

Supplementary Material

Table 1. Influence of sowing date (June, July and August) on stem morphological traits of the 14 sweet sorghum genotypes cultivated in Bamako, Mali and results of the two-way ANOVAs testing effects of genotype (G) and sowing date (S) on measured traits

Probabilities: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, NS = not significant ($P > 0.05$). Means with the same letter are not statistically different (LSD test) between sowing dates for a given variety and a trait

Accession number	Final plant height (cm)			Average internode length (cm)			Stem median diameter (mm)		
	June	July	Aug	June	July	Aug	June	July	Aug
IS 8685	356a	309b	222c	14a	15a	15a	17a	17a	16a
IS 23142	413a	374b	237c	14a	15a	12b	22a	21a	17b
IS 23254	405a	362b	223c	16b	17a	15b	15a	15a	11b
IS 33261	435a	374b	276c	13b	15a	13b	25a	23a	20a
IS 10234	252a	199b	135c	12a	12a	10a	17a	16a	13b
IS 15443	381a	330b	178c	18a	19a	16b	20a	17a	13b
IS 26833	416b	360b	269c	18a	18a	16a	18a	16b	15b
IS 26731	284a	212b	162c	19a	20a	15b	14a	8b	9b
IS 2848	187a	154b	128b	11a	11a	10a	16a	12b	9b
IS 2814	175a	153ab	122b	8a	9a	9a	17a	16a	11b
IS 5867	319a	311a	191b	19ab	21a	18b	15a	14a	13a
IS 20351	362a	314b	188c	18a	20a	18a	16a	13b	10b
SSM 215	229a	199a	148b	12a	12a	12a	19a	17a	12b
IS 6351	369a	293b	173c	16a	15b	11c	17a	13b	12b
<i>Mean</i>	327	282	189	15	16	14	18	16	13
Analysis of variance:									
Sowing date (S)	***			***			***		
Genotype (G)	***			***			***		
S x G	***			***			*		

Table 2. Correlation coefficients between sorghum traits measured at 50% anthesis in June (A) and July (B) sowings in the 14 genotypes cultivated in Sotuba, Mali in 2010

Correlations were not performed for August sowing due to the lack of sugar and dry weight measurements

A. Sowing of June

	Thermal time to flag leaf (°Cd)	Sugar concentration (mg.g ⁻¹ DM)	Sugar content (g.plant ⁻¹)	Stem dry weight (g)	Stem moisture (%)	Green leaf dry weight at anthesis (g)	Total leaf number	Phyllochron
Sugar concentration (mg.g⁻¹ DM)	-0.1325							
Sugar content (g)	0.9160***	-0.0604						
Stem dry weight (g)	0.8987***	-0.3237	0.9545**					
Stem moisture (%)	-0.3259	0.8954***	-0.3153	-0.5154				
Green leaf dry weight (g)		-0.6835**	0.4827	0.6299*	0.7280**			
Total leaf number	0.9560***	-0.2521	0.9355**	0.9448***	0.4141	0.5699*		
Phyllochron	0.6713**	0.1785	-0.4886	0.4209	0.0453	-0.0436	0.4286	
Brix	0.5269	-0.3995	0.5864*	0.6015*	0.7579**	0.5234	0.5394*	0.3574

Probabilities: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

B. Sowing of July

	Thermal time to flag leaf (°Cd)	Sugar concentration (mg.g ⁻¹ DM)	Sugar content (g.plant ⁻¹)	Stem dry weight (g)	Stem moisture (%)	Green leaf dry weight at anthesis (g)	Total leaf number	Phyllochron
Sugar concentration (mg.g⁻¹ DM)	-0.3861							
Sugar content (g)	0.8795***	-0.2727						
Stem dry weight (g)	0.8901***	-0.5521*	0.9440**					
Stem moisture (%)	-0.2431	0.6130*	-0.3855	-0.5271				
Green leaf dry weight (g)	0.7456**	-0.4939	0.8417**	0.8830***	-0.5667*			
Total leaf number	0.9023***	-0.4173	0.9141**	0.9361***	-0.5006	0.8550***		
Phyllochron	0.4741	-0.0585	0.1759	0.1615	0.4272	-0.0268	0.0506	
Brix	-0.0870	0.4177	0.2101	0.0355	-0.4509	0.1411	0.1603	-0.5159

Probabilities: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Table 3. Correlation coefficients between traits measured at anthesis and/or grain maturity in the 14 genotypes in Sotuba, Mali in 2010 in June (A), July (B) and August (C) sowings

DW = dry weight; SCP = sugar concentration per plant; SPP = sugar production per plant. The percentages of variation in sugar concentration and green leaf dry weights were calculated between anthesis and maturity. A negative percentage indicates a decrease of the values of the trait between anthesis and maturity. Probabilities: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

