

An aerial photo of the Martin Fire on July 10th, 2018 in northern Nevada



Improving Restoration Success with Seed Enhancement Technologies

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Limitations



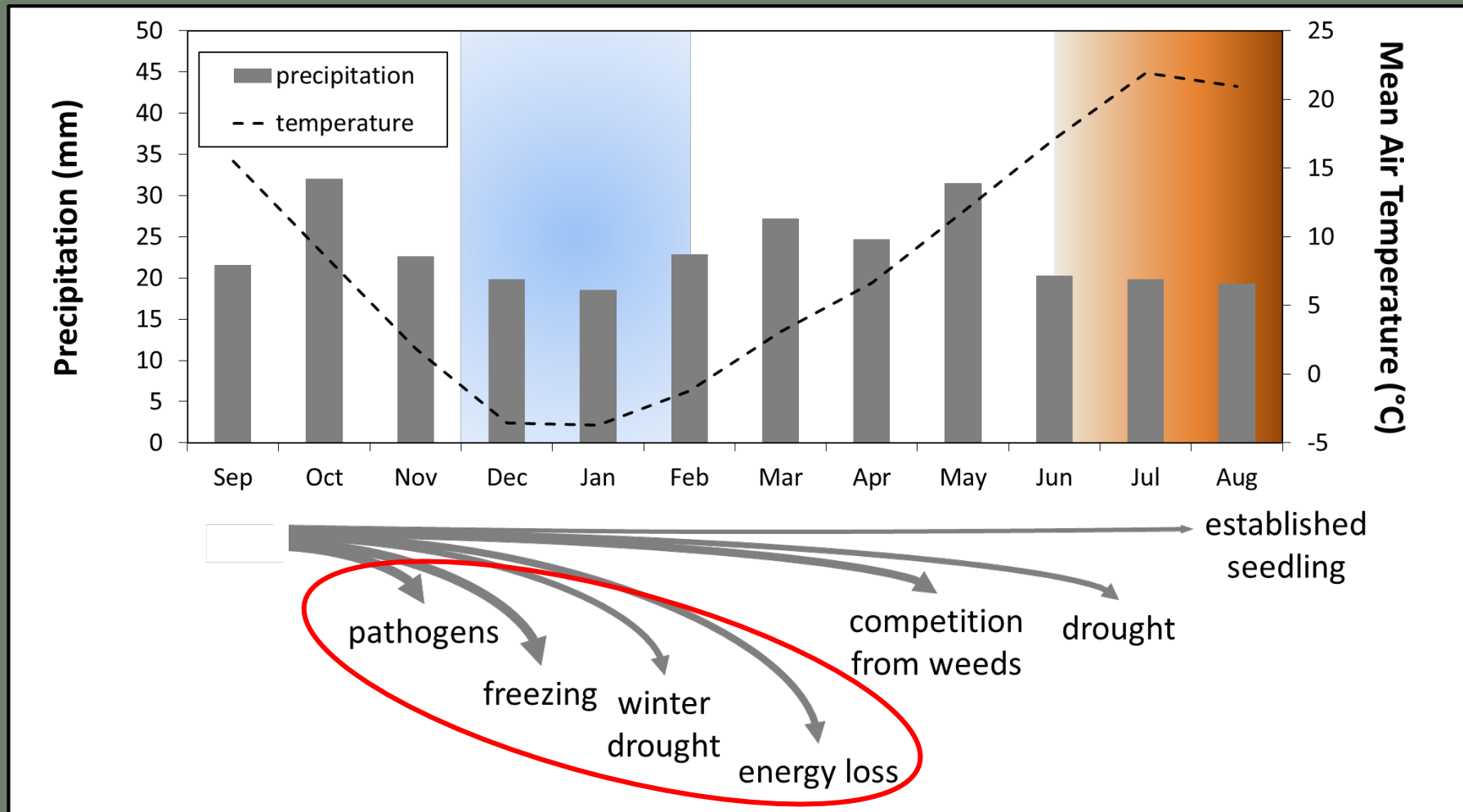
S-Abscisic Acid



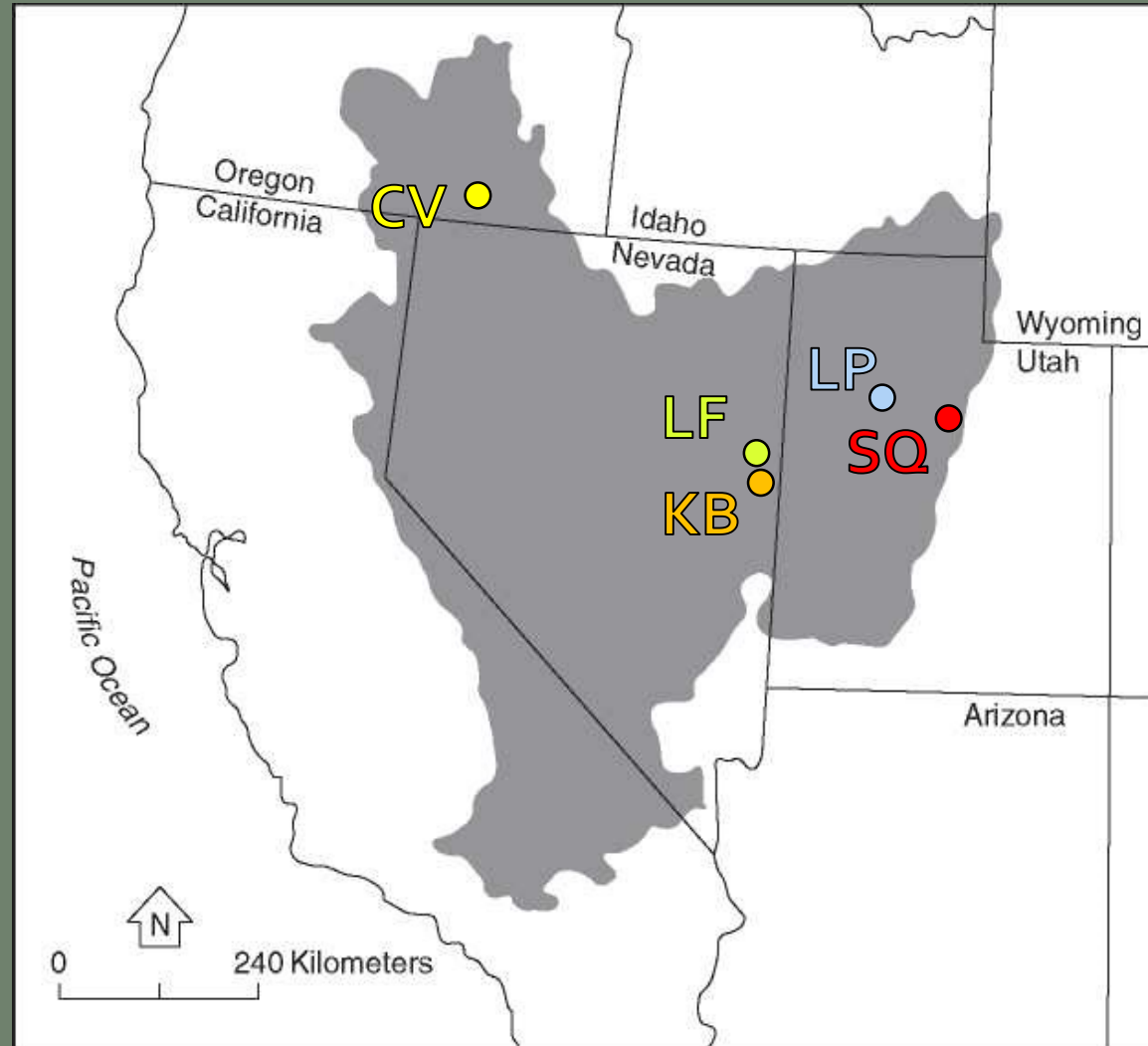
Targeted Fungicides



Unfortunately, dryland systems characteristically experience low seedling establishment



