

APPLICATION FOR RELEASE

APPLICATION FOR RELEASE OF (check one):

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| <input checked="" type="checkbox"/> CULTIVAR | <input type="checkbox"/> PARENTAL LINE |
| <input type="checkbox"/> ASSOCIATE CULTIVAR | <input type="checkbox"/> GENETIC STOCK |
| <input type="checkbox"/> GERMPLASM | |

1. Crop: Peanut (*Arachis hypogaea* L.)
2. Experimental no. or name: GA 142537
3. Pedigree and history: GA 142537 was developed from an intersubspecific cross made in 2010 between two Georgia cultivars, Georgia-11J' (ssp. *hypogaea*) and 'Georgia Valencia' (ssp. *fastigiata*). Pedigree selection was practiced within the early segregating populations (F₂-F₅). Yield tests have been conducted for the past four years (2016-19) compared to other check cultivars.
4. Description of plant material: GA 142537 is being proposed for release as a new large-podded, large-seeded, high-oleic, valencia-type peanut cultivar. It has a runner growth habit, medium maturity, 3-seed per pod, and red testa color (Figures 1 and 2). It also has a high level of tolerance to tomato spotted wilt virus (TSWV). For these past four years (2016-2019), field observations and data indicate that these characteristics of GA 142537 are very uniform and stable, and no off-types or variants have been found.
5. Need for and potential users of plant material: This potential new cultivar has very good performance in Georgia (Tables 1-4). Even though this is a small but consistent fresh-market trade, possibly several peanut seed companies and growers should be interested in the use of this plant material for the boiling industry.
6. Justification for release:
 - A. During the past four-years (2016-19) averaged over 8 tests in Georgia, GA 142537 was found to have similar TSWV, but significantly less total disease incidence, higher yield, grade, and dollar value return per acre compared to six other valencia cultivars (Table 1). Likewise, GA 142537 had significantly higher overall performance in both an early April and optimum May planting date as well (Tables 2 and 3).
 - B. GA 142537 also had the significantly highest pod yields in the Georgia statewide variety testing program for one, two, and three-year averages (Table 4). There were ten valencia genotypes in these test each year.
 - C. During three-years (2017-19), GA 142537 was found to have among the largest fancy pod percentage compared to eight valencia-type cultivars (Table 5). However, GA 142537 was not significantly different from Georgia Valencia in

APPLICATION FOR RELEASE
percentage of fancy pods and 100 pod weight.

- D. GA 142537 was likewise found to have a desirable roasted peanutty flavor, protein, and oil content as Georgia Valencia (Table 6). Both GA 142537 and Georgia Valencia had significantly higher percent protein than Georgia Red.
- E. GA 142537 also has the high-oleic fatty acid oil chemistry, and results in a higher O/L ratio than the only other two currently available high-oleic valencia-type cultivars, NuMex-01 and TAM Val. OL 14 (Table 7). The high O/L trait is quite desirable in the fresh-market trade to provide longer storage of peanut pods and seed for boiling at later dates after harvest.

7. Participating scientists: **W. D. Branch**
8. Location(s) at which plant material was developed: **Coastal Plain Experiment Station**
9. Recommended form of intellectual property protection and royalty:
U.S. Utility Patent and Plant Variety Protection (PVP) with royalty

Cultivar and associate cultivar applications only provide the following information:

10. Method of propagation: **Seed**
11. Amount of breeder seed stocks available (if applicable): **50 lbs**
12. Amount of foundation seed stocks available if applicable: **2,000 lbs**
13. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable): **N/A**
14. Describe any unusual difficulty anticipated in the production of any class of seed stocks:
None
15. Suggest up to three names for the cultivar, if appropriate:
'Georgia-Val/HO' (Name preferred by the breeder).
16. Name approved by plant cultivar and germplasm release committee:

(Please keep this as a separate page)

Application for the cultivar release of the advanced peanut breeding line, GA 142537.

