Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Statistical Analysis of the Photodegradation of Imazethapyr on the Surface of Extracted Soybean (*glycine max*) and Corn (*Zea mays*) Epicuticular Waxes

Supplemental Data

Scott C. Anderson, Jr.

Amy Christiansen

Alexa Peterson

Logan Beukelman

Amanda M. Nienow*

Gustavus Adolphus College

800 W College Ave

Saint Peter, MN 56082

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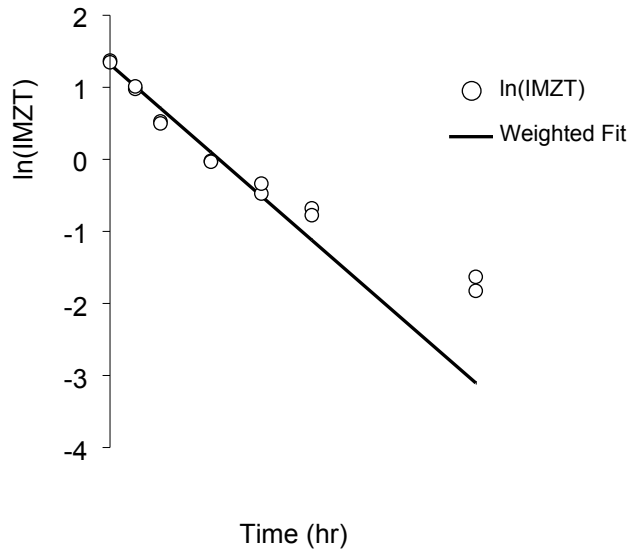

Figure S1. Imazethapyr photodegradation rate as a function of time on soybean epicuticular waxes. Epicuticular waxes were extracted from soybean plants grown in a growth chamber at 25 ^{o}C with a 56% relative humidity for 12 days under two light banks. Under these conditions, the photodegradation rate constant of imazethapyr was determined to be 0.31 hr^{-1} through a weighted linear regression (with R^2= 0.95). This data set represents the maximum rate constant for imazethapyr photodegradation on soybean wax.

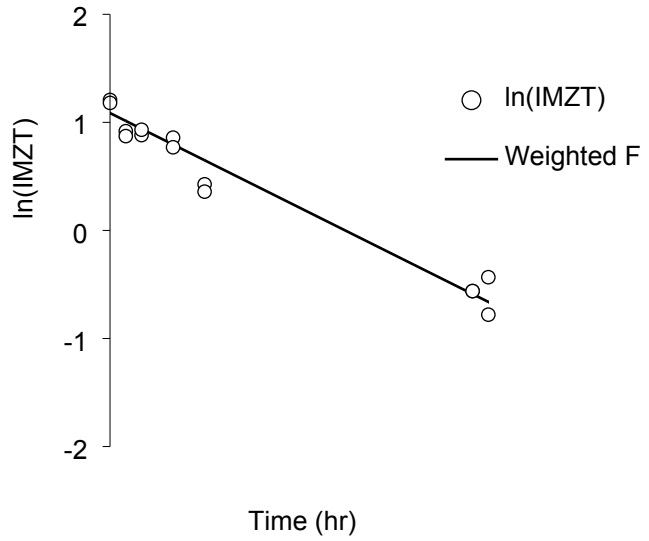

Figure S2. Imazethapyr photodegradation rate as a function of time on soybean epicuticular waxes. Epicuticular waxes were extracted from soybean plants grown in a growth chamber at 22 ^{o}C with a 68% relative humidity for 15 days under four light banks. Under these conditions, the photodegradation rate constant of imazethapyr was determined to be 0.07 hr^{-1} through a weighted linear regression (with R^2= 0.88). This data set represents the minimum rate constant for imazethapyr photodegradation on soybean wax.

