

Supplementary File 1: Genotypes used in this study: species, plant identification, ploidy and collection site.

Genotype	Plant ID	Ploidy	Collection site
<i>A. duranensis</i>	V14167	2x	Salta, Argentina
<i>A. duranensis</i>	K7988	2x	Campo Duran, Argentina
<i>A. duranensis</i>	Sj2737	2x	Campo Duran, Argentina
<i>A. duranensis</i>	Sj2864	2x	Campo Duran, Argentina
<i>A. duranensis</i>	Sj2848	2x	Anta, Prov. Salta, Argentina.
<i>A villosa</i>	V12812	2x	Bella Union, Uruguay
<i>A. ipaënsis</i>	KG30076	2x	Gran Chaco, Bolivia
<i>A. magna</i>	KG30097	2x	Santa Cruz, Bolivia
<i>A. stenosperma</i>	V10229	2x	Cananeia, SP, Brazil
<i>A. stenosperma</i>	V10309	2x	Rondonopolis, MT, Brazil
Synthetic allotetraploid (<i>A. ipaënsis</i> KG 30076 x <i>A duranensis</i> V14167) ^{4x}	Anf1	4x	Synthetic
<i>A. hypogaea</i> subsp. <i>hypogaea</i> var. <i>hypogaea</i>	IAC-Caiapó	4x	Modern cultivar
<i>A. hypogaea</i> subsp. <i>hypogaea</i> var. <i>hypogaea</i>	IAC-Runner- 886	4x	Modern cultivar

Supplementary File 2: Drought-related traits of *Arachis duranensis* V14167, *A. ipaënsis* KG30076, the synthetic allotetraploid (*A. ipaënsis* KG30076 x *A. duranensis* V14167)^{4x} and *A. hypogaea* subsp. *hypogaea* var. *hypogaea* ‘IAC-Runner 886’. Values identified with the same letter are not statistically different from each other based on Tukey’s test at 0.05 significance level.

<div>Trait \ Genotype</div>	<i>A. duranensis</i>	<i>A. ipaënsis</i>	Synthetic	‘Runner’
	Average ± SD	Average ± SD	Average ± SD	Average ± SD
Stomata length (µm) adaxial	18.21c ± 2.37	19.62bc ± 2.40	22.94a ± 1.69	21.71ab ± 2.31
Stomata length (µm) abaxial	19.63b ± 1.94	18.41b ± 1.76	26.60a ± 2.49	28.52a ± 1.87
Stomata width (µm) adaxial	13.15bc ± 2.45	9.92c ± 0.95	19.91a ± 0.85	19.47a ± 1.71
Stomata width (µm) abaxial	12.42c ± 2.90	15.90bc ± 1.49	23.09a ± 2.58	18.63ab ± 1.08
Individual leaf area (mm²)	1109.30b ± 289.13	1348.93b ± 320.24	2594.84a ± 729.74	2189.48a ± 401.22
# trichome/mm² adaxial	4a ± 1	2b ± 1	4a ± 1	5a ± 1
# trichome/mm² abaxial	18a ± 2	10bc ± 1	9c ± 1	15ab ± 2
# stomata/mm² adaxial	184b ± 13	229a ± 19	156c ± 7	142c ± 13
# epidermis cells/mm² adaxial	755b ± 20	768a ± 14	708c ± 10	672c ± 9
Stomatic index adaxial	19.58b ± 1.13	22.98a ± 1.49	18.10bc ± 0.84	17.45bc ± 1.36
# stomata/mm² abaxial	134bc ± 13bc	178a ± 10	117c ± 8	172ab ± 15
# epidermis cells/mm² abaxial	762b ± 11	797a ± 13	733c ± 10	557d ± 7
Stomatic index abaxial	14.93b ± 1.27	18.27a ± 0.75	13.74b ± 0.84	23.59a ± 1.49
Leaf thickness (µm)	205.65c ± 6.59	248.65b ± 9.31	269.69a ± 13.08	257.52ab ± 5.49
Water storage cells layer (µm)	42.99b ± 5.07	49.79ab ± 10.24	65.23a ± 7.63	47.80ab ± 9.36
Ratio water storage layer/leaf (%)	20.90%	20.02%	24.18%	18.56%
SLA	185.12a ± 9.39	142.80c ± 18.22	183.54 ab ± 11.11	164.17b ± 25.72
SCMR	40.50b ± 5.36	38.93b ± 4.32	36.90b ± 4.31	53.89a ± 3.07
δ ¹³ C	-25.95b ± 1.13	-26.39ab ± 1.79	-25.47b ± 0.36	-28.31a ± 1.59

SLA: specific leaf area; SCMR: SPAD chlorophyll meter reading; δ¹³C: leaf stable carbon isotope composition.

Supplementary File 3: Weather data during the two experiments in the green house. Daily maximum and minimum temperature (°C), maximum and minimum humidity (%) and midday VPD (KPa).

