

WEED MANAGEMENT IN DRY BEANS WITH DIMETHENAMID AND REDUCED RATES OF IMAZETHAPYR PREPLANT-INCORPORATED. Peter H. Sikkema, Nader Soltani, Christy Shropshire, Richard Vyn, and Laura L. Van Eerd, Associate Professor, Research Associate, Research Technician, College Professor, and Assistant Professor, University of Guelph Ridgetown Campus, Ridgetown, ON, Canada. NOP 2C0.

Three field trials were conducted over a three-year period (2003, 2004 and 2005) near Exeter, Ontario to determine if dimethenamid tank-mixed with reduced doses of imazethapyr applied preplant incorporated (PPI) can be used as an efficacious, environmentally acceptable, and economically feasible weed management strategy for broad spectrum weed control in white and kidney beans. There was no additional injury in white or kidney beans with the imazethapyr plus dimethenamid tank-mix treatments evaluated. Based on regression analysis, the dose of imazethapyr required to provide a minimum of 95% control of *Amaranthus retroflexus*, *Ambrosia artemesiifolia*, *Chenopodium album*, *Sinapis arvensis*, and *Setaria viridis* was reduced significantly when tank-mixed with dimethenamid (1000 g ha<sup>-1</sup>). There was no adverse effect on the yield of white and kidney beans with any of the herbicides evaluated. The low application dose of imazethapyr compared to dimethenamid (75 vs. 1000 g ai ha<sup>-1</sup>, respectively) resulted in an environmental impact (EI) of imazethapyr that was seven-times less than dimethenamid. The application of dimethenamid at 1000 g ai ha<sup>-1</sup> or imazethapyr at 15 g ai ha<sup>-1</sup> produced the lowest profit margins. Application of higher doses of imazethapyr alone and tank-mixing dimethenamid with imazethapyr increased the profit margins for both white and kidney beans. Based on these results, dimethenamid tank-mixed with reduced doses of imazethapyr applied PPI results in acceptable weed control, crop yield and net returns with an acceptable minimal increase in environmental impact.