

Supplementary Material

Concerted anatomical change associated with crassulacean acid metabolism in the Bromeliaceae

Jamie Males

Department of Plant Sciences, University of Cambridge, Cambridge, UK. Email: jom23@cam.ac.uk

Table S1. Source of plant material or cross-sectional images for all bromeliad species used in this investigation

Genus	Species	Reference/Collection
<i>Acanthostachys</i>	<i>strobilacea</i>	Proença and Sajo 2007
<i>Aechmea</i>	<i>alba</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>bromeliifolia</i> var <i>albobracteata</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>bromeliifolia</i> var <i>bromeliifolia</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>capixabae</i>	Aoyama and Sajo 2003
<i>Aechmea</i>	<i>carvalhoi</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>castanea</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>conifera</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>corymbosa</i>	Aoyama and Sajo 2003

<i>Aechmea</i>	<i>digitata</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>fasciata</i>	CUBG
<i>Aechmea</i>	<i>glandulosa</i>	Aoyama and Sajo 2003
<i>Aechmea</i>	<i>hostilis</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>lamarchei</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>leucolepis</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>maasii</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>perforata</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>racinae</i>	Aoyama and Sajo 2003
<i>Aechmea</i>	<i>rodriguesiana</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>rubens</i>	Horres <i>et al.</i> 2007
<i>Aechmea</i>	<i>saxicola</i>	Sousa <i>et al.</i> 2005
<i>Aechmea</i>	<i>triangularis</i>	Faria <i>et al.</i> 2012
<i>Aechmea</i>	<i>victoriana var discolor</i>	Aoyama and Sajo 2003
<i>Aechmea</i>	<i>warasii</i>	Aoyama and Sajo 2003
<i>Aechmea</i>	<i>weberbaueri</i>	Horres <i>et al.</i> 2007
<i>Aechmea</i>	<i>weilbachii</i>	Aoyama and Sajo 2003
<i>Alcantarea</i>	<i>burle-marxii</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>duarteana</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>extensa</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>farneyi</i>	Versieux <i>et al.</i> 2010

<i>Alcantarea</i>	<i>geniculata</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>glaziouana</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>nahoumii</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>nigripetala</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>patriae</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>roberto-kautskyi</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>trepida</i>	Versieux <i>et al.</i> 2010
<i>Alcantarea</i>	<i>vinicolor</i>	Versieux <i>et al.</i> 2010
<i>Ananas</i>	<i>comosus</i>	RBGK
<i>Araeococcus</i>	<i>micranthus</i>	Aoyama and Sajo 2003
<i>Araeococcus</i>	<i>parviflorus</i>	Aoyama and Sajo 2003
<i>Billbergia</i>	<i>distachia</i>	Proença and Sajo 2007
<i>Billbergia</i>	<i>euphemiae</i>	Pereira <i>et al.</i> 2011
<i>Billbergia</i>	<i>portiana</i>	Proença and Sajo 2007
<i>Bromelia</i>	<i>antiacantha</i>	Pereira <i>et al.</i> 2011
<i>Bromelia</i>	<i>arenaria</i>	Monteiro <i>et al.</i> 2011
<i>Bromelia</i>	<i>balansae</i>	Proença and Sajo 2007
<i>Bromelia</i>	<i>binotii</i>	Monteiro <i>et al.</i> 2011
<i>Bromelia</i>	<i>goyazensis</i>	Monteiro <i>et al.</i> 2011
<i>Bromelia</i>	<i>humilis</i>	CUBG
<i>Bromelia</i>	<i>morreniana</i>	Monteiro <i>et al.</i> 2011

<i>Bromelia</i>	<i>reversacantha</i>	Monteiro <i>et al.</i> 2011
<i>Bromelia</i>	<i>scarlatina</i>	Monteiro <i>et al.</i> 2011
<i>Catopsis</i>	<i>berteroniana</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>floribunda</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>juncifolia</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>morreniana</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>nitida</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>paniculata</i>	Palací <i>et al.</i> 2004
<i>Catopsis</i>	<i>sessiliflora</i>	Palací <i>et al.</i> 2004
<i>Cryptanthus</i>	<i>acaulis</i>	CUBG
<i>Cryptanthus</i>	<i>bivittatus</i>	CUBG
<i>Deuterocohnia</i>	<i>brevifolia</i>	CUBG
<i>Deuterocohnia</i>	<i>lorentziana</i>	CUBG
<i>Deuterocohnia</i>	<i>meziana</i>	RBGE
<i>Deuterocohnia</i>	<i>scapigera</i>	Santos-Silva <i>et al.</i> 2013
<i>Dyckia</i>	<i>bracteata</i>	Santos-Silva <i>et al.</i> 2013
<i>Dyckia</i>	<i>choristaminea</i>	RBGE
<i>Dyckia</i>	<i>rariflora</i>	RBGE
<i>Dyckia</i>	<i>remotiflora</i>	CUBG
<i>Dyckia</i>	<i>tuberosa</i>	Proença and Sajo 2007
<i>Encholirium</i>	<i>pedicellatum</i>	Forzza 2005

<i>Fascicularia</i>	<i>bicolor</i>	CUBG
<i>Fosterella</i>	<i>albicans</i>	Horres <i>et al.</i> 2007
<i>Fosterella</i>	<i>chiquitana</i>	Rex <i>et al.</i> 2007
<i>Fosterella</i>	<i>cotacajensis</i>	Rex <i>et al.</i> 2007
<i>Guzmania</i>	<i>claviformis</i>	Medeiros 2015
<i>Guzmania</i>	<i>lingulata</i>	CUBG
<i>Guzmania</i>	<i>monostachia</i>	CUBG
<i>Guzmania</i>	<i>paniculata</i>	Medeiros 2015
<i>Guzmania</i>	<i>retusa</i>	Medeiros 2015
<i>Guzmania</i>	<i>sanguinea</i>	Medeiros 2015
<i>Guzmania</i>	<i>ventricosa</i>	Casañas Suárez and Jáuregui 2011
<i>Guzmania</i>	<i>wittmackii</i>	RBGE
<i>Lutheria</i>	<i>glutinosa</i>	CUBG
<i>Lutheria</i>	<i>splendens</i>	CUBG
<i>Lymania</i>	<i>corallina</i>	Aoyama and Sajo 2003
<i>Lymania</i>	<i>globosa</i>	Aoyama and Sajo 2003
<i>Mezobromelia</i>	<i>capituligera</i>	Medeiros 2015
<i>Mezobromelia</i>	<i>pleiosticha</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Ochagavia</i>	<i>carnea</i>	CUBG
<i>Ochagavia</i>	<i>elegans</i>	CUBG
<i>Ochagavia</i>	<i>litoralis</i>	RBGE