A. Sowing of June	Grain yield (maturity)	Stem DW at maturity	Green leaf DW at anthesis	Green leaf DW at maturity	SCP at anthesis	SCP at maturity	SPP at anthesis	SPP at maturity	% variation SCP	% variation green leaf DW	Harvest index	Leaf/grain ratio
Stem DW at maturity(g)	0.3160											
Green leaf DW at anthesis (g)	0.7072*	0.7324*										
Green leaf DW at maturity (g)	0.2776	0.9637***	0.6472*									
SCP at anthesis (mg.g⁻¹ DW)	-0.5511	-0.3947	-0.6851*	-0.3934								
SCP at maturity (mg.g⁻¹ DW)	-0.5875	0.1229	-0.1264	0.0960	0.4300							
SPP at anthesis (g)	0.0720	0.9127***	0.5569	0.8791***	-0.1123	0.3273						
SPP at maturity (g)	0.1296	0.9633***	0.6290*	0.9180***	-0.2041	0.3073	0.9742***					
% of variation in SCP	-0.0048	0.4868	0.5460	0.4520	-0.6160*	0.4378	0.3756	0.4597				
% of variation in green leaf DW	0.0596	0.8364**	0.4492	0.9351***	-0.3345	0.1806	0.8253**	0.8176**	0.4549			
Harvest index (g.g⁻¹)	0.2418	-0.7093*	-0.3761	-0.7300*	0.2850	-0.5245	-0.7147*	-0.7293*	-0.7354**	-0.8117**		
Green leaf DW:grain DW ratio	-0.3861	0.5532	0.3619	0.5009	-0.2469	-0.5377	0.6093*	0.6444*	0.7486**	0.5306	-	0.8284**
	0.4282	0.6714*			-	0.7483*	0.4720	0.5526	0.7762**	0.6042*	-0.6898*	0.5385
Brix (°B)			0.8310**	0.6593*	*	0.0780						

Table 3. Continued

B. Sowing of July	Grain yield (maturity)	Stem DW at maturity	Green leaf DW at anthesis	Green leaf DW at maturity	SCP at anthesis	SCP at maturity	SPP at anthesis	SPP at maturity	% variation SCP	% variation green leaf DW	Harvest index	Leaf/grain ratio
Stem DW at maturity(g)	0.1097											
Green leaf DW at anthesis (g)	0.5761	0.7694**										
Green leaf DW at maturity (g)	0.4658	0.7355*	0.9040***									
SCP at anthesis (mg.g ⁻¹ DW)	-0.2679	-0.3593	-0.4083	-0.2329								
SCP at maturity (mg.g ⁻¹ DW)	0.0201	-0.4037	-0.0932	-0.0358	0.5838							
SPP at anthesis (g)	0.1594	0.9325***	0.8571**	0.8556**	-0.2130	-0.1391						
SPP at maturity (g)	0.3034	0.8657**	0.9084***	0.8768***	-0.2642	0.0073	0.9669***					
% of variation in sugar SCP	0.3742	-0.2176	0.2310	0.1404	-0.1814	0.6779*	-0.0403	0.1924				
% of variation in green leaf DW	0.5190	0.4889	0.6703*	0.8789***	-0.0458	-0.0200	0.6236	0.6350*	0.0480			
Harvest index (g.g ⁻¹)	0.0291	-0.8108**	-0.7231*	-0.6847*	0.2561	-0.0297	-0.8998***	-0.8965*	-0.1950	-0.4321		
Green leaf DW:grain DW ratio	-0.1283	0.8670**	0.7269*	0.6899*	-0.2384	-0.1441	0.9198***	0.8506*	-0.0617	-0.3815	-0.9284***	
Brix (°B)	0.6111	0.5078	0.7960**	0.8604**	-0.1548	0.3016	0.6687*	0.7971**	0.5199	0.8133**	-0.6003	0.4490

C. Sowing of August	Grain yield (maturity)	Stem DW at maturity	Green leaf DW at maturity	Sugar SCP at maturity	Sugar SPP at maturity	Harvest index
Stem DW at maturity(g)	0.9563***					
Green leaf DW at maturity (g)	0.9218**	0.9330***				
SCP at maturity (mg.g ⁻¹ DW)	-0.5263	-0.5243	-0.3322			
SPP at maturity (g)	0.9059**	0.9707***	0.9323***	-0.3143		
Harvest index (g.g ⁻¹)	0.2939	0.0264	0.0450	-0.1813	-0.0753	
Brix (°B)	-0.3652	-0.3347	-0.1171	0.4572	-0.2823	-0.0595