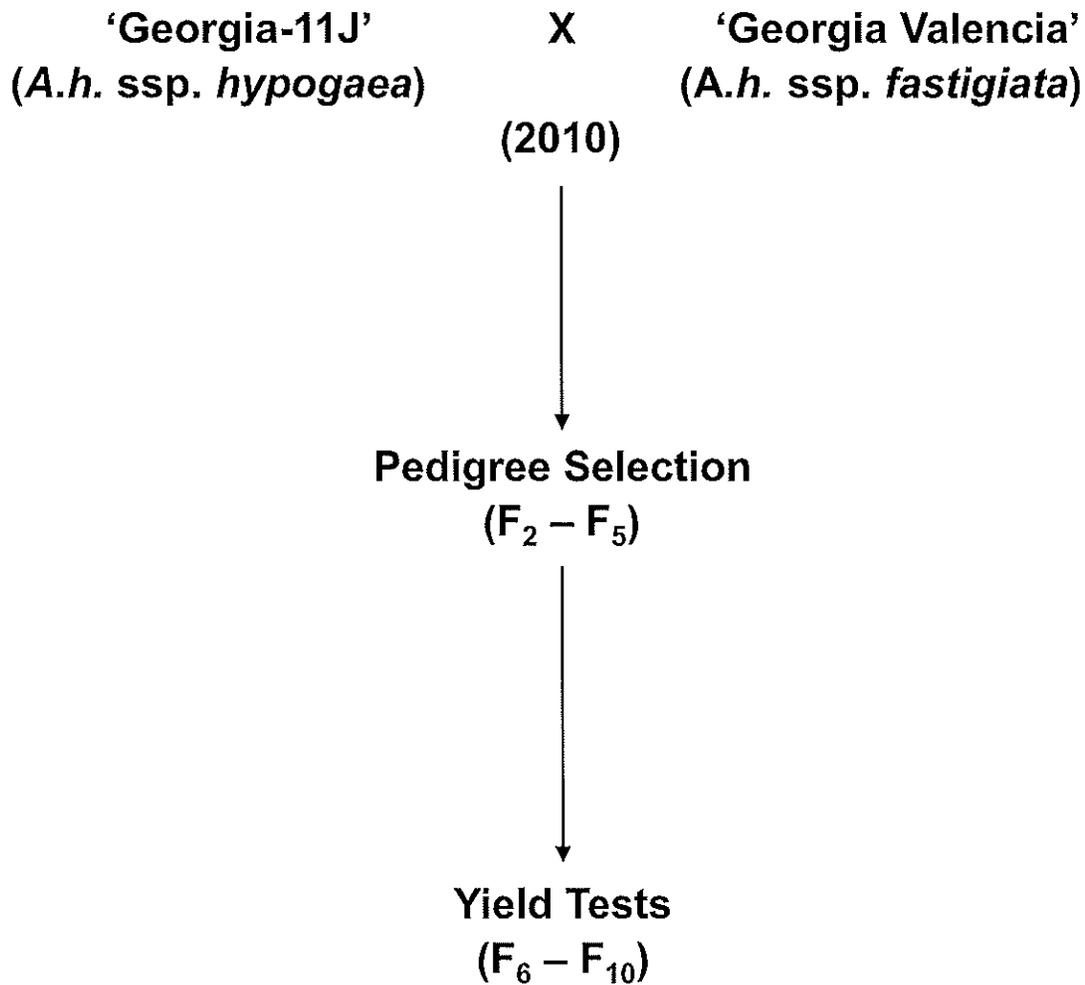
Recommended:

- A. Wm. D. Branch _____
Originating Scientist Date
- B. Marine Sherwin _____
Department Head Date Sept 5, 2020
- C. Michael D. Lewis _____
For Griffin and Tifton, Assistant Dean Date September 8, 2020
- D. Peggy Ozias-Akins _____
Chair, GAES PCGRC Date Digitally signed by Peggy Ozias-Akins Date: 2020-09-09 07:56:40
- E. Allen Moore _____
Associate Dean for Research Date 9/9/20

Approved:

- F. Allen Moore _____
Dean and Director Date 9/9/20

GA 142537



2020 = F₁₀ Foundation Seed



Fig. 1 Above-ground, GA 142537 has distinctly different runner growth habit compared to the typical bunch growth habit for other valencia U.S. market-types.