<i>Pitcairnia</i>	<i>crystalinensis</i>	Santos-Silva <i>et al.</i> 2013
<i>Pitcairnia</i>	<i>encholirioides</i>	Santos-Silva <i>et al.</i> 2013
<i>Pitcairnia</i>	<i>imbricata</i>	CUBG
<i>Pitcairnia</i>	<i>integrifolia</i>	CUBG
<i>Pitcairnia</i>	<i>paniculata</i>	MSBG
<i>Pitcairnia</i>	<i>xanthocalyx</i>	CUBG
<i>Puya</i>	<i>alpestris</i>	CUBG
<i>Puya</i>	<i>chilensis</i>	CUBG
<i>Puya</i>	<i>mirabilis</i>	CUBG
<i>Puya</i>	<i>venusta</i>	CUBG
<i>Quesnelia</i>	<i>arvensis</i>	Mantovani <i>et al.</i> 2012
<i>Quesnelia</i>	<i>edmundoi</i>	Mantovani <i>et al.</i> 2012
<i>Quesnelia</i>	<i>seideliana</i>	Mantovani <i>et al.</i> 2012
<i>Quesnelia</i>	<i>strobilispica</i>	Pereira <i>et al.</i> 2011
<i>Racinaea</i>	<i>aerisincola</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Racinaea</i>	<i>dyeriana</i>	CUBG
<i>Ronnbergia</i>	<i>neoregelioides</i>	Aoyama and Sajo 2003
<i>Tillandsia</i>	<i>balbisiana</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>bergeri</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>brachycaulos</i>	CUBG
<i>Tillandsia</i>	<i>bulbosa</i>	CUBG

<i>Tillandsia</i>	<i>butzii</i>	CUBG
<i>Tillandsia</i>	<i>caput-medusae</i>	CUBG
<i>Tillandsia</i>	<i>complanata</i>	Leoni 3022
<i>Tillandsia</i>	<i>fasciculata</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>gardneri</i>	Scatena and Segecin 2005
<i>Tillandsia</i>	<i>geminiflora</i>	Scatena and Segecin 2005
<i>Tillandsia</i>	<i>harrisii</i>	MSBG
<i>Tillandsia</i>	<i>ionantha</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>juncea</i>	CUBG
<i>Tillandsia</i>	<i>leiboldiana</i>	CUBG
<i>Tillandsia</i>	<i>linearis</i>	Scatena and Segecin 2005
<i>Tillandsia</i>	<i>lithophila</i>	RBGE
<i>Tillandsia</i>	<i>loliacea</i>	Proença and Sajo 2007
<i>Tillandsia</i>	<i>mallemonitii</i>	Scatena and Segecin 2005
<i>Tillandsia</i>	<i>malzinei</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Tillandsia</i>	<i>paleacea</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>paucifolia</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>pohliana</i>	Proença and Sajo 2007
<i>Tillandsia</i>	<i>polystachia</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Tillandsia</i>	<i>recurvata</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>schiedeana</i>	Loeschen <i>et al.</i> 1993

<i>Tillandsia</i>	<i>setacea</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>stricta</i>	Scatena and Segecin 2005
<i>Tillandsia</i>	<i>tenuifolia</i>	Proença and Sajo 2007
<i>Tillandsia</i>	<i>usneoides</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>utriculata</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>valenzuelana</i>	Loeschen <i>et al.</i> 1993
<i>Tillandsia</i>	<i>xerographica</i>	RBGE
<i>Vriesea</i>	<i>arachnoidea</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>biguassuensis</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>bituminosa</i>	Arruda and da Costa 2003
<i>Vriesea</i>	<i>carinata</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>corcovadensis</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>correia-araujoi</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>erythrodactylon</i>	RBGE
<i>Vriesea</i>	<i>fenestralis</i>	CUBG
<i>Vriesea</i>	<i>flammea</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>fosteriana</i>	Arruda and da Costa 2003
<i>Vriesea</i>	<i>gigantea</i>	CUBG
<i>Vriesea</i>	<i>guttata</i>	CUBG
<i>Vriesea</i>	<i>incurvata</i>	RBGE
<i>Vriesea</i>	<i>lubbersii</i>	Gomes-da-Silva <i>et al.</i> 2012

<i>Vriesea</i>	<i>microrachis</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>neoglutinosa</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>poenulata</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Vriesea</i>	<i>rubens</i>	Gomes-da-Silva <i>et al.</i> 2012
<i>Werauhia</i>	<i>sanguinolenta</i>	CUBG
<i>Werauhia</i>	<i>viridiflora</i>	RBGE
<i>Wittrockia</i>	<i>gigantea</i>	Pereira <i>et al.</i> 2011

Table S2. Mean anatomical parameters for all bromeliad species used in this investigation

NA = data not applicable or not measured

Genus	Species	Subfamily	Photosynthetic pathway	<i>d</i> (µm)	LT (µm)	H (µm)	C (µm)	C: H	IAS (%)	A (µm)
<i>Acanthostachys</i>	<i>strobilacea</i>	Bromelioideae	CAM	28.77 ± 0.44	3079.47 ± 24.21	2248.75 ± 18.15	830.72 ± 4.05	0.37	NA	14082 ± 11.30
<i>Aechmea</i>	<i>alba</i>	Bromelioideae	CAM	34.69 ± 0.21	812.65 ± 7.24	65.62 ± 0.54	747.03 ± 2.66	11.38	NA	13110 ± 11.09
<i>Aechmea</i>	<i>bromeliifolia</i> var <i>albobracteata</i>	Bromelioideae	CAM	47.89 ± 0.35	2370.44 ± 18.99	597.95 ± 3.21	1772.49 ± 11.09	2.96	NA	92331 ± 52.06
<i>Aechmea</i>	<i>bromeliifolia</i> var <i>bromeliifolia</i>	Bromelioideae	CAM	50.20 ± 0.72	1437.42 ± 13.96	145.75 ± 0.92	1291.67 ± 10.43	8.86	NA	68975 ± 42.31
<i>Aechmea</i>	<i>capixabae</i>	Bromelioideae	CAM	37.79 ± 0.22	867.96 ± 5.20	514.35 ± 3.01	353.61 ± 2.88	0.69	NA	7243 ± 12.04