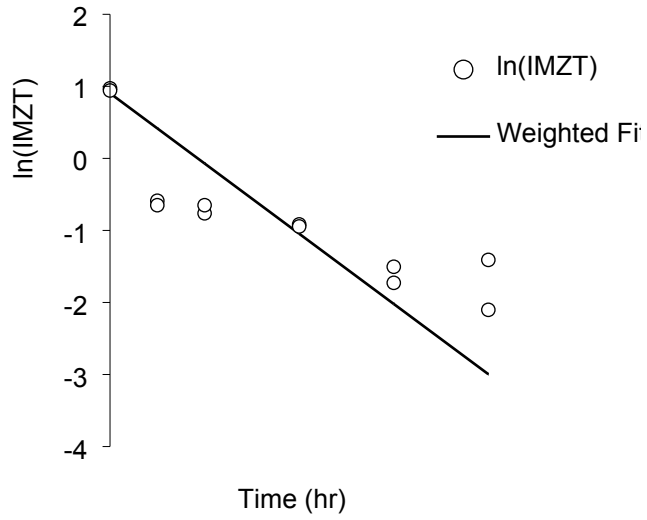

Figure S3. Imazethapyr photodegradation rate as a function of time. Corn plants were grown in a growth chamber at 28 ^{o}C with a 68% relative humidity for 15 days under four light banks. Under these conditions, the photodegradation rate constant of imazethapyr was determined to be 0.49 hr^{-1} through a weighted linear regression (with R^2= 0.76). This data set represents the maximum rate constant for imazethapyr photodegradation on corn wax.

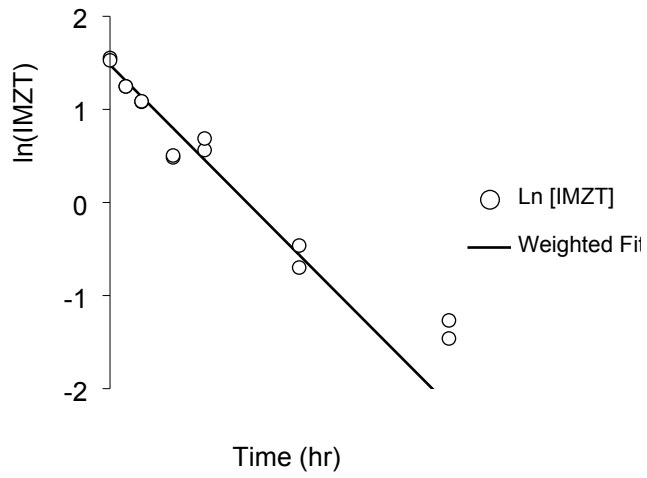

Figure S4. Imazethapyr photodegradation rate as a function of time on corn epicuticular waxes. Epicuticular waxes were extracted from corn plants grown in a growth chamber at 25 ^{o}C with a 78% relative humidity for 12 days under six light banks. Under these conditions, the photodegradation rate constant of imazethapyr was determined to be 0.17 hr^{-1} through a weighted linear regression (with R^2= 0.91).

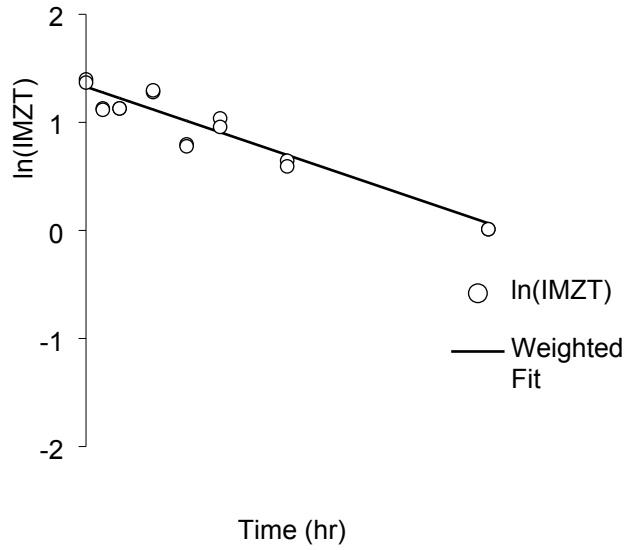

Figure S5. Imazethapyr photodegradation rate as a function of time on corn epicuticular waxes. Epicuticular waxes were extracted from corn plants grown in a growth chamber at 28 ^{o}C with a 68% relative humidity for 9 days under four light banks. Under these conditions, the photodegradation rate constant of imazethapyr was determined to be 0.05 hr^{-1} through a weighted linear regression (with R^2= 0.74). This data set represents the minimum rate constant for imazethapyr photodegradation on corn wax.

