Performance of Release Candidates in the NCSU Peanut Breeding Program.


Because of the disjoint nature of peanut (Arachis hypogaea L.) production and post-harvest handling in the Virginia-Carolina (VC) production area, one must consider the needs of all three segments of the peanut industry in establishing breeding objectives—growers, shellers, and processors. In the N.C. State Univ. peanut breeding program, a series of trials are conducted to evaluate performance of cultivars and breeding lines with respect to the needs and wishes of these various segments. The trials include (1) replicated (\(y \geq 2, l=3, r=2\)) field tests of lines in which are measured yield, grade, and pod brightness and hue; (2) separate replicated trials (\(y \geq 2, l=1, r \geq 3\)) of reactions to four diseases common in the VC area (leaf spots caused by Cercospora arachidicola Hori and Cercosporidium personatum [Berk. & M.A. Curtis] Deighton, Cylindrocladium black rot caused by C. parasiticum Crous, M.J. Wingf. & Alfenas, Sclerotinia blight caused by S. minor Jagger, and tomato spotted wilt caused by Tomato spotted wilt tospovirus), and (3) evaluation of sensory quality of paste ground from sound mature kernel samples grown in the field and roasted as near as possibly to a common color. Lines having performed sufficiently well in NCSU’s field yield trials for two or more years may graduate to the three-state (Va., N.C., and S.C.) Peanut Variety and Quality Evaluation (PVQE) trials coordinated by Dr. Maria Balota of Virginia Tech’s Tidewater Agric. Res. and Ext. Ctr. Yield, grade, color, and quality traits are extensively measured in the PVQE trials. After three years in the PVQE trials, a line may be considered for release. There were 19 NCSU breeding lines (17 of them high-oleic, 2 normal-oleic with very large pods and seeds) entered in the 2011 PVQE program, 7 of them for a second year. There are four lines that appear to be likely candidates for release following a third year of testing agronomic performance, grade, and quality in the PVQE trials: N08070olJC, N08075olICT, N08081olJC, and N08082olJCT. N08070olC and N08081olJC have the advantage in agronomic performance, N08070olJC and N08075olICT in disease resistance, and N08075olICT and N08082olJCT in flavor. Results from an additional year of testing may indicate that a single line is the lead candidate for release.