Research conducted at five sites across the Great Basin in Fall of 2018



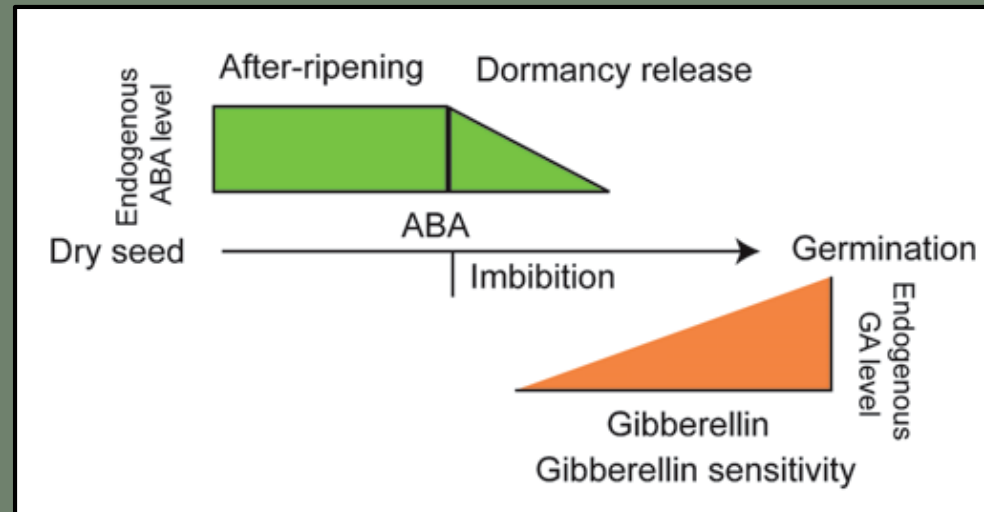


S-Abscisic Acid

Reestablishing Primary Dormancy to Increase Restoration Success



Dormancy maximizes seedling survival by regulating germination to more favorable conditions



Successful restoration seeding cannot share natural recruitment strategies



Reestablishing primary dormancy in fall sown seed to provide overwintering protection

