APPLICATION FOR RELEASE OF:

☒ **CULTIVAR**
☐ **ASSOCIATE CULTIVAR**
☐ **GERMPLASM**
☐ **PARENTAL LINE**
☐ **GENETIC STOCK**

1. **Crop:** Soybean (*Glycine max* L. Merr.)

2. **Experimental no. or name: G19-13438**

3. **Pedigree and history:**

G19-13438 originated from a cross of G13-6299 × N10-711. G13-6299 is an elite maturity group (MG) VII conventional germplasm line developed at the University of Georgia (UGA) (Stewart-Brown et al., 2018). G13-6299 was an F_5-derived selection from a cross of G00-3213 × LG04-600. G00-3213 is an elite MG VII line derived by crossing N7001 × Boggs, developed by the University of Georgia. LG04-600 is an MG IV germplasm line developed by the USDA-ARS and Illinois Agricultural Experiment Station and released in 2012 (Nelson, et al., 2012). N10-711, the experimental name of USDA-N7004 was derived from a cross of (Dillon × Tamahikari (PI 423897)) × N03-832 (McNeece, et al., 2020). USDA-N7004, a late MG VII germplasm line, was developed by North Carolina Agricultural Experiment Station and USDA-ARS and released in 2019.

The cross of G13-6299 × N10-711 was made in the summer of 2016 at the University of Georgia J. Phil Campbell Farm in Athens, GA. F_1 plants were grown at the USDA Puerto Rico winter nursery during the winter of 2016-2017. In 2017, 12 rows of the F_2 generation were grown at the UGA Iron Horse Farm (IHF) near Watkinsville, GA. During the winter of 2017-2018, two cycles of single seed descent were completed in the Illinois Crop Improvement Association Winter nursery in Puerto Rico to advance this population to the F_4 generation. The F_5 generation was grown in 12 rows at the UGA IHF in the summer of 2018 with individual plants harvested and genotyped for trait selection in the fall 2019. In the summer of 2019, 100 F_5-derived plant rows were grown at the UGA IHF. G19-13438 was one of these selected F_5-derived plant rows.

G19-13438 was first evaluated in replicated yield plots in 2020 at two Georgia location as part of the UGA Preliminary Yield Trials (PYT) with two reps per location. In 2021, it advanced

to the UGA advanced Yield Trials (AYT), evaluated at three locations in Georgia with three reps per location.

Due to its strong performance, G19-13438 was tested in the USDA Preliminary Uniform Test - MG VII across six locations in AL, GA, NC in 2022. In 2023 - 2024, it progressed to the USDA Uniform Test - MG VII evaluated at 15 locations across AL, GA, NC. Additionally, in 2024, G19-13438 was also tested at seven locations in the GA State Variety Tests - MG VII/VIII. In 2024, G19-13438 was also evaluated in the UGA advanced trial at the rain-fed conditions in Midville, GA.

4. Description of plant material:

G19-13438 has purple flowers, tawny pubescence, a determinate growth habit, and brown pod walls. The seeds have black hilum colors and yellow seed coats with a dull texture. G19-13438 is a conventional mid maturity group (MG) VII (MG 7.6) breeding line and was tested across 32 environments from 2020 to 2024.

Compared to commercial checks with similar maturity, G19-13438 yielded 103.8-109.8% of check means in the UGA multiple environment tests (PYTs and AYTs) across 5 environments during 2020-2021 (Tables 1 and 2). Due to its strong performance, G19-13438 was advanced into the USDA Southern Preliminary Uniform Test - MG VII/VIII in 2022. It yielded 50.4 bu/ac, which was 99.1% of the check mean in the test (Table 3). During 2023-2024, G19-13438 was yield-tested in the USDA Southern Uniform Test - MG VII/VIII for two years and yielded 109.8% of check mean across 12 environments when compared to the commercial checks and ranked top in the test (Table 4).

In 2024, G19-13438 was yield-tested in the GA State Variety Tests – MG VII/VIII in a total of 7 locations. Compared with the test mean, G19-13438 yielded 4.1 bu/ac above test mean (103.2%) and 3.4 bu/a above AGS Woodruff (105.9%) (Table 5). During 2024, G19-13438 was also evaluated in the UGA advanced trial at the rain-fed conditions in Midville, GA (Table 6). It yielded 113.1% of the check mean (Table 6)

According to the USDA Uniform Test (Table 4), G19-13438 exhibited a lodging score of 1.6, comparable to or better than commercial checks, and a plant height of 34 in, similar to the check varieties. Its seed size averaged 15.3 g per 100 seeds, aligning with the test average (Table 4). G19-13438 matured four days later than the check mean. Notably, it had an average protein content of 36.2%, which was 1.4% higher than the check mean, while its oil content of 19.4%

remained similar to the check mean (Table 4). These trends were consistent across all other tests (Tables 1, 2, and 3).

Based on greenhouse evaluations, G19-13438 exhibits resistance to soybean cyst nematode (SCN) races 2 and 5, as well as southern root-knot nematode, with moderate resistance to Javanese root-knot nematode. It also shows resistance to the frogeye leaf spot and moderate resistance to stem canker (Table 7 and 8). However, it is susceptible to peanut root-knot nematode and SCN race 3.

