

**BSPM 509 Herbicide Selectivity and Action**  
 Meeting time Tuesday and Thursday, 10-11:15  
 Instructors, Drs. Scott Nissen, Todd Gaines, and Franck Dayan

Week and Dates	Instructor	Topics
	Nissen	Instructor and student introductions Course introduction (general overview and grading) Pivotal events in Weed Science Important terminology Basic chemistry necessary to understand herbicide MOA Important plant processes
	Nissen	Root anatomy 101 Root absorption Xylem translocation Predicting root absorption Modeling xylem translocation
	Nissen	Cuticle, leaf, and shoot anatomy 101 Leaf and shoot absorption Phloem translocation Designing herbicide molecules for long distance transport Exceptions to the ROTs (rules of thumb) Introduction to surfactants (experiential learning)
	Nissen	Basic stages of herbicide metabolism Important transformations and the enzymes involved Environmental factors affecting herbicide metabolism Bio-activation (pro-herbicides)
	Nissen	Cellulose biosynthesis Microtubule assembly Cellulose biosynthesis inhibiting (CBI) herbicides Microtubule inhibiting herbicides
	Nissen	Fatty acid biosynthesis, chloroplast and ER ACCase inhibitors (grass specific herbicides)

		Very long chain fatty acid inhibitors
	Gaines	Introduction to amino acid biosynthesis Branched chain amino acid inhibitors Aromatic amino acid inhibitors Glutamine synthetase inhibitor
	Gaines	Inhibitors of amino acid biosynthesis (continued)
	Dayan	Plant processes involving light energy Part I Inhibitors of PS I and PS II
	Dayan	Plant processes involving light energy Part II Carotenoid biosynthesis inhibitors Porphyrin biosynthesis inhibitors <i>**Possible lecture by Dr. Paul Neve on October 25<sup>th</sup></i>
	Nissen	Review of plant hormone Synthetic plant growth regulators Current interest in old technology
	Gaines	Current status of herbicide resistance: a global perspective
	Nissen Dayan	Discussion on herbicide resistance (continued) Topics of national and regional interest Common resistance mechanisms Target site and non-target site resistance mechanisms Resistance management strategies
		<b>Thanksgiving</b>
	Nissen Dayan Gaines	Practical applications of herbicide MOA CSI problem solving Research topics involving herbicide MOA Laboratory experiments and introduction to common laboratory techniques Course evaluation
	Nissen Dayan Gaines	Flex days, opportunities to continue with lab experiments, discussion of student research topics, invited speakers, etc
		Finals week

