

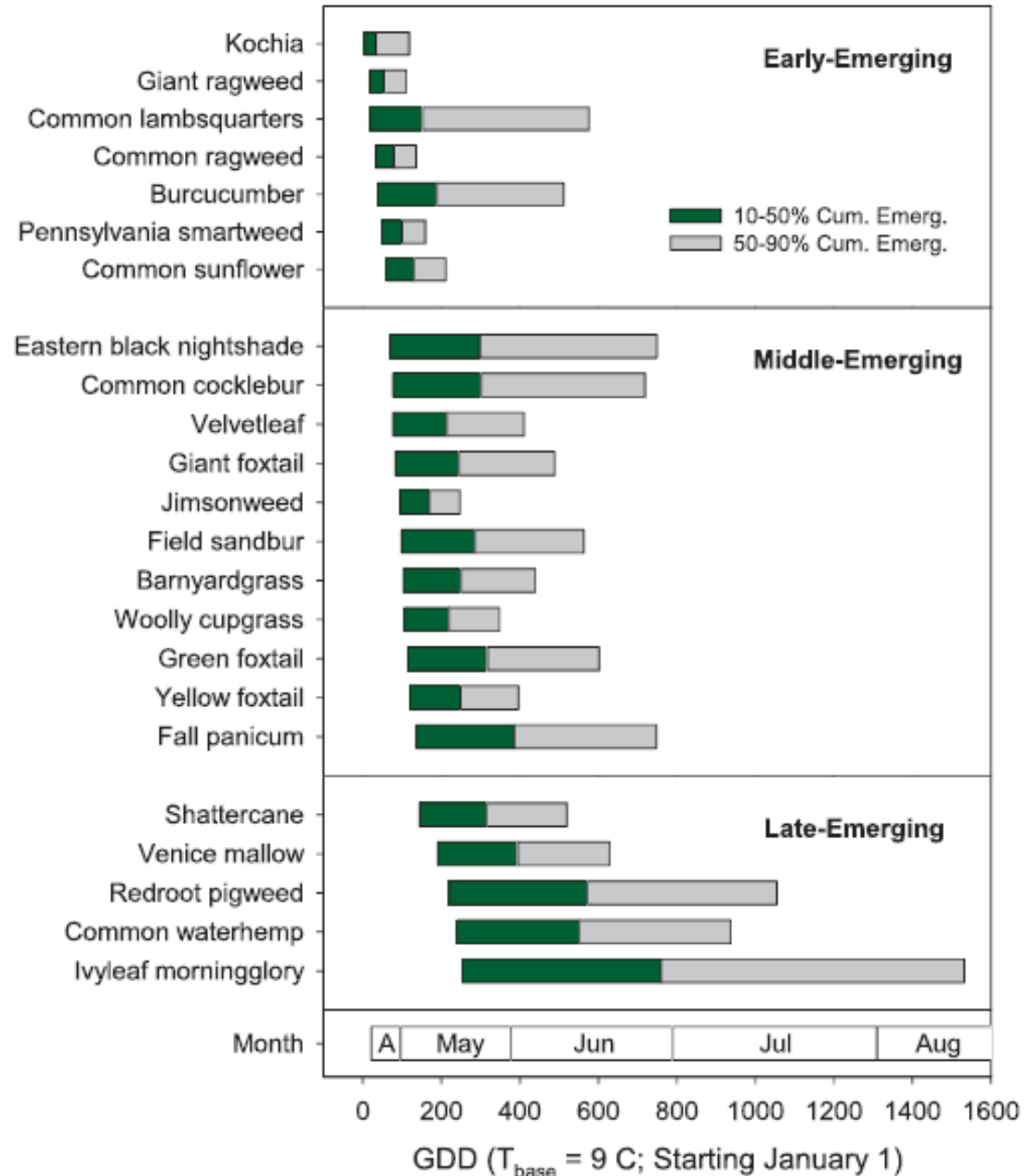
ADJUSTING HERBICIDE PROGRAMS FOR PLANTING DATE

Sarah Lancaster

Assistant Professor and Extension Specialist

Weed species

- Earlier emergence (April/May)
 - ragweed species
 - Sunflower
- Intermediate emergence (May)
 - Velvetleaf
 - foxtails
- Later emergence (May/June and beyond)
 - morningglories
 - pigweeds
 - shattercane/johnsongrass
 - Venice mallow
- Extended emergence
 - cocklebur
 - lambsquarters
 - fall panicum



Herbicide half-life

Herbicide	Grp	Example	Half-life (days)	Primary degradation
chlorimuron	2	Classic	40	hydrolysis
imazethapyr	2	Pursuit	60-90	microbial
pendimethalin	3	Prowl H2O	44	microbial
Metribuzin	5	Dimetric	30-60	microbial
saflufenacil	14	Sharpen	1-36	microbial
sulfentrazone	14	Authority products	120-300	microbial
S-metolachlor	15	Dual II Magnum	30-50	microbial
pyroxasulfone	15	Zidua	16-26	microbial

Time to canopy

- Row spacing
- Seeding rate
- Growth rate
 - Days to canopy similar if planted before late May in MS

