5.3 Sensory Evaluation of Juice Made with Fruit from Huanglongbing (HLB) Affected Trees

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Fruit and juice from trees affected with the huanglongbing (HLB) disease are reportedly having a bitter or salty taste, but a full description of the flavor of such juice has not been published. Hamlin and Valencia oranges were harvested from groves where trees were either healthy or affected with HLB, and included normal looking (non-symptomatic) and symptomatic fruit (small, green, and lopsided). Fruit was juiced using a JBT 391 extractor and pasteurized under simulated commercial conditions. A sensory trained panel evaluated the juice using eight aroma, eight flavor, and six taste and mouth feel descriptors. Samples of each juice were analyzed for sugars, acids, limonoids, and volatiles. In general, there was no or little difference between juice from healthy and non-symptomatic HLB fruit. However, for Hamlin and Valencia harvested in January and April, respectively, orange and fresh (Valencia only) aromas were lower; and sour/fermented, peppery/musty, and paint aromas were higher in juice from HLB-symptomatic than healthy fruit. Orange, fruity, and fresh flavors, as well as sweetness, were lower in juice from HLB-symptomatic fruit; while peel oil, sour/fermented, peppery/musty, and paint flavors, as well as sourness, saltiness, bitterness, metallic, and tingling attributes were rated higher. There were little or no differences between samples due to disease status for Valencia harvested in June. Chemical analyses revealed higher limonin and nomilin in Hamlin and Valencia harvested in April, and lower Brix/TA ratio in Valencia (April), which may explain some of the differences in taste.