



# Sugar Belle® shows potential in orange juice processing

By Yu Wang, Charles Sims, Zhifeng Gao, Lisa House, Frederick Gmitter and Jude Grosser

**T**he citrus industry has faced significant declines in both production and consumption during the huanglongbing (HLB) era. For example, Florida orange production has dropped about 70 percent over the last two decades. In the absence of effective interventions, the spread of HLB will continue to reduce the U.S. citrus supply. Compounding this problem is the dramatic decrease in consumer demand for orange juice (OJ). Recently, a 6.1 percent decline in OJ sales was reported for the 2017–2018 season, as compared to the prior season.

## CONSUMER DEMAND AND GROWER CONCERNS

Consumer demand is impacted by many factors, including taste expectations. Taste can be impacted by changes in fruit quality from HLB, which results in fruit with altered flavor. Due to the increased cost of crop production, growers must feel confident that the fruit they produce is truly competitive, high-quality and liked by consumers.

Consumer preference is key to consumption, the “engine” behind the drive to fight against HLB. Therefore, a near-term strategy should not only improve HLB-compromised citrus production and quality, but also increase consumer demand for citrus products.

Due to Valencia orange’s susceptibility to HLB, citrus varieties that are resistant or tolerant to the disease are needed. In the meantime, the citrus industry needs near-term solutions to



remain viable and avoid collapse. Use of Sugar Belle® in the juice processing stream might be one such option.

Sugar Belle® has been recognized as the most HLB-tolerant commercial cultivar currently grown. Additionally, citrus growers are increasingly planting Sugar Belle® due to its good field performance and competitive fruit quality.

However, Sugar Belle® is a mandarin hybrid that was originally developed for the fresh market. Due to the possibly limited capacity of the fresh market to absorb all the fruit produced, citrus growers indicated they want to have confidence in the future market for Sugar Belle® blended juice before making substantial investments in planting more acreage of this cultivar. Having an option to sell to processors in addition to the fresh market will give growers more confidence in planting this HLB-tolerant variety by addressing concerns regarding market saturation.

According to the 2015 Food & Health Survey conducted by the International Food Information Council Foundation, flavor is the top-ranking driver of food and beverage purchasing



In a consumer preference study, participants ranked Sugar Belle®/Valquarius blended juice higher than commercial orange juice.

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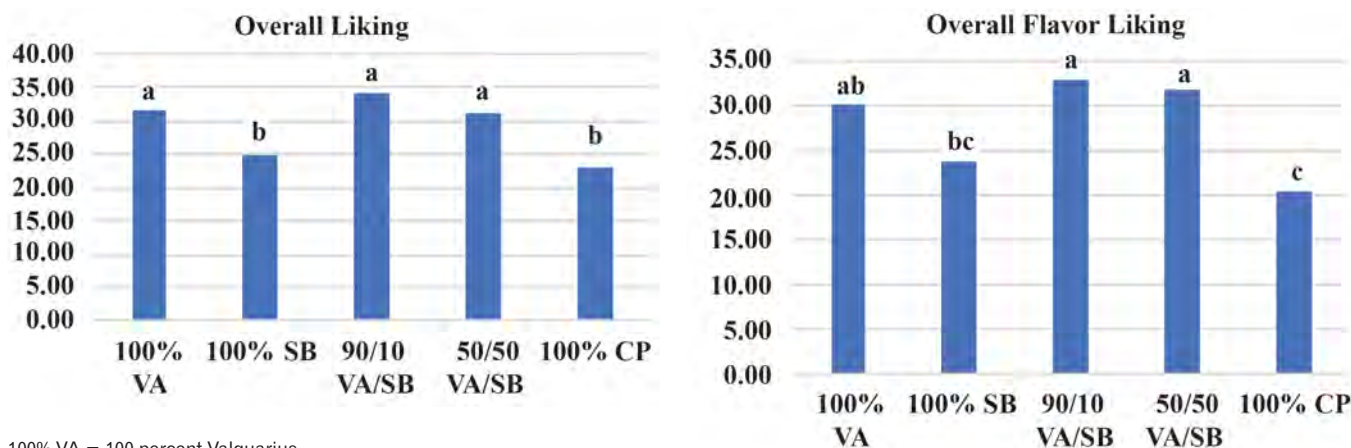
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100% VA = 100 percent Valquarius  
 100% SB = 100 percent Sugar Belle®  
 90/10 VA/SB = 90 percent Valquarius and 10 percent Sugar Belle®  
 50/50 VA/SB = 50 percent Valquarius and 50 percent Sugar Belle®  
 100% CP = 100 percent commercial product

**Figure 1.** Overall liking and overall flavor liking of different juice products.

decisions, and consumers are willing to pay more for better tasting products. A recent study ([www.grocerydive.com/news/grocery--study-flavor-drives-most-juice-purchases/534702](http://www.grocerydive.com/news/grocery--study-flavor-drives-most-juice-purchases/534702)) further indicated that flavor drives most juice purchase. Therefore, to cover growers' costs and to increase consumer demand, flavor is considered the key

factor in the use of Sugar Belle® in OJ processing.

### STUDY SHOWS BLENDED JUICE PREFERENCE

University of Florida researchers conducted a preliminary study on extending the use of Sugar Belle® into the juice market. In the sensory and

consumer preference study, 100 percent Valquarius (a recently released orange) juice, 100 percent Sugar Belle®, 90 percent Valquarius/10 percent Sugar Belle® blended juice, 50 percent Valquarius/50 percent Sugar Belle® blended juice, and 100 percent commercially available not-from-concentrate (NFC) juice product obtained from a major



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supermarket chain store were used. The study included 170 participants.

Except for the commercial juice, all juice was processed using commercial extraction and pasteurization equipment and procedures. The processed juice was frozen and stored for three months before sensory tests. When compared to the commercially purchased NFC juice, the 90 percent Valquarius/10 percent Sugar Belle® blended juice had a better color and higher flavor intensity. In particular, the flavor liking and overall liking (flavor plus color and texture) of 90/10 blended juice were higher than 100 percent commercial NFC juice (Figure 1, page 16).

## WILLINGNESS TO PAY MORE

The consumer willingness to pay was estimated to understand not only what product would be preferred, but to what degree of economic benefit this product may bring to growers. To measure willingness to pay, the market price of a 52-ounce carton of NFC orange juice was provided. Study participants were then asked how much they would pay for the juice they tasted. They were willing to pay about 50 cents more per 52-ounce carton of 90/10 percent blended juice compared to the commercial product, indicating the potential of economic returns by marketing the Sugar Belle® blend.

## CONCLUSION

In conclusion, use of Sugar Belle® blended with orange juice addresses concerns growers may have about planting more acres of a product that appears to improve citrus productivity in Florida while showing the potential to increase consumer demand for orange juice. Sugar Belle® could be used in OJ processing for a premium quality product.

A larger scale study is needed before an applicable recommendation can be made. However, preliminary research shows the potential value of this approach to exploit Sugar Belle® fruit in the OJ business. 🍊

*Yu Wang is an assistant professor; Charles Sims, Lisa House, Frederick Gmitter and Jude Grosser are professors; and Zhifeng Gao is an associate professor — all with the University of Florida Institute of Food and Agricultural Sciences.*

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