

**Analysis of variance tables:**

**Table S1.** Analysis of variance and F test for mean individual raw cashew nut weight (g), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	16.20	16.20	147.46	<0.001*
Treatments	3	0.31	0.10	0.9467	0.4359
Blocks	3	0.37	0.13	1.1378	0.3567
Clones*Treatments	3	0.51	0.17	1.5373	0.2342
Residuals	21	2.31	0.11		
Total	31				
CV	3.82%				
Clones		Averages			
'BRS 226'		9.4			
'CCP 76'		8.0			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S2.** Analysis of variance and F test for raw cashew nut yield (kg ha<sup>-1</sup>), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	23532471	23532471	139.40	<0.001*
Treatments	3	522204	174068	1.0311	0.4001
Blocks	3	392136	130712	0.7743	0.5220
Clone*Treatments	3	599837	199946	1.1844	0.3408
Residuals	21	3376326	168816		
Total	31				
CV	20.35%				
Clones		Averages			
'BRS 226'		2,866			
'CCP 76'		1,111			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S3.** Analysis of variance and F test for individual cashew apple mean weight (g), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	2926.6	2926.6	17.5431	<0.001*
Treatments	3	391.6	130.2	0.7805	0.51811
Blocks	3	929.5	309.8	1.8572	0.1678
Clones*Treatments	3	1639.1	546.4	3.2751	0.0413*
Residuals	21	3503.4	166.8		
Total	31				
CV	9,87%				
Clones		Averages			
'BRS 226'		121.3 b			
'CCP 76'		140.4 a			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value

\* Statistically significant

**Table S4.** Analysis of variance and F test breakdown of the interaction between treatments and each clone for individual mean cashew apple weight (g), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Block	3	929.4883	309.82943	1.8572	0.1678

Clone	1	2926.6494	2926.6494	17.5431	0.0004*
Treatment: Clone 'BRS226'	3	1776.8225	592.27416	3.5502	0.0319*
Treatment: Clone 'CCP76'	3	252.9098	84.30328	0.5053	0.6828
Residuals	21	3503.3606	166.2670		
Total	31	9389.2307	302.87841		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S5.** Linear model analysis of variance of the effect of biochar application on the individual mean cashew apple weight (g) for 'BRS 226' Clone, Pacajus-CE, Brazil, 2023.

	DF	SS	MS	Fc	p
Linear effect	1	1589.49	1589.49	9.53	0.00559*
Deviations	2	187.34	93.67	0.56	0.5787
Residuals	21	3503.36	166.83		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value

\* Statistically significant.

**Table S6.** Analysis of variance and F test for cashew peduncle yield (kg ha<sup>-1</sup>), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	2400259159	2400259159	62,7363	<0.001*
Treatments	3	126559446	42186482	1.1026	0.3712
Blocks	3	274498521	91499507	2.3915	0.0989
Clones*Treatments	3	124385685	41461895	1.0837	0.3787
Residuals	21	765190345	38259517		
Total	31				
CV	21,4%				
Clones	Averages				
'BRS 226'		37,477.29 <sup>a</sup>			
'CCP 76'		19,748.23 <sup>b</sup>			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S7.** Analysis of variance and F test for cashew nuts water productivity (kg m<sup>-3</sup>), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	3.3776	3.3776	167.79	<0.001*
Treatments	3	0.3116	0.1039	5.1592	0.0084*
Blocks	3	0.0454	0.0151	0.7523	0.5339
Clones*Treatments	3	0.3921	0.1307	6.4927	0.003*
Residuals	21	0.3921	0.0201		
Total	31	4.5188			
CV	20.8%				
Clones	Averages				
'BRS 226'		1.0 <sup>a</sup>			
'CCP 76'		0.3 <sup>b</sup>			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S8.** Analysis of variance and F test of the breakdown of the interaction between treatments and each Clone for cashew nuts water productivity (kg m<sup>-3</sup>), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clone	1	3.42595	3.42595	170.6302	<0.001*
Treatment: BRS 226 Clone	3	0.71684	0.23895	11.9008	0.0001*
Treatment: CCP 76 Clone	3	0.0512	0.01671	0.8321	0.4912
Blocks	3	0.04442	0.01481	0.7375	0.5414
Residuals	21	0.4264	0.02008		
Total	31	4.65898	0.1509		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S9.** Analysis of variance and F test for cashew apples water productivity (kg m<sup>-3</sup>), Pacajus-CE, Brazil, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	8594983	8594983	86966	<0.001*
Treatments	3	2048637	682.879	3194	0.044556*
Blocks	3	1342828	447.609	2093	0.131643
Clones*Treatments	3	3182932	1060.98	4962	0.009294*
Residuals	21	4490195	213818.81		
Total	31	29659575			
CV	223.5%				
Clones		Averages			
'BRS 226'		2,245 a			
'CCP 76'		1,017 b			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S10.** Analysis of variance and F test of the interaction between treatments and each clone breakdown for cashew apples water productivity (kg m<sup>-3</sup>), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clone	1	18594982.7	18594982.7	86.9661	0.001*
Treatment: BRS 226 Clone	3	4683172.3	1561057.4	7.3008	0.0016*
Treatment: CCP 76 Clone	3	548396.5	182798.8	0.8549	0.4797
Blocks	3	1342828	447609.3	20934	0.1316
Residuals	21	4490195.3	213818.8		
Total	31	29559574.7	956760.5		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S11.** Analysis of variance and F test for soluble solids (°Brix), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	23.6328	23.6328	47.0904	<0.001*
Treatments	3	8.3609	2.7870	5.5533	0.0058*
Blocks	3	0.7284	0.2428	0.4838	0.6971
Clones*Treatments	3	0.1109	0.0370	0.0737	0.9735
Residuals	21	10.5391	0.5019		
Total	31				
CV	5.99%				
Clones		Averages			
'BRS 226'		10.97 b			
'CCP 76'		12.69 a			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S12.** Analysis of variance of the quadratic model ( $y = -0.2855x^2 + 1.2168x + 11.204$ ;  $R^2=0.99$ ;  $p=0.00059$ ) on the effect of biochar application on soluble solids ( $^{\circ}$ Brix), Pacajus-CE, Brazil. 2023.

