Diurnal Cycling of Total Nonstructural Carbohydrates in Leafy Vegetables. (C06-mayland101058-Poster)

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Abstract:

The diurnal nature of photosynthetic activity causes C-3 legumes and grasses and C-4 grasses to undergo a diurnal cycling of total non structural carbohydrate (TNC) concentrations. Cattle, sheep, goats and horses prefer the afternoon (PM) harvested forage to that cut in the morning (AM). These responses seem related to the increased TNC in the PM-forages. Do TNC in leafy vegetables demonstrate a similar diurnal cycle? Three lettuce varieties (Black Simpson, Green Salad, and Speckled Trout), grown in two different gardens near Kimberly, ID), were sampled at sundown and the next morning at sunup during the week of June 2-7, 2001 and immediately frozen. Sugars were determined on freeze dried tissue. Sugar concentrations for PM and AM harvested tissue were respectively: 82 and 82 g/kg as monosaccharides, 63 and 42 g/kg as disaccharides, 22 and 17 g/kg as fructans, 10 and 5 g/kg as starch and 177 and 146 g/kg as TNC. Soluble sugar concentrations in leaf lettuce demonstrate a diurnal cycling like that previously shown for forages. Afternoon harvest favors higher sugar and dry matter concentrations which may be opposing factors for ideal transport, marketing, and overall human preference.

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