Competitive crop cultivars are considered a component of integrated weed management systems; however specific knowledge of interactions among crop cultivars and other management tactics, such as biologically effective herbicide dose, is limited. Observed variation in crop tolerance and weed suppressive ability among sweet corn cultivars, coupled with the need for new approaches to manage annual grasses, provided incentive to quantify the effect of sweet corn hybrid on efficacy of sublethal sethoxydim doses and crop yield stability. A split plot design was established in Urbana, IL and Prosser, WA where main plot treatments were one of two sethoxydim-tolerant *sugary-1* sweet corn cultivars, also seeded with wild proso millet. Subplot treatments were doses of sethoxydim ranging from 0 to 100 g ai/ha applied at 3-4 leaf wild proso millet. Cultivar 'GH6631' grew taller, produced a denser canopy, and yielded more than 'GH6333'. As a result, weed suppressive ability was higher in 'GH6631' than 'GH6333'. At the time of crop harvest, wild proso millet shoot biomass was least in 'GH6631' for doses up to 25 g ai/ha of sethoxydim, where higher doses provided complete weed control regardless of crop cultivar. Functional relationships between crop yield and sethoxydim dose revealed 'GH6631' yielded 35 to 50% better than 'GH6333' at sublethal herbicide doses. Although sethoxydim is not currently registered for broadcast use on sethoxydim-tolerant sweet corn hybrids, this study demonstrates that efficacy of sublethal herbicide dose is improved when integrated with competitive crop cultivars.