EFFECT OF TIME OF DAY OF APPLICATION ON HERBICIDE EFFICACY IN CORN. Peter H. Sikkema,[1] Nader Soltani[1], and Robert E. Nurse[2]. [1]University of Guelph Ridgetown Campus, Ridgetown, Ontario, Canada, N0P 2C0; [2]Agriculture and Agri-Food Canada, Harrow, ON.

Field trials were conducted from 2005 to 2007 at two locations in southwestern Ontario to investigate how the timing of herbicide applications throughout the day affects weed control in corn. Weed control following the application of six postemergence (POST) herbicides (atrazine, bromoxynil, dicamba/diflufenzopyr, glyphosate, glufosinate, and nicosulfuron ) at 600, 900, 1200, 1500, 1800, 2100 and 2400 hours was assessed. For many weed species herbicide efficacy was reduced when applications were made at 600, 2100, 2400 hours. Velvetleaf was the most sensitive to the time of day effect, followed by common ragweed, common lambsquarters and redroot pigweed. Annual grasses were not as sensitive to application timing; however, control of barnyardgrass and green foxtail was reduced in some environments at 600 hours and after 2100 hours. Only in the most severe cases was the grain yield of corn reduced due to reduced weed control. Changes in air temperature, relative humidity and light intensity throughout the day that cause species-specific physiological changes may account for the variation in weed control throughout the day. The results of this research suggest that there is a strong species-specific influence of ambient air temperature, light intensity and leaf orientation on the efficacy of POST herbicides. It is hoped that the results of this research will aid growers to apply herbicides when they are most efficacious, thus reducing costs associated with weed escapes.

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