Simple Non-Destructive Method for Quantification of Aflatoxins in Individual Peanut (*Arachis* spp.) Seeds

V.S. SOBOLEV*, R.S. ARIAS, A.N. MASSA, T.E. WALK, V.A. ORNER, and M.C. LAMB, National Peanut Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Dawson, GA 39842

Two high-throughput purification procedures for quantification of aflatoxins in individual peanut seeds using UPLC have been developed. Aflatoxins were extracted from a pulverized sample, and after a single cleanup step on a minicolumn packed with Florisil or C_{18}-Al_2O_3 mixture, were determined by UPLC equipped with a C_{18} column and a fluorescence detector. A gradient mobile phase composed of H_2O, MeOH, and MeCN provided baseline separation of aflatoxins B_1, B_2, G_1, and G_2; recoveries of these toxins from peanuts spiked at 1 - 50 ng/g exceeded 80%. The methods have been used for the exploration of wild *Arachis* germplasm to identify accessions resistant to *Aspergillus* and to determine and characterize novel sources of genetic resistance to this fungus. Both methods are non-destructive since they use only half of the seed, and leave the other half containing the embryonic axis intact. Such a technique allows germination and growth of the peanut plant to full maturity from the same seeds used for the aflatoxin analysis.