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Table 1: Specific $\delta^{13}\text{C}$ values for samples (with corresponding labels) presented in Figure 1

Label	$\delta^{13}\text{C}_{\text{VPDB}} (\text{\textperthousand})$	Label	$\delta^{13}\text{C}_{\text{VPDB}} (\text{\textperthousand})$
X14	-26.5	S25	-27.0
X10	-22.3	S26	-26.6
X13	-20.4	S22*	-26.2
X11	-20.4	S15	-25.3
X1	-20.3	S2	-24.3
X27	-20.2	S24*	-23.5
X28	-20.0	S27	-13.1
X26	-19.9	S12	-12.8
X2	-19.7	S18	-12.8
X8	-17.1	S14	-12.7
X15	-15.2	S19	-12.5
X5	-13.7	S16	-12.4
X25	-13.0	S23*	-12.4
X3	-12.8	S3*	-12.3
X19	-11.6	S11	-12.2
X18	-11.3	S8	-11.8
X9	-11.0	S21*	-11.8
X29	-11.0	S10	-11.3
X7	-10.9	S20*	-11.1
X22	-10.8	S4*	-11.0
X20	-10.7	S1	-11.0
X21	-10.7	S6	-10.9
X6	-10.7	S9	-10.8
X12	-10.6	S5*	-10.0
X30	-10.5		
X4	-10.1	S13	-26.3
X16	-10.1	S28	-25.9
X17	-9.7	S7	-20.3
		S17	-25.8
X33	-10.8	S29	-16.1
Xy33	-11.5		
Xy23*	-22.3		
Xy24*	-21.5		

Table 2: Specific $\delta^{13}\text{C}$ values for calculation of xylitol and sugar source endpoints, as shown in Figure 1

Sample	$\delta^{13}\text{C}_{\text{VPDB}} (\text{\textperthousand})$	N	Reference
Maize cob	-11.3	7	1
Maize seeds	-11.9	8	1
Maize seeds	-15.4		2
Maize seeds	-10.5	2	3
<i>Zea mays</i>	-13.9	3	4
Corn	-11.2		5
Mean maize isotope value	-12.4		
<i>Betula pendula</i> tree	-28.4	4	6
<i>B. pendula</i> stemwood cellulose	-29.0	5	7
<i>B. pendula</i> fall leaves	-28.1		8
<i>B. pendula</i> leaves	-28.9		9
<i>B. pendula</i> whole leaf	-28.0		10
Mean birch isotope value	-28.5		
<i>Saccharum</i>	-13.9		4
Cane sugar	-11.5		11
Mean sugarcane isotope value	-12.7		
Beet sugar	-25.5		11
Beet sugar	-25.6		12
Mean sugar beet isotope value	-25.6		

References

1. DeNiro MJ, Hastorf CA. Alteration of $^{15}\text{N}/^{14}\text{N}$ and $^{13}\text{C}/^{12}\text{C}$ ratios of plant matter during the initial stages of diagenesis: Studies utilizing archaeological specimens from Peru. *Geochim Cosmochim Acta.* 1985;49:97–115. [https://doi.org/10.1016/0016-7037\(85\)90194-2](https://doi.org/10.1016/0016-7037(85)90194-2)
2. Greer AL, Horton TW, Nelson XJ. Simple ways to calculate stable isotope discrimination factors and convert between tissue types. *Methods Ecol Evol.* 2015;6:1341–1348. <https://doi.org/10.1111/2041-210X.12421>
3. Keegan WF, DeNiro MJ. Stable carbon- and nitrogen-isotope ratios of bone collagen used to study coral-reef and terrestrial components of prehistoric Bahamian diet. *Am Antiquity.* 1988;53(2):17. <https://doi.org/10.2307/281022>
4. Smith B, Epstein S. Two categories of $^{13}\text{C}/^{12}\text{C}$ ratios for higher plants. *Plant Physiol.* 1971;47:380–384. <https://doi.org/10.1104/pp.47.3.380>
5. González-Martín I, González-Pérez C, Hernández-Méndez J, Marqués-Macías E, Sanz-Poveda F. Use of isotope analysis to characterize meat from Iberian-breed swine. *Meat Sci.* 1999;52:437–441.
6. Czimczik CI, Preston CM, Schmidt MW, Werner RA, Schulze E-D. Effects of charring on mass, organic carbon, and stable carbon isotope composition of wood. *Org Geochem.* 2002;33(11):1207–1223. [https://doi.org/10.1016/S0146-6380\(02\)00137-7](https://doi.org/10.1016/S0146-6380(02)00137-7)

7. Saurer M, Maurer S, Matyssek R, Landolt W, Günthardt-Goerg MS, Siegenthaler U. The influence of ozone and nutrition on $\delta^{13}\text{C}$ in *Betula pendula*. *Oecologia*. 1995;103(4):397–406. <https://doi.org/10.1007/BF00328677>
8. Balesdent J, Girardin C, Mariotti A. Site-related $\delta^{13}\text{C}$ of tree leaves and soil organic matter in a temperate forest. *Ecology*. 1993;74(6):1713–1721. <https://doi.org/10.2307/1939930>
9. Ineson P, Cotrufo MF, Bol R, Harkness DD, Blum H. Quantification of soil carbon inputs under elevated CO₂: C₃ plants in a C₄ soil. *Plant Soil*. 1995;187(2):345–350. <https://doi.org/10.1007/BF00017099>
10. Martin B, Bytnarowicz A, Thorstenson YR. Effects of air pollutants on the composition of stable carbon isotopes, $\delta^{13}\text{C}$, of leaves and wood, and on leaf injury. *Plant Physiol*. 1988;88(1):218–223. <https://doi.org/10.1104/pp.88.1.218>
11. González-Martín I, Marqués-Macías E, Sánchez-Sánchez J, González-Rivera B. Detection of honey adulteration with beet sugar using stable isotope methodology. *Food Chem*. 1998;61(3):281–286. [https://doi.org/10.1016/S0308-8146\(97\)00101-5](https://doi.org/10.1016/S0308-8146(97)00101-5)
12. Jahren AH, Saudek C, Yeung EH, Linda Kao WH, Kraft RA, Caballero B. An isotopic method for quantifying sweeteners derived from corn and sugar cane. *Am J Clin Nutr*. 2006;84:1380–1384.