

YU, M. H.*; USDA, ARS, Crop Improvement and Protection Research Unit, 1636 East Alisal St., Salinas, CA 93905-3018. **Resistance to *Meloidogyne* spp. and improvement of sugarbeet cultivars.**

The production of sugarbeet (*Beta vulgaris* L.) crops encounters numerous challenges, including attack from root-knot nematode in infested areas. *Meloidogyne* spp. is a destructive pest of sugarbeet that reduces yield and quality of the harvest. The available wild beet source of host-plant resistance is effective against all four economically important *Meloidogyne* species. Transferal of resistance from wild beets to cultivated sugarbeet was achieved by means of hybrid crosses and screening procedures. Performances of nematode resistant sugarbeet experimental lines were observed in field plantings. In non-infested soils several resistant populations produced sizable taproots, even though root conformations were less uniform and root weights were lower than the control. Under root-knot nematode infested conditions, yields of susceptible control plants were noticeably lower than that of the resistant counterparts. Intensive genotype-environment interactions expressed more readily to susceptible sugarbeet when secondary invasion and/or high temperature elements were involved. Development of sugarbeet with resistance to *Meloidogyne* spp., therefore, is the most desirable and environmentally safe means to solve the production problems due to root-knot nematode.