GA 142537

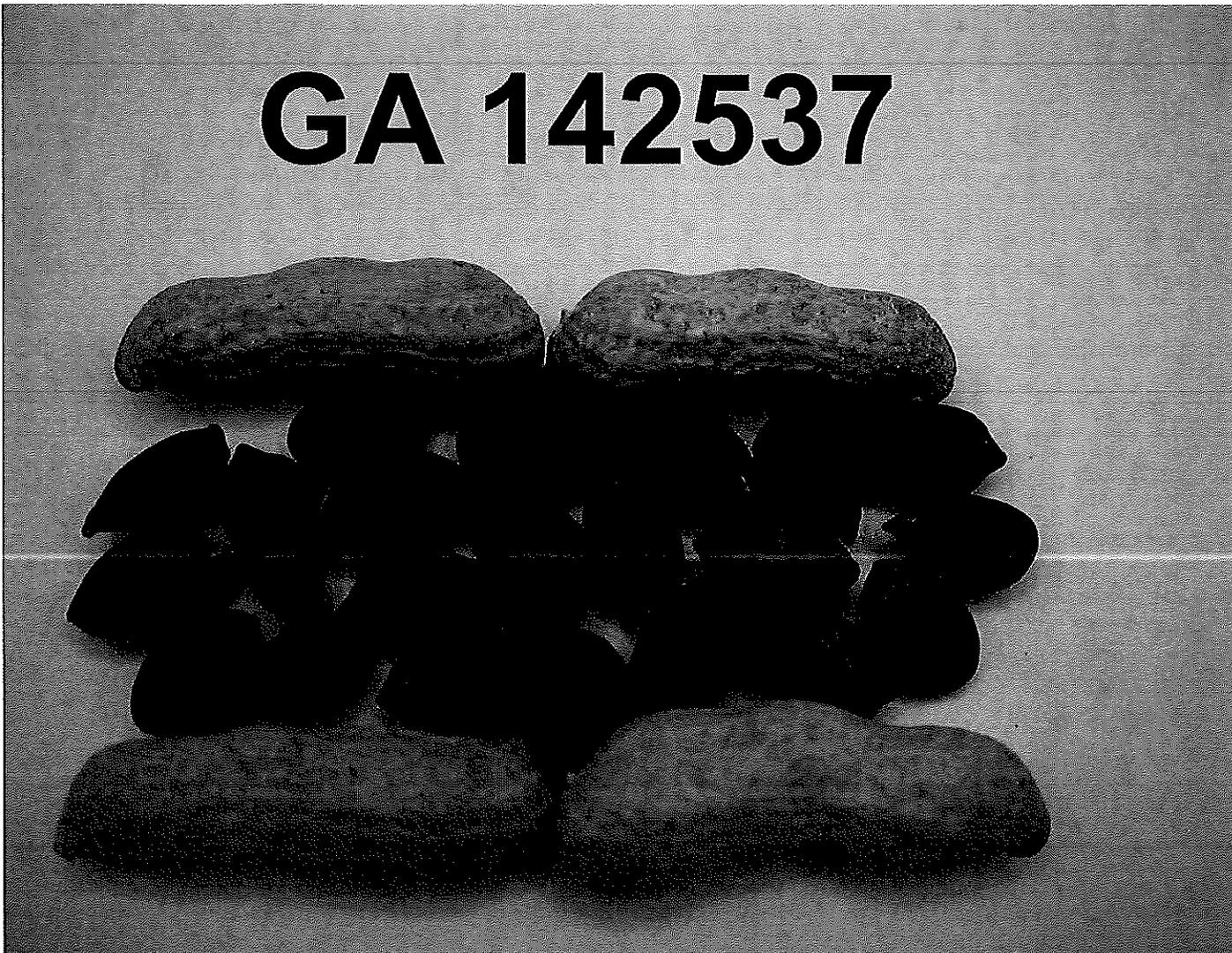


Fig. 2 Below-ground, GA 142537 has the typical 3-seed/pod and red seedcoat (testa) color common with other U.S. valencia market-types.

Table 1. FOUR-YEAR (8 TESTS) AVERAGE DISEASE INCIDENCE, POD YIELD, TSMK GRADE, SEED COUNT, AND DOLLAR VALUES OF GA 142537 VS. SIX OTHER VALENCIA-TYPE VARIETIES WHEN PLANTED IN APRIL AND MAY AT TIFTON, GEORGIA, 2016-19.

Peanut Genotype	TSWV[†] (%)	TD[‡] (%)	Yield (lb/a)	TSMK[¶] (%)	Seed (no./lb)	Value (\$/a)
©GA 142537	10 c*	34 e	3395 a	69 a	737 d	577 a
Georgia Valencia	10 c	40 d	2762 b	60 b	819 c	414 b
Georgia Red	11 c	49 c	2453 c	67 a	1008 b	402 b
©NuMex-01	17 b	59 b	1934 d	54 c	1204 a	273 c
H&W Val. 136	25 a	72 a	1779 de	57 bc	1169 a	260 c
N. Mex. Val. A	17 b	60 b	1759 de	58 bc	1202 a	259 c
N. Mex. Val. C	17 b	62 b	1645 e	60 b	1149 a	249 c

* Within columns, means followed by the same letter are not significantly different at $P \leq 0.05$.

[†] Percentage of tomato spotted wilt virus (TSWV) incidence at about mid-season.

[‡] Percentage of total disease (TD) incidence prior to digging, primarily TSWV and some soilborne diseases.

[¶] Percentage of total sound mature kernel (TSMK) grade equals all sound splits (SS) plus sound mature kernels (SMK) that ride a minimum slotted screen size for valencia market types.

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Table 2. FOUR-YEAR (4 TESTS) AVERAGE DISEASE INCIDENCE, POD YIELD, TSMK GRADE, SEED COUNT, AND DOLLAR VALUES OF GA 142537 VS. SIX OTHER VALENCIA-TYPE VARIETIES WHEN PLANTED EARLY IN APRIL AT TIFTON, GEORGIA, 2016-19.

Peanut Genotype	TSWV[†] (%)	TD[‡] (%)	Yield (lb/a)	TSMK[¶] (%)	Seed (no./lb)	Value (\$/a)
ⓄGA 142537	6 c*	44 e	3067 a	71 a	731 e	522 a
Georgia Valencia	9 bc	54 de	2100 b	59 b	864 d	304 b
Georgia Red	8 bc	63 cd	2067 b	67 a	991 c	340 b
ⓄNuMex-01	12 b	75 ab	1304 c	48 d	1252 ab	169 c
H&W Val. 136	18 a	84 a	1240 c	53 cd	1194 ab	166 c
N. Mex Val. A	12 b	72 bc	1287 c	54 bc	1260 a	179 c
N. Mex Val. C	12 b	76 ab	1058 c	57 bc	1185 b	154 c

* Within columns, means followed by the same letter are not significantly different at $P \leq 0.05$.

[†] Percentage of tomato spotted wilt virus (TSWV) incidence at about mid-season.

[‡] Percentage of total disease (TD) incidence prior to digging, primarily TSWV and some soilborne diseases.

[¶] Percentage of total sound mature kernel (TSMK) grade equals all sound splits (SS) plus sound mature kernels (SMK) that ride a minimum slotted screen size of for valencia market types.

Ⓞ High-oleic

Table 3. FOUR-YEAR (4 TESTS) AVERAGE DISEASE INCIDENCE, POD YIELD, TSMK GRADE, SEED COUNT, AND DOLLAR VALUES OF GA 142537 VS. SIX OTHER VALENCIA-TYPE VARIETIES WHEN PLANTED OPTIMUM IN MAY AT TIFTON, GEORGIA, 2016-19.

Peanut Genotype	TSWV[†] (%)	TD[‡] (%)	Yield (lb/a)	TSMK[¶] (%)	Seed (no./lb)	Value (\$/a)
©GA 142537	14 cd*	25 d	3723 a	67 a	744 c	631 a
Georgia Valencia	12 d	27 cd	3425 a	62 c	774 c	524 b
Georgia Red	15 cd	35 c	2839 b	66 ab	1025 b	464 b
©NuMex-01	21 bc	43 b	2564 bc	60 c	1156 a	378 c
H&W Val. 136	31 a	59 a	2318 c	61 c	1145 a	354 c
N. Mex. Val. C	23 b	48 b	2233 c	62 bc	1113 ab	343 c
N. Mex. Val. A	22 b	48 b	2231 c	61 c	1144 a	339 c

* Within columns, means followed by the same letter are not significantly different at P≤0.05.

[†] Percentage of tomato spotted wilt virus (TSWV) incidence at about mid-season.

[‡] Percentage of total disease (TD) incidence prior to digging, primarily TSWV and some soilborne diseases.

[¶] Percentage of total sound mature kernel (TSMK) grade equals all sound splits (SS) plus sound mature kernels (SMK) that ride a minimum slotted screen size for valencia market types.

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Table 4. GEORGIA STATEWIDE VARIETY TESTS THREE-YEAR SUMMARY OF VALENCIA-TYPE PEANUT YIELDS AT TIFTON, GA, 2017-2019.†

Genotype	Irrigated Test		
	2019	2-Yr Avg	3-Yr Avg
	-----lb/acre-----		
©GA 142537	4398*	4026*	4000*
Georgia Valencia	3763	3515	3562
Georgia Red	3279	2965	3133
©TAMVal OL14	2910	2744	-
N. M. Val. A	2517	2305	2382
©NuMex-01	2335	2290	2670
Val. McRan	2366	2263	2409
N. M. Val. C	2299	2223	2446
H & W Val. 136	2360	2214	2558
H & W Val. 118	2130	2042	-

*Yields within the column are significantly different from other yields at $P \leq 0.10$.

†Source: Mailhot, D. J. et al. 2020. GEORGIA 2019 Peanut, Cotton, and Tobacco Performance Test. University of Georgia Annual Publication 104-11. (www.swvt.uga.edu)

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Table 5. THREE-YEAR (3 TESTS) AVERAGE POD PRESIZER DISTRIBUTION AND 100 POD WEIGHT OF GA 142537 VS. EIGHT OTHER VALENCIA-TYPE VARIETIES, 2017-19.

Peanut Genotype	Fancy Pods[†] (%)	Red +38/64" (%)	White -38+34/64" (%)	Blue -34/64" (%)	Pod (g/100)
GA 142537	51 b*	4 b	47 a	49 d	202 a
Georgia Valencia	61 a	6 a	55 a	39 e	195 a
Georgia Red	9 e	0 c	8 d	91 a	140 bc
NuMex-01	25 d	0 c	24 c	75 b	144 b
H&W Val. 136	38 c	3 b	35 b	62 c	144 b
N. Mex Val. A	13 e	0 c	12 d	87 a	118 d
N. Mex Val. C	16 de	0 c	15 d	84 ab	127 cd
TAM Val. OL14	7 e	0 c	7 d	93 a	137 bc
H&W Val. 118	10 e	0 c	10 d	90 a	129 bcd

* Within columns, means followed by the same letter are not significantly different at $P \leq 0.05$.

[†] Fancy pods = +38/64 and +34/64 inches (Red + White Pans) summed together.

Table 6. 2017 AVERAGE ROASTED FLAVOR SCORE AND 2019 AVERAGE PERCENT PROTEIN AND OIL AMONG THREE PEANUT GENOTYPES, RESPECTIVELY.

Peanut Genotype	Roasted Peanutty Flavor[†]	Protein (%)	Oil (%)
GA 142537	5.3 b*	24.99 a	52.27 a
Georgia Valencia	5.2 b	25.04 a	52.42 a
Georgia Red	6.0 a	23.07 b	52.74 a

* Mean within the columns followed by the same letter are not significantly different at $P \leq 0.05$.

[†] RP Flavor score = 1-10 scale, where >5.0 is concerned a good roasted peanutty flavor, if free of off-flavors. All of the above samples did not have any off-flavors and were all >5.0.

Table 7. THREE-YEAR (3 TESTS) AVERAGE OLEIC (O) TO LINOLEIC (L) FATTY ACID RATIO OF GA 142537 VS EIGHT OTHER VALENCIA-TYPE VARIETIES, 2017-19.

Peanut Genotype	O/L Ratio			Mean
	2017	2018	2019	
©GA 142537	31.5 a*	40.4 a	37.3 a	36.1 a
©NuMex-01	23.9 b	32.3 b	25.0 b	26.7 b
©TAM Val. OL 14	23.8 b	25.9 c	24.5 b	24.7 c
Georgia Valencia	2.0 c	1.3 d	1.8 c	1.7 d
Georgia Red	1.3 c	1.3 d	1.2 c	1.3 d
N. Mex. Val A	1.3 c	1.3 d	1.2 c	1.3 d
N. Mex. Val C	1.3 c	1.4 d	1.4 c	1.3 d
H&W Val. 118	1.3 c	1.3 d	1.2 c	1.3 d
H&W Val. 136	1.1 c	1.3 d	1.1 c	1.2 d

*Within columns, means followed by the same letter are not significantly different at $P \leq 0.05$.

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GA 142537

- **High-Yielding, High-Oleic, TSWV-Tolerant, Large-Podded, Large-Seeded, Valencia-Type Cultivar.**
 - **Runner Growth Habit distinctly different from other Valencia Bunch Growth Habits.**
 - **Medium Maturity approximately Two-Weeks Later than other Valencia-Types.**
 - **Good Performance and Stability across Years when Planted in April and May.**
 - **Excellent Peanut Cultivar for the High-Oleic Valencia Market Type.**
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