<i>Aechmea</i>	<i>carvalhoi</i>	Bromelioideae	CAM	21.39 ± 0.28	387.41 ± 3.89	153.82 ± 1.17	233.59 ± 1.78	1.52	NA	6461 ± 10.01
<i>Aechmea</i>	<i>castanea</i>	Bromelioideae	CAM	39.69 ± 0.40	1850.56 ± 14.41	264.37 ± 1.85	1586.19 ± 12.04	6.00	NA	115935 ± 66.91
<i>Aechmea</i>	<i>conifera</i>	Bromelioideae	CAM	50.21 ± 0.33	1537.57 ± 12.02	NA	1537.57 ± 10.65	NA	NA	67041 ± 52.33
<i>Aechmea</i>	<i>corymbosa</i>	Bromelioideae	CAM	61.00 ± 0.37	838.21 ± 5.06	NA	838.21 ± 4.50	NA	NA	NA
<i>Aechmea</i>	<i>digitata</i>	Bromelioideae	CAM	52.21 ± 0.25	3657.24 ± 33.53	1138.88 ± 9.85	2518.36 ± 19.91	2.21	NA	351516 ± 94.09
<i>Aechmea</i>	<i>fasciata</i>	Bromelioideae	CAM	41.10 ± 0.26	584.08 ± 4.87	215.74 ± 1.04	368.34 ± 3.04	1.71	9.01 ± 0.22	6542 ± 9.76
<i>Aechmea</i>	<i>glandulosa</i>	Bromelioideae	CAM	35.45 ± 0.11	684.49 ± 6.76	187.68 ± 1.31	496.81 ± 2.89	2.65	NA	13118 ± 15.50
<i>Aechmea</i>	<i>hostilis</i>	Bromelioideae	CAM	34.70 ± 0.14	1492.36 ± 12.66	173.11 ± 1.56	1319.25 ± 10.31	7.62	NA	NA
<i>Aechmea</i>	<i>lamarchei</i>	Bromelioideae	CAM	38.01 ± 0.19	921.07 ± 3.12	112.46 ± 0.87	808.61 ± 5.41	7.19	NA	48800 ± 26.76
<i>Aechmea</i>	<i>leucolepis</i>	Bromelioideae	CAM	28.97 ± 0.24	1835.98 ± 14.57	396.83 ± 2.66	1439.15 ± 11.30	3.63	NA	177634 ± 72.44
<i>Aechmea</i>	<i>maasii</i>	Bromelioideae	CAM	34.56 ± 0.21	1190.43 ± 10.10	59.52 ± 0.26	1130.91 ± 10.19	19.00	NA	40354 ± 53.01
<i>Aechmea</i>	<i>perforata</i>	Bromelioideae	CAM	45.86 ± 0.20	2270.34 ± 18.83	328.88 ± 3.04	1941.46 ± 14.47	5.90	NA	NA
<i>Aechmea</i>	<i>racinae</i>	Bromelioideae	CAM	34.70 ± 0.29	317.54 ± 2.55	NA	317.54 ± 2.87	NA	NA	2008 ± 12.08

<i>Aechmea</i>	<i>rodriguesiana</i>	Bromelioideae	CAM	62.90 ± 0.41	2112.00 ± 17.80	143.00 ± 1.22	1969.00 ± 14.32	13.77	NA	96736 ± 56.79
<i>Aechmea</i>	<i>rubens</i>	Bromelioideae	CAM	60.79 ± 0.45	1527.64 ± 12.02	215.16 ± 2.07	1312.48 ± 10.10	6.10	NA	109072 ± 43.09
<i>Aechmea</i>	<i>saxicola</i>	Bromelioideae	CAM	51.23 ± 0.50	1855.14 ± 16.03	265.81 ± 2.18	1589.33 ± 14.43	5.98	NA	NA
<i>Aechmea</i>	<i>triangularis</i>	Bromelioideae	CAM	42.37 ± 0.36	1523.39 ± 13.33	129.44 ± 0.99	1393.95 ± 12.76	10.77	NA	54528 ± 40.02
<i>Aechmea</i>	<i>victoriana var discolor</i>	Bromelioideae	CAM	45.56 ± 0.35	772.27 ± 4.04	423.16 ± 3.35	349.11 ± 3.24	0.83	NA	14028 ± 33.99
<i>Aechmea</i>	<i>warasii</i>	Bromelioideae	CAM	48.59 ± 0.48	1394.47 ± 10.06	728.69 ± 6.14	665.78 ± 5.50	0.91	NA	19598 ± 56.65
<i>Aechmea</i>	<i>weberbaueri</i>	Bromelioideae	CAM	23.42 ± 0.20	774.86 ± 4.25	297.21 ± 1.00	477.65 ± 3.87	1.61	NA	21121 ± 34.40
<i>Aechmea</i>	<i>weilbachii</i>	Bromelioideae	CAM	40.88 ± 0.21	553.78 ± 5.61	86.87 ± 0.65	466.91 ± 3.91	5.38	NA	25546 ± 39.95
<i>Alcantarea</i>	<i>burle-marxii</i>	Tillandsioideae	C3	10.87 ± 0.11	680.63 ± 3.08	183.03 ± 1.03	497.60 ± 3.22	2.72	NA	40178 ± 33.42
<i>Alcantarea</i>	<i>duarteana</i>	Tillandsioideae	C3	14.24 ± 0.09	1413.77 ± 11.19	959.34 ± 6.66	454.43 ± 3.08	0.47	NA	70183 ± 55.90
<i>Alcantarea</i>	<i>extensa</i>	Tillandsioideae	C3	11.79 ± 0.11	988.17 ± 6.76	323.99 ± 1.04	664.18 ± 4.50	2.05	NA	95933 ± 62.03
<i>Alcantarea</i>	<i>farneyi</i>	Tillandsioideae	C3	11.45 ± 0.04	892.84 ± 4.82	484.68 ± 3.85	408.16 ± 3.90	0.84	NA	42551 ± 41.45
<i>Alcantarea</i>	<i>geniculata</i>	Tillandsioideae	C3	10.75 ± 0.06	841.77 ± 4.45	500.89 ± 3.90	340.88 ± 3.21	0.68	NA	41989 ± 49.03

<i>Alcantarea</i>	<i>glaziouana</i>	Tillandsioideae	C3	12.51 ± 0.10	718.71 ± 3.87	315.80 ± 2.76	402.91 ± 2.86	1.28	NA	38102 ± 28.76
<i>Alcantarea</i>	<i>nahoumii</i>	Tillandsioideae	C3	12.50 ± 0.08	984.80 ± 9.09	372.63 ± 2.34	612.17 ± 5.16	1.64	NA	79244 ± 30.05
<i>Alcantarea</i>	<i>nigripetala</i>	Tillandsioideae	C3	10.10 ± 0.09	762.77 ± 4.32	392.94 ± 2.41	369.83 ± 3.21	0.94	NA	30890 ± 50.20
<i>Alcantarea</i>	<i>patriae</i>	Tillandsioideae	C3	10.77 ± 0.03	1041.59 ± 9.98	440.26 ± 3.66	601.33 ± 5.11	1.37	NA	70301 ± 64.43
<i>Alcantarea</i>	<i>roberto-kautskyi</i>	Tillandsioideae	C3	10.24 ± 0.05	802.47 ± 4.41	388.29 ± 3.75	414.18 ± 2.98	1.07	NA	73300 ± 32.09
<i>Alcantarea</i>	<i>trepida</i>	Tillandsioideae	C3	11.86 ± 0.06	928.04 ± 3.05	377.33 ± 2.98	550.71 ± 4.07	1.46	NA	79293 ± 48.18
<i>Alcantarea</i>	<i>vinicolor</i>	Tillandsioideae	C3	12.45 ± 0.07	1168.22 ± 10.22	527.25 ± 4.04	640.97 ± 5.55	1.22	NA	113390 ± 90.54
<i>Ananas</i>	<i>comosus</i>	Bromelioideae	CAM	32.78 ± 0.18	1518.88 ± 9.98	576.13 ± 4.12	942.75 ± 5.41	1.64	6.21 ± 0.11	37870 ± 40.32
<i>Araeococcus</i>	<i>micranthus</i>	Bromelioideae	CAM	39.77 ± 0.24	2648.59 ± 18.81	1726.65 ± 10.05	921.94 ± 3.99	0.53	NA	18897 ± 12.19
<i>Araeococcus</i>	<i>parviflorus</i>	Bromelioideae	CAM	24.99 ± 0.20	418.11 ± 2.00	227.23 ± 1.88	190.88 ± 1.30	0.84	NA	3665 ± 8.85
<i>Billbergia</i>	<i>distachia</i>	Bromelioideae	CAM	35.39 ± 0.29	738.02 ± 5.44	339.81 ± 2.45	398.21 ± 2.25	1.17	NA	12260 ± 14.47
<i>Billbergia</i>	<i>euphemiae</i>	Bromelioideae	C3	48.26 ± 0.36	1400.03 ± 12.11	738.76 ± 2.31	661.27 ± 3.64	0.90	NA	28614 ± 22.25
<i>Billbergia</i>	<i>porteana</i>	Bromelioideae	CAM	47.42 ± 0.40	2003.37 ± 18.10	928.65 ± 5.07	1074.72 ± 8.08	1.16	NA	NA

