KAFFKA, STEPHEN R.* and GARY R. PETERSON . Department of Agronomy and Range Science, University of California, Davis, CA 95616-8515. A comparison of different sugarbeet seed conditioning and preplant treatments on seedling emergence in diverse California locations.

Different pre-plant seed treatments were applied to two sugarbeet cultivars to determine whether they improved or inhibited seedling emergence under a diverse set of soil and temperature conditions found in several California locations. Treatments included bare, processed seed as the control, washing, matric conditioning, and several commercial seed treatments including film coating, pelleting and matric conditioning for comparison. Control, washed, and matric conditioned seeds also were compared with and without fungicide applications in some of the trials. Tests were carried out over a three year period in the Imperial Valley (IV), Davis (D) in the Sacramento Valley, and Tulelake (TL), a high elevation location. The same cultivars, but different seed lots were used each year. Soil temperatures during the trials ranged from 0° C in TL to 40° C in the Imperial Valley. On average, treatments involving matric conditioning resulted in significantly faster rates of emergence to 50% and 90% levels. Differences varied from 1 to 2 days at 50% emergence to as many as 4 days at 90% emergence, depending on location and year. In general, pelleted (unprimed) seed required longer to reach maximum emergence, but achieved high emergence levels in most locations. Maximum emergence varied across locations from approximately 57 % in TL to 79 % in IV. Treatment by cultivar interactions also differed by location and year over a range of 20 % in TL to more than 40 % in the IV. Cultivar differences were consistent and significantly different in most locations and years, with the less vigorous cultivar reaching maximum emergence levels 3 % to 10 % lower on average than the more vigorous cultivar. Maximum emergence percent was not significantly different between most treatments, but the best performing treatments were superior to the control.