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. ... reased whitered bineds results asked! one widt , waskedites sent asked!

discrimination for selection of recisions room for breeding, than a linear scoring marked. We use a linear rating system for disease loss setimates. The sine weed for the disease nursery has been amployed for that purpose for more than 20 years. In recont years we have had difficulty producing discount severa accept to discrintars resistant from partially customit outplants. The variety supleys a two year sciention between supercesses and slighter and somethy the sugarbants are inoquisted aix washs after planting, by dispensing this that crowns, siller caryopees on wouch the funque has been grown, Reportments were done to detempine if binlogical control of the paintoget was responsible for low disease savericy. Bigily ensusptible to bigbly resistant experient ganotypes respective to the exceptibles districted; district order and the an adjacent field with no prior was an a root set disease sursory. In two of terms years, the disease was some savare at the que sites than in the service broad non-sony. Incomisted plants at the rew sites also were even stoned. Stological coming of phisocrapia seems a likely cause of the described disease savegity in the escablished mareery. The orop rotation for the site is being charged to a three year rotation of augarhaute/outs/navy boars, in so attampt to reduce the apparent affects of oldinglest control of Shirocranic.