

USING *WEEDCAST* COMPUTER MODEL TO DETERMINE POTATO CULTIVATION TIMING. Joel Felix, Douglas J. Doohan, Jerry A. Ivany, and George O. Kegode, Postdoctoral Research Associate, Associate Professor, Research Scientist, and Assistant Professor, The Ohio State University, Wooster, OH 44691, Agriculture and Agri-Food Canada, P.O. BOX 1210, Charlottetown, PE C1A 7M8. Canada, and North Dakota State University, Fargo, ND 58105

WeedCast computer model was evaluated as a decision aid to determine cultivation time in potatoes at Wooster, OH, Fargo, ND, and Charlottetown, PE, Canada in 2001 and 2002. Split-plot design with cultivation time as the main plots and +/- herbicides as subplots was used. Main plots were cultivated when the model predicted 15, 30, or 60% weed emergence for the most predominant species on the site. Subplots were either treated with metolachlor + metribuzin at 1.68 and 0.5 kg ai/ha, respectively, or left unsprayed. Subplots within the control were weeded only at layby. Otherwise, potatoes were grown using standard cultural practices as recommended by the respective extension services. Cultivation timing was predicted using pigweeds (*Amaranthus* spp) and Pennsylvania smartweed *Polygonum pensylvanicum* in 2001 and 2002, respectively, at Wooster and common lambsquarters (*Chenopodium album*) at Charlottetown. Eastern Black nightshade (*Solanum ptychanthum*) was the indicator at Fargo in 2002. Weed control for the different cultivation timings varied between years. Overall, plots treated with herbicides had lower numbers of weeds m⁻² at Wooster and Charlottetown in 2001. Cultivation timing based in 15% predicted emergence of *Amaranthus* spp and *C. album* resulted in better weed control and higher tuber yield at Wooster and Charlottetown, respectively, in 2001. In 2002, however, 30% emergence of *P. pensylvanicum* was the best predictor. Weed pressure was high in the cultivation only plots regardless of cultivation timing. *Amaranthus* spp density was 12 to 184 weeds m⁻² for cultivation only plots at 5 wk after hilling, compared to only 0 to 4 weeds m⁻² for herbicide treated plots. There was no apparent pattern for treatment effects at the Fargo site in 2002, but cultivation alone at 30% predicted *S. ptychanthum* emergence provided the best suppression of *Amaranthus retroflexus*. At Charlottetown in 2002, visual observations indicate that the 15% predicted emergence of *C. album* timing resulted in best weed control with successively later cultivation giving poorer results. The study will be repeated in 2003 to confirm the results.