SUPPLEMENTARY MATERIAL

Table S1. Canegro cultivar trait parameter values for four sucrose cultivars (NCo376, N19, N31), three high-fibre clones (04G0073, 11F0551, 11K1393) and two hypothetical genotypes representing conventional sugarcane (HS) and a high-fibre clone (HF), as determined by Singels et al. (2016).

Parameter	Description	NCo376	N19	N31	0400G73	11F0551 11K1393	HS	HF
MaxPARCE	Maximum (no stress) radiation conversion efficiency expressed as assimilate produced before respiration, per unit PAR (g/MJ)	5.7	5.8	5.9	6.2	6.9	5.8	6.9
APFMX	Maximum fraction of dry mass increments that can be allocated to aerial dry mass (t/t)	0.88	0.88	0.88	0.88	0.88	0.88	0.88
STKPFMAX	Fraction of daily aerial dry mass increments partitioned to stalk at high temperatures in a mature crop (t/t on a dry mass basis)	0.70	0.65	0.68	0.60	0.60	0.65	0.60
SUCA	Sucrose partitioning parameter: Maximum sucrose contents in the base of stalk (t/t)	0.58	0.63	0.53	0.30	0.30	0.63	0.30
FF_CELLSE	Fraction of leaf mass and stalk fibre mass that consist of cellulose and hemi-cellulose.	0.66	0.66	0.66	0.66	0.66	0.66	0.66
dPERdt	Change in plant extension rate per unit change in effective temperature (mm/h/°C)	0.25	0.25	0.35	0.30	0.30	0.25	0.30
LFMAX	Maximum number of green leaves a healthy, adequately-watered plant will have after it is old enough to lose some leaves	12	11	11	13	13	11	13
MXLFAREA	Max leaf area assigned to all leaves above leaf number MXLFARNO (cm^2)	360	400	360	382	382	400	382
MXLFARNO	Leaf number above which leaf area is limited to MXLFAREA	17	17	14	23	23	17	23
PI1	Phyllocron interval 1 (for leaf numbers below Pswitch, °C.d	70	50	90	59	59	50	59
PI2	Phyllocron interval 2 (for leaf numbers above Pswitch, °C.d	170	146	170	117	117	146	117
PSWITCH	Leaf number at which the phyllocron changes	12	12	14	12	12	12	12
TTPLNTEM	Thermal time to emergence for a plant crop (°Cd)	150	150	150	150	150	150	150
TTRATNEM	Thermal time to emergence for a ratoon crop (°Cd)	100	50	50	50	50	50	50
CHUPIBASE	Thermal time from emergence to start of stalk growth (°Cd)	1000	750	900	800	1000	1000	1000
TAR0	The number of lower order tillers produced per higher order tiller per unit thermal time (/°Cd) for unstressed crops	0.020	0.015	0.018	0.020	0.020	0.015	0.020

TT_POPGROWTH	Thermal time from emergence to peak tiller population (°Cd)	600	600	600	600	600	600	600
MAX_POP	Maximum tiller population (stalks/m2)	60	60	60	60	60	60	60
POPTT16	Stalk population at/after 1600 degree days (/m2)	13.30	10.00	13.50	15.00	15.00	10.00	15.00
AQP_UP5	Drought sensitivity coefficient: The soil water depletion fraction below which transpiration and photosynthesis rates are reduced at the reference atmospheric evaporative demand of 5 mm/d	0.6	0.45	0.55	0.65	0.65	0.45	0.65