

BUGBEE, W.M., C.A. WOZNIAK, and G.A. SMITH, USDA, Agricultural Research Service, Northern Crop Science Laboratory, PO Box 5677, State University Station, Fargo, ND 58105-5677. A two-way approach to improve root rot resistance.

Pectin lyase, produced by *Rhizoctonia solani*, was found associated with crown and root rot on sugar beet. The sugar beet also was found to produce a pectin lyase inhibitor protein (PNLIP). The behaviour of PNLIP in controlled experiments prompted efforts to pursue the goal of manipulating PNLIP for enhanced root rot resistance. Polyclonal and monoclonal antibodies to PNLIP were used to probe sugar beet cDNA libraries. Transformed *E. coli* colonies were lifted with nitrocellulose membranes, lysed directly on the membranes and probed with antibodies. The monoclonals appeared to be more specific than the polyclonals. Colonies whose lysates reacted positively with monoclonals, were electrophoresed and the protein bands were electroblotted to nitrocellulose. None of these fractionated bands reacted with the monoclonals. Nine amino acids at the amino terminal of PNLIP were sequenced. Two oligonucleotides were synthesized based on the amino acid sequence and will be used in further efforts to isolate the PNLIP-encoding DNA. The polyclonal and monoclonal antibodies were used in a double antibody sandwich ELISA protocol to estimate the PNLIP content in small samples of sugar beet extract. Plants with high or low levels of PNLIP were cloned by apical meristem culture. Clones were interpollinated to create four synthetic lines. In a small greenhouse trial, the effect of this selection technique was not conclusive.