

PROJECT TITLE

Determining the effect of mucilage on seed hydration dynamics during priming and its impact on embryo life expectancy in Arabidopsis

CONSORTIUM

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SUMMARY OF THE REPORT

Priming is a controlled hydration and drying procedure widely used by seed producers to enhance the homogeneity and speed of seed germination. The trade-off is that embryo life expectancy is reduced, which limits how long seeds can be stored before sowing, or remain viable in the soil bank. Several studies have indicated that a slower rate of seed drying could counter the detrimental effects of priming on lifespan. Many plant species form a mucilage hydrogel around their seeds after imbibition in water. This mucilage is formed from polysaccharides released from the seed coat. We hypothesized that the presence of a mucilage hydrogel would modify the dynamics of seed hydration and drying. In *Arabidopsis*, mutants have been identified that show altered mucilage synthesis or properties and these are important tools for further investigation of the role of mucilage in priming as seeds can be compared directly without prior manipulation. CT imaging of wild-type and mutant seeds during priming in soil and determination of subsequent germination rates was carried out to determine if hydration and germination dynamics are indeed modified *in situ*.