

BABB, T. A.*, J. L. KIMMELL, J.S. GERIK, R. P. HEIMFORTH. Spreckels Sugar Co., Inc., P. O. Box 2240, Woodland, CA 95695; USDA-ARS, 1636 E. Alisal St., Salinas, CA 93905. - Evaluation of 1,3-dichloropropene soil fumigation and tolerant varieties on California sugarbeet production in rhizomania infested soils.

The production of sugarbeets (*Beta vulgaris* L) is limited in California by the presence of rhizomania, a viral disease (beet necrotic yellow vein virus) transmitted by a fungus, *Polymyxa betae* Keskin. Trials in 1989 and 1990 evaluated the effect of tolerant varieties in combination with soil fumigation on sugarbeet yield in rhizomania infested fields. A split-plot experimental design was used with main plots of 0, 9 & 12 gallons per acre (gpa) fumigation rates using 1,3-dichloropropene. Subplots were varieties with a range of tolerance to rhizomania. An attempt was made to quantify the inoculum density in each of three fields and relate it to subsequent yields. Main plots were applied in either October or April and plots were planted in February or April. Yields varied between location, with unfumigated plots ranging from 0.45 tons of sugar per acre (TS/A) for a susceptible variety to 1.16 TS/A for a tolerant variety. The highest yielding tolerant variety yielded 3.3 TS/A in 1989 with 12 gpa of 1,3-dichloropropene. Results suggest varietal tolerance presently available is not sufficient to profitably produce sugarbeets in fields infested with rhizomania without soil fumigation. The success of a tolerant variety in combination with soil fumigation may be dependent on the original inoculum density in a field. A technique to rapidly assay soil for disease inoculum levels would aid California growers in determining which fields will produce economic returns when combined with soil fumigation and an adapted, rhizomania tolerant variety.