WOZNIAK, C. A.[1]* and S. E. HINZ[2], USDA, Agricultural Research Service, P.O. Box 5677 - University Station, and North Dakota State University, Fargo, ND 58105. - Native bacterial flora and development of larvae of the sugarbeet root maggot.

Collections of third instar sugarbeet root maggots (SBRM), *Tetanops myopaeformis* Röder, were made in 1991 and 1992 from the Red River Valley, eastern Montana, north central Wyoming, and western Nebraska to determine the identity of bacteria associated with this larval stage. The most commonly encountered species were *Serratia marcescens*, *S. liquefaciens*, *Pseudomonas fluorescens*, *Ps. putida*, and *Xanthomonas maltophilia*. Of these, *X. maltophilia* (Xm) was the only species encountered consistently from third instars regardless of origin. Additionally, Xm was found to be a commensal of the sugarbeet rhizosphere. Bacteria naturally associated with SBRM are transferred to the surface of the chorion during oviposition and transmitted to the first instars upon emergence from the egg sheath. Eggs treated with 0.2% hypochlorite were found to produce gnotobiotic larvae. Gnotobiotic larvae coincubated on MS plant tissue culture medium with axenic sugarbeet cells were observed to feed on the tissue but failed to moult or increase in size. Death of these larvae typically ensued in less than 50 days, at which point they remained as first instars. Addition of Xm (isolated from natural populations of SBRM) at the onset of the coincubation with sugarbeet cells resulted in up to 50% of the larvae reaching the second or third instar stage. At the termination of the culture period, the amount of remaining sugarbeet tissue was greatly decreased in the presence of SBRM with Xm versus gnotobiotic SBRM without Xm. Comparisons of other isolates of Xm and other bacterial species suggests that the capacity to enhance insect utilization of the sugarbeet cells is not limited to this one strain of Xm. This coincubation method may eventually serve as a production method for this maggot as they have been recalcitrant to routine lab rearing.