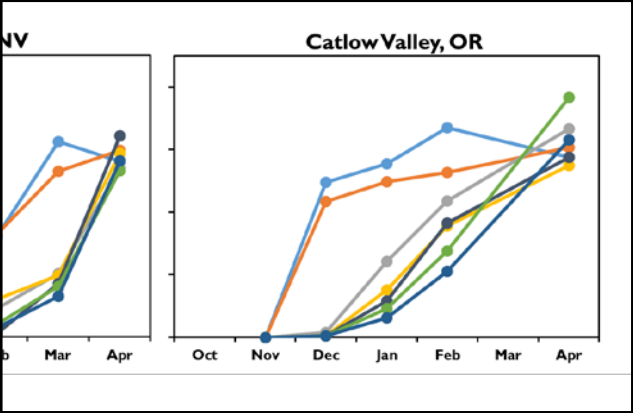
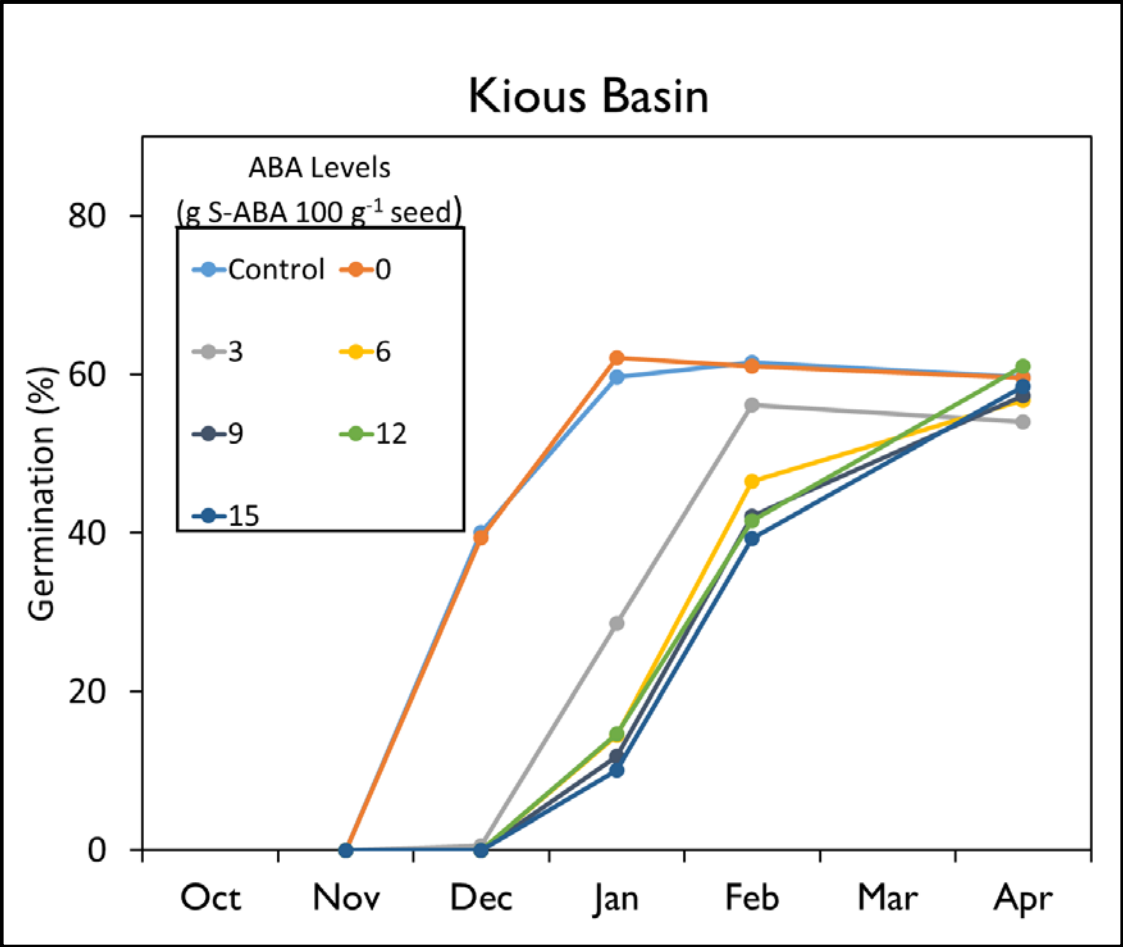
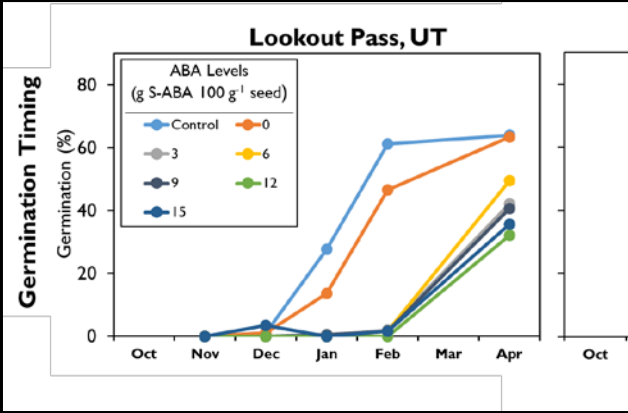


