

## Development of germplasm and cultivars with two new sources of resistance to Root Knot Nematode from the wild species *A. stenosperma*

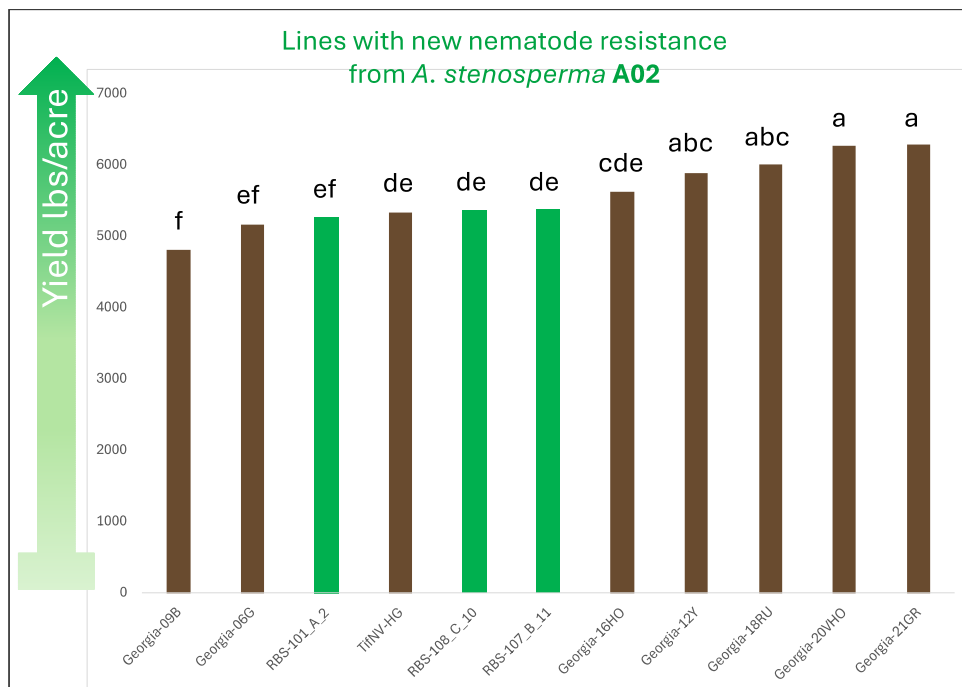
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### Overview

Cultivated peanut has an exceptionally narrow genetic base. This imposes limitations on improvements that can be made by breeding with peanuts of pure pedigree. This research builds on our previous introduction of two new wild species resistances to root-knot nematodes from *A. stenosperma*, one from chromosome A02 and one from A09. With this year's results, we now know that both new sources of resistance provide effective field immunity from de infection, and that our lines incorporating both these new sources of resistance yield competitively with current elite peanut cultivars. In 2025, we will take selected lines to elite (for A02) and intermediate yield trials (A09), respectively.

### Results

Advanced lines with the new chromosome A02 resistance yielded well in multilocation Intermediate Field Trials. The trials were designed to test yield potential and, therefore, used standard regimes of plant protection products in fields without significant nematode pressure. Our lines with the new A02 source of resistance yielded as competitively as GA 06G, GA 16HO and TifNV HG (Fig 1). As for the new source from chromosome A09, preliminary Trials in a heavily nematode infected field in Attapulugus showed that lines yielded competitively with GA 14N.



**Fig 1.** Average yields in **Intermediate Yield Trials** of peanut lines with the **new source of nematode resistance from *A. stenosperma* chromosome A02 (in green)**, with **control cultivars in brown**. Field trials had three replications at each of three locations, Midville, Tifton, and Attapulugus. Since we have previously determined the effectiveness of the resistance, the aim of this trial was to determine yield potential under optimal conditions. All fields received standard spraying regimes and fields did not have significant nematode infestations. Letters above the bars indicate statistical groupings at  $P < 0.05$ . Our lines grouped with GA 06G, GA 16HO and TifNV HG, the latter being the only other nematode resistance cultivar in the trial (with nematode resistance from *A. cardenasii* A09).