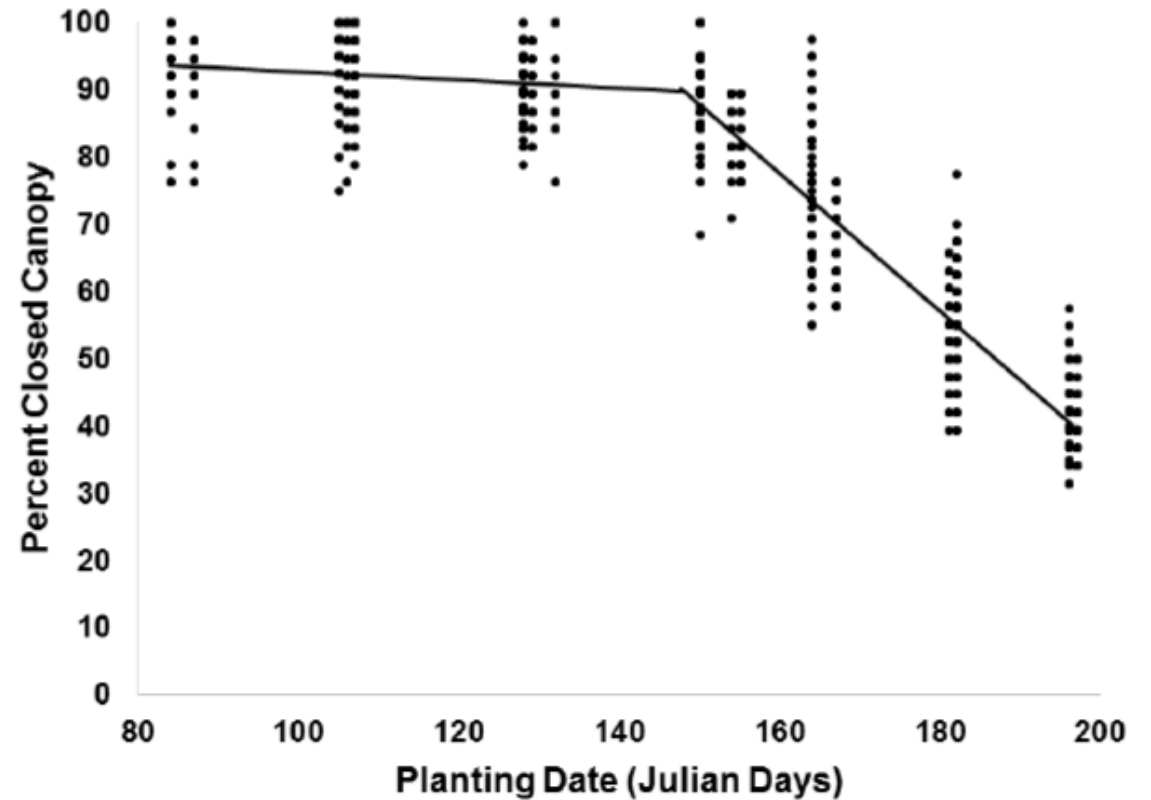


Figure 3. Piecewise regression for percent canopy closure. The equation for the portion before the break point was $y = -0.07x (\pm 0.02) + 99.89 (\pm 1.85)$ with a p -value of <0.01 . The equation for the portion after the break point was $y = -1.01x (\pm 0.02) + 239.54 (\pm 5.97)$ with a p -value of <0.01 . The break point was 147 Julian days.

Planting dates

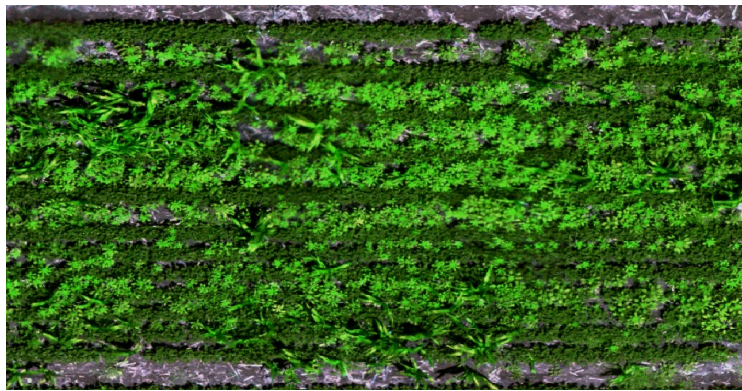
- Ottawa
 - 6/15
 - 6/29
- Manhattan
 - 4/26
 - 5/22
- Scandia
 - 5/16
 - 6/14

Preliminary data

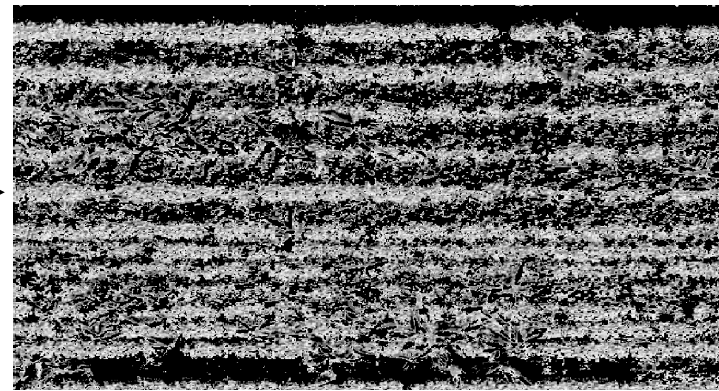
- Ottawa (8/10/22 rating)
 - No differences in waterhemp control
 - Canopy cover $\geq 85\%$ in earlier planted vs 32 to 45% in late-planted soybeans
- Manhattan (8/8/22 rating)
 - No difference in Palmer amaranth control
 - No differences in canopy cover
- Scandia (8/10/22 rating)
 - No differences in Palmer amaranth control
 - Early 15's: 83% to 92% canopy cover
 - Early 30's: 77 to 87% canopy cover
 - Late 15's: 89 to 93% canopy cover
 - Late 30's: 76 to 80% canopy cover

Future Work

- Explore zonal statistics to see if any of the variance in VI can quantify weed cover and/or weed species
- Segmentation of weeds vs crop by hue saturation value (HSV)
- Segmentation of weeds vs crop by DEM



RGB plot image



HSV Segmentation to remove weeds