

**New sources of RKN resistance from the wild species *A. stenosperma*:  
germplasm release, cultivar development, and pyramiding with foliar disease resistance**

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**Overview**

The research builds on our previous introduction and characterization of wild species resistances to root-knot nematodes and leaf spots into peanut lines with predominantly elite agronomic genetics. This work moves towards germplasm release, cultivar development, and the pyramiding foliar disease resistance with nematode resistance.

**Summarized Results**

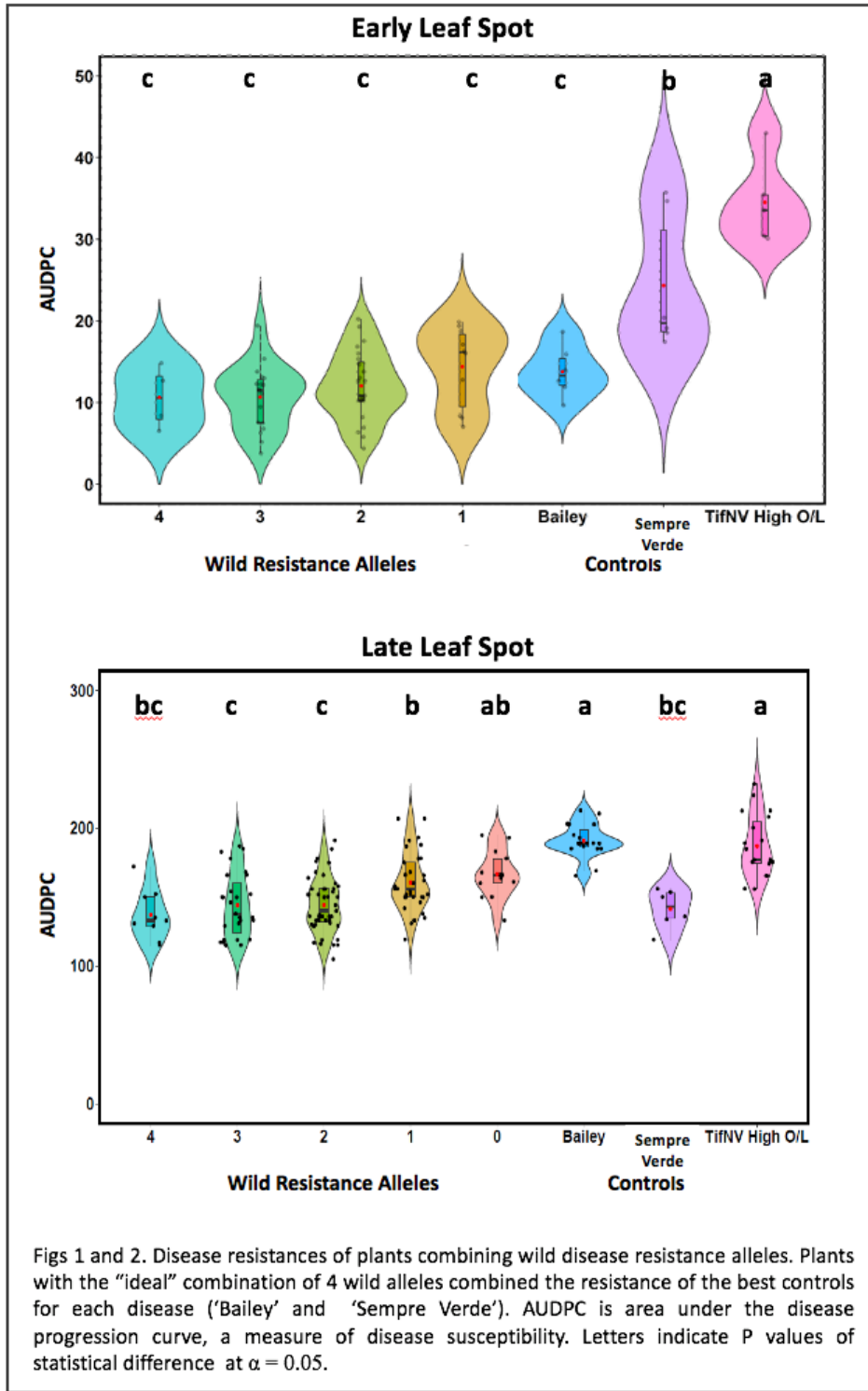
This work has identified and characterized new sources of nematode and leaf spot resistance from wild species the wild species *Arachis stenosperma*, *A. batizocoi* and *A. cardenasii*. Resistances to Early and Late Leaf Spots and nematodes were pyramided in highly-performing lines, which were advanced, evaluated and selected in the field. These lines have a superior combination of resistances to the control cultivars we tested (Sempre Verde, Bailey II, TifNV HO). Crosses to make new combinations of leaf spot and nematode resistances were made.

**Results**

In 2022, 175 lineages from third backcrossed plants derived from the elite breeding lines 5-646-10, 13-1014, and a tetraploid hybrid of *A. stenosperma* V10309 and *A. batizocoi* K9484 were trialed at Midville (Fig 1). Of these, more than 50 yielded better than the average of the controls (GA-06G, 5-646-10 and 13-1014) and 7 yielded better than the best of the individual control minirows. 150 lineages combining multiple wild species pest and disease resistances were advanced as single plant selections, 69 of these plants yielded better than the best of the control plants (Bailey II, Sempre Verde and TifNV HO). Disease evaluations, in the field and in detached leaf assays, showed that plants with the “ideal” combination of four wild alleles have similar resistance to Early Leaf Spot as the most resistant control, ‘Bailey’; and similar resistance to Late Leaf Spot resistance as the most resistant control, ‘Sempre Verde’ (Figs. 2 and 3). In addition to leaf spot resistance, many of these lineages have wild species derived root-knot nematode resistance.



Fig 1. Drone image of Wild Peanut Lab 2022 Midville field trial. Field is about 4 acres



**Perspectives**

Moving forward we will begin the process of germplasm release; and advance field selections, and in fields infected and uninfected with root knot nematodes. We will also advance crosses made in 2022 which combine different wild species resistance alleles.