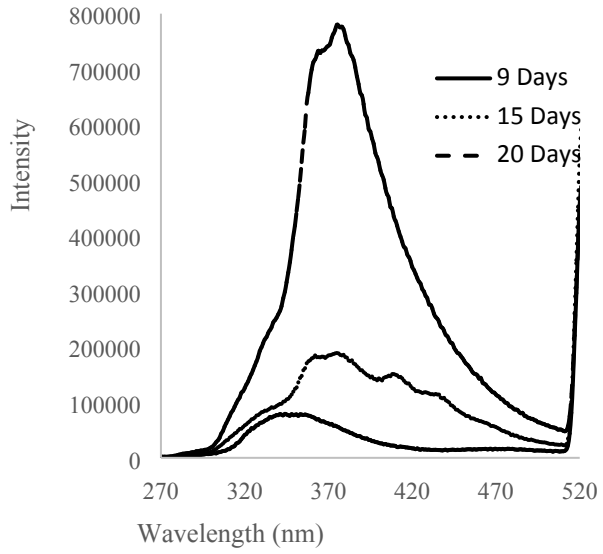

Figure S6: Emission florescence spectra for soybean plants grown for different lengths of time. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and under four light banks while for various lengths of time: 9, 15, and 20 days. 9 day old soybean plants are represented by the dashed line, 15 day old plants by the solid line, and 20 day old plants by the dotted line. The excitation wavelength was 260 nm.

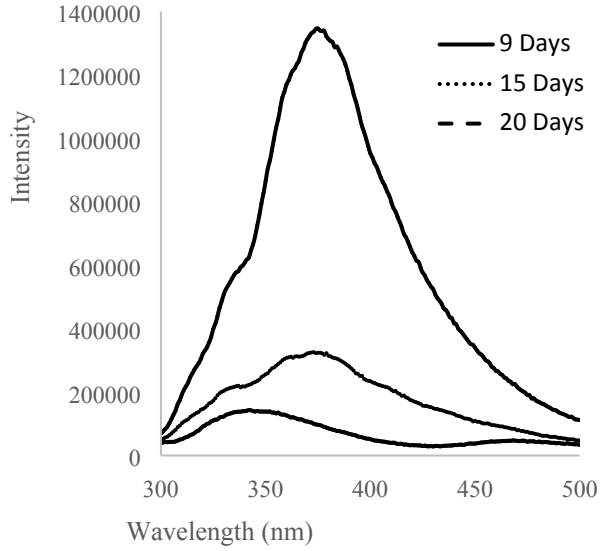

Figure S7: Emission florescence spectra for soybean plants grown for different lengths of time. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and under four light banks while for various lengths of time: 9, 15, and 20 days. 9 day old soybean plants are represented by the dashed line, 15 day old plants by the solid line, and 20 day old plants by the dotted line. The excitation wavelength was 275 nm.