	DF	SS	MS	Fc	p
Linear effect	1	0.0806	0.0806	0.16	0.69269
Quadratic effect	1	8198	8198	16.34	0.000559*
Deviations	1	0.0821	0.0821	0.6	0.68996
Residuals	21	10.5391	0.5019		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S13.** Analysis of variance and F test for titratable acidity (%), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	0.0170	0.0170	25.202	<0.001*
Treatments	3	0.0076	0.0025	3.7372	0.0269*
Blocks	3	0.0010	0.0003	0.4758	0.7025
Clones*Treatments	3	0.0350	0.0117	17.2742	<0.001*
Residuals	21	0.0142	0.0007		
Total	31				
CV	12.69%				
Clones		Averages			
'BRS 226'		0.2280 a			
'CCP 76'		0.1819 b			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S14.** Analysis of variance and F test for the clone interaction in each biochar dose for cashew apple titratable acidity (%), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Block	3	0.00096	0.00032	0.758	0.7025
Treatment	3	0.00758	0.00250	3.7372	0.0269*
Clone: Treatment 0	1	0.03926	0.03926	58.0728	<0.001*
Clone: Treatment 1	1	0.00281	0.00281	4.1551	0.0543*
Clone: Treatment 2	1	0.00030	0.00030	0.4494	0.5099
Clone: Treatment 4	1	0.00970	0.00970	14.3473	0.0011*
Residuals	21	0.01420	0.00070		
Total	31	0.07481	0.00241		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S15.** Analysis of variance and F test of the interaction between treatments and each clone breakdown for cashew apple titratable acidity (%), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Block	3	0.00096	0.00032	0.4758	0.7025
Clone	1	0.01704	0.01704	25.202	0.0001*
Treatment and BRS226 Clone	3	0.000912	0.00304	4.4975	0.0138*
Treatment and CCP76 Clone	3	0.03349	0.01116	16.5139	<0.001*
Residuals	21	0.01420	0.00070		
Total	31	0.07481	0.00241		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S16.** Analysis of variance and F test for soluble solids/titratable acidity ratio (SS/TA), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	4870.6	4870.60	75.4472	<0.001*
Treatments	3	797.0	265.66	4.1151	0.0192*
Blocks	3	92.8	30.95	0.4793	0.7001
Clones*Treatments	3	3897.3	1299.11	20.1236	<0.001*
Residuals	21	1355.7	64.56		
Total	31				
CV	12.99%				
Clones		Averages			
‘BRS 226’		49.52 b			
‘CCP 76’		74.20 a			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value

\* Statistically significant

**Table S17.** Analysis of variance and F test for the clone interaction in each biochar for cashew apple SS/TA ratio, Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Blocks	3	92.834620	30.4487	0.4793	0.7001
Treatments	3	796.97007	265.6567	4.1151	0.0192*
Clone: Treatment 0	1	6,495.81000	6495.810	100.6222	<0.001*
Clone: Treatment 1	1	14.92300	14.9230	0.2312	0.6356
Clone: Treatment 2	1	381.82209	381.82209	5.9145	0.024*
Clone: Treatment 4	1	18,75.37542	1875.37542	29.0502	<0.001*
Residuals	21	11,013.4230	64.55644		
Total	31	19,671.1582	355.2171		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S18.** Analysis of variance and F test of the interaction breakdown between treatments and each Clone for SS/TA ratio, Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Blocks	3	92.83462	30.4487	0.4793	0.7001
Clones	1	4870.60550	4870.6055	75.4472	<0.001*
Treatment and ‘BRS 226’	3	859.51868	286.50623	4.4381	0.0145*
Treatment and ‘CCP 76’	3	3834.77897	1278.25966	19.8007	<0.001*
Residuals	21	1355.68520	64.55644		
Total	31	11013.4230	355.2171		

DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value.

\* Statistically significant.

**Table S19.** Analysis of variance and F test for firmness (kgf), Pacajus-CE, Brazil, 2023.

Sources of variation	DF	SS	MS	Fc	p
Clones	1	0.4160	0.4160	1.6985	0.2066
Treatments	3	0.2686	0.0895	0.3655	0.7786
Blocks	3	1.3347	0.4449	1.1864	0.1751
Clones*Treatments	3	0.3067	0.1022	0.4174	0.7424
Residuals	21	5.1437	0.2449		
Total	31				
CV	22.58%				
Clones		Averages			
‘BRS 226’		2.0778 a			

CV is the coefficient of variation (%); DF is the degree of freedom; SS is the sum of squares; MS is the mean square; Fc is the calculated F value and p is the test of Snedecor value

\* Statistically significant