We coated a model species with a range of S-ABA levels

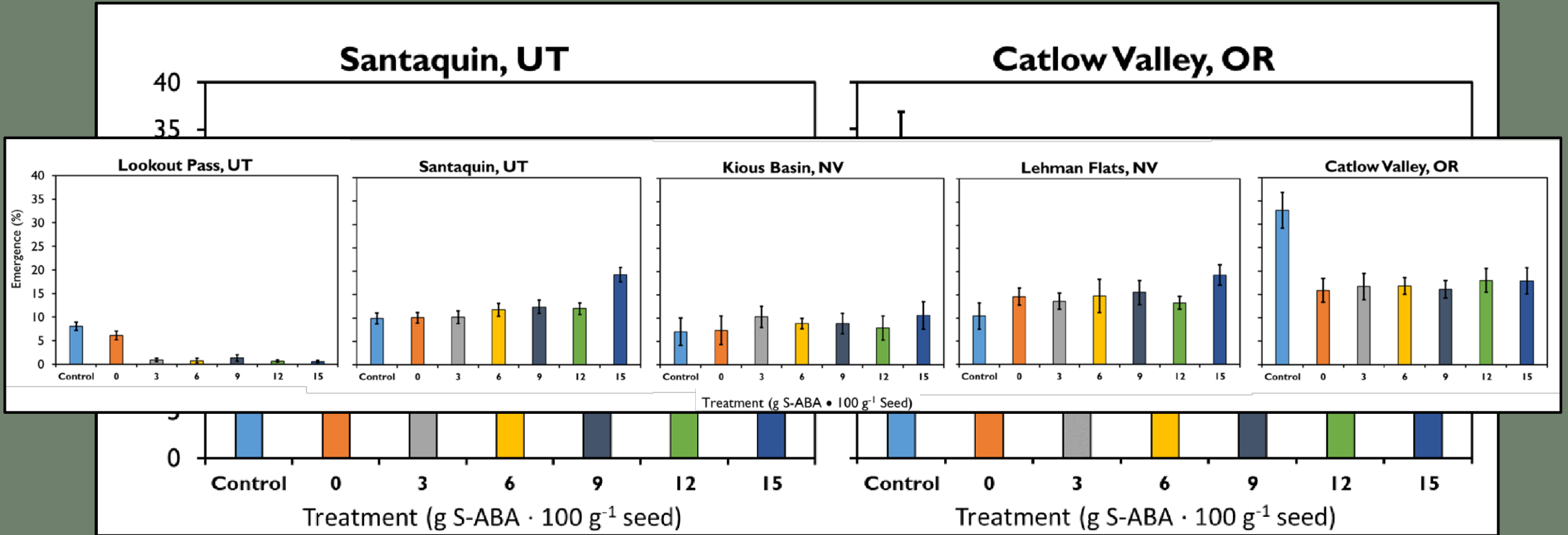
- Control (No coating, no S-ABA)
- Variables
 - Blank (Coating, no S-ABA)
 - ABA (g S-ABA · 100 g⁻¹ seed)
 - 3, 6, 9, 12, 15



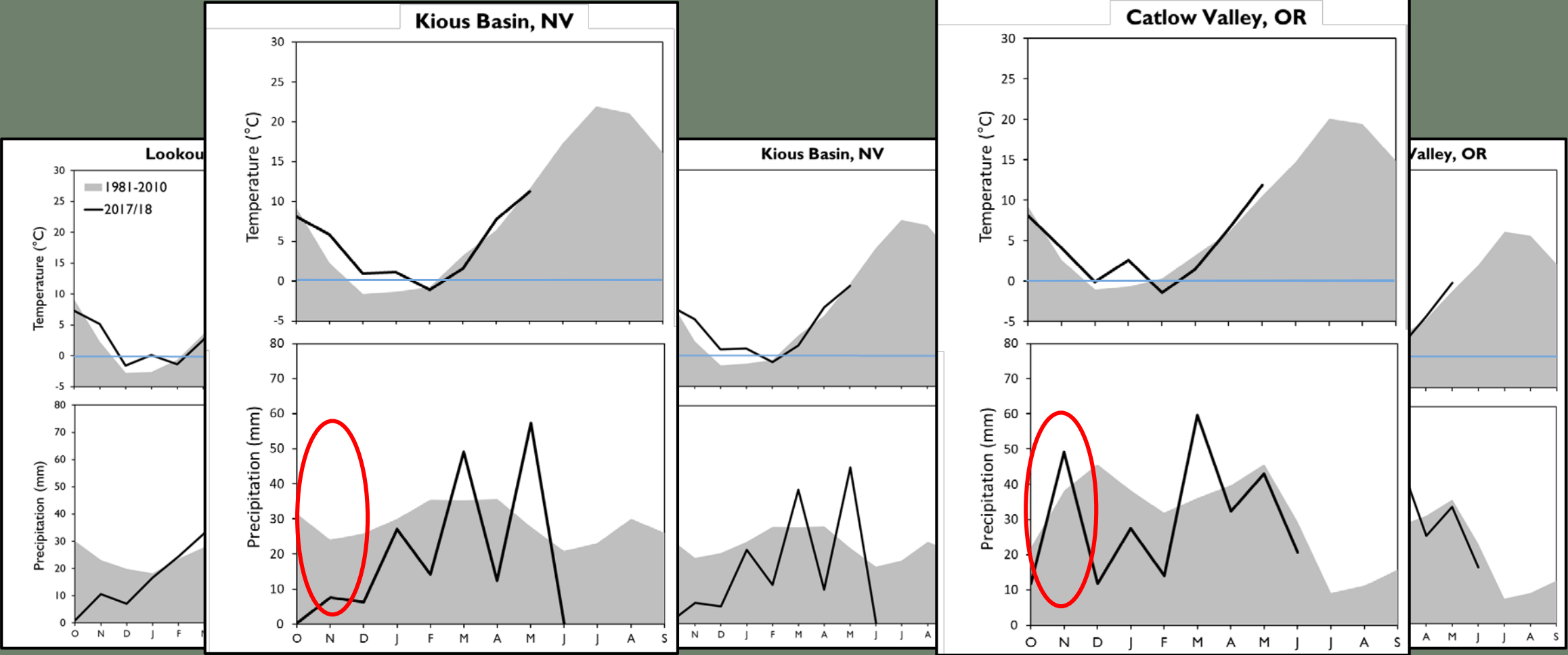
S-Abscisic acid (S-ABA) in seed coatings can reestablish primary dormancy to purchased seed

