

Subject: 2014 VegR&D Poster Abstract, UC Davis, April 10, 2014

Seed Coating Technologies Employing a Plant-based Binder

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Abstract

Seed enhancements may be defined as post-harvest treatments that improve germination or seedling growth, or facilitate the delivery of seeds and other materials required at the time of sowing. This definition includes three general areas of enhancements: priming, coating and seed conditioning. Coating includes three techniques routinely used for vegetable crop seeds: film coating, encrusting and pelleting. Most coating formulations are inert and have little effect on seedling growth. The objective of current research was to develop coating formulations with desired properties using a renewable resource for the coating binder. Soy flour (SF) was used as the binder and diatomaceous earth (DE, particle size 45-106 μm) used as filler. Three concentrations of soy flour (5%, 7.5% or 10%) and mixed with water and a red dye added used as binder. Mechanical integrity tests and soaking in water were performed to assess the coating quality. Increasing the SF concentration increased the strength of the coating. Germination test revealed that the 10% SF treatment no significant effect on germination percentage, rate and uniformity in comparison with the non-coated control. Moreover, both root and shoot length from the 10% SF treatment was greater than the control. Soy flour provides a non-synthetic binder that may use as a binder and also enhances early seedling growth.