

BRE1520: Application of abscisic acid (ABA) analogs for improving pulse crop agronomy and physiology

This project focused on development of novel ABA analogs to reduce ABA response in pulse crops and to demonstrate their application to promote germination under low temperature, break dormancy, and hasten maturation. This project consisted of two major parts: chemistry activity focused on the design and synthesis of novel ABA analogs, and applied activities which included screening and identification of promising compounds based on their effects on seed germination at low temperature and for further investigation at the seedling and adult plant stage. To date, two ABA analogs, namely ABA 1001 and ABA 1009, have been found to have potent anti ABA activity. ABA-1001 and ABA-1009 showed germination enhancement at low temperatures for canola, soybean, lentil, and chickpea. ABA-1009 also showed a potential as candidate for desiccant based on lentil and bean seedling desiccation experiments. Further research is aimed at optimizing improved ABA analog activity, fine tuning measurement of the effects, and in analyzing ABA and GA levels toward determining the mode of action of the ABA analogs, all geared to developing novel plant growth regulators for pulse crops.