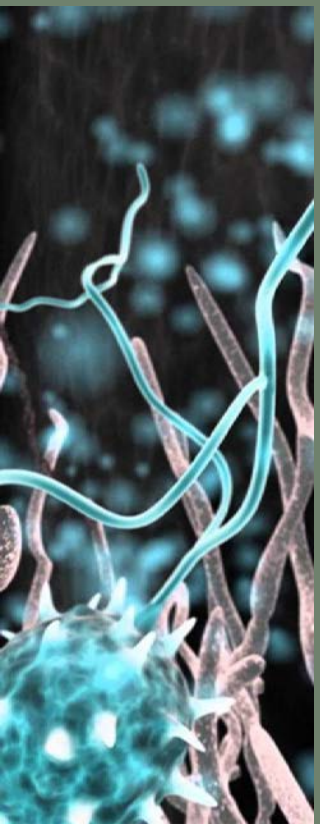


Reestablished dormancy in fall sown seed exhibited variable emergence results



Additional data are needed from S-ABA research over a broader scope of climate and site conditions





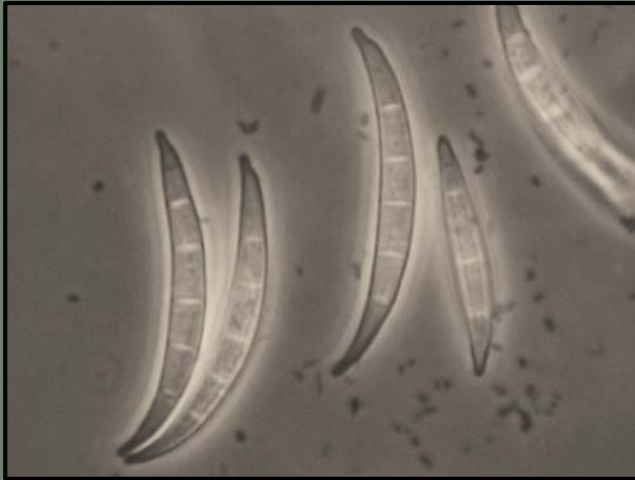
Targeted Fungicides

Enhanced Protection from Seed and Soil Borne Pathogens

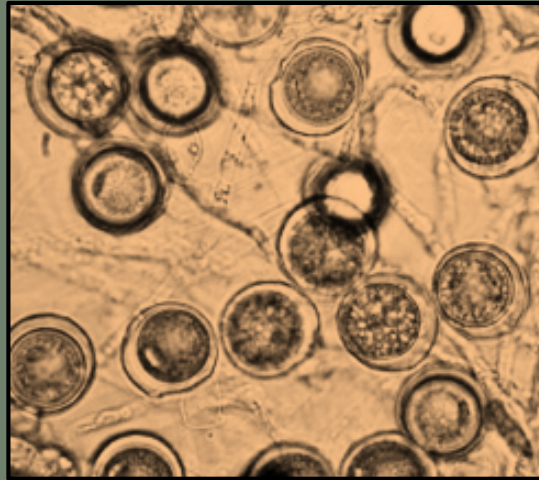


Fungal pathogens are pernicious predators of dormant fall-sown seed

Fusarium sp.



Pythium sp.



