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

#030993-01

DATE: April 26, 2006

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-RF330-363

PROJECT LEADER: Dr. James W. Todd

EXPIRATION DATE: December 31, 2005

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FINAL REPORT OF PROGRESS:

Two advanced breeding lines (F9), CRSP 08 and CRSP 14, generated from a cross between 'Florida MDR 98' and the Bolivian land race, 'Bayo Grande', have been evaluated for a third time in the Uniform Peanut Performance Tests in 2005. 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. Both 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. No clear winner has emerged between CRSP 8 and CRSP14, and they are very similar in all aspects of production results and post-harvest qualities. Work was initiated in 2005 to investigate suitability of these two lines for use in twin row and reduced tillage systems, and will continue in 2006. Initial results indicate that they are both suitable, and perform well in these expanding cultural systems. Plant growth and size are generally similar to C99R and Carver. The average yields with these two breeding lines have exceeded yields of 'Georgia Green' by 47% in sprayed tests and by 83% in non-sprayed tests. These lines also have shown 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.

Tomato spotted wilt virus proved to be the major limiting factor in a fungicides spray regimes test to evaluate resistance in these two advanced lines and other candidate peanut

breeding lines as means of reducing costs for disease control inputs. Disease levels due to early and late leaf spot were light to moderate in this test, but yields were generally not significantly reduced by as few as two fungicide applications compared to six. Yields were adversely affected by TSWV in the more susceptible lines or cultivars. Post harvest qualities of CRSP 08 and CRSP14 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. The two lines, CRSP 08 and 14, have been shown to be very similar and no clear winner has emerged. On the other hand, it appears that since they are sister lines, it may be better to combine them into a multiline composite such as was the case when 'Florunner' was released as a composite of four sister lines by the University of Florida/USDA in the late 1960s. The composite of these two lines was proposed under the candidate name of 'Attaboy' at the April meeting of the UGA Peanut Commodity Committee. A positive vote of the committee enabled the process to go to the next level which is to petition the UGA College of Agriculture Cultivar Release Committee for approval. That committee meets again in the fall of 2006.

Other advanced lines were selected from candidates evaluated in 23 tests in 2005 for further testing in 2006 as follows: (1) C99R X Bayo Grande, 39 lines out of 61 tested, (2) Andru93 X RP1997C/1F1 #3, one line out of 4 tested, (3) Early Bunch X Bayo Grande, two lines out of two tested, (4) Georgia Green X Bayo Grande, 7 lines out of 12 tested, (5) Georgia Green X (Bayo Grande X Florida MDR 98), none kept out of 5 lines tested, (6) Gregory X Bayo Grande, none kept out of one line tested, (7) ANorden HOL X Bayo Grande, none kept out of one tested, (8) Tamrun 96 X RP 1997C/1F1, one line out of three tested, (9) VA 98R X Bayo Grande, 18 lines out of 35 tested, (10) Various F9 selections from Florida MDR 98 X Bayo Grande, 24 lines out of 50 tested. In addition to the 106 lines listed above, 203 individual plant selections were made from 26 of the most promising F6 lines listed. A total of twenty tests are planned for locations in Georgia, Florida and Alabama in the 2006 crop season. Grades and other post-harvest quality factors were determined for selected highly promising candidate lines. CRSP 08 and CRSP 14 were evaluated by J. Leek Associates for various qualitative measurements including taste parameters.