<i>Bromelia</i>	<i>antiacantha</i>	Bromelioideae	CAM	33.94 ± 0.41	1022.02 ± 9.76	189.65 ± 1.09	832.37 ± 6.67	4.39	NA	63308 ± 42.45
<i>Bromelia</i>	<i>arenaria</i>	Bromelioideae	CAM	35.75 ± 0.32	3100.69 ± 28.84	1537.32 ± 11.34	1563.37 ± 10.11	1.02	NA	80195 ± 61.00
<i>Bromelia</i>	<i>balansae</i>	Bromelioideae	CAM	48.50 ± 0.33	1492.81 ± 12.21	367.79 ± 2.67	1125.02 ± 8.99	3.06	NA	29939 ± 23.54
<i>Bromelia</i>	<i>binotii</i>	Bromelioideae	CAM	20.82 ± 0.38	1046.90 ± 8.66	214.96 ± 1.89	831.94 ± 4.41	3.87	NA	73535 ± 49.05
<i>Bromelia</i>	<i>goyazensis</i>	Bromelioideae	CAM	44.60 ± 0.40	2701.73 ± 24.51	1149.32 ± 10.05	1552.41 ± 10.16	1.35	NA	46927 ± 23.39
<i>Bromelia</i>	<i>humilis</i>	Bromelioideae	CAM	35.61 ± 0.32	1871.93 ± 14.07	843.21 ± 5.66	1028.72 ± 9.75	1.22	6.44 ± 0.10	55667 ± 44.67
<i>Bromelia</i>	<i>morreniana</i>	Bromelioideae	CAM	31.35 ± 0.33	456.26 ± 3.31	76.04 ± 0.43	380.22 ± 2.14	5.00	NA	16598 ± 29.08
<i>Bromelia</i>	<i>reversacantha</i>	Bromelioideae	CAM	18.37 ± 0.06	1017.73 ± 9.76	162.40 ± 1.13	855.33 ± 4.47	5.27	NA	15522 ± 14.98
<i>Bromelia</i>	<i>scarlatina</i>	Bromelioideae	CAM	34.15 ± 0.25	610.10 ± 5.20	260.19 ± 1.49	349.91 ± 2.09	1.34	NA	33933 ± 38.56
<i>Catopsis</i>	<i>berteroniana</i>	Tillandsioideae	C3	11.85 ± 0.06	571.83 ± 4.87	408.45 ± 3.00	163.38 ± 1.33	0.40	12.39 ± 0.15	16354 ± 27.77
<i>Catopsis</i>	<i>floribunda</i>	Tillandsioideae	C3	11.77 ± 0.10	506.86 ± 4.46	374.64 ± 2.65	132.22 ± 1.04	0.35	15	5287 ± 9.09
<i>Catopsis</i>	<i>juncifolia</i>	Tillandsioideae	C3	12.09 ± 0.08	586.72 ± 4.30	476.02 ± 3.80	110.70 ± 0.98	0.23	NA	NA

<i>Catopsis</i>	<i>morreniana</i>	Tillandsioideae	C3	11.95 ± 0.11	316.12 ± 3.04	189.67 ± 0.95	126.45 ± 1.03	0.67	14.2 ± 0.17	6818 ± 10.13
<i>Catopsis</i>	<i>nitida</i>	Tillandsioideae	C3	11.78 ± 0.04	259.04 ± 2.15	188.39 ± 1.14	70.65 ± 0.54	0.38	NA	NA
<i>Catopsis</i>	<i>paniculata</i>	Tillandsioideae	C3	18.95 ± 0.05	575.14 ± 4.95	226.57 ± 2.21	348.57 ± 2.77	1.54	NA	21011 ± 25.04
<i>Catopsis</i>	<i>sessiliflora</i>	Tillandsioideae	C3	10.08 ± 0.06	450.10 ± 3.87	310.78 ± 2.46	139.32 ± 1.20	0.45	NA	NA
<i>Cryptanthus</i>	<i>acaulis</i>	Bromelioideae	CAM	36.61 ± 0.24	422.11 ± 3.42	251.26 ± 2.09	170.85 ± 1.55	0.68	6.83 ± 0.11	12010 ± 14.45
<i>Cryptanthus</i>	<i>bivittatus</i>	Bromelioideae	CAM	33.17 ± 0.27	392.42 ± 2.07	237.83 ± 1.90	154.59 ± 1.40	0.65	6.01 ± 0.06	11225 ± 26.98
<i>Deuterocohnia</i>	<i>brevifolia</i>	Pitcairnioideae	CAM	29.33 ± 0.30	1444.16 ± 13.75	948.19 ± 4.63	495.97 ± 3.94	0.52	7.18 ± 0.05	12122 ± 24.55
<i>Deuterocohnia</i>	<i>lorentziana</i>	Pitcairnioideae	CAM	35.16 ± 0.28	1612.05 ± 12.01	1083.46 ± 8.91	528.59 ± 4.28	0.49	5.11 ± 0.12	13087 ± 19.05
<i>Deuterocohnia</i>	<i>meziana</i>	Pitcairnioideae	CAM	32.19 ± 0.30	1503.71 ± 10.09	981.92 ± 9.02	521.79 ± 3.90	0.53	NA	15430 ± 31.37
<i>Deuterocohnia</i>	<i>scapigera</i>	Pitcairnioideae	CAM	17.38 ± 0.14	695.80 ± 3.74	598.14 ± 3.58	97.66 ± 0.43	0.16	NA	NA
<i>Dyckia</i>	<i>bracteata</i>	Pitcairnioideae	CAM	22.42 ± 0.19	1189.46 ± 8.56	624.47 ± 4.01	564.99 ± 2.38	0.90	NA	11585 ± 26.43