Sclerotinia sp.



Application of a fungicide to the seed testa will protect seed and seedlings from known pathogens

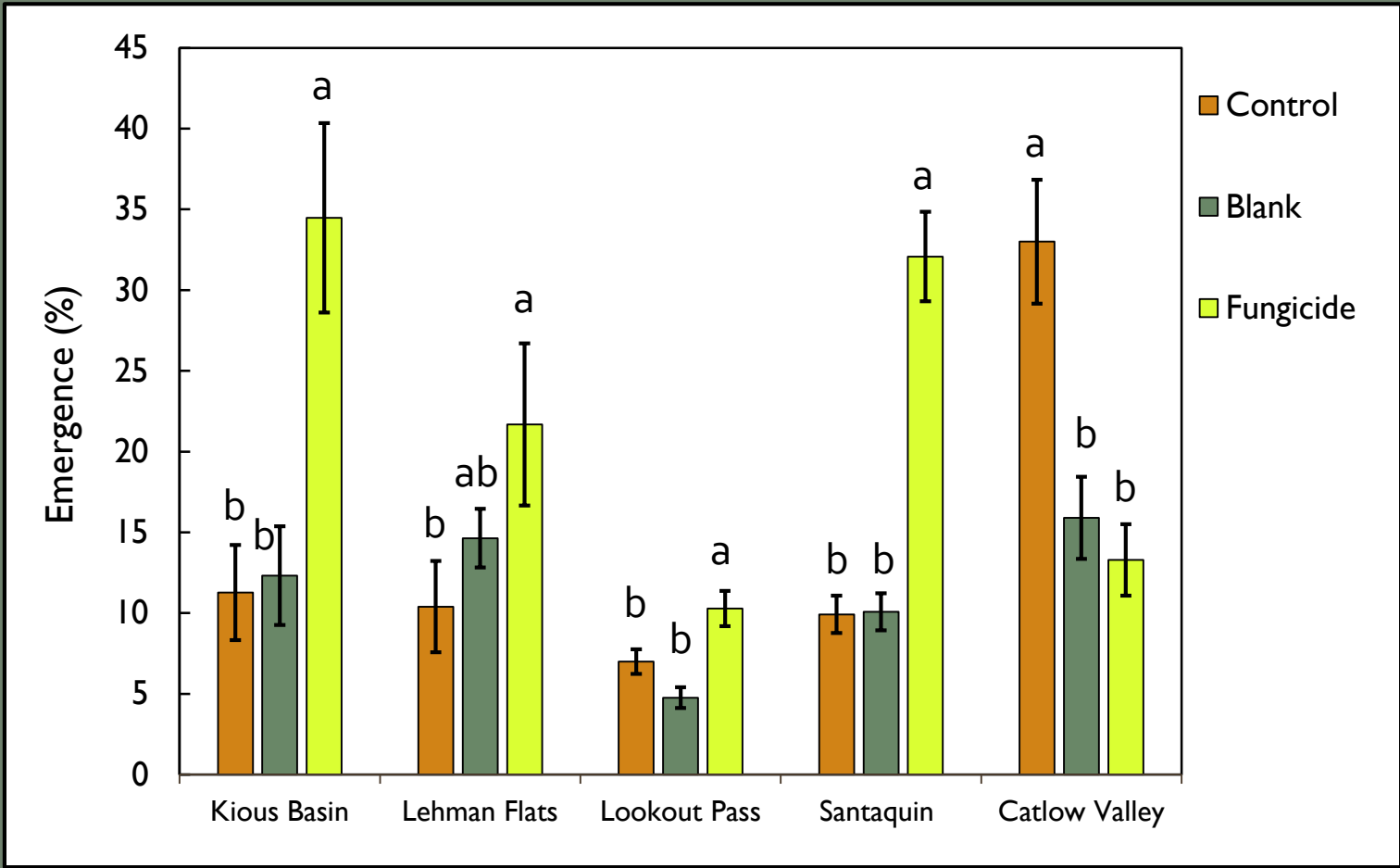


We applied a fungicide formulated to target known pathogens for our model species

