

EFFICACY OF CORN HERBICIDES WHEN APPLIED WITH FLAT-FAN AND AIR-INDUCTION NOZZLES. Peter H. Sikkema, Lynette Brown, Christy Shropshire, Helmut Spieser, and Nader Soltani, Associate Professor, Research Technician, Research Technician, Extension Specialist, and Research Associate, University of Guelph Ridgetown Campus, Ridgetown, ON, Canada. N0P 2C0.

Twelve field experiments were conducted over a four-year (2002 to 2005) period to determine the influence of herbicide dose, nozzle type, spray volume and spray pressure on herbicide efficacy in field corn (*Zea mays* L.). Control of *Abutilon theophrasti* (velvetleaf), *Ambrosia artemisiifolia* (common ragweed), *Chenopodium album* (common lambsquarters), *Amaranthus powellii* (green pigweed) and *Echinochloa crus-galli* (barnyard grass) was improved with the use of full herbicide doses compared to half doses. The application of the full compared to the half herbicide dose resulted in an increase in control of 11 to 27% of *A. theophrasti*, *A. artemisiifolia* and *C. album* with bromoxynil (140 vs 280 g ha⁻¹), an increase in control of 20 to 28% of *A. powellii* and *C. album*, with glufosinate (200 vs 400 g ha⁻¹), an increase in the control of *A. theophrasti*, *A. artemisiifolia* and *C. album* of 11 to 19% with dicamba (150 vs 300 g ha⁻¹) and an increase in the control of *E. crus-galli* of 8 to 11% with nicosulfuron (12.5 vs 25 g ha⁻¹). Yield was increased by 9 to 15% for bromoxynil, 16 to 19% for glufosinate and 8% for nicosulfuron when the full herbicide dose was used. When applied at the manufacturer's recommended dose, flat fan (FF) nozzles compared to the air induction (AI) nozzles provided better control of *A. theophrasti*, *A. artemisiifolia* and *C. album* with bromoxynil, *A. artemisiifolia* and *C. album* with dicamba and *E. crus-galli* with nicosulfuron. Weed control with bromoxynil was the only herbicide that was affected by water carrier volume. By increasing spray pressure with an AI nozzle from 280 to 490 kPa, there was an improvement in the control of *A. theophrasti*, *A. artemisiifolia*, *C. album* with the application of bromoxynil and *E. crus-galli* with the application and nicosulfuron, and a 16% yield increase with bromoxynil. Overall, this study concludes that the optimum nozzle type, water carrier volume and spray pressure is herbicide and weed species specific.