<i>Dyckia</i>	<i>choristaminea</i>	Pitcairnioideae	CAM	26.01 ± 0.14	1665.25 ± 10.01	1080.86 ± 8.76	584.39 ± 4.19	0.54	NA	2701 ± 8.08
<i>Dyckia</i>	<i>rariflora</i>	Pitcairnioideae	CAM	31.84 ± 0.24	1597.18 ± 13.71	1009.60 ± 7.88	587.58 ± 4.40	0.58	NA	9760 ± 21.08
<i>Dyckia</i>	<i>remotiflora</i>	Pitcairnioideae	CAM	24.78 ± 0.22	1438.22 ± 9.70	892.69 ± 4.51	545.53 ± 4.48	0.61	4.43 ± 0.14	5661 ± 11.19
<i>Dyckia</i>	<i>tuberosa</i>	Pitcairnioideae	CAM	54.25 ± 0.39	1569.20 ± 10.22	781.96 ± 3.25	787.24 ± 3.20	1.01	NA	10424 ± 30.02
<i>Encholirium</i>	<i>pedicellatum</i>	Pitcairnioideae	CAM	41.73 ± 0.34	4085.72 ± 23.64	2962.68 ± 19.20	1123.04 ± 9.05	0.38	NA	NA
<i>Fascicularia</i>	<i>bicolor</i>	Bromelioideae	C3	30.22 ± 0.31	2240.13 ± 10.01	1909.62 ± 14.54	330.51 ± 2.88	0.17	5.91 ± 0.12	NA
<i>Fosterella</i>	<i>albicans</i>	Pitcairnioideae	C3	13.01 ± 0.10	553.71 ± 4.21	416.99 ± 3.22	136.72 ± 1.04	0.33	NA	1888 ± 8.05
<i>Fosterella</i>	<i>chiquitana</i>	Pitcairnioideae	C3	15.58 ± 0.17	1175.77 ± 9.95	1017.49 ± 8.80	158.28 ± 1.26	0.16	NA	47007 ± 48.71
<i>Fosterella</i>	<i>cotacajensis</i>	Pitcairnioideae	C3	11.41 ± 0.05	1385.37 ± 12.01	1222.39 ± 10.41	162.98 ± 1.70	0.13	NA	1645 ± 6.55
<i>Guzmania</i>	<i>claviformis</i>	Tillandsioideae	C3	20.71 ± 0.18	630.42 ± 3.88	259.58 ± 2.09	370.84 ± 2.95	1.43	NA	39011 ± 32.08
<i>Guzmania</i>	<i>lingulata</i>	Tillandsioideae	C3	17.08 ± 0.14	480.82 ± 2.35	279.19 ± 1.54	201.63 ± 1.80	0.72	19.4 ± 1.06	27234 ± 55.21
<i>Guzmania</i>	<i>monostachia</i>	Tillandsioideae	C3-CAM	17.01 ± 0.09	494.12 ± 2.65	262.50 ± 2.30	231.62 ± 1.94	0.88	18.0 ± 0.94	11992 ± 20.10

<i>Guzmania</i>	<i>paniculata</i>	Tillandsioideae	C3	19.71 ± 0.13	616.69 ± 3.09	376.51 ± 3.33	240.18 ± 2.37	0.64	NA	20853 ± 31.38
<i>Guzmania</i>	<i>retusa</i>	Tillandsioideae	C3	11.10 ± 0.04	365.33 ± 3.10	162.37 ± 0.87	202.96 ± 1.88	1.25	NA	40152 ± 38.90
<i>Guzmania</i>	<i>sanguinea</i>	Tillandsioideae	C3	19.38 ± 0.14	591.67 ± 3.45	318.16 ± 1.43	273.51 ± 2.35	0.86	NA	42103 ± 41.22
<i>Guzmania</i>	<i>ventricosa</i>	Tillandsioideae	C3	11.20 ± 0.10	365.50 ± 2.78	173.76 ± 1.49	191.74 ± 1.02	1.10	NA	13434 ± 30.20
<i>Guzmania</i>	<i>wittmackii</i>	Tillandsioideae	C3	14.11 ± 0.07	300.55 ± 2.91	153.22 ± 1.01	147.33 ± 1.56	0.96	NA	9785 ± 8.70
<i>Lutheria</i>	<i>glutinosa</i>	Tillandsioideae	C3	16.22 ± 0.13	461.08 ± 3.06	295.56 ± 2.24	165.52 ± 1.09	0.56	12.12 ± 0.71	12122 ± 27.15
<i>Lutheria</i>	<i>splendens</i>	Tillandsioideae	C3	15.04 ± 0.12	440.62 ± 3.41	277.36 ± 2.54	163.26 ± 1.32	0.59	8.29 ± 0.13	10815 ± 22.04
<i>Lymania</i>	<i>corallina</i>	Bromelioideae	CAM	31.03 ± 0.30	434.26 ± 3.87	133.62 ± 1.07	300.64 ± 2.87	2.25	NA	NA
<i>Lymania</i>	<i>globosa</i>	Bromelioideae	CAM	45.01 ± 0.32	724.93 ± 2.09	258.45 ± 2.26	466.48 ± 2.34	1.80	NA	15339 ± 31.40
<i>Mezobromelia</i>	<i>capituligera</i>	Tillandsioideae	C3	11.56 ± 0.02	384.43 ± 1.90	180.20 ± 1.08	204.23 ± 2.00	1.13	NA	34141 ± 49.94
<i>Mezobromelia</i>	<i>pleiosticha</i>	Tillandsioideae	C3	19.49 ± 0.13	708.03 ± 5.61	333.19 ± 3.17	374.84 ± 2.08	1.13	NA	38852 ± 42.80
<i>Ochagavia</i>	<i>carnea</i>	Bromelioideae	C3	31.03 ± 0.12	2124.06 ± 18.76	1370.36 ± 11.19	753.70 ± 4.34	0.55	NA	NA

<i>Ochagavia</i>	<i>elegans</i>	Bromelioideae	C3	28.16 ± 0.22	1930.66 ± 14.39	1295.33 ± 10.54	635.33 ± 3.28	0.49	5.00 ± 0.06	NA
<i>Ochagavia</i>	<i>litoralis</i>	Bromelioideae	C3	30.39 ± 0.31	2006.16 ± 17.71	1310.36 ± 12.22	695.80 ± 5.04	0.53	NA	NA
<i>Pitcairnia</i>	<i>crystalinensis</i>	Pitcairnioideae	C3	12.90 ± 0.08	728.13 ± 4.56	441.29 ± 2.33	286.84 ± 2.22	0.65	NA	6472 ± 4.55
<i>Pitcairnia</i>	<i>encholirioides</i>	Pitcairnioideae	C3	12.38 ± 0.07	553.44 ± 3.27	307.47 ± 1.09	245.97 ± 2.18	0.80	NA	6682 ± 5.09
<i>Pitcairnia</i>	<i>imbricata</i>	Pitcairnioideae	C3	10.87 ± 0.05	612.31 ± 3.19	436.31 ± 2.22	176.00 ± 1.19	0.40	15.3 ± 1.00	13371 ± 18.74
<i>Pitcairnia</i>	<i>integrifolia</i>	Pitcairnioideae	C3	11.12 ± 0.05	644.92 ± 4.78	449.94 ± 3.08	194.98 ± 1.53	0.43	16.3 ± 0.87	15043 ± 22.90
<i>Pitcairnia</i>	<i>paniculata</i>	Pitcairnioideae	C3	9.25 ± 0.02	525.98 ± 2.98	304.98 ± 2.10	221.00 ± 1.98	0.72	NA	10334 ± 25.16
<i>Pitcairnia</i>	<i>xanthocalyx</i>	Pitcairnioideae	C3	9.30 ± 0.04	585.17 ± 3.76	382.61 ± 3.08	202.56 ± 1.74	0.53	15.8 ± 1.03	12133 ± 14.45
<i>Puya</i>	<i>alpestris</i>	Puyoideae	C3	19.47 ± 0.13	1395.56 ± 11.10	899.20 ± 5.52	496.36 ± 3.42	0.55	4.16 ± 0.09	NA
<i>Puya</i>	<i>chilensis</i>	Puyoideae	C3-CAM	18.81 ± 0.14	1414.52 ± 12.04	924.88 ± 2.78	489.64 ± 4.04	0.53	5.84 ± 0.11	NA

