GRIFFIN, G. D. USDA, Agricultural Research Service. Forage and Range Research. Utah State University, Logan, UT 84322-6300. - Effect of injection spacing and population density on nematicidal control of *Heterodera schachtii*.

Heterodera schachtii initial soil nematode densities (Pi) of 3.8-16.8 eggs/cm^3 soil were effectively controlled with application of the soil fumigant 1,3-dichloropropene (1,3-D) injected on 56-cm row centers. The poorest nematode control and lowest sugarbeet, *Beta vulgaris* L., yields resulted from fumigation of a Pi of 16.8 eggs/cm^3 soil with 90 kg/ha of 1,3-D injected on 30-cm broadcast centers. The best nematode control resulted from fumigation of a Pi of 3.8 eggs/cm^3 soil with 225 kg/ha of 1,3-D injected on 56-cm row centers. Chemical rates of 90, 135, 180, and 225 kg/ha of 1,3-D injected on 56-cm row centers resulted in sugarbeet yields of 62, 69, 72, and 82 metric tons/ha at a Pi of 3.8 eggs/cm^3, 57, 62, 69, and 77 metric tons/ha at a Pi of 7.7 eggs/cm^3 soil, and 37, 44, 57, and 69 metric tons/ha at a Pi of 16.8 eggs/cm^3 soil. The same rates of chemicals injected on 30-cm broadcast centers resulted in sugarbeet yields of 49, 54, 67, and 74 metric tons/ha at a Pi of 3.8 eggs/cm^3 soil, 36, 47, 54, and 65 metric tons/ha at a Pi of 7.7 eggs/cm^3 soil, and 20, 31, 40, and 47 metric tons/ha at a Pi of 16.8 eggs/cm^3 soil. Soil fumigant 1,3-D, at a rate of 135 kg/ha injected on 90-cm row centers was as effective in controlling *H. schachtii* as were 180 and 225 kg/ha injected on 56-cm row and 30-cm broadcast centers.

KERR, ERIC D.*, JAMES G. ROBB, and DARYL E. ELLIS. University of Nebraska Panhandle Research and Extension Center, 4502 Ave. I, Scottsbluff, NE 69361. Factors affecting the economic threshold for *Heterodera schachtii* control in sugar beet.

Economic threshold levels for the sugar beet nematode, *Heterodera schachtii* Schm., on sugar beet, *Beta vulgaris* L., varies significantly among geographic areas that differ in average soil temperatures. Field studies were conducted in the North Platte Valley of Nebraska during 1988 and 1989 to establish relationships between preplant nematode egg and larva concentration (eggs/cm^3 of soil) and final sugar beet yield. For the response function that most closely represented the average field conditions in the North Platte Valley, the sensitivity of results to changes in percent sugar, percent nematode control, cost of control, and sugar price coefficients were evaluated. For typical production costs and grower contracts, economic threshold levels were influenced by each of these coefficients. The economic threshold (eggs/cm^3) dropped from about 3.0 at 15% sugar to about 2.3 at 18% sugar. At 80% nematode control the threshold was 3.1, in contrast with 2.5 at 100% nematode control. Cost of control is a major determinant of the economic threshold. With a $60/acre cost of control the threshold level was 1.8; increasing the cost of control to $100/acre increased the threshold to 3.1; at $160/acre control cost the threshold increased to 4.9. Price of sugar also influenced the economic threshold, at $20/cwt the calculated threshold was 3.3, at $28/cwt the threshold declined to 2.3.