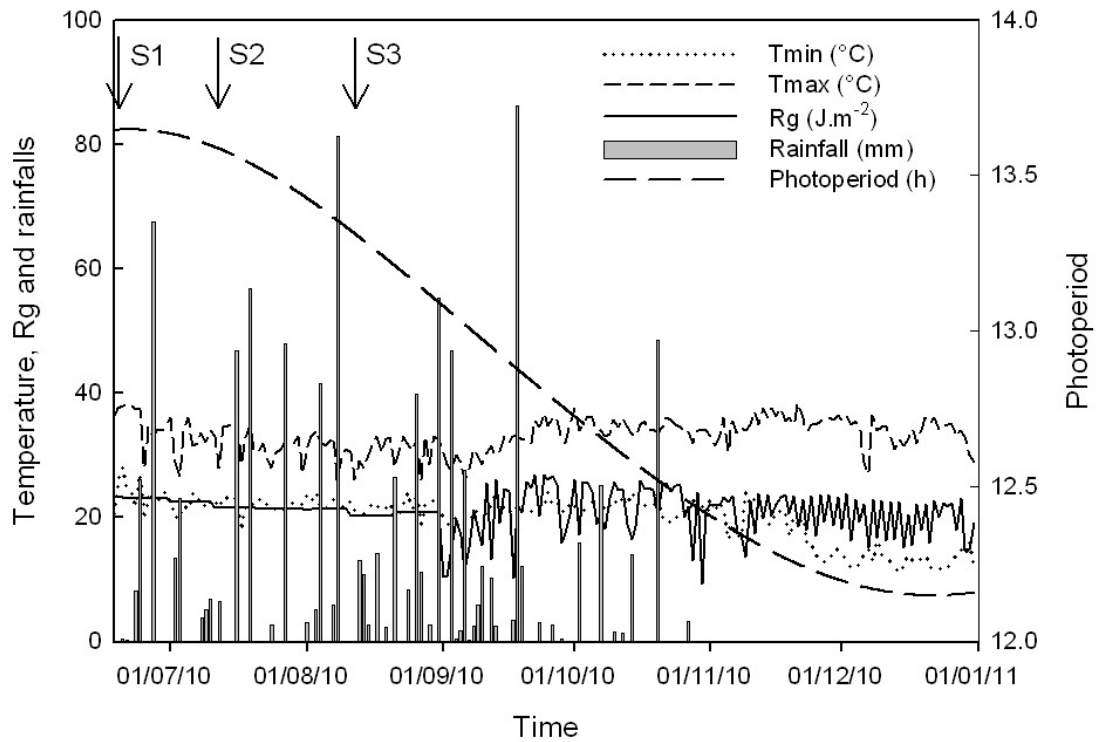


Fig. S1. Daily climatic conditions at the Sotuba agronomical station of IER, Mali between the 18 June and the 31 December 2010. On left hand ordinate, Tmin and Tmax: minimal and maximal air temperature, respectively ($^{\circ}\text{C}$); Rg: global radiation ($\text{MJ}\cdot\text{m}^{-2}$); rainfall (mm). On right hand ordinate, photoperiod (h). Black arrows indicate successive sowing dates (S1: 18/6; S2: 12/7; S3: 12/8).

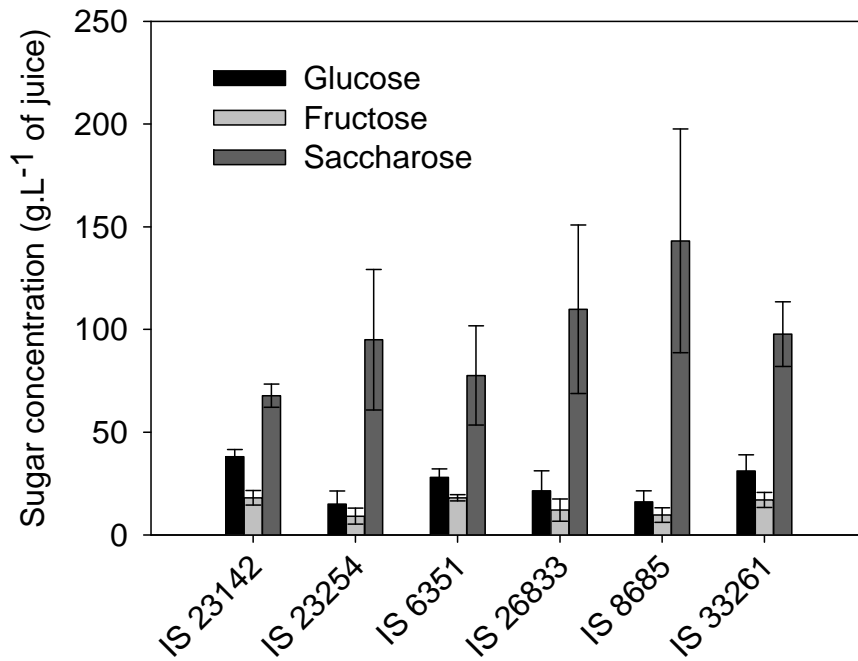


Fig. 2. Sugar composition (glucose, fructose and sucrose) quantified by high performance ionic chromatography with pulsed amperometric detection (HPLC) in juice after stem crushing at grain maturity in six genotypes sown in June and July (B) at Sotuba, Mali in 2010. Data are means of four plants, two sampled for June and July sowings respectively. The standard deviations computed for each sugar type and set of 4 plants are shown. Plants for the sowing of August were not available.