<i>Puya</i>	<i>mirabilis</i>	Puyoideae	C3	20.56 ± 0.21	1201.03 ± 10.05	810.96 ± 7.90	390.07 ± 3.00	0.48	7.87 ± 0.08	NA
<i>Puya</i>	<i>venusta</i>	Puyoideae	CAM	18.31 ± 0.16	1371.22 ± 12.41	912.32 ± 6.76	458.90 ± 4.20	0.50	4.55 ± 0.07	NA
<i>Quesnelia</i>	<i>arvensis</i>	Bromelioideae	CAM	23.26 ± 0.20	947.98 ± 7.67	223.05 ± 1.04	724.93 ± 2.39	3.25	NA	59453 ± 63.37
<i>Quesnelia</i>	<i>edmundoi</i>	Bromelioideae	CAM	34.36 ± 0.33	794.46 ± 6.98	31.78 ± 0.24	762.68 ± 3.98	24.00	NA	23905 ± 21.38
<i>Quesnelia</i>	<i>seideliana</i>	Bromelioideae	CAM	23.75 ± 0.25	934.73 ± 6.65	521.09 ± 1.45	413.64 ± 2.87	0.79	NA	8546 ± 17.70
<i>Quesnelia</i>	<i>strobilispica</i>	Bromelioideae	CAM	44.98 ± 0.42	770.46 ± 5.40	347.25 ± 1.98	423.21 ± 3.06	1.22	NA	9055 ± 10.04
<i>Racinaea</i>	<i>aerisincola</i>	Tillandsioideae	C3	25.09 ± 0.22	423.62 ± 2.29	274.46 ± 2.05	149.16 ± 1.09	0.54	NA	13511 ± 26.90
<i>Racinaea</i>	<i>dyeriana</i>	Tillandsioideae	C3	23.09 ± 0.20	418.05 ± 3.64	293.76 ± 2.23	124.29 ± 1.08	0.42	11.93 ± 0.86	13022 ± 24.45
<i>Ronnbergia</i>	<i>neoregelioides</i>	Bromelioideae	NA	22.97 ± 0.15	558.78 ± 2.00	303.80 ± 2.98	254.98 ± 2.22	0.84	NA	4457 ± 3.76
<i>Tillandsia</i>	<i>balbisiana</i>	Tillandsioideae	CAM	78.56 ± 0.38	1301.82 ± 9.89	387.03 ± 3.56	914.79 ± 5.13	2.36	NA	NA
<i>Tillandsia</i>	<i>bergeri</i>	Tillandsioideae	CAM	124.16 ± 0.46	2444.89 ± 14.42	NA	2444.89 ± 18.90	NA	NA	NA
<i>Tillandsia</i>	<i>brachycaulos</i>	Tillandsioideae	CAM	57.12 ± 0.28	622.34 ± 5.04	340.34 ± 2.99	282.00 ± 1.76	0.83	7.93 ± 0.21	NA

<i>Tillandsia</i>	<i>bulbosa</i>	Tillandsioideae	CAM	70.13 ± 0.39	904.14 ± 6.39	579.58 ± 4.06	324.56 ± 2.20	0.56	6.01 ± 0.09	NA
<i>Tillandsia</i>	<i>butzii</i>	Tillandsioideae	CAM	52.77 ± 0.33	613.04 ± 4.90	406.14 ± 3.11	206.90 ± 1.55	0.51	5.16 ± 0.19	NA
<i>Tillandsia</i>	<i>caput-medusae</i>	Tillandsioideae	CAM	68.03 ± 0.42	1455.91 ± 12.70	433.31 ± 1.32	1022.60 ± 8.87	2.36	5.14 ± 0.21	9556 ± 8.04
<i>Tillandsia</i>	<i>complanata</i>	Tillandsioideae	C3	11.54 ± 0.05	306.06 ± 2.88	153.03 ± 1.83	153.03 ± 1.31	1.00	NA	NA
<i>Tillandsia</i>	<i>fasciculata</i>	Tillandsioideae	CAM	63.34 ± 0.29	1795.88 ± 15.60	1172.16 ± 9.56	623.72 ± 4.05	0.53	6.15 ± 0.48	36031 ± 24.15
<i>Tillandsia</i>	<i>gardneri</i>	Tillandsioideae	CAM	43.41 ± 0.30	349.00 ± 2.43	243.75 ± 1.00	105.25 ± 0.95	0.43	NA	NA
<i>Tillandsia</i>	<i>geminiflora</i>	Tillandsioideae	CAM	45.76 ± 0.38	468.35 ± 2.22	208.16 ± 1.54	260.19 ± 1.89	1.25	NA	5067 ± 9.24
<i>Tillandsia</i>	<i>harrisii</i>	Tillandsioideae	CAM	24.29 ± 0.26	1147.66 ± 8.75	590.23 ± 3.88	557.43 ± 4.77	0.94	NA	18550 ± 31.35
<i>Tillandsia</i>	<i>ionantha</i>	Tillandsioideae	CAM	122.22 ± 0.44	2241.61 ± 19.01	991.86 ± 6.09	1249.75 ± 10.13	1.26	6.20 ± 0.22	47677 ± 52.26
<i>Tillandsia</i>	<i>juncea</i>	Tillandsioideae	CAM	41.22 ± 0.36	501.33 ± 5.22	211.09 ± 0.98	290.24 ± 2.05	1.38	4.71 ± 0.17	NA

