

KAFFKA, STEPHEN R.*¹, DAXUE, DONG¹, PETERSON, GARY¹, and THOMAS A. BABB². ¹ Department of Agronomy and Range Science, University of California, Davis, CA 95616, and ²Spreckels Sugar, Inc., Box 2240, Woodland, CA 95776. **Sugarbeet (*Beta vulgaris*) seedling emergence in response to varying soil, irrigation, and seed treatments in California.**

Sugarbeet seeds from a single seed lot were treated with different combinations of seed coating materials (film coating and pelleting), fungicides (metalaxyl, chloroneb, and hymexazol) and an insecticide (imidicloprid). Some also were primed. These differing seed treatments were compared in three emergence trials, two at Davis in California's Sacramento Valley in 1997 and 1998, and one at Holtville, in the Imperial Valley in 1997. Seeds were planted in plots that had been treated with a soil fumigant (metam sodium), a pre-plant incorporated herbicide (cycloate), or no soil treatment. Sprinkler irrigation and furrow irrigation methods also were compared. Emergence rates, cumulative emergence, seedling populations at the six leaf stage, and the causes of post emergence seedling mortality were evaluated for each seed x soil x irrigation treatment combination. Soil fumigation had no significant effect on emergence in any of the three trials, while the use of cycloate significantly reduced final plant populations. Emergence rates and cumulative emergence were comparable in furrow and sprinkler irrigated treatments in both Davis and Holtville, despite a five fold increase in surface soil salinity in Holtville with furrow irrigation (2 to 10 dS m⁻¹). Emergence rates were highest for primed and untreated seeds and lowest for film coated seed at all locations. Both cumulative emergence and plant populations at the six leaf stage were significantly greater for both primed and film coated seeds treated with imidicloprid, compared to seeds without imidicloprid. Post emergence mortality was due primarily to pathogens in all the trials, though the amount of predation by insects varied among the trials. Pre-emergence mortality varied more than post emergence mortality among the treatment combinations, and the largest seedling populations were correlated with the lowest pre-emergence mortality.