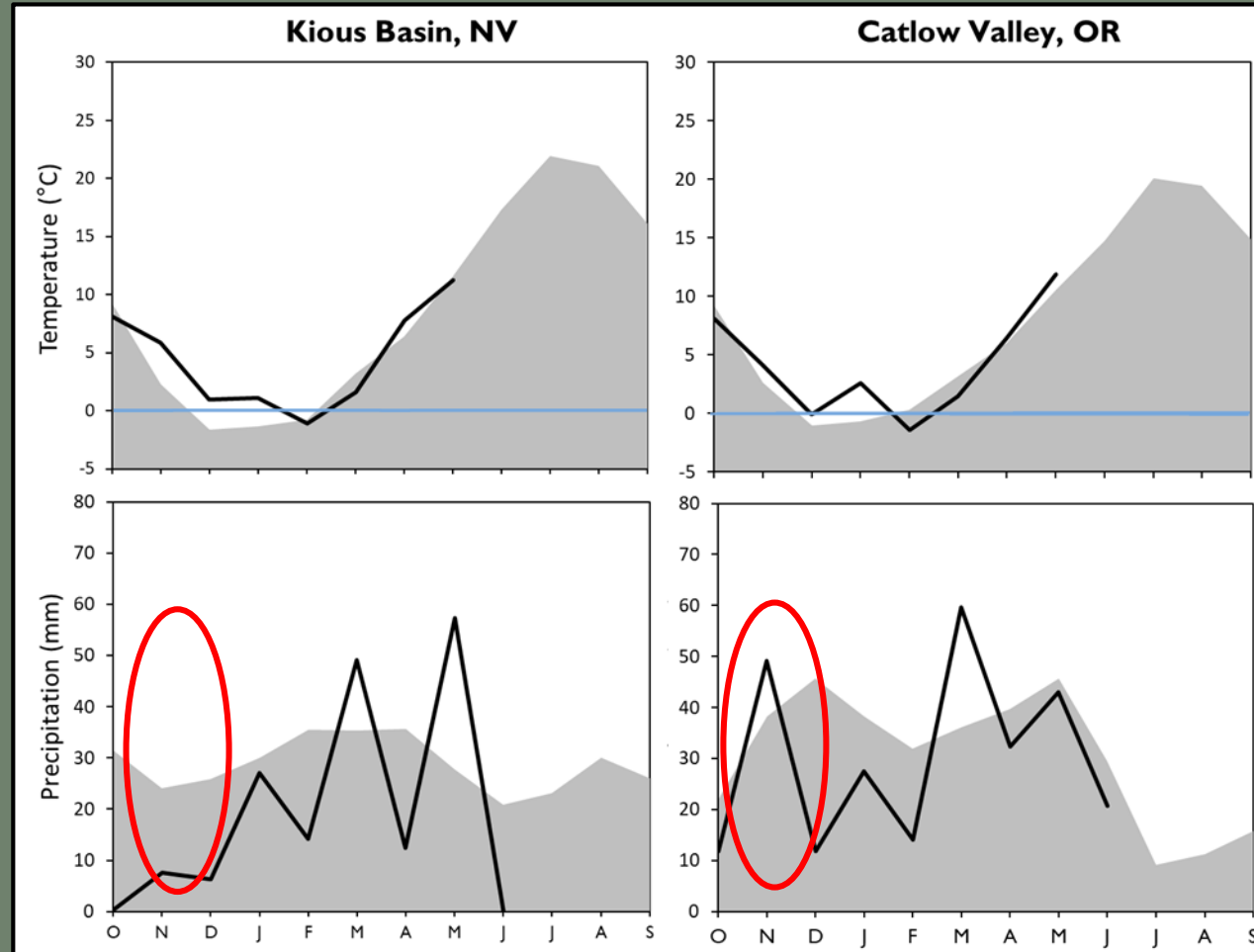
- Control (No coating, no fungicide)
- Variables
 - Blank (Coating, no fungicide)
 - Fungicide (Coating & fungicide)



Fungicide enhanced seeds outperformed untreated seed at four of the five study sites



Further fungicide studies repeated over a wider range of site conditions is needed



Seed enhancement technologies offer novel approaches to successfully restore dryland systems





In no other ecosystem is the urgency of a new perspective [towards restoration] greater than in the world's drylands (James et al 2013)



Acknowledgements

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