<i>Tillandsia</i>	<i>leiboldiana</i>	Tillandsioideae	C3	24.12 ± 0.20	436.11 ± 2.70	290.74 ± 2.10	145.37 ± 1.31	0.50	10.5 3 ± 0.77	11899 ± 35.43
<i>Tillandsia</i>	<i>linearis</i>	Tillandsioideae	CAM	37.94 ± 0.18	226.11 ± 1.86	131.29 ± 0.65	94.82 ± 0.54	0.72	NA	1135 ± 6.07
<i>Tillandsia</i>	<i>lithophila</i>	Tillandsioideae	CAM	36.92 ± 0.24	1700.93 ± 11.67	1026.42 ± 8.54	674.51 ± 5.21	0.66	NA	NA
<i>Tillandsia</i>	<i>loliacea</i>	Tillandsioideae	CAM	74.07 ± 0.45	1160.71 ± 10.59	NA	1160.71 ± 8.98	NA	NA	NA
<i>Tillandsia</i>	<i>mallemonitii</i>	Tillandsioideae	CAM	40.15 ± 0.31	423.77 ± 3.64	NA	423.77 ± 3.26	NA	NA	728 ± 2.04
<i>Tillandsia</i>	<i>malzinei</i>	Tillandsioideae	C3	15.05 ± 0.04	363.90 ± 3.30	249.84 ± 2.44	114.06 ± 1.04	0.46	NA	4627 ± 4.15
<i>Tillandsia</i>	<i>paleacea</i>	Tillandsioideae	CAM	74.12 ± 0.41	1085.42 ± 8.48	393.27 ± 1.05	692.15 ± 5.42	1.76	NA	NA
<i>Tillandsia</i>	<i>paucifolia</i>	Tillandsioideae	CAM	90.11 ± 0.36	2110.77 ± 16.31	1045.24 ± 7.74	1065.53 ± 8.09	1.02	5.75 ± 0.23	NA
<i>Tillandsia</i>	<i>pohliana</i>	Tillandsioideae	CAM	59.72 ± 0.33	598.44 ± 5.22	235.10 ± 1.80	363.34 ± 2.24	1.55	NA	9245 ± 5.66
<i>Tillandsia</i>	<i>polystachia</i>	Tillandsioideae	CAM	23.56 ± 0.09	757.82 ± 4.01	417.92 ± 2.35	339.90 ± 2.76	0.81	6.29 ± 0.19	18203 ± 22.54
<i>Tillandsia</i>	<i>recurvata</i>	Tillandsioideae	CAM	96.58 ± 0.38	2394.00 ± 20.13	827.83 ± 8.04	1566.17 ± 12.12	1.89	NA	NA
<i>Tillandsia</i>	<i>schiedeana</i>	Tillandsioideae	CAM	86.38 ± 0.40	1765.67 ± 14.54	718.59 ± 6.22	1047.08 ± 8.87	1.46	NA	NA

<i>Tillandsia</i>	<i>setacea</i>	Tillandsioideae	CAM	51.22 ± 0.36	1654.54 ± 11.18	1020.21 ± 8.00	634.33 ± 5.43	0.62	NA	NA
<i>Tillandsia</i>	<i>stricta</i>	Tillandsioideae	CAM	49.21 ± 0.28	545.30 ± 3.76	216.88 ± 2.01	328.42 ± 2.09	1.51	7.01 ± 0.21	5490 ± 11.17
<i>Tillandsia</i>	<i>tenuifolia</i>	Tillandsioideae	CAM	43.34 ± 0.27	382.82 ± 3.29	122.06 ± 0.87	260.76 ± 1.90	2.14	NA	2758 ± 4.65
<i>Tillandsia</i>	<i>usneoides</i>	Tillandsioideae	CAM	94.42 ± 0.38	802.72 ± 4.65	NA	802.72 ± 4.45	NA	NA	NA
<i>Tillandsia</i>	<i>utriculata</i>	Tillandsioideae	CAM	72.95 ± 0.34	1148.67 ± 10.05	574.34 ± 4.03	574.34 ± 3.22	1.00	4.50 ± 0.11	19657 ± 24.34
<i>Tillandsia</i>	<i>valenzuelana</i>	Tillandsioideae	CAM	46.40 ± 0.41	788.28 ± 4.09	492.68 ± 4.11	295.61 ± 1.09	0.60	NA	NA
<i>Tillandsia</i>	<i>xerographica</i>	Tillandsioideae	CAM	34.60 ± 0.35	1787.92 ± 14.16	573.90 ± 4.89	1214.02 ± 9.65	2.12	NA	46635 ± 47.65
<i>Vriesea</i>	<i>arachnoidea</i>	Tillandsioideae	C3	15.76 ± 0.13	461.15 ± 3.26	320.80 ± 1.94	140.35 ± 1.00	0.44	NA	4672 ± 3.21
<i>Vriesea</i>	<i>biguassuensis</i>	Tillandsioideae	C3	13.82 ± 0.10	366.68 ± 2.41	194.12 ± 0.98	172.56 ± 1.43	0.89	NA	12320 ± 16.87
<i>Vriesea</i>	<i>bituminosa</i>	Tillandsioideae	C3	13.46 ± 0.11	480.78 ± 1.59	193.30 ± 1.45	287.48 ± 2.33	1.49	NA	62922 ± 59.65
<i>Vriesea</i>	<i>carinata</i>	Tillandsioideae	C3	20.08 ± 0.16	170.73 ± 1.44	96.75 ± 0.33	73.98 ± 0.65	0.76	NA	404 ± 1.18
<i>Vriesea</i>	<i>corcovadensis</i>	Tillandsioideae	C3	12.94 ± 0.10	545.46 ± 3.78	302.43 ± 2.76	243.03 ± 2.30	0.80	NA	12197 ± 11.22

<i>Vriesea</i>	<i>correia-araujoii</i>	Tillandsioideae	C3	10.53 ± 0.04	348.46 ± 3.02	205.65 ± 1.87	142.81 ± 1.11	0.69	NA	12027 ± 31.08
<i>Vriesea</i>	<i>erythrodactylon</i>	Tillandsioideae	C3	16.52 ± 0.09	243.26 ± 2.00	127.42 ± 1.04	115.84 ± 0.90	0.91	NA	12126 ± 30.55
<i>Vriesea</i>	<i>fenestralis</i>	Tillandsioideae	C3	18.11 ± 0.16	523.17 ± 2.15	352.70 ± 3.22	170.47 ± 1.24	0.48	13.68 ± 0.91	11007 ± 26.73
<i>Vriesea</i>	<i>flammea</i>	Tillandsioideae	C3	12.57 ± 0.04	548.73 ± 2.76	346.29 ± 3.04	202.44 ± 1.87	0.58	NA	13675 ± 22.45
<i>Vriesea</i>	<i>fosteriana</i>	Tillandsioideae	C3	20.82 ± 0.08	642.45 ± 4.09	256.98 ± 2.45	385.47 ± 3.20	1.50	15.86 ± 1.13	86664 ± 89.94
<i>Vriesea</i>	<i>gigantea</i>	Tillandsioideae	C3	19.04 ± 0.14	531.04 ± 4.98	362.66 ± 3.01	168.38 ± 1.54	0.46	12.42 ± 0.97	10556 ± 12.31
<i>Vriesea</i>	<i>guttata</i>	Tillandsioideae	C3	17.17 ± 0.12	487.43 ± 3.98	341.20 ± 2.89	146.23 ± 1.02	0.43	9.36 ± 0.81	13041 ± 25.54
<i>Vriesea</i>	<i>incurvata</i>	Tillandsioideae	C3	18.67 ± 0.12	269.15 ± 3.24	146.81 ± 1.20	122.34 ± 1.30	0.83	NA	8352 ± 12.43
<i>Vriesea</i>	<i>lubbersii</i>	Tillandsioideae	C3	21.15 ± 0.10	378.54 ± 3.33	238.77 ± 1.15	139.77 ± 1.06	0.59	NA	8993 ± 4.56
<i>Vriesea</i>	<i>microrachis</i>	Tillandsioideae	C3	11.89 ± 0.10	469.44 ± 3.75	221.23 ± 1.09	248.21 ± 2.09	1.12	NA	23026 ± 35.67
<i>Vriesea</i>	<i>neoglutinosa</i>	Tillandsioideae	C3	14.55 ± 0.13	520.44 ± 3.90	314.43 ± 2.07	206.01 ± 1.88	0.66	NA	14303 ± 13.54
<i>Vriesea</i>	<i>poenulata</i>	Tillandsioideae	C3	14.28 ± 0.05	591.20 ± 4.41	319.38 ± 2.55	271.82 ± 1.97	0.85	NA	13650 ± 22.08