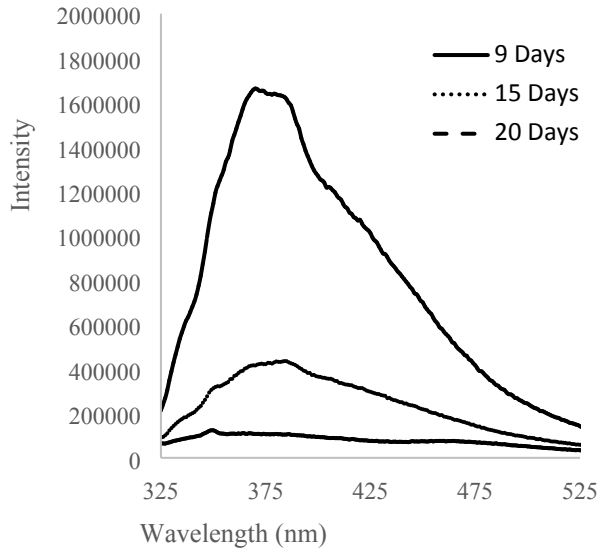

Figure S8: Emission florescence spectra for soybean plants grown for different lengths of time. Soybean plants were grown in a growth chamber at 28 ºC, with a 68% relative humidity, and under four light banks while for various lengths of time: 9, 15, and 20 days. 9 day old soybean plants are represented by the dashed line, 15 day old plants by the solid line, and 20 day old plants by the dotted line. The excitation wavelength was 315 nm.

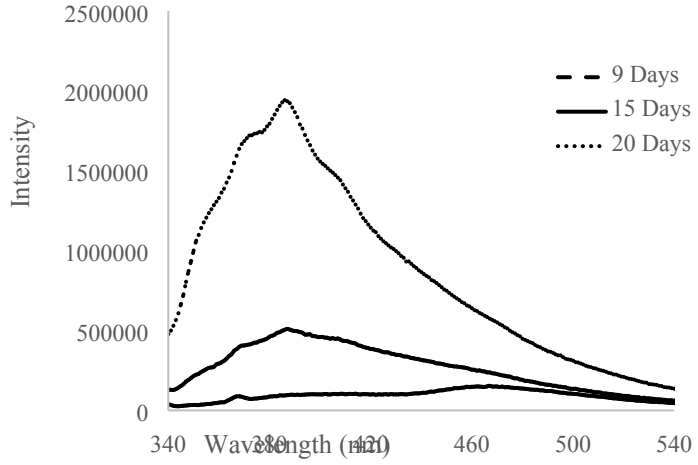

Figure S9: Emission florescence spectra for soybean plants grown for different lengths of time. Soybean plants were grown in a growth chamber at 28 ºC, with a 68% relative humidity, and under four light banks while for various lengths of time: 9, 15, and 20 days. 9 day old soybean plants are represented by the dashed line, 15 day old plants by the solid line, and 20 day old plants by the dotted line. The excitation wavelength was 330 nm.

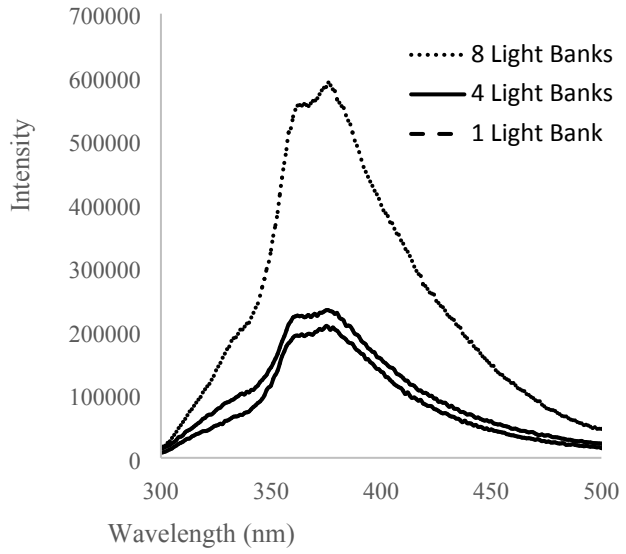

Figure S10: Emission florescence spectra for soybean plants grown under different numbers of light banks. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and to 15 days of age under one, four, or eight light banks. Soybean plants grown under 1 light bank are represented by the dashed line, 4 light banks by the solid line, and 8 light banks by the dotted line. The excitation wavelength was 260 nm.

