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2016

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

Final report

INSTITUTION: University of Georgia

PROJECT TITLE: Pyramiding breeding peanut germplasm with multiple disease resistance
and high oleic acid content

RES. AGR. NO.: PROJECT LEADER: Scott Jackson

GACCP Budget No.:

EXPIRATION DATE: June 30, 2017 NPB CONTACT: Bob Parker/Maria Mehok
NPB Budget No.:

Objectives

This is a multiple-year project with a final goal to develop new peanut varieties or cultivars with high oleic acid (O/L) content and multiple disease resistances. The objective in the funding period is to plant F1 seeds, identify real F1 hybrids and plant F2 seeds.

Project accomplishments

We collected 10 peanut varieties/cultivars in 2015 from Dr. Corley Holbrook at USDA including TifNV-High O/L (nematode resistance and High O/L) and TUFRunner 727 (good resistance to white mold and leaf spot, High O/L), and made 13 unique crosses using these peanut materials.

In 2016, 220 putative hybrid seeds were planted in Tifton, and 202 (92%) seeds have germinated. As these individuals exhibited similar phenotypes to their parents, it has been difficult to determine real hybrids based on phenotypic traits. We are collaborating with Dr. Peggy Ozias-Akins's group to identify true F1 hybrids using molecular markers closely linked to high oleic content or nematode resistance. We extracted DNA from each of the 202 plants and identified 142 (70%) real hybrid plants (Table 1).

In the fall of 2016, we harvested the F2 seeds from each of the true F1 individuals. These F2 seeds have been planted in the field in April 2017 and we currently have over 7,000 F2 plants (Table 2).

Table 1. Planting and molecular identification of peanut hybrids in 2016

Cross	Planted seeds	Germinated seeds	Markers	Real hybrids
TUFRunner 727/TifNV-High O/L	18	14	8887-nematode	10
TUFRunner 727/SPT 06-06	30	28	1846/7-high O/L	16
TUFRunner 727/0925bp-6	13	12	1846/7	9
TUFRunner 727/906	18	17	1846/7	17
TUFRunner 727/Georganic	22	20	1846/7	10
TUFRunner 727/Tifrunner	18	18	1846/7	14
TUFRunner 727/CHAMPS	14	13	1846/7	9
TifNV-High O/L/SPT 06-06	18	17	1846/7	14
TifNV-High O/L/0925bp-6	18	17	1846/7	14
TifNV-High O/L/906	18	16	1846/7	15
TifNV-High O/L/Georganic	15	14	1846/7	4
TifNV-High O/L/Tifrunner	12	11	1846/7	9
TifNV-High O/L/CHAMPS	6	5	1846/7	1
Total	220	202		142

Table 2. Summary of F2 generation planted in 2017

Cross	Planted F2 lines	Germinated seeds
TUFRunner 727/TifNV-High O/L	10	837
TUFRunner 727/SPT 06-06	20	1449
TUFRunner 727/0925bp-6	7	1018
TUFRunner 727/906	13	782
TUFRunner 727/Georganic	13	656
TUFRunner 727/Tifrunner	13	671
TUFRunner 727/CHAMPS	6	107
TifNV-High O/L/SPT 06-06	14	482
TifNV-High O/L/0925bp-6	12	376
TifNV-High O/L/906	15	463
TifNV-High O/L/Georganic	3	57
TifNV-High O/L/Tifrunner	6	268
Total	132	7166