<i>Vriesea</i>	<i>rubens</i>	Tillandsioideae	C3	13.57 ± 0.07	382.10 ± 3.20	196.21 ± 2.01	185.89 ± 1.43	0.95	NA	15257 ± 28.90
<i>Werauhia</i>	<i>sanguinolenta</i>	Tillandsioideae	C3	15.22 ± 0.08	395.60 ± 3.44	237.36 ± 1.76	158.24 ± 1.20	0.67	14.01 ± 0.91	12716 ± 31.38
<i>Werauhia</i>	<i>viridiflora</i>	Tillandsioideae	C3	15.08 ± 0.04	315.89 ± 2.71	131.12 ± 1.04	184.77 ± 1.04	1.41	NA	28105 ± 34.75
<i>Wittrockia</i>	<i>gigantea</i>	Bromelioideae	CAM	28.54 ± 0.22	748.42 ± 5.05	56.70 ± 0.34	691.72 ± 5.45	12.20	NA	34855 ± 42.66

References

- Aoyama EM, Sajo MG (2003) Leaf structure of *Aechmea* Ruiz & Pav. Subgenus *Lamprococcus* (Beer) Baker and related species (Bromeliaceae). *Revista Brasileira de Botânica* **26**, 461–473.
- Arruda RCO, da Costa AF (2003) Foliar anatomy of five *Vriesea* sect. *Xiphion* (Bromeliaceae) species. *Selbyana* **24**, 180–189.
- Casañas Suárez OL, Jáuregui D (2011). Foliar morphoanatomy of epiphytes of a cloud forest, Altos de Pipe, estado Miranda, Venezuela. *Acta Botánica Venezuéllica* **34**, 153–175.
- Faria APG, Vieira ACM, Wendt T (2012) Leaf anatomy and its contribution to the systematics of *Aechmea* subgenus *Macrochordion* (de Vriese) Baker (Bromeliaceae). *Anais da Academia Brasileira de Ciências* **84**, 961–971.
- Forzza RC (2005) Revisão taxonômica de *Encholirium* Mart. Ex Schult. & Schult.f. (Pitcairnioideae- Bromeliaeae). *Boletim de Botânica, Universidade de São Paulo* **23**, 1–49.

Gomes-da-Silva J, Vargens FAC, Arruda RCO, da Costa AF (2012). A morphological cladistics analysis of the *Vriesea corcovadensis* group (Bromeliaceae: Tillandsioideae), with anatomical descriptions: new evidence of the non-monophyly of the genus. *Systematic Botany* **37**, 641–654.

Horres R, Schulte K, Wiesing K, Zizka G (2007) Systematics of Bromelioideae (Bromeliaceae)- evidence from molecular and anatomical studies. *Aliso* **23**, 27–43.

Leoni, CTH (2011) Leaf anatomy of *Tillandsia complanata* Benth. *Pittieria* **35**, 133–142.

Loeschen VS, Martin CE, Smith M, Eder SL (1993) Leaf anatomy and CO₂ recycling during Crassulacean acid metabolism in twelve epiphytic species of *Tillandsia* (Bromeliaceae). *International Journal of Plant Sciences* **154**, 100–106.

Mantovani A, da Venda AKL, Almeida VR, da Costa AF, Forzza RC (2012) Leaf anatomy of *Quesnelia* (Bromeliaceae): implications for the systematics of core bromelioids. *Plant Systematics and Evolution* **298**, 787–800.

Medeiros ASM (2015) Caracterização anatômica foliar de espécies de *Guzmania* Ruiz & Pav. E *Mezobromelia* L.B. Sm. (Tillandsioideae, Bromeliaceae). Undergraduate Thesis, Universidade Federal do Rio Grande do Norte.

Monteiro RF, Forzza RC, Mantovani A (2011) Leaf structure of *Bromelia* and its significance for the evolution of Bromelioideae (Bromeliaceae). *Plant Systematics and Evolution* **293**, 53–64.

Palací CA, Brown GK, Tuthill DE (2004) Vegetative morphology and leaf anatomy of *Catopsis* (Tillandsioideae: Bromeliaceae). *Selbyana* **25**, 138–150.

Pereira TAR, de Oliveira TS, da Silva LC, Azevedo AA (2011) Comparative leaf anatomy of four species of Bromelioideae (Bromeliaceae) occurring in the Atlantic Forest, Brazil. *Botany* **89**, 243–253.

Proença SL, Sajo MG (2007) Anatomia foliar de bromélias ocorrentes em áreas de cerrado do Estado de São Paulo, Brasil. *Acta Botánica Brasilica* **21**, 657–673.

Rex M, Patzolt K, Schulte K, Zizka G, Vásque R, Ibisch PL, Weising K (2007) AFLP analysis of genetic relationships in the genus *Fosterella* L.B.Smith (Pitcairnioideae, Bromeliaceae). *Genome* **50**, 90–105.

Santos-Silva F, Saraiva DP, Monteiro RF, Pita P, Mantovani A, Forzza RC (2013) Invasion of the South American dry diagonal: what can the leaf anatomy of Pitcairnioideae (Bromeliaceae) tell us about it? *Flora* **208**, 508–521.

Scatena VL, Segecin S (2005) Leaf anatomy of *Tillandsia* L. (Bromeliaceae) from “Campos Gerais”, Paraná, Brazil. *Brazilian Journal of Botany* **28**, 635–649.

Sousa GM, Estelita MEM, Wanderley MGL (2005) Anatomia foliar de espécies brasileiras de *Aechmea* subg. *Chevaliera* (Gaudich. ex Beer) Baker, Bromelioideae-Bromeliaceae. *Revista Brasileira de Botânica* **28**, 603–613.

Versieux LM, Elbl PM, Wanderley MGL, Menezes NL (2010) *Alcantarea* (Bromeliaceae) leaf anatomical characterization and its systematic implications. *Nordic Journal of Botany* **28**, 385–397.