

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

The *WeedCast* computer model was evaluated as a decision aid to determine cultivation timing in potato at Fargo, ND; Wooster, OH; and Charlottetown, PEI, Canada from 2001 to 2003. A split-plot arrangement of treatments in a randomized complete block design with cultivation time as the main plot and herbicide as subplot was used. Main plots were cultivated when the model predicted 0, 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, 0% predicted weed emergence, were cultivated only at layby. Otherwise, potatoes were grown using standard cultural practices as recommended by the respective extension services. Cultivation timing was predicted using *Solanum ptychanthum* and *Amaranthus retroflexus* in 2002 and 2003, respectively, at Fargo; *A. retroflexus*, *Polygonum pennsylvanicum*, and *Chenopodium album*, in 2001, 2002, and 2003, respectively at Wooster; and *C. album* at Charlottetown all years. In 2001, cultivation timing based on 15% predicted emergence of *A. retroflexus* (Wooster) and *C. album* (Charlottetown) resulted in better weed control and tuber yield. In 2002, cultivation at 30% predicted emergence of *S. ptychanthum* and *P. pennsylvanicum* provided the best weed suppression at Fargo and Wooster, respectively; whereas at Charlottetown, 15% predicted emergence of *C. album* resulted in the best weed control. In 2003, three cultivations done at 15, 30, and 60% predicted weed emergence provided the best weed control and lowest weed biomass yield when compared with two cultivations at 30 and 60% predicted weed emergence, or one cultivation at 60% predicted weed emergence. Cultivation alone did not adequately control all weeds, and at all three sites potato that was only cultivated tended to yield less than cultivation + herbicide treatments. We conclude that timing cultivation to 15% predicted emergence using *Weedcast* appears to be an effective tool for improving weed management in potato.