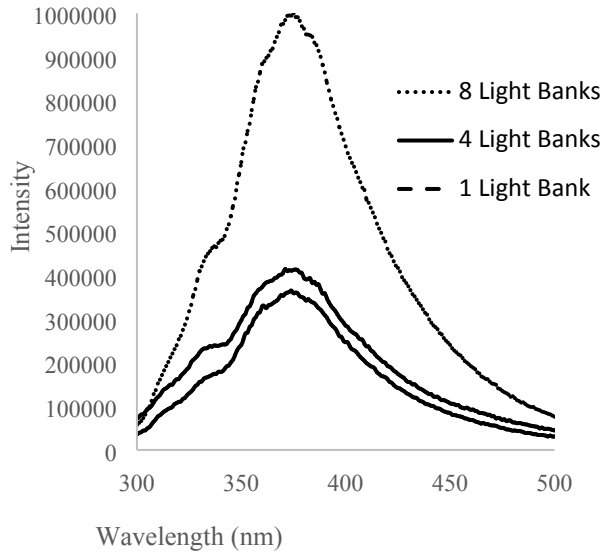

Figure S11: Emission florescence spectra for soybean plants grown under different numbers of light banks. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and to 15 days of age under one, four, or eight light banks. Soybean plants grown under 1 light bank are represented by the dashed line, 4 light banks by the solid line, and 8 light banks by the dotted line. The excitation wavelength was 275 nm.

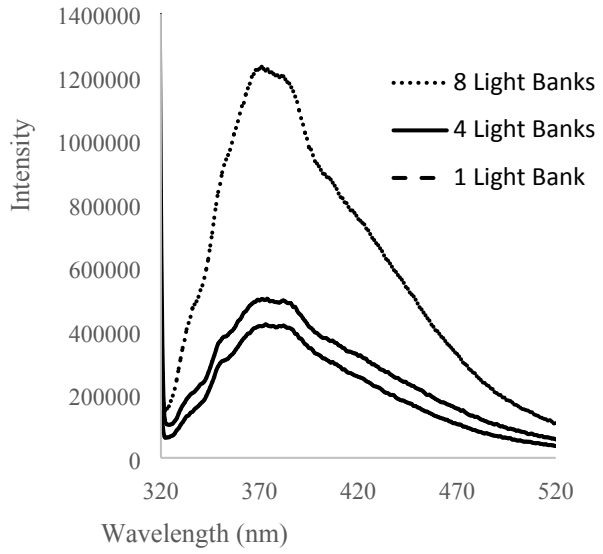

Figure S12: Emission florescence spectra for soybean plants grown under different numbers of light banks. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and to 15 days of age under one, four, or eight light banks. Soybean plants grown under 1 light bank are represented by the dashed line, 4 light banks by the solid line, and 8 light banks by the dotted line. The excitation wavelength was 315 nm.

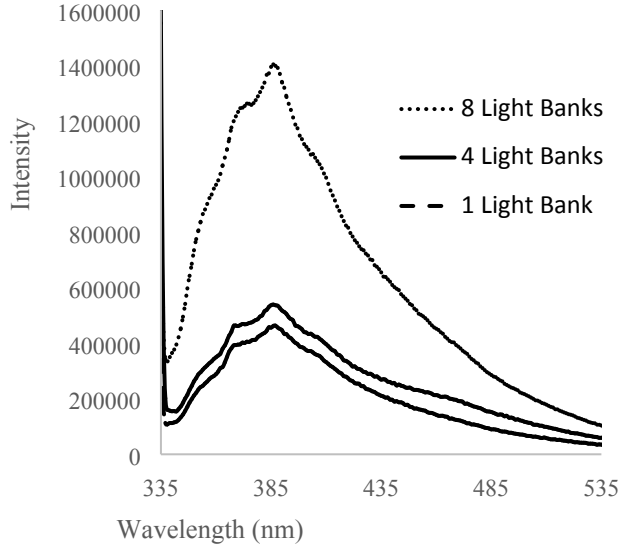

Figure S13: Emission florescence spectra for soybean plants grown under different numbers of light banks. Soybean plants were grown in a growth chamber at 28 ^{o}C, with a 68% relative humidity, and to 15 days of age under one, four, or eight light banks. Soybean plants grown under 1 light bank are represented by the dashed line, 4 light banks by the solid line, and 8 light banks by the dotted line. The excitation wavelength was 330 nm.