

Title Sensory analysis of pac choi and tomato grown under organic and conventional systems

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Abstract

Vegetables are popular among consumers because of their versatility of preparation, unique sensory characteristics, and exceptional health benefits. Trends such as organic farming and breeding to increase nutrition and functional health components have increased interest in understanding the flavor of vegetables, such as leafy greens. A lexicon of thirty-two flavor attributes was created to help describe the flavor of fresh leafy vegetables. This lexicon includes five "green" attributes; mouth feel characteristics such as pungent, bite, tooth-etch, and heat/burn; fundamental tastes including bitter and umami; seven terms that describe unique flavors related to specific vegetables such as cabbage, celery, lettuce, spinach, parsley, beet, and radish leaves; and a group of other terms including citrus, piney, woody, water-like, musty/earthy, floral, sulfur, metallic, soapy, petroleum-like, and overall sweet. In addition, our study encompassed a series of sensory tests which will aid in better understanding the effects of several production variables on the sensory characteristics of pac choi and tomato. Variables evaluated were production systems (i.e. organic and conventional), fertilizer amount (i.e. high, low, and no fertilizer), environment (i.e. field and high tunnel), maturity level (i.e. 2.5, 4.5, and 6.5-week old plants at the time of harvest), and shelf life (i.e. 1, 4, 9, 18 days of refrigerated storage). Samples were grown at the Kansas State University Horticulture Research Center located in Olathe, Kansas. Highly trained descriptive panelists from the Sensory Analysis Center at Kansas State University evaluated the samples. There do not appear to be major sensory differences between organic and conventional products specific to the crops and seasons studied. Furthermore, when differences were present, they generally were quite small and showed no clear trends or patterns favoring one production system over the other even after refrigerated storage. However, it is suggested that differences in flavor and volatile composition between organic and conventional pac choi may be more evident at early stages of growth.