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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT
RESEARCH INITIATIVE FINAL PROGRESS REPORT
FOR WORK DONE UNDER RESEARCH AGREEMENT:

#032492-01

DATE: July 23, 2007

INSTITUTION: University of Georgia, Tifton Campus

PROJECT TITLE: **Investigations of Production, Utilization and Post-Harvest Qualities of
Candidate Multiple Pest Resistant Breeding Lines**

RESEARCH AGREEMENT NO.: 25-21-RF330-377

PROJECT LEADER: Dr. James W. Todd

EXPIRATION DATE: June 30, 2007

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NPB Control No.: 032492-01

FINAL REPORT OF PROGRESS:

Five advanced breeding lines (F11), generated from a cross between >Florida MDR 98' and the Bolivian land race, >Bayo Grande=, were chosen as having the highest levels of pest resistance and yield from five hundred and seventy-seven lines generated from individual plant selections made from 1999-2005. Two of these lines have been evaluated in the Uniform Peanut Performance Tests and Cultivar Tests in Georgia, Florida and Alabama each year for the last three years. One of these lines, CRSP 14, was chosen for submission as a new cultivar, and is currently under consideration by the University of Georgia, College of Agriculture Cultivar Release Committee. The name >Parham= has been proposed, and honors Mr. Stith Parham, posthumously, one of the inventors of the Hull-Scrape Method for Assessing Peanut Maturity. Yields, grades and resistance to multiple disease and insect pests have been evaluated in numerous other tests in Georgia, Florida and Alabama by collaborators in those states. All of these breeding lines have a good to very good package of resistance to several important disease and insect pests of peanut in the southeastern peanut production area. Resistance to early leaf spot has been good to excellent, while resistance to late leaf spot has been good. Initial testing also showed promising resistance to cylindrocladium black rot and white mold. Spotted wilt

(TSWV) resistance has been comparable to C99R and several of the newer Georgia and Florida releases.. The average yields with this breeding line have exceeded yields of >Georgia Green= by 47% in sprayed tests and by 83% in non-sprayed tests. Several of our elite lines also have usable levels of resistance to leaf hopper and three cornered alfalfa hopper, which are emerging as significant new pests to peanut production in the southeast.

Late leaf spot along with tomato spotted wilt virus proved to be the major limiting factors in a fungicides spray regimes test to evaluate resistance in ten advanced candidate peanut breeding lines as means of reducing costs for disease control inputs. Disease levels due to early and late leaf spot were moderate in this test, but yields were generally not significantly reduced by as few as two fungicide applications compared to four. Yields were adversely affected by TSWV in the more susceptible lines or cultivars.

Other advanced lines (F8) were selected from candidates evaluated in 23 tests in 2006 for further testing in 2007 as follows: (1) C99R X Bayo Grande, 20 lines out of 39 tested, (2) VA 98R X Bayo Grande, 10 lines out of 18 tested, (10) F11 selections from Florida MDR 98 X Bayo Grande, 6 lines out of 21 tested. In addition to the 36 lines listed above, individual plant selections (F4 and F5) were made from 4 of the most promising F3 and F4 lines tested in 2006. Those included were 76 selections of NemaTam X 0020-14, 37 selections of >Georgia Valencia= X PI 339967, 376 selections of >Georgia Valencia= X 0020-08, 130 selections of 0020-20X UF 94022. Finally, an F3 nursery of material from 12 new crosses with high oleic parents X high pest resistance parents is being evaluated in Tifton for TSWV resistance and yield. Grades and other post-harvest quality factors were determined for selected highly promising candidate lines. Post harvest qualities of CRSP648, CRSP702, and CRSP910 were evaluated by J. Leek and Associates with results indicating normal readings for oil content, taste, blanching and roasting qualities and other parameters of interest to manufacturers.