

American fast food isn't all corn-based

Understanding the significance of corn (C_4) versus C_3 feedstocks in today's cattle industry is particularly relevant because corn contributes widely to our economy, from food to fuel. Recently Jahren and Kraft (1) made statements on the use of corn within American fast food manufacture that we believe grossly overestimated corn's importance. The authors misinterpreted literature, incorrectly assigning isotope-ratio end-members to define animals eating C_3 versus C_4 diets.

Jahren and Kraft state: "For beef cattle, a final diet of corn silage yielded $\delta^{13}C = -18.1$ and -21.1‰ for lipid and muscle, respectively" (1). The cited study actually reported values of -21.1‰ for lipid and -18.1‰ for muscle (2). The Bahar *et al.* "maize silage" diet was not pure corn, but also contained a C_3 -based supplement (2). Jahren and Kraft did not remove fat from samples before analysis (1), whereas Bahar *et al.* did (2). Thus, Jahren and Kraft incorrectly defined an exclusively corn-based dietary end-member by (i) using $\delta^{13}C$ for

lipid instead of muscle, (ii) redefining an $\approx 75\%$ C_4 diet as 100% corn, and (iii) comparing samples with fat to delipidified values (1, 2).

Given these concerns, we reanalyzed their data and calculated that $\approx 70\%$ of beef servings had a corn-dominated ($>50\%$ C_4) diet, with $\delta^{13}C$ above -19‰ ; only 30% had a diet that could be $>85\%$ corn, with $\delta^{13}C$ above -16‰ . This is dramatically different from the original conclusion (1): only 30% and not "93% of the beef sampled in this study had $\delta^{13}C$ value consistent with an exclusively corn-based diet."

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1. Jahren AH, Kraft RA (2008) Carbon and nitrogen stable isotopes in fast food: Signatures of corn and confinement. *Proc Natl Acad Sci USA* 105:17855–17860.
2. Bahar B, *et al.* (2005) Alteration of carbon and nitrogen stable isotope composition of beef by substitution of grass silage with maize silage. *Rapid Commun Mass Spectrom* 19:1937–1942.

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The authors declare no conflict of interest.

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