5. Need for and potential users of plant material:

Soybean (*Glycine max*) represents one of the major sources of edible vegetable oil and proteins for livestock feed use. Soybeans were planted on over 85 million acres each year in the U.S. over the past several years. Almost all soybean cultivars for production are transgenic which has helped growers to manage weeds in soybean production. Even with the substantial number of transgenic soybean acres in the U.S. for better weed management, some growers still like to grow non-GMO soybeans, which helps reduce their seed cost. In addition, some processors like to use non-GMO soybeans as their ingredients.

The private seed companies have stopped breeding soybean cultivars for the southeastern region (MG V and beyond). In addition, the private seed companies do not develop conventional soybean cultivars anymore. The University of Georgia soybean breeding program has been recognized as a successful program to develop high yielding soybean cultivars with a disease resistance package. Release of this new conventional variety will benefit the soybean growers in Georgia and southeastern USA.

6. Justification for release:

G19-13438 is an MG VII soybean line tested across 32 environments in the southeastern USA. It has demonstrated strong yield performance and adaptability compared to elite commercial GMO varieties. In the 2023-2024 USDA Uniform Soybean Tests – MG VII/VIII, conducted across 12 locations, G19-13438 yielded 109.8% of the check mean, ranking as the top-performing entry in the test (Table 4). In the 2024 GA State Variety Tests – MG VII/VIII, it outperformed the test mean by 4.1 bu/ac (103.2%) and exceeded AGS Woodruff by 0.7 bu/ac

(Table 5). Additionally, in the UGA advanced trial under rain-fed conditions in Midville, G19-13438 yielded 113.1% of the check mean (Table 6).

G19-13438 exhibits resistance to soybean cyst nematode (SCN) races 2 and 5, as well as southern root-knot nematode, with moderate resistance to Javanese root-knot nematode. It also shows resistance to frogeye leaf spot and moderate resistance to stem canker (Table 7 and 8).

While GMO soybeans offer improved weed management, some growers prefer non-GMO varieties to reduce seed costs. The release of G19-13438 will provide southeastern U.S. growers with a high-performing conventional soybean cultivar. A seed company has expressed interest in licensing this cultivar upon its release.

7. Participating scientists:

Zenglu Li, Brian Little, E. Dale Wood, Melissa Mitchum, and James Buck

8. Location(s) at which plant material was developed:

University of Georgia, Athens, GA

9. Recommended form of intellectual property protection and royalty: PVP or patent

References:

McNeece BT, Bagherzadi L, Carter TE, Mian MAR. Registration of USDA-N7004 soybean germplasm with good yield, elevated seed protein, and 25% exotic pedigree from Tamahikari. *Journal of Plant Registrations*, 2020; 14: 431–436.

Nelson, R.L. and Johnson, E.O.C. (2012), Registration of the High-Yielding Soybean Germplasm Line LG04-6000. *Journal of Plant Registrations*, 6: 212-215.

Stewart-Brown, B.B., Wood, E.D., Noe, J., Boerma, H.R. and Li, Z., 2018. Registration of G13-6299 Soybean Germplasm Line with Diverse Pedigree. *Journal of Plant Registrations*, *12*(1), pp.132-137.

APPLICATION FOR RELEASE

Application for the release of G19-13438 Soybean (Glycine max L. Merr.) cultivar

After the application has been reviewed and approved by the Committee and requested changes have been made, please send the entire application through DocuSign, including this signature page. There are directions for establishing your own DocuSign account; the College OIT help desk will be able to help you if you run into issues establishing your account, or if you have other questions.

At the Add Recipients step, please be sure to **click on the signing order check box**, so that it goes for signature in the correct order. Use **Needs to Sign** for everyone below:

Release recommended by:

A. Signed by: Zenglu Li 7899B37079904EB... — 03/26/2025 | 3:38 PM EDT
Originating Scientist Zenglu Li — Date

B. DocuSigned by: Wayne Parrott EAF3B98C66534FF... — 03/26/2025 | 3:49 PM EDT
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This will be Wayne Parrott, wparrott@uga.edu

C. DocuSigned by: B25EB3E698BB409... — 03/27/2025 | 11:22 AM EDT
Department Head — Date
This will be either
- Jodi Johnson-Maynard, jlmaynard@uga.edu, or
- Leo Lombardini, lombardini@uga.edu, or
- Harald Scherm, scherm@uga.edu

Signature by the DH and Assistant Deans indicates that 1) the DH has reviewed the application with the executive committee and/or appropriate commodity committees as needed, and 2) the application has been reviewed to ensure that the genetic material was developed with GAES funds and that the application includes appropriate collaborators involved in developing the genetic material.

D. _____ — _____
For Griffin and Tifton, Assistant Dean — Date
This will be either
- Timothy Grey, tgrey@uga.edu, for Tifton, or
- Jeff Dean, jeffdean@uga.edu, for Griffin

E. Signed by: Harshavardhan Thippareddi DDA6A4D5BAA1451... — 04/07/2025 | 8:28 AM EDT
Associate Dean for Research — Date
- This will be Dr. Harsha Thippareddi, agresch@uga.edu
- And the last step will also be Dr. Harsha Thippareddi, agresch@uga.edu

Approved:

F. Signed by: Harshavardhan Thippareddi DDA6A4D5BAA1451... — 04/07/2025 | 8:28 AM EDT
Dean and Director — Date

RE: GSDC Wheat

BH

Becki Hicks
To Leslie Wright; Alex Gilreath

Reply | Reply All | Forward

Thu 12/4/2025 3:40 PM

Per Blake Fleeman G19-13438 will be branded as Woodruff 2.0

Becki Hicks
Turfgrass